TEST REPORT

Report Number : 14523744-E16V3

Applicant	:	APPLE INC 1 APPLE PARK WAY CUPERTINO, CA 95104, U.S.A.
Model	:	A3101 (Parent Model) A3102, A3104 (Variant Models)
Brand	:	APPLE
FCC ID	:	BCG-E8436A (Parent Model) BCG-E8437A, BCG-E8438A (Variant Models)
IC	:	579C-E8436A (Parent Model) 579C-E8437A, 579C-E8438A (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:
AUGUST 03, 2023

Prepared by:
UL VERIFICATION SERVICES INC.
47173 Benicia Street
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CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/11/2023	Initial Issue	---
V2	7/20/2023	Address TCB question section 6.1 and 9.7	Alfonso Sanchez
V3	8/3/2023	Updated Section 3	Alfonso Sanchez

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC 1 APPLE PARK WAY CUPERTINO, CA 95104, U.S.A.
Model	A3101 (Parent Model, Full Test) A3102, A3104 (Variant Models)
Brand	APPLE
FCC ID	BCG-E8436A (Parent Model) BCG-E8437A, BCG-E8438A (Variant Models)
IC	579C-E8436A (Parent model) 579C-E8437A, (Variant Model) 579C-E8438A (Variant Model)
EUT Description	SMARTPHONE
Serial Number	H7YCQNJ7MH; J5C923LGQ5; H3KYQTJNJ0; CJQ9MDXNP4
Sample Receipt Date	March 3, 2023; April 11, 2023; June 06, 2023, July 5, 2023
Date Tested	MARCH 10, 2023 to JULY 05, 2023
Applicable Standards	FCC CFR 47 PART 15 SUBPART F §15.519 ISED RSS-220 ISSUE 1 AMENDMENT 1
Test Results	COMPLIES

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document.

Approved & Released By:	Prepared & Reviewed By:
	
Thu Chan Staff Engineer UL Verification Services Inc.	Alfonso Sanchez Senior Test Engineer UL Verification Services Inc.

2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. 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

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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 C63.10:2013
- ISED RSS-220 Issue 1 Amendment 1
- ISED RSS GEN Issue 5 Amendment 2

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. 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			
☐	Building 3: 843 Auburn Court, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538, USA			

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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}
Conducted Antenna Port Emission Measurement	1.940 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 %
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
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 EMISSIONS

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:

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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 Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, UMTS, LTE, 5GNR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth (BT), Ultra-Wideband (UWB), GPS, NFC, NB UNII, 802.15.4, 802.15.4ab-NB and MSS technologies. The rechargeable battery is not user accessible.

The EUT has a UWB transceiver with two integral antennas (ANT1 = UWB1, ANT2 = ANT6/UWB0). ANT1 only operates on 8 GHz (Channel 9). ANT2 operates on 6.5 GHz (Channel 5) and 8 GHz (Channel 9). The antennas are not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

Parent Model: A3101, FCC ID: BCG-E8436A, IC: 579C- E8436A

Variant Models: A3102, FCC ID: BCG-E8437A, IC: 579C- E8437A
A3104, FCC ID: BCG-E8438A, IC: 579C- E8438A

6.2. MAXIMUM OUTPUT POWER

Highest Average Powers based on ANT/CH for the parent model are listed as follow:

Parent Model (A3101)			
ANT	**CH**	**CONFIG**	**Average Power (dBm EIRP)**
1	9	402	-42.31
2	5	805	-42.33
2	9	802	-42.31

6.3. MODULATION

The UWB signal is BPSK pulsed modulated signal.

6.4. SOFTWARE AND FIRMWARE

The Software and Firmware version used at test is FT: 1859.0.0.101.1~2.347.2503.

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7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
Laptop + Adapter	Apple	MacBook Pro	FVF1CBUHV29
Brisket – USB Adapter	Apple	Brisket UART Cable Pigtail	F2010M00004786
USB-C Power Adapter	Apple	A2305	C4H9516000APF4F4P
USB-C Ethernet Adapter	Ugreen	CM475	60600
USB-A to USB-C adapter	Anker	A8731	X002NCP6GR
USB-A Cable with Repeater	Ugreen	10321	X000TT2OLL

I/O CABLES

I/O CABLES					
Port	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
AC	1	AC	Un-shielded	2	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. All selected configs are used for the Ant/Ch settings that were tested at default power (0 dBm), and Config 9 Payload 125 was chose for uwanted emission test with CH9 on Ant 1 and both CH5 and CH9 on Ant 2 on the parent model by setting at maximum output power higher than 0 dBm.

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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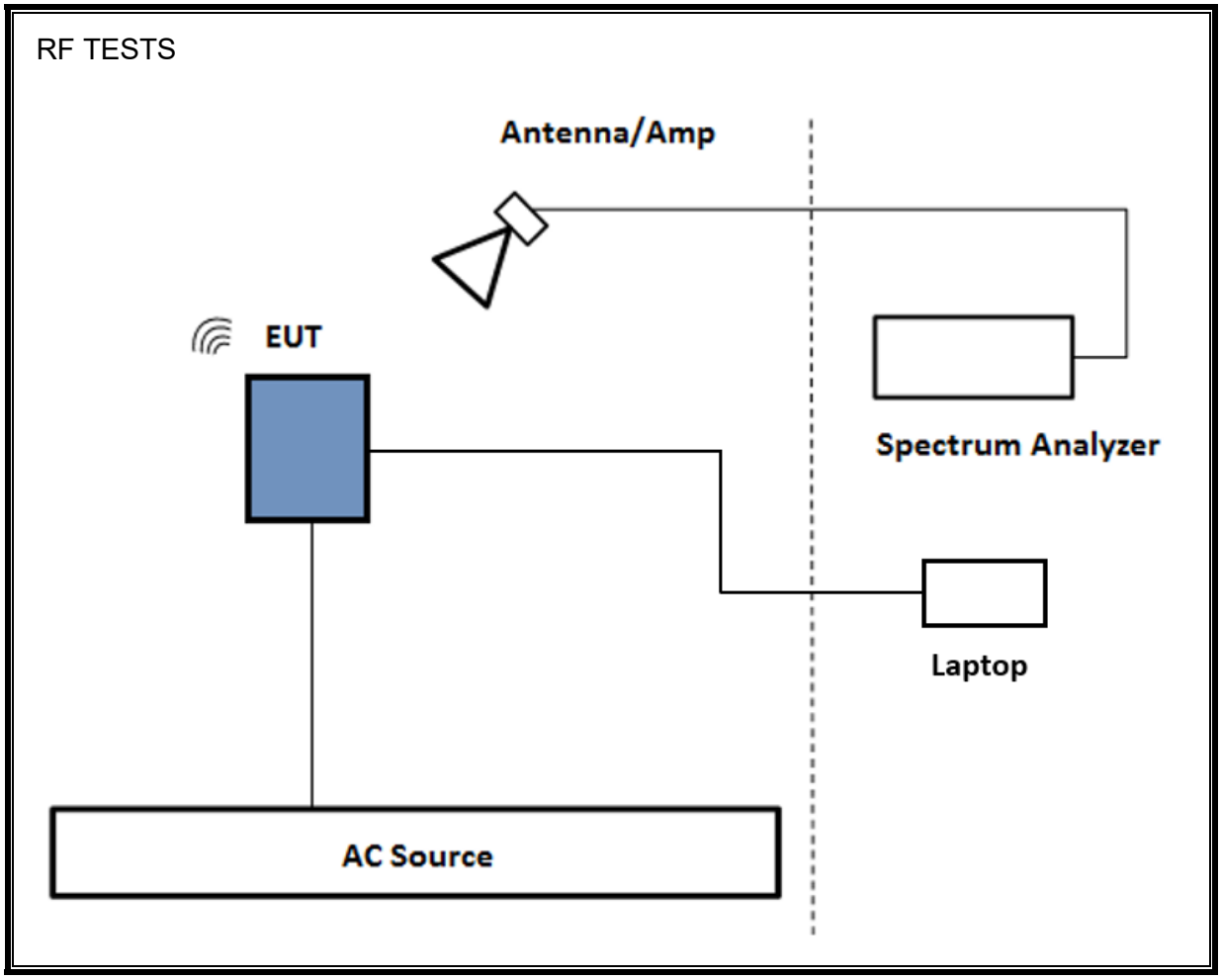
SETUP DIAGRAM FOR Above 1GHz TESTS



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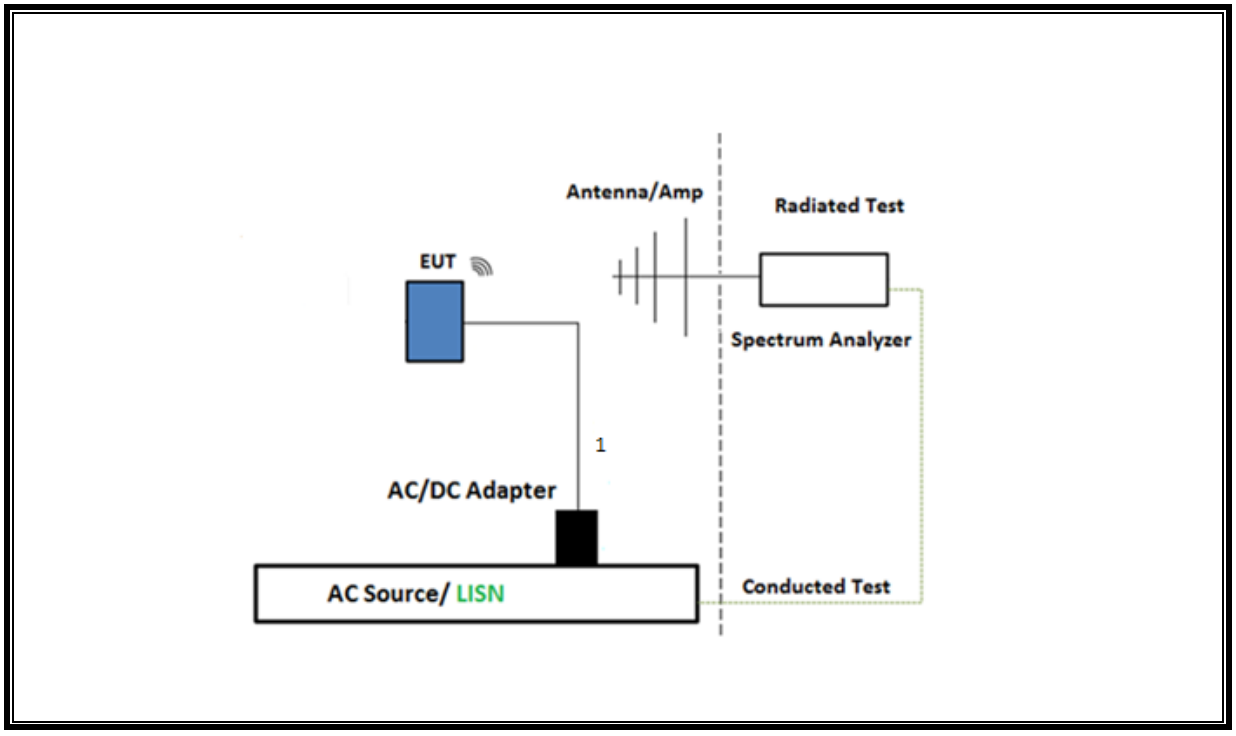
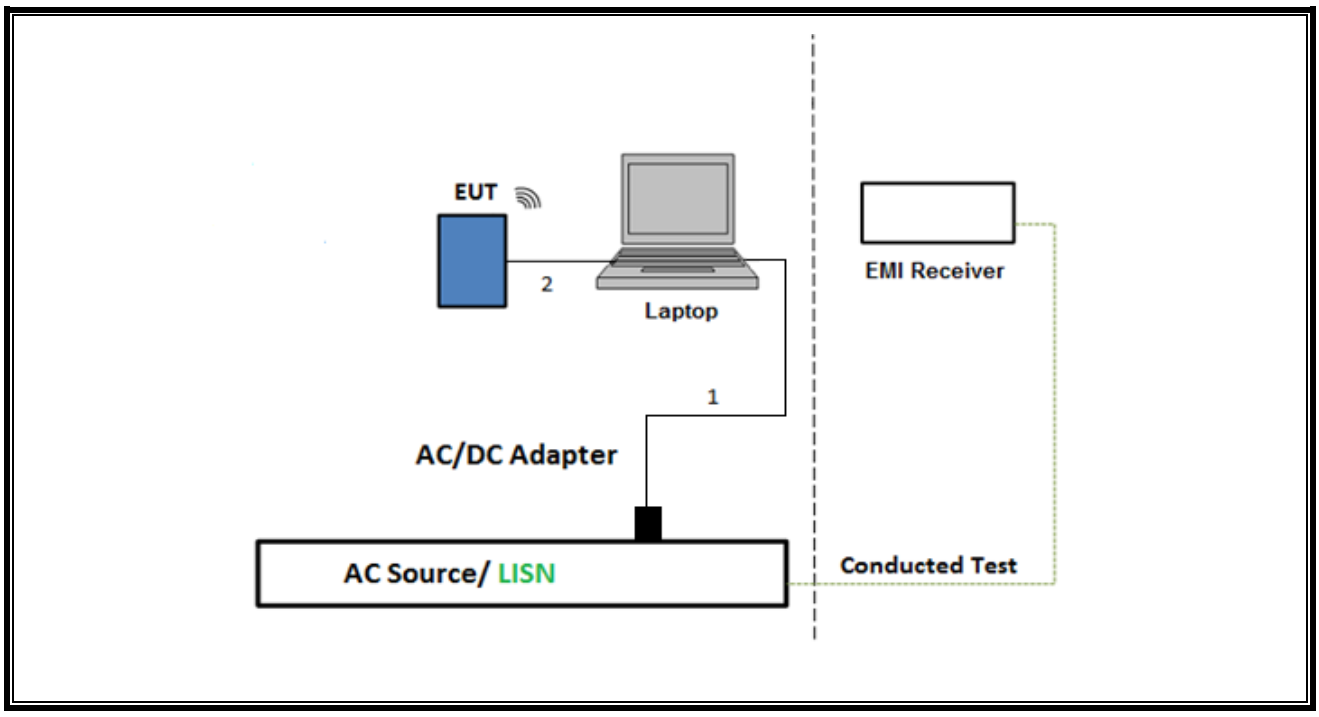
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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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					
Description	Manufacturer	Model	Local ID	Cal Date	Cal Due
EMI Test Reciever	Rohde & Schwarz	ESW44	223459	9/9/2022	9/9/2023
Horn Antenna, 1-18GHz	ETS-Lindgren	3117	80707	5/30/2023	5/31/2023
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	N/A	231876	4/4/2023	4/30/2024
EMI Test Reciever	Rohde & Schwarz	ESW44	223460	2/18/2023	2/29/2024
Horn Antenna, 1-18GHz	ETS-Lindgren	3117	206805	7/5/2022	7/5/2023
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	N/A	224478	10/26/2022	10/26/2023
EMI Test Reciever	Rohde & Schwarz	ESW44	235266	3/30/2023	3/20/2024
Horn Antenna, 1-18GHz	ETS-Lindgren	3117	206808	3/7/2023	3/31/2024
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	N/A	173233	3/13/2023	3/31/2024
Antenna, Broadband Hybrid, 30 MHz to 3GHz	Sunol Sciences Corp	JB3	230634	1/23/2023	1/31/2024
Amplifier, 9kHz to 1 GHz, 32dB	Sonoma Instrumnet	310N	79584	12/12/2022	12/12/2023
Antenna, Passive Loop 100kHz - 30MHz	Electro-Metrics	EM-6872	170015	7/28/2022	7/28/2023
Antenna, Passive Loop 30Hz - 1MHz	Electro-Metrics	EM-6871	170013	7/28/2022	7/28/2023
Antenna, Horn 18-26.5GHz	ARA	MWH-1826/B	81139	7/11/2022	7/11/2023
RF Amplifier 18-26.5GHz	Amplical	AMP18G26.5-60	220194	7/13/2022	7/13/2023
Antenna, Horn 26.5-40GHz	ARA	MWH-2640/B	81105	7/11/2022	7/11/2023
RF Amplifier 26.5-40GHz	Amplical	AMP26G40-60	220193	7/15/2022	7/15/2023
Filter, LPF 0-5400MHz Ch5/9 5.4G LPF	Wainwright Instruments Gmbh	WLKX12-5400-5913-18000-60ST	204843	11/10/2022	11/10/2023
Filter, HPF, 9-18GHz	RF-Lambda	RHPF23G09G18	206078	11/10/2022	11/10/2023
Filter, HPF 11.2GHz, Ch9 11.5G HPF	Wainwright Instruments Gmbh	WHW2-8165-11500-21000-40CD	176234	12/28/2022	12/28/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESR	171646	2/20/2023	2/20/2024
Cable, RG223 Coax, double shield, BNC	Pasternack Enterprises	RG233/U	202322	7/15/2022	7/31/2023
Cable, RG223 Coax, double shield, BNC	Pasternack Enterprises	RG233/U	202326	7/15/2022	7/31/2023
Transient Limiter	TE	TBFL1	207996	7/15/2022	7/15/2023
LISN for Conducted Emissions CISPR-16	Fischer Custom Communications, Ince	FCC-LISN-50/250/-25-2-01-480V	175765	1/27/2023	1/27/2024
Radiated Software	UL	UL EMC	Version 9.5 May 1, 2023		
AC Line Conducted Software	UL	UL EMC	Version 9.5 March 3, 2023		

Tests were performed prior to the calibration date to ensure accurate measurements were recorded.

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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 model. The plots for the parent model of Ant 1, CONFIG 0, Payload 25 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.

RESULTS

Parent Model
Employee IDs: 32703, 32553, 32305
Location: Chamber 5B
Test Date: 6/12/23 – 6/18/23

ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
1	9	0	25	Portrait	H	608.2647
1	9	1	45	Portrait	H	607.6444
1	9	9	125	Portrait	H	619.9244
1	9	10	25	Portrait	H	607.7437
1	9	11	25	Portrait	H	609.5225
1	9	11	65	Portrait	H	609.6358
1	9	101	25	Portrait	H	604.6909
1	9	101	65	Portrait	H	605.4793
1	9	102	25	Portrait	H	609.0588
1	9	102	65	Portrait	H	609.4243
1	9	103	25	Portrait	H	608.8514
1	9	103	125	Portrait	H	607.8445
1	9	202	625	Portrait	H	722.3774
1	9	402	445	Portrait	H	668.3368
1	9	501	0	Portrait	H	593.4268
1	9	503	0	Portrait	H	593.0764899
1	9	601	0	Portrait	H	605.7896433
1	9	605	0	Portrait	H	605.0127566
1	9	607	0	Portrait	H	605.1720399
1	9	701	0	Portrait	H	615.6558
1	9	702	0	Portrait	H	617.4756
1	9	703	0	Portrait	H	620.2968
1	9	704	0	Portrait	H	627.0447
1	9	705	0	Portrait	H	615.4891
1	9	706	0	Portrait	H	619.461
1	9	405	4093	Portrait	H	711.3336
1	9	407	4093	Portrait	H	619.9244
1	9	801	0	Portrait	H	613.5144
1	9	802	0	Portrait	H	612.3021
1	9	803	0	Portrait	H	612.7138
1	9	804	0	Portrait	H	630.0839
1	9	805	0	Portrait	H	622.1684
1	9	806	0	Portrait	H	618.0024
1	9	807	0	Portrait	H	612.4354
1	9	808	0	Portrait	H	612.4142
1	9	809	0	Portrait	H	612.2091
1	9	80A	0	Portrait	H	620.1398
1	9	80B	0	Portrait	H	617.8768
1	9	80C	0	Portrait	H	620.0134

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ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
2	5	0	25	Portrait	H	581.7893
2	5	1	45	Portrait	H	581.0665
2	5	9	125	Portrait	H	595.1799
2	5	10	25	Portrait	H	579.9022
2	5	11	25	Portrait	H	578.6327
2	5	11	65	Portrait	H	579.7371
2	5	101	25	Portrait	H	577.8184
2	5	101	65	Portrait	H	579.4826
2	5	102	25	Portrait	H	577.8989
2	5	102	65	Portrait	H	580.1965
2	5	103	25	Portrait	H	579.8644
2	5	103	125	Portrait	H	584.4674
2	5	202	625	Portrait	H	783.2222
2	5	402	445	Portrait	H	693.2133
2	5	501	0	Portrait	H	568.3991
2	5	503	0	Portrait	H	571.5055
2	5	601	0	Portrait	H	582.5875
2	5	605	0	Portrait	H	567.9057
2	5	607	0	Portrait	H	569.7221
2	5	701	0	Portrait	H	590.65
2	5	702	0	Portrait	H	579.755
2	5	703	0	Portrait	H	586.568
2	5	704	0	Portrait	H	594.6397
2	5	705	0	Portrait	H	568.1418
2	5	706	0	Portrait	H	582.7244
2	5	405	4093	Portrait	H	667.3689
2	5	407	4093	Portrait	H	663.1269
2	5	801	0	Portrait	H	589.7401
2	5	802	0	Portrait	H	580.5285
2	5	803	0	Portrait	H	576.6027
2	5	804	0	Portrait	H	592.4456
2	5	805	0	Portrait	H	593.7641
2	5	806	0	Portrait	H	587.7439
2	5	807	0	Portrait	H	578.8158
2	5	808	0	Portrait	H	577.4304
2	5	809	0	Portrait	H	576.8394
2	5	80A	0	Portrait	H	590.484
2	5	80B	0	Portrait	H	585.4148
2	5	80C	0	Portrait	H	585.4148

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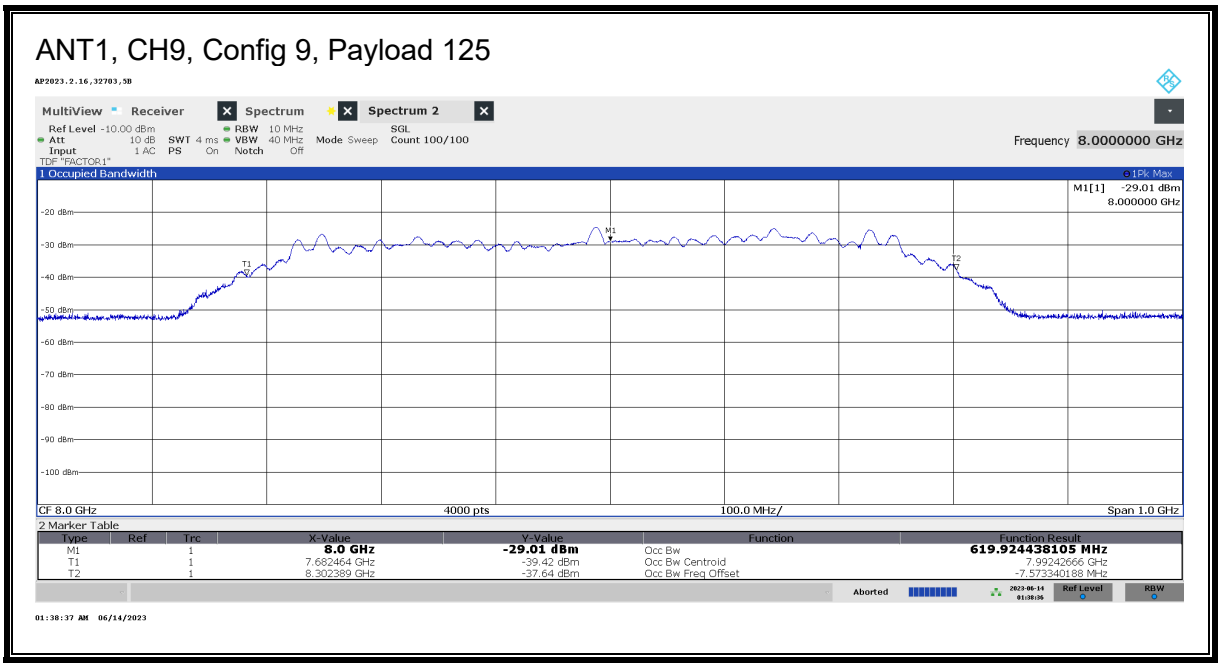
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
2	9	0	25	Portrait	H	600.590437
2	9	1	45	Portrait	H	584.8109
2	9	9	125	Portrait	H	606.9088
2	9	10	25	Portrait	H	585.285
2	9	11	25	Portrait	H	585.0973
2	9	11	65	Portrait	H	585.9817
2	9	101	25	Portrait	H	585.4486
2	9	101	65	Portrait	H	586.4499
2	9	102	25	Portrait	H	585.346
2	9	102	65	Portrait	H	586.324
2	9	103	25	Portrait	H	586.4068
2	9	103	125	Portrait	H	593.8023
2	9	202	625	Portrait	H	817.9867
2	9	402	445	Portrait	H	709.6875
2	9	501	0	Portrait	H	597.7409
2	9	503	0	Portrait	H	597.0703
2	9	601	0	Portrait	H	599.6998
2	9	605	0	Portrait	H	599.491
2	9	607	0	Portrait	H	598.0364
2	9	701	0	Portrait	H	615.2876
2	9	702	0	Portrait	H	613.8889
2	9	703	0	Portrait	H	615.8993
2	9	704	0	Portrait	H	624.4096
2	9	705	0	Portrait	H	611.9893
2	9	706	0	Portrait	H	616.8501
2	9	405	4093	Portrait	H	752.5462
2	9	407	4093	Portrait	H	743.8685
2	9	801	0	Portrait	H	592.0772
2	9	802	0	Portrait	H	592.4909
2	9	803	0	Portrait	H	592.9786
2	9	804	0	Portrait	H	600.4125
2	9	805	0	Portrait	H	604.7558
2	9	806	0	Portrait	H	600.043
2	9	807	0	Portrait	H	592.5965
2	9	808	0	Portrait	H	591.6981
2	9	809	0	Portrait	H	590.8142
2	9	80A	0	Portrait	H	600.9731
2	9	80B	0	Portrait	H	595.2672
2	9	80C	0	Portrait	H	596.7373

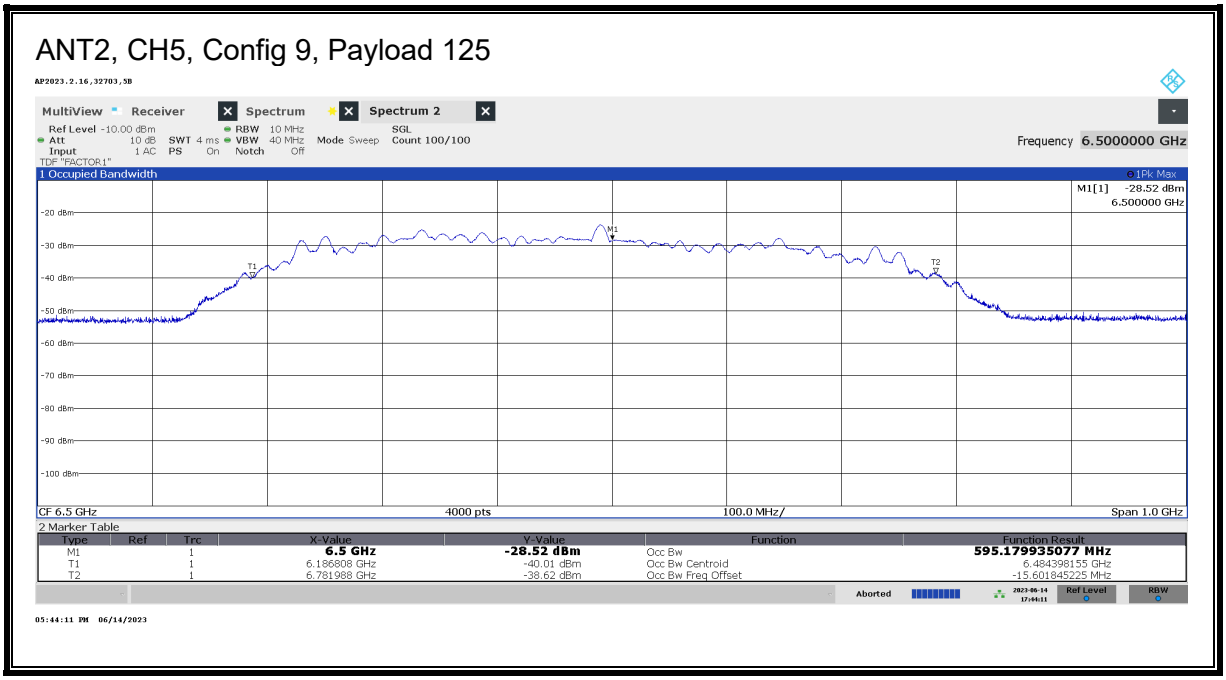
99% BW

Parent Model

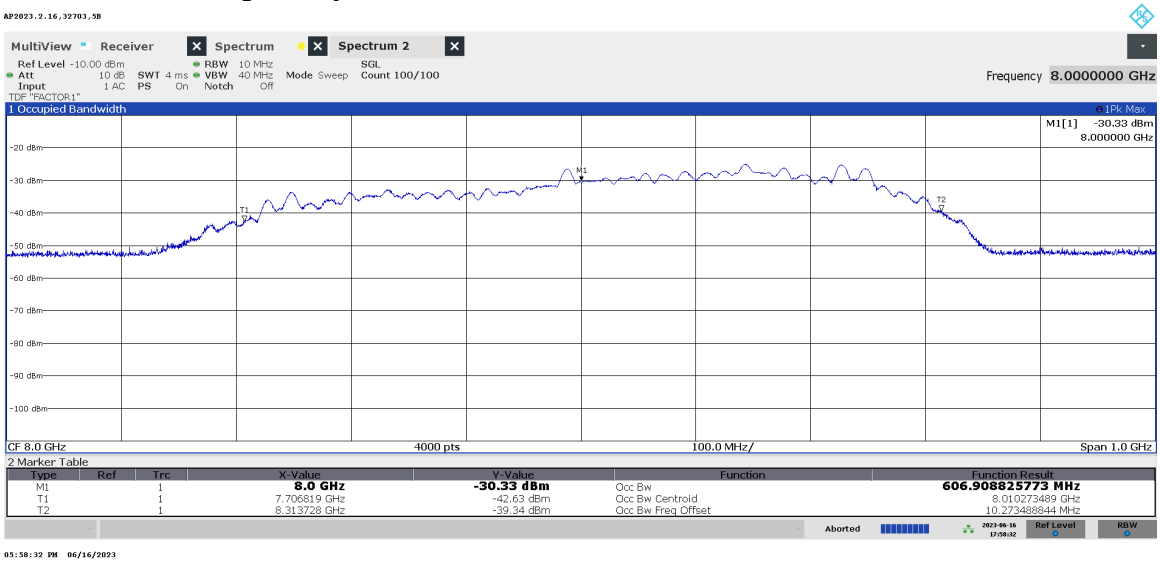
ANT1, CH9, Config 9, Payload 125



ANT2, CH5, Config 9, Payload 125



ANT2, CH9, Config 9, Payload 125



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.

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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 model. The plots for the parent model of Ant 1, CONFIG 9, Payload 125 on CH9 and Ant 2, CONFIG 9, Payload 125 on CH9 and CH5 bandwidth measurement on are presented and same measurement settings apply to the rest of the test configurations.

RESULTS

Parent Model
Employee IDs: 32703, 32553, 32305
Location: 05 -RDE- B
Test Date: 6/12/23 – 6/18/23

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ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
1	9	0	25	Portrait	H	8.22625	7.724181	8.250313	7.987247	526.13	500	26.132	P
1	9	1	45	Portrait	H	8.22625	7.724181	8.250813	7.987497	526.63	500	26.632	P
1	9	9	125	Portrait	H	8.2263	7.7257	8.248811	7.9872455	523.13	500	23.131	P
1	9	10	25	Portrait	H	8.2263	7.7242	8.250313	7.987247	526.13	500	26.132	P
1	9	11	25	Portrait	H	8.2268	7.7242	8.250813	7.987497	526.63	500	26.632	P
1	9	11	65	Portrait	H	8.2268	7.7242	8.250813	7.987497	526.63	500	26.632	P
1	9	101	25	Portrait	H	8.2263	7.7726	8.29873	8.035665	526.13	500	26.13	P
1	9	101	65	Portrait	H	8.2263	7.7242	8.25081	7.987495	526.63	500	26.63	P
1	9	102	25	Portrait	H	8.2263	7.7242	8.249812	7.9869965	525.63	500	25.631	P
1	9	102	65	Portrait	H	8.2263	7.7242	8.250051	7.987116	525.87	500	25.87	P
1	9	103	25	Portrait	H	8.2258	7.7242	8.250813	7.987497	526.63	500	26.632	P
1	9	103	125	Portrait	H	8.2268	7.2418	7.76793	7.504865	526.13	500	26.13	P
1	9	202	625	Portrait	H	8.2263	7.7247	8.249812	7.9872465	525.13	500	25.131	P
1	9	402	445	Portrait	H	8.2263	7.7242	8.25031	7.987245	526.13	500	26.13	P
1	9	501	0	Portrait	H	8.2263	7.7249	8.25075	7.9878	525.90	500	25.9	P
1	9	503	0	Portrait	H	8.2263	7.7242	8.25031	7.987245	526.13	500	26.13	P
1	9	601	0	Portrait	H	8.2268	7.7247	8.25031	7.987495	525.63	500	25.63	P
1	9	605	0	Portrait	H	8.2268	7.7242	8.25031	7.987245	526.13	500	26.13	P
1	9	607	0	Portrait	H	8.2263	7.7242	8.25031	7.987245	526.13	500	26.13	P
1	9	701	0	Portrait	H	8.2263	7.7237	8.251313	7.987497	527.63	500	27.632	P
1	9	702	0	Portrait	H	8.2263	7.7237	8.253814	7.9887475	530.13	500	30.133	P
1	9	703	0	Portrait	H	8.2263	7.7232	8.258815	7.990998	535.63	500	35.634	P
1	9	704	0	Portrait	H	8.2263	7.7232	8.265817	7.994499	542.64	500	42.636	P
1	9	705	0	Portrait	H	8.2263	7.7237	8.256814	7.9902475	533.13	500	33.133	P
1	9	706	0	Portrait	H	8.2263	7.7237	8.271818	7.9977495	548.14	500	48.137	P
1	9	405	4093	Portrait	H	8.2263	7.7247	8.271311	7.997996	546.63	500	46.63	P
1	9	407	4093	Portrait	H	8.2273	7.7262	8.265317	7.9957495	539.14	500	39.135	P
1	9	801	0	Portrait	H	8.2263	7.7232	8.282821	8.003001	559.64	500	59.64	P
1	9	802	0	Portrait	H	8.2263	7.7157	8.274319	7.994999	558.64	500	58.64	P
1	9	803	0	Portrait	H	8.2263	7.7232	8.274821	7.999001	551.64	500	51.64	P
1	9	804	0	Portrait	H	8.2263	7.7232	8.283321	8.003251	560.14	500	60.14	P
1	9	805	0	Portrait	H	8.2263	7.7232	8.28232	8.0027505	559.14	500	59.139	P
1	9	806	0	Portrait	H	8.2263	7.7232	8.274171	7.998676	550.99	500	50.99	P
1	9	807	0	Portrait	H	8.2263	7.7232	8.282858	8.0030381	559.64	500	59.64	P
1	9	808	0	Portrait	H	8.2263	7.7237	8.283321	8.003501	559.64	500	59.64	P
1	9	809	0	Portrait	H	8.2263	7.7232	8.282821	8.003001	559.64	500	59.64	P
1	9	80A	0	Portrait	H	8.2268	7.7232	8.284321	8.003751	561.14	500	61.14	P
1	9	80B	0	Portrait	H	8.2263	7.7237	8.282821	8.003251	559.14	500	59.14	P
1	9	80C	0	Portrait	H	7.7199	7.7197	8.28231	8.000995	562.63	500	62.63	P

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ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
2	5	0	25	Portrait	H	6.2508	6.2262	6.752314	6.489248	526.13	500	26.132	P
2	5	1	45	Portrait	H	6.2503	6.2262	6.752314	6.489248	526.13	500	26.132	P
2	5	9	125	Portrait	H	6.2503	6.2282	6.750813	6.4894975	522.63	501	22.631	P
2	5	10	25	Portrait	H	6.2503	6.2262	6.752315	6.4892492	526.13	500	26.132	P
2	5	11	25	Portrait	H	6.2508	6.2262	6.752314	6.489248	526.13	500	26.132	P
2	5	11	65	Portrait	H	6.2503	6.2262	6.752314	6.489248	526.13	500	26.132	P
2	5	101	25	Portrait	H	6.2508	6.2262	6.75231	6.489245	526.13	500	26.13	P
2	5	101	65	Portrait	H	6.2508	6.2262	6.75181	6.488995	525.63	500	25.63	P
2	5	102	25	Portrait	H	6.2503	6.2262	6.75181	6.488995	525.63	500	25.63	P
2	5	102	65	Portrait	H	6.2508	6.2312	6.74731	6.489245	516.13	500	16.13	P
2	5	103	25	Portrait	H	6.2503	6.2267	6.751812	6.489247	525.13	500	25.13	P
2	5	103	125	Portrait	H	6.2503	6.2262	6.75181	6.488995	525.63	500	25.63	P
2	5	202	625	Portrait	H	6.2508	6.2267	6.75181	6.489245	525.13	500	25.13	P
2	5	402	445	Portrait	H	6.2508	6.2267	6.752313	6.4894975	525.63	500	25.631	P
2	5	501	0	Portrait	H	6.2503	6.2262	6.752012	6.489097	525.83	500	25.83	P
2	5	503	0	Portrait	H	6.7288	6.2267	6.75281	6.489745	526.13	500	26.13	P
2	5	601	0	Portrait	H	6.7288	6.2267	6.75281	6.489745	526.13	500	26.13	P
2	5	605	0	Portrait	H	6.2508	6.2262	6.75231	6.489245	526.13	500	26.13	P
2	5	607	0	Portrait	H	6.2508	6.2272	6.753312	6.490247	526.13	500	26.13	P
2	5	701	0	Portrait	H	6.2508	6.2252	6.753313	6.489247	528.13	500	28.132	P
2	5	702	0	Portrait	H	6.2513	6.2252	6.752811	6.488996	527.63	500	27.63	P
2	5	703	0	Portrait	H	6.2207	6.2207	6.753313	6.4869965	532.63	500	32.633	P
2	5	704	0	Portrait	H	6.7288	6.2257	6.75431	6.489995	528.63	500	28.63	P
2	5	705	0	Portrait	H	6.2508	6.2237	6.753311	6.488496	529.63	500	29.63	P
2	5	706	0	Portrait	H	6.2508	6.2142	6.752809	6.483494	538.63	500	38.63	P
2	5	405	4093	Portrait	H	6.7288	6.2267	6.75281	6.489745	526.13	500	26.13	P
2	5	407	4093	Portrait	H	6.4578	6.2232	6.75131	6.487245	528.13	500	28.13	P
2	5	801	0	Portrait	H	6.4443	6.2228	6.753443	6.4881265	530.63	500	30.633	P
2	5	802	0	Portrait	H	6.4273	6.2182	6.753314	6.485747	535.13	500	35.134	P
2	5	803	0	Portrait	H	6.4273	6.2182	6.753314	6.485747	535.13	500	35.134	P
2	5	804	0	Portrait	H	6.4273	6.2212	6.753313	6.4872465	532.13	500	32.133	P
2	5	805	0	Portrait	H	6.4273	6.2182	6.753314	6.485747	535.13	500	35.134	P
2	5	806	0	Portrait	H	6.4273	6.2182	6.753314	6.485747	535.13	500	35.134	P
2	5	807	0	Portrait	H	6.4443	6.2257	6.753313	6.489497	527.63	500	27.632	P
2	5	808	0	Portrait	H	6.4273	6.2257	6.753313	6.489497	527.63	500	27.632	P
2	5	809	0	Portrait	H	6.4443	6.2257	6.752813	6.489247	527.13	500	27.132	P
2	5	80A	0	Portrait	H	6.4273	6.2212	6.752813	6.4869965	531.63	500	31.633	P
2	5	80B	0	Portrait	H	6.4273	6.2222	6.752814	6.4874975	530.63	500	30.633	P
2	5	80C	0	Portrait	H	6.4273	6.2207	6.753313	6.4869965	532.63	500	32.633	P

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ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
2	9	0	25	Portrait	H	8.2263	7.7257	8.250312	7.9879965	524.63	500	24.631	P
2	9	1	45	Portrait	H	8.2263	7.7467	8.250313	7.9985	503.63	500	3.626	P
2	9	9	125	Portrait	H	8.2263	7.7472	8.248812	7.9979995	501.63	501	1.625	P
2	9	10	25	Portrait	H	8.2268	7.7467	8.250313	7.9985	503.63	500	3.626	P
2	9	11	25	Portrait	H	8.2263	7.7467	8.250813	7.99875	504.13	500	4.126	P
2	9	11	65	Portrait	H	8.2263	7.7467	8.250313	7.9985	503.63	500	3.626	P
2	9	101	25	Portrait	H	8.2268	7.7472	8.25004	7.998615	502.85	500	2.85	P
2	9	101	65	Portrait	H	8.2263	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	102	25	Portrait	H	8.2268	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	102	65	Portrait	H	8.2268	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	103	25	Portrait	H	8.2263	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	103	125	Portrait	H	8.2263	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	202	625	Portrait	H	8.2263	7.7467	8.25032	7.998505	503.63	500	3.63	P
2	9	402	445	Portrait	H	8.2263	7.7262	8.25081	7.988495	524.63	500	24.63	P
2	9	501	0	Portrait	H	8.2268	7.7257	8.25081	7.988245	525.13	500	25.13	P
2	9	503	0	Portrait	H	8.2268	7.7257	8.25081	7.988245	525.13	500	25.13	P
2	9	601	0	Portrait	H	8.2263	7.7257	8.25131	7.988495	525.63	500	25.63	P
2	9	605	0	Portrait	H	8.2268	7.7257	8.25081	7.988245	525.13	500	25.13	P
2	9	607	0	Portrait	H	8.2268	7.7262	8.25031	7.988245	524.13	500	24.13	P
2	9	701	0	Portrait	H	8.2263	7.7257	8.251813	7.988747	526.13	500	26.132	P
2	9	702	0	Portrait	H	8.2263	7.7257	8.258314	7.9919975	532.63	500	32.633	P
2	9	703	0	Portrait	H	8.2258	7.7257	8.267817	7.996749	542.14	500	42.136	P
2	9	704	0	Portrait	H	8.2263	7.7257	8.273318	7.9994995	547.64	500	47.637	P
2	9	705	0	Portrait	H	8.2258	7.7257	8.273318	7.9994995	547.64	500	47.637	P
2	9	706	0	Portrait	H	8.2263	7.7252	8.273318	7.9992495	548.14	500	48.137	P
2	9	405	4093	Portrait	H	8.2263	7.7262	8.26482	7.9955	538.64	500	38.64	P
2	9	407	4093	Portrait	H	8.2268	7.7272	8.27432	8.000755	547.13	500	47.13	P
2	9	801	0	Portrait	H	8.2263	7.7457	8.28332	8.014503	537.63	500	37.634	P
2	9	802	0	Portrait	H	8.2258	7.7267	8.274319	8.0005005	547.64	500	47.637	P
2	9	803	0	Portrait	H	8.2263	7.7457	8.274818	8.010252	529.13	500	29.132	P
2	9	804	0	Portrait	H	8.2263	7.7267	8.283321	8.0050015	556.64	500	56.639	P
2	9	805	0	Portrait	H	8.2263	7.7457	8.278349	8.0120175	532.66	500	32.663	P
2	9	806	0	Portrait	H	8.2263	7.7457	8.28232	8.014003	536.63	500	36.634	P
2	9	807	0	Portrait	H	8.2263	7.7419	8.278504	8.010187	536.63	500	36.634	P
2	9	808	0	Portrait	H	8.2263	7.7462	8.282821	8.014504	536.63	500	36.634	P
2	9	809	0	Portrait	H	8.2263	7.7457	8.28332	8.014503	537.63	500	37.634	P
2	9	80A	0	Portrait	H	8.2263	7.7457	8.28332	8.014503	537.63	500	37.634	P
2	9	80B	0	Portrait	H	8.2263	7.7457	8.28282	8.014253	537.13	500	37.134	P
2	9	80C	0	Portrait	H	8.2263	7.7462	8.282821	8.014504	536.63	500	36.634	P

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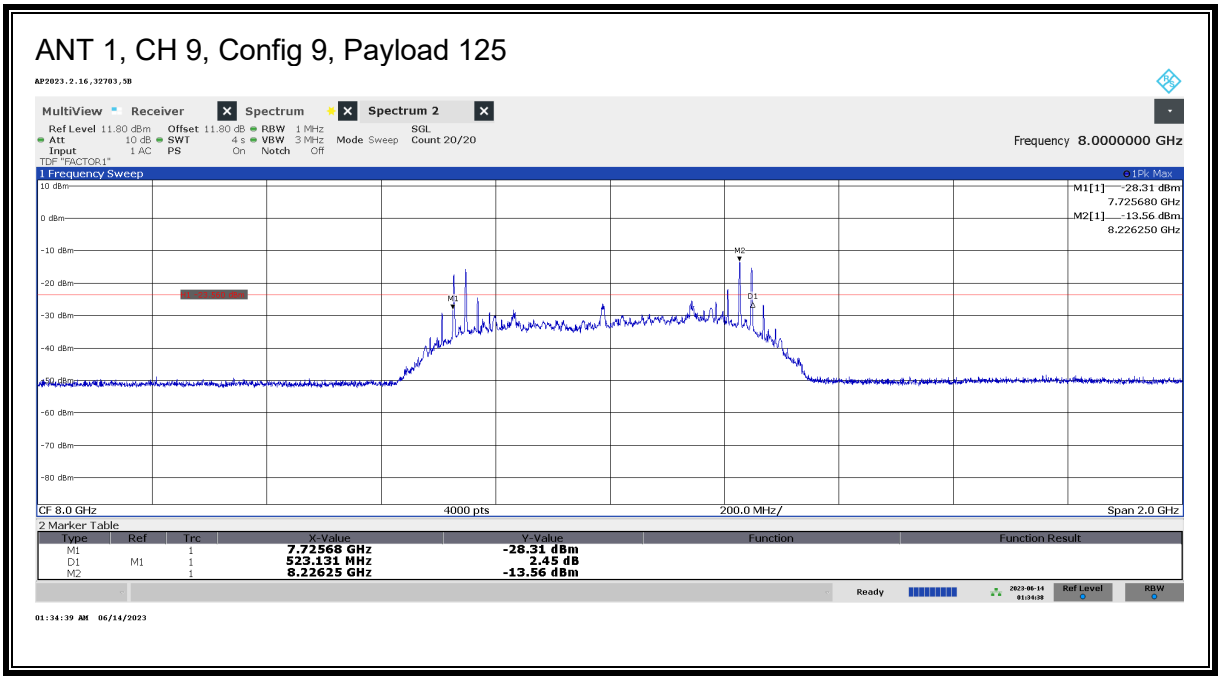
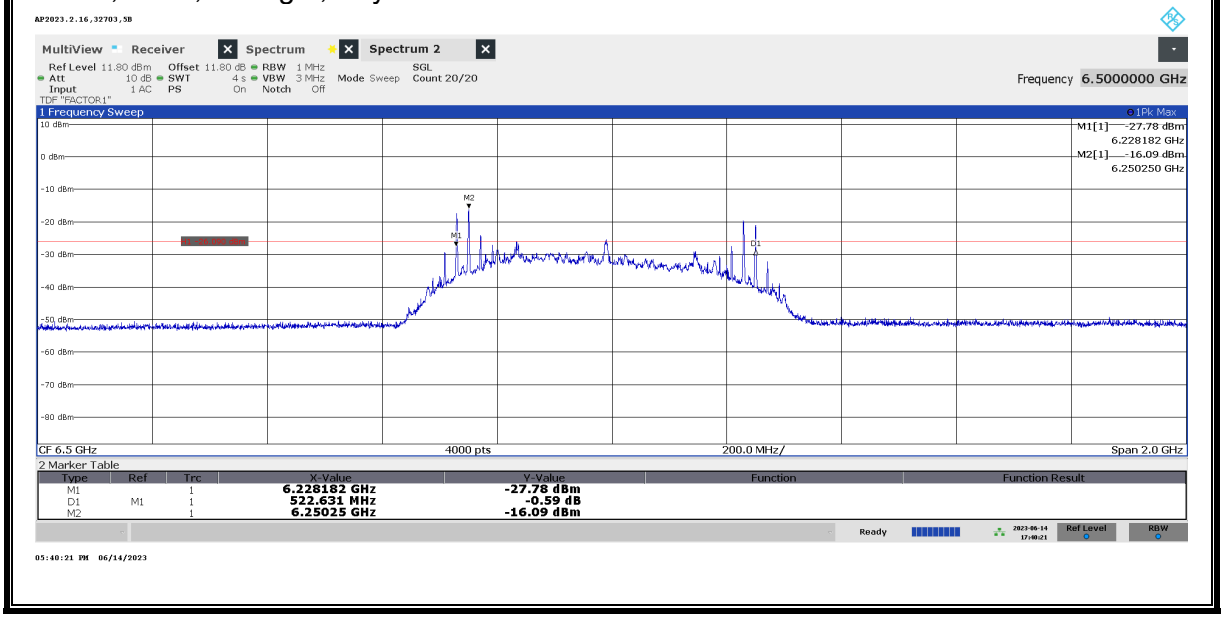
OPERATING BANDWIDTH

Parent Model

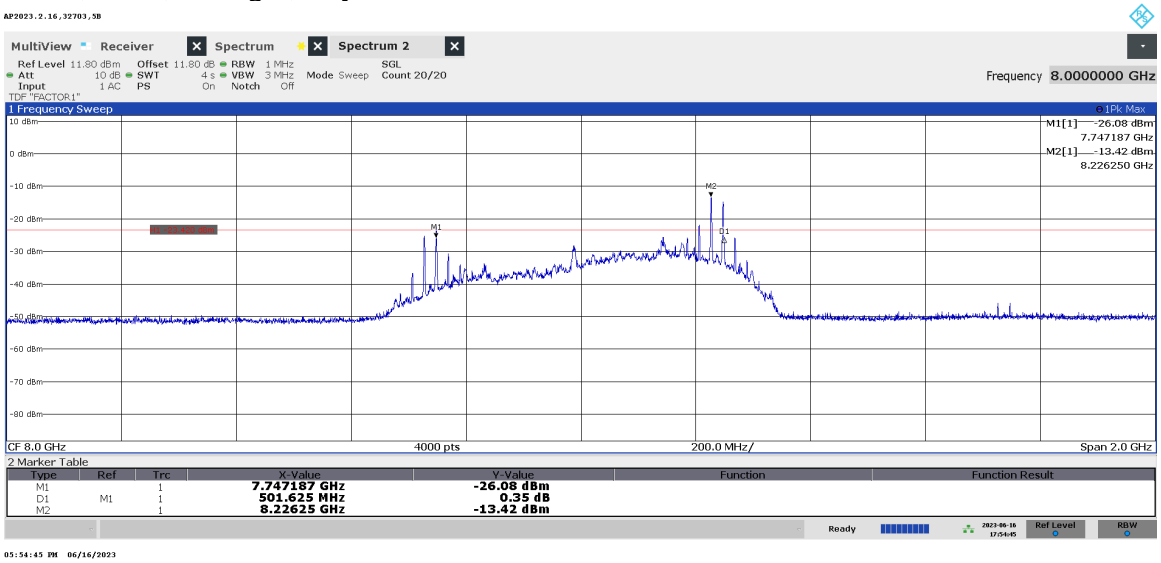
ANT 1, CH 9, Config 9, Payload 125



ANT2, CH 5, Config 9, Payload 125



ANT2, CH 9, Config 9, Payload 125



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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 model. 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 A2881 Ant 1 CH9 test configurations.

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RESULTS

Parent Model

Employee IDs: 32703, 32553, 32305
Location: 05 – RDE - B
Test Date: 6/12/23 – 6/18/23

						Peak EIRP Power				Average EIRP Power			
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
1	9	0	25	Portrait	H	8.2375	-1.84	0	-1.84	8.1535	-42.63	-41.3	-1.33
1	9	1	45	Portrait	H	8.2365	-1.06	0	-1.06	8.1435	-43.00	-41.3	-1.70
1	9	9	125	Portrait	H	8.2365	-8.37	0	-8.37	8.2255	-42.40	-41.3	-1.10
1	9	10	25	Portrait	H	8.2375	-2.53	0	-2.53	8.1535	-42.61	-41.3	-1.31
1	9	11	25	Portrait	H	8.2365	-1.25	0	-1.25	8.1435	-43.90	-41.3	-2.60
1	9	11	65	Portrait	H	8.2365	-1.92	0	-1.92	8.1435	-42.77	-41.3	-1.47
1	9	101	25	Portrait	H	8.2345	-1.33	0	-1.33	8.1435	-43.80	-41.3	-2.50
1	9	101	65	Portrait	H	8.2375	-1.98	0	-1.98	8.1435	-42.63	-41.3	-1.33
1	9	102	25	Portrait	H	8.2165	-1.48	0	-1.48	8.1435	-44.10	-41.3	-2.80
1	9	102	65	Portrait	H	8.2365	-1.80	0	-1.80	8.1435	-42.63	-41.3	-1.33
1	9	103	25	Portrait	H	8.2365	-1.37	0	-1.37	8.1585	-42.45	-41.3	-1.15
1	9	103	125	Portrait	H	8.2365	-4.52	0	-4.52	8.1585	-42.46	-41.3	-1.16
1	9	202	625	Portrait	H	8.2385	-10.19	0	-10.19	8.1415	-42.50	-41.3	-1.20
1	9	402	445	Portrait	H	8.2375	-8.79	0	-8.79	8.1385	-42.31	-41.3	-1.01
1	9	501	0	Portrait	H	8.2365	-1.25	0	-1.25	8.2265	-45.00	-41.3	-3.70
1	9	503	0	Portrait	H	8.2365	-1.25	0	-1.25	8.2265	-45.09	-41.3	-3.79
1	9	601	0	Portrait	H	8.2365	-1.55	0	-1.55	8.1505	-42.76	-41.3	-1.46
1	9	605	0	Portrait	H	8.2375	-1.44	0	-1.44	8.2265	-44.74	-41.3	-3.44
1	9	607	0	Portrait	H	8.2365	-1.45	0	-1.45	8.2265	-44.70	-41.3	-3.40
1	9	701	0	Portrait	H	8.2365	-3.81	0	-3.81	8.1745	-42.48	-41.3	-1.18
1	9	702	0	Portrait	H	8.2365	-4.30	0	-4.30	8.1535	-42.61	-41.3	-1.31
1	9	703	0	Portrait	H	8.2365	-4.25	0	-4.25	8.1555	-42.62	-41.3	-1.32
1	9	704	0	Portrait	H	8.2365	-6.22	0	-6.22	8.1405	-42.62	-41.3	-1.32
1	9	705	0	Portrait	H	8.1115	-2.87	0	-2.87	8.1465	-42.68	-41.3	-1.38
1	9	706	0	Portrait	H	8.1135	-4.70	0	-4.70	8.1505	-42.78	-41.3	-1.48
1	9	405	4093	Portrait	H	8.2365	-12.56	0	-12.56	8.1365	-42.51	-41.3	-1.21
1	9	407	4093	Portrait	H	8.2165	-11.95	0	-11.95	8.1435	-42.47	-41.3	-1.17
1	9	801	0	Portrait	H	8.2365	-1.55	0	-1.55	8.1125	-42.73	-41.3	-1.43
1	9	802	0	Portrait	H	8.2365	-2.03	0	-2.03	8.1445	-42.40	-41.3	-1.10
1	9	803	0	Portrait	H	8.2365	-1.35	0	-1.35	8.1335	-43.42	-41.3	-2.12
1	9	804	0	Portrait	H	8.2365	-4.40	0	-4.40	8.1635	-42.47	-41.3	-1.17
1	9	805	0	Portrait	H	8.2375	-4.57	0	-4.57	8.1435	-42.51	-41.3	-1.21
1	9	806	0	Portrait	H	8.2355	-3.51	0	-3.51	8.1335	-42.44	-41.3	-1.14
1	9	807	0	Portrait	H	8.2365	-1.15	0	-1.15	8.1455	-42.33	-41.3	-1.03
1	9	808	0	Portrait	H	8.2365	-1.07	0	-1.07	8.1415	-42.56	-41.3	-1.26
1	9	809	0	Portrait	H	8.2365	-1.10	0	-1.10	8.1725	-43.30	-41.3	-2.00
1	9	80A	0	Portrait	H	8.2375	-4.36	0	-4.36	8.1535	-42.38	-41.3	-1.08
1	9	80B	0	Portrait	H	8.2385	-3.51	0	-3.51	8.1485	-42.72	-41.3	-1.42
1	9	80C	0	Portrait	H	8.2375	-3.43	0	-3.43	8.1415	-42.60	-41.3	-1.30

						Peak EIRP Power				Average EIRP Power			
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
2	5	0	25	Portrait	H	6.4895	-3.25	0	-3.25	6.3585	-42.74	-41.3	-1.44
2	5	1	45	Portrait	H	6.4905	-2.47	0	-2.47	6.3495	-42.50	-41.3	-1.20
2	5	9	125	Portrait	H	6.4925	-8.24	0	-8.24	6.3555	-42.72	-41.3	-1.42
2	5	10	25	Portrait	H	6.4905	-2.91	0	-2.91	6.3935	-42.42	-41.3	-1.12
2	5	11	25	Portrait	H	6.4925	-1.48	0	-1.48	6.3885	-42.41	-41.3	-1.11
2	5	11	65	Portrait	H	6.4895	-3.20	0	-3.20	6.3965	-42.50	-41.3	-1.20
2	5	101	25	Portrait	H	6.4925	-1.55	0	-1.55	6.3885	-42.66	-41.3	-1.36
2	5	101	65	Portrait	H	6.4865	-2.97	0	-2.97	6.3955	-42.73	-41.3	-1.43
2	5	102	25	Portrait	H	6.4915	-1.79	0	-1.79	6.3885	-42.69	-41.3	-1.39
2	5	102	65	Portrait	H	6.4905	-3.17	0	-3.17	6.3965	-42.50	-41.3	-1.20
2	5	103	25	Portrait	H	6.4895	-3.18	0	-3.18	6.3935	-42.70	-41.3	-1.40
2	5	103	125	Portrait	H	6.4885	-5.51	0	-5.51	6.3955	-42.50	-41.3	-1.20
2	5	202	625	Portrait	H	6.2375	-14.23	0	-14.23	6.3895	-42.70	-41.3	-1.40
2	5	402	445	Portrait	H	6.2445	-12.62	0	-12.62	6.3885	-42.76	-41.3	-1.46
2	5	501	0	Portrait	H	6.2415	-2.54	0	-2.54	6.4065	-42.48	-41.3	-1.18
2	5	503	0	Portrait	H	6.7395	-1.56	0	-1.56	6.5105	-42.55	-41.3	-1.25
2	5	601	0	Portrait	H	6.7385	-4.58	0	-4.58	6.5065	-42.49	-41.3	-1.19
2	5	605	0	Portrait	H	6.2425	-3.28	0	-3.28	6.3955	-42.40	-41.3	-1.10
2	5	607	0	Portrait	H	6.2425	-2.62	0	-2.62	6.5205	-42.69	-41.3	-1.39
2	5	701	0	Portrait	H	6.2415	-7.40	0	-7.40	6.3985	-42.70	-41.3	-1.40
2	5	702	0	Portrait	H	6.4285	-7.08	0	-7.08	6.4065	-42.49	-41.3	-1.19
2	5	703	0	Portrait	H	6.4255	-6.99	0	-6.99	6.4465	-42.44	-41.3	-1.14
2	5	704	0	Portrait	H	6.4275	-8.00	0	-8.00	6.5175	-42.38	-41.3	-1.08
2	5	705	0	Portrait	H	6.4885	-3.65	0	-3.65	6.4065	-42.68	-41.3	-1.38
2	5	706	0	Portrait	H	6.4315	-4.72	0	-4.72	6.3995	-42.43	-41.3	-1.13
2	5	405	4093	Portrait	H	6.4895	-15.25	0	-15.25	6.5105	-42.43	-41.3	-1.13
2	5	407	4093	Portrait	H	6.4895	-14.58	0	-14.58	6.4035	-42.43	-41.3	-1.13
2	5	801	0	Portrait	H	6.2465	-6.24	0	-6.24	6.4475	-42.71	-41.3	-1.41
2	5	802	0	Portrait	H	6.2445	-6.31	0	-6.31	6.3865	-42.66	-41.3	-1.36
2	5	803	0	Portrait	H	6.2435	-5.08	0	-5.08	6.3865	-42.60	-41.3	-1.30
2	5	804	0	Portrait	H	6.2405	-9.04	0	-9.04	6.4065	-42.63	-41.3	-1.33
2	5	805	0	Portrait	H	6.2425	-8.87	0	-8.87	6.3865	-42.33	-41.3	-1.03
2	5	806	0	Portrait	H	6.2385	-8.01	0	-8.01	6.3865	-42.54	-41.3	-1.24
2	5	807	0	Portrait	H	6.2425	-5.90	0	-5.90	6.4065	-42.74	-41.3	-1.44
2	5	808	0	Portrait	H	6.2405	-5.35	0	-5.35	6.3935	-42.47	-41.3	-1.17
2	5	809	0	Portrait	H	6.2415	-5.33	0	-5.33	6.3945	-42.67	-41.3	-1.37
2	5	80A	0	Portrait	H	6.2445	-8.83	0	-8.83	6.3955	-42.48	-41.3	-1.18
2	5	80B	0	Portrait	H	6.2425	-7.62	0	-7.62	6.4025	-42.57	-41.3	-1.27
2	5	80C	0	Portrait	H	6.2445	-7.85	0	-7.85	6.3925	-42.73	-41.3	-1.43

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						Peak EIRP Power				Average EIRP Power			
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
2	9	0	25	Portrait	H	8.2365	-1.44	0	-1.44	8.1705	-42.68	-41.3	-1.38
2	9	1	45	Portrait	H	8.2385	-1.31	0	-1.31	8.1435	-43.20	-41.3	-1.90
2	9	9	125	Portrait	H	8.2375	-7.95	1	-8.95	8.1725	-42.46	-40.3	-2.16
2	9	10	25	Portrait	H	8.2375	-1.79	0	-1.79	8.1585	-42.71	-41.3	-1.41
2	9	11	25	Portrait	H	8.2375	-1.35	0	-1.35	8.1275	-44.01	-41.3	-2.71
2	9	11	65	Portrait	H	8.2375	-1.82	0	-1.82	8.1435	-42.68	-41.3	-1.38
2	9	101	25	Portrait	H	8.2385	-1.39	0	-1.39	8.1435	-44.18	-41.3	-2.88
2	9	101	65	Portrait	H	8.2375	-1.63	0	-1.63	8.1435	-42.56	-41.3	-1.26
2	9	102	25	Portrait	H	8.2375	-1.39	0	-1.39	8.1435	-44.04	-41.3	-2.74
2	9	102	65	Portrait	H	8.2365	-1.92	0	-1.92	8.1435	-42.78	-41.3	-1.48
2	9	103	25	Portrait	H	8.2375	-1.62	0	-1.62	8.1585	-42.50	-41.3	-1.20
2	9	103	125	Portrait	H	8.2375	-4.18	0	-4.18	8.1585	-42.47	-41.3	-1.17
2	9	202	625	Portrait	H	8.2385	-10.42	0	-10.42	8.1695	-42.59	-41.3	-1.29
2	9	402	445	Portrait	H	8.2375	-8.99	0	-8.99	8.1545	-42.51	-41.3	-1.21
2	9	501	0	Portrait	H	8.2385	-1.40	0	-1.40	8.1535	-45.28	-41.3	-3.98
2	9	503	0	Portrait	H	8.2375	-1.39	0	-1.39	8.2265	-45.32	-41.3	-4.02
2	9	601	0	Portrait	H	8.2365	-1.40	0	-1.40	8.1295	-42.88	-41.3	-1.58
2	9	605	0	Portrait	H	8.2355	-1.03	0	-1.03	8.2265	-44.29	-41.3	-2.99
2	9	607	0	Portrait	H	8.2365	-1.43	0	-1.43	8.2265	-44.75	-41.3	-3.45
2	9	701	0	Portrait	H	8.3275	-3.42	0	-3.42	8.1365	-42.36	-41.3	-1.06
2	9	702	0	Portrait	H	8.2355	-3.86	0	-3.86	8.1385	-42.63	-41.3	-1.33
2	9	703	0	Portrait	H	8.2375	-3.55	0	-3.55	8.1375	-42.43	-41.3	-1.13
2	9	704	0	Portrait	H	8.2365	-5.66	0	-5.66	8.1345	-42.67	-41.3	-1.37
2	9	705	0	Portrait	H	8.1125	-2.51	0	-2.51	8.1365	-42.32	-41.3	-1.02
2	9	706	0	Portrait	H	8.1225	-4.24	0	-4.24	8.1385	-42.59	-41.3	-1.29
2	9	405	4093	Portrait	H	8.2375	-12.44	0	-12.44	8.1385	-42.66	-41.3	-1.36
2	9	407	4093	Portrait	H	8.2375	-11.99	0	-11.99	8.1405	-42.79	-41.3	-1.49
2	9	801	0	Portrait	H	8.2365	-1.66	0	-1.66	8.1535	-42.57	-41.3	-1.27
2	9	802	0	Portrait	H	8.2375	-1.20	0	-1.20	8.1435	-42.31	-41.3	-1.01
2	9	803	0	Portrait	H	8.2365	-1.25	0	-1.25	8.1435	-43.20	-41.3	-1.90
2	9	804	0	Portrait	H	8.2355	-4.35	0	-4.35	8.1535	-42.40	-41.3	-1.10
2	9	805	0	Portrait	H	8.2355	-4.39	0	-4.39	8.1435	-42.44	-41.3	-1.14
2	9	806	0	Portrait	H	8.2365	-3.54	0	-3.54	8.1435	-42.44	-41.3	-1.14
2	9	807	0	Portrait	H	8.2375	-1.37	0	-1.37	8.1635	-42.61	-41.3	-1.31
2	9	808	0	Portrait	H	8.2365	-1.08	0	-1.08	8.1605	-43.13	-41.3	-1.83
2	9	809	0	Portrait	H	8.2385	-1.19	0	-1.19	8.1415	-42.53	-41.3	-1.23
2	9	80A	0	Portrait	H	8.2375	-4.55	0	-4.55	8.1535	-42.57	-41.3	-1.27
2	9	80B	0	Portrait	H	8.2365	-3.05	0	-3.05	8.1585	-42.35	-41.3	-1.05
2	9	80C	0	Portrait	H	8.2375	-3.54	0	-3.54	8.1485	-42.50	-41.3	-1.20

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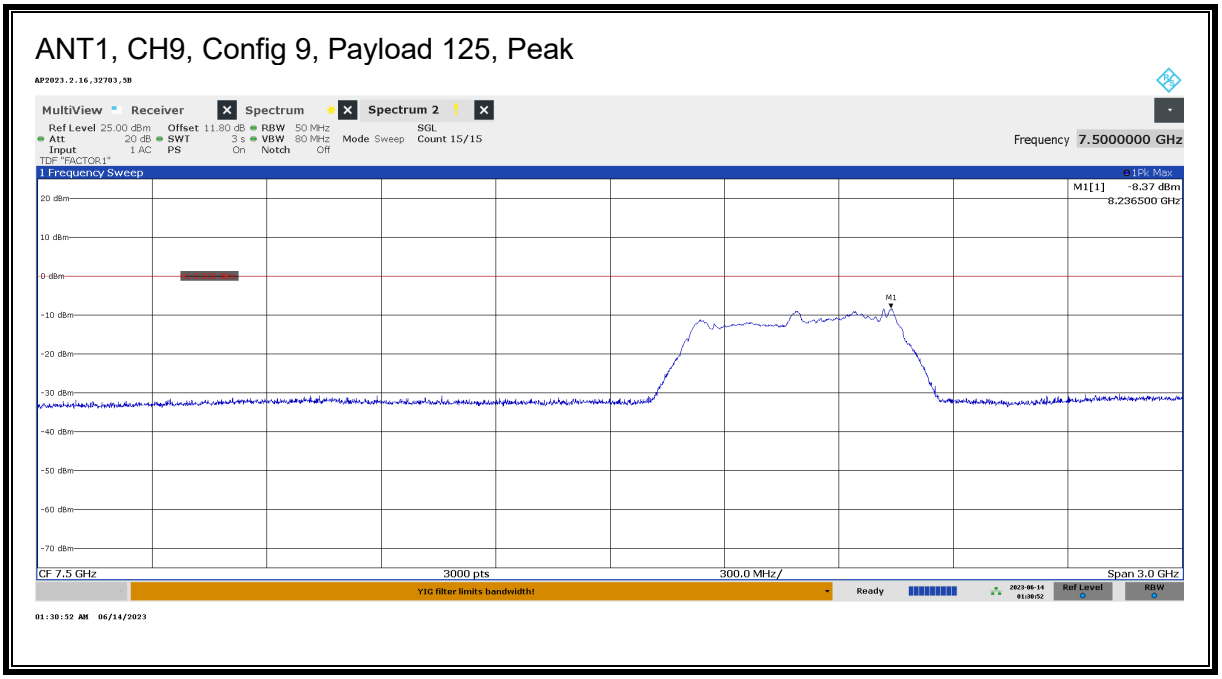
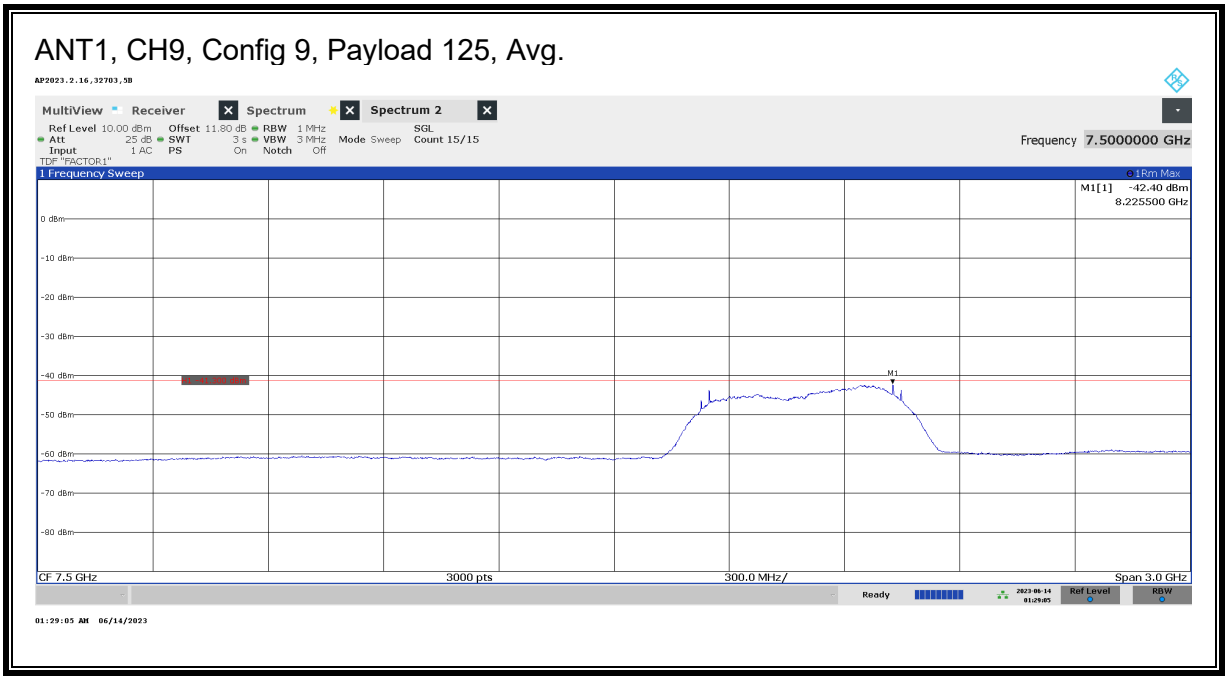
PEAK POWER AND MAXIMUM AVERAGE EMISSIONS

Parent Model

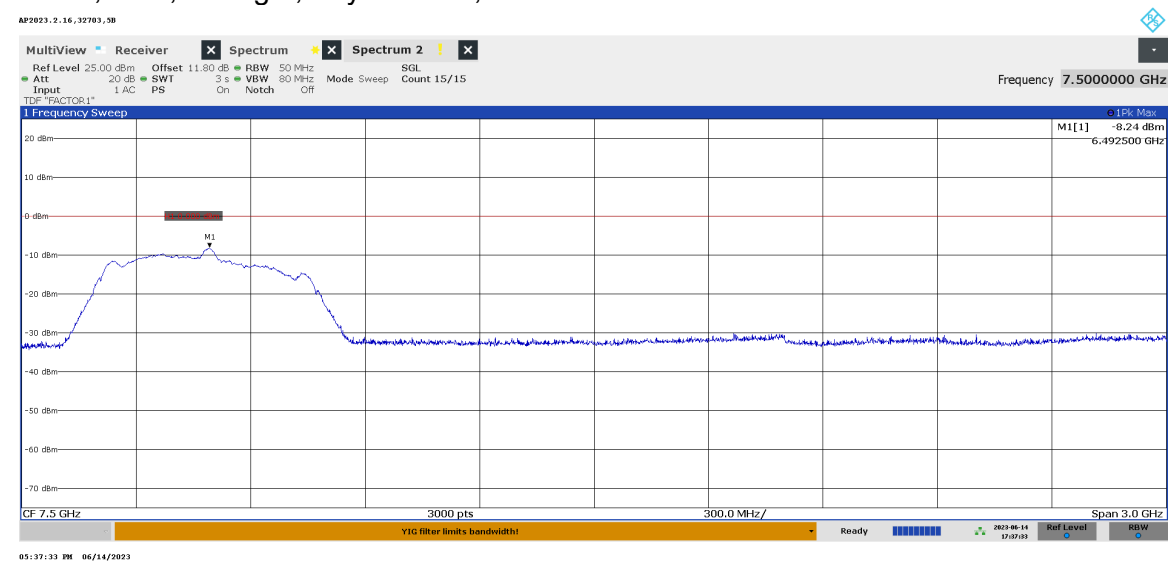
ANT1, CH9, Config 9, Payload 125, Peak



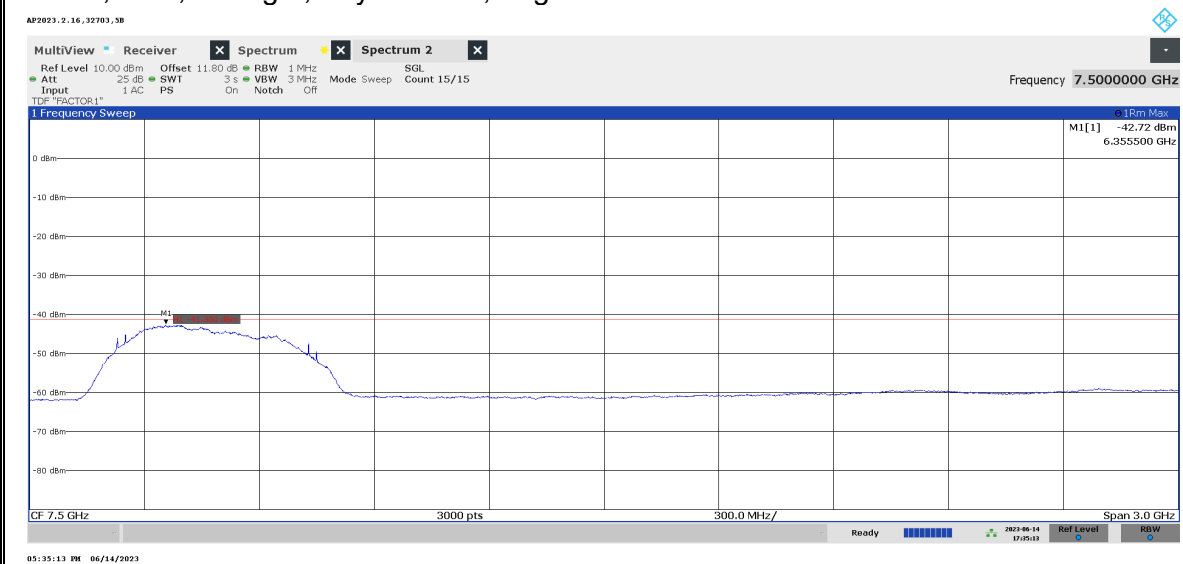
ANT1, CH9, Config 9, Payload 125, Avg.



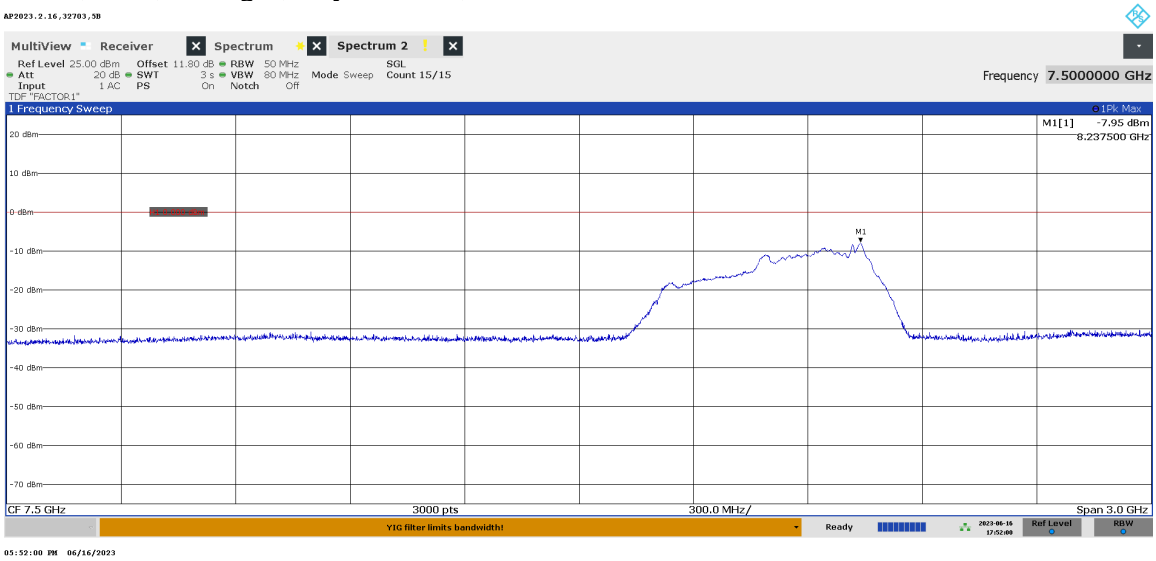
ANT2, CH5, Config 9, Payload 125, Peak



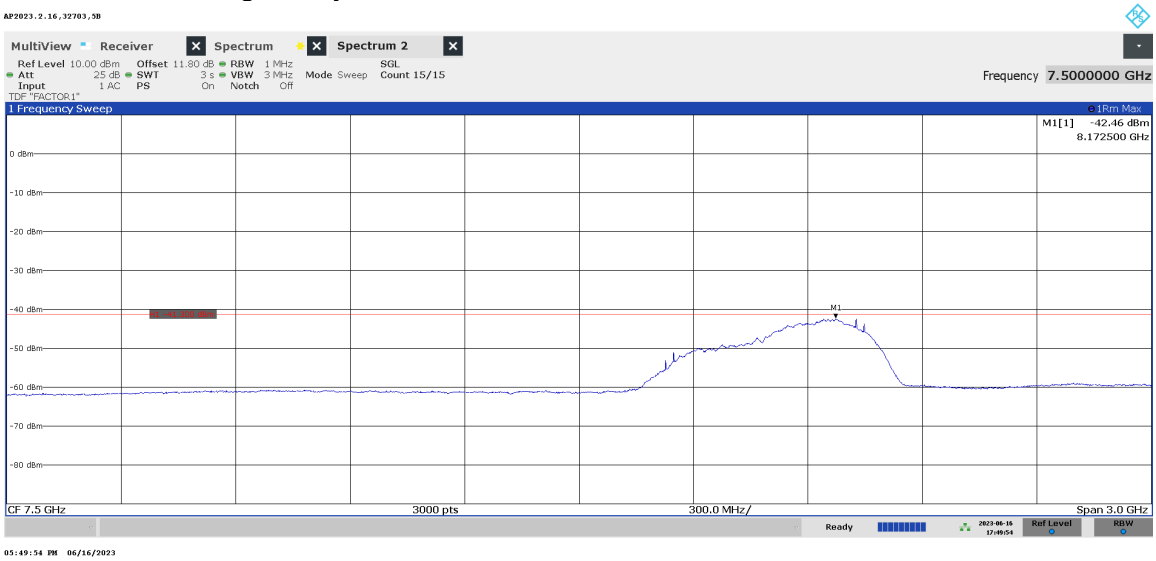
ANT2, CH5, Config 9, Payload 125, Avg.



ANT2, CH9, Config 9, Payload 125, Peak



ANT2, CH9, Config 9, Payload 125, Peak



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.

RSS-220

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 A models are shown below.

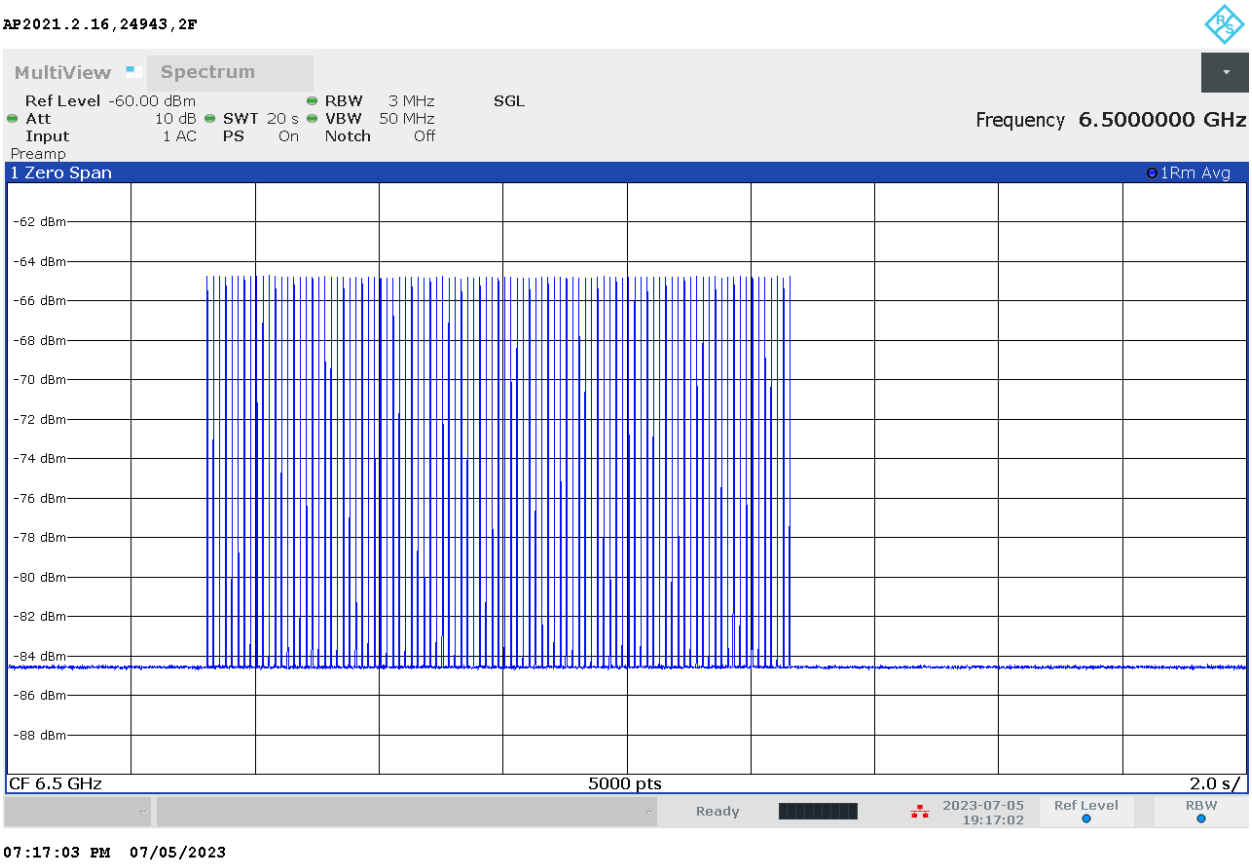
Parent Model
Employee ID: 24943
Location: Chamber F
Test Date: 07/05/23

Signal Levels on all Plots

- Initiator is Low Amplitude
- Responder is High Amplitude

Case 1: Initiator ends the UWB link

Parent Model

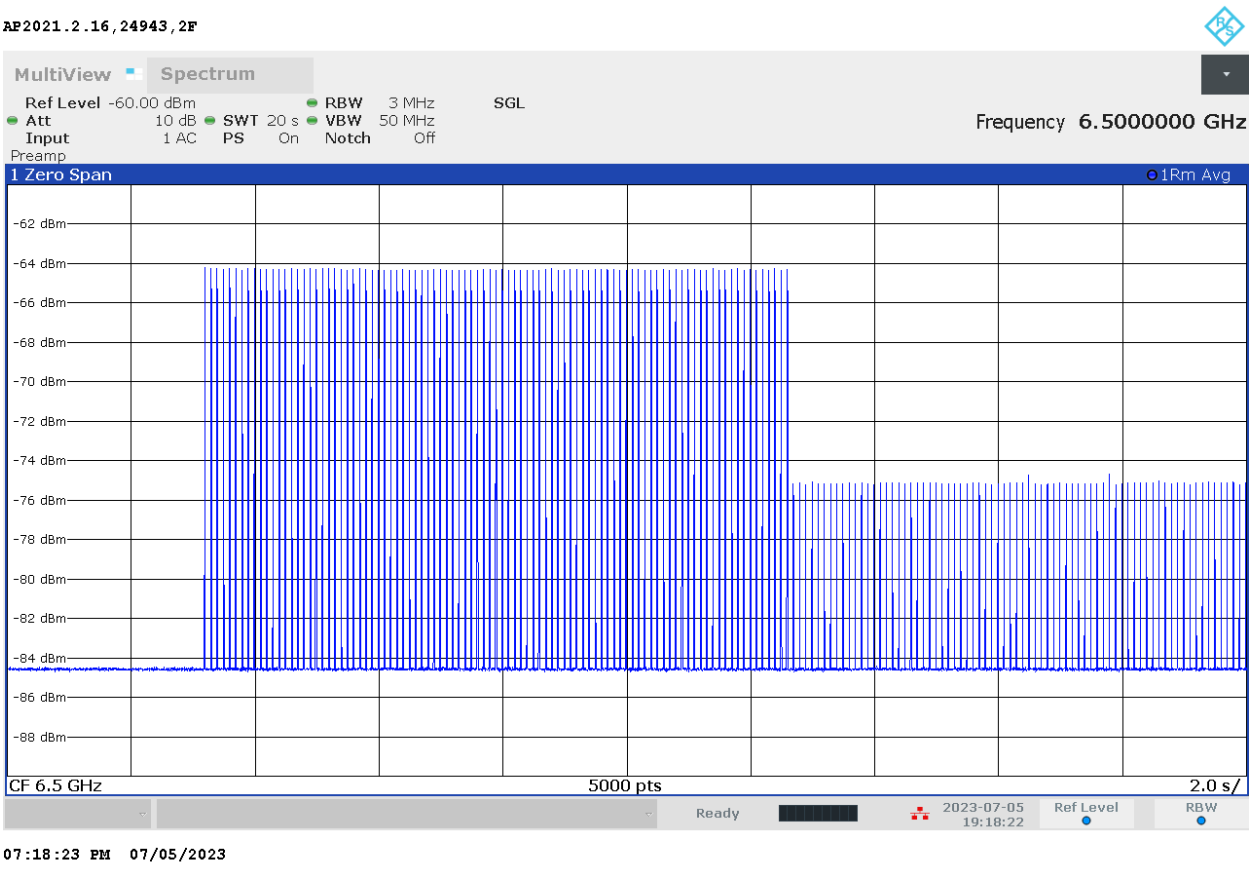


RESULT

- All devices, including the Responder, cease transmissions

Case 2: Responder ends the UWB link

Parent Model



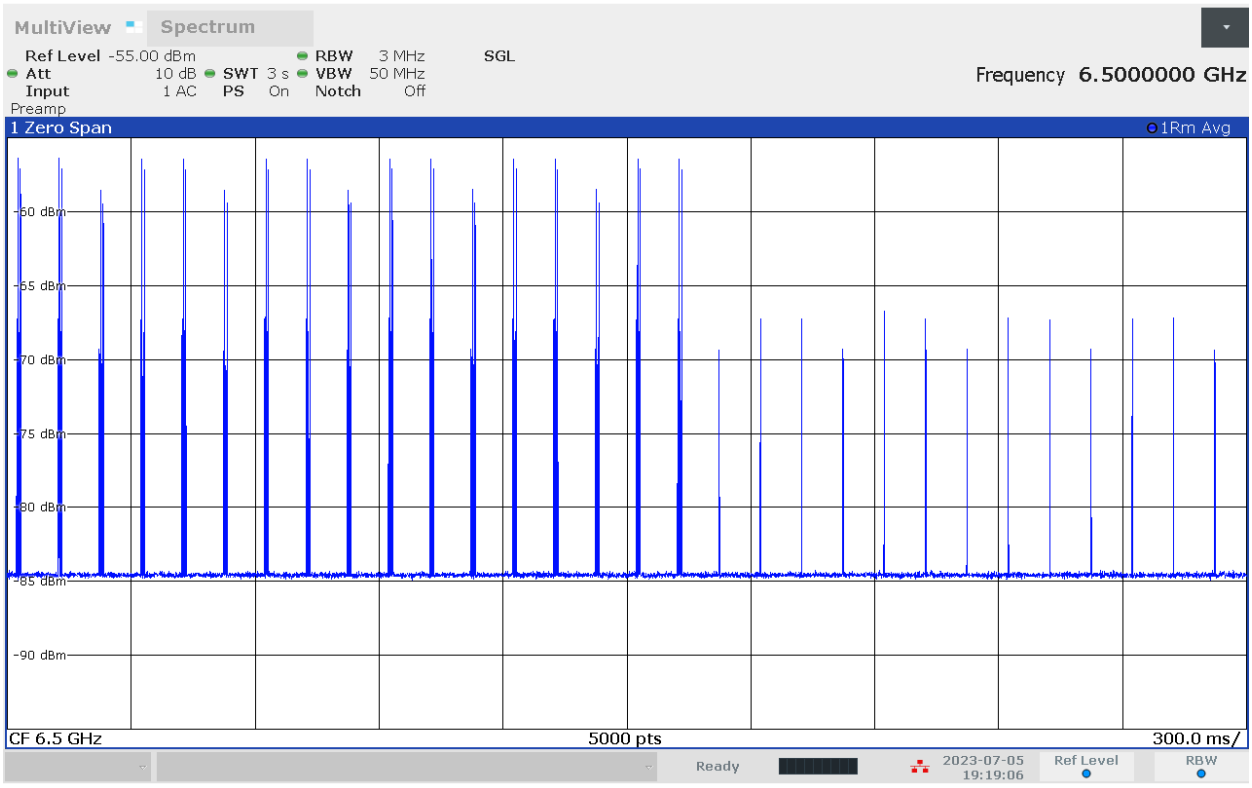
RESULT

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

Zoom-in Plot during On-Off Transition

Parent Model

AP2021.2.16,24943,2F



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RESULT

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

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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

RSS-220

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 A3101 models are shown below.

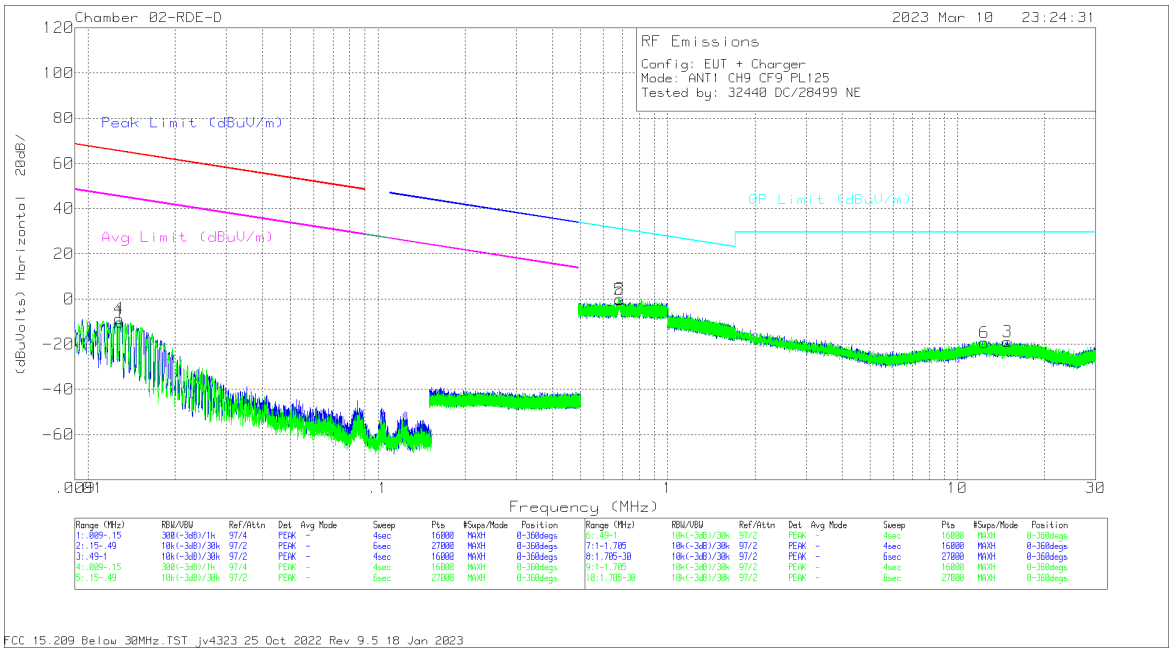
Emissions Summary

Parent Model
Employee IDs: 32440, 28499,
Location: 02-RDE- D
Test Date: 3/10/23

					Frequency Range	
Ant	CH	Config	Payload	Power Setting	9 kHz - 30 MHz	30 - 960 MHz
1	9	9	125	Max	PASS	PASS
2	5	9	125	Max	PASS	PASS
2	9	9	125	Max	PASS	PASS

9.5.1. EMISSIONS, 9 kHz – 30 MHz

ANT. 1, CH9, CONFIG 9



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
4	.0122	43.68	Pk	60.1	-30.9	-80	-7.12	65.86	-72.98	45.86	-52.98	0-360	Off
1	.0126	41.83	Pk	60.1	-31	-80	-9.07	65.56	-74.63	45.56	-54.63	0-360	On

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
2	.6793	15.65	Pk	56.4	-32.4	-40	-.35	30.97	-31.32	0-360	On
5	.6851	14.53	Pk	56.4	-32.4	-40	-1.47	30.9	-32.37	0-360	Off
3	12.6954	18.8	Pk	34.4	-31.9	-40	-18.7	29.5	-48.2	0-360	On
6	13.561	20.62	Pk	34.2	-31.9	-40	-17.08	29.5	-46.58	0-360	Off

Pk - Peak detector

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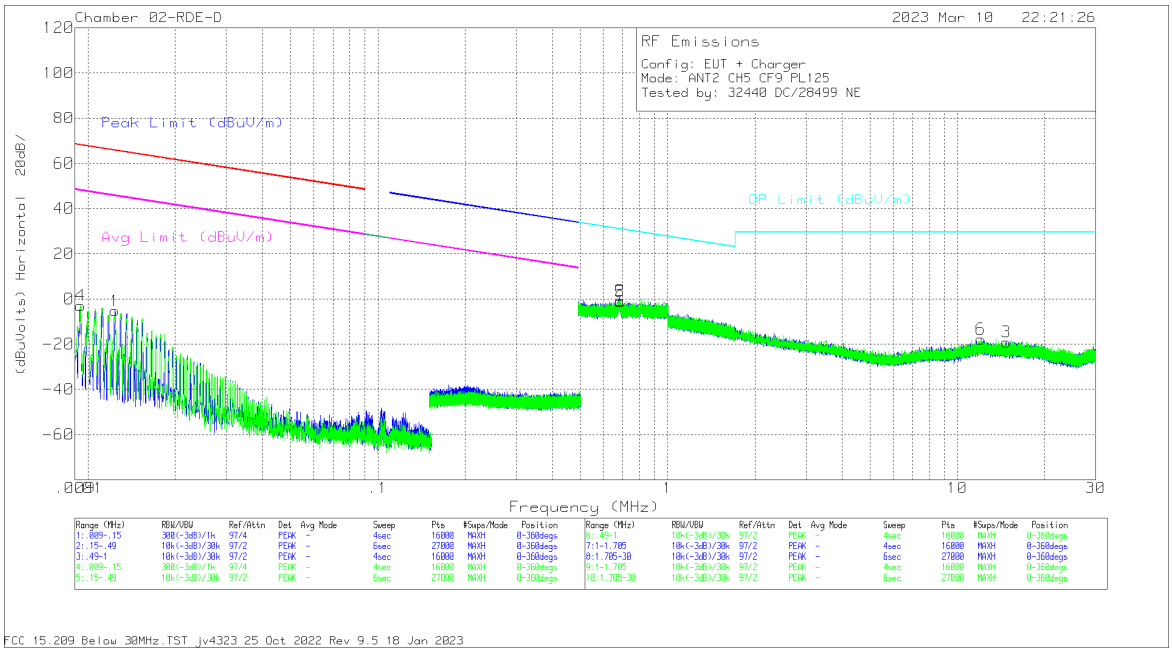
ANT. 2, CH5, Config 9



Trace Markers

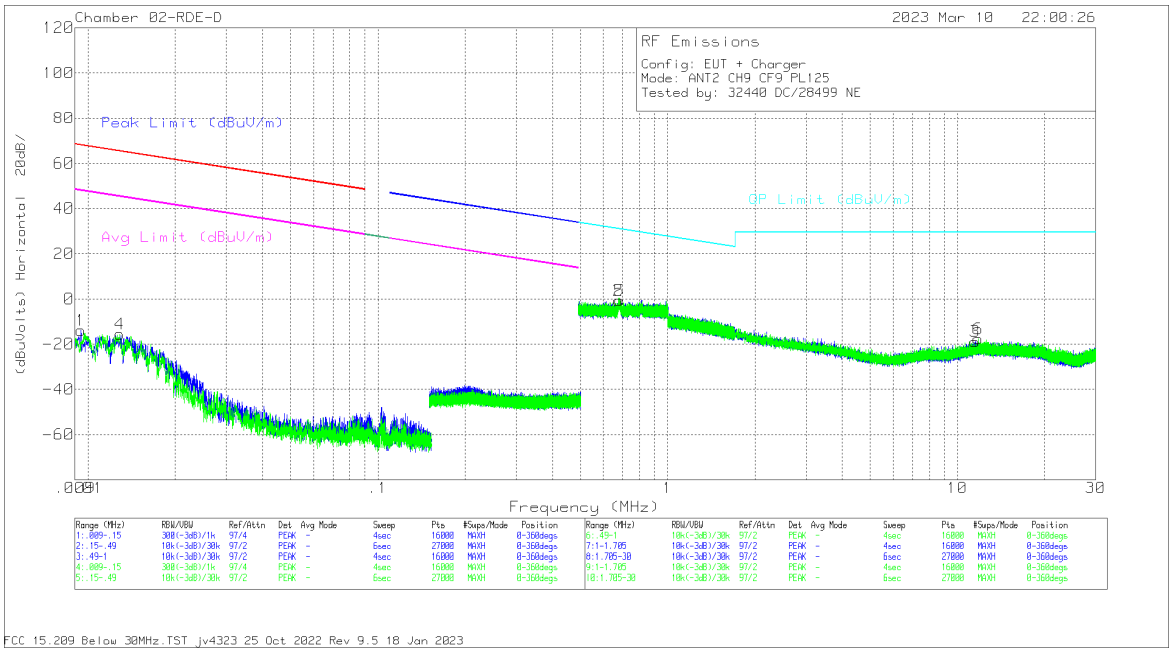
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
4	.0094	46.59	Pk	61	-30.5	-80	-2.91	68.11	-71.02	48.11	-51.02	0-360	Off
1	.0124	45.58	Pk	60.1	-30.9	-80	-5.22	65.73	-70.95	45.73	-50.95	0-360	On

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
5	.6847	14.81	Pk	56.4	-32.4	-40	-1.19	30.9	-32.09	0-360	Off
2	.6857	15.27	Pk	56.4	-32.4	-40	-.73	30.89	-31.62	0-360	On
6	12.0247	19.56	Pk	34.6	-31.9	-40	-17.74	29.5	-47.24	0-360	Off
3	14.7222	18.75	Pk	34.1	-31.9	-40	-19.05	29.5	-48.55	0-360	On

Pk - Peak detector

ANT. 2, CH9, Config 9



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
1	.0094	35.59	Pk	61	-30.5	-80	-13.91	68.09	-82	48.09	-62	0-360	On
4	.0129	35.46	Pk	60	-31	-80	-15.54	65.41	-80.95	45.41	-60.95	0-360	Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
2	.6758	15.36	Pk	56.4	-32.4	-40	-.64	31.02	-31.66	0-360	On
5	.6825	15.38	Pk	56.4	-32.4	-40	-.62	30.93	-31.55	0-360	Off
3	11.4965	18.42	Pk	34.7	-31.9	-40	-18.78	29.5	-48.28	0-360	On
6	11.7805	19.73	Pk	34.6	-31.9	-40	-17.57	29.5	-47.07	0-360	Off

Pk - Peak detector

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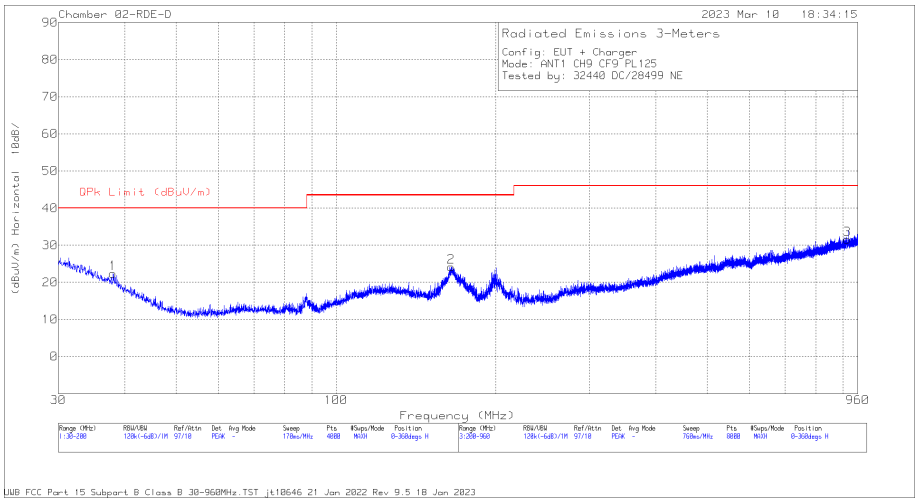
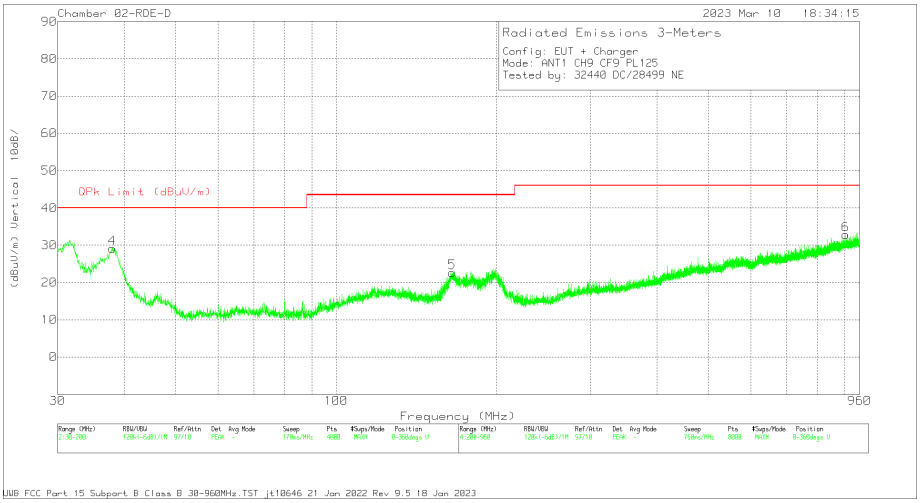
9.5.2. EMISSIONS, 30 - 960 MHz

ANT. 1, CH9, CONFIG 9



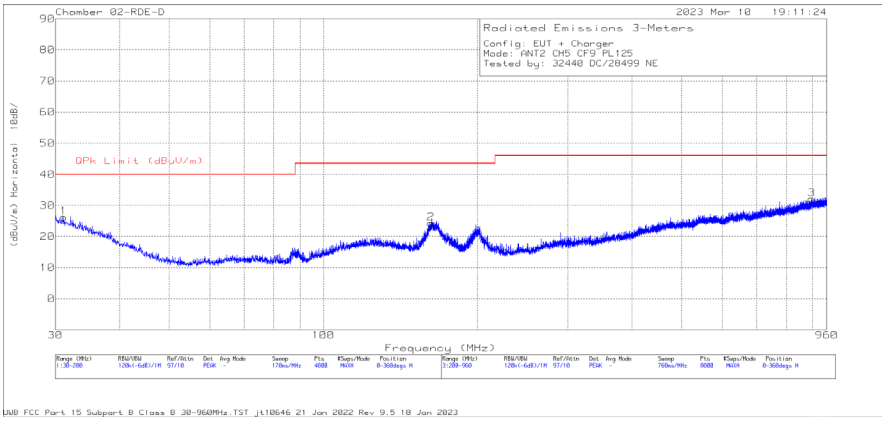


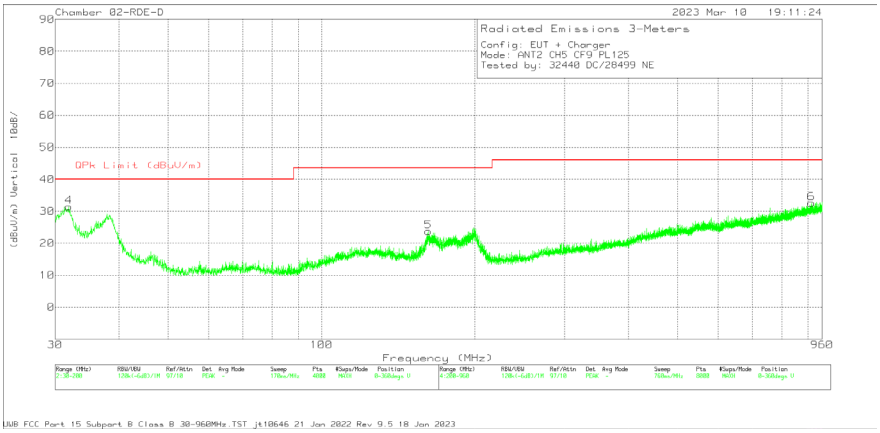
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	37.9921	38.45	Pk	21.1	-30.4	29.15	40	-10.85	0-360	100	V
1	38.0346	31.72	Pk	21.1	-30.4	22.42	40	-17.58	0-360	100	H
2	164.717	36.14	Pk	18	-30	24.14	43.52	-19.38	0-360	199	H
5	164.972	34.68	Pk	18	-30	22.68	43.52	-20.84	0-360	100	V
6	903.659	30.09	Pk	28.9	-26.1	32.89	46.02	-13.13	0-360	199	V
3	917.246	28.56	Pk	29	-26	31.56	46.02	-14.46	0-360	99	H

Pk - Peak detector

ANT. 2, CH5, CONFIG 9



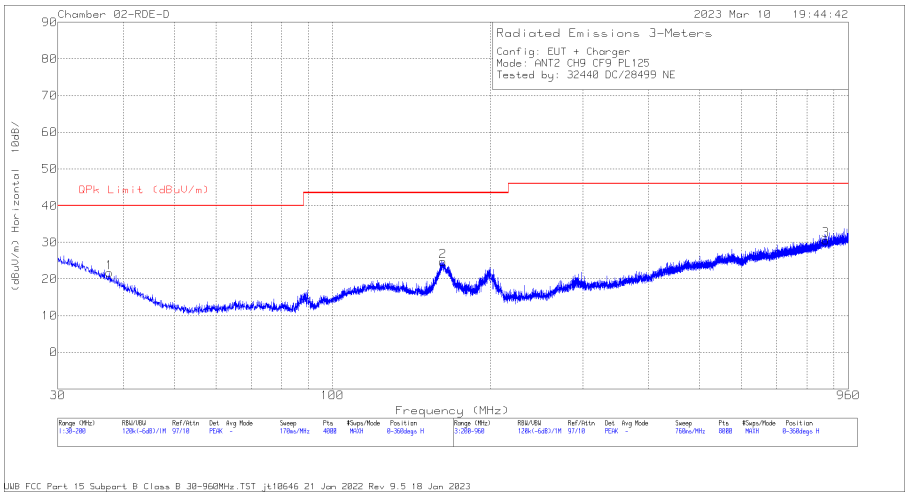


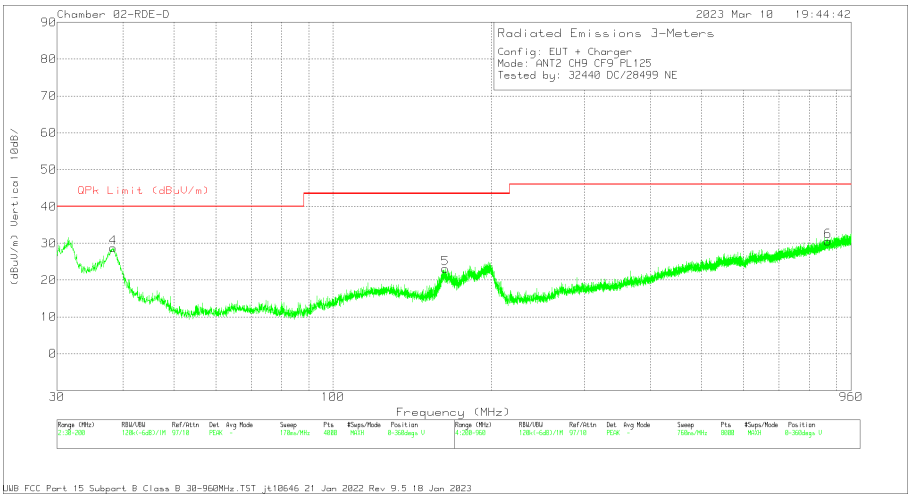
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.1478	30.44	Pk	26.2	-30.4	26.24	40	-13.76	0-360	101	H
4	31.913	36.22	Pk	25.6	-30.4	31.42	40	-8.58	0-360	100	V
5	161.869	35.64	Pk	18.1	-30	23.74	43.52	-19.78	0-360	100	V
2	162.167	36.22	Pk	18.1	-30	24.32	43.52	-19.2	0-360	199	H
3	897.293	29.59	Pk	28.7	-26.2	32.09	46.02	-13.93	0-360	399	H
6	914.585	29.73	Pk	29	-26.1	32.63	46.02	-13.39	0-360	199	V

Pk - Peak detector

ANT. 2, CH9, CONFIG 9





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	37.652	30.72	Pk	21.4	-30.4	21.72	40	-18.28	0-360	299	H
4	38.3322	38.29	Pk	20.9	-30.4	28.79	40	-11.21	0-360	100	V
2	162.464	36.63	Pk	18.1	-30	24.73	43.52	-18.79	0-360	199	H
5	163.229	35.15	Pk	18	-30	23.15	43.52	-20.37	0-360	100	V
6	867.934	28.76	Pk	28.3	-26.5	30.56	46.02	-15.46	0-360	99	V
3	869.17	28.71	Pk	28.4	-26.5	30.61	46.02	-15.41	0-360	101	H

Pk - 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 = 500 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 = 500 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 A2881 models are shown below.

Average Emissions Summary

Parent Model
Employee IDs: 26051, 31300, 19172, 19186, 24943, 33302, 32440
Location: 05-RDE-A, 05-RDE-E, 02-RDE-F
Test Date: 3/21/23 – 4/20/23, 6/16/23

					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	9	125	Max	PASS	PASS	PASS	PASS	PASS
2	5	9	125	Max	PASS	PASS	PASS	PASS	PASS
2	9	9	125	Max	PASS	PASS	PASS	PASS	PASS

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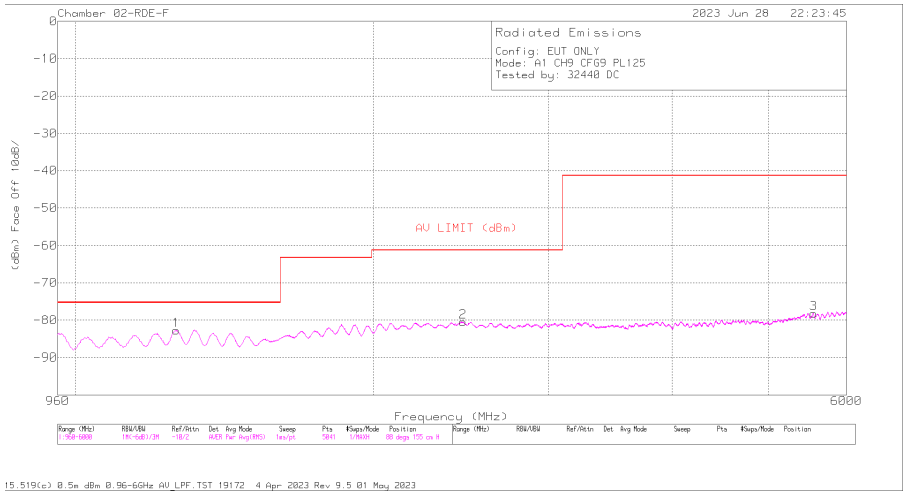
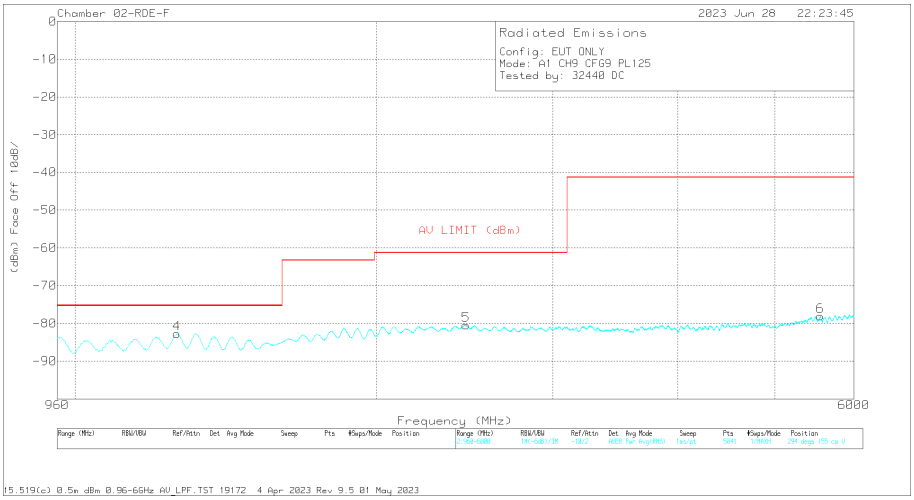
9.6.1. AVERAGE EMISSIONS, 0.96 – 6 GHz

FCC15.519 (C)

Parent

ANT. 1, CH9, CONFIG 9



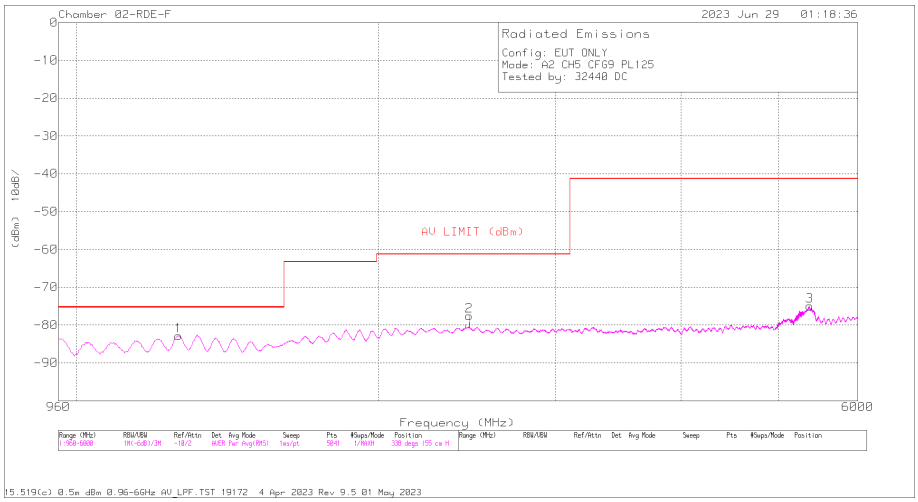


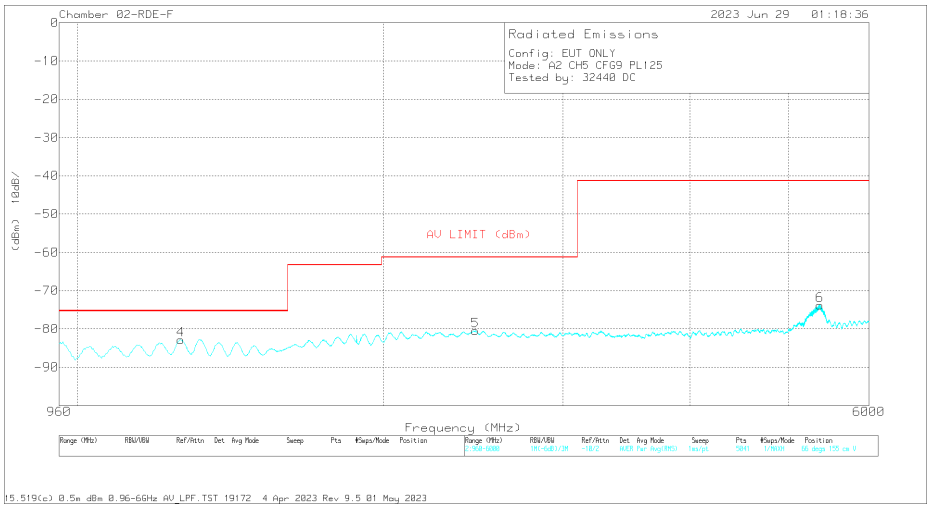
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1264	-61.25	RMS	28.8	-46.7	-15.6	11.8	-82.75	-75.3	-7.45	66	155	H
2	2461	-62.78	RMS	32.4	-46.6	-15.6	11.8	-80.48	-61.3	-19.18	286	155	H
3	5557	-65.49	RMS	34.4	-45.3	-15.6	11.8	-78.19	-41.3	-36.89	176	155	H
4	1264	-61.25	RMS	28.8	-46.7	-15.6	11.8	-82.75	-75.3	-7.45	294	155	V
5	2458	-62.8	RMS	32.4	-46.6	-15.6	11.8	-80.5	-61.3	-19.2	228	155	V
6	5556	-65.48	RMS	34.4	-45.2	-15.6	11.8	-78.08	-41.3	-36.78	294	155	V

RMS - RMS detection

ANT. 2, CH5, CONFIG 9





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1264	-61.31	RMS	28.8	-15.6	11.8	-82.81	-75.3	-7.51	52	155	H
2	2463	-59.93	RMS	32.4	-15.6	11.8	-77.63	-61.3	-16.33	140	155	H
3	5373	-61.4	RMS	34.5	-15.6	11.8	-75	-41.3	-33.7	52	155	H
4	1264	-61.3	RMS	28.8	-15.6	11.8	-82.8	-75.3	-7.5	88	155	V
5	2461	-62.76	RMS	32.4	-15.6	11.8	-80.46	-61.3	-19.16	110	155	V
6	5367	-59.96	RMS	34.5	-15.6	11.8	-73.76	-41.3	-32.46	66	155	V

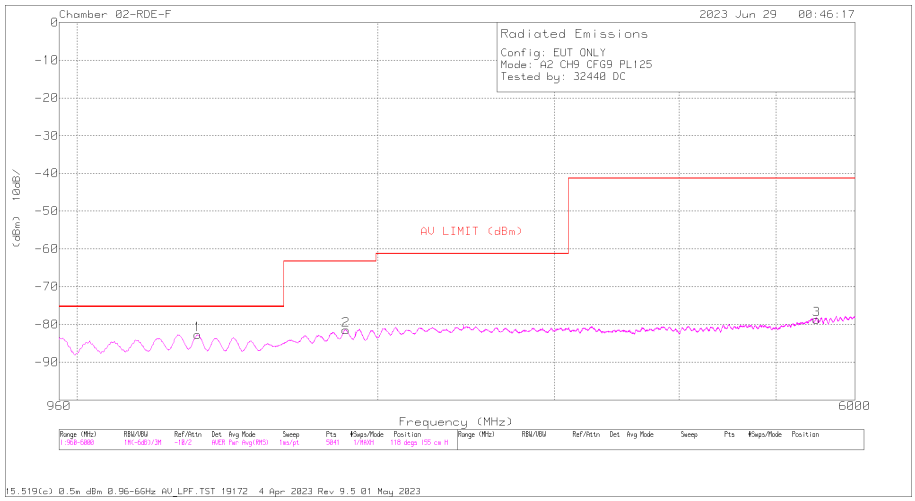
RMS - RMS detection

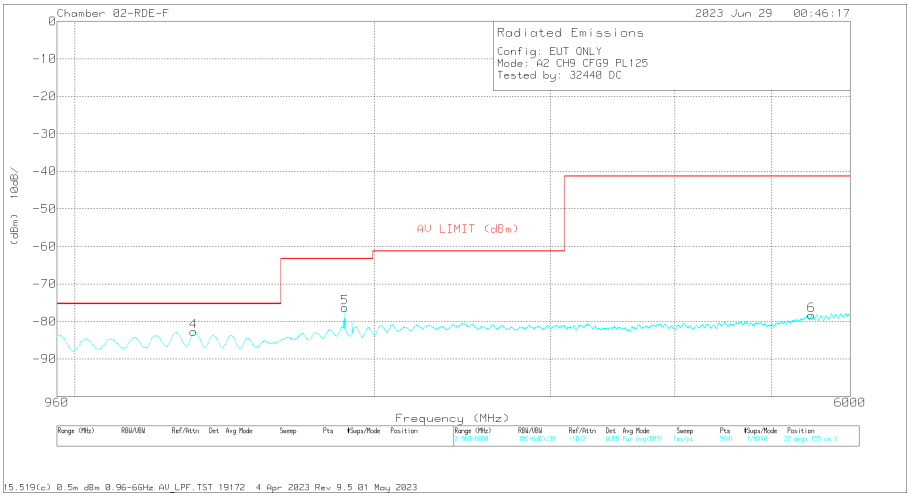
Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2445.2	-61.99	RMS	32.3	-15.6	11.8	-79.99	-61.3	-18.69	235	155	H
3	5367	-59.88	RMS	34.5	-15.6	11.8	-73.68	-41.3	-32.38	52	155	H
6	5368	-59.98	RMS	34.5	-15.6	11.8	-73.78	-41.3	-32.48	71	155	V

RMS - RMS detection

ANT. 2, CH9, CONFIG 9





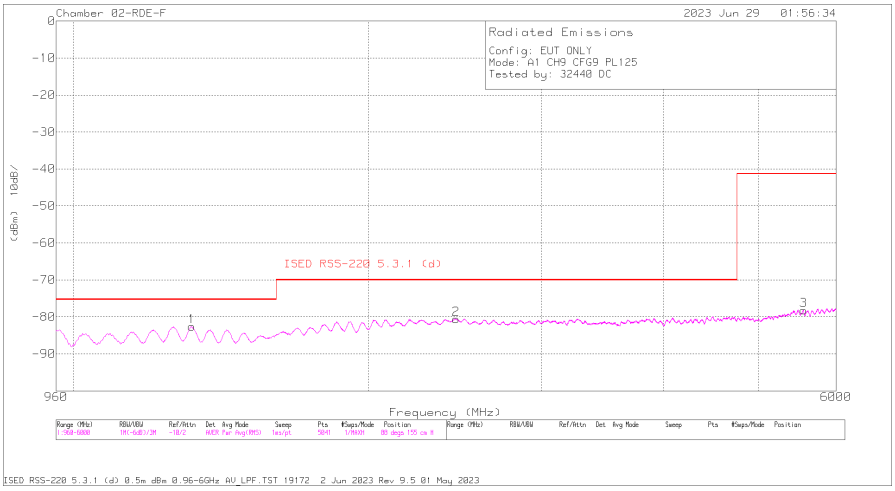
Trace Markers

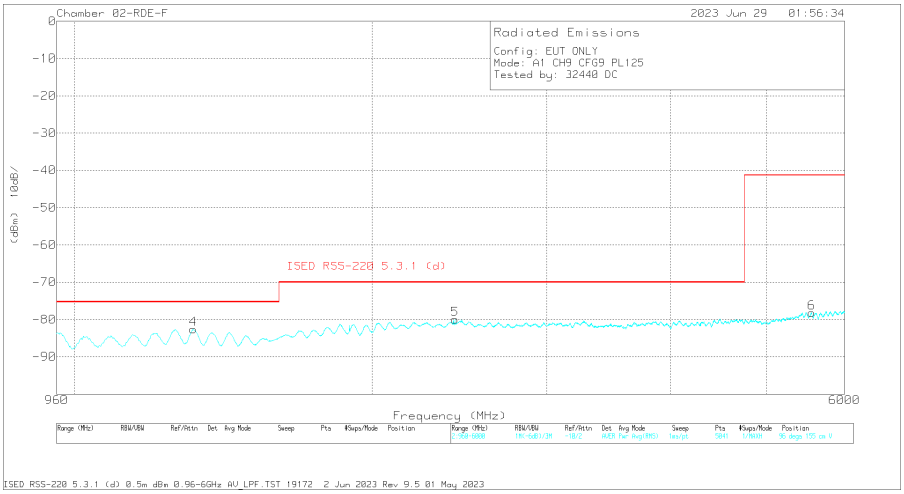
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1320	-61.27	RMS	28.9	-15.6	11.8	-82.67	-75.3	-7.37	52	155	H
2	1858	-61.82	RMS	30.5	-15.6	11.8	-81.52	-63.3	-18.22	30	155	H
3	5494	-65.97	RMS	34.4	-15.6	11.8	-78.67	-41.3	-37.37	316	155	H
4	1317	-61.44	RMS	28.9	-15.6	11.8	-82.74	-75.3	-7.44	176	155	V
5	1867	-56.55	RMS	30.5	-15.6	11.8	-76.35	-63.3	-13.05	22	155	V
6	5488	-65.23	RMS	34.4	-15.6	11.8	-78.33	-41.3	-37.03	110	155	V

RMS - RMS detection

RSS-220 5.3.1 (d)

ANT. 1, CH9, CONFIG 9



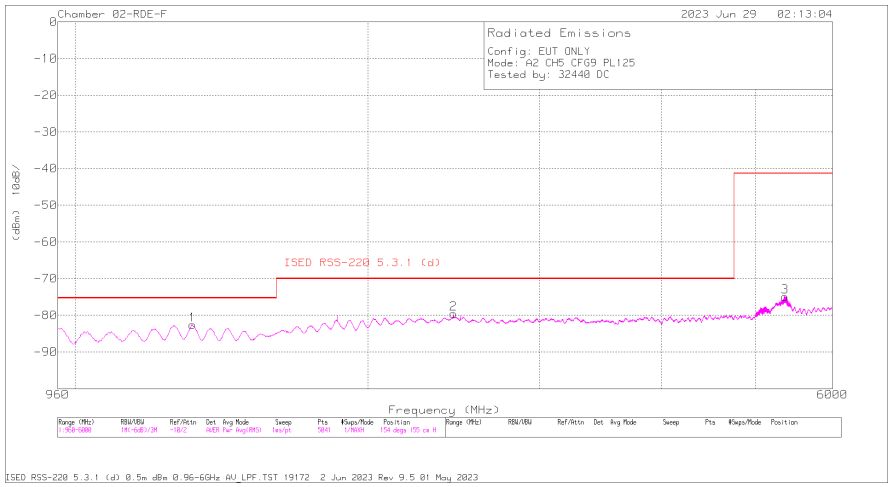


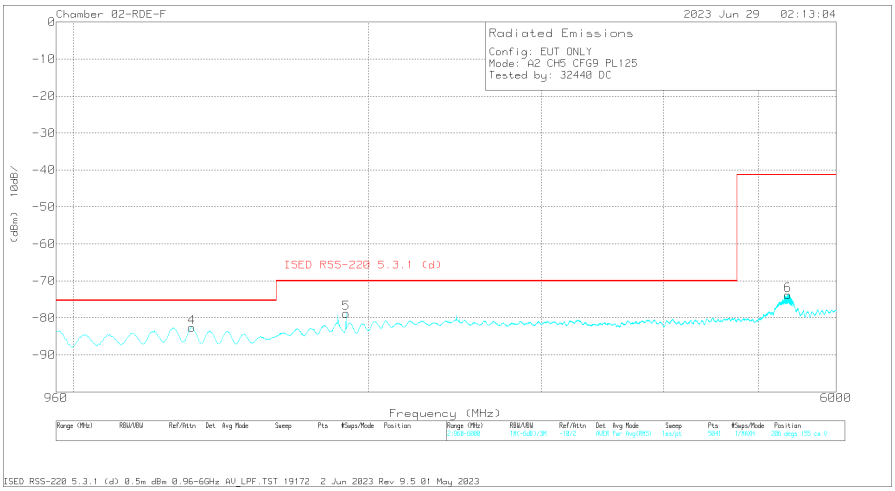
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1320	-61.16	RMS	28.9	-15.6	11.8	-82.56	-75.3	-7.26	0	155	H
2	2456	-62.76	RMS	32.4	-15.6	11.8	-80.56	-70	-10.56	198	155	H
3	5557	-65.5	RMS	34.4	-15.6	11.8	-78.2	-41.3	-36.9	242	155	H
4	1319	-61.25	RMS	28.9	-15.6	11.8	-82.65	-75.3	-7.35	294	155	V
5	2425	-61.74	RMS	32.3	-15.6	11.8	-79.94	-70	-9.94	140	155	V
6	5557	-65.45	RMS	34.4	-15.6	11.8	-78.15	-41.3	-36.85	250	155	V

RMS - RMS detection

ANT. 2, CH5, CONFIG 9





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1320	-61.19	RMS	28.9	-15.6	11.8	-82.59	-75.3	-7.29	308	155	H
2	2448	-61.69	RMS	32.4	-15.6	11.8	-79.59	-70	-9.59	264	155	H
3	5365	-61.24	RMS	34.5	-15.6	11.8	-74.94	-41.3	-33.64	44	155	H
4	1320	-61.21	RMS	28.9	-15.6	11.8	-82.61	-75.3	-7.31	360	155	V
5	1897	-59.07	RMS	30.6	-15.6	11.8	-78.77	-70	-8.77	250	155	V
6	5360	-60.13	RMS	34.5	-15.6	11.8	-73.83	-41.3	-32.53	75	155	V

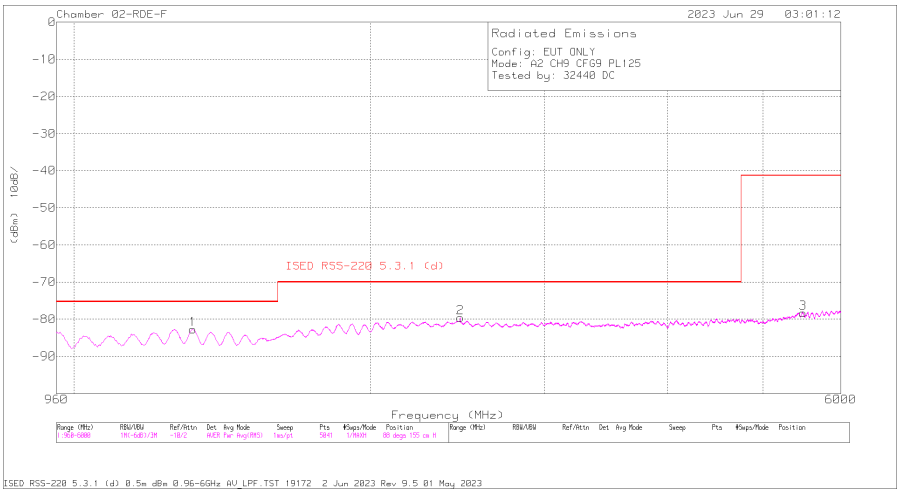
RMS - RMS detection

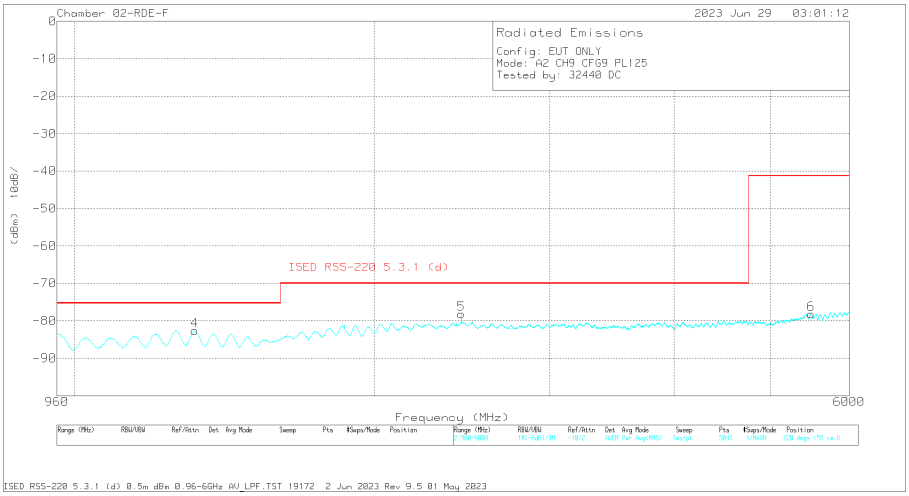
Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	5367	-60.6	RMS	34.5	-15.6	11.8	-74.4	-41.3	-33.1	57	155	H
5	1882.1	-57.65	RMS	30.6	-15.6	11.8	-77.35	-70	-7.35	358	155	V
6	5361.9	-59.65	RMS	34.5	-15.6	11.8	-73.25	-41.3	-31.95	74	155	V

RMS - RMS detection

ANT. 2, CH9, CONFIG 9





Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Dist. Corr. (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1321	-61.28	RMS	28.9	-15.6	11.8	-82.68	-75.3	-7.38	220	155	H
2	2467	-61.93	RMS	32.4	-15.6	11.8	-79.63	-70	-9.63	264	155	H
3	5495	-65.79	RMS	34.4	-15.6	11.8	-78.39	-41.3	-37.09	330	155	H
4	1321	-61.21	RMS	28.9	-15.6	11.8	-82.61	-75.3	-7.31	206	155	V
5	2447	-60.24	RMS	32.3	-15.6	11.8	-78.24	-70	-8.24	96	155	V
6	5491	-65.35	RMS	34.4	-15.6	11.8	-78.25	-41.3	-36.95	272	155	V

RMS - RMS detection

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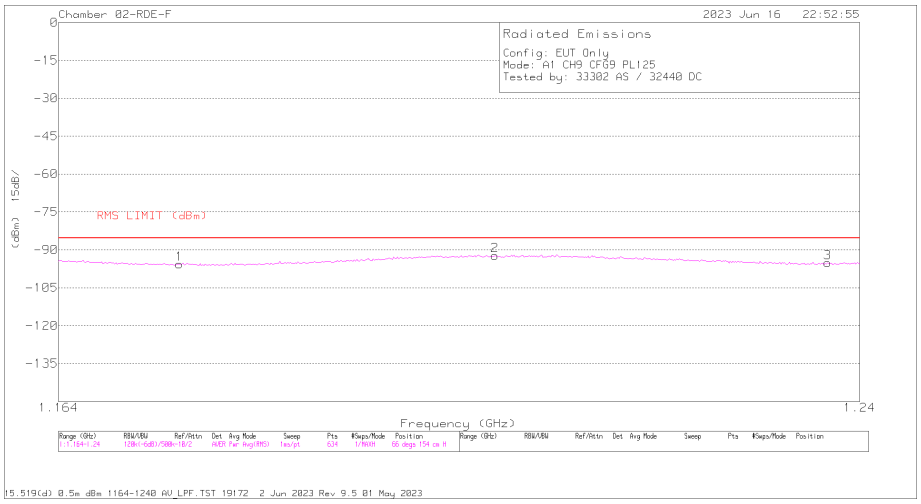
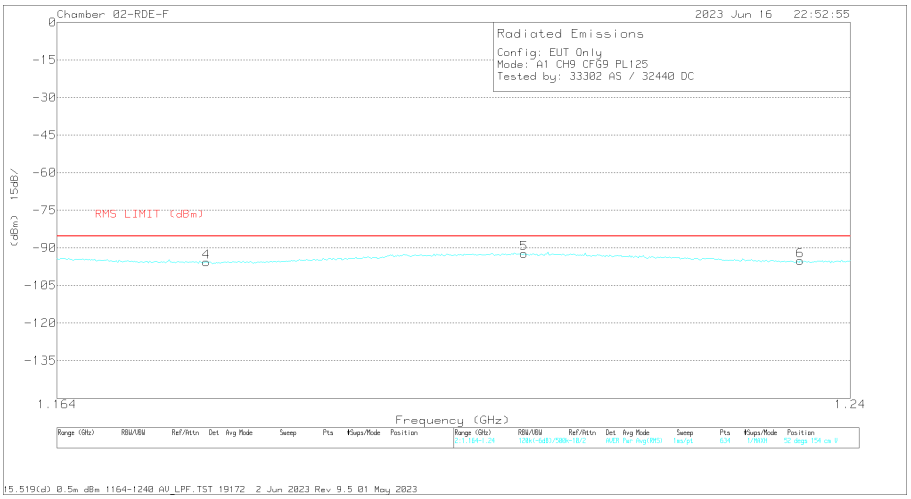
9.6.2. AVERAGE EMISSIONS, 1.164 – 1.240 GHz

ANT. 1, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.175166	-73.19	RMS	28.1	-47	-15.6	11.8	.2	-95.69	-85.3	-10.39	264	154	H
2	1.204821	-69.98	RMS	28.4	-47	-15.6	11.8	.2	-92.18	-85.3	-6.88	220	154	H
3	1.236878	-73.28	RMS	28.6	-46.8	-15.6	11.8	.2	-95.08	-85.3	-9.78	198	154	H
4	1.177927	-73.17	RMS	28.2	-47.1	-15.6	11.8	.2	-95.67	-85.3	-10.37	118	154	V
5	1.208183	-70.13	RMS	28.4	-47	-15.6	11.8	.2	-92.33	-85.3	-7.03	294	154	V
6	1.235077	-73.27	RMS	28.6	-46.8	-15.6	11.8	.2	-95.07	-85.3	-9.77	184	154	V

RMS - RMS detection

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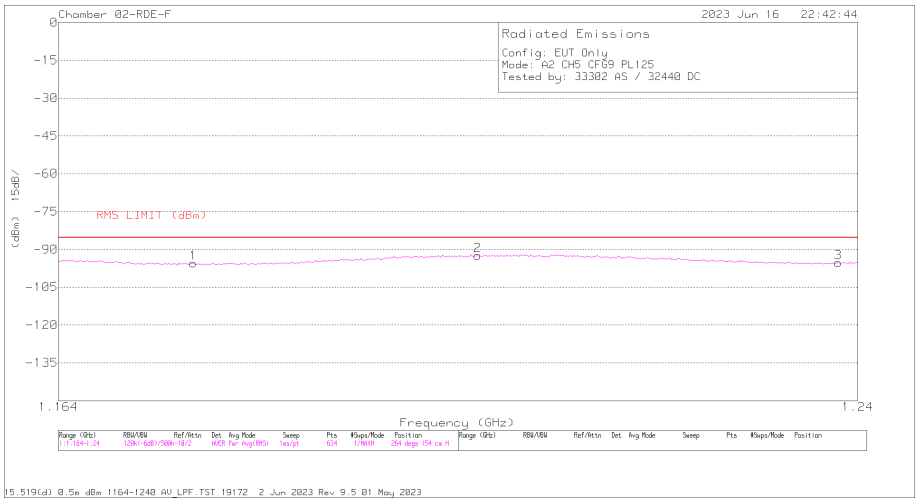
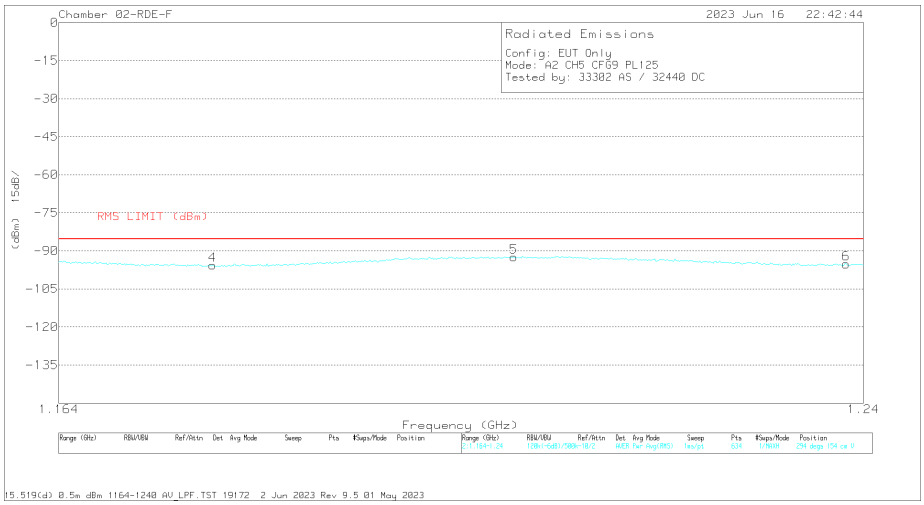
ANT. 2, CH5, CONFIG 9



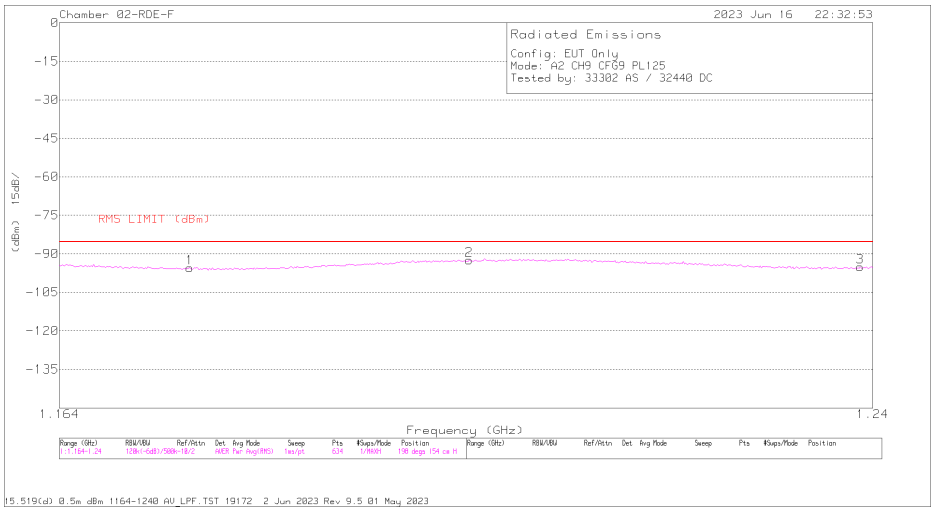


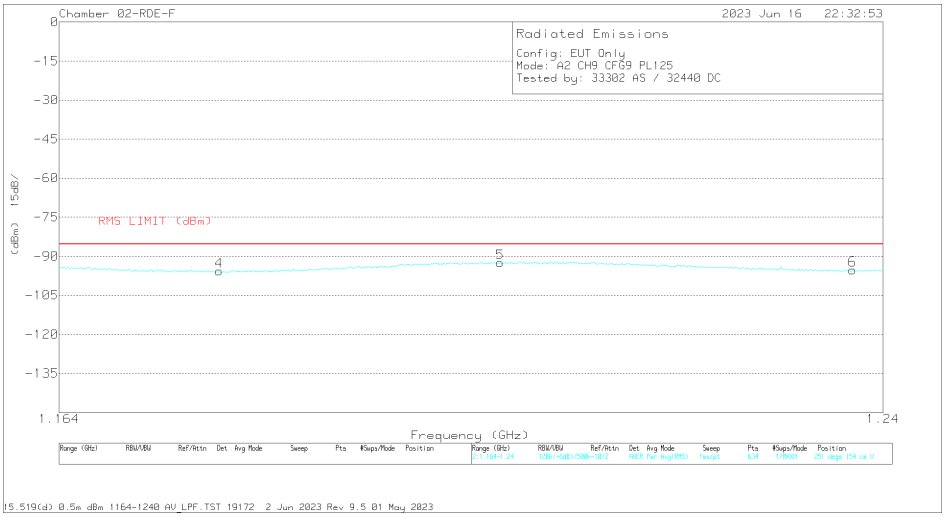
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.176487	-73.13	RMS	28.2	-47	-15.6	11.8	.2	-95.53	-85.3	-10.23	308	154	H
2	1.203261	-70.29	RMS	28.4	-46.9	-15.6	11.8	.2	-92.39	-85.3	-7.09	176	154	H
3	1.238079	-73.39	RMS	28.6	-46.8	-15.6	11.8	.2	-95.19	-85.3	-9.89	44	154	H
4	1.178167	-73.1	RMS	28.2	-47.1	-15.6	11.8	.2	-95.6	-85.3	-10.3	360	154	V
5	1.206382	-70.22	RMS	28.4	-47	-15.6	11.8	.2	-92.42	-85.3	-7.12	206	154	V
6	1.238319	-73.37	RMS	28.6	-46.8	-15.6	11.8	.2	-95.17	-85.3	-9.87	272	154	V

RMS - RMS detection

ANT. 2, CH9, CONFIG 9





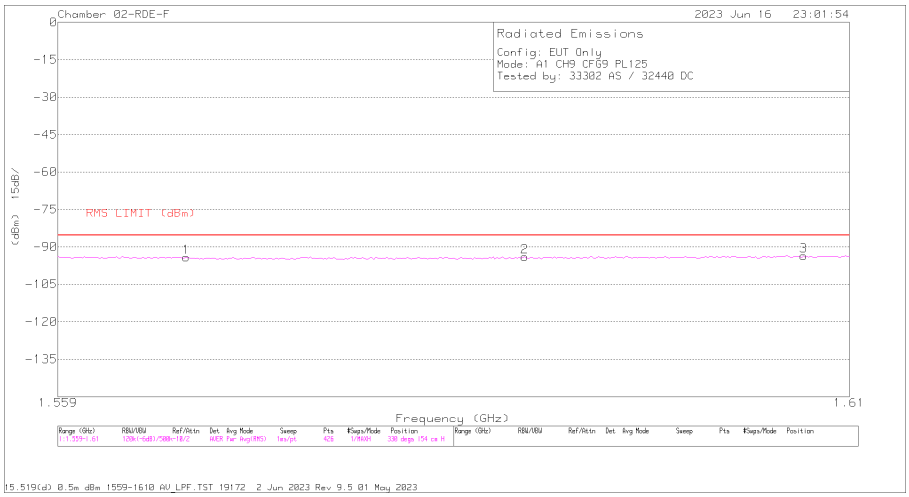
Trace Markers

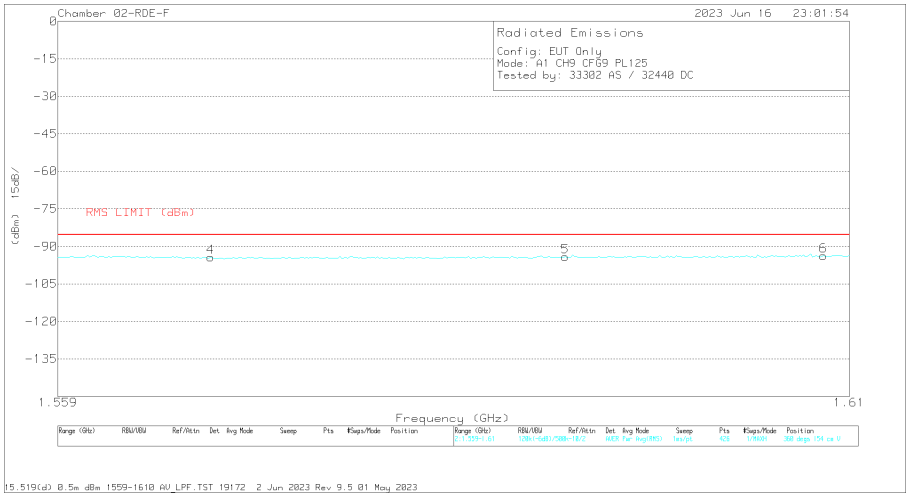
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.175886	-73.03	RMS	28.2	-47	-15.6	11.8	.2	-95.43	-85.3	-10.13	286	154	H
2	1.2017	-70.19	RMS	28.4	-47	-15.6	11.8	.2	-92.39	-85.3	-7.09	176	154	H
3	1.238799	-73.33	RMS	28.7	-46.8	-15.6	11.8	.2	-95.03	-85.3	-9.73	22	154	H
4	1.178408	-73.09	RMS	28.2	-47.1	-15.6	11.8	.2	-95.59	-85.3	-10.29	74	154	V
5	1.204101	-70.24	RMS	28.4	-47	-15.6	11.8	.2	-92.44	-85.3	-7.14	294	154	V
6	1.237118	-73.38	RMS	28.6	-46.8	-15.6	11.8	.2	-95.18	-85.3	-9.88	206	154	V

RMS - RMS detection

9.6.3. AVERAGE EMISSIONS, 1.559 – 1.610 GHz

ANT. 1, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.56716	-71.46	RMS	27.8	-46.9	-15.6	11.8	.2	-94.16	-85.3	-8.86	330	154	H
2	1.58888	-71.71	RMS	28	-46.7	-15.6	11.8	.2	-94.01	-85.3	-8.71	176	154	H
3	1.607	-71.33	RMS	28.2	-46.8	-15.6	11.8	.2	-93.53	-85.3	-8.23	308	154	H
4	1.56872	-71.67	RMS	27.8	-46.9	-15.6	11.8	.2	-94.37	-85.3	-9.07	295	154	V
5	1.59152	-71.67	RMS	28	-46.8	-15.6	11.8	.2	-94.07	-85.3	-8.77	360	154	V
6	1.60832	-71.59	RMS	28.2	-46.8	-15.6	11.8	.2	-93.79	-85.3	-8.49	162	154	V

RMS - RMS detection

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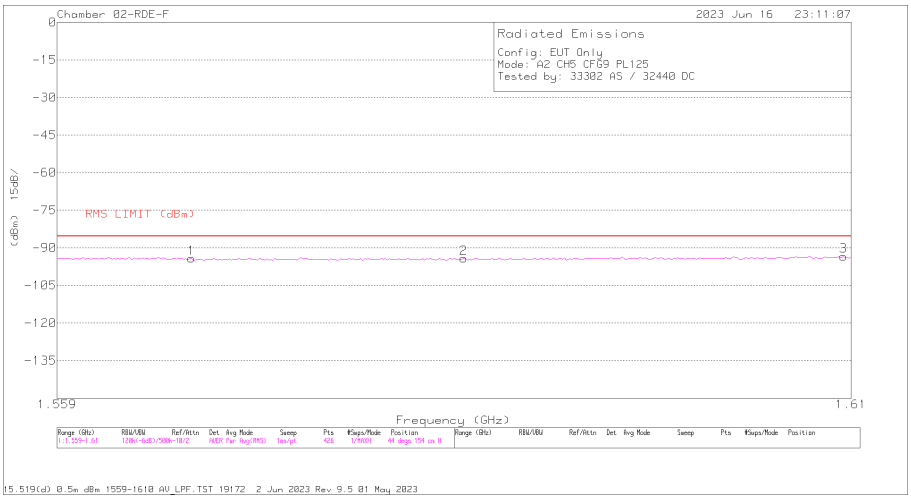
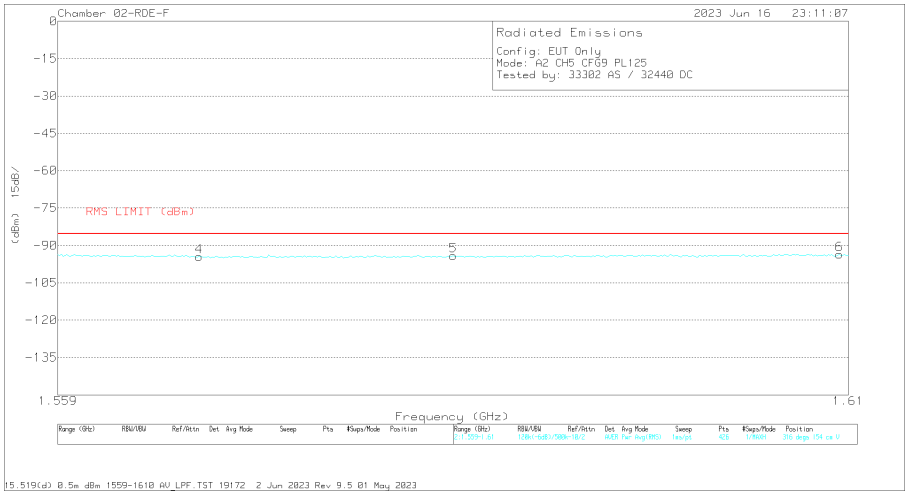
ANT. 2, CH5, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.56752	-71.49	RMS	27.8	-46.9	-15.6	11.8	.2	-94.19	-85.3	-8.89	66	154	H
2	1.58492	-71.89	RMS	28	-46.7	-15.6	11.8	.2	-94.19	-85.3	-8.89	308	154	H
3	1.60952	-70.99	RMS	28.2	-46.8	-15.6	11.8	.1	-93.29	-85.3	-7.99	242	154	H
4	1.568	-71.83	RMS	27.8	-46.9	-15.6	11.8	.2	-94.53	-85.3	-9.23	360	154	V
5	1.58432	-71.8	RMS	28	-46.7	-15.6	11.8	.2	-94.1	-85.3	-8.8	339	154	V
6	1.6094	-71.26	RMS	28.2	-46.8	-15.6	11.8	.1	-93.56	-85.3	-8.26	294	154	V

RMS - RMS detection

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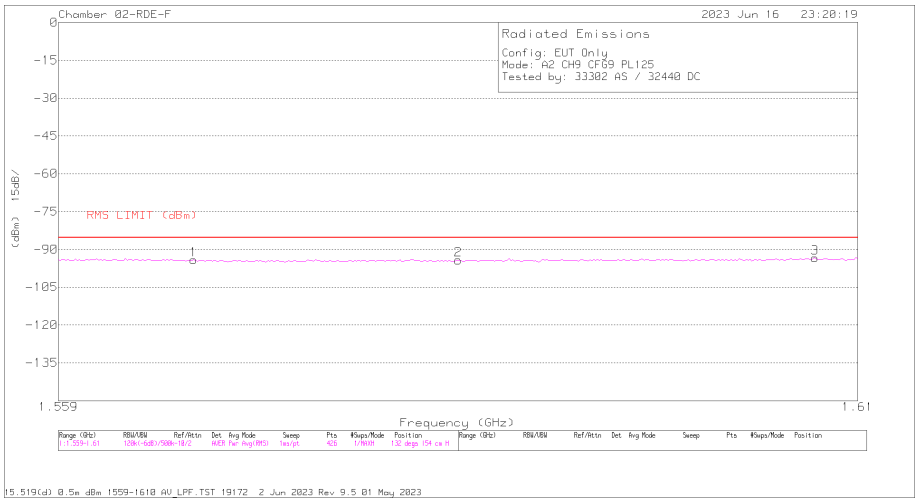
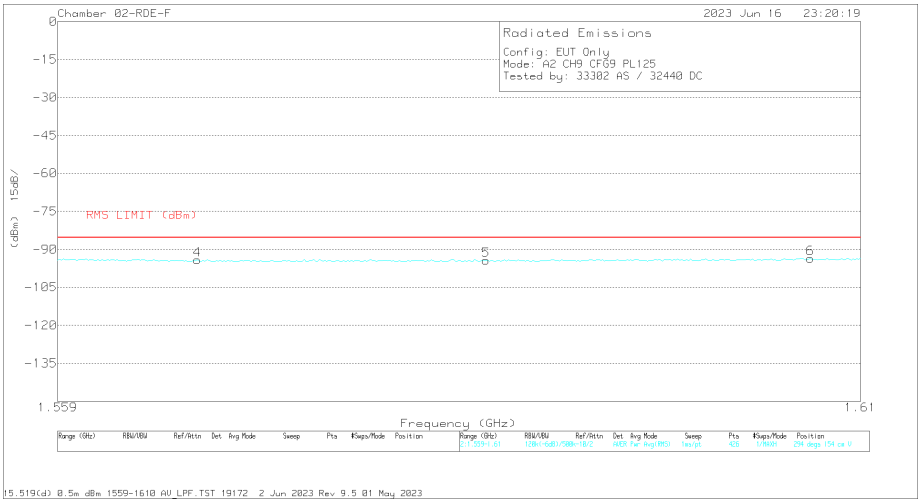
ANT. 2, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206808 ACF (dB) 3mH	Amp/Cbl (dB)	Dist. Corr. (dB)	Conv. Fact. (dB)	204843 LPF (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.56752	-71.39	RMS	27.8	-46.9	-15.6	11.8	.2	-94.09	-85.3	-8.79	66	154	H
2	1.58432	-71.93	RMS	28	-46.7	-15.6	11.8	.2	-94.23	-85.3	-8.93	154	154	H
3	1.60724	-71.1	RMS	28.2	-46.8	-15.6	11.8	.2	-93.3	-85.3	-8	198	154	H
4	1.56776	-71.45	RMS	27.8	-46.9	-15.6	11.8	.2	-94.15	-85.3	-8.85	294	154	V
5	1.586	-72.01	RMS	28	-46.7	-15.6	11.8	.2	-94.31	-85.3	-9.01	162	154	V
6	1.60676	-71.39	RMS	28.2	-46.8	-15.6	11.8	.2	-93.59	-85.3	-8.29	272	154	V

RMS - RMS detection

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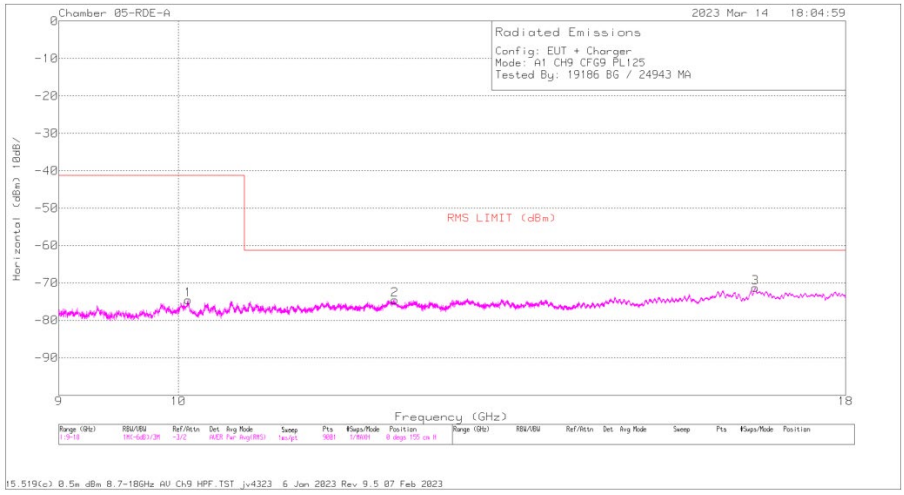
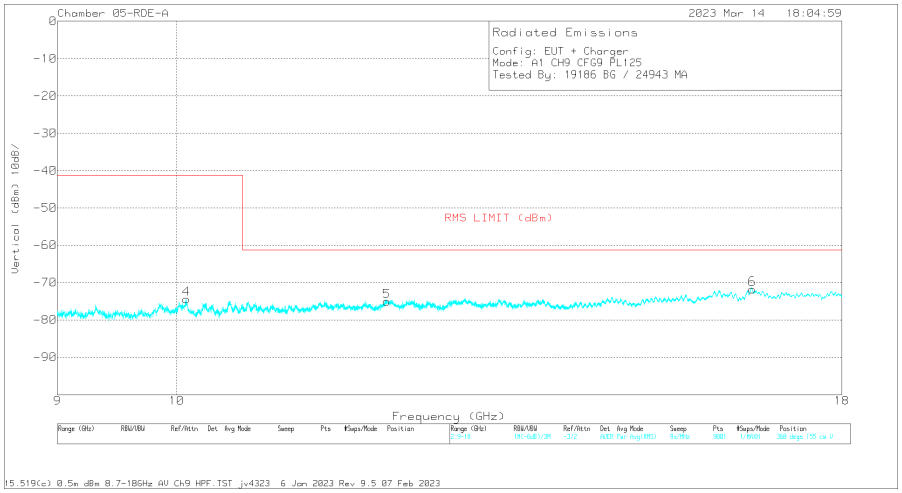
9.6.4. AVERAGE EMISSIONS, 9 – 18 GHz

ANT. 1, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206805 ACF (dB) - 3mH	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	10.086	-69.29	RMS	37.4	-15.6	11.8	-38.8	-74.49	-41.3	-33.19	176	155	H
4	10.086	-69.18	RMS	37.4	-15.6	11.8	-38.8	-74.38	-41.3	-33.08	360	155	V
5	12.043	-68.49	RMS	38.9	-15.6	11.8	-41.59	-74.98	-61.3	-13.68	207	155	V
2	12.101	-68.66	RMS	39	-15.6	11.8	-41.05	-74.51	-61.3	-13.21	198	155	H
3	16.626	-67.1	RMS	41.5	-15.6	11.8	-41.88	-71.28	-61.3	-9.98	22	155	H
6	16.633	-67.19	RMS	41.5	-15.6	11.8	-42.23	-71.72	-61.3	-10.42	31	155	V

RMS - RMS detection

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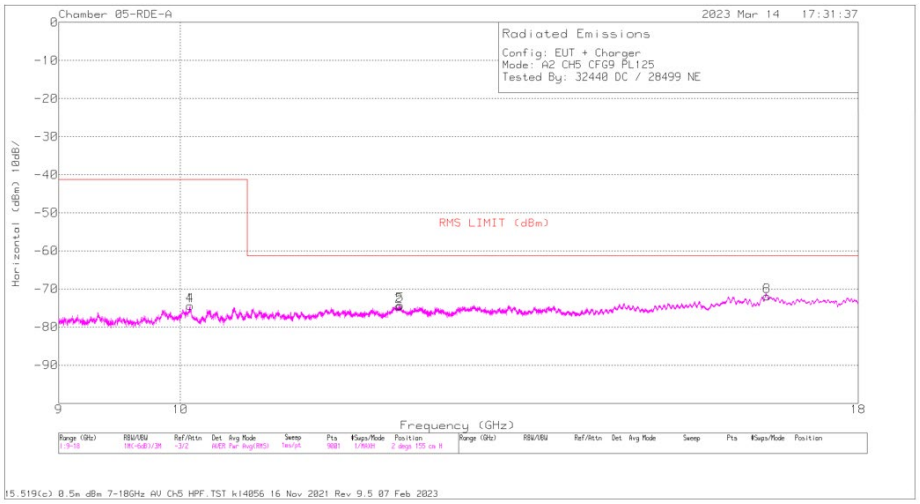
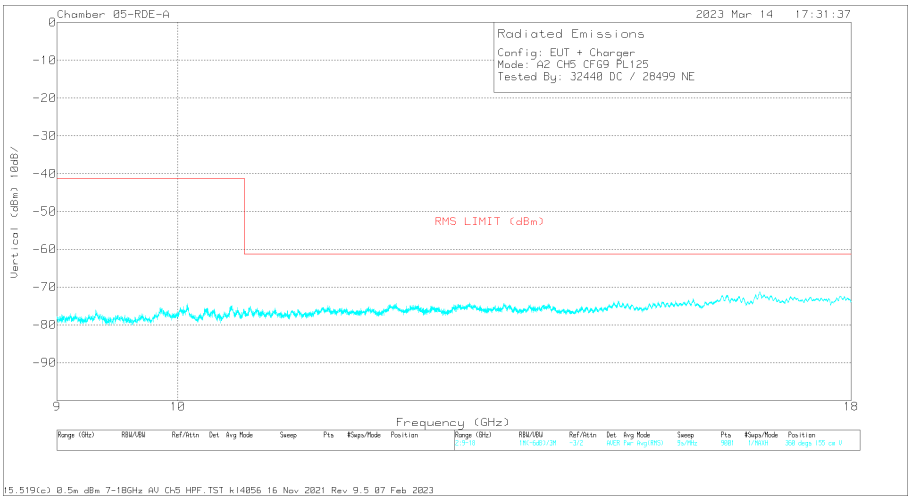
ANT. 2, CH5, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206805 ACF (dB) - 3mH	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	10.086	-69.19	RMS	37.4	-15.6	11.8	-38.8	-74.39	-41.3	-33.09	176	155	H
4	10.086	-69.19	RMS	37.4	-15.6	11.8	-38.8	-74.39	-41.3	-33.09	176	155	H
2	12.09	-68.24	RMS	38.9	-15.6	11.8	-41.44	-74.58	-61.3	-13.28	154	155	H
5	12.101	-68.45	RMS	39	-15.6	11.8	-41.05	-74.3	-61.3	-13	44	155	H
3	16.633	-67.38	RMS	41.5	-15.6	11.8	-42.23	-71.91	-61.3	-10.61	286	155	H
6	16.633	-67.38	RMS	41.5	-15.6	11.8	-42.23	-71.91	-61.3	-10.61	286	155	H

RMS - RMS detection

UL VERIFICATION SERVICES INC
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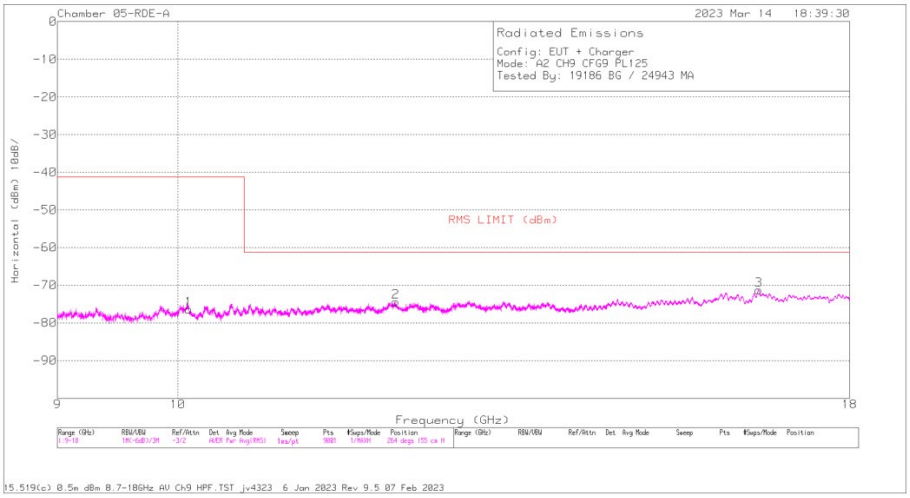
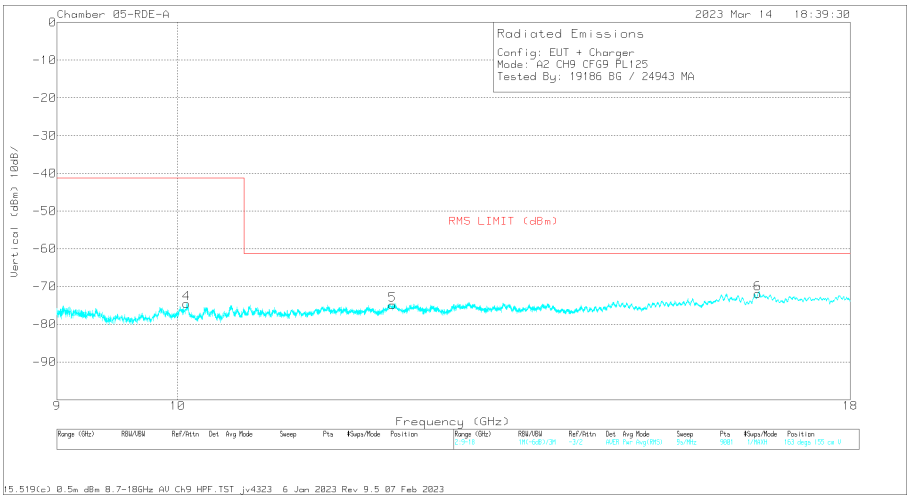
ANT. 2, CH9, CONFIG 9





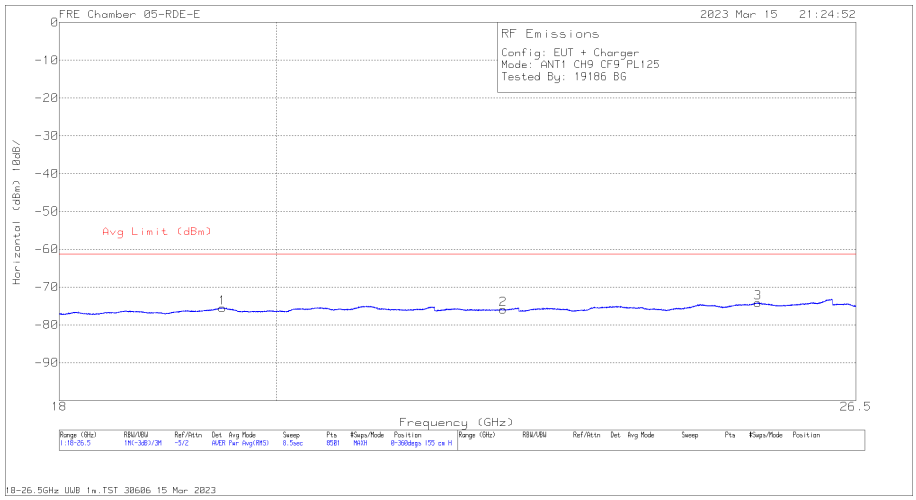
Trace Markers

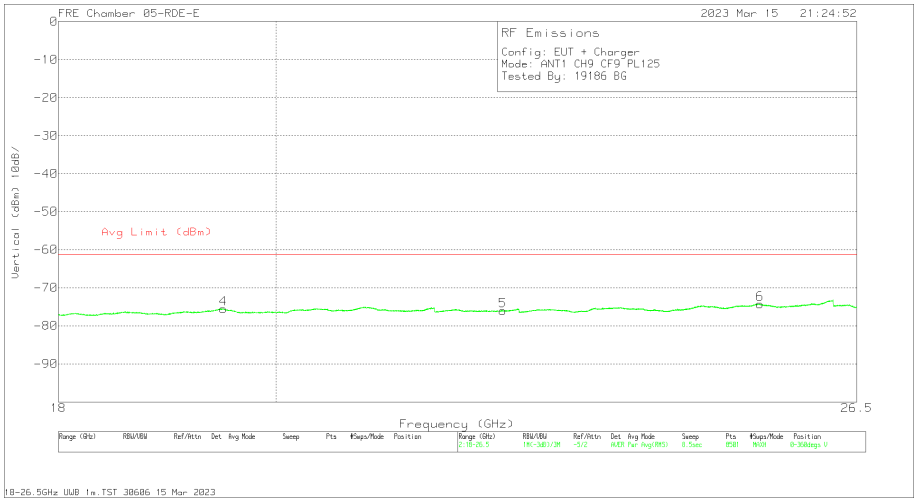
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206805 ACF (dB) - 3mH	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	10.08	-68.91	RMS	37.4	-15.6	11.8	-39.21	-74.52	-41.3	-33.22	141	155	V
1	10.095	-69.53	RMS	37.4	-15.6	11.8	-40.42	-76.35	-41.3	-35.05	110	155	H
5	12.067	-68.35	RMS	38.9	-15.6	11.8	-41.66	-74.91	-61.3	-13.61	141	155	V
2	12.101	-68.61	RMS	39	-15.6	11.8	-41.05	-74.46	-61.3	-13.16	241	155	H
6	16.602	-67.5	RMS	41.4	-15.6	11.8	-42.03	-71.93	-61.3	-10.63	185	155	V
3	16.622	-67.01	RMS	41.4	-15.6	11.8	-41.85	-71.26	-61.3	-9.96	308	155	H

RMS - RMS detection

9.6.5. AVERAGE EMISSIONS, 18 – 26.5 GHz

ANT. 1, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Horn ACF (dB/m)	220194 Amp (dB)	CBL/SWIT CH	Dist Corr (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.486	-62.61	RMS	33.1	-61.7	13.4	-9.5	11.8	-75.51	-61.3	-14.21	0-360	155	H
4	19.498	-62.67	RMS	33.1	-61.7	13.4	-9.5	11.8	-75.57	-61.3	-14.27	0-360	155	V
5	22.326	-65	RMS	33.8	-61.3	14.2	-9.5	11.8	-76	-61.3	-14.7	0-360	155	V
2	22.33	-64.85	RMS	33.8	-61.3	14.2	-9.5	11.8	-75.85	-61.3	-14.55	0-360	155	H
3	25.267	-65.81	RMS	34.9	-60.7	15.2	-9.5	11.8	-74.11	-61.3	-12.81	0-360	155	H
6	25.287	-66.02	RMS	34.9	-60.7	15.2	-9.5	11.8	-74.32	-61.3	-13.02	0-360	155	V

RMS - RMS detection

UL VERIFICATION SERVICES INC
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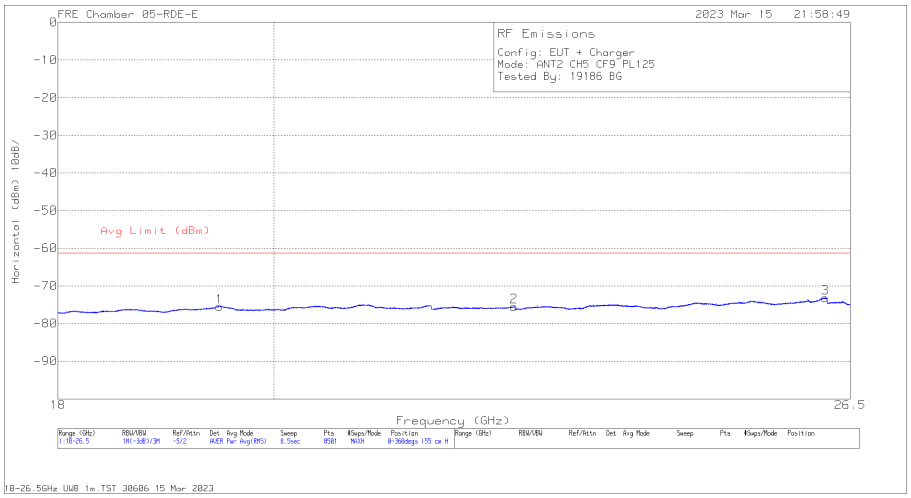
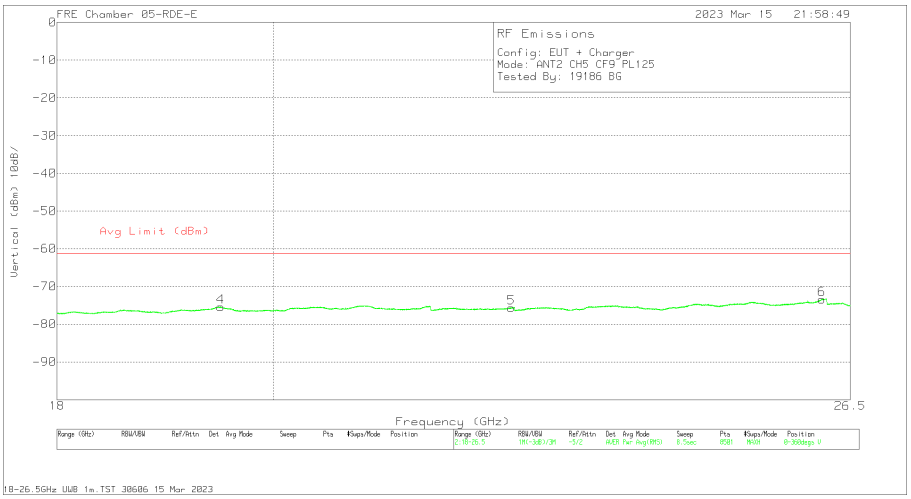
ANT. 2, CH5, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Horn ACF (dB/m)	220194 Amp (dB)	CBL/SWITCH	Dist Corr (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.474	-62.48	RMS	33.1	-61.8	13.4	-9.5	11.8	-75.48	-61.3	-14.18	0-360	155	H
4	19.496	-62.54	RMS	33.1	-61.7	13.4	-9.5	11.8	-75.44	-61.3	-14.14	0-360	155	V
5	22.463	-64.75	RMS	33.7	-61.2	14.3	-9.5	11.8	-75.65	-61.3	-14.35	0-360	155	V
2	22.491	-64.57	RMS	33.7	-61.2	14.3	-9.5	11.8	-75.47	-61.3	-14.17	0-360	155	H
6	26.137	-66.35	RMS	35.1	-60.1	15.6	-9.5	11.8	-73.45	-61.3	-12.15	0-360	155	V
3	26.18	-66.04	RMS	35.1	-60.1	15.6	-9.5	11.8	-73.14	-61.3	-11.84	0-360	155	H

RMS - RMS detection

UL VERIFICATION SERVICES INC
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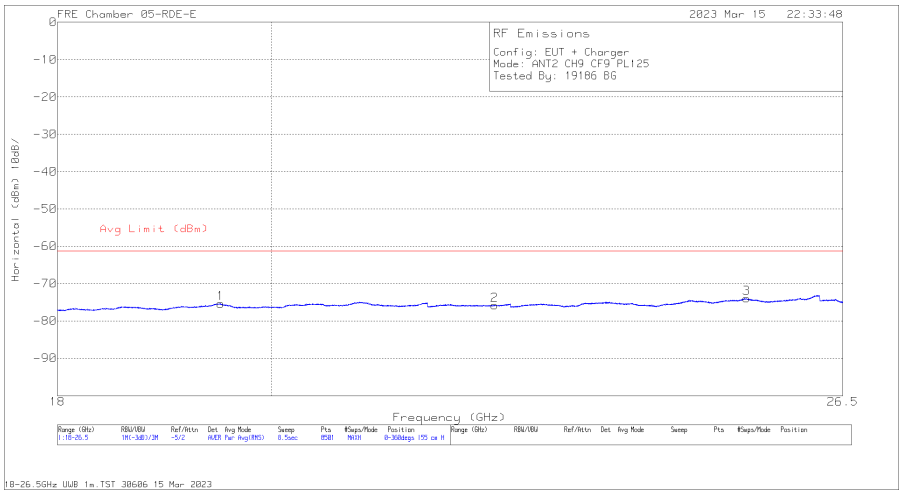
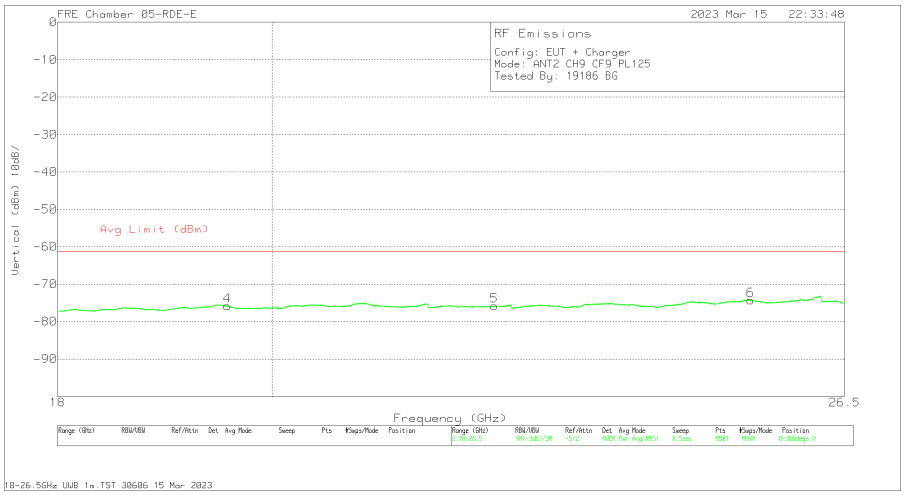
ANT. 2, CH9, CONFIG 9





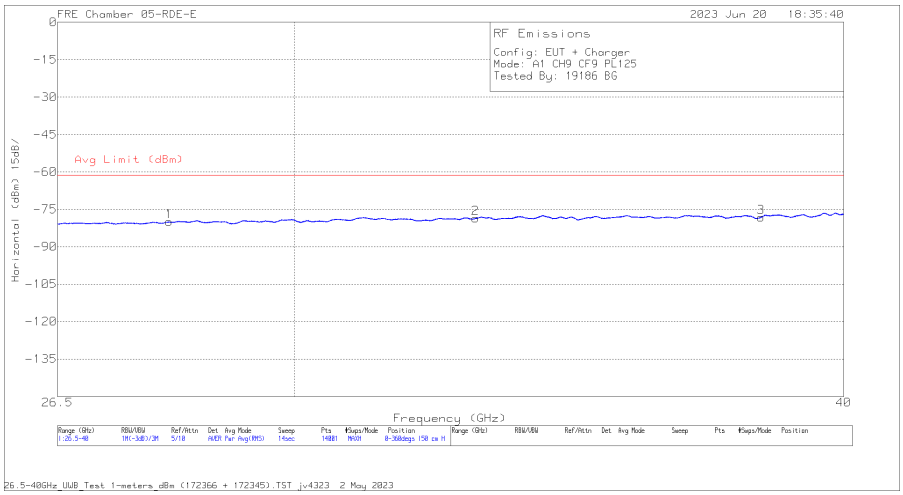
Trace Markers

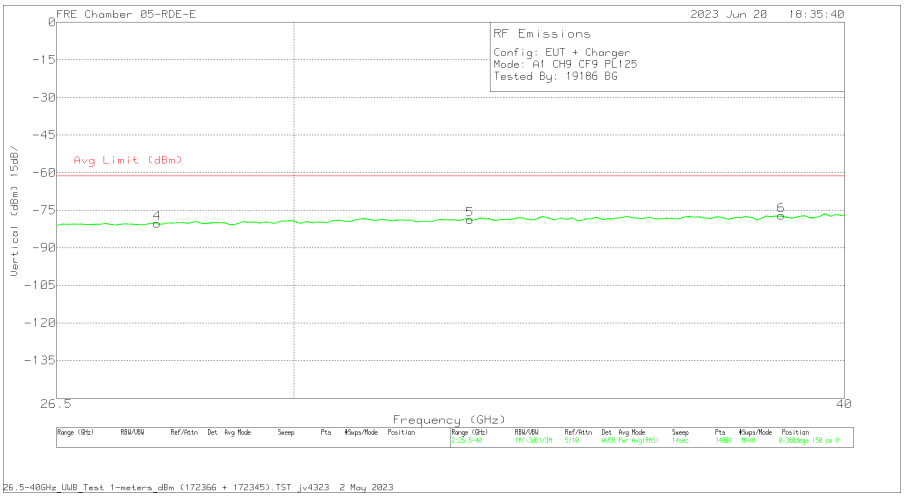
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Horn ACF (dB/m)	220194 Amp (dB)	CBL/SWITCH	Dist Corr (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.508	-62.44	RMS	33.1	-61.7	13.4	-9.5	11.8	-75.34	-61.3	-14.04	0-360	155	H
4	19.565	-63.18	RMS	33.2	-61.5	13.4	-9.5	11.8	-75.78	-61.3	-14.48	0-360	155	V
5	22.307	-64.81	RMS	33.8	-61.3	14.2	-9.5	11.8	-75.81	-61.3	-14.51	0-360	155	V
2	22.323	-64.78	RMS	33.8	-61.3	14.2	-9.5	11.8	-75.78	-61.3	-14.48	0-360	155	H
3	25.273	-65.61	RMS	34.9	-60.7	15.2	-9.5	11.8	-73.91	-61.3	-12.61	0-360	155	H
6	25.304	-66.02	RMS	34.9	-60.7	15.2	-9.5	11.8	-74.32	-61.3	-13.02	0-360	155	V

RMS - RMS detection

9.6.6. AVERAGE EMISSIONS, 26.5 – 40 GHz

ANT. 1, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172366 ACF (dB) 1mH	172345 Amp (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL/SWITCH	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	27.928108	-55.23	RMS	36.1	-73.6	-15.6	11.8	16.2	-80.33	-61.3	-19.03	0-360	150	V
1	28.096858	-55.45	RMS	36.3	-73.3	-15.6	11.8	16.3	-79.95	-61.3	-18.65	0-360	150	H
5	32.890323	-58.68	RMS	37.4	-71.4	-15.6	11.8	17.7	-78.78	-61.3	-17.48	0-360	150	V
2	32.986752	-58.59	RMS	37.4	-71.3	-15.6	11.8	17.7	-78.59	-61.3	-17.29	0-360	150	H
3	38.302861	-61.56	RMS	38.8	-71.2	-15.6	11.8	19.6	-78.16	-61.3	-16.86	0-360	150	H
6	38.696289	-60.86	RMS	39.1	-71.3	-15.6	11.8	19.7	-77.16	-61.3	-15.86	0-360	150	V

RMS - RMS detection

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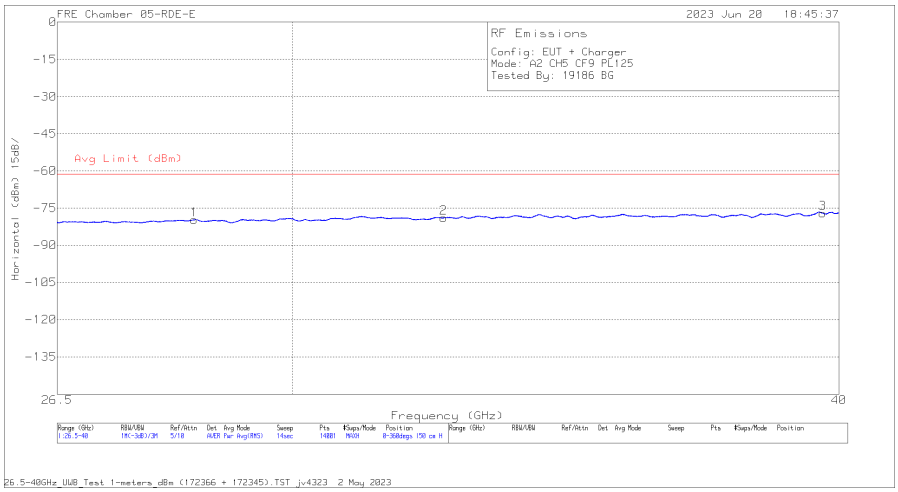
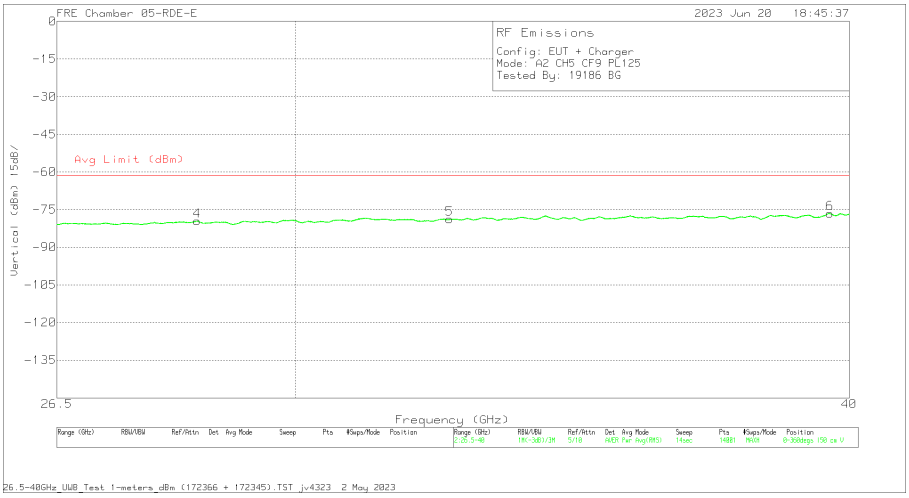
ANT. 2, CH5, CONFIG 9



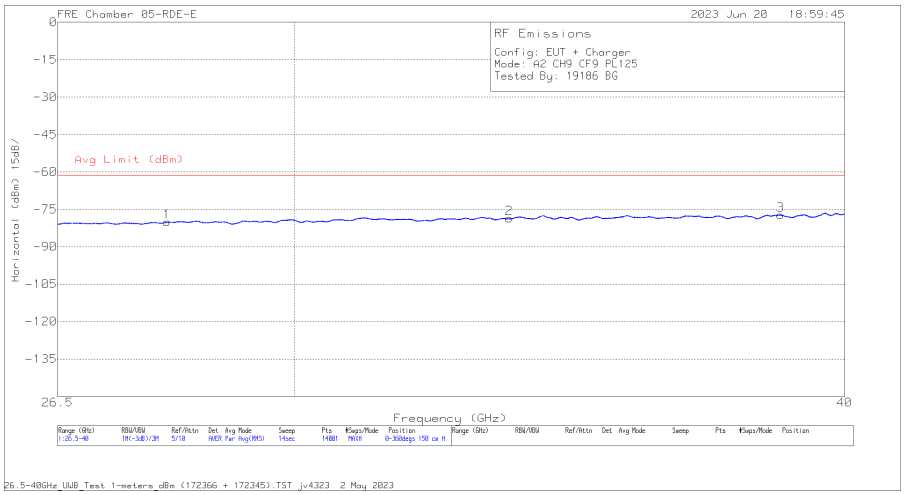


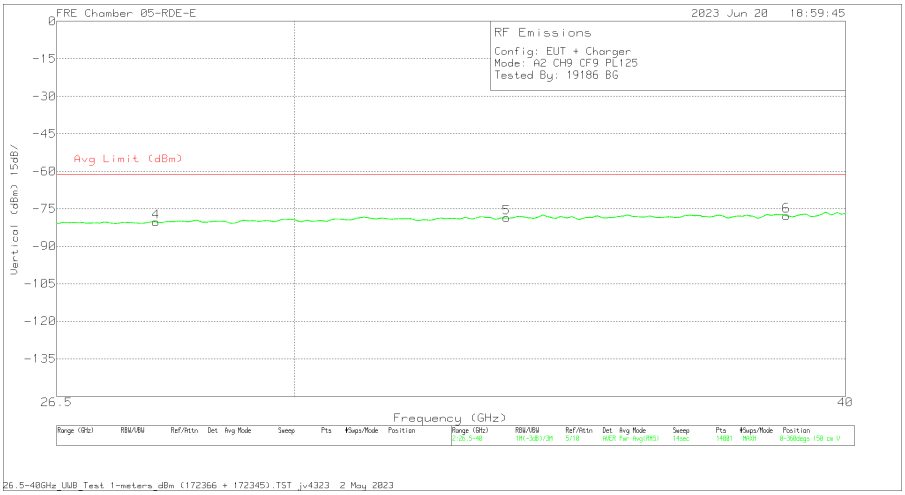
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172366 ACF (dB) 1mH	172345 Amp (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL/SWITCH	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.482572	-55.95	RMS	36.4	-72.7	-15.6	11.8	16.4	-79.65	-61.3	-18.35	0-360	150	H
4	28.504751	-55.8	RMS	36.4	-72.7	-15.6	11.8	16.4	-79.5	-61.3	-18.2	0-360	150	V
2	32.479537	-59.11	RMS	37.3	-71	-15.6	11.8	17.7	-78.91	-61.3	-17.61	0-360	150	H
5	32.499787	-59.1	RMS	37.3	-71	-15.6	11.8	17.8	-78.8	-61.3	-17.5	0-360	150	V
6	39.598861	-59.55	RMS	39.2	-72.2	-15.6	11.8	19.9	-76.45	-61.3	-15.15	0-360	150	V
3	39.655754	-59.9	RMS	39.3	-72.4	-15.6	11.8	19.8	-77	-61.3	-15.7	0-360	150	H

RMS - RMS detection

ANT. 2, CH9, CONFIG 9





Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172366 ACF (dB) 1mH	172345 Amp (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL/SWITCH	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	27.91075	-55.2	RMS	36.1	-73.6	-15.6	11.8	16.3	-80.2	-61.3	-18.9	0-360	150	V
1	28.058286	-55.29	RMS	36.2	-73.4	-15.6	11.8	16.2	-80.09	-61.3	-18.79	0-360	150	H
5	33.516145	-58.06	RMS	37.4	-72	-15.6	11.8	17.8	-78.66	-61.3	-17.36	0-360	150	V
2	33.567252	-57.93	RMS	37.4	-72.2	-15.6	11.8	17.9	-78.63	-61.3	-17.33	0-360	150	H
3	38.683754	-60.96	RMS	39.1	-71.3	-15.6	11.8	19.7	-77.26	-61.3	-15.96	0-360	150	H
6	38.789825	-60.74	RMS	39.1	-71.9	-15.6	11.8	19.6	-77.74	-61.3	-16.44	0-360	150	V

RMS - RMS detection

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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

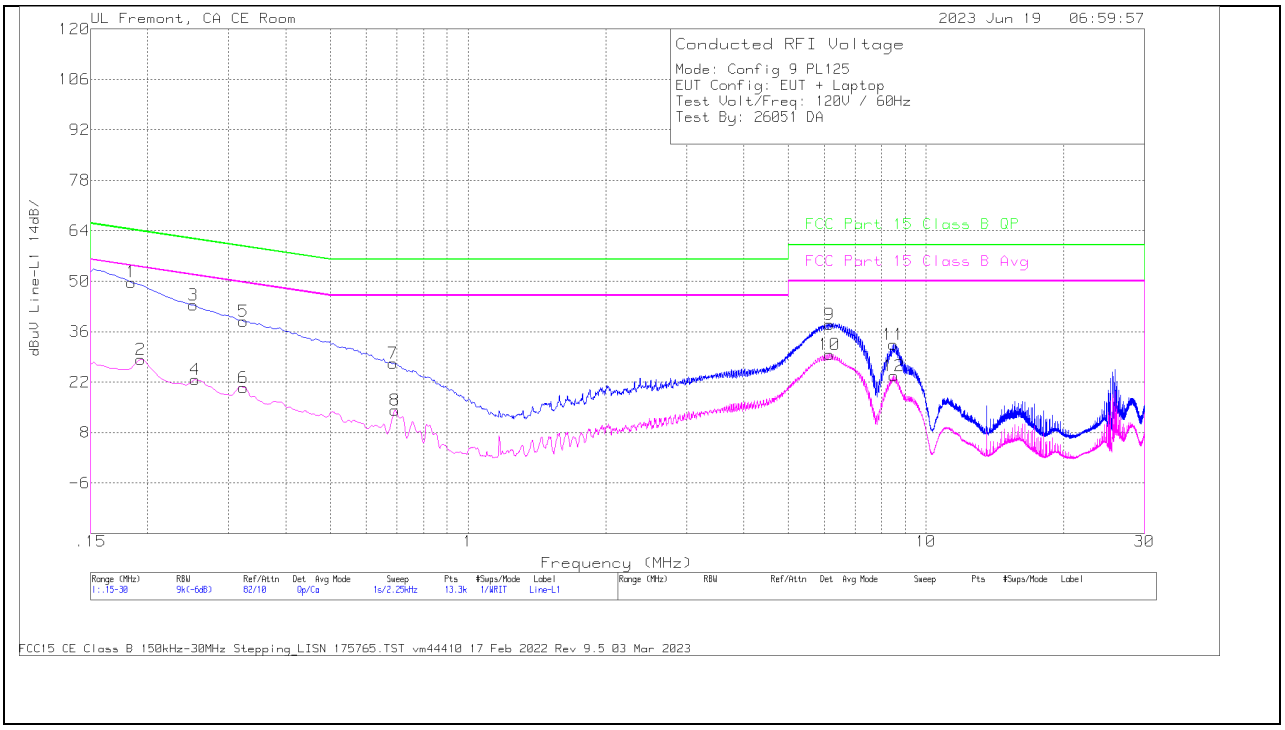
Parent Model
Employee IDs: 26051
Location: Immunity Test Lab
Test Date: 6/19/2023

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

9.7.1. AC Power Line with Laptop

Parent

LINE 1 RESULTS



Trace Markers

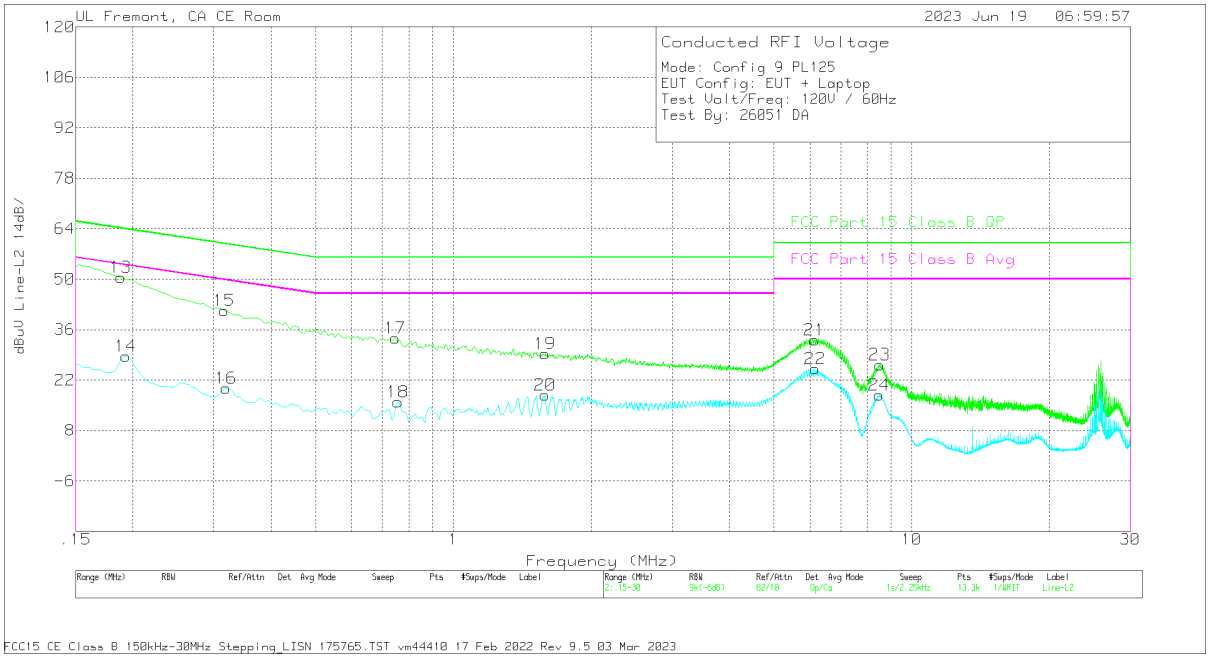
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	18.91	Ca	0	0	9.4	28.31	-	-	53.92	-25.61
4	.2535	13.41	Ca	0	0	9.3	22.71	-	-	51.64	-28.93
6	.3233	11.16	Ca	0	0	9.3	20.46	-	-	49.62	-29.16
8	.6923	4.84	Ca	0	.1	9.3	14.24	-	-	46	-31.76
10	6.1485	20.29	Ca	0	.1	9.3	29.69	-	-	50	-20.31
12	8.502	14.21	Ca	0	.2	9.3	23.71	-	-	50	-26.29
1	.1838	40.34	Qp	0	0	9.4	49.74	64.31	-14.57	-	-
3	.2513	34.13	Qp	0	0	9.3	43.43	61.72	-18.29	-	-
5	.3233	29.55	Qp	0	0	9.3	38.85	59.62	-20.77	-	-
7	.6855	17.81	Qp	0	.1	9.3	27.21	56	-28.79	-	-
9	6.1485	28.58	Qp	0	.1	9.3	37.98	60	-22.02	-	-
11	8.4998	22.97	Qp	0	.2	9.3	32.47	60	-27.53	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Trace Markers

Range 2: Line-L2 .15 - 30MHz

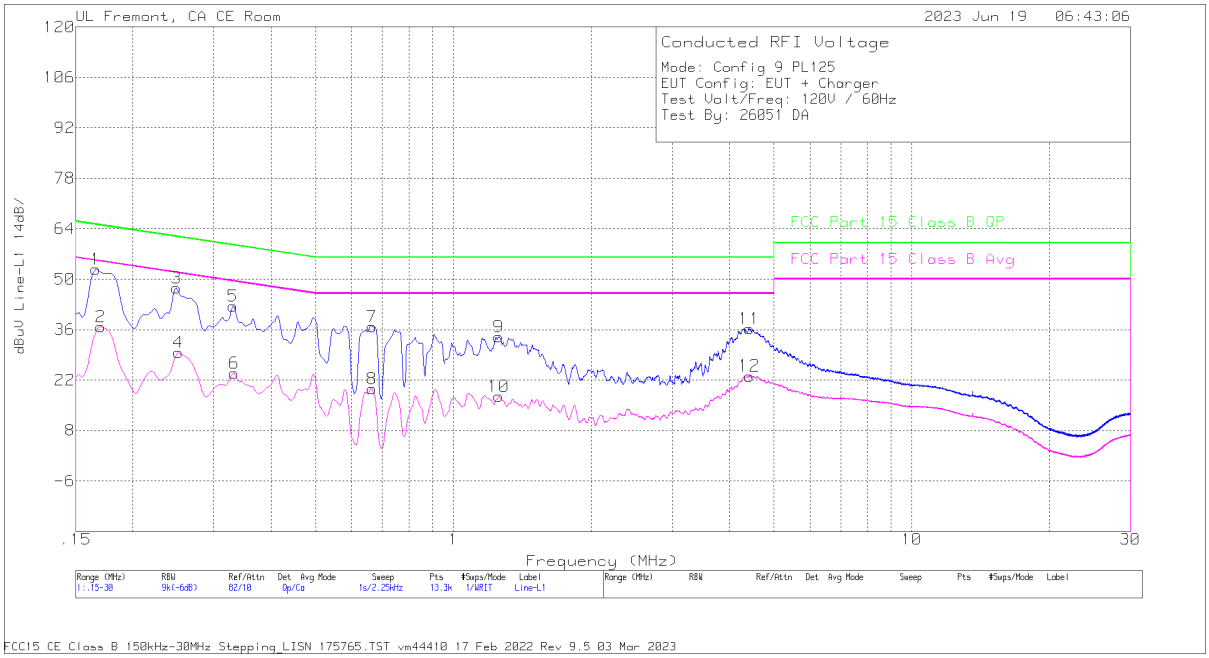
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
14	.1928	19.23	Ca	0	0	9.4	28.63	-	-	53.92	-25.29
16	.3188	10.39	Ca	0	0	9.3	19.69	-	-	49.74	-30.05
18	.7575	6.5	Ca	0	.1	9.3	15.9	-	-	46	-30.1
20	1.5833	8.41	Ca	0	.1	9.3	17.81	-	-	46	-28.19
22	6.1485	15.67	Ca	0	.1	9.3	25.07	-	-	50	-24.93
24	8.4885	8.38	Ca	0	.2	9.3	17.88	-	-	50	-32.12
13	.1883	41.06	Qp	0	0	9.4	50.46	64.11	-13.65	-	-
15	.3165	31.94	Qp	0	0	9.3	41.24	59.8	-18.56	-	-
17	.7463	24.26	Qp	0	.1	9.3	33.66	56	-22.34	-	-
19	1.5855	19.84	Qp	0	.1	9.3	29.24	56	-26.76	-	-
21	6.1373	23.78	Qp	0	.1	9.3	33.18	60	-26.82	-	-
23	8.5065	16.77	Qp	0	.2	9.3	26.27	60	-33.73	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

9.7.2. AC Power Line with AC/DC Adapter

Parent

LINE 1 RESULTS



Trace Markers

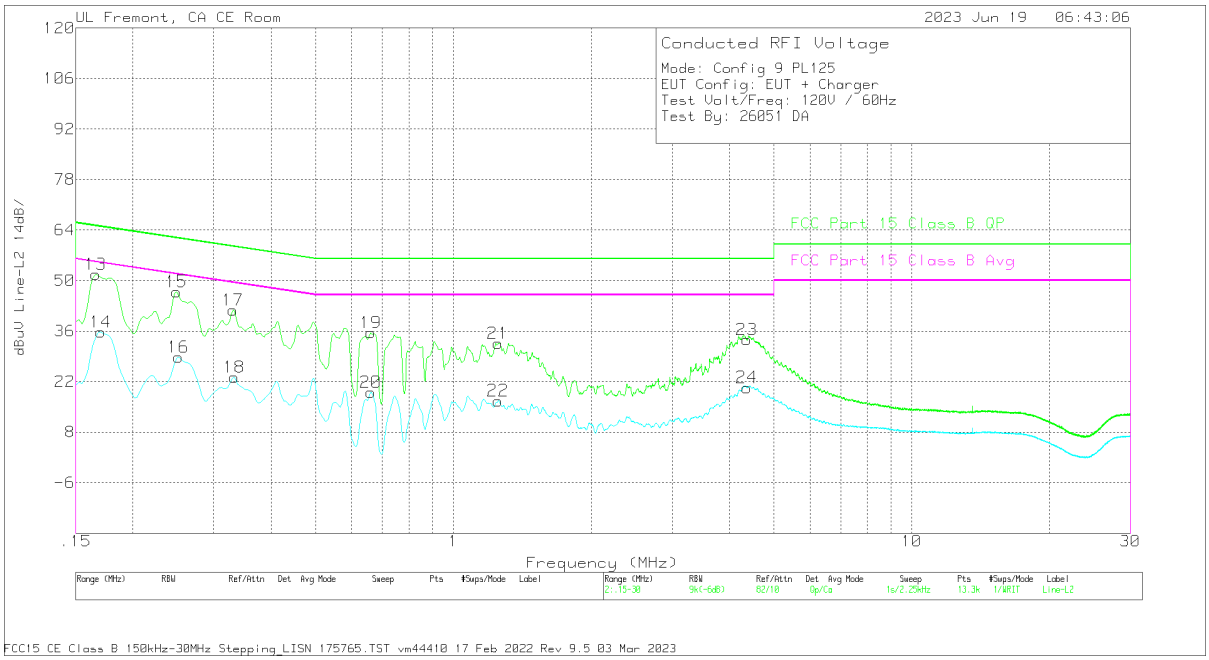
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.1703	27.45	Ca	0	0	9.4	36.85	-	-	54.95	-18.1
4	.2513	20.32	Ca	0	0	9.3	29.62	-	-	51.72	-22.1
6	.3323	14.57	Ca	0	0	9.3	23.87	-	-	49.39	-25.52
8	.6653	10.11	Ca	0	.1	9.3	19.51	-	-	46	-26.49
10	1.257	8.11	Ca	0	.1	9.3	17.51	-	-	46	-28.49
12	4.425	13.74	Ca	0	.1	9.3	23.14	-	-	46	-22.86
1	.1658	43.38	Qp	0	0	9.4	52.78	65.17	-12.39	-	-
3	.249	38.34	Qp	0	0	9.3	47.64	61.79	-14.15	-	-
5	.33	33.22	Qp	0	0	9.3	42.52	59.45	-16.93	-	-
7	.6653	27.38	Qp	0	.1	9.3	36.78	56	-19.22	-	-
9	1.257	24.59	Qp	0	.1	9.3	33.99	56	-22.01	-	-
11	4.4183	26.83	Qp	0	.1	9.3	36.23	56	-19.77	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Trace Markers

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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	.1703	26.33	Ca	0	0	9.4	35.73	-	-	54.95	-19.22
16	.2513	19.47	Ca	0	0	9.3	28.77	-	-	51.72	-22.95
18	.3323	13.92	Ca	0	0	9.3	23.22	-	-	49.39	-26.17
20	.6608	9.73	Ca	0	.1	9.3	19.13	-	-	46	-26.87
22	1.2525	7.31	Ca	0	.1	9.3	16.71	-	-	46	-29.29
24	4.3643	10.96	Ca	0	.1	9.3	20.36	-	-	46	-25.64
13	.1658	42.36	Qp	0	0	9.4	51.76	65.17	-13.41	-	-
15	.249	37.65	Qp	0	0	9.3	46.95	61.79	-14.84	-	-
17	.33	32.6	Qp	0	0	9.3	41.9	59.45	-17.55	-	-
19	.6608	26.12	Qp	0	.1	9.3	35.52	56	-20.48	-	-
21	1.2525	23.2	Qp	0	.1	9.3	32.6	56	-23.4	-	-
23	4.371	24.25	Qp	0	.1	9.3	33.65	56	-22.35	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

10. SETUP PHOTOS

Please refer to 14523744-EP1V1 for setup photos.

END OF REPORT

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