TEST REPORT

Report Number : 14040866-E21V3

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

Model : A2651 (Parent Model)
A2893, A2894, A2895, A2896 (Variant Models)

FCC ID : BCG-E8141A (Parent Model)
BCG-E8154A, BCG-E8155A, BCG-E8156A, BCG-E8156A (Variant Models)

IC : 579C-E8141A (Parent Model)
579C-E8154A, 579C-E8155A, 579C-E8156A, 579C-E8156A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC CFR 47 PART 15 SUBPART F §15.519
ISED RSS-220 ISSUE 1 AMENDMENT 1

Date Of Issue:
July 31, 2022

Prepared by:
UL LLC
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	07/15/2022	Initial Issue	---
V2	07/29/2022	Address TCB questions for section 7 and 8	Alejandro Martinez
V3	07/31/2022	Address TCB question for section 7	Alejandro Martinez

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A2651 (Parent Model)
A2893, A2894, A2895, A2896 (Variant Models)

BRAND: APPLE

SERIAL NUMBERS: JHXP7PXL52; JT29K2T190; QWH461KFWV; HY4Y0FC23D

SAMPLE RECEIPT DATES: MAY 20, 2022; JUNE 29, 2022; JULY 08, 2022

DATE TESTED: JUNE 21 – JULY 08, 2022

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC §15 Subpart F	Complies
ISED RSS-220 Issue 1 Amendment 1	Complies

UL LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By:

Thu Chan
Staff Engineer
UL LLC

Tested By:

Alejandro Martinez
Laboratory Engineer
UL LLC

2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.4
15.503 & 15.519 (b)	RSS-220 Sect. 2	-10 dB BW	Complies	ANSI C63.10 Section 10.1
15.519 (c) & (e)	RSS-220 Sect. 4 (c) & 5.3.1 (d)	Pk Power & Max Avg Emissions	Complies	ANSI C63.10 Section 10.3
15.519 (a)(1)	RSS-220 Sect. 5.3.1 (b)	Cessation Time	Complies	None
15.519 (c) & 15.209 (a)	RSS-220 Sect. 3.4	Emissions Below 960 MHz	Complies	ANSI C63.10 Section 10.2
15.519 (c) & (d)	RSS-220 Sect. 5.3.1 (d) & (e)	Emissions Above 960 MHz	Complies	ANSI C63.10 Section 10.3
15.207 (a)	RSS-Gen 8.8	AC Power Line Conducted Emissions	Complies	ANSI C63.10 Section 6.2

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- CFR Title 47 Part 15 Subpart F
- KDB 393764 D01 UWB FAQ v02r01
- ANSI C63.10-2020
- ISED RSS-220 Issue 1 Amendment 1
- ISED RSS GEN Issue 5 Amendment 2

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

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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	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

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

5.4. SAMPLE CALCULATION

RADIATED EMISSION

Where relevant, the following sample calculation is provided:

EIRP (dBm) = Meter Reading (dBm) + Antenna Factor (dB/m) + Pre-Amp Gain/Cbl Loss (dB)
+ dBm-to-dBm Unit Conversion Factor @ 3m
= -60 dBm + 28 dB/m + (-27) dB + 11.8
= -47.2 dBm

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + LISN Insertion Loss (dB) + Cable Loss (dB)
+ Limiter Factor (dB)
= 38.32 dBuV + 0.1 dB + 0 dB + 9.4 (dB)
= 47.82 dBuV

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6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and MSS. All models support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

The EUT has a UWB transceiver with two integral antennas (ANT0 = ANT6/UWB0, ANT1 = UWB1). ANT0 operates on 6.5 GHz (Channel 5) and 8 GHz (Channel 9). ANT1 only operates on 8 GHz (Channel 9). The antennas are not user accessible. Six signal configurations (CONFIG 0,1,2,3,4 & 5) are available for each ANT/CH setting.

Testing was performed on both antennas (UWB0/ANT0 and UWB1/ANT1) of the A2651 parent model and on the single antenna (UWB1/ANT1) of the A2893 variant model. Then, the measurement results are used to support the applications for the parent and variant models identified on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

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6.2. MAXIMUM OUTPUT POWER

Highest Average Powers based on ANT/CH for both the parent and variant A2893 models are listed as follow:

Parent Model (A2651)			
ANT	**CH**	**CONFIG**	**Average Power (dBm EIRP)**
0	5	5	-42.30
0	9	4	-42.42
1	9	2	-42.39

Variant Model (A2893)			
ANT	**CH**	**CONFIG**	**Average Power (dBm EIRP)**
1	9	2	-42.32

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

Two integral antennas are employed for the parent and variant models. The antenna gains of the tested antennas for the parent and variant A2893 models are listed as follow:

Parent Model (A2651)			
CH	**Freq. Band**	**Gain (dBi)**	
	(GHz)	**Ant 0**	**Ant 1**
5	6.5	1.6	N/A
9	8.0	-0.7	0.8

	Variant Model (A2893)		
CH	**Freq. Band**	**Gain (dBi)**	
	(GHz)	**Ant 0**	**Ant 1**
5	6.5	1.3	N/A
9	8.0	-1.4	0.3

6.4. MODULATION

The UWB signal is BPSK pulsed modulated signal.

6.5. SOFTWARE AND FIRMWARE

The Software and Firmware version used at test is FT:1495.0.17~322.2148.1432.

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7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
Laptop + Adapter	Apple	Mac Book Pro	C02VL9ANHV22
Bacon – USB Adapter	Apple	Bacon UART Cable Pigtail	F7514PIGMN0000043
USB-C Ethernet Adapter	Anker	A8338	AEDRTG0B19400074
Laptop + Adapter	Apple	Mac Book Pro	C2QLN093FKYR
Bacon – USB Adapter	Apple	Bacon UART Cable Pigtail	F7514PIGMN0000075

I/O CABLES

I/O CABLES					
Port	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
AC	1	AC	Un-shielded	1	N/A
USB	1	USB	Un-shielded	1	N/A

TEST SETUP

The EUT was examined at pre-scan test using a fundamental frequency in the portrait (z), landscape (y), and flatbed (x) position and the worst-case orientation of individual ANT/CH/CONFIG setting was determined for final spurious emission measurement. Config 3, Payload 125 of both CH5 and CH9 on Ant 0 and CH9 on Ant 1 were selected to test for unwanted emissions as the worst case after pre-scan on the parent model. For variant Model A2893 only Config 3, Payload 125 of CH9 on Antenna 1 was selected to test for unwanted emissions.

Measurements of spurious average emissions were made with the device operating at a higher power than production power to ensure compliance. Measurements of the in-band signal (peak and average emissions, 10 dBc bandwidth, 99% bandwidth) were all made at the production power settings.

EUT was connected to AC power adapter in all test cases except 0.96-6GHz, 1164-1240MHz, and 1559-1610MHz due to noise unrelated to the UWB signal from the device.

For simultaneous transmission on the same antenna of multiple channels in the UWB and WiFi, no noticeable new emission was found.

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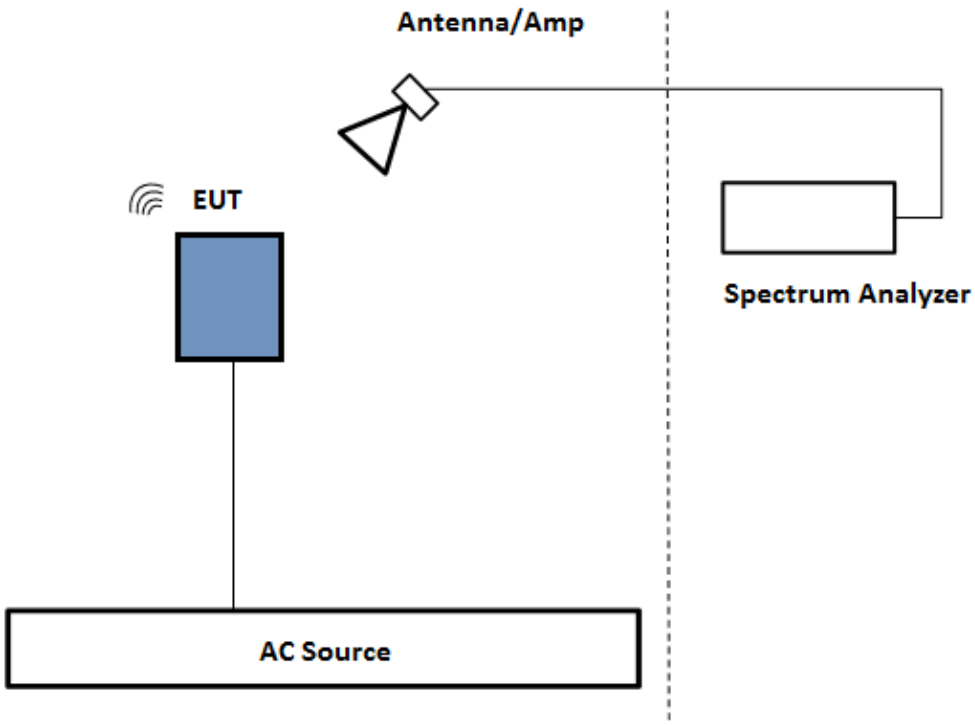
SETUP DIAGRAM FOR TESTS

RF TESTS



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8. 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**	**Local ID**	**Cal Date**	**Cal Due**
EMI Test Receiver	Rohde & Schwarz	ESW44	191428	2/20/2022	2/20/2023
Horn Antenna, 1-18 GHz	ETS Lindgren	3117	200786	2/24/2022	2/24/2023
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	N/A	PRE0183530	11/17/2021	11/17/2022
EMI Test Receiver	Rohde & Schwarz	ESW44	191429	2/20/2022	2/20/2023
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	204044	1/31/2022	1/31/2023
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	79584	7/21/2021	7/21/2022
Antenna, Horn 1-18GHz	ETS Lindgren	3117	81887	3/16/2022	3/16/2023
Rf Filter Box, 1-18GHz	UL-FR1 (CTECH)	N/A	PRE0183207	10/23/2021	10/23/2022
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	PRE0179467	7/29/2021	7/29/2022
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	PRE0179465	7/29/2021	7/29/2022
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	172362	2/9/2022	2/9/2023
Rf amplifier 18-26.5GHz	AMPLICAL	AMP18G26.5-60	171580	6/10/2022	6/10/2023
Antenna, Horn 26.5 to 40GHz	A.R.A.	MWH-2640/B	172365	3/8/2022	3/8/2023
Rf Amplifier, 26-40GHz	AMPLICAL	AMP26G40-60	220537	5/14/2022	5/14/2023
Filter, LPF 0-5400MHz Ch5/9 5.4G LPF	Microtronics	LPM20143	188196	11/30/2021	11/30/2022
Filter, HPF 8.655GHz -40GHz , Ch5 HPF	Wainwright Instruments GmbH	WHNX6-7110-9000-26500-40CD	176232	11/30/2021	11/30/2022
Filter, HPF 11.2GHz, Ch9 11.5G HPF	Wainwright Instruments GmbH	WHW2-8165-11500-21000-40CD	176234	12/9/2021	12/9/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESR	93091	2/21/2022	2/21/2023
Cable, RG223 Coax, double shield, BNC	Pasternack Enterprises	RG233/U	202327	10/22/2021	10/22/2022
Cable, RG223 Coax, double shield, BNC	Pasternack Enterprises	RG233/U	202326	10/22/2021	10/22/2022
Cable, RG223 Coax, double shield, BNC	Pasternack Enterprises	RG233/U	202322	10/22/2021	10/22/2022
Transient Limiter	TE	TBFL1	207996	6/1/2022	6/1/2023
LISN for Conducted Emissions CISPR-16	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	175765	1/26/2022	1/26/2023
Radiated Software	UL	UL EMC	Ver 9.5, 21 Jan 2022		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, 21 Jan 2022		

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9. APPLICABLE LIMITS AND TEST RESULTS

9.1. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

ANSI C63.10 Section 6.9.3

The transmitter output is connected to a spectrum analyzer. The RBW is in the range of 1% to 5% of the OBW bandwidth. The VBW is set to ≥ 3*RBW. The sweep time is coupled.

Tabulated data provides the test results of all available test configurations for the parent and variant A2893 models. The plots for the parent model of Ant 0, CONFIG 0, Payload 125 on CH5 and Ant 1, CONFIG 0, Payload 125 on CH9 bandwidth measurement on are presented and same measurement settings apply to the rest of the test configurations. Same measurement settings from Ant 1, CONFIG 0, Payload 125 on CH9 from the parent model also apply to the variant Model A2893 Ant 1 CH9 test configurations.

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RESULTS

Parent Model
Employee IDs: 24947, 28535, 28709
Location: Chamber D
Test Date: 06/21/2022 – 07/06/2022

ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant Polarity	99% BW (MHz)
0	5	0	125	Portrait	V	611.95
0	5	1	125	Portrait	V	608.94
0	5	2	125	Portrait	V	638.51
0	5	3	125	Portrait	V	642.74
0	5	4	0	Portrait	V	627.70
0	5	5	0	Portrait	V	606.63
0	9	0	125	Flatbed	V	618.07
0	9	1	125	Flatbed	V	608.99
0	9	2	125	Flatbed	V	593.09
0	9	3	125	Flatbed	V	649.60
0	9	4	0	Flatbed	V	598.61
0	9	5	0	Flatbed	V	619.43
1	9	0	125	Landscape	V	612.76
1	9	1	125	Landscape	V	610.15
1	9	2	125	Landscape	V	639.12
1	9	3	125	Landscape	V	640.35
1	9	4	0	Landscape	V	608.89
1	9	5	0	Landscape	V	617.82

Variant Model A2893
Employee ID: 24947, 28709
Location: Chamber D
Test Date: 07/01/2022 – 07/06/2022

ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant Polarity	99% BW (MHz)
1	9	0	125	Portrait	H	609.99
1	9	1	125	Portrait	H	604.86
1	9	2	125	Portrait	H	610.28
1	9	3	125	Portrait	H	638.06
1	9	4	0	Portrait	H	627.68
1	9	5	0	Portrait	H	608.51

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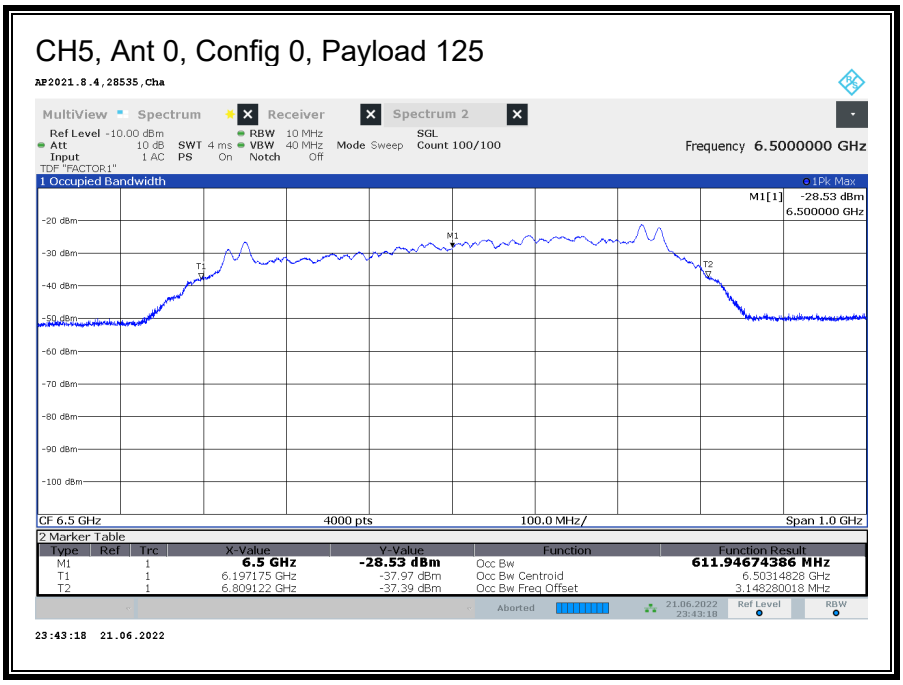
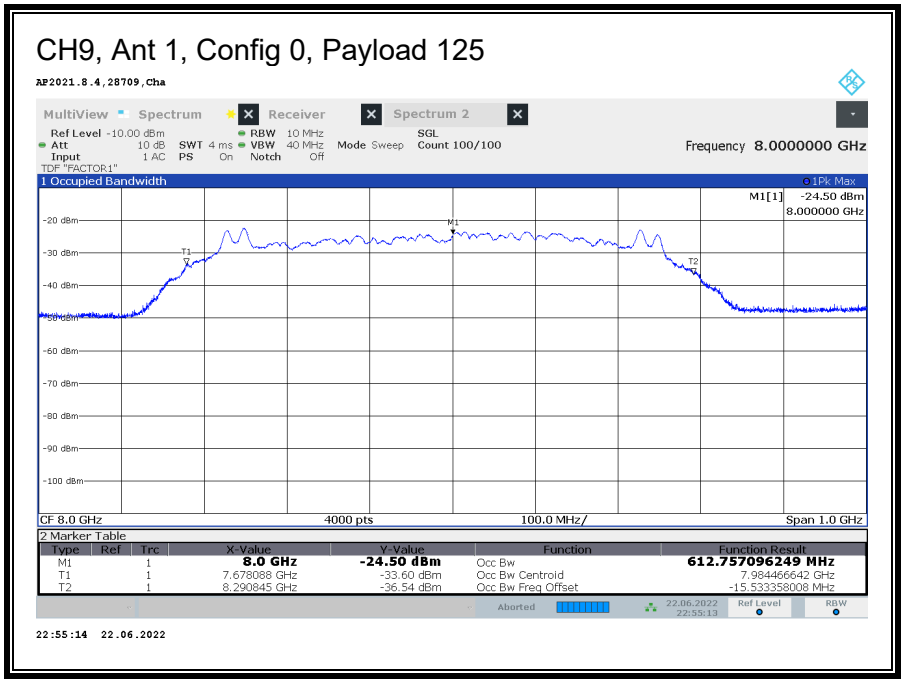
99% BW

Parent Model





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9.2. OPERATING BANDWIDTH

LIMITS

FCC

§15.503 (a)*UWB bandwidth.* For the purpose of this subpart, the UWB bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna. The upper boundary is designated fH and the lower boundary is designated fL. The frequency at which the highest radiated emission occurs is designated fM.

§15.503 (b)*Center frequency.* The center frequency, FC, equals (FH + FL)/2.

§15.503 (c)*Fractional bandwidth.* The fractional bandwidth equals 2(FH−FL)/ (FH+ FL).

§15.503 (d)*Ultra-wideband (UWB) transmitter.* An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

§15.519 (b) The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

RSS-220

Section 2 A *UWB device* is an intentional radiator that has either a *-10 dB bandwidth* of at least 500 MHz or a *-10 dB fractional bandwidth* greater than 0.2.

Section 5.1 (a) The -10 dB bandwidth of the device shall be totally contained in the band 3.1-10.6 GHz.

"-10 dB bandwidth B_{-10}" and "-10 dB fractional bandwidth μ_{-10}" are defined as follows:

$$B_{-10} = f_H - f_L$$
$$\mu_{-10} = B_{-10}/f_C$$

where:

f_M is the frequency of maximum UWB transmission;
f_H is the highest frequency at which the power spectral density of the UWB transmission is -10 dB relative to f_M;
f_L is the lowest frequency at which the power spectral density of the UWB transmission is -10 dB relative to f_M; and
$f_C = (f_H + f_L)/2$ is the centre frequency of the -10 dB bandwidth.

TEST PROCEDURE

ANSI C63.10 Clause 10.1

RSS-220 Section 2 of the Annex

Tabulated data provides the test results of all available test configurations for the parent and variant A2893 models. The plots for the parent model of Ant 0, CONFIG 0, Payload 125 on CH5 and Ant 1, CONFIG 0, Payload 125 on CH9 bandwidth measurement on are presented and same measurement settings apply to the rest of the test configurations. Same measurement settings from Ant 1, CONFIG 0, Payload 125 on CH9 from the parent model also apply to the variant model A2893 Ant 1 CH9 test configurations.

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RESULTS

Parent Model
Employee IDs: 28535, 28709
Location: Chamber D
Test Date: 06/21/2022 – 07/06/2022

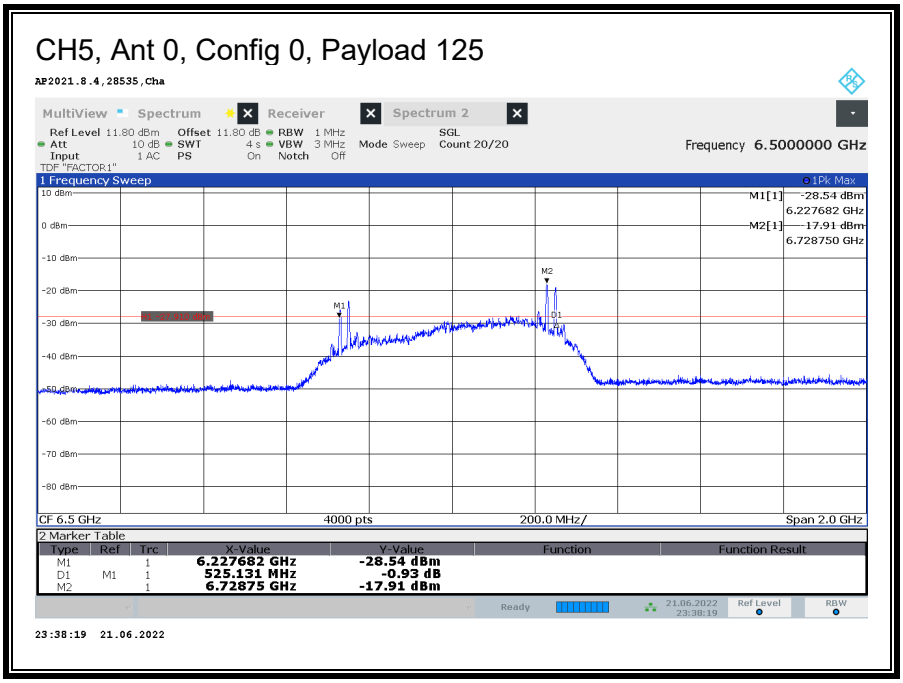
ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
0	5	0	125	Portrait	V	6.729	6.228	6.753	6.490	525.13	500	25.13	P
0	5	1	125	Portrait	V	6.729	6.228	6.753	6.490	525.13	500	25.13	P
0	5	2	125	Portrait	V	6.729	6.229	6.751	6.490	522.63	500	22.63	P
0	5	3	125	Portrait	V	6.729	6.229	6.751	6.490	521.63	500	21.63	P
0	5	4	0	Portrait	V	6.729	6.227	6.753	6.490	525.63	500	25.63	P
0	5	5	0	Portrait	V	6.728	6.226	6.754	6.490	527.63	500	27.63	P
0	9	0	125	Flatbed	V	7.748	7.724	8.249	7.986	525.63	500	25.63	P
0	9	1	125	Flatbed	V	7.748	7.724	8.249	7.986	525.13	500	25.13	P
0	9	2	125	Flatbed	V	7.748	7.726	8.248	7.987	522.63	500	22.63	P
0	9	3	125	Flatbed	V	7.748	7.726	8.248	7.987	522.63	500	22.63	P
0	9	4	0	Flatbed	V	7.748	7.724	8.250	7.987	526.63	500	26.63	P
0	9	5	0	Flatbed	V	7.748	7.723	8.251	7.987	528.63	500	28.63	P
1	9	0	125	Landscape	V	7.748	7.724	8.250	7.987	526.13	500	26.13	P
1	9	1	125	Landscape	V	7.748	7.724	8.250	7.987	526.63	500	26.63	P
1	9	2	125	Landscape	V	7.748	7.725	8.248	7.987	523.13	500	23.13	P
1	9	3	125	Landscape	V	7.748	7.726	8.248	7.987	522.63	500	22.63	P
1	9	4	0	Landscape	V	7.748	7.721	8.250	7.986	529.13	500	29.13	P
1	9	5	0	Landscape	V	7.748	7.723	8.251	7.987	528.63	500	28.63	P

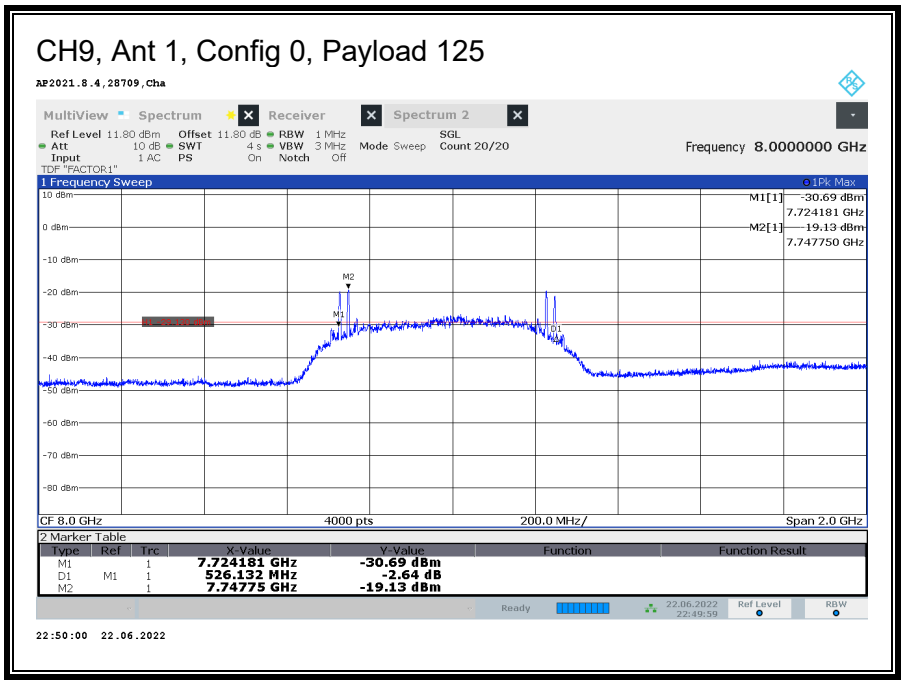
Variant Model A2893
Employee ID: 28709
Location: Chamber D
Test Date: 07/01/2022

ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
1	9	0	125	Portrait	H	7.748	7.724	8.250	7.987	526.63	500	26.63	P
1	9	1	125	Portrait	H	7.748	7.724	8.250	7.987	526.63	500	26.63	P
1	9	2	125	Portrait	H	7.748	7.726	8.249	7.987	523.13	500	23.13	P
1	9	3	125	Portrait	H	7.748	7.726	8.248	7.987	522.63	500	22.63	P
1	9	4	0	Portrait	H	7.748	7.724	8.250	7.987	526.13	500	26.13	P
1	9	5	0	Portrait	H	7.748	7.723	8.251	7.987	528.13	500	28.13	P

OPERATING BANDWIDTH

Parent Model





9.3. PEAK POWER AND MAXIMUM AVERAGE EMISSIONS

LIMITS

FCC

15.519 (e) There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M. That limit is 0 dBm EIRP.

15.519 (c) The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency in MHz	EIRP in dBm
3100 - 10600	-41.3

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Annex, Section 4 (c) Peak measurements shall be made in addition to average measurements. Transmissions shall not exceed 0 dBm e.i.r.p. in any 50 MHz bandwidth when the average limit is -41.3 dBm/MHz.

Section 5.3.1 (d) Radiated emissions above 960 MHz from a device shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz.

Frequency	E.I.R.P. in a Resolution Bandwidth of 1 MHz
4.75 – 10.6 GHz	−41.3 dBm

TEST PROCEDURE

ANSI C63.10 Clause 10.3

RSS-220 Annex

Peak EIPR power is measured using RBW of 50 MHz.

The radiated emissions of 6 - 9 GHz frequency band are performed at 3-meter test distance.

Tabulated data provides the test results of all available test configurations for the parent and variant A2893 models. Plots for the parent model of Ant 0, CONFIG 0, Payload 125 on CH5 and Ant 1, CONFIG 0, Payload 125 on CH9 peak and maximum average power measurements are presented and same measurement settings apply to the rest of test configurations. Same measurement settings from Ant 1, CONFIG 0, Payload 125 on CH9 from the parent model also apply to the variant model A2893 Ant 1 CH9 test configurations.

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RESULTS

Parent Model
Employee IDs: 28535, 28709
Location: Chamber D
Test Date: 06/21/2022 – 06/23/2022

						Peak EIRP Power				Average EIRP Power			
ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant. Polarity	FM (GHz)	Peak Power (dBm/50MHz)	Peak Limit (0 dBm/50 MHz)	Margin (dB)	FM (GHz)	Avg Power (dBm/MHz)	Avg Limit (dBm/MHz)	Margin (dB)
0	5	0	125	Portrait	V	6.7405	-4.87	0	-4.87	6.6555	-42.86	-41.3	-1.56
0	5	1	125	Portrait	V	6.7375	-3.56	0	-3.56	6.6555	-42.40	-41.3	-1.10
0	5	2	125	Portrait	V	6.6285	-8.63	0	-8.63	6.6455	-42.58	-41.3	-1.28
0	5	3	125	Portrait	V	6.6605	-8.55	0	-8.55	6.6455	-42.58	-41.3	-1.28
0	5	4	0	Portrait	V	6.7385	-4.05	0	-4.05	6.6565	-42.85	-41.3	-1.55
0	5	5	0	Portrait	V	6.7425	-1.86	0	-1.86	6.6475	-42.30	-41.3	-1.00
0	9	0	125	Flatbed	V	7.7375	-3.53	0	-3.53	7.8415	-42.82	-41.3	-1.52
0	9	1	125	Flatbed	V	7.7365	-2.37	0	-2.37	7.8865	-42.64	-41.3	-1.34
0	9	2	125	Flatbed	V	7.7365	-7.27	0	-7.27	7.8365	-42.60	-41.3	-1.30
0	9	3	125	Flatbed	V	7.9815	-6.07	0	-6.07	7.8955	-42.55	-41.3	-1.25
0	9	4	0	Flatbed	V	7.7335	-5.42	0	-5.42	8.0025	-42.42	-41.3	-1.12
0	9	5	0	Flatbed	V	7.7385	-4.03	0	-4.03	8.0045	-42.51	-41.3	-1.21
1	9	0	125	Landscape	V	7.9825	-3.60	0	-3.60	8.0625	-42.61	-41.3	-1.31
1	9	1	125	Landscape	V	7.9995	-2.89	0	-2.99	8.0615	-42.88	-41.3	-1.58
1	9	2	125	Landscape	V	7.9885	-6.09	0	-6.09	8.0105	-42.39	-41.3	-1.09
1	9	3	125	Landscape	V	7.9925	-6.53	0	-6.54	8.1275	-42.83	-41.3	-1.53
1	9	4	0	Landscape	V	7.7435	-5.30	0	-5.30	8.0695	-42.52	-41.3	-1.22
1	9	5	0	Landscape	V	7.7355	-3.08	0	-3.08	8.0655	-42.54	-41.3	-1.24

Variant Model A2893
Employee ID: 28535, 28709
Location: Chamber D
Test Date: 06/21/2022 – 06/23/2022

						Peak EIRP Power				Average EIRP Power			
ANT	CH	CONFIG	Payload	EUT Orientation	Meas. Ant. Polarity	FM (GHz)	Peak Power (dBm/50MHz)	Peak Limit (0 dBm/50 MHz)	Margin (dB)	FM (GHz)	Avg Power (dBm/MHz)	Avg Limit (dBm/MHz)	Margin (dB)
1	9	0	125	Portrait	H	7.9815	-3.47	0	-3.47	7.8415	-42.74	-41.3	-1.44
1	9	1	125	Portrait	H	7.9995	-2.61	0	-2.61	7.8865	-42.49	-41.3	-1.19
1	9	2	125	Portrait	H	7.9785	-6.41	0	-6.41	7.8675	-42.32	-41.3	-1.02
1	9	3	125	Portrait	H	7.9895	-6.58	0	-6.58	7.7475	-42.49	-41.3	-1.19
1	9	4	0	Portrait	H	7.7385	-2.77	0	-2.77	7.8825	-42.78	-41.3	-1.48
1	9	5	0	Portrait	H	7.7445	-1.76	0	-1.76	7.8905	-42.37	-41.3	-1.07

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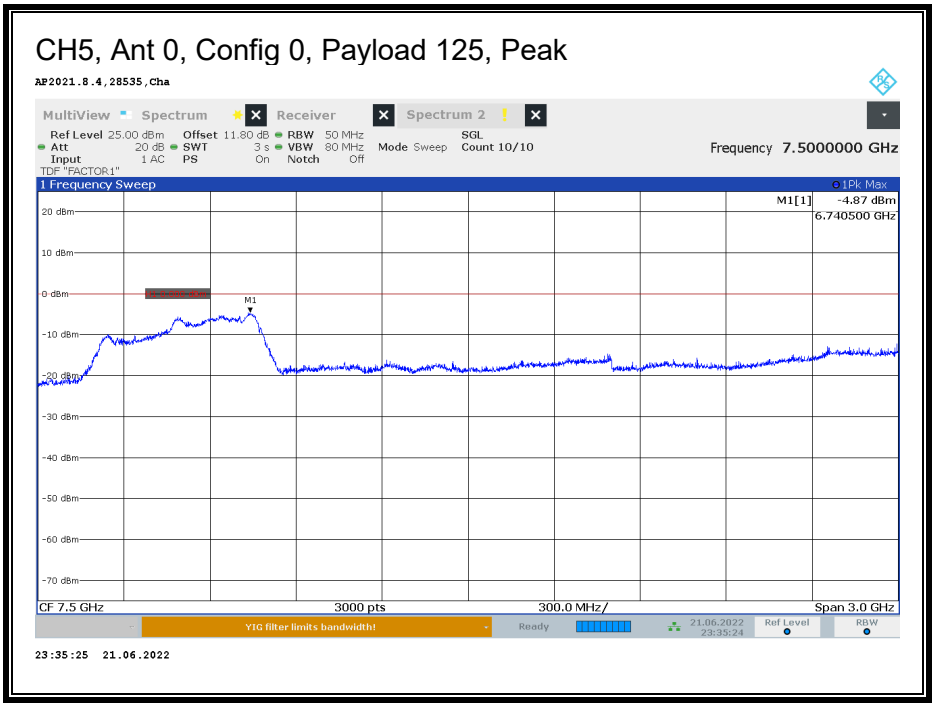
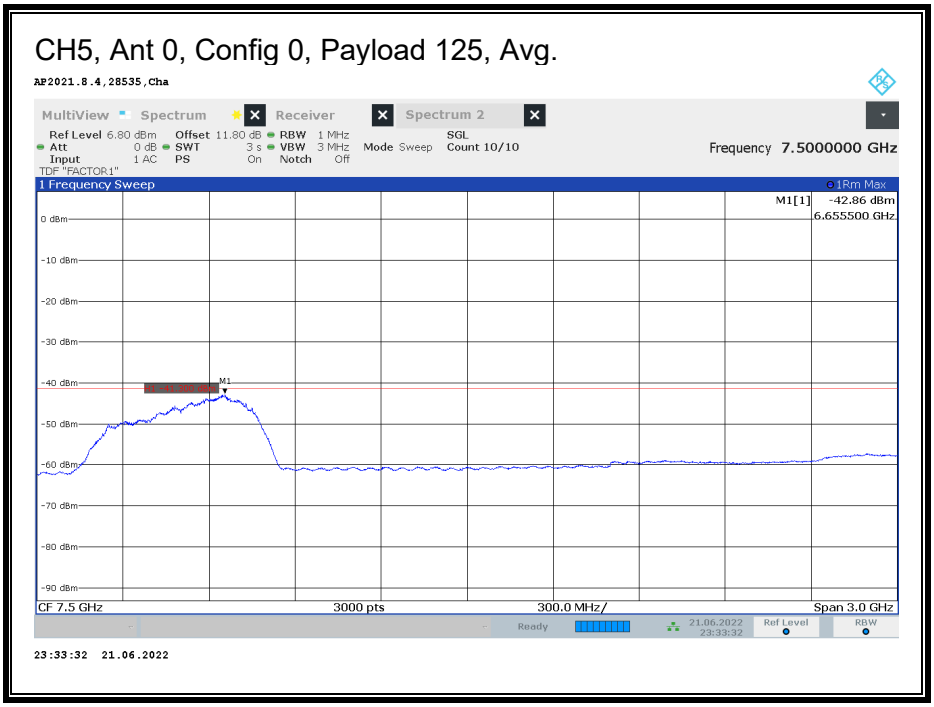
PEAK POWER AND MAXIMUM AVERAGE EMISSIONS

Parent Model





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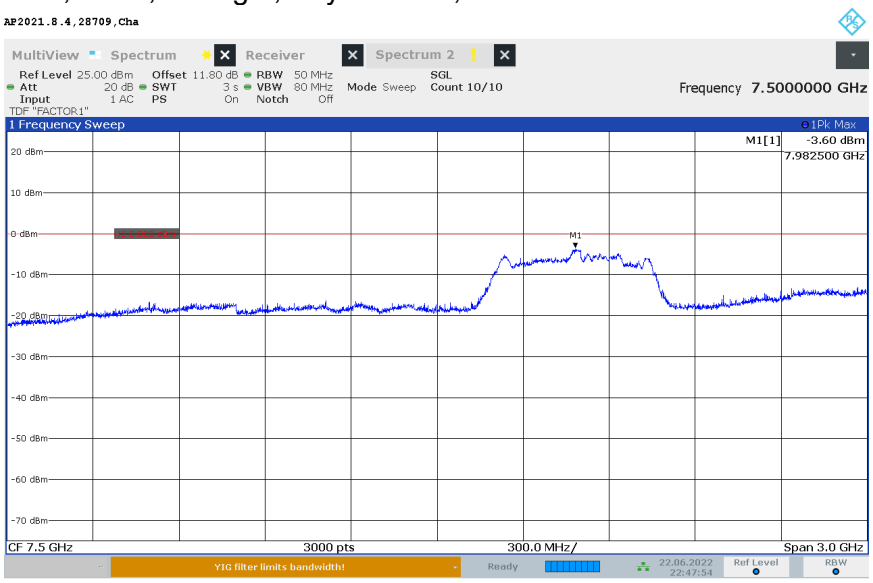
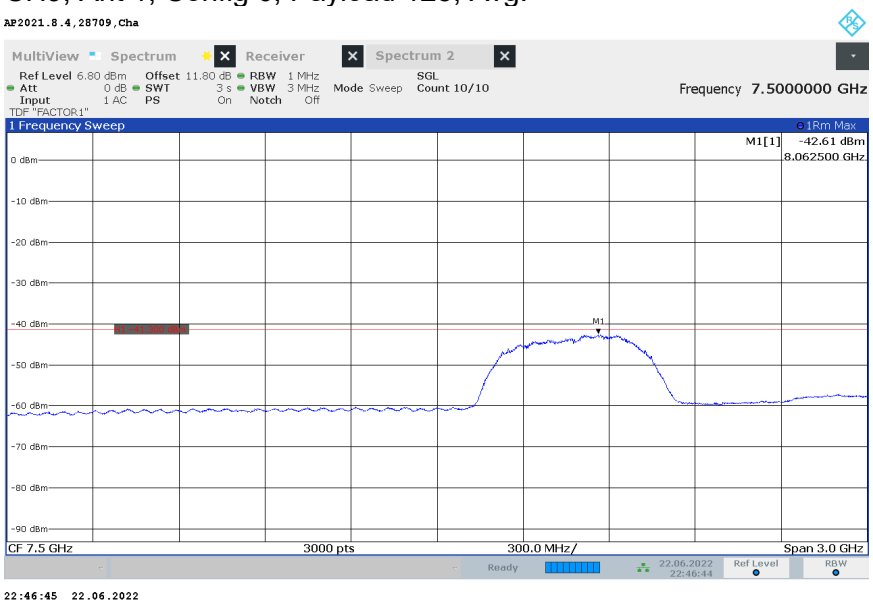
CH9, Ant 1, Config 0, Payload 125, Peak



CH9, Ant 1, Config 0, Payload 125, Avg.



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9.4. CESSATION TIME

LIMITS

FCC

§15.519(a)(1) A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

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Section 5.3.1 (b) The device is to transmit only when it is sending information to an associated receiver. The device shall cease transmission of information within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB device at least every 10 seconds or the UWB device shall cease transmitting any information other than periodic signals used for the establishment or re-establishment of a communication link with an associated receiver.

TEST PROCEDURES

* Initiator = EUT
* Responder = associated receiver

Transmissions are monitored for two cases:

1. The Initiator ends the UWB link.
2. The Responder ends the UWB link.

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RESULTS

Results for both the parent and variant A2893 models are shown below.

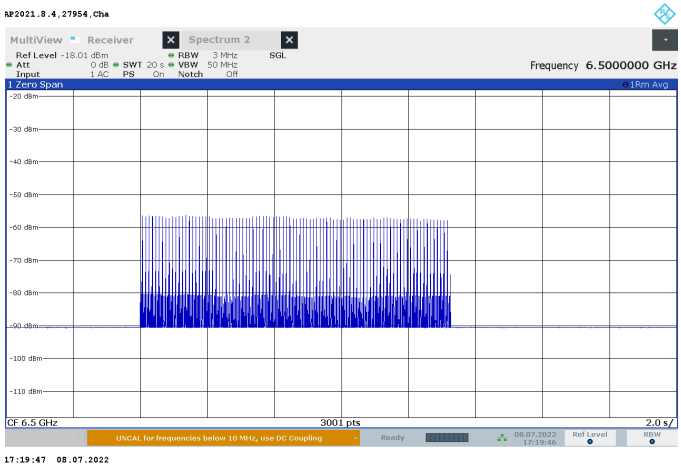
Parent and Variant A2893 models
Employee ID: 27954
Location: Chamber D
Test Date: 07/08/2022

Signal Levels on all Plots

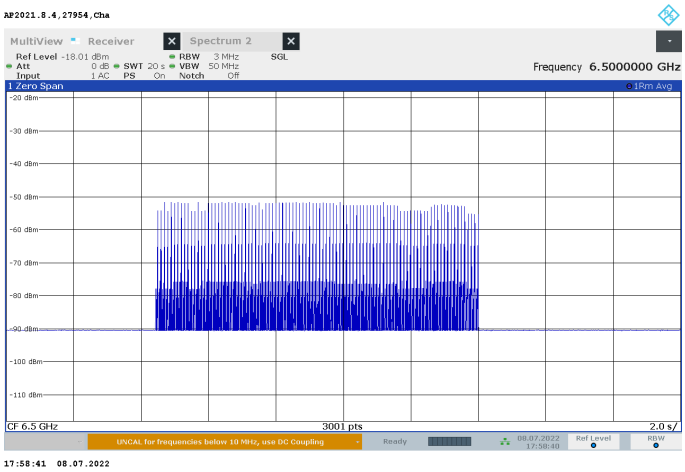
- Initiator is Low Amplitude
- Responder is High Amplitude

Case 1: Initiator ends the UWB link

Parent Model



Variant Model A2893



RESULT

- All devices, including the Responder, cease transmissions

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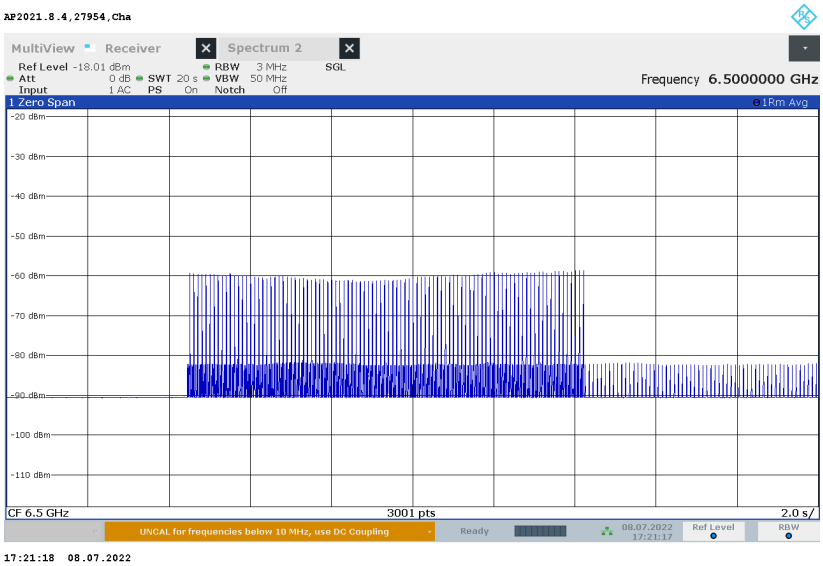
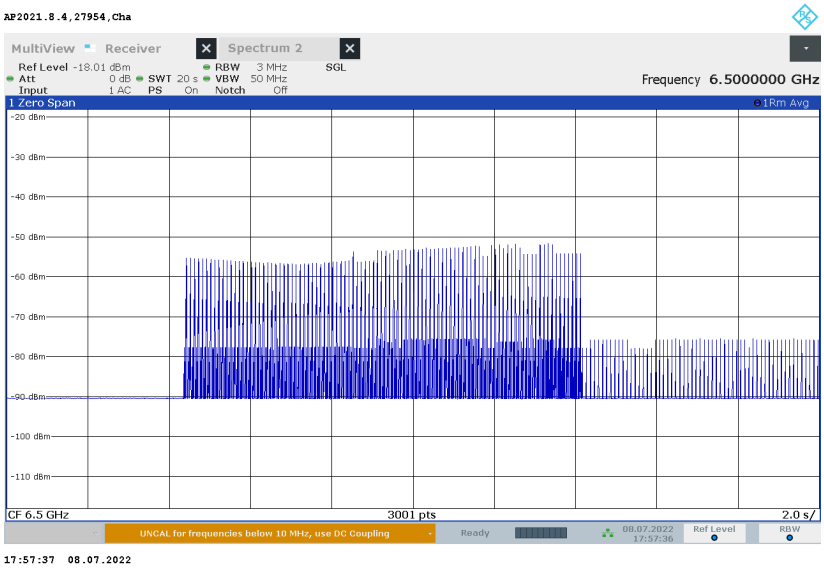
Case 2: Responder ends the UWB link

Parent Model



Variant Model A2893



RESULT

- Responder ends the link; Initiator stops Acknowledgements but continues Polling.
    - Responder ceases transmissions, does not respond to Polling Signals.

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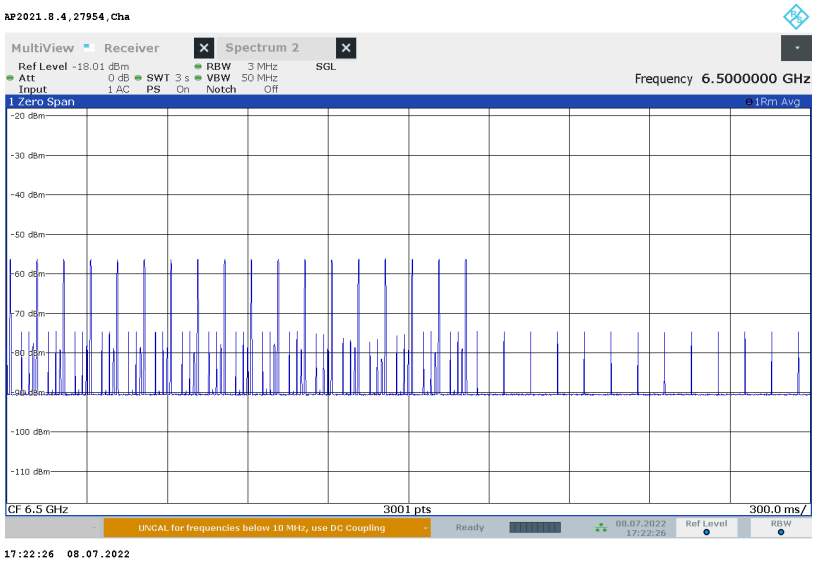
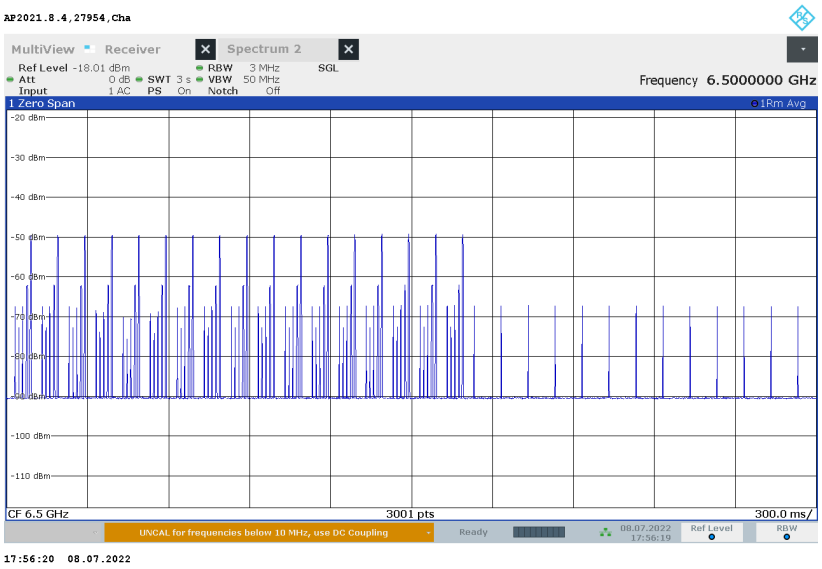
Zoom-in Plot during On-Off Transition

Parent Model



Variant Model A2893



RESULT

- Shows Link Traffic, Acknowledgements and Polling Signals while Link is established
- Shows Polling Signals after Link has ended

9.5. EMISSIONS BELOW 960 MHz

LIMITS

FCC

§15.519 (c) The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall not exceed the emission levels in §15.209. The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

15.209 (a)

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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

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Section 3.4 Radiated emissions at or below 960 MHz for all subclasses of UWB device shall not exceed the following limits. Measurements of radiated emissions at and below 960 MHz are to be made using a CISPR quasi-peak detector. CISPR measurement bandwidth specifications are to be used.

Frequency (MHz)	Field Strength (Microvolts/m)	Measurement Distance (Metres)	E.i.r.p. (dBmW)
0.009-0.490	2,400/F (F in kHz)	300	10 log (17.28 / F^2) (F in kHz)
0.490-1.705	24,000/F (F in kHz)	30	10 log (17.28 / F^2) (F in kHz)
1.705-30	30	30	-45.7
30-88	100	3	-55.2
88-216	150	3	-51.7
216-960	200	3	-49.2

Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average emissions detector.

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TEST PROCEDURE

ANSI C63.10 Clause 10.2

RSS-220 Annex

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 3m from the EUT.

For below 30 MHz testing, investigation was done on three antenna orientations: RX antenna Face-on, Face-off and horizontal (parallel to ground). The worst-case configurations were determined on RX antenna Face-on and Face-off; therefore, all final tests were performed using these two orientations.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30-meter open area test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

A final test is made at any frequencies at which emissions are found. During this final scan, the antenna is kept no further from the EUT than the maximum distance calculated for each band that yields a minimum system noise floor.

RESULTS

Results for both the parent and variant A2893 models are shown below.

Emissions Summary

Parent Model
Employee IDs: 24943
Location: Chamber F
Test Date: 06/22/2022 – 06/23/2022

					Frequency Range	
Ant	CH	Config	Payload	Power Setting	9 kHz - 30 MHz	30 - 960 MHz
0	5	3	125	Max	PASS	PASS
0	9	3	125	Max	PASS	PASS
1	9	3	125	Max	PASS	PASS

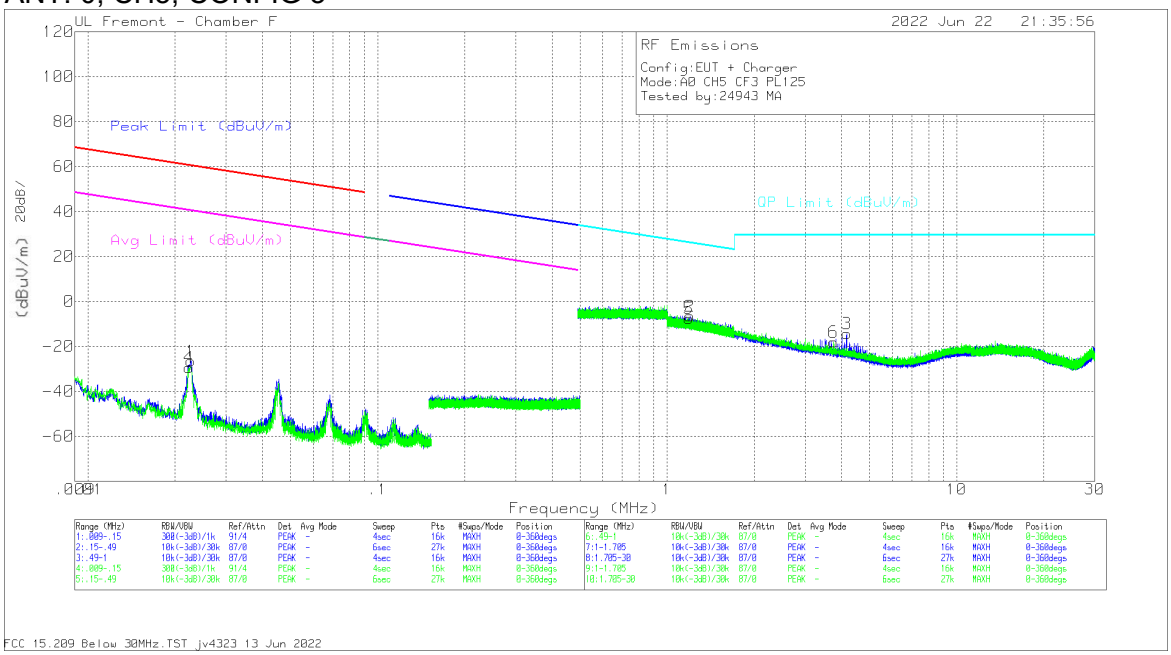
Variant Model A2893
Employee ID: 26051
Location: Chamber F
Test Date: 07/01/2022

					Frequency Range	
Ant	CH	Config	Payload	Power Setting	9 kHz - 30 MHz	30 - 960 MHz
1	9	3	125	Max	PASS	PASS

9.5.1. EMISSIONS, 9 kHz – 30 MHz

Parent

ANT. 0, CH5, CONFIG 3



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
1	.0227	26.73	Pk	58.7	-32	-80	-26.57	60.48	-87.05	40.48	-67.05	0-360	On
4	.0223	23.81	Pk	58.8	-32	-80	-29.39	60.63	-90.02	40.63	-70.02	0-360	Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
2	1.198	20.18	Pk	45.9	-32.6	-40	-6.52	26.06	-32.58	0-360	On
3	4.1783	21.33	Pk	37	-32.6	-40	-14.27	29.5	-43.77	0-360	On
5	1.1906	19.34	Pk	45.7	-32.6	-40	-7.56	26.11	-33.67	0-360	Off
6	3.7538	16.94	Pk	37.6	-32.6	-40	-18.06	29.5	-47.56	0-360	Off

Pk - Peak detector

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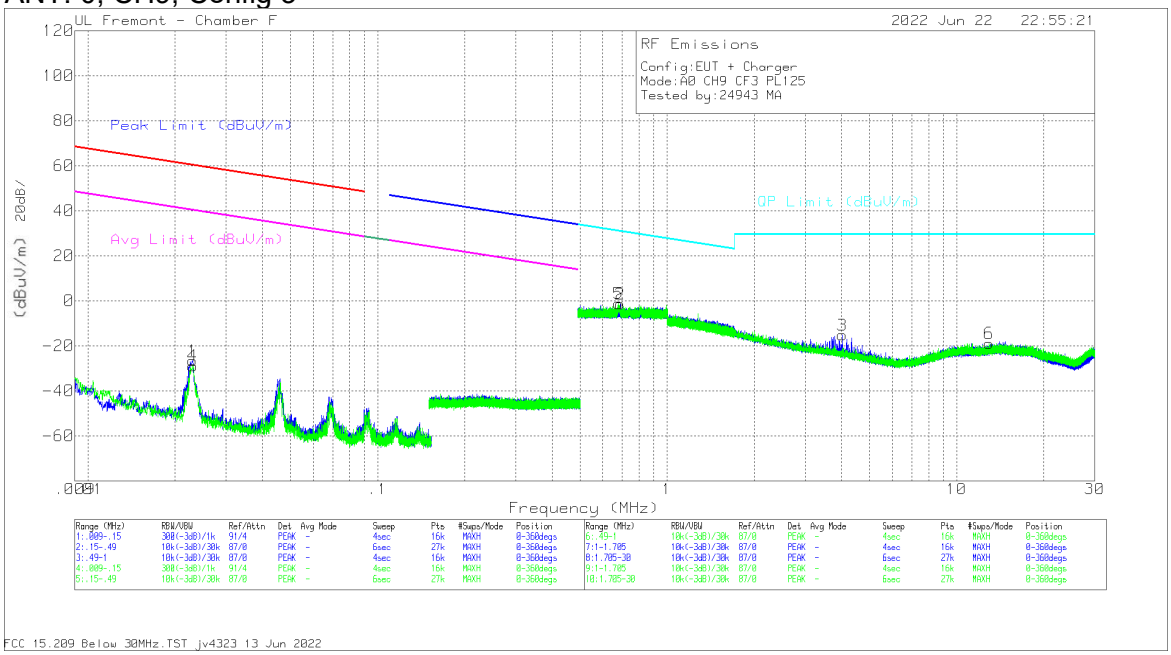
ANT. 0, CH9, Config 3



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
1	.0229	26.74	Pk	58.7	-32	-80	-26.56	60.37	-86.93	40.37	-66.93	0-360	On
4	.023	24.34	Pk	58.8	-32	-80	-28.86	60.35	-89.21	40.35	-69.21	0-360	Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
2	.6886	14.77	Pk	56.4	-32.6	-40	-1.43	30.85	-32.28	0-360	On
5	.6799	14.99	Pk	56.4	-32.6	-40	-1.21	30.96	-32.17	0-360	Off
3	4.0274	20.21	Pk	37.2	-32.6	-40	-15.19	29.5	-44.69	0-360	On
6	12.9291	19.41	Pk	34.3	-32.6	-40	-18.89	29.5	-48.39	0-360	Off

Pk - Peak detector

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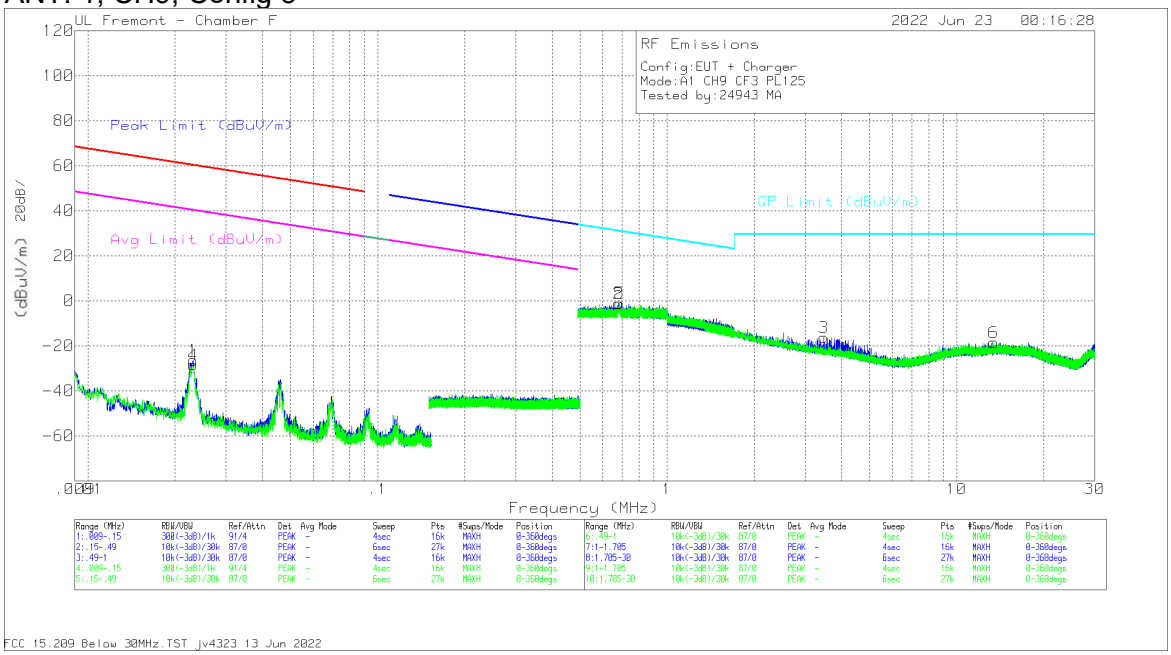
ANT. 1, CH9, Config 3



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
1	.023	26.93	Pk	58.7	-32	-80	-26.37	60.34	-86.71	40.34	-66.71	0-360	On
4	.023	24.75	Pk	58.8	-32	-80	-28.45	60.34	-88.79	40.34	-68.79	0-360	Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
2	.6803	14.98	Pk	56.4	-32.6	-40	-1.22	30.96	-32.18	0-360	On
5	.6854	15.14	Pk	56.4	-32.6	-40	-1.06	30.89	-31.95	0-360	Off
3	3.4709	18.35	Pk	38	-32.6	-40	-16.25	29.5	-45.75	0-360	On
6	13.4195	19.78	Pk	34.3	-32.6	-40	-18.52	29.5	-48.02	0-360	Off

Pk - Peak detector

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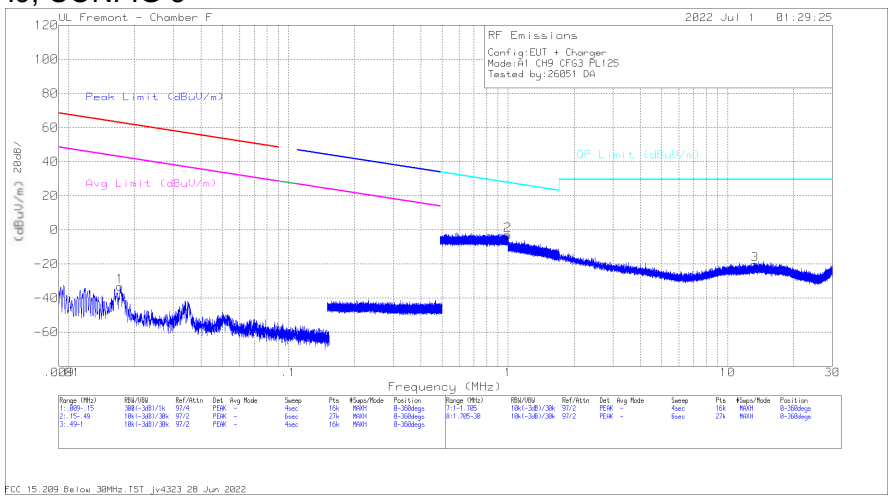
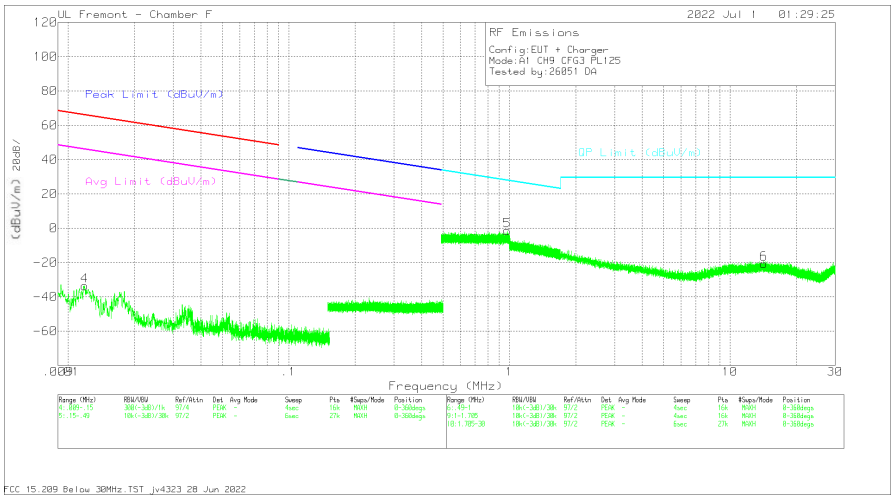
A2893 Variant

ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
1	.0171	18.77	Pk	59.4	-31.4	-80	-33.23	62.91	-96.14	42.91	-76.14	0-360	On
4	.0119	16.77	Pk	60.2	-30.6	-80	-33.63	66.07	-99.7	46.07	-79.7	0-360	Off

Pk - Peak detector

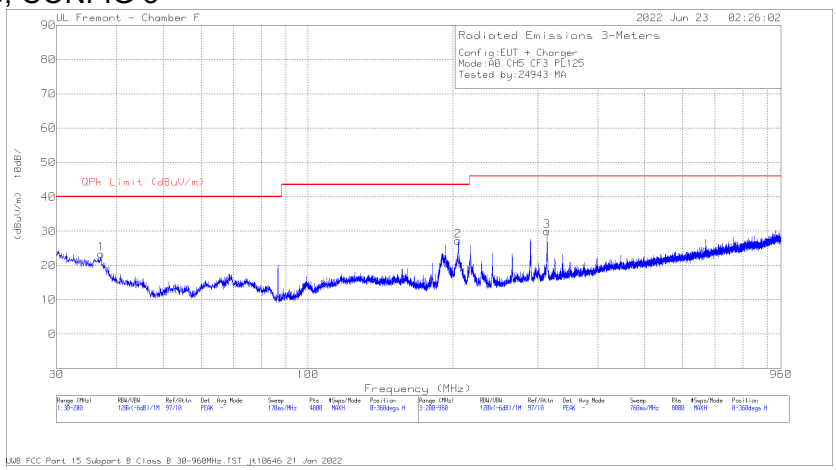
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Face
2	.997	12.97	Pk	56.6	-32.6	-40	-3.03	27.65	-30.68	0-360	On
5	.978	14.49	Pk	56.6	-32.6	-40	-1.51	27.81	-29.32	0-360	Off
3	13.3357	18	Pk	34.3	-32.6	-40	-20.3	29.5	-49.8	0-360	On
6	14.2328	17.66	Pk	34.2	-32.6	-40	-20.74	29.5	-50.24	0-360	Off

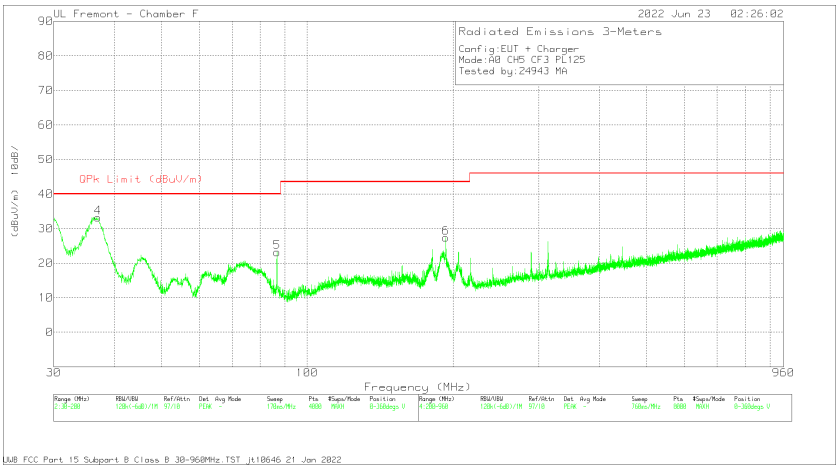
Pk - Peak detector

9.5.2. EMISSIONS, 30 - 960 MHz

Parent

ANT. 0, CH5, CONFIG 3



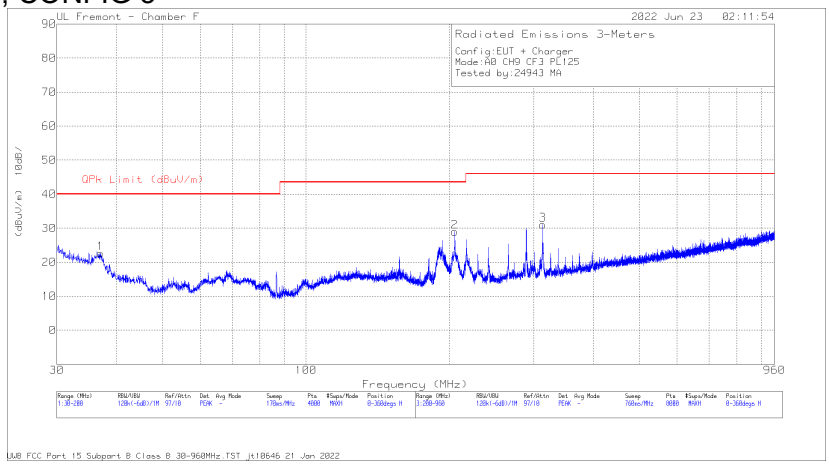


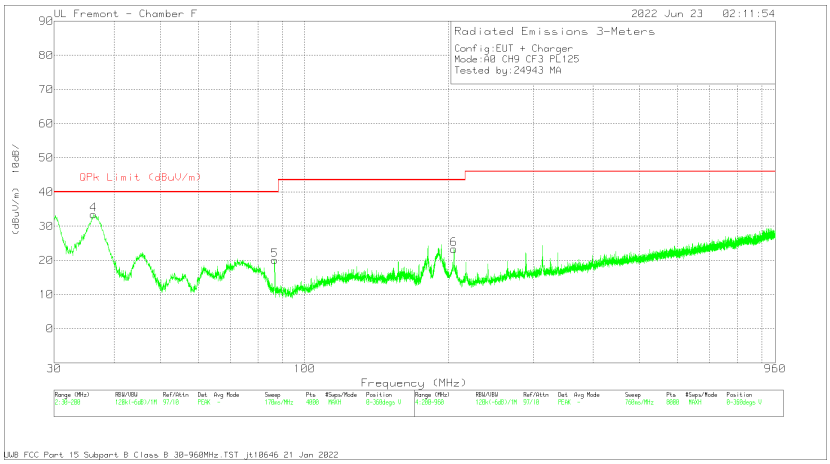
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	37.1844	32.77	Pk	22.6	-32	23.37	40	-16.63	0-360	300	H
4	37.0143	42.48	Pk	22.7	-32	33.18	40	-6.82	0-360	101	V
5	86.6247	40.57	Pk	14.1	-31.5	23.17	40	-16.83	0-360	101	V
6	193.157	39.95	Pk	18.3	-30.9	27.35	43.52	-16.17	0-360	101	V
2	205.036	39.81	Pk	18.3	-30.9	27.21	43.52	-16.31	0-360	101	H
3	313.634	39.87	Pk	20.5	-30.4	29.97	46.02	-16.05	0-360	101	H

Pk - Peak detector

ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	37.0143	31.95	Pk	22.7	-32	22.65	40	-17.35	0-360	299	H
4	36.2491	42.16	Pk	23.3	-32	33.46	40	-6.54	0-360	101	V
5	86.6672	37.45	Pk	14.1	-31.5	20.05	40	-19.95	0-360	101	V
2	204.941	41.48	Pk	18.3	-30.8	28.98	43.52	-14.54	0-360	101	H
3	313.729	40.97	Pk	20.5	-30.4	31.07	46.02	-14.95	0-360	101	H
6	205.036	35.91	Pk	18.3	-30.9	23.31	43.52	-20.21	0-360	200	V

Pk - Peak detector

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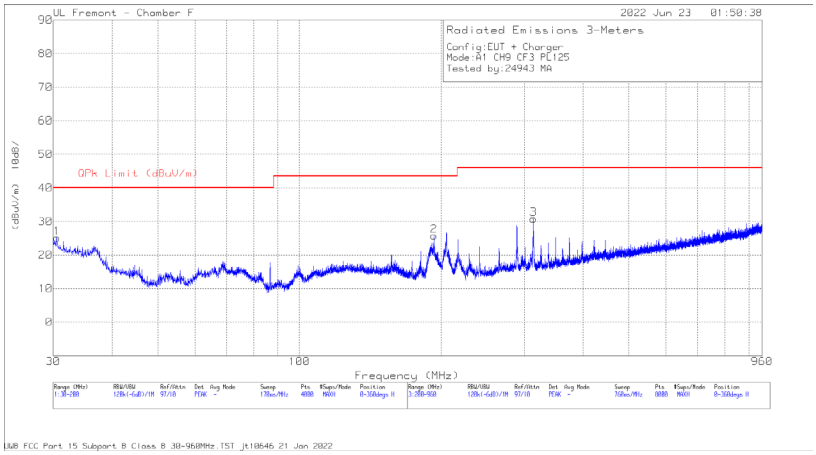
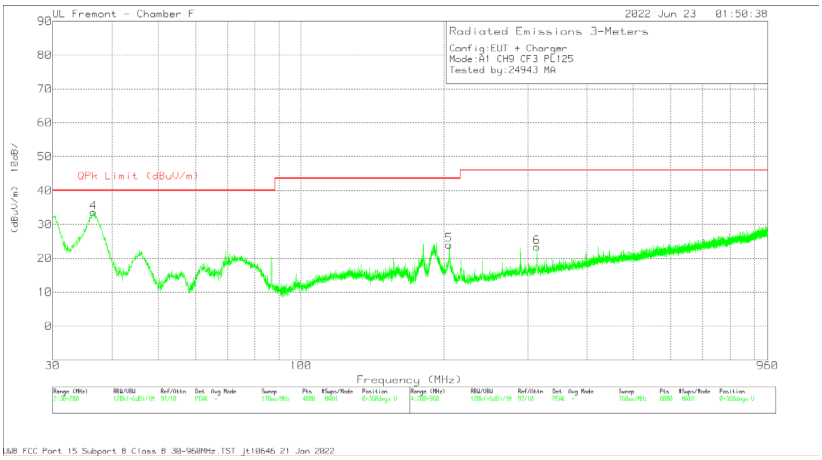
ANT 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.5526	29.71	Pk	27.4	-32	25.11	40	-14.89	0-360	200	H
2	193.072	38.33	Pk	18.3	-30.9	25.73	43.52	-17.79	0-360	101	H
4	36.5892	42.55	Pk	23	-32	33.55	40	-6.45	0-360	101	V
3	313.824	40.68	Pk	20.5	-30.4	30.78	46.02	-15.24	0-360	101	H
5	205.036	36.59	Pk	18.3	-30.9	23.99	43.52	-19.53	0-360	101	V
6	313.539	33.22	Pk	20.5	-30.4	23.32	46.02	-22.7	0-360	101	V

Pk - Peak detector

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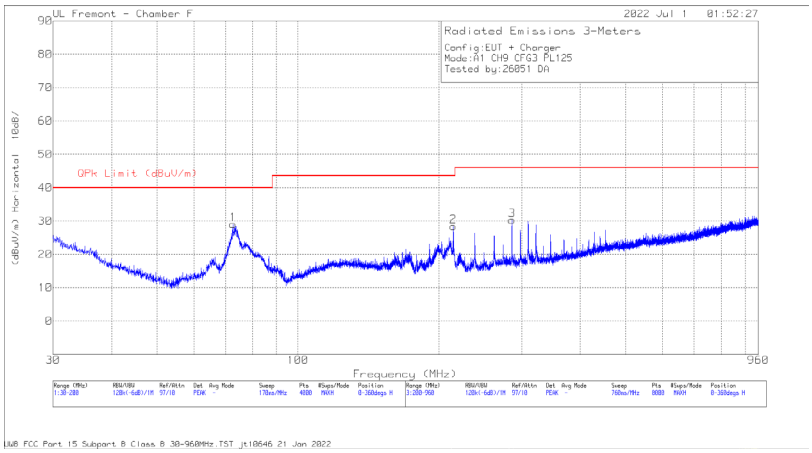
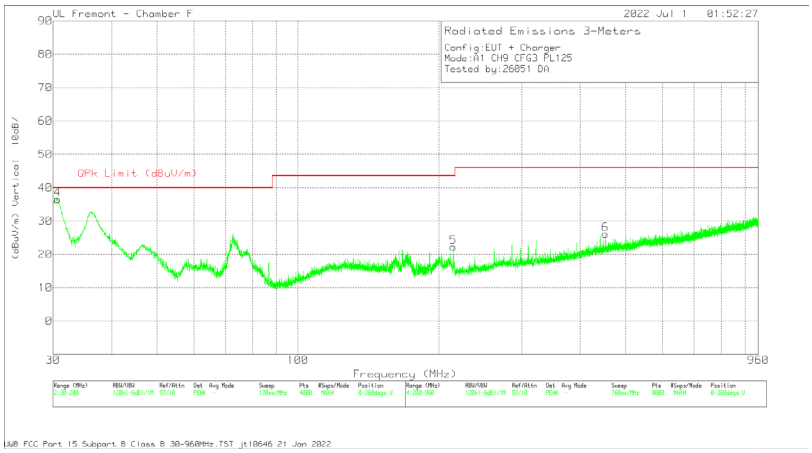
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	72.6385	46.37	Pk	14.4	-31.7	29.07	40	-10.93	0-360	200	H
4	30.6802	41.23	Pk	27.3	-32	36.53	40	-3.47	0-360	102	V
	30.4542	38.3	Qp	27.4	-32	33.7	40	-6.3	15	105	V
2	214.537	41.83	Pk	17.4	-30.8	28.43	43.52	-15.09	0-360	102	H
3	286.081	40.7	Pk	20.1	-30.5	30.3	46.02	-15.72	0-360	102	H
5	214.537	35.64	Pk	17.4	-30.8	22.24	43.52	-21.28	0-360	199	V
6	452.922	32.63	Pk	23.4	-29.9	26.13	46.02	-19.89	0-360	199	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.6. AVERAGE EMISSIONS ABOVE 960 MHz

LIMITS

FCC

15.519 (c)

Frequency in MHz	EIRP in dBm
960-1610	−75.3
1610-1990	−63.3
1990-3100	−61.3
3100-10600	−41.3
Above 10600	−61.3

§15.519 (d) In addition to the radiated emission limits specified in the table in paragraph (c) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency in MHz	EIRP in dBm
1164-1240	−85.3
1559-1610	−85.3

RSS-220

Section 5.3.1 (d) Radiated emissions above 960 MHz from a device shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz.

Hand-held (Outdoor) Communication, Measurement, Location Sensing, and Tracking Devices	
Frequency	E.i.r.p. in a Resolution Bandwidth of 1 MHz
960-1 610 MHz	-75.3 dBm
1.61-4.75 GHz	-70.0 dBm
4.75-10.6 GHz	-41.3 dBm
Above 10.6 GHz	-61.3 dBm

Section 5.3.1 (e) In addition to the limits specified in paragraph (d) of this section, radiated emissions shall not exceed the following average limits when measured using a resolution bandwidth greater than or equal to 1 kHz. The measurements shall demonstrate compliance with the stated limits at whatever resolution bandwidth is used.

Frequency	E.i.r.p. in a Resolution Bandwidth of no less than 1 kHz
1 164-1 240 MHz	-85.3 dBm
1 559-1 610 MHz	-85.3 dBm

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TEST PROCEDURE

ANSI C63.10 Clause 10.3.

RSS-220 Annex

Exploratory measurements for all frequency ranges are performed with the measurement antenna at close distances to the EUT as described in ANSI C63.10 6.6.4.2. Where emissions are observed the measurement antenna is then positioned at a height of 1.5m and a distance of 1m from the EUT and final measurements are made at the frequencies observed in the exploratory scans using the alternative measurement procedures detailed in ANSI C63.10 section 6.6.5. If no emissions are observed, a plot is made at a test distance of 1m from the EUT to show the measurement system noise floor.

PROCEDURE FOR 0.96 TO 6 GHz

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 0.5m from the EUT.

A low pass filter with a cut off frequency of 6 GHz is used to suppress the fundamental and perform measurement for 0.96 - 6 GHz.

Distance Correction Factor from 3m to 0.5m = 20*log(0.5m/3m) = -15.56 dB

RESULTS FOR 6 GHz TO 9 GHz

The 6 - 9 GHz frequency band is covered in Section 9.3.

PROCEDURE FOR 9 GHz TO 18 GHz

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 0.5m from the EUT.

A high pass filter with pass band frequency beyond 9 GHz is used to suppress the fundamental and perform measurement for 9 - 18 GHz.

Distance Correction Factor from 3m to 0.5m = 20*log(0.5m/3m) = -15.56 dB

PROCEDURE FOR 1.164 TO 1.240 GHz

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 0.5m from the EUT.

RBW = 120 kHz & VBW = 360 kHz were used at pre-scan.

A low pass filter with a cut off frequency of 6 GHz is used to suppress the fundamental and perform measurement for 1.164 – 1.240 GHz.

Distance Correction Factor from 3m to 0.5m = 20*log(0.5m/3m) = -15.56 dB

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PROCEDURE FOR 1.559 TO 1.610 GHz

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 0.5m from the EUT.

RBW = 120 kHz & VBW = 360 kHz were used at pre-scan.

A low pass filter with a cut off frequency of 6 GHz is used to suppress the fundamental and perform measurement for 1.559 – 1.610 GHz.

Distance Correction Factor from 3m to 0.5m = 20*log(0.5m/3m) = -15.56 dB

PROCEDURE FOR 18 GHz TO 40 GHz

Measurements are made with the antenna feeding a spectrum analyzer via a preamplifier and cables, at a maximum distance of 1m from the EUT.

A final test is made at any frequencies at which emissions are found. During this final scan, the antenna is kept no further from the EUT than the maximum distance calculated for each band that yields a minimum system noise floor.

Distance Correction Factor from 3m to 1m = 20*log(1m/3m) = -9.54 dB

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RESULTS

Results for both the parent and variant A2893 models are shown below.

Average Emissions Summary

Parent Model
Employee IDs: 19220, 24943, 28709
Location: Chamber F
Test Date: 06/23/2022

					Frequency Ranges				
Ant	CH	Config	Payload	Power Setting	1164 - 1240 MHz	1559 - 1610 MHz	0.96 - 18 GHz	18 - 26.5 GHz	26.5 - 40 GHz
0	5	3	125	Max	PASS	PASS	PASS	PASS	PASS
0	9	3	125	Max	PASS	PASS	PASS	PASS	PASS
1	9	3	125	Max	PASS	PASS	PASS	PASS	PASS

Variant Model A2893
Employee ID: 26051
Location: Chamber F
Test Date: 06/30/2022

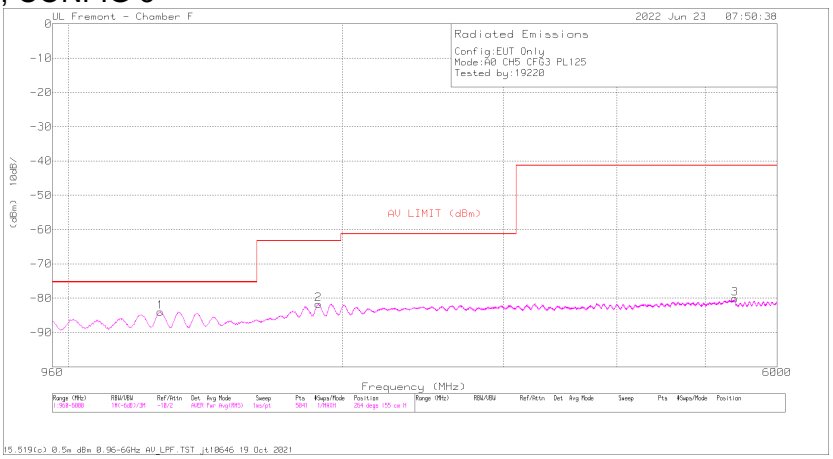
					Frequency Ranges				
Ant	CH	Config	Payload	Power Setting	1164 - 1240 MHz	1559 - 1610 MHz	0.96 - 18 GHz	18 - 26.5 GHz	26.5 - 40 GHz
1	9	3	125	Max	PASS	PASS	PASS	PASS	PASS

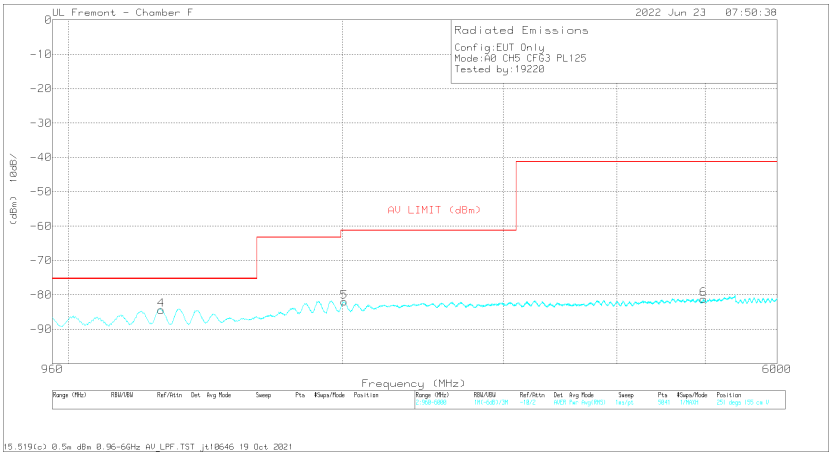
9.6.1. AVERAGE EMISSIONS, 0.96 – 6 GHz

FCC15.519 (C)

Parent

ANT. 0, CH5, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1262	-60.94	RMS	29.5	-48.8	-15.6	11.8	.1	-83.94	-75.3	-8.64	110	155	H
2	1881	-61.13	RMS	31.9	-49	-15.6	11.8	.3	-81.73	-63.3	-18.43	330	155	H
3	5392	-65.73	RMS	35	-47.1	-15.6	11.8	1.5	-80.13	-41.3	-38.83	110	155	H
4	1264.5	-61.22	RMS	29.6	-49.1	-15.6	11.8	.1	-84.42	-75.3	-9.12	228	155	V
5	2009	-61.22	RMS	32	-49.3	-15.6	11.8	.3	-82.02	-61.3	-20.72	360	155	V
6	4982	-65.05	RMS	34.4	-47.7	-15.6	11.8	.9	-81.25	-41.3	-39.95	163	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH5 fundamental signal.

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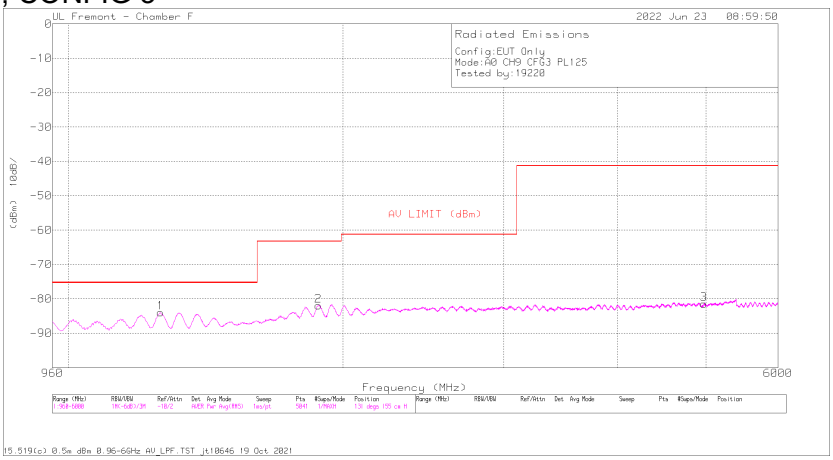
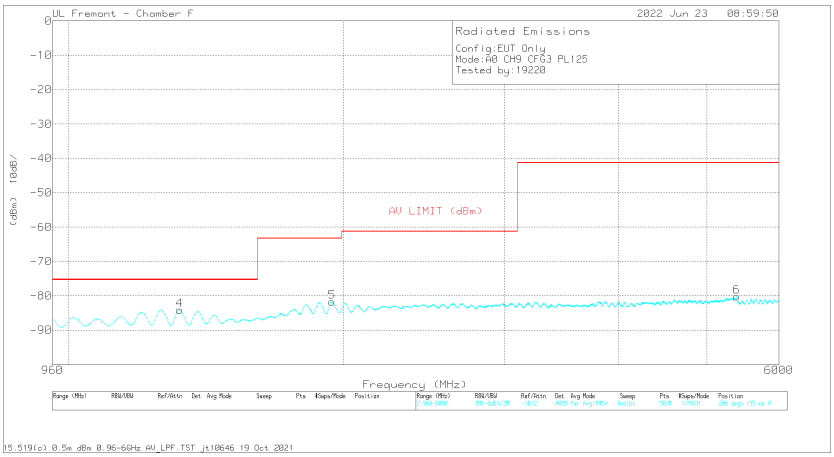
ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1261.5	-61.01	RMS	29.5	-48.8	-15.6	11.8	.1	-84.01	-75.3	-8.71	1	155	H
2	1880	-61.23	RMS	31.9	-49.1	-15.6	11.8	.3	-81.93	-63.3	-18.63	109	155	H
3	4975	-65.16	RMS	34.4	-47.7	-15.6	11.8	.8	-81.46	-41.3	-40.16	286	155	H
4	1323	-61.15	RMS	29.5	-48.8	-15.6	11.8	.1	-84.15	-75.3	-8.85	52	155	V
5	1944	-61.21	RMS	32.1	-49.2	-15.6	11.8	.4	-81.71	-63.3	-18.41	251	155	V
6	5392	-65.84	RMS	35	-47.1	-15.6	11.8	1.5	-80.24	-41.3	-38.94	119	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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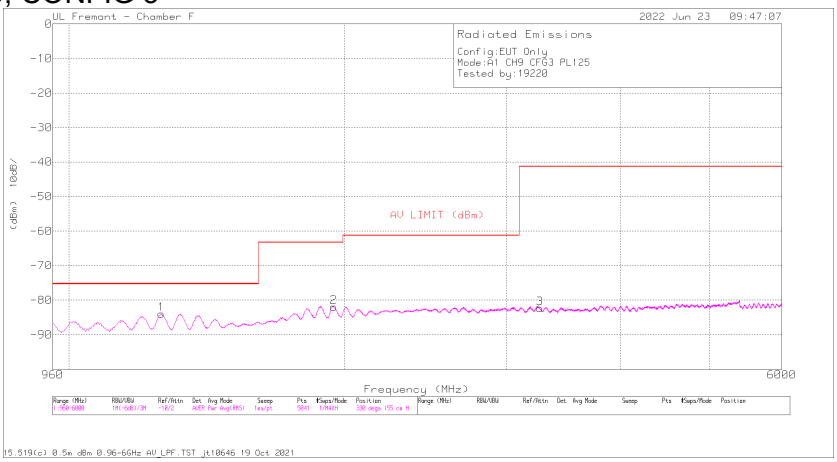
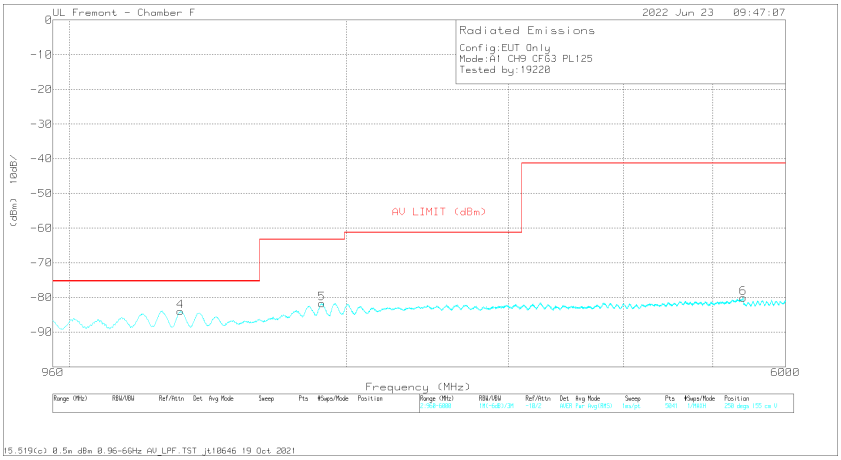
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1262	-61.01	RMS	29.5	-48.8	-15.6	11.8	.1	-84.01	-75.3	-8.71	154	155	H
2	1947	-61.23	RMS	32.1	-49.4	-15.6	11.8	.3	-82.03	-63.3	-18.73	110	155	H
3	3267	-65.4	RMS	33.3	-46.8	-15.6	11.8	.4	-82.3	-41.3	-41	110	155	H
4	1321	-61.02	RMS	29.5	-48.8	-15.6	11.8	.1	-84.02	-75.3	-8.72	360	155	V
5	1881	-61.12	RMS	31.9	-49	-15.6	11.8	.3	-81.72	-63.3	-18.42	294	155	V
6	5399	-65.48	RMS	34.9	-47.3	-15.6	11.8	1.6	-80.08	-41.3	-38.78	250	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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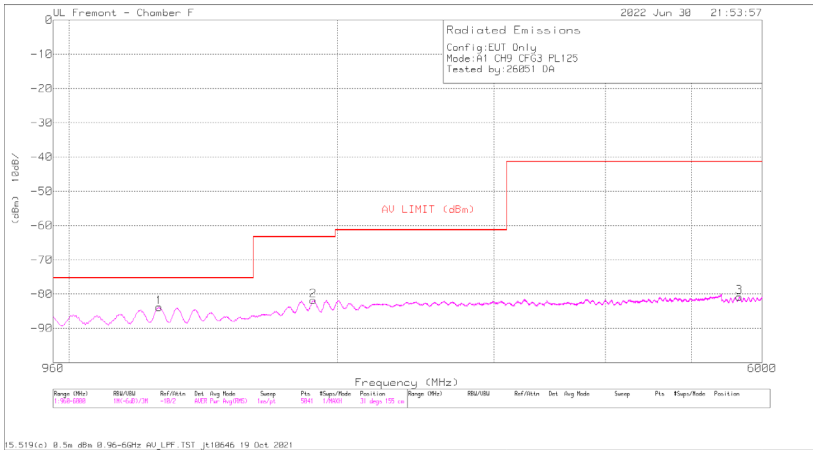
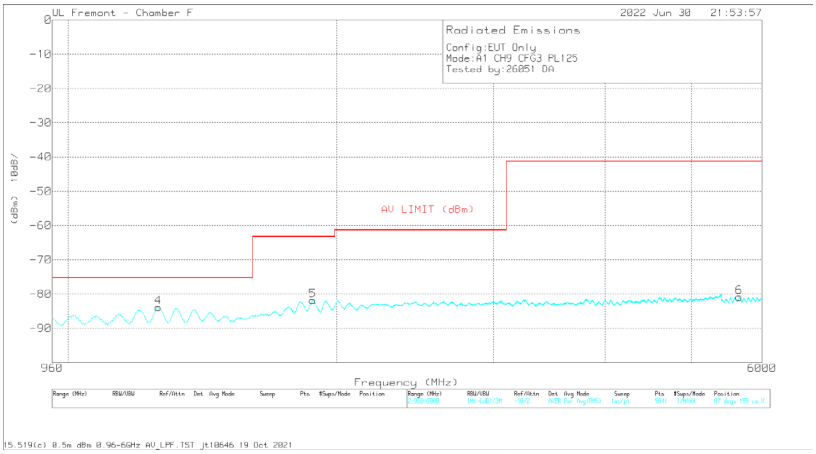
A2893 Variant

ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1262	-60.83	RMS	29.5	-48.8	-15.6	11.8	.1	-83.83	-75.3	-8.53	250	155	H
2	1880	-61.11	RMS	31.9	-49.1	-15.6	11.8	.3	-81.81	-63.3	-18.51	250	155	H
3	5658	-64.98	RMS	35.2	-47.2	-15.6	11.8	0	-80.78	-41.3	-39.48	162	155	H
4	1262	-60.84	RMS	29.5	-48.8	-15.6	11.8	.1	-83.84	-75.3	-8.54	197	155	V
5	1881	-61.21	RMS	31.9	-49	-15.6	11.8	.3	-81.81	-63.3	-18.51	66	155	V
6	5657	-65.17	RMS	35.2	-47.1	-15.6	11.8	0	-80.87	-41.3	-39.57	220	155	V

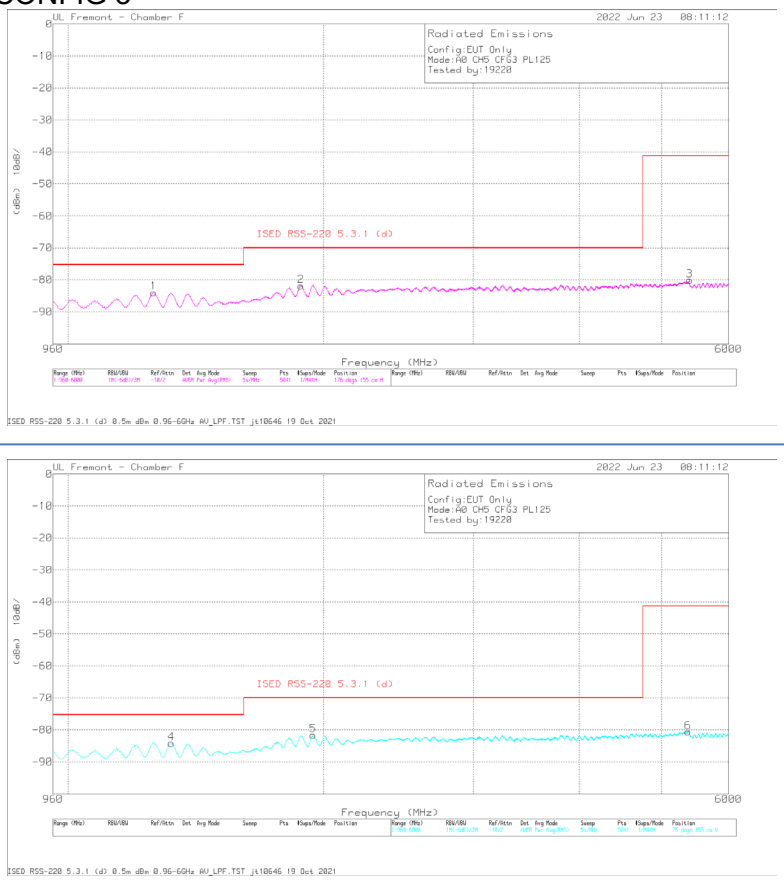
RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

RSS-220 5.3.1 (d)

Parent

ANT. 0, CH5, CONFIG 3



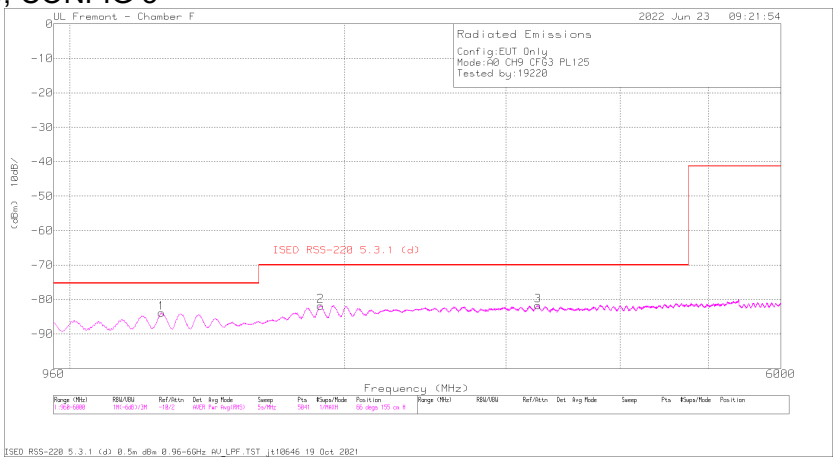
Trace Markers

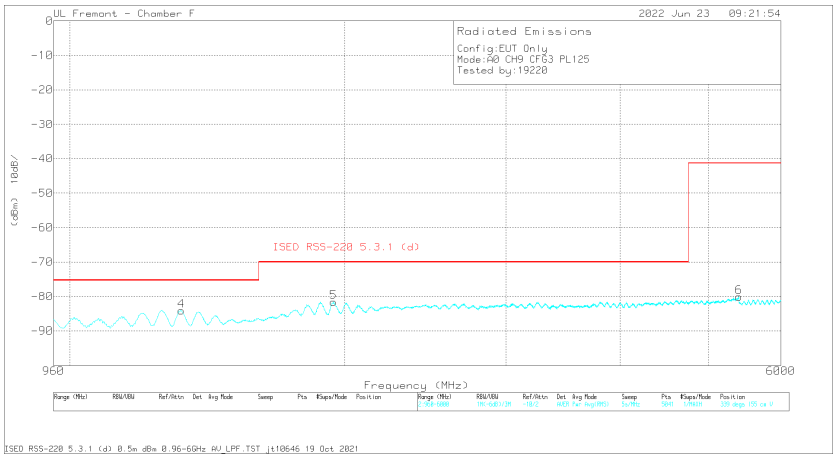
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1262	-60.92	RMS	29.5	-48.8	-15.6	11.8	.1	-83.92	-75.3	-8.62	308	155	H
2	1881	-61.3	RMS	31.9	-49	-15.6	11.8	.3	-81.9	-70	-11.9	198	155	H
3	5399.5	-65.63	RMS	34.9	-47.3	-15.6	11.8	1.7	-80.13	-41.3	-38.83	242	155	H
4	1323	-61.17	RMS	29.5	-48.8	-15.6	11.8	.1	-84.17	-75.3	-8.87	97	155	V
5	1944	-61.14	RMS	32.1	-49.2	-15.6	11.8	.4	-81.64	-70	-11.64	185	155	V
6	5375	-65.75	RMS	35	-47.5	-15.6	11.8	1.4	-80.65	-41.3	-39.35	360	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH5 fundamental signal.

ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1260	-60.71	RMS	29.5	-48.9	-15.6	11.8	.1	-83.81	-75.3	-8.51	197	155	H
2	1881	-61.19	RMS	31.9	-49	-15.6	11.8	.3	-81.79	-70	-11.79	132	155	H
3	3253	-64.78	RMS	33.3	-46.8	-15.6	11.8	.4	-81.68	-70	-11.68	242	155	H
4	1325	-61.09	RMS	29.5	-48.8	-15.6	11.8	.1	-84.09	-75.3	-8.79	119	155	V
5	1944	-61.08	RMS	32.1	-49.2	-15.6	11.8	.4	-81.58	-70	-11.58	339	155	V
6	5399	-65.49	RMS	34.9	-47.3	-15.6	11.8	1.6	-80.09	-41.3	-38.79	273	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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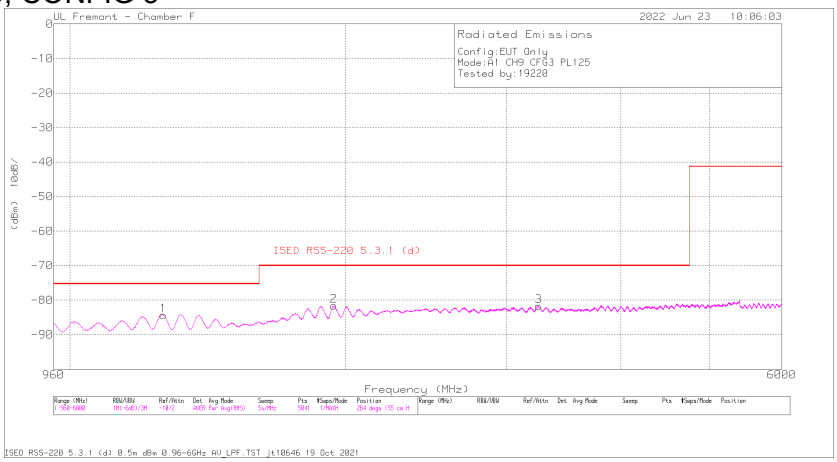
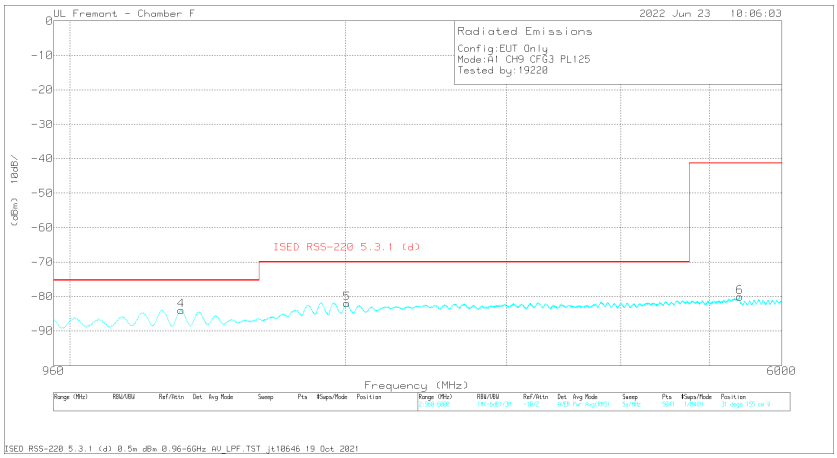
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1266	-61.31	RMS	29.6	-49	-15.6	11.8	.1	-84.41	-75.3	-9.11	176	155	H
2	1944	-61.1	RMS	32.1	-49.2	-15.6	11.8	.4	-81.6	-70	-11.6	220	155	H
3	3253	-64.8	RMS	33.3	-46.8	-15.6	11.8	.4	-81.7	-70	-11.7	154	155	H
4	1323	-61.03	RMS	29.5	-48.8	-15.6	11.8	.1	-84.03	-75.3	-8.73	52	155	V
5	2008	-61.13	RMS	32	-49.4	-15.6	11.8	.3	-82.03	-70	-12.03	229	155	V
6	5400	-65.5	RMS	34.9	-47.4	-15.6	11.8	1.7	-80.1	-41.3	-38.8	316	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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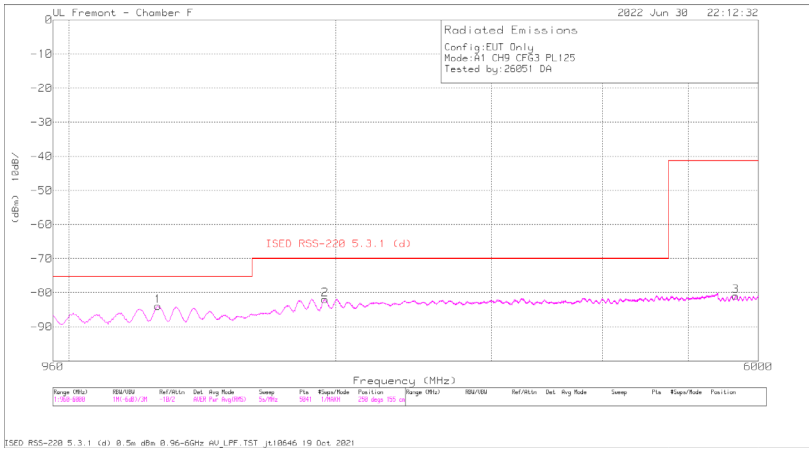
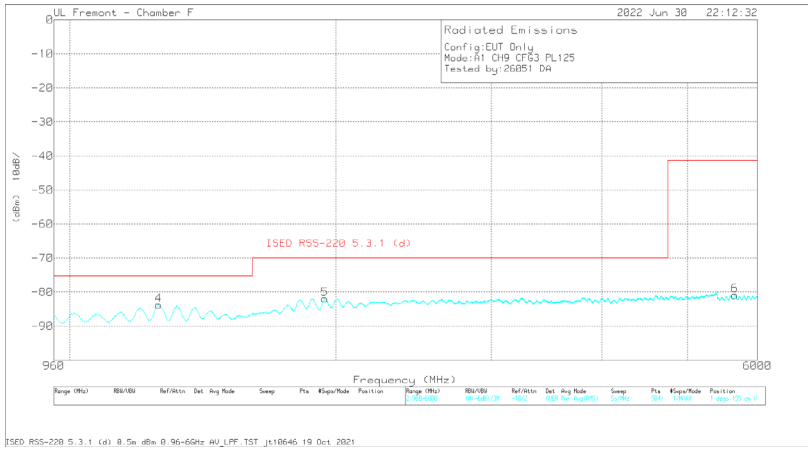
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1261	-60.79	RMS	29.5	-48.9	-15.6	11.8	.1	-83.89	-75.3	-8.59	163	155	H
2	1946	-61.31	RMS	32.1	-49.2	-15.6	11.8	.3	-81.91	-70	-11.91	163	155	H
3	5658	-65.11	RMS	35.2	-47.2	-15.6	11.8	0	-80.91	-41.3	-39.61	184	155	H
4	1261	-60.7	RMS	29.5	-48.9	-15.6	11.8	.1	-83.8	-75.3	-8.5	330	155	V
5	1944	-61.43	RMS	32.1	-49.2	-15.6	11.8	.4	-81.93	-70	-11.93	198	155	V
6	5656	-65.2	RMS	35.2	-47.1	-15.6	11.8	0	-80.9	-41.3	-39.6	264	155	V

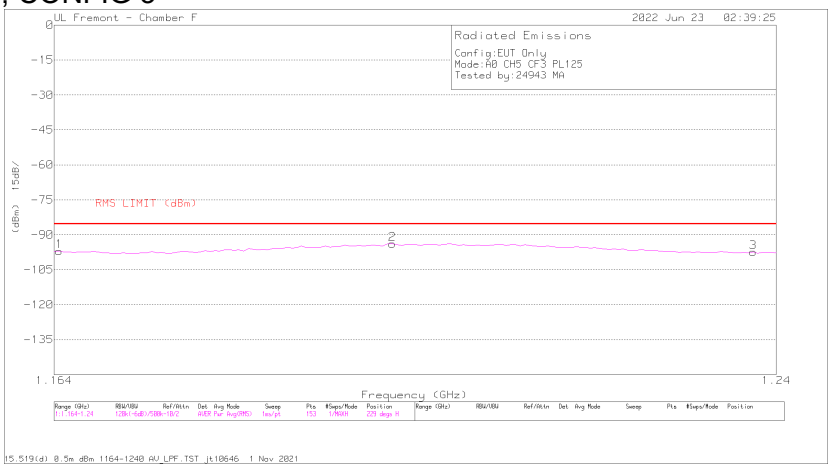
RMS - RMS detection

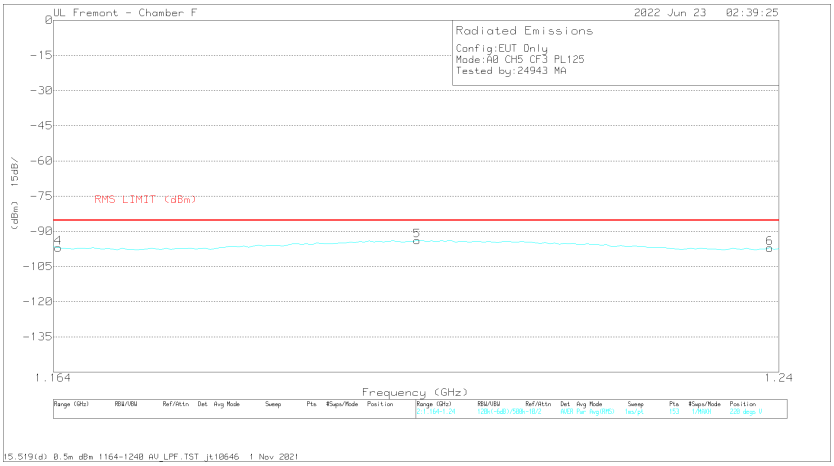
*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

9.6.2. AVERAGE EMISSIONS, 1.164 – 1.240 GHz

Parent

ANT. 0, CH5, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.1645	-72.37	RMS	28.3	-49.3	-15.6	11.8	.2	-96.97	-85.3	-11.67	338	155	H
2	1.199	-69.48	RMS	28.1	-48.9	-15.6	11.8	.2	-93.88	-85.3	-8.58	30	155	H
3	1.2375	-73.2	RMS	28.5	-49.1	-15.6	11.8	.2	-97.4	-85.3	-12.1	163	155	H
4	1.1645	-72.38	RMS	28.3	-49.3	-15.6	11.8	.2	-96.98	-85.3	-11.68	110	155	V
5	1.2015	-69.31	RMS	28.2	-49.2	-15.6	11.8	.2	-93.91	-85.3	-8.61	131	155	V
6	1.239	-73.09	RMS	28.5	-48.9	-15.6	11.8	.2	-97.09	-85.3	-11.79	220	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH5 fundamental signal.

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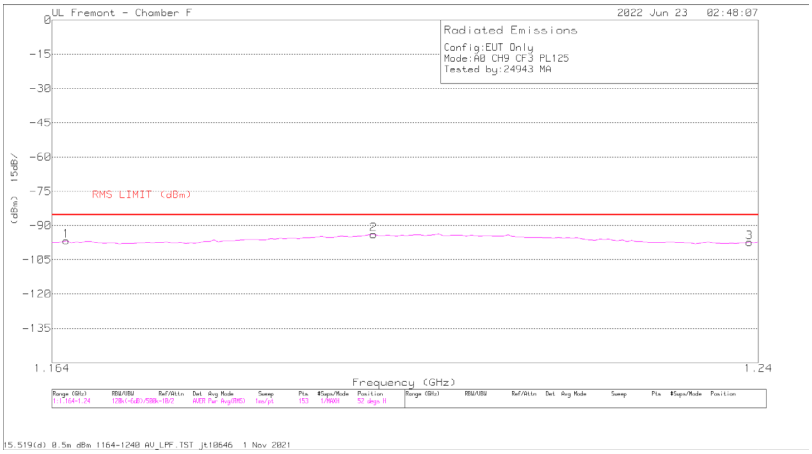
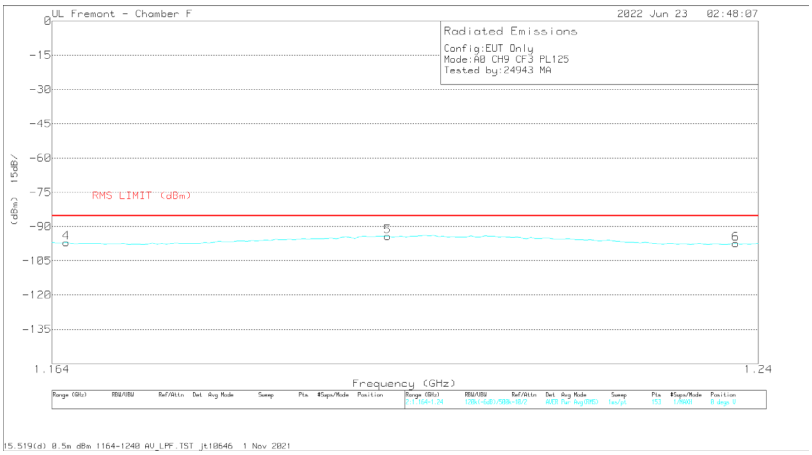
ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.1655	-72.02	RMS	28.3	-49.3	-15.6	11.8	.2	-96.62	-85.3	-11.32	273	155	H
2	1.198	-69.19	RMS	28.1	-49.1	-15.6	11.8	.2	-93.79	-85.3	-8.49	162	155	H
3	1.239	-73.27	RMS	28.5	-48.9	-15.6	11.8	.2	-97.27	-85.3	-11.97	119	155	H
4	1.1655	-72.38	RMS	28.3	-49.3	-15.6	11.8	.2	-96.98	-85.3	-11.68	307	155	V
5	1.1995	-69.64	RMS	28.1	-49.1	-15.6	11.8	.2	-94.24	-85.3	-8.94	110	155	V
6	1.2375	-73.23	RMS	28.5	-49.1	-15.6	11.8	.2	-97.43	-85.3	-12.13	88	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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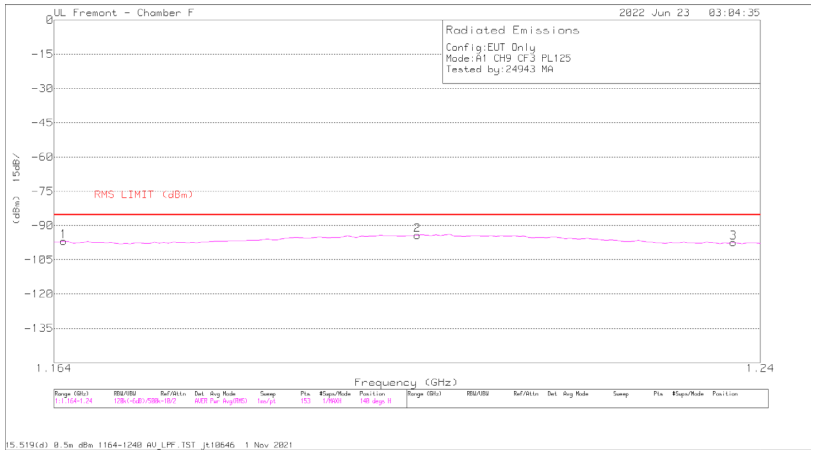
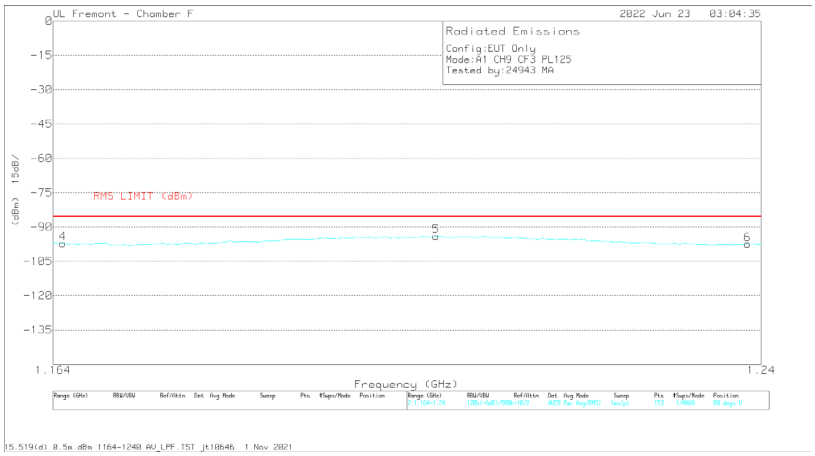
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.165	-72.22	RMS	28.3	-49.3	-15.6	11.8	.2	-96.82	-85.3	-11.52	294	155	H
2	1.2025	-69.67	RMS	28.2	-49.1	-15.6	11.8	.2	-94.17	-85.3	-8.87	317	155	H
3	1.237	-73.16	RMS	28.5	-49.1	-15.6	11.8	.2	-97.36	-85.3	-12.06	53	155	H
4	1.165	-72.53	RMS	28.3	-49.3	-15.6	11.8	.2	-97.13	-85.3	-11.83	330	155	V
5	1.2045	-69.59	RMS	28.2	-49	-15.6	11.8	.2	-93.99	-85.3	-8.69	286	155	V
6	1.2385	-73.33	RMS	28.5	-49	-15.6	11.8	.2	-97.43	-85.3	-12.13	109	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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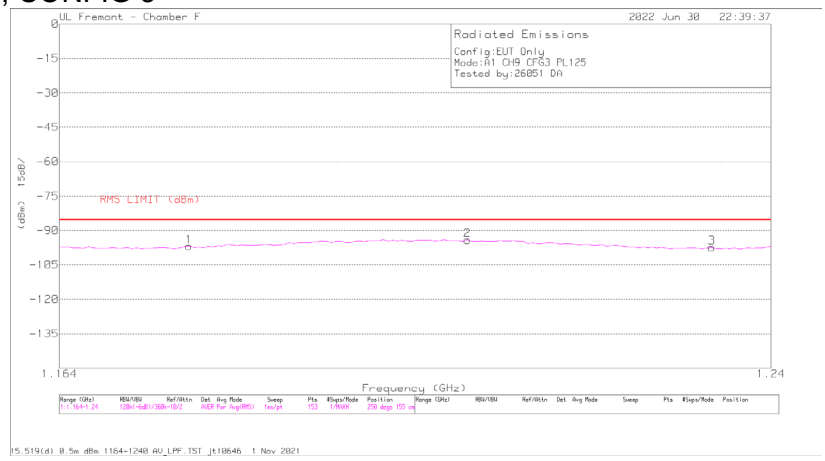
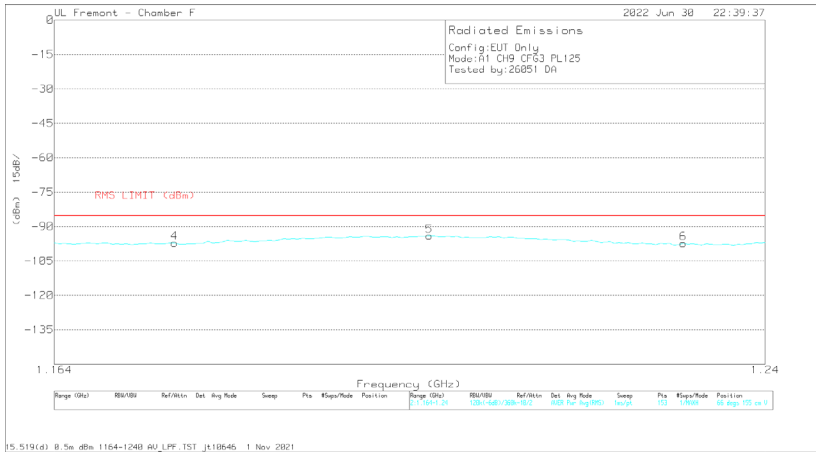
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.1775	-72.45	RMS	28.2	-49	-15.6	11.8	.2	-96.85	-85.3	-11.55	360	155	H
2	1.207	-69.63	RMS	28.3	-49.2	-15.6	11.8	.2	-94.13	-85.3	-8.83	184	155	H
3	1.2335	-73.24	RMS	28.5	-49	-15.6	11.8	.2	-97.34	-85.3	-12.04	229	155	H
4	1.1765	-72.73	RMS	28.2	-49	-15.6	11.8	.2	-97.13	-85.3	-11.83	44	155	V
5	1.2035	-69.67	RMS	28.2	-49	-15.6	11.8	.2	-94.07	-85.3	-8.77	308	155	V
6	1.231	-73.22	RMS	28.5	-49	-15.6	11.8	.2	-97.32	-85.3	-12.02	22	155	V

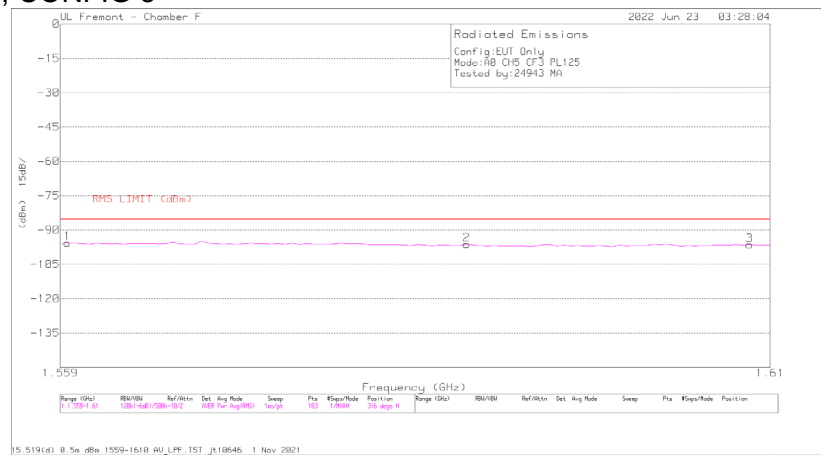
RMS - RMS detection

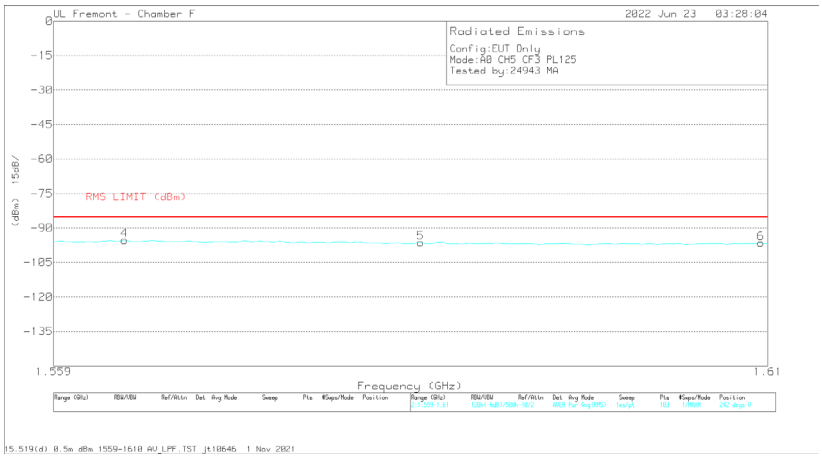
*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

9.6.3. AVERAGE EMISSIONS, 1.559 – 1.610 GHz

Parent

ANT. 0, CH5, CONFIG 3





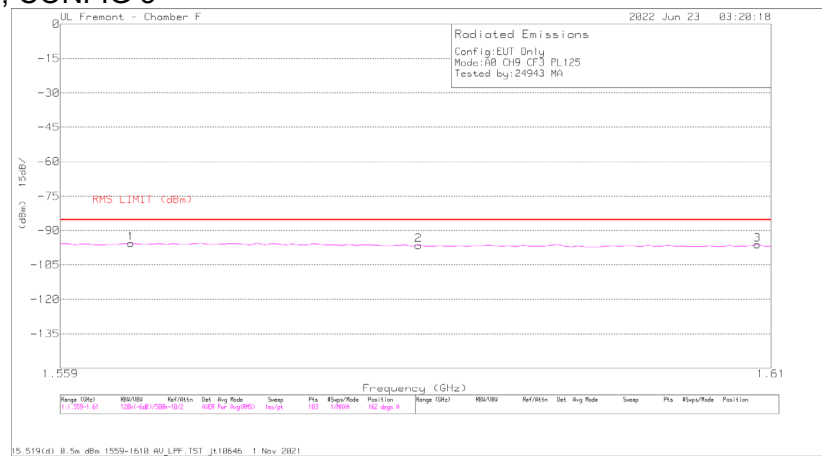
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5595	-70.97	RMS	27.8	-48.9	-15.6	11.8	.2	-95.67	-85.3	-10.37	294	1	1.5595
2	1.588	-71.29	RMS	27.7	-49.1	-15.6	11.8	.2	-96.29	-85.3	-10.99	206	2	1.588
3	1.6085	-71.92	RMS	27.8	-48.8	-15.6	11.8	.2	-96.52	-85.3	-11.22	141	3	1.6085
4	1.564	-70.46	RMS	27.7	-48.9	-15.6	11.8	.2	-95.26	-85.3	-9.96	22	4	1.564
5	1.585	-71.32	RMS	27.7	-49.1	-15.6	11.8	.2	-96.32	-85.3	-11.02	88	5	1.585
6	1.6095	-71.87	RMS	27.8	-48.8	-15.6	11.8	.2	-96.47	-85.3	-11.17	330	6	1.6095

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH5 fundamental signal.

ANT. 0, CH9, CONFIG 3



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.564	-70.78	RMS	27.7	-48.9	-15.6	11.8	.2	-95.58	-85.3	-10.28	31	155	H
2	1.5845	-71.49	RMS	27.7	-49	-15.6	11.8	.2	-96.39	-85.3	-11.09	316	155	H
3	1.609	-71.62	RMS	27.8	-48.7	-15.6	11.8	.2	-96.12	-85.3	-10.82	251	155	H
4	1.5595	-70.73	RMS	27.8	-48.9	-15.6	11.8	.2	-95.43	-85.3	-10.13	176	155	V
5	1.59	-71.67	RMS	27.7	-49.1	-15.6	11.8	.2	-96.67	-85.3	-11.37	330	155	V
6	1.6065	-71.7	RMS	27.8	-48.9	-15.6	11.8	.2	-96.4	-85.3	-11.1	197	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

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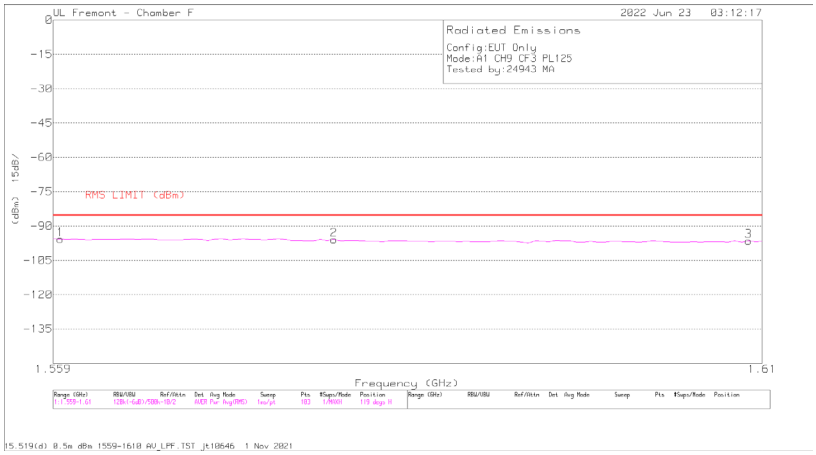
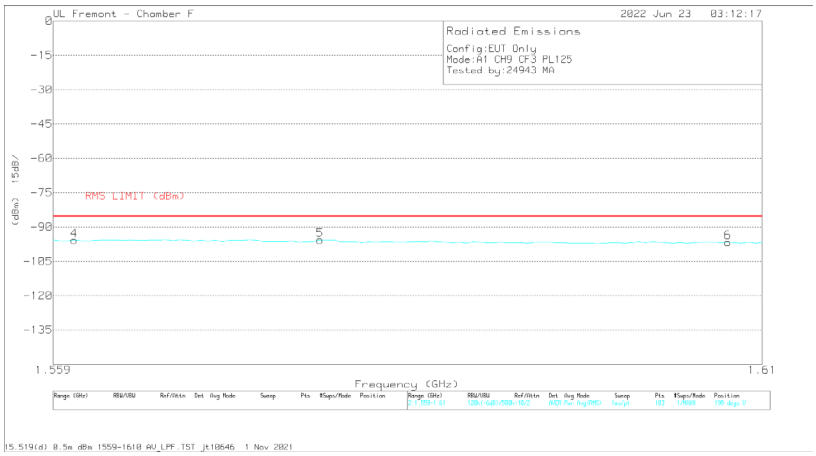
ANT. 1, CH9, CONFIG 3





Trace Markers

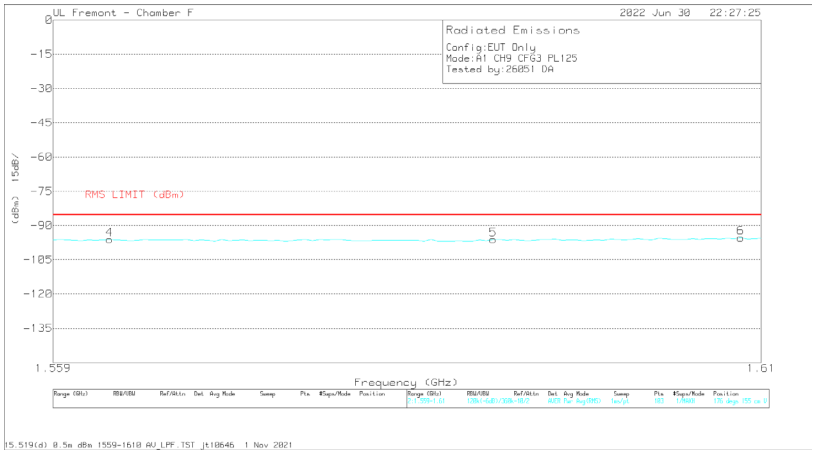
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	188196 LPF (dB)	EIRP (dBm)	FCC15.519(d) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5595	-71.02	RMS	27.8	-48.9	-15.6	11.8	.2	-95.72	-85.3	-10.42	273	155	H
2	1.579	-71.25	RMS	27.8	-48.9	-15.6	11.8	.2	-95.95	-85.3	-10.65	338	155	H
3	1.609	-71.96	RMS	27.8	-48.7	-15.6	11.8	.2	-96.46	-85.3	-11.16	141	155	H
4	1.5605	-70.93	RMS	27.8	-49	-15.6	11.8	.2	-95.73	-85.3	-10.43	242	155	V
5	1.578	-70.93	RMS	27.8	-48.9	-15.6	11.8	.2	-95.63	-85.3	-10.33	220	155	V
6	1.6075	-71.89	RMS	27.8	-48.9	-15.6	11.8	.2	-96.59	-85.3	-11.29	308	155	V

RMS - RMS detection

*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

A2893 Variant

ANT. 1, CH9, CONFIG 3



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	188196 LPF 1-6GHz	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.561	-71.07	RMS	27.7	-49	-15.6	11.8	.2	-95.97	-85.3	-10.67	229	155	H
2	1.5875	-71.23	RMS	27.7	-49	-15.6	11.8	.2	-96.13	-85.3	-10.83	316	155	H
3	1.6075	-70.74	RMS	27.8	-48.9	-15.6	11.8	.2	-95.44	-85.3	-10.14	31	155	H
4	1.563	-71.23	RMS	27.7	-48.9	-15.6	11.8	.2	-96.03	-85.3	-10.73	0	155	V
5	1.5905	-71.07	RMS	27.7	-49.1	-15.6	11.8	.2	-96.07	-85.3	-10.77	329	155	V
6	1.6085	-70.69	RMS	27.8	-48.8	-15.6	11.8	.2	-95.29	-85.3	-9.99	264	155	V

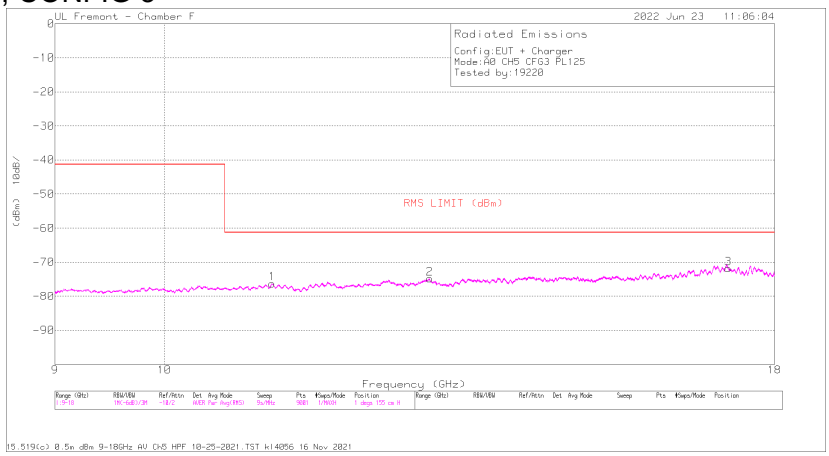
RMS - RMS detection

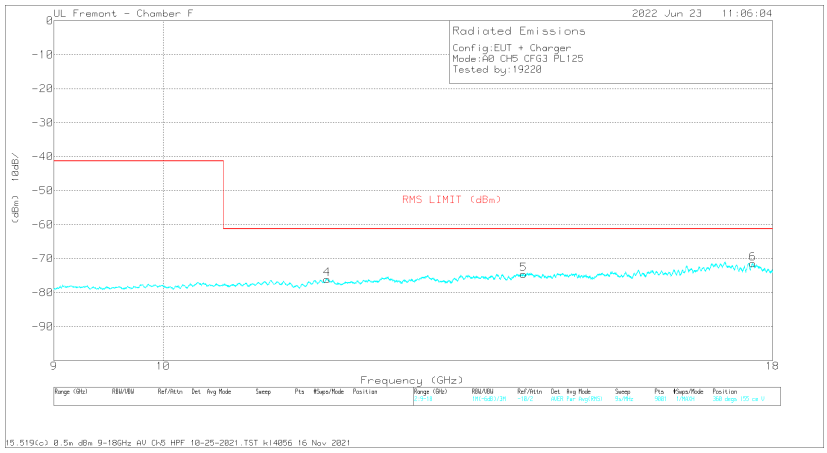
*Note: Test was performed with a low-pass filter with cutoff frequency at 5.4 GHz to suppress CH9 fundamental signal.

9.6.4. AVERAGE EMISSIONS, 9 – 18 GHz

Parent

ANT. 0, CH5, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	CH9_HPF (dB)	EIRP (dBm)	FCC15.519(c) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	11.093	-65.76	RMS	37.8	-45.3	-15.6	11.8	.8	-76.26	-61.3	-14.96	286	155	H
2	12.914	-65.32	RMS	38.7	-44.8	-15.6	11.8	.4	-74.82	-61.3	-13.52	132	155	H
3	17.219	-64.72	RMS	42.1	-46	-15.6	11.8	.6	-71.82	-61.3	-10.52	65	155	H
4	11.714	-66.11	RMS	38.3	-45	-15.6	11.8	.6	-76.01	-61.3	-14.71	317	155	V
5	14.155	-64.81	RMS	39.6	-46.1	-15.6	11.8	.5	-74.61	-61.3	-13.31	97	155	V
6	17.661	-65.51	RMS	41.5	-44.2	-15.6	11.8	.6	-71.41	-61.3	-10.11	229	155	V

RMS - RMS detection

*Note: Test was performed with a high-pass filter with pass-band frequency starting at 9 GHz to suppress CH5 fundamental signal.

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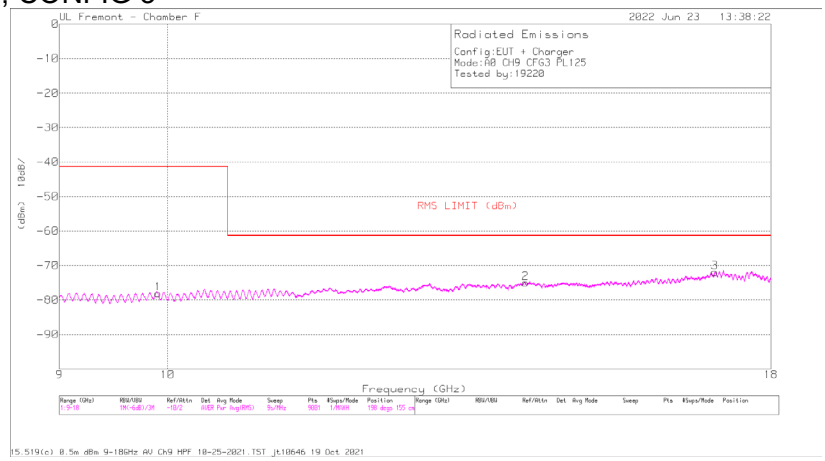
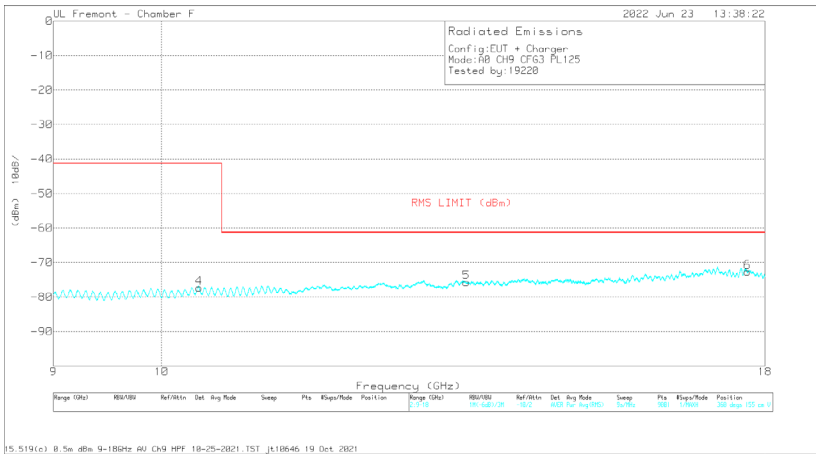
ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	CH9_HPF (dB)	EIRP (dBm)	FCC15.519(c) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	9.907	-64.51	RMS	37.1	-46.9	-15.6	11.8	0	-78.11	-41.3	-36.81	44	155	H
2	14.174	-65.03	RMS	39.6	-46	-15.6	11.8	.2	-75.03	-61.3	-13.73	330	155	H
3	17.042	-66.08	RMS	42.2	-44.5	-15.6	11.8	.2	-71.98	-61.3	-10.68	110	155	H
4	10.373	-64.34	RMS	37.3	-46.5	-15.6	11.8	0	-77.34	-41.3	-36.04	53	155	V
5	13.457	-65.42	RMS	38.9	-45.6	-15.6	11.8	.2	-75.72	-61.3	-14.42	97	155	V
6	17.695	-65.17	RMS	41.5	-45.6	-15.6	11.8	.4	-72.67	-61.3	-11.37	141	155	V

RMS - RMS detection

*Note: Test was performed with a high-pass filter with pass-band frequency starting at 9 GHz to suppress CH9 fundamental signal.

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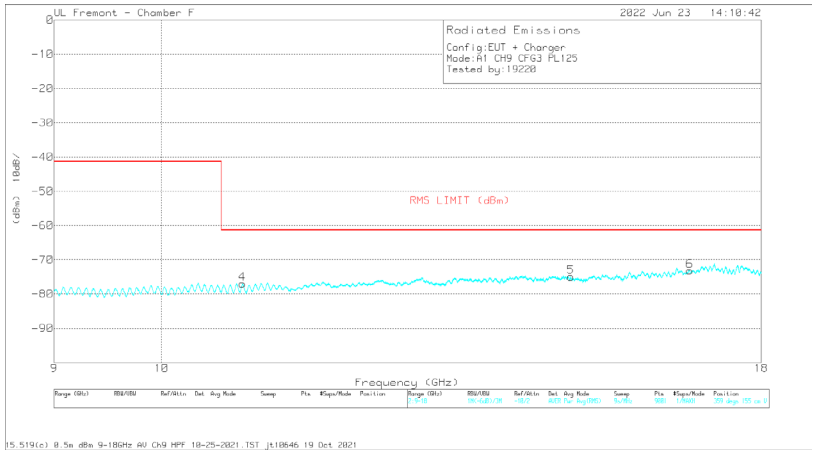
ANT. 1, CH9, CONFIG 3



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF (dB/m)	Amp/Cbl (dB)	Dist Correction (dB)	Conversion Factor (dB)	CH5_HPF (dB)	EIRP (dBm)	FCC15.519(c) EIRP RMS (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	10.421	-64.81	RMS	37.3	-46.1	-15.6	11.8	0	-77.41	-41.3	-36.11	66	155	H
2	12.916	-65.67	RMS	38.7	-45	-15.6	11.8	.3	-75.47	-61.3	-14.17	88	155	H
3	17.569	-66.24	RMS	41.6	-44.3	-15.6	11.8	.3	-72.44	-61.3	-11.14	44	155	H
4	10.825	-65.37	RMS	37.7	-45.5	-15.6	11.8	0	-76.97	-61.3	-15.67	207	155	V
5	14.934	-65.56	RMS	39.6	-45.4	-15.6	11.8	.2	-74.96	-61.3	-13.66	185	155	V
6	16.782	-65.7	RMS	41.7	-45.7	-15.6	11.8	.3	-73.2	-61.3	-11.9	30	155	V

RMS - RMS detection

*Note: Test was performed with a high-pass filter with pass-band frequency starting at 9 GHz to suppress CH9 fundamental signal.

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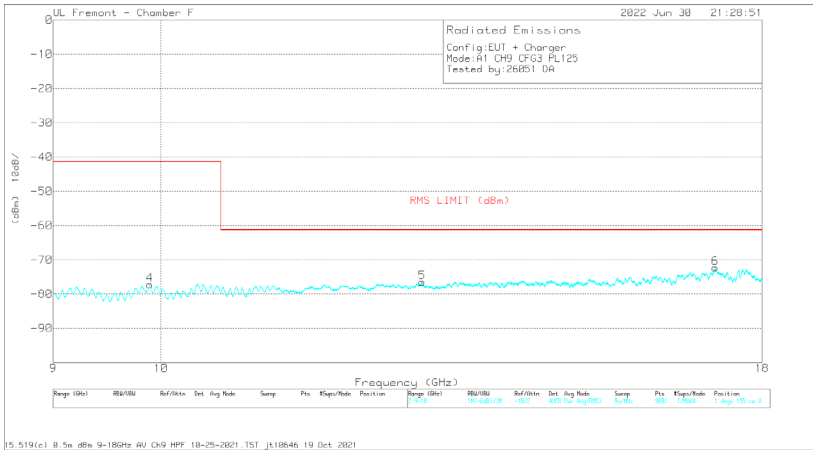
A2893 Variant

ANT. 1, CH9, CONFIG 3



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	81887 ACF (dB)	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	Ch9 HPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	9.891	-63.84	RMS	37.1	-46.7	-15.6	11.8	0	-77.24	-41.3	-35.94	294	155	H
2	12.911	-66.78	RMS	38.7	-44.8	-15.6	11.8	.2	-76.48	-61.3	-15.18	273	155	H
3	17.192	-66.04	RMS	42.2	-44.8	-15.6	11.8	.1	-72.34	-61.3	-11.04	140	155	H
4	9.891	-63.87	RMS	37.1	-46.7	-15.6	11.8	0	-77.27	-41.3	-35.97	22	155	V
5	12.911	-66.83	RMS	38.7	-44.8	-15.6	11.8	.2	-76.53	-61.3	-15.23	154	155	V
6	17.192	-66.02	RMS	42.2	-44.8	-15.6	11.8	.1	-72.32	-61.3	-11.02	1	155	V

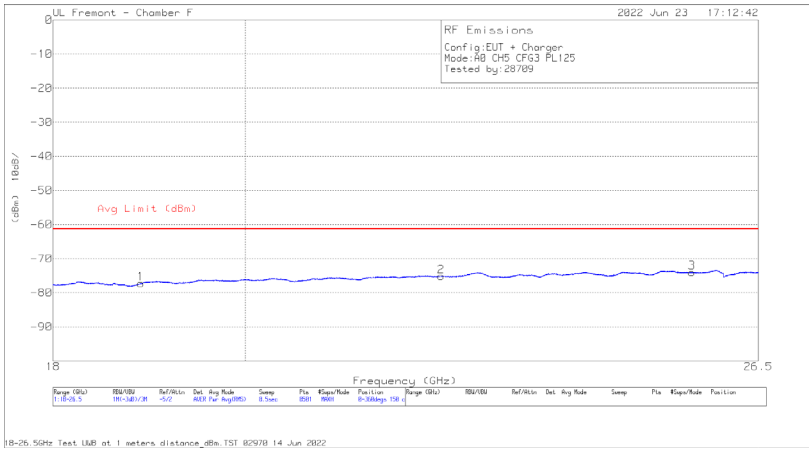
RMS - RMS detection

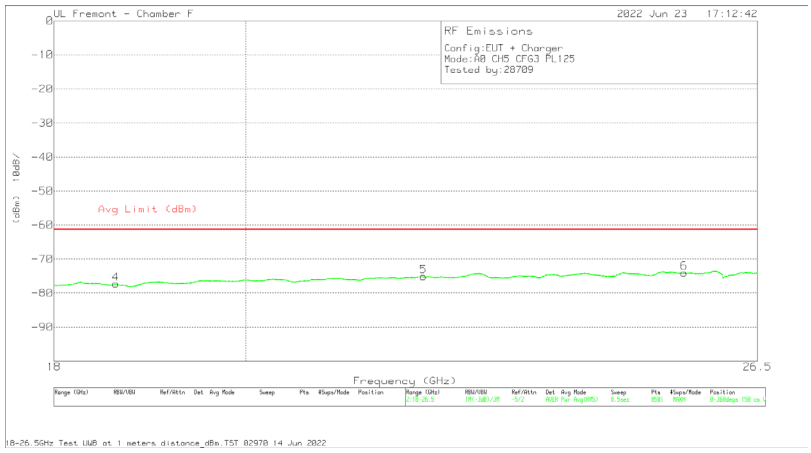
*Note: Test was performed with a high-pass filter with pass-band frequency starting at 9 GHz to suppress CH9 fundamental signal.

9.6.5. AVERAGE EMISSIONS, 18 – 26.5 GHz

Parent

ANT. 0, CH5, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172362 1m AF (dB/m)	171580 Amp (dB)	Cables (dB)	Distance CF (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.889	-66.53	RMS	32.2	-63	17.8	-9.5	11.8	-77.23	-61.3	-15.93	0-360	150	H
2	22.269	-67.56	RMS	34.1	-63.3	19.3	-9.5	11.8	-75.16	-61.3	-13.86	0-360	150	H
3	25.55	-70.62	RMS	35.7	-62.2	20.8	-9.5	11.8	-74.02	-61.3	-12.72	0-360	150	H
4	18.623	-66.25	RMS	32.4	-63.3	17.6	-9.5	11.8	-77.25	-61.3	-15.95	0-360	150	V
5	22.056	-67.49	RMS	34.1	-63.2	19.2	-9.5	11.8	-75.09	-61.3	-13.79	0-360	150	V
6	25.452	-70.5	RMS	35.7	-62.2	20.7	-9.5	11.8	-74	-61.3	-12.7	0-360	150	V

RMS - RMS detection

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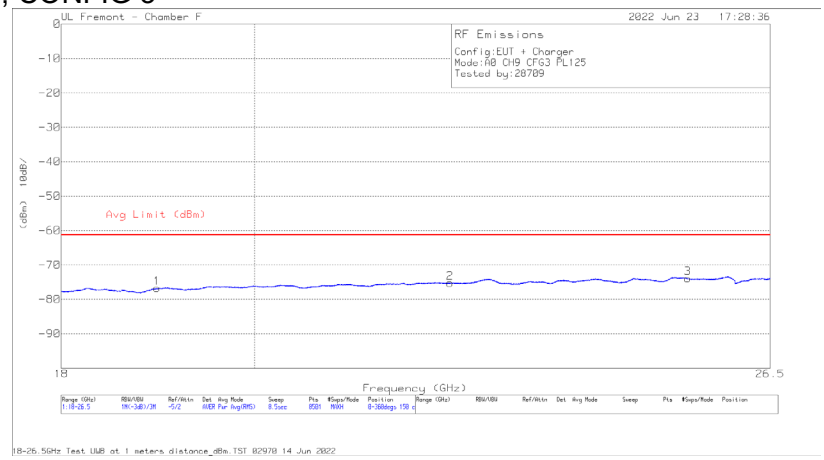
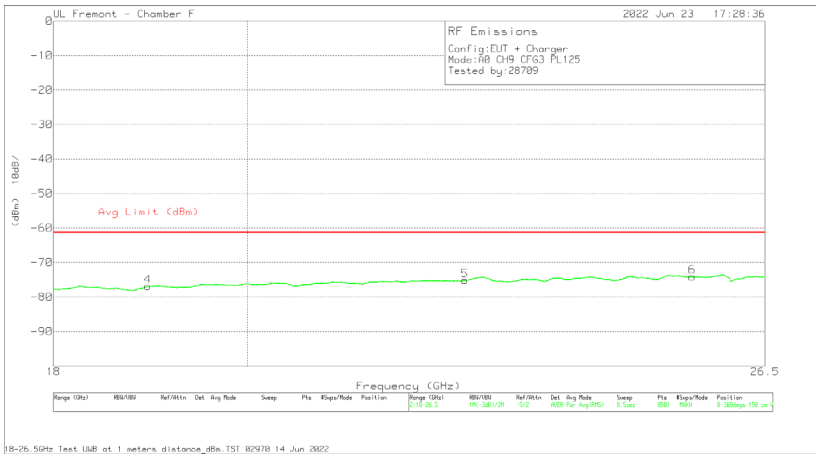
ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172362 1m AF (dB/m)	171580 Amp (dB)	Cables (dB)	Distance CF (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.967	-66.1	RMS	32.5	-63.2	17.8	-9.5	11.8	-76.7	-61.3	-15.4	0-360	150	H
2	22.254	-67.61	RMS	34.1	-63.3	19.3	-9.5	11.8	-75.21	-61.3	-13.91	0-360	150	H
3	25.337	-70.36	RMS	35.6	-62.1	20.7	-9.5	11.8	-73.86	-61.3	-12.56	0-360	150	H
4	18.948	-66.28	RMS	32.4	-63.1	17.8	-9.5	11.8	-76.88	-61.3	-15.58	0-360	150	V
5	22.51	-68.08	RMS	34.6	-63.4	19.4	-9.5	11.8	-75.18	-61.3	-13.88	0-360	150	V
6	25.473	-70.49	RMS	35.7	-62.3	20.7	-9.5	11.8	-74.09	-61.3	-12.79	0-360	150	V

RMS - RMS detection

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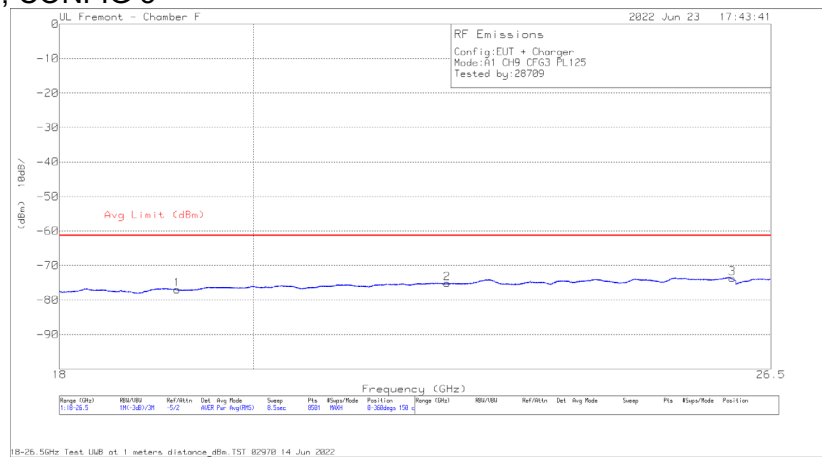
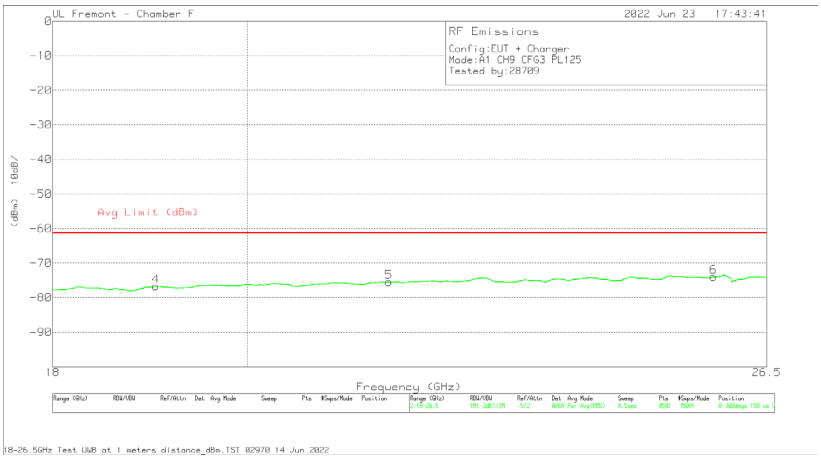
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172362 1m AF (dB/m)	171580 Amp (dB)	Cables (dB)	Distance CF (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.191	-66.94	RMS	33	-63.2	17.9	-9.5	11.8	-76.94	-61.3	-15.64	0-360	150	H
2	22.222	-67.57	RMS	34.1	-63.3	19.3	-9.5	11.8	-75.17	-61.3	-13.87	0-360	150	H
3	25.948	-70.86	RMS	35.7	-61.8	21	-9.5	11.8	-73.66	-61.3	-12.36	0-360	150	H
4	19.037	-66.28	RMS	32.8	-63.3	17.8	-9.5	11.8	-76.68	-61.3	-15.38	0-360	150	V
5	21.595	-68.05	RMS	34	-62.7	19	-9.5	11.8	-75.45	-61.3	-14.15	0-360	150	V
6	25.748	-70.97	RMS	35.8	-61.9	20.8	-9.5	11.8	-73.97	-61.3	-12.67	0-360	150	V

RMS - RMS detection

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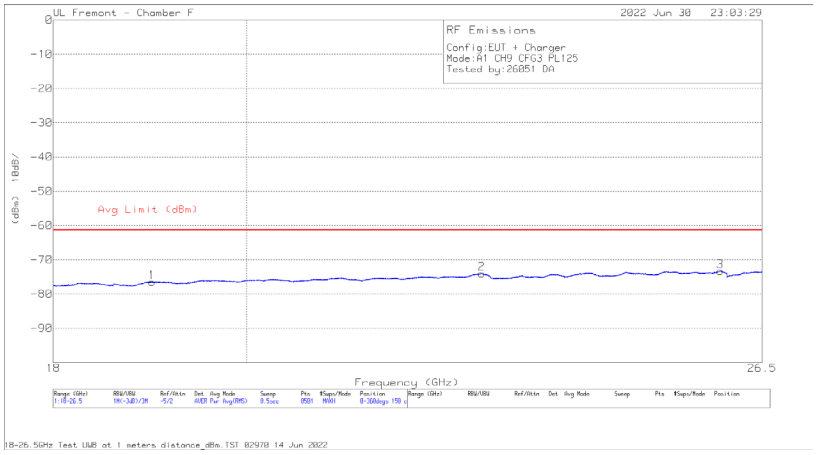
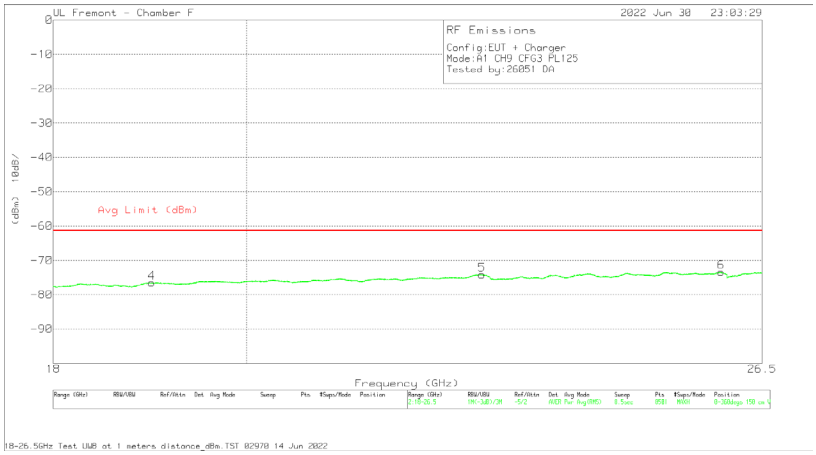
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172362 1m AF (dB/m)	171580 Amp (dB)	Cables (dB)	Distance CF (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.998	-65.98	RMS	32.7	-63.3	17.8	-9.5	11.8	-76.48	-61.3	-15.18	0-360	150	H
2	22.739	-67.52	RMS	34.7	-63	19.5	-9.5	11.8	-74.02	-61.3	-12.72	0-360	150	H
3	25.9	-70.39	RMS	35.8	-61.9	20.9	-9.5	11.8	-73.29	-61.3	-11.99	0-360	150	H
4	18.994	-66	RMS	32.7	-63.3	17.8	-9.5	11.8	-76.5	-61.3	-15.2	0-360	150	V
5	22.7435	-67.64	RMS	34.7	-63	19.5	-9.5	11.8	-74.14	-61.3	-12.84	0-360	150	V
6	25.914	-70.47	RMS	35.8	-61.9	20.9	-9.5	11.8	-73.37	-61.3	-12.07	0-360	150	V

RMS - RMS detection

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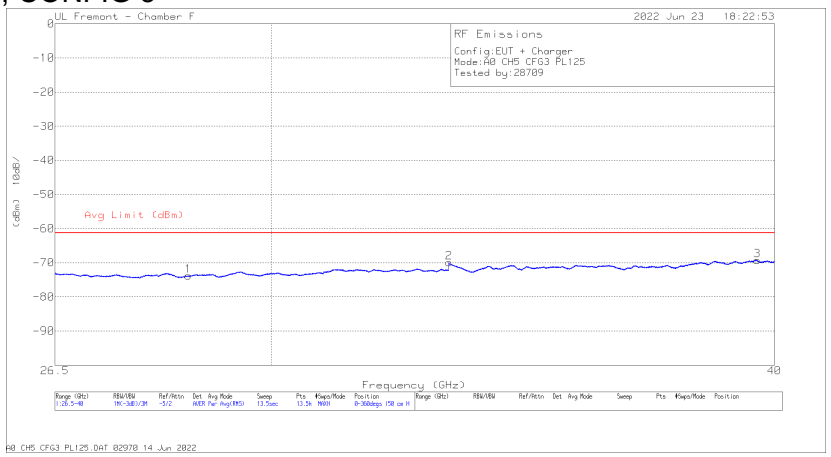
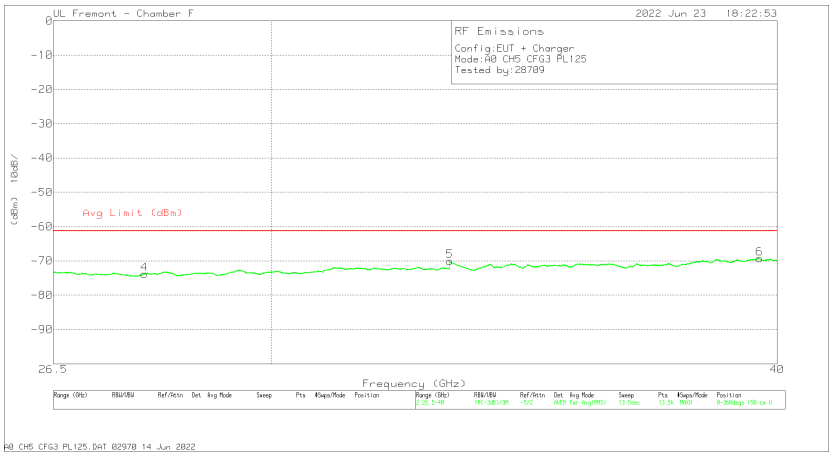
9.6.6. AVERAGE EMISSIONS, 26.5 – 40 GHz

Parent

ANT. 0, CH5, CONFIG 3



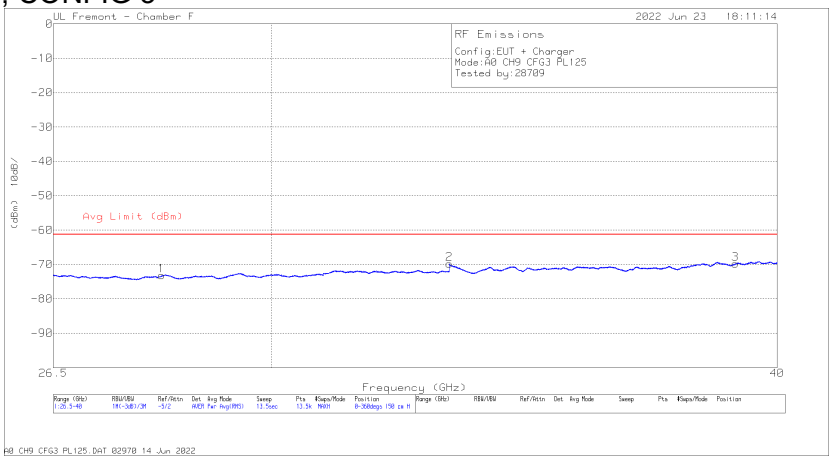


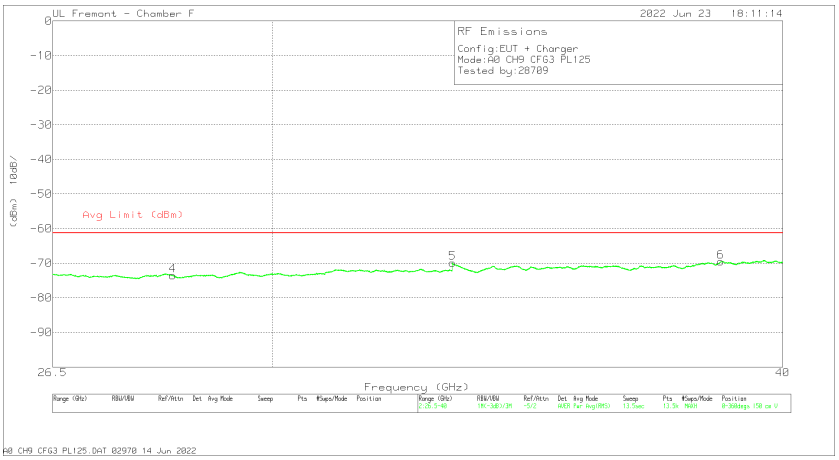
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172365 1m AF (dB/m)	220537 Amp (dB)	Distance CF (dB)	Conv. Fact. (dB)	Cables (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.599	-72.2	RMS	36.6	-62.5	-9.5	11.8	22	-73.8	-61.3	-12.5	0-360	150	H
2	33.202	-72.27	RMS	37.6	-61.5	-9.5	11.8	23.9	-69.97	-61.3	-8.67	0-360	150	H
3	39.61	-74.98	RMS	39.2	-62.3	-9.5	11.8	26.5	-69.28	-61.3	-7.98	0-360	150	H
4	27.911	-71.36	RMS	36.3	-62.8	-9.5	11.8	21.8	-73.76	-61.3	-12.46	0-360	150	V
5	33.201	-72.34	RMS	37.6	-61.5	-9.5	11.8	23.9	-70.04	-61.3	-8.74	0-360	150	V
6	39.601	-75.08	RMS	39.2	-62.2	-9.5	11.8	26.5	-69.28	-61.3	-7.98	0-360	150	V

RMS - RMS detection

ANT. 0, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172365 1m AF (dB/m)	220537 Amp (dB)	Distance CF (dB)	Conv. Fact. (dB)	Cables (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.185	-71.5	RMS	36.5	-62.4	-9.5	11.8	21.9	-73.2	-61.3	-11.9	0-360	150	H
2	33.2	-72.14	RMS	37.6	-61.5	-9.5	11.8	23.9	-69.84	-61.3	-8.54	0-360	150	H
3	39.065	-75.2	RMS	39.1	-62.2	-9.5	11.8	26.2	-69.8	-61.3	-8.5	0-360	150	H
4	28.356	-71.64	RMS	36.7	-62.8	-9.5	11.8	21.9	-73.54	-61.3	-12.24	0-360	150	V
5	33.201	-72.2	RMS	37.6	-61.5	-9.5	11.8	23.9	-69.9	-61.3	-8.6	0-360	150	V
6	38.627	-73.9	RMS	39.1	-63.1	-9.5	11.8	26.1	-69.5	-61.3	-8.2	0-360	150	V

RMS - RMS detection

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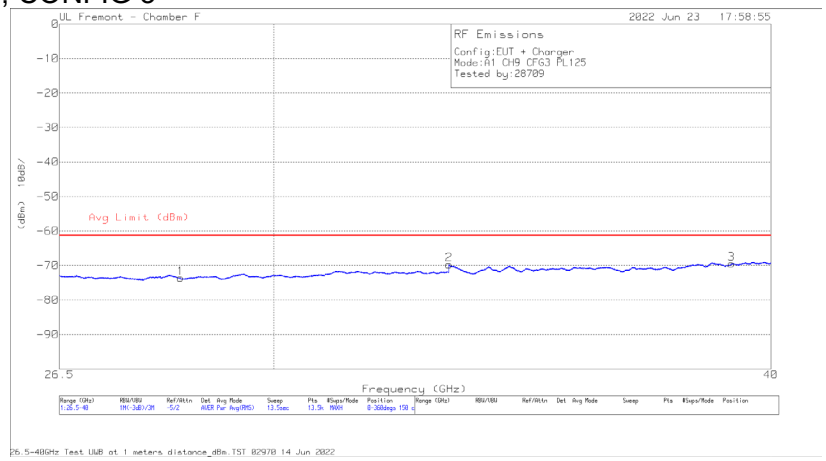
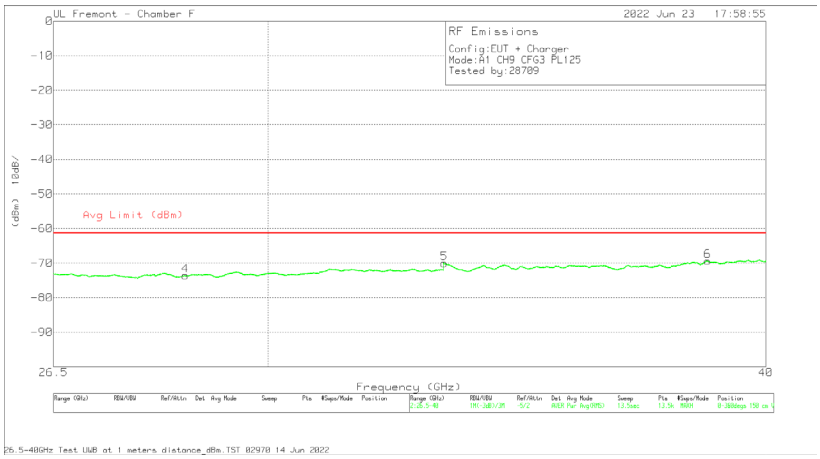
ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172365 1m AF (dB/m)	220537 Amp (dB)	Distance CF (dB)	Conv. Fact. (dB)	Cables (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.422	-71.59	RMS	36.6	-62.9	-9.5	11.8	22	-73.59	-61.3	-12.29	0-360	150	H
2	33.202	-71.98	RMS	37.6	-61.5	-9.5	11.8	23.9	-69.68	-61.3	-8.38	0-360	150	H
3	39.098	-74.8	RMS	39.1	-62.3	-9.5	11.8	26.2	-69.5	-61.3	-8.2	0-360	150	H
4	28.599	-72.01	RMS	36.6	-62.5	-9.5	11.8	22	-73.61	-61.3	-12.31	0-360	150	V
5	33.214	-72.34	RMS	37.5	-61.4	-9.5	11.8	23.9	-70.04	-61.3	-8.74	0-360	150	V
6	38.676	-74.16	RMS	39.2	-62.8	-9.5	11.8	26.1	-69.36	-61.3	-8.06	0-360	150	V

RMS - RMS detection

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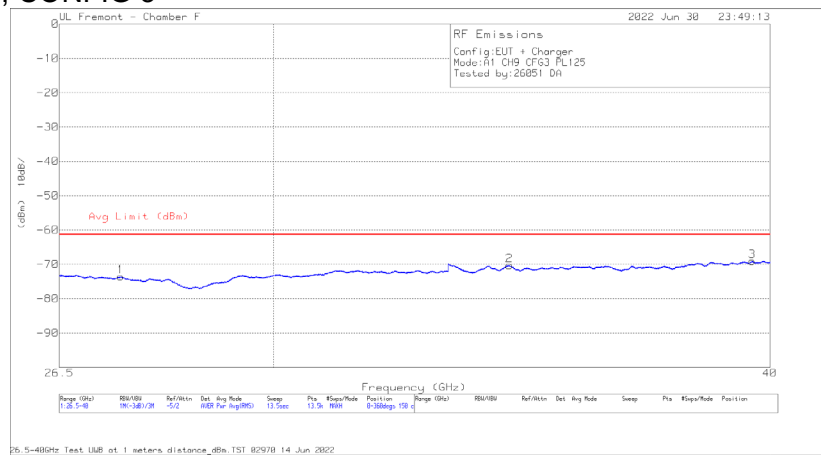
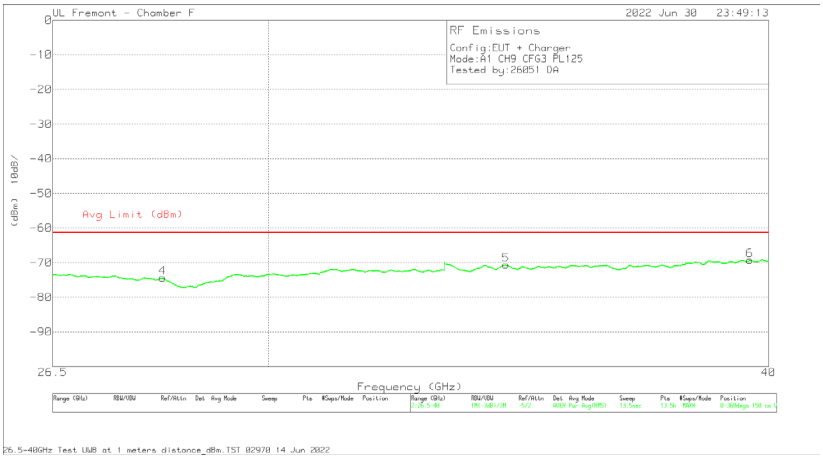
A2893 Variant

ANT. 1, CH9, CONFIG 3





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172365 1m AF (dB/m)	220537 Amp (dB)	Distance CF (dB)	Conv. Fact. (dB)	Cables (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	27.459	-70.65	RMS	36.2	-63	-9.5	11.8	21.6	-73.55	-61.3	-12.25	0-360	150	H
2	34.394	-73.38	RMS	38	-61.5	-9.5	11.8	24.3	-70.28	-61.3	-8.98	0-360	150	H
3	39.589	-74.84	RMS	39.2	-62.2	-9.5	11.8	26.5	-69.04	-61.3	-7.74	0-360	150	H
4	28.229	-72.64	RMS	36.6	-62.5	-9.5	11.8	21.9	-74.34	-61.3	-13.04	0-360	150	V
5	34.39	-73.71	RMS	38	-61.5	-9.5	11.8	24.3	-70.61	-61.3	-9.31	0-360	150	V
6	39.567	-75.06	RMS	39.2	-62.2	-9.5	11.8	26.5	-69.26	-61.3	-7.96	0-360	150	V

RMS - RMS detection

9.7. AC POWER-LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a) & RSS-Gen 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

ANSI C63.10 Section 6.2

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

Results for both the parent and variant A2893 models are shown below.

Parent Model
Employee IDs: 28709
Location: Immunity Test Lab
Test Date: 07/05/2022 – 07/06/2022

Variant Model A2893
Employee ID: 28709
Location: Immunity Test Lab
Test Date: 07/05/2022 – 07/06/2022

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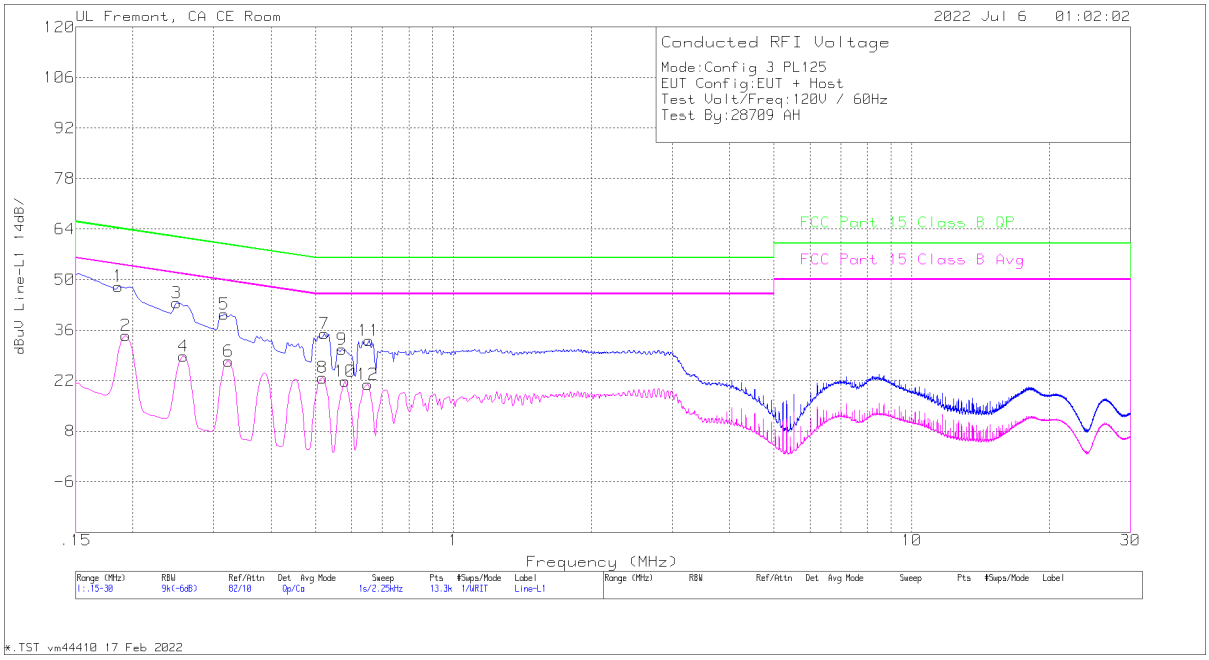
9.7.1. AC Power Line with Laptop

Parent

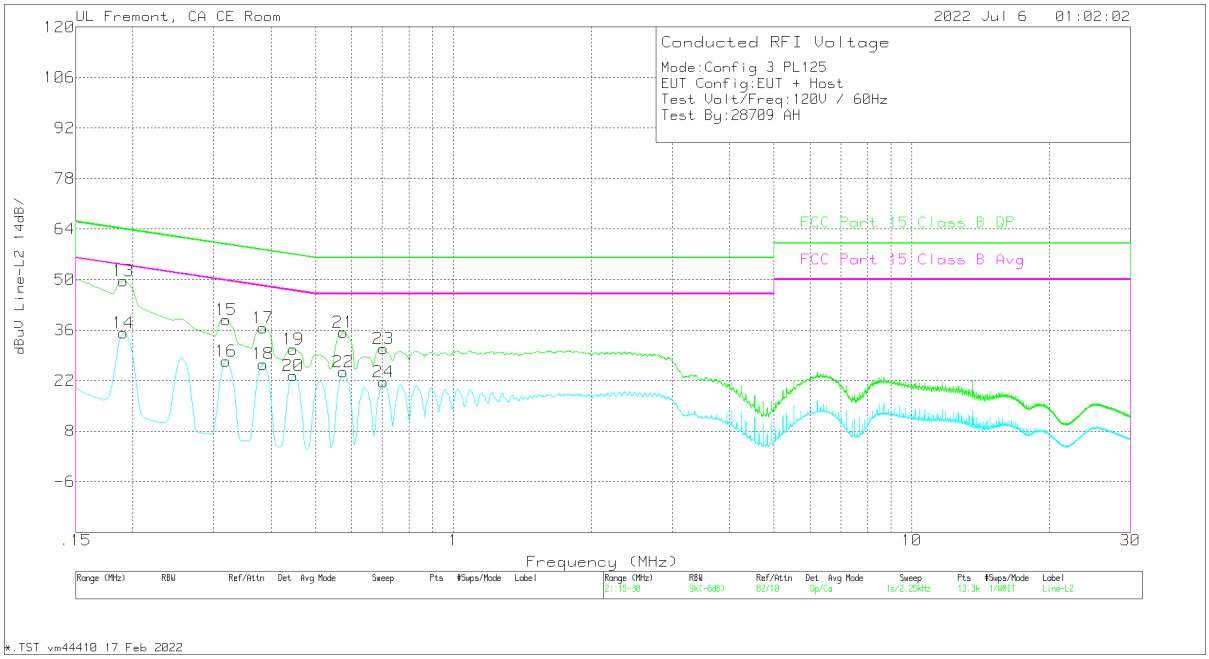
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
2	.1928	24.5	Ca	.1	0	9.9	34.5	-	-	53.92	-19.42
4	.258	19.24	Ca	0	0	9.5	28.74	-	-	51.5	-22.76
6	.3233	17.86	Ca	0	0	9.5	27.36	-	-	49.62	-22.26
8	.519	13.3	Ca	0	0	9.5	22.8	-	-	46	-23.2
10	.5798	12.17	Ca	0	.1	9.5	21.77	-	-	46	-24.23
12	.6495	11.35	Ca	0	.1	9.5	20.95	-	-	46	-25.05
1	.186	37.97	Qp	.1	0	10.1	48.17	64.21	-16.04	-	-
3	.249	34.06	Qp	0	0	9.5	43.56	61.79	-18.23	-	-
5	.3165	30.96	Qp	0	0	9.5	40.46	59.8	-19.34	-	-
7	.5235	25.62	Qp	0	0	9.5	35.12	56	-20.88	-	-
9	.5708	21.27	Qp	0	0	9.5	30.77	56	-25.23	-	-
11	.654	23.56	Qp	0	.1	9.5	33.16	56	-22.84	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
14	.1905	25.14	Ca	.1	0	10	35.24	-	-	54.01	-18.77
16	.3188	17.87	Ca	0	0	9.5	27.37	-	-	49.74	-22.37
18	.384	17.12	Ca	0	0	9.5	26.62	-	-	48.19	-21.57
20	.447	13.94	Ca	0	0	9.5	23.44	-	-	46.93	-23.49
22	.5753	14.99	Ca	0	0	9.5	24.49	-	-	46	-21.51
24	.7035	12.11	Ca	0	.1	9.5	21.71	-	-	46	-24.29
13	.1905	39.5	Qp	.1	0	10	49.6	64.01	-14.41	-	-
15	.3188	29.45	Qp	0	0	9.5	38.95	59.74	-20.79	-	-
17	.384	27.12	Qp	0	0	9.5	36.62	58.19	-21.57	-	-
19	.447	21.18	Qp	0	0	9.5	30.68	56.93	-26.25	-	-
21	.5753	25.87	Qp	0	0	9.5	35.37	56	-20.63	-	-
23	.7035	21.34	Qp	0	.1	9.5	30.94	56	-25.06	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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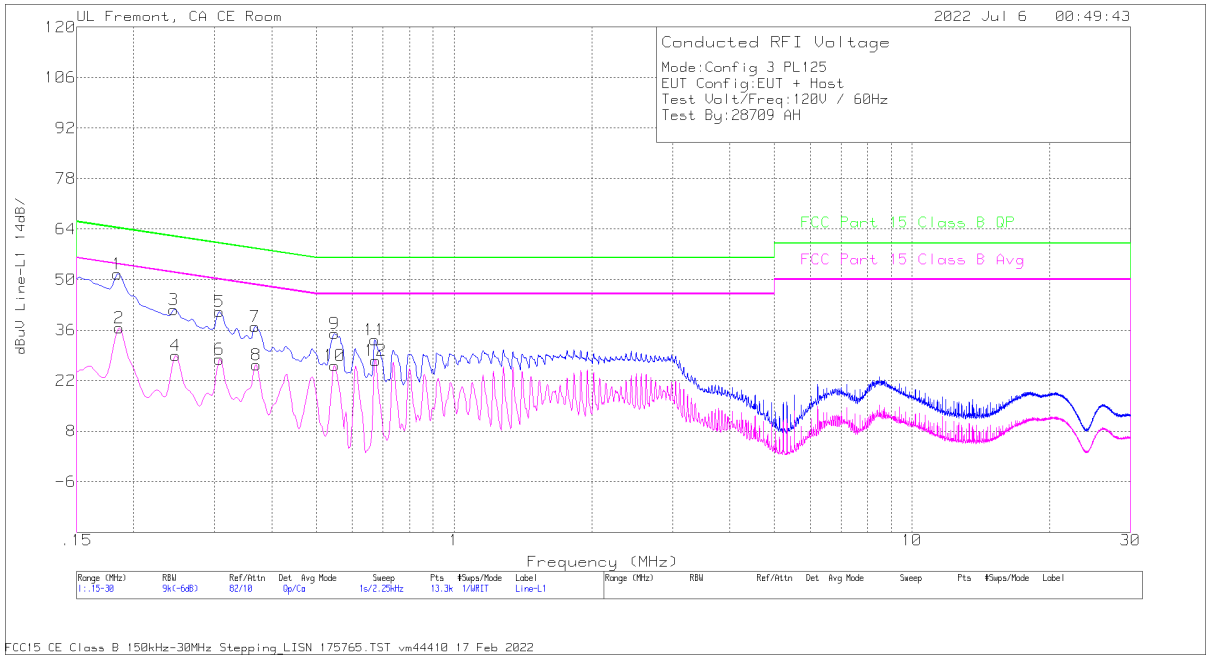
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
2	.186	26.36	Ca	.1	0	10.1	36.56	-	-	54.21	-17.65
4	.2468	19.46	Ca	0	0	9.5	28.96	-	-	51.87	-22.91
6	.3075	18.38	Ca	0	0	9.5	27.88	-	-	50.04	-22.16
8	.3705	16.83	Ca	0	0	9.5	26.33	-	-	48.49	-22.16
10	.5483	16.75	Ca	0	0	9.5	26.25	-	-	46	-19.75
12	.6743	18.01	Ca	0	.1	9.5	27.61	-	-	46	-18.39
1	.1838	41.34	Qp	.1	0	10.2	51.64	64.31	-12.67	-	-
3	.2445	32.21	Qp	0	0	9.5	41.71	61.94	-20.23	-	-
5	.3075	31.64	Qp	0	0	9.5	41.14	60.04	-18.9	-	-
7	.3683	27.46	Qp	0	0	9.5	36.96	58.54	-21.58	-	-
9	.5483	25.5	Qp	0	0	9.5	35	56	-21	-	-
11	.672	23.76	Qp	0	.1	9.5	33.36	56	-22.64	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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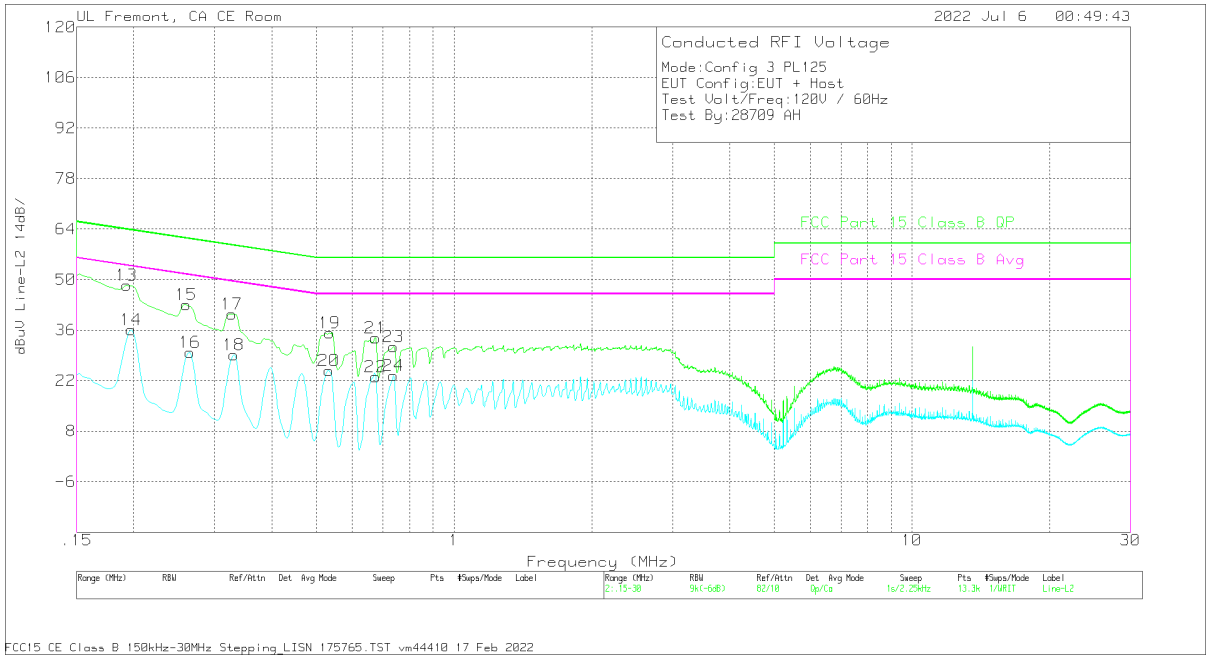
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
14	.1973	26.27	Ca	0	0	9.8	36.07	-	-	53.73	-17.66
16	.2648	20.36	Ca	0	0	9.5	29.86	-	-	51.28	-21.42
18	.33	19.57	Ca	0	0	9.5	29.07	-	-	49.45	-20.38
20	.5325	15.32	Ca	0	0	9.5	24.82	-	-	46	-21.18
22	.6743	13.42	Ca	0	.1	9.5	23.02	-	-	46	-22.98
24	.7373	13.8	Ca	0	.1	9.5	23.4	-	-	46	-22.6
13	.1928	38.56	Qp	0	0	9.9	48.46	63.92	-15.46	-	-
15	.2603	33.47	Qp	0	0	9.5	42.97	61.42	-18.45	-	-
17	.3278	31	Qp	0	0	9.5	40.5	59.51	-19.01	-	-
19	.5348	25.71	Qp	0	0	9.5	35.21	56	-20.79	-	-
21	.6743	24.21	Qp	0	.1	9.5	33.81	56	-22.19	-	-
23	.7373	21.78	Qp	0	.1	9.5	31.38	56	-24.62	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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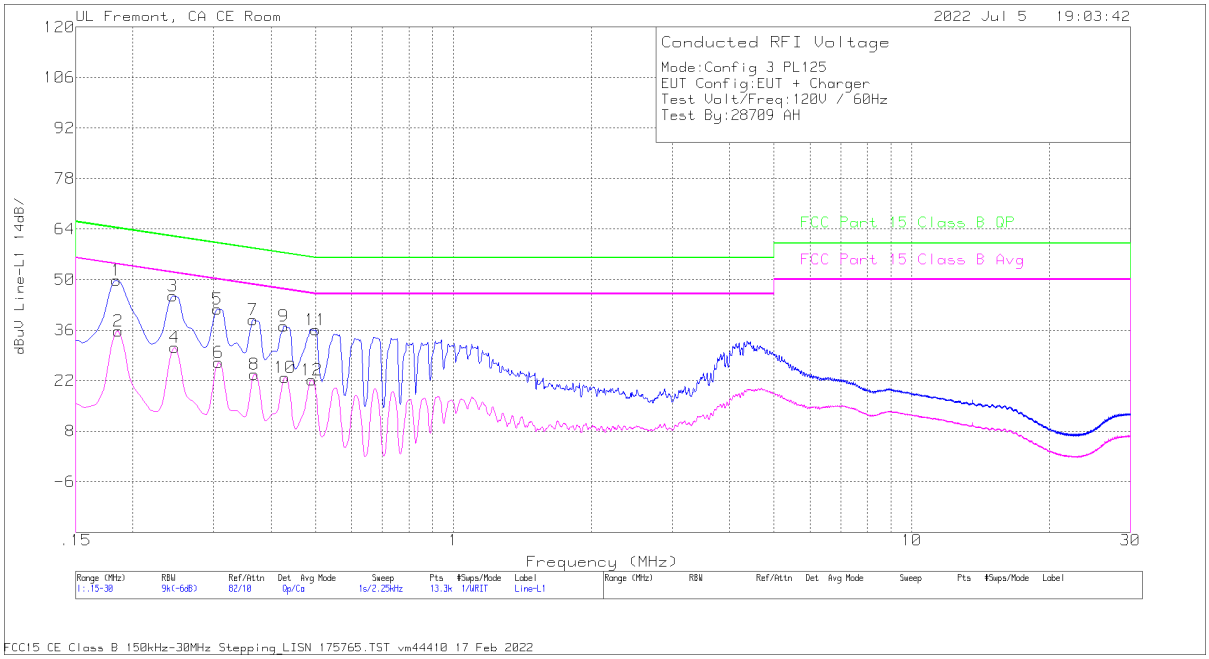
9.7.2. AC Power Line with AC/DC Adapter

Parent

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
2	.186	25.47	Ca	.1	0	10.1	35.67	-	-	54.21	-18.54
4	.2468	21.68	Ca	0	0	9.5	31.18	-	-	51.87	-20.69
6	.3075	17.48	Ca	0	0	9.5	26.98	-	-	50.04	-23.06
8	.3683	14.22	Ca	0	0	9.5	23.72	-	-	48.54	-24.82
10	.429	13.34	Ca	0	0	9.5	22.84	-	-	47.27	-24.43
12	.492	12.67	Ca	0	0	9.5	22.17	-	-	46.13	-23.96
1	.1838	39.52	Qp	.1	0	10.2	49.82	64.31	-14.49	-	-
3	.2445	36.02	Qp	0	0	9.5	45.52	61.94	-16.42	-	-
5	.3053	32.36	Qp	0	0	9.5	41.86	60.1	-18.24	-	-
7	.366	29.39	Qp	0	0	9.5	38.89	58.59	-19.7	-	-
9	.4268	27.66	Qp	0	0	9.5	37.16	57.32	-20.16	-	-
11	.501	26.56	Qp	0	0	9.5	36.06	56	-19.94	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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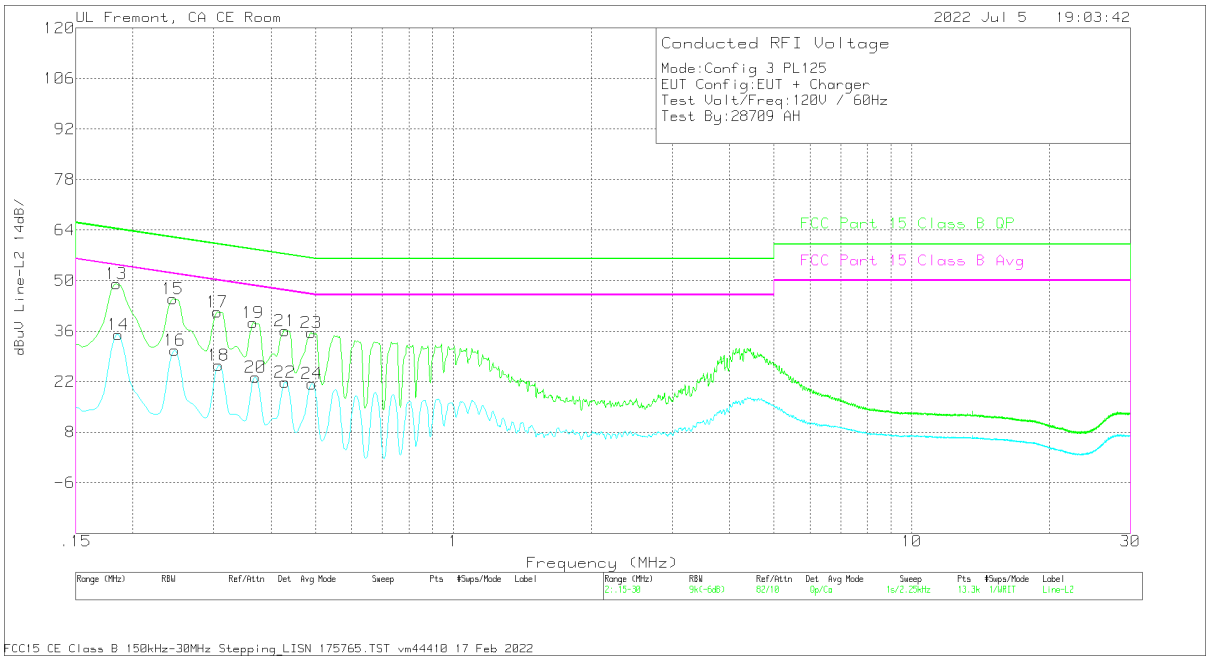
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
14	.186	24.91	Ca	.1	0	10.1	35.11	-	-	54.21	-19.1
16	.2468	21.19	Ca	0	0	9.5	30.69	-	-	51.87	-21.18
18	.3075	17.05	Ca	0	0	9.5	26.55	-	-	50.04	-23.49
20	.3705	13.67	Ca	0	0	9.5	23.17	-	-	48.49	-25.32
22	.429	12.37	Ca	0	0	9.5	21.87	-	-	47.27	-25.4
24	.492	11.91	Ca	0	0	9.5	21.41	-	-	46.13	-24.72
13	.1838	38.78	Qp	.1	0	10.2	49.08	64.31	-15.23	-	-
15	.2445	35.47	Qp	0	0	9.5	44.97	61.94	-16.97	-	-
17	.3053	31.85	Qp	0	0	9.5	41.35	60.1	-18.75	-	-
19	.366	28.78	Qp	0	0	9.5	38.28	58.59	-20.31	-	-
21	.429	26.65	Qp	0	0	9.5	36.15	57.27	-21.12	-	-
23	.4898	26	Qp	0	0	9.5	35.5	56.17	-20.67	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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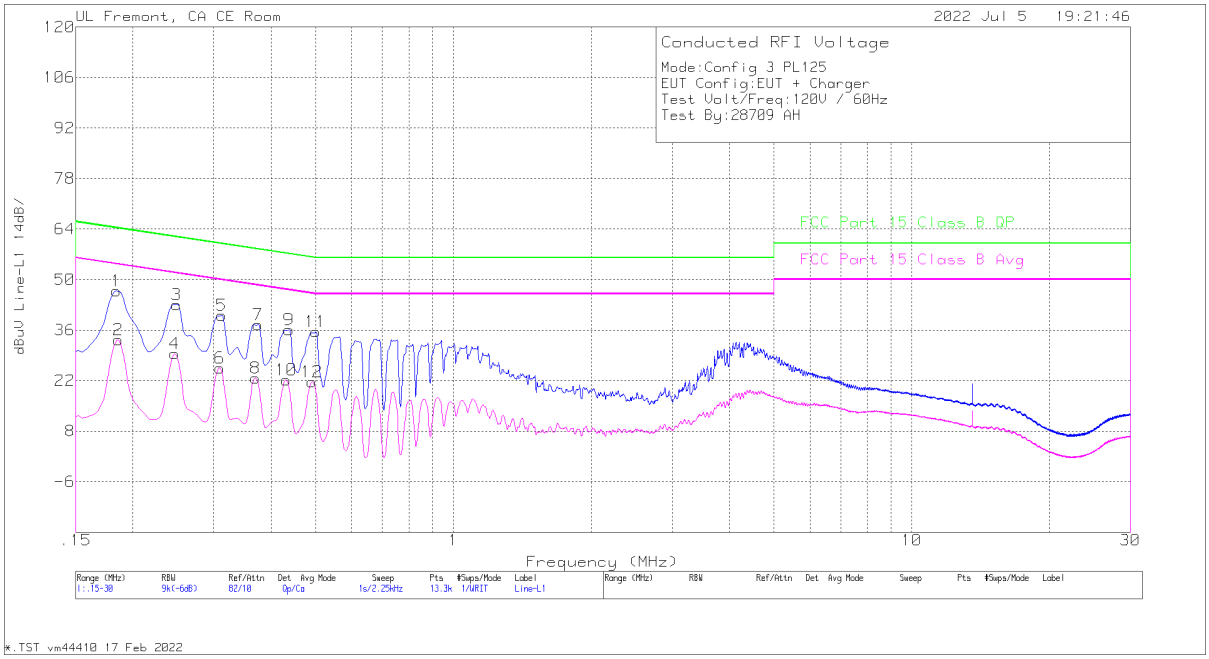
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
2	.186	23.13	Ca	.1	0	10.1	33.33	-	-	54.21	-20.88
4	.2468	19.95	Ca	0	0	9.5	29.45	-	-	51.87	-22.42
6	.3098	16.02	Ca	0	0	9.5	25.52	-	-	49.98	-24.46
8	.3705	13.27	Ca	0	0	9.5	22.77	-	-	48.49	-25.72
10	.4313	12.65	Ca	0	0	9.5	22.15	-	-	47.23	-25.08
12	.492	12.17	Ca	0	0	9.5	21.67	-	-	46.13	-24.46
1	.1838	36.56	Qp	.1	0	10.2	46.86	64.31	-17.45	-	-
3	.249	33.61	Qp	0	0	9.5	43.11	61.79	-18.68	-	-
5	.312	30.55	Qp	0	0	9.5	40.05	59.92	-19.87	-	-
7	.375	28.04	Qp	0	0	9.5	37.54	58.39	-20.85	-	-
9	.438	26.62	Qp	0	0	9.5	36.12	57.1	-20.98	-	-
11	.501	26.02	Qp	0	0	9.5	35.52	56	-20.48	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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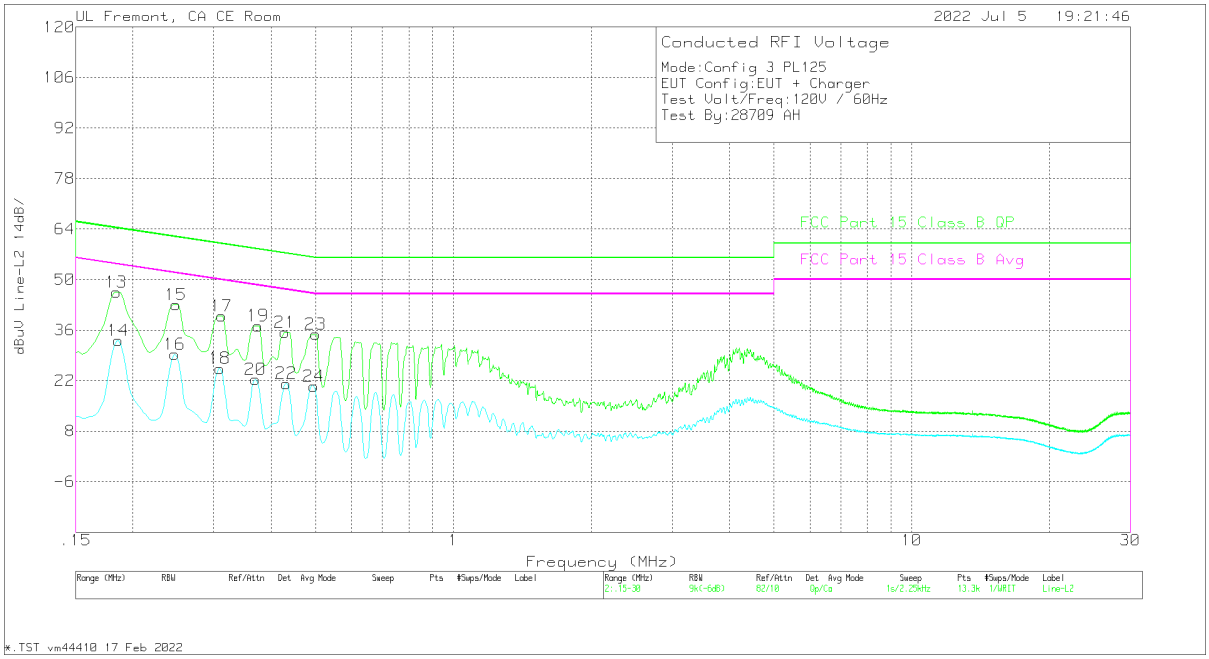
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av(CISPR) Margin (dB)
14	.186	22.98	Ca	.1	0	10.1	33.18	-	-	54.21	-21.03
16	.2468	19.78	Ca	0	0	9.5	29.28	-	-	51.87	-22.59
18	.3098	15.9	Ca	0	0	9.5	25.4	-	-	49.98	-24.58
20	.3705	12.8	Ca	0	0	9.5	22.3	-	-	48.49	-26.19
22	.4313	11.73	Ca	0	0	9.5	21.23	-	-	47.23	-26
24	.4965	10.94	Ca	0	0	9.5	20.44	-	-	46.06	-25.62
13	.1838	36.3	Qp	.1	0	10.2	46.6	64.31	-17.71	-	-
15	.2479	33.61	Qp	0	0	9.5	43.11	61.83	-18.72	-	-
17	.312	30.43	Qp	0	0	9.5	39.93	59.92	-19.99	-	-
19	.375	27.72	Qp	0	0	9.5	37.22	58.39	-21.17	-	-
21	.429	25.87	Qp	0	0	9.5	35.37	57.27	-21.9	-	-
23	.501	25.36	Qp	0	0	9.5	34.86	56	-21.14	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

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10. SETUP PHOTOS

Please refer to 14040866-EP1V1 for setup photos.

END OF REPORT

UL LLC
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