FCC/IC Test Report

For:
Lucid USA, Inc.

Host Model: P21-K2C000
Module Model: JODY-W354-00A

Host Product Description:
UCC (Unified Cockpit Controller)

FCC ID: 2AXZJ-K2B100
IC: 27970-K2B100

Applied Rules and Standards:
47 CFR Part 15.407 (UNII-1) & 5 GHz (UNII-3)
RSS-247 Issue 3 (DTSs) & (LE-LAN), and RSS-Gen Issue 5

REPORT #: EMC_LUCID_019_24001_15_407

DATE: 2024-09-30

A2LA Accredited

IC recognized # 3462B

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecom.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.407 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

Company	Description	Host Model #	Module Model #
Lucid USA, Inc.	UCC (Unified Cockpit Controller)	P21-K2C000	JODY-W354-00A

Responsible for the Report:

Date	Section	Name	Signature
2024-09-30	Compliance	Art Thammanavarat (Senior EMC Engineer)	Art Thammanavarat Digitally signed by: Art Thammanavarat DN: CN = Art Thammanavarat email = art.thammanavarat@cetecom.com C = AD Date: 2024.09.30 13:08:56 -07'00'

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
EMC Lab Manager:	Alvin, Ilarina
Responsible Project Leader:	Akanksha Baskaran

2.2 Identification of the Client

Client Firm/Name:	Lucid USA, Inc.
Street Address:	7373 Gateway Blvd
City/Zip Code	Newark, California, 94560
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as Client
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Host Model No	P21-K2C000
HW Version	01
SW Version	491
Contains FCC ID :	2AXZJ-K2B100
Contains IC:	27970-K2B100
Product Description	UCC (Unified Cockpit Controller)
Radio Module	**Wi-Fi & Bluetooth Modules** **Model Name** : Ublox **Model Number :** JODY-W354-00A **Wireless Technologies** **Wi-Fi 5GHz :** 802.11 a/g/n/ac **Bluetooth :** BDR/DER, BLE
Frequency Range, # of channels	Frequency Range (MHz) / Channel Number 5150-5250 / 36-48 [4] 5725-5850 / 149-165 [5]
Modes of Operation	WiFi 802.11a/b/g/n/ac
Antenna Gain as declared	2.5 dBi
Max. Peak Output Power	5GHz WLAN UNII-1 : +18.0dBm 5GHz WLAN UNII-3 : +16.8dBm
Rated Operating Voltage Range	9V to 16V DC
Operating Temperature Range	-40 ºC to 85 ºC
Other Radios in the device	Bluetooth BDR/EDR: GFSK
Sample Revision	■Production Unit; ☐Pre-Production

*** Note:** Frequency bands 5260-5320, 5600-5650, 5660-5725 are not supported in UCC (Unified Cockpit Controller)disabled for use in Canada by firmware program that controls country code during manufacturing and cannot be altered by an end user or service technician.

3.2 EUT Sample details

EUT #	Host Model #	HW Version	SW Version	Notes/Comments
1	P21-K2C000	01	491	N/A

3.3 Support Equipment (SE) details

SE #	Type	Model	Manufacturer	Serial Number
1	Media Converter	100/1000Base-T1	Technica Engineering	1402240122420140
2	Center Console Monitor	P11-NAT6ST-01	LUCID	2213800007
3	Dash Monitor	P11-NASBST-07	LUCID	2218900006
4	USB Drive – 32GB	CRUZER 32 GB	San DISK	SDCZ36-032G
5	Video Camera	P11-G160WW-C	Continental	RVS231LD10-0001
6	Dual A2B Audio Generator	A2BFRTX2	Flexmedia XM	0090
7	Gigabit Ethernet Fiber Media Converter	ET91000SFP2	Startech.com	2821010161

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1+(SE#1+2+3+4+5+6+7)	Powered by 12 VDC Car battery

3.5 Mode of Operation details

Mode of Operation	Description
Wi-Fi	The radio of the EUT was configured to a fixed channel transmission in Wi-Fi mode with highest possible duty cycle using confidential test software and scripts (per meta-ublox-modules-2019-11-04 document) provided by the applicant.
Wi-Fi + BT	The radio of the EUT was configured to a fixed channel simultaneous transmission in Wi-Fi, BDR mode with highest possible duty cycle using confidential test software and scripts (per meta-ublox-modules-2019-11-04 document) provided by the applicant.

3.6 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on mid channels, and highest power in 802.11a mode. For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations.

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.407 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

This test report is to support a request for the FCC ID: 2AXZJ-K2B100 and IC: 27970-K2B100. The device was also evaluated operating in co-transmission mode, and found compliant with the above requirement.

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	NA	NP	Result
§15.407(e)	Emission Bandwidth	Nominal	802.11a/n/ ac/ax	☐	☐	■	See Note 5
§15.407(a)	Power Spectral Density	Nominal	802.11a/n/ ac/ax	☐	☐	■	See Note 5
§15.407(a)	Maximum Output Power	Nominal	802.11a/n/ ac/ax	■	☐	☐	See Note 3,4
§15.407; 15.205	Band Edge Compliance	Nominal	802.11a/n/ ac/ax	☐	☐	■	See Note 6
§15.407(b); §15.209; 15.205	Radiated TX Spurious Emissions	Nominal	802.11a/n/ ac/ax	■	☐	☐	Complies
§15.207(a)	AC Conducted Emissions	Nominal	802.11a/n/ ac/ax	☐	■	☐	See Note 2

Note 1: NA= Not Applicable
Note 2: This device does not connect to AC mains network
Note 3: Power verification testing was conducted only on middle channel.
Note 4: Leveraged from report # MDE_UBLOX_2220_FCC_02, Section 5.2 (FCC ID: XPYJODYW374, IC: 8595A-JODYW374)
Note 5: Leveraged from report # MDE_UBLOX_2220_FCC_02, Section 5.3 (FCC ID: XPYJODYW374, IC: 8595A-JODYW374)
Note 6: Leveraged from report # MDE_UBLOX_2220_FCC_02, Section 5.4 (FCC ID: XPYJODYW374, IC: 8595A-JODYW374)

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=2.

Radiated measurement

Measurement System		EMC 1	EMC 2
Conducted emissions (mains port)	150 kHz – 30 MHz	2.47 dB	N/A
Radiated emissions	9 kHz – 30 MHz	2.68 dB	2.53 dB
	30 – 100 MHz	4.21 dB	3.85 dB
	100 MHz – 1 GHz	5.51 dB	5.24 dB
	1 – 6 GHz	5.0 dB	4.88 dB
	6 – 18 GHz	4.76 dB	4.58 dB
	18 – 40 GHz	4.65 dB	4.61 dB

RF conducted measurement ±0.5 dB

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: http://physics.nist.gov/cuu/Uncertainty/typeb.html. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3dB to the limit.

6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25°C
- Relative humidity: 40-60%

6.2 Dates of Testing:

2024-07-26 – 2024-08-06

6.3 Decision Rule:

Cetecom advanced follows ILAC G8:2019 chapter 4.2.1 (Simple Acceptance Rule).

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, See chapter 9, but is not taken into account – neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.

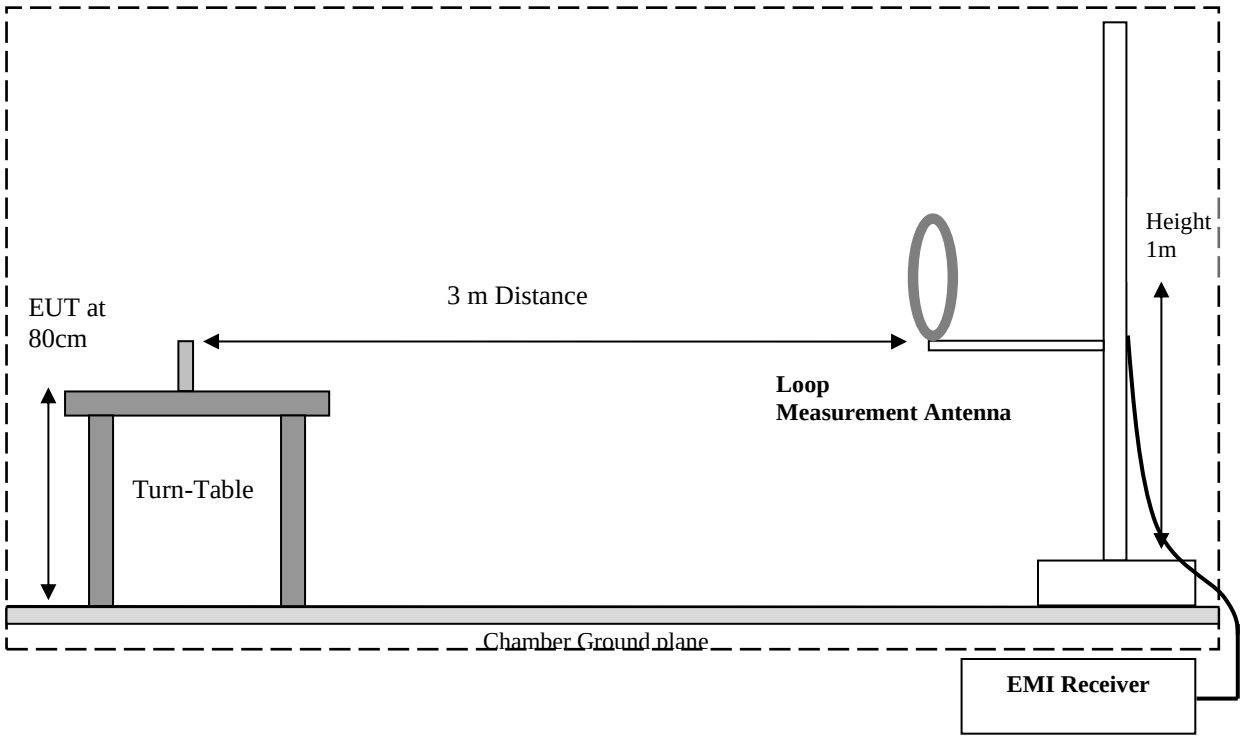
7 Measurement Procedures

7.1 Radiated Measurement

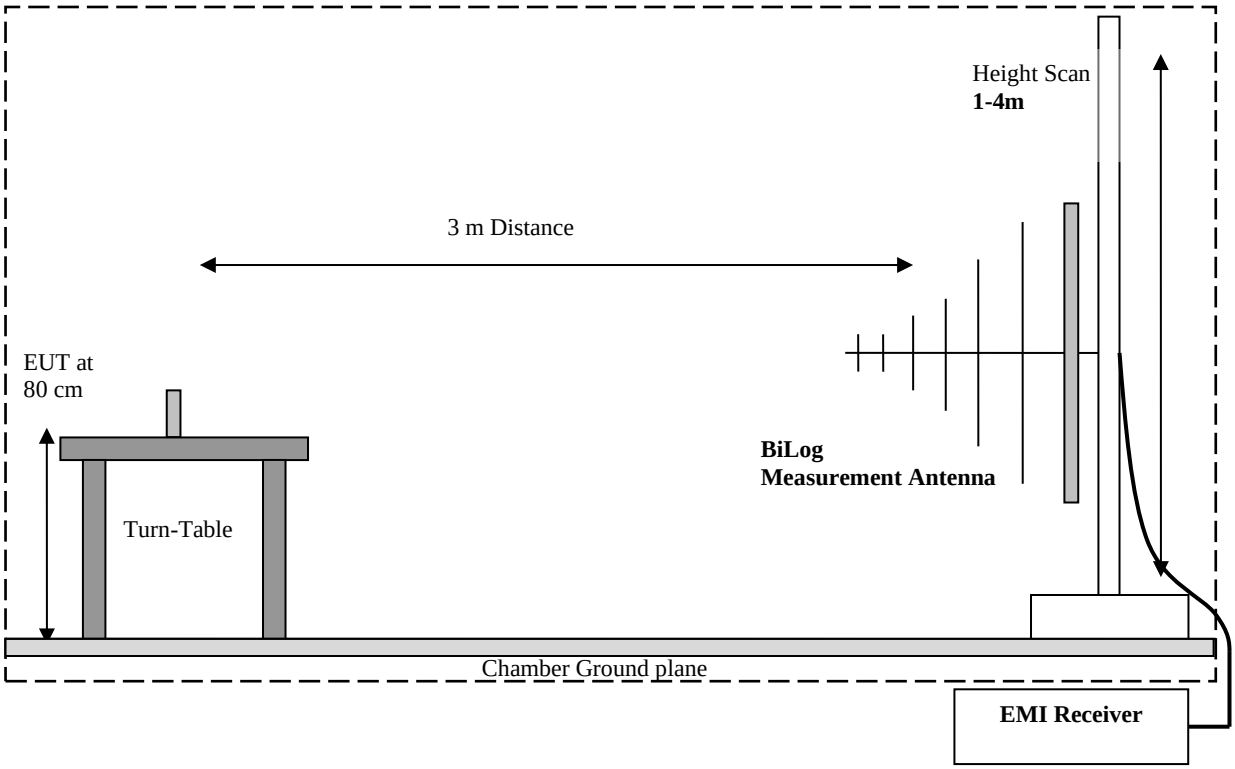
The radiated measurement is performed according to ANSI C63.10 (2013)

- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.

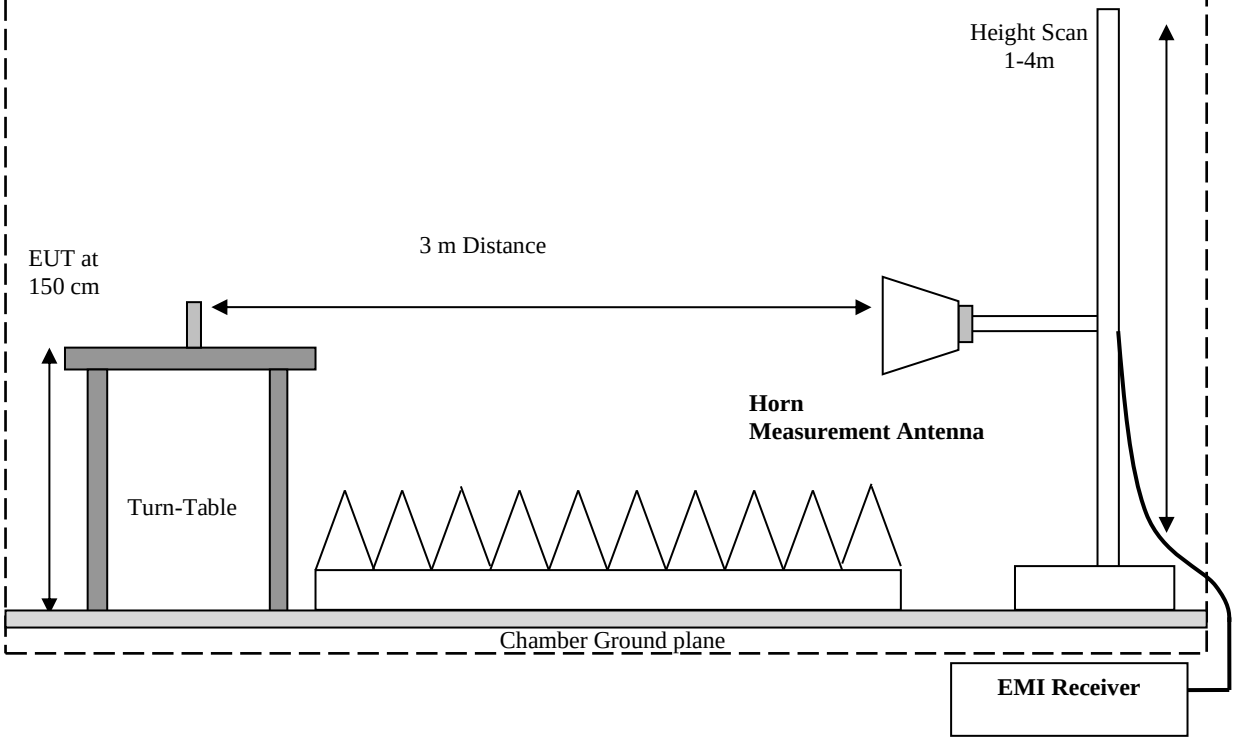
Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz Measurements



7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

1. Measured reading in dBµV
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

FS (dBµV/m) = Measured Value on SA (dBµV)+ Cable Loss (dB)+ Antenna Factor (dB/m)

Example:

Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

8 Test Result Data

8.1 Maximum Output Power

8.1.1 Measurement according to FCC 789033 D02 General UNII Test Procedures New Rules v02r01

Spectrum Analyzer settings for method SA-1:

- Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- Set RBW = 1 MHz
- Set the VBW ≥ 3 MHz
- Detector = RMS
- Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
- Sweep time = Auto Couple
- Trace mode = Trace average at least 100 traces in power averaging (i.e., RMS mode).
- If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
- Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

8.1.2 Limits:

FCC§15.407

Sub-band 5150-5250 MHz

- For AP the maximum conducted output power over the frequency band of operation shall not exceed 1 W
- For Client Devices the maximum conducted output power over the frequency band of operation shall not exceed 250 mW

Sub-band 5250-5350 MHz and 5470-5725 MHz and

- The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz

Sub-band 5725-5850 MHz

- The maximum conducted output power over the frequency band of operation shall not exceed 1 W

RSS-247

Sub-band 5150-5250 MHz

- For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
- For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.

Sub-band 5250-5350 MHz

- For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
  - Devices, other than devices installed in vehicles, shall comply with the following:
    a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less.
    b) b.The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

- Additional requirements

  In addition to the above requirements, devices shall comply with the following, where applicable:

  a) Outdoor fixed devices with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

i. -13 dBW/MHz	for $0^\circ \leq \theta < 8^\circ$
ii. -13 − 0.716 (θ-8) dBW/MHz	for $8^\circ \leq \theta < 40^\circ$
iii. -35.9 − 1.22 (θ-40) dBW/MHz	for $40^\circ \leq \theta \leq 45^\circ$
iv. -42 dBW/MHz	for $\theta > 45^\circ$

  The measurement procedure defined in Annex A of this document shall be used to verify the compliance to the e.i.r.p. at different elevations.

  b) Devices, other than outdoor fixed devices, having an e.i.r.p. greater than 200 mW shall comply with either i. or ii. below:

  i. devices shall comply with the e.i.r.p. elevation mask in 6.2.2.3(a); or

  ii. devices shall implement a method to permanently reduce their e.i.r.p. via a firmware feature in the event that the Department requires it. The test report must demonstrate how the device's power table can be updated to meet this firmware requirement. The manufacturer shall provide this firmware to update all systems automatically incompliance with the directions received from the Department.

Sub-band 5470-5600 MHz and 5650-5725 MHz

- The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less.
- The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Sub-band 5725-5850 MHz

- The maximum conducted output power shall not exceed 1 W.

Note: All limits are conducted. 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.

8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
23.9° C	1	Wi-Fi	12 VDC	2.5 dBi

8.1.4 Conducted Power Verification result:

FCC:

Plot #	Channel	Frequency (MHz)	Maximum Output Power (dBm)	EIRP (dBm)	Limit	Result
1	44	5220	18.0	20.5	See Section 8.1.2	Pass
2	157	5785	16.8	19.3	See Section 8.1.2	Pass

ISED:

Plot #	Channel	Frequency (MHz)	Maximum Output Power (dBm)	EIRP (dBm)	Limit	Result
3	44	5220	6.3	8.8	See Section 8.1.2	Pass
4	157	5785	16.8	19.3	See Section 8.1.2	Pass

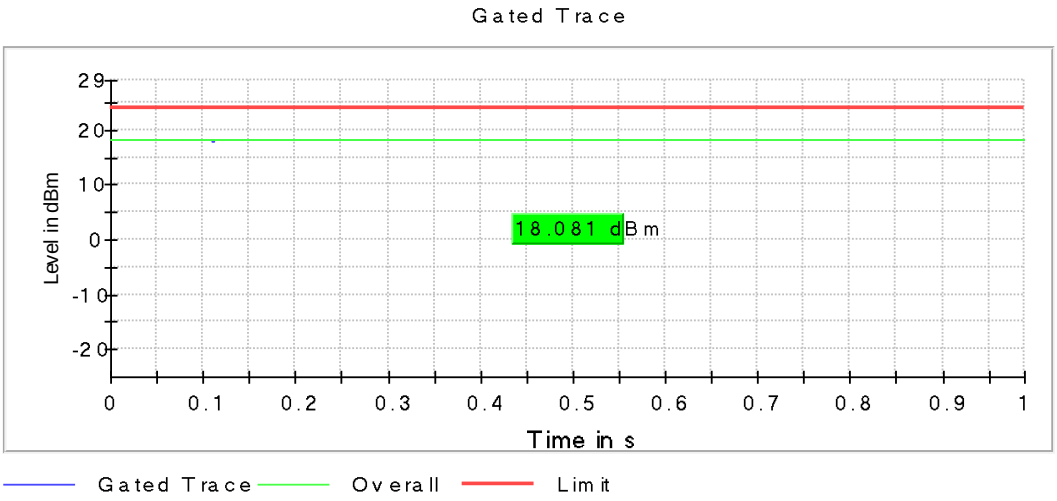
8.1.5 Measurement Plots:

Plot #1 Power Verification

Mode: 802.11a	Channel: 44	FCC

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
5220.000000	18.0	30.0	98.993	PASS

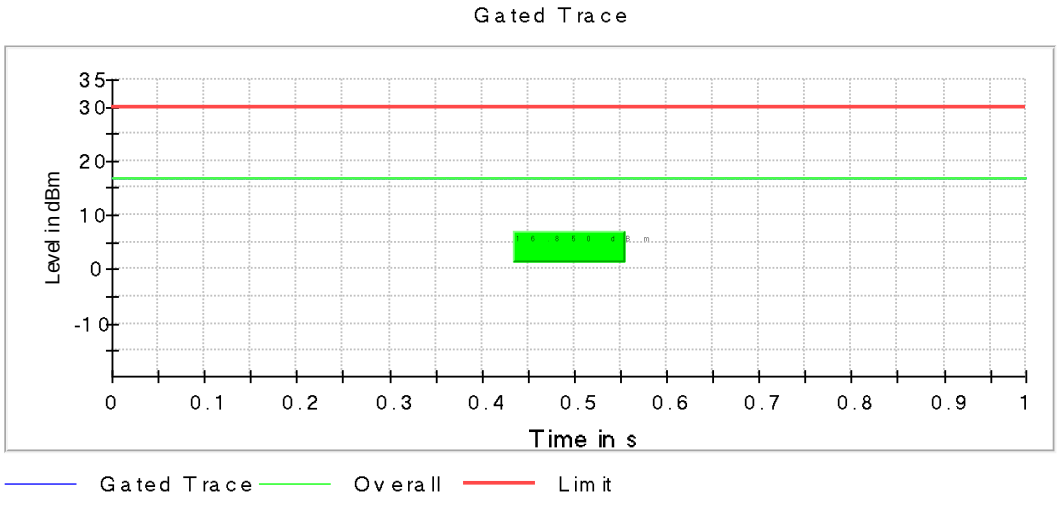


Plot #2 Power Verification

Mode: 802.11a	Channel: 157	FCC

Result

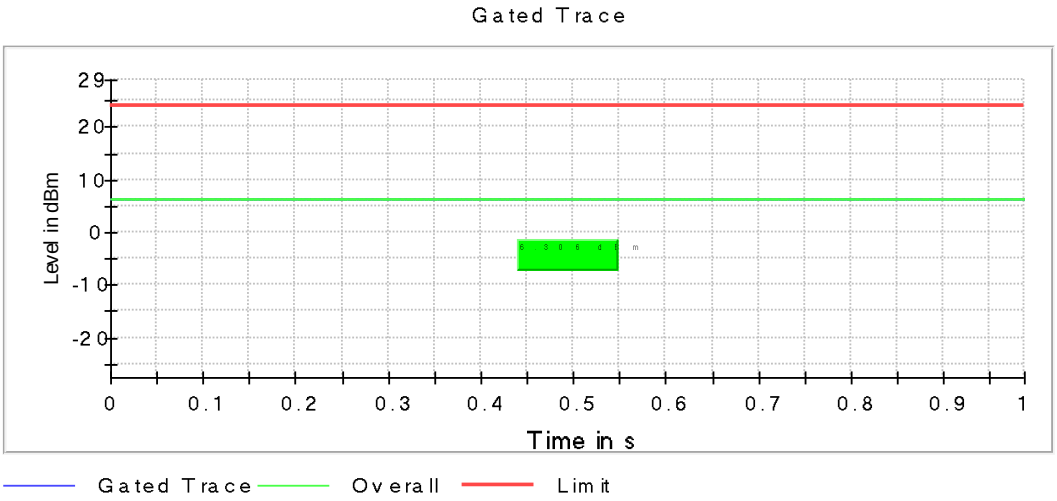
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
5785.000000	16.8	30.0	98.993	PASS



Plot #3 Power Verification		
Mode: 802.11a	**Channel: 44**	**ISED**

Result

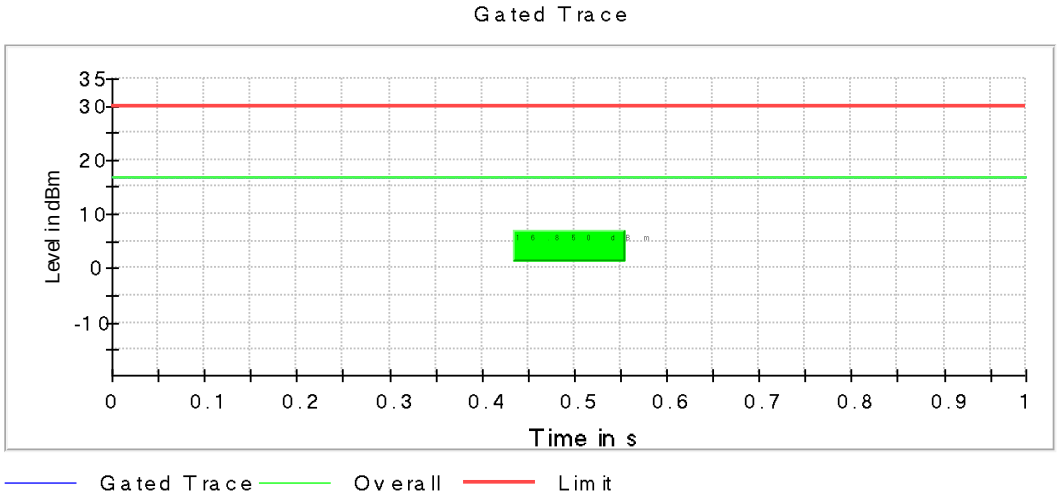
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
5220.000000	6.3	24.0	98.999	PASS



Plot #4 Power Verification		
Mode: 802.11a	**Channel: 157**	**ISED**

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
5785.000000	16.8	30.0	98.993	PASS



8.2 Radiated Transmitter Spurious Emissions

8.2.1 Measurement according to ANSI C63.10 (2013)

Spectrum Analyzer Settings:

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector: Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 KHz (<1GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing at distance other than the specified in the standard, the limit conversion is calculated by using 40 dB/decade extrapolation factor as follow: Conversion factor (CF) = 40 log (D/d) = 40 log (300m / 3m) = 80dB

8.2.2 Limits:

FCC §15.407

- Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.
- The provisions of §15.205 apply to intentional radiators operating under this section.

FCC §15.209

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of emission (MHz)	Field strength (µV/m)	Measurement Distance (m)	Field strength @ 3m (dBµV/m)
0.009–0.490	2400/F(kHz) / ---------	300	-
0.490–1.705	24000/F(kHz) / --------	30	-
1.705–30.0	30 / (29.5)	30	-
30–88	100	3	40 dBµV/m
88–216	150	3	43.5 dBµV/m
216–960	200	3	46 dBµV/m
Above 960	500	3	54 dBµV/m

FCC §15.205

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

- Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

8.2.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
23.9° C	1	802.11a	12 VDC

8.2.4 Measurement result:

Plot #	EUT Operating Mode	Channel #	Scan Frequency	Limit	Result
1-5	Wi-Fi + BDR	Mid (44)	9 kHz – 40 GHz	See section 8.2.2	Pass
6-10	Wi-Fi + BDR	Mid (157)	9 kHz – 40 GHz	See section 8.2.2	Pass

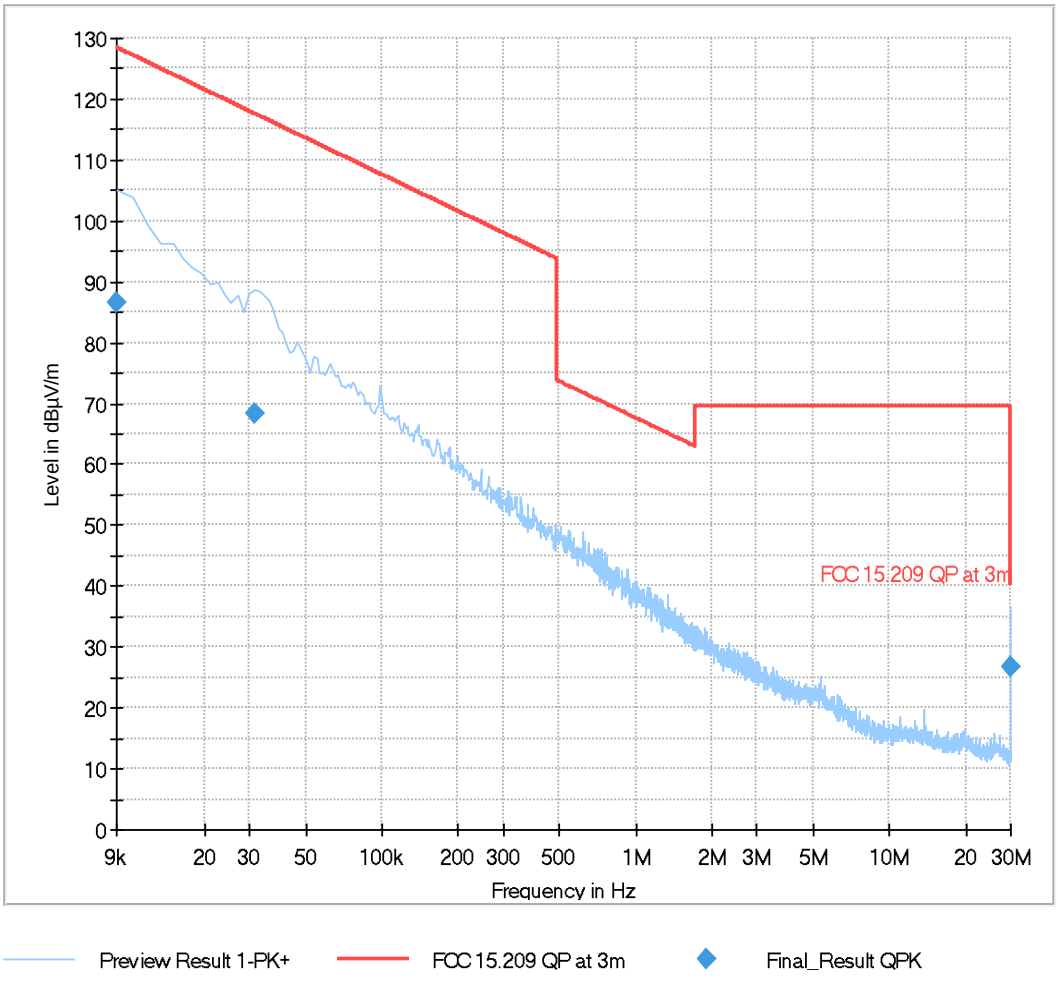
8.2.5 Measurement Plots:

Plot # 1 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5220 MHz	802.11a

Final_Result

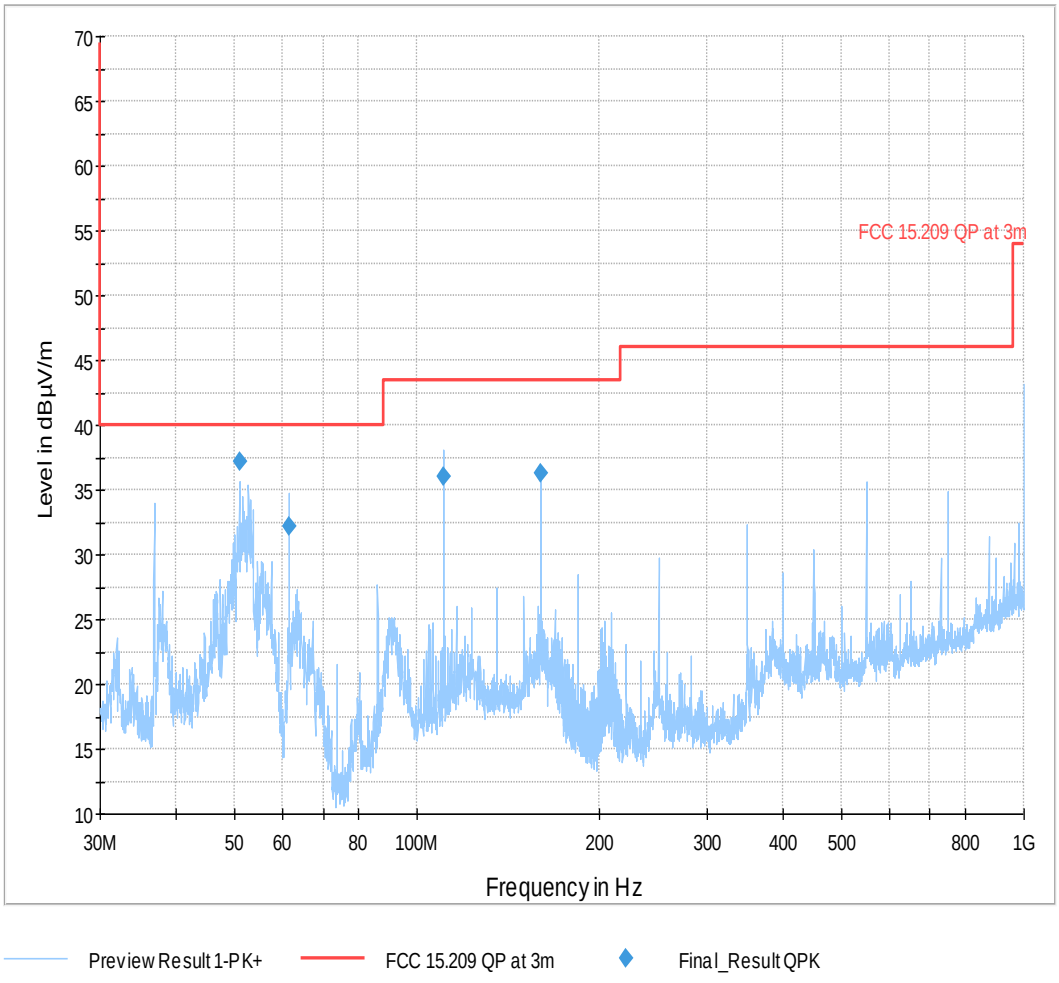
Frequency (MHz)	QuasiPeak (dBµV/m)	DET 2 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
0.009	86.48	---	128.50	42.02	500.0	0.2	120.0	V	92.0	59.9	
0.031	68.26	---	117.63	49.37	500.0	0.2	120.0	H	-31.0	48.5	
30.000	26.74	---	40.00	13.26	500.0	9.0	120.0	V	17.0	22.3	



Plot # 2 Radiated Emissions: 30 MHz – 1 GHz	
Tx Frequency: 5220 MHz	**802.11a**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
50.928	37.237	40.00	2.76	500.0	120.000	100.0	V	-32.0	-20.4	-34.7	0.0	14.4	57.6	
61.404	32.136	40.00	7.86	500.0	120.000	117.0	V	197.0	-21.7	-34.7	0.0	13.0	53.8	
110.559	36.068	43.50	7.43	500.0	120.000	100.0	V	-18.0	-11.7	-34.4	0.0	22.8	47.7	
159.738	36.344	43.50	7.16	500.0	120.000	100.0	V	70.0	-9.4	-34.2	0.0	24.8	45.7	

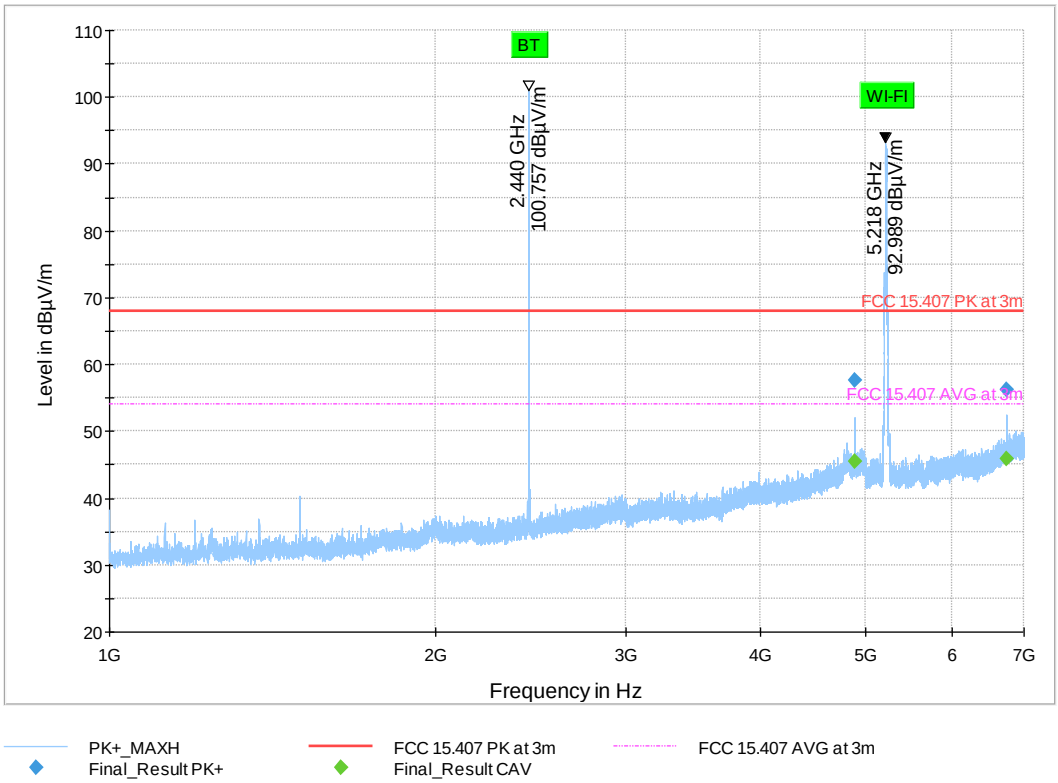


Plot # 3 Radiated Emissions: 1 – 7 GHz

Tx Frequency: 5220 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
4880.313	57.714	---	68.00	10.29	500.0	1000.000	116.0	V	276.0	13.4	-	0.0	33.1	44.3	
4880.313	---	45.532	53.98	8.45	500.0	1000.000	116.0	V	276.0	13.4	-	0.0	33.1	32.1	
6749.875	56.192	---	68.00	11.81	500.0	1000.000	100.0	V	231.0	16.4	-	0.0	34.9	39.8	
6749.875	---	45.897	53.98	8.08	500.0	1000.000	100.0	V	231.0	16.4	-	0.0	34.9	29.5	

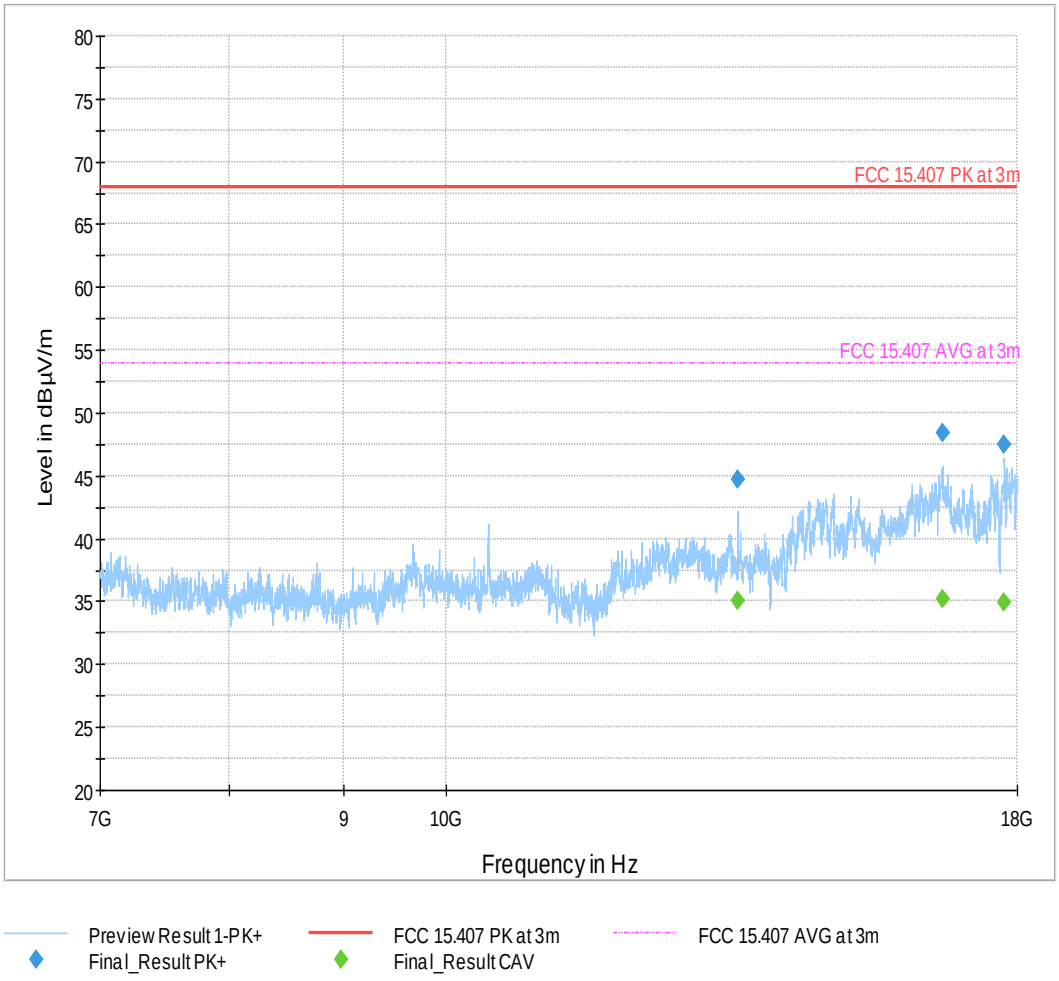


Plot # 4 Radiated Emissions: 7 – 18 GHz

Tx Frequency: 5220 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
13499.969	---	35.100	53.98	18.88	500.0	1000.000	176.0	V	215.0	7.6	13.2	-44.7	39.1	27.5	
13499.969	44.735	---	68.00	23.27	500.0	1000.000	176.0	V	215.0	7.6	13.2	-44.7	39.1	37.1	
16679.313	48.365	---	68.00	19.64	500.0	1000.000	400.0	H	17.0	14.0	15.2	-42.5	41.3	34.4	
16679.313	---	35.254	53.98	18.73	500.0	1000.000	400.0	H	17.0	14.0	15.2	-42.5	41.3	21.3	
17765.219	47.451	---	68.00	20.55	500.0	1000.000	203.0	V	253.0	14.7	16.4	-43.1	41.5	32.7	
17765.219	---	34.933	53.98	19.05	500.0	1000.000	203.0	V	253.0	14.7	16.4	-43.1	41.5	20.2	

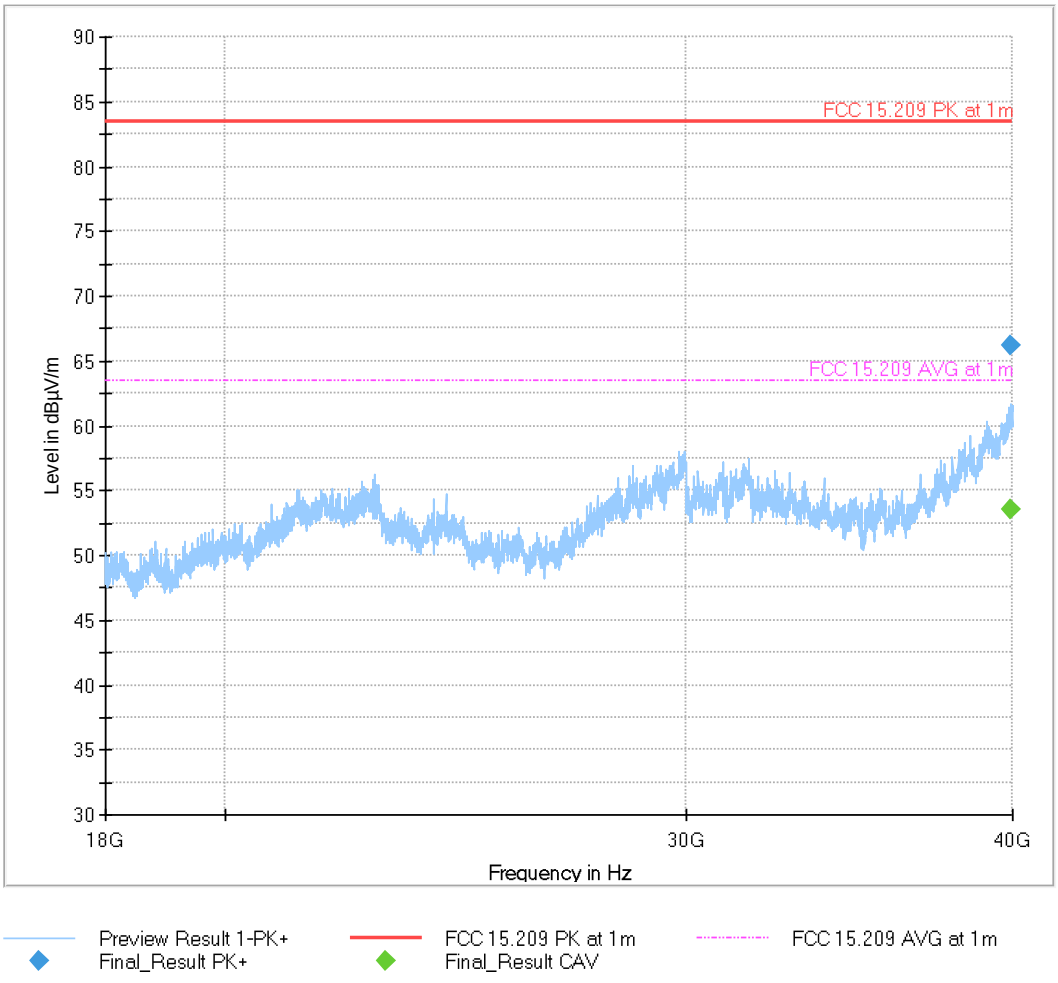


Plot # 5 Radiated Emissions: 18 – 40 GHz

Tx Frequency: 5220 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
39962.188	---	53.50	63.50	10.00	500.0	1000.0	150.0	H	189.0	24.8	
39962.188	66.15	---	83.50	17.35	500.0	1000.0	150.0	H	189.0	24.8	

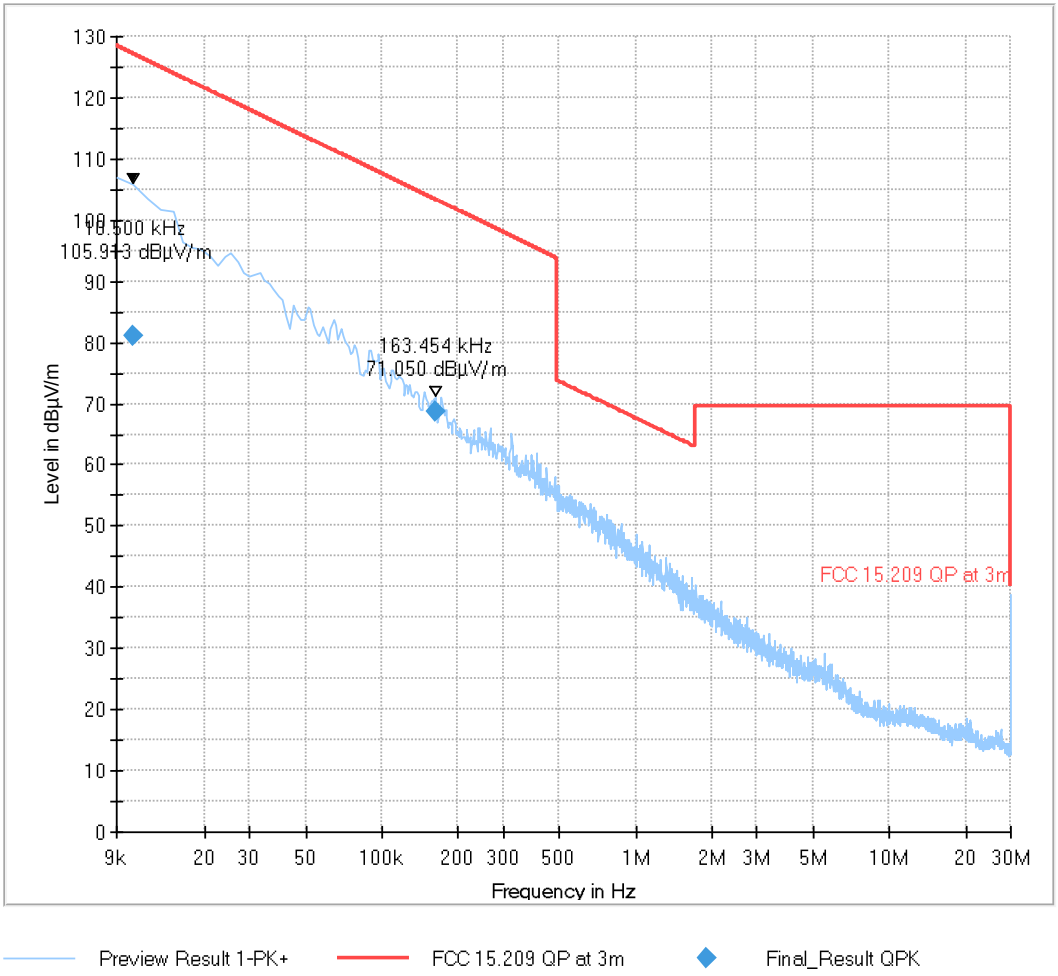


Plot # 6 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5785 MHz	802.11a

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	DET 2 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
0.010	81.21	---	127.16	45.96	500.0	0.2	120.0	H	-6.0	58.5	
0.163	68.79	---	103.33	34.54	500.0	9.0	120.0	V	8.0	34.1	

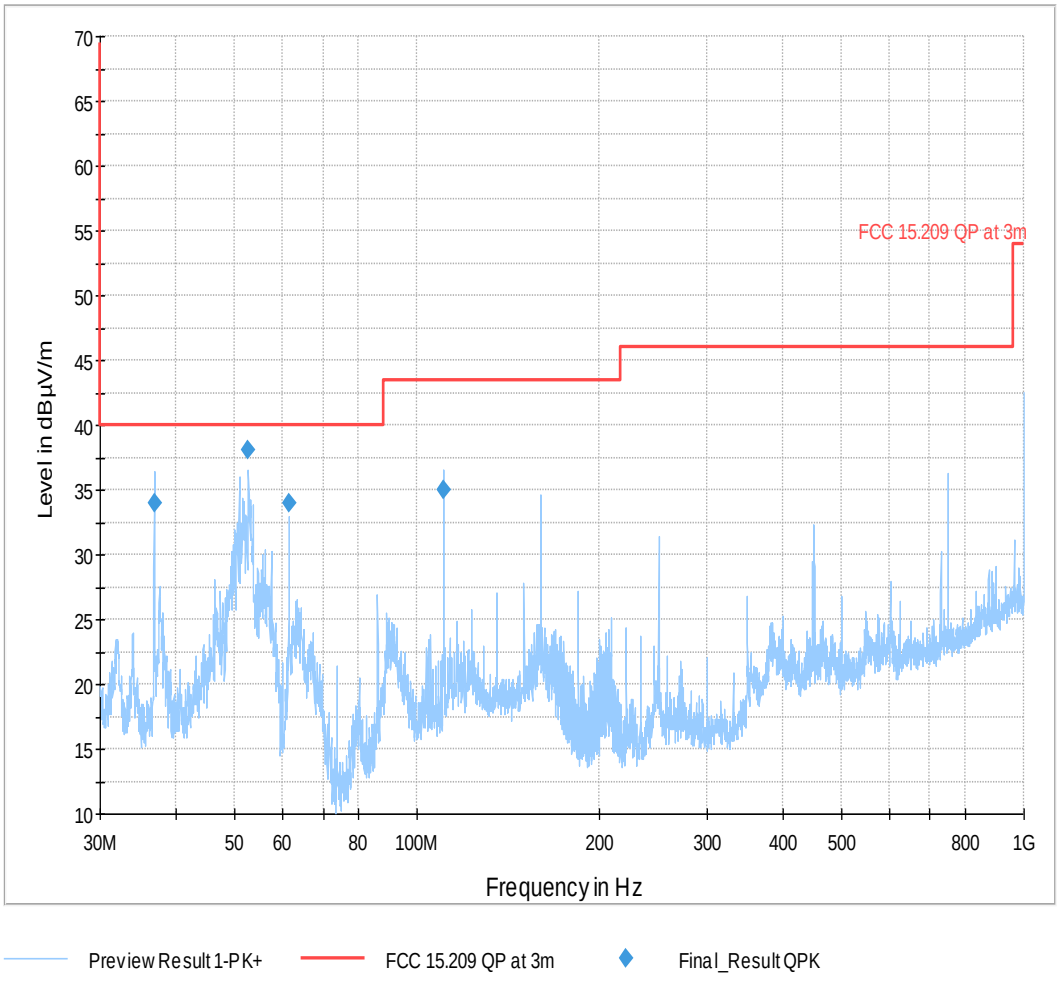


Plot # 7 Radiated Emissions: 30 MHz – 1 GHz

Tx Frequency: 5785 MHz	802.11a

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
36.839	33.946	40.00	6.05	500.0	120.000	100.0	V	176.0	-15.0	-34.8	0.0	19.8	48.9	
52.650	38.079	40.00	1.92	500.0	120.000	100.0	V	323.0	-21.3	-34.7	0.0	13.5	59.3	
61.428	34.017	40.00	5.98	500.0	120.000	100.0	V	206.0	-21.7	-34.7	0.0	13.0	55.7	
110.559	35.009	43.50	8.49	500.0	120.000	100.0	V	137.0	-11.7	-34.4	0.0	22.8	46.7	

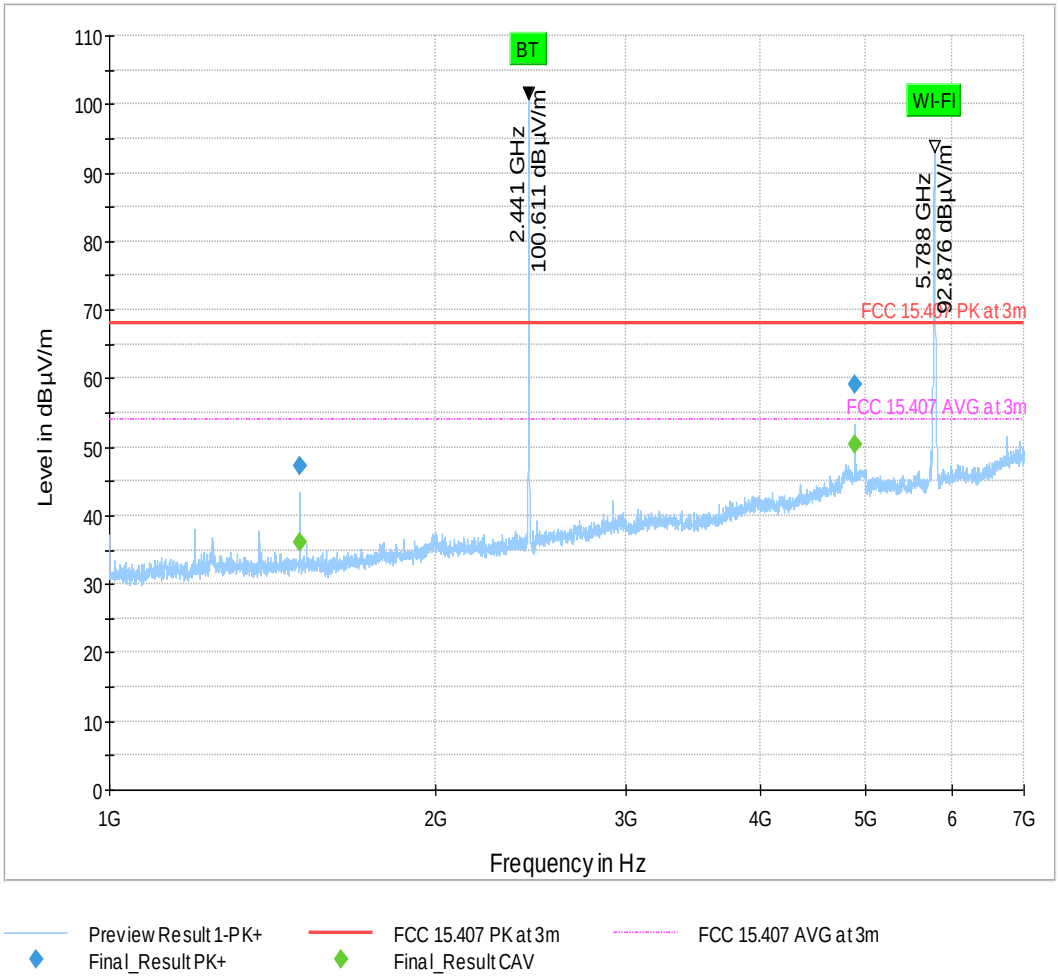


Plot # 8 Radiated Emissions: 1 – 7 GHz

Tx Frequency: 5785 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
1499.875	---	35.998	53.98	17.98	500.0	1000.000	100.0	H	311.0	2.5	-	0.0	25.2	33.5	
1499.875	47.219	---	68.00	20.78	500.0	1000.000	100.0	H	311.0	2.5	-	0.0	25.2	44.8	
4882.000	59.052	---	68.00	8.95	500.0	1000.000	212.0	V	280.0	13.4	-	0.0	33.1	45.6	
4882.000	---	50.368	53.98	3.61	500.0	1000.000	212.0	V	280.0	13.4	-	0.0	33.1	36.9	

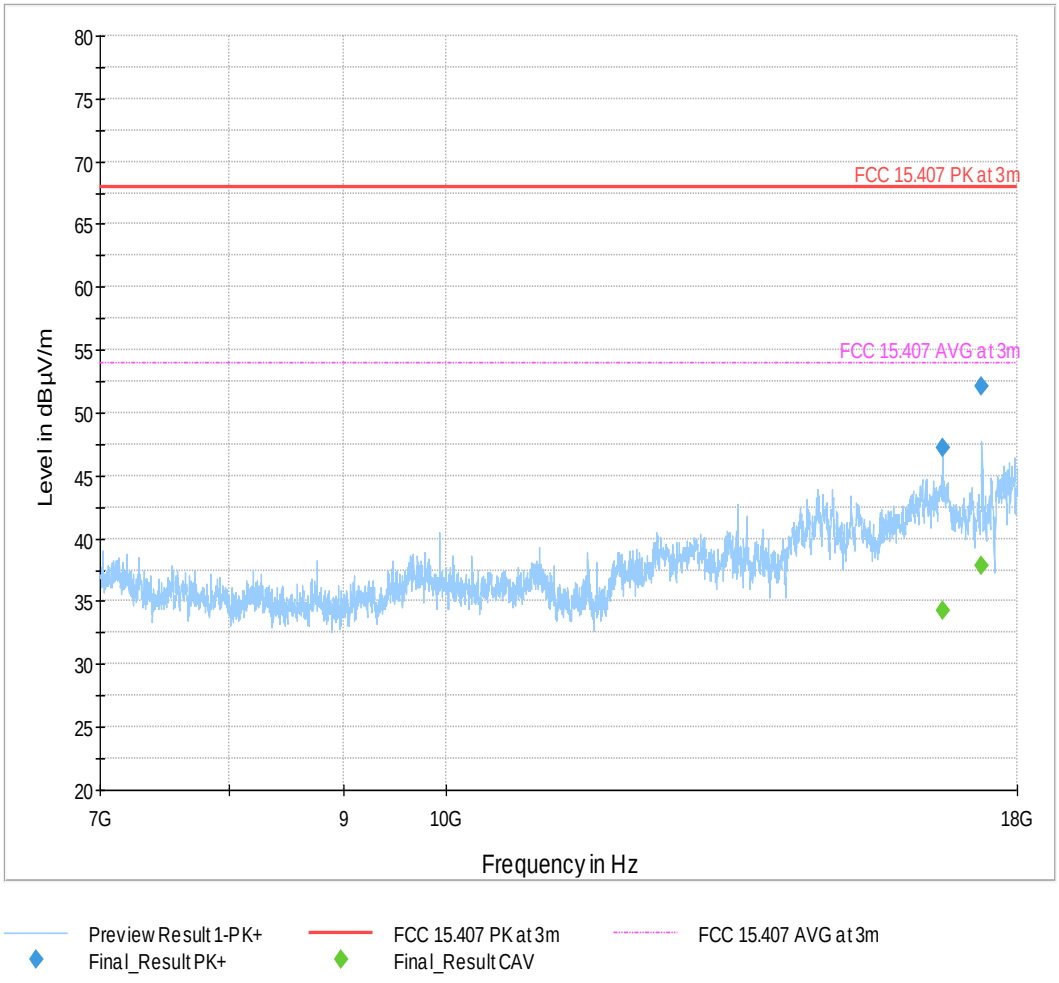


Plot # 9 Radiated Emissions: 7 – 18 GHz

Tx Frequency: 5785 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
16675.875	---	34.262	53.98	19.72	500.0	1000.000	100.0	V	328.0	14.0	15.2	-42.5	41.3	20.3	
16675.875	47.211	---	68.00	20.79	500.0	1000.000	100.0	V	328.0	14.0	15.2	-42.5	41.3	33.2	
17356.156	---	37.838	53.98	16.14	500.0	1000.000	175.0	V	256.0	12.0	14.8	-44.1	41.3	25.8	
17356.156	52.093	---	68.00	15.91	500.0	1000.000	175.0	V	256.0	12.0	14.8	-44.1	41.3	40.1	

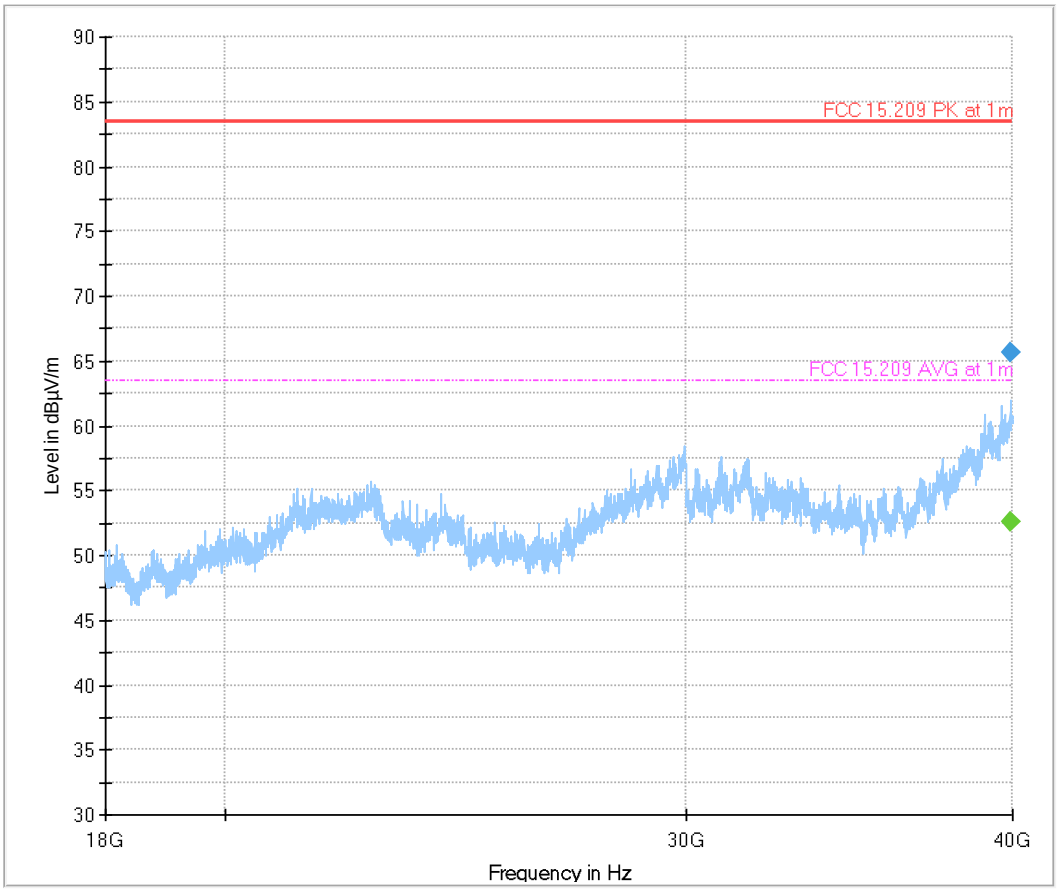


Plot # 10 Radiated Emissions: 18 – 40 GHz

Tx Frequency: 5785 MHz	802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
39945.313	---	52.58	63.50	10.92	500.0	1000.0	150.0	H	103.0	24.8	
39945.313	65.60	---	83.50	17.90	500.0	1000.0	150.0	H	103.0	24.8	



9 Test setup photos

Setup photos are included in supporting file name: "EMC_LUCID_019_24001_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
BILOG ANTENNA	A.H. SYSTEMS	BiLA2G	569	3 YEARS	10/30/2023
HORN ANTENNA	EMCO	3115	00035111	3 YEARS	10/26/2023
HORN ANTENNA	ETS LINDGREN	3117-PA	00167061	3 YEARS	9/25/2023
HORN ANTENNA	ETS LINDGREN	3116C-PA	00166821	3 YEARS	10/26/2023
ESW.EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW44	101715	3 YEARS	10/24/2023
DIGITAL THERMOMETER	Control Company	4410,90080-03	230712972	3 YEARS	10/18/2023
Software	EMC32	Version 10.50.40	-	-	-

Note: Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.
Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

11 History

Date	Report Name	Changes to report	Report prepared by
2024-09-30	EMC_LUCID_019_23001_15_407	Initial Version	Art Thammanavarat

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