

TEST REPORT

Report Number : 14982485-E16V2

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

Model : A3286 (Parent Model)
A3287, A3288 (Variant Models)

Brand : APPLE

FCC ID : BCG-E8689A (Parent Model)
BCG-E8690A, BCG-E8691A (Variant Models)

IC : 579C-E8689A (Parent Model)
579C-E8690A, 579C-E8691A (Variant Models)

EUT Description : SMARTPHONE

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

Date Of Issue:
JULY 30, 2024

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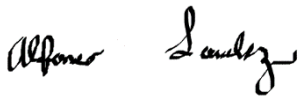
Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/8/2024	Initial Issue	---
V2	7/30/2024	Address TCB question Section 1, 6.1, 8, 9	Alfonso Sanchez

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.	
Model	A3286 (Parent Model) A3287, A3288 (Variant Models)	
Brand	APPLE	
FCC ID	BCG-E8689A (Parent Model) BCG-E8690A, BCG-E8691A (Variant Models)	
IC	579C-E8689A (Parent Model) 579C-E8690A, 579C-E8691A (Variant Models)	
EUT Description	SMARTPHONE	
SERIAL NUMBER	QR72TT96NR, JFV7FDG2D3 CGYGG69DNF, XL5VXWHQJT, T4F7KYVC25	
SAMPLE RECEIPT DATE	APRIL 18, 2024; JANUARY 04, 2024; APRIL 3, 2024; JUNE 13, 2024	
DATE TESTED	MARCH 01, 2024 TO JUNE 27, 2024	
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

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 Ct, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538, USA			

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:

$$\begin{aligned}
 \text{EIRP (dBm)} &= \text{Meter Reading (dBm)} + \text{Antenna Factor (dB/m)} + \text{Pre-Amp Gain/Cbl Loss (dB)} \\
 &\quad + \text{dBm-to-dBm Unit Conversion Factor @ 3m} \\
 &= -60 \text{ dBm} + 28 \text{ dB/m} + (-27) \text{ dB} + 11.8 \\
 &= -47.2 \text{ dBm}
 \end{aligned}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned}
 \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{LISN Insertion Loss (dB)} + \text{Cable Loss (dB)} \\
 &\quad + \text{Limiter Factor (dB)} \\
 &= 42.19 \text{ dBuV} + 0.1 \text{ dB} + 0 \text{ dB} + 9.4 \text{ (dB)} \\
 &= 51.69 \text{ dBuV}
 \end{aligned}$$

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

The EUT has a UWB transceiver with two integral antennas (ANT1 = ANT8/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.

All ANT1 data is reused based on reference FCC ID: BCG-E8688A / IC: 579C-E8688A to cover variant models FCC ID: BCG-E8689A / IC: 579C-E8689A, FCC ID: BCG-E8690A / IC: 579C-E8690A, and FCC ID: BCG-E8691A / IC: 579C-E8691A per manufacturer KDB inquiry approved by FCC/ISED.

ANT2 was retested for the variant models due to having different antenna gains from the reference model.

6.2. MAXIMUM OUTPUT POWER

Highest Average Powers based on ANT/CH are listed as follows:

ANT	CH	CONFIG	PL	Average Power (dBm EIRP)
1	9	810	0GAP0	-42.34
2	5	703	0	-42.34
2	9	6	125	-42.30

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: 2219.0.0.100.1~40.74.46

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

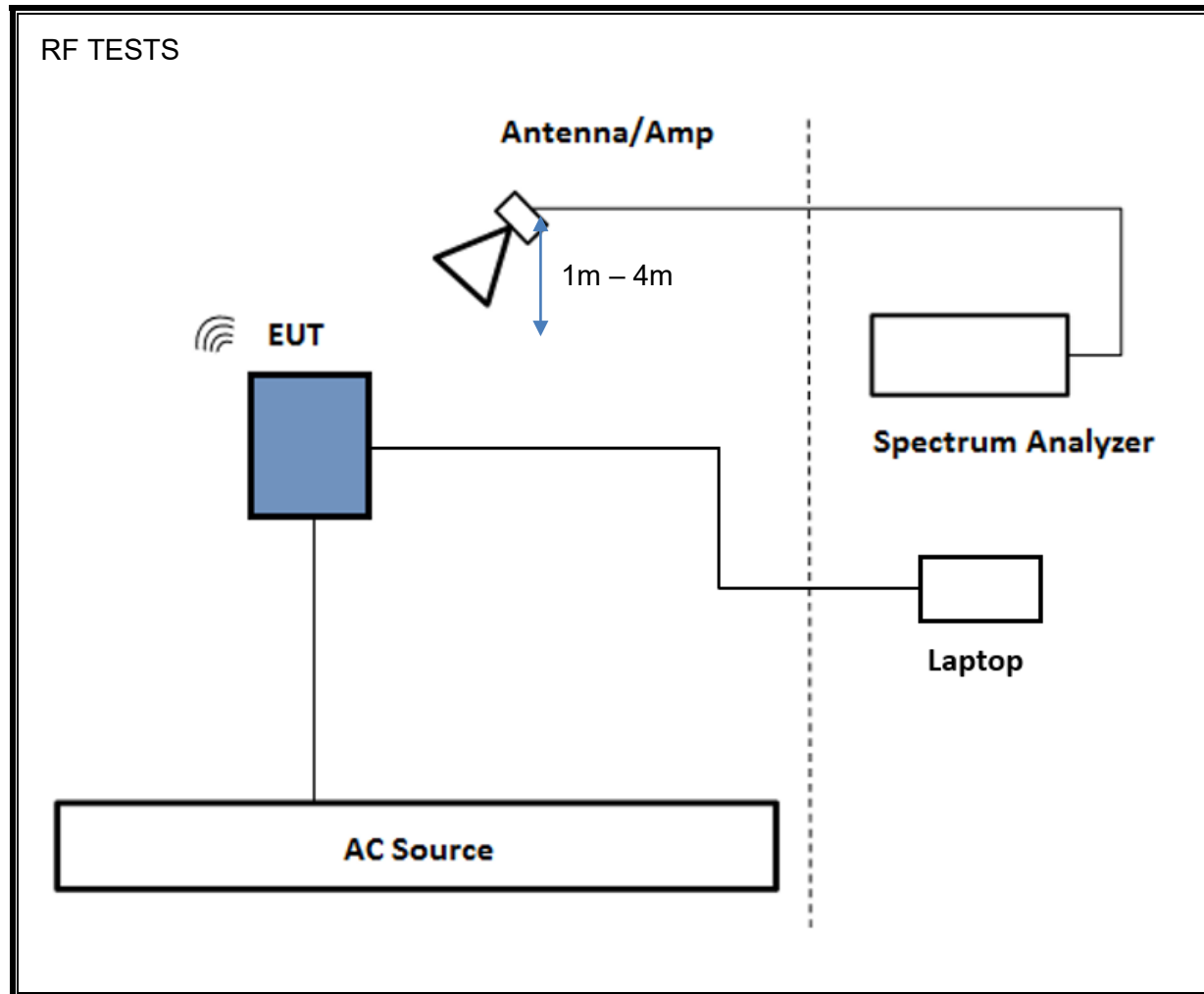
TEST SETUP

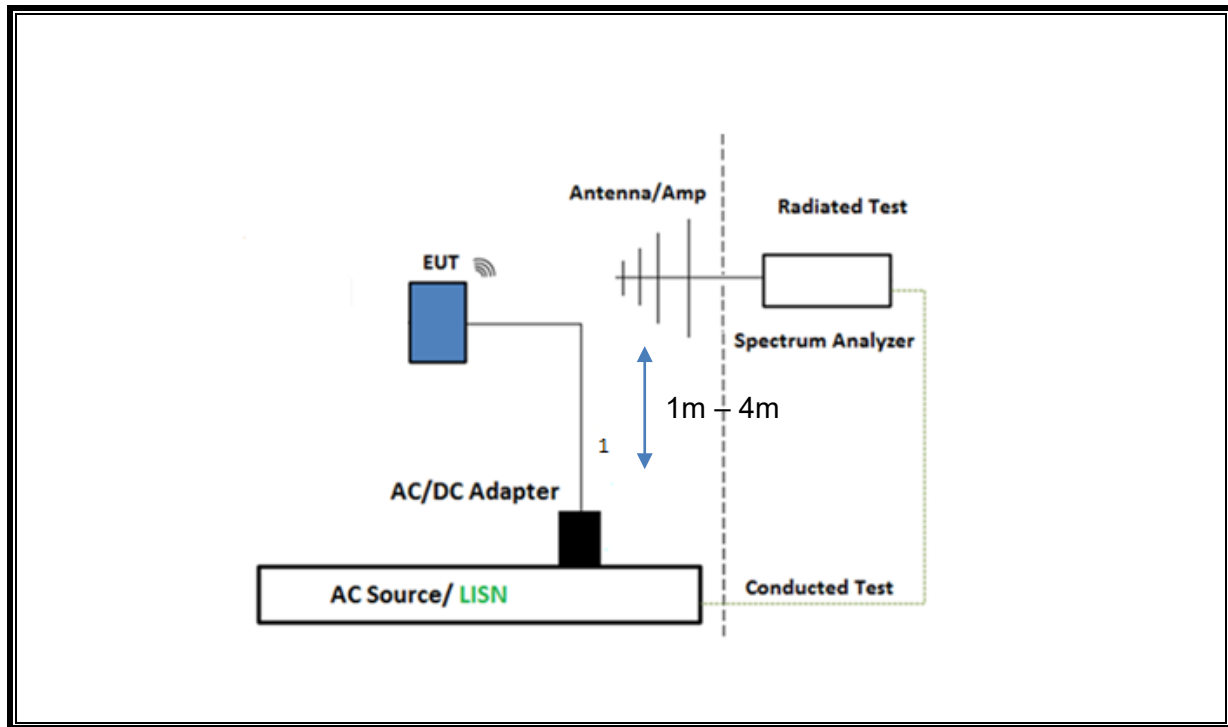
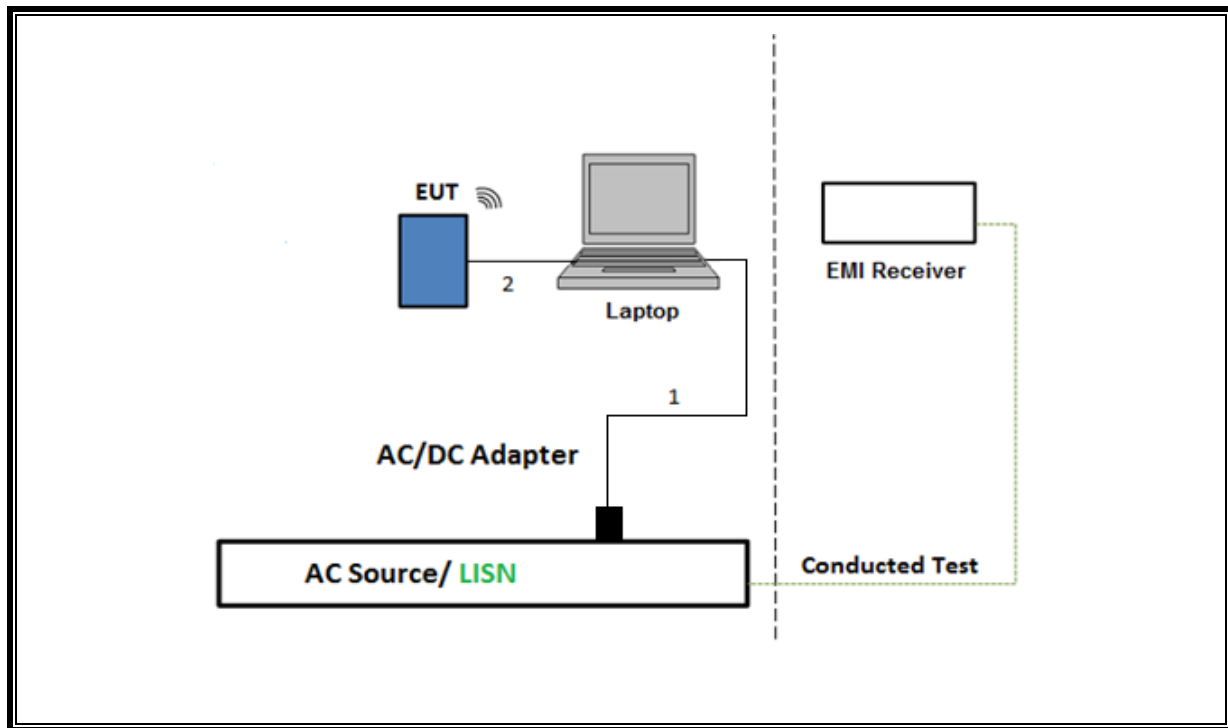
The EUT was examined at pre-scan test using a fundamental frequency in the portrait (z), landscape (y), and flatbed (x) position and the worst-case orientation of individual ANT/CH/CONFIG setting was determined for final spurious emission measurement. All selected configs are used for the Ant/Ch settings that were tested at default power (0 dBm), and Config 9 Payload 125 was chose for unwanted emission test with CH9 on Ant 1 and both CH5 and CH9 on Ant 2 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 – 6 GHz, 1164 – 1240 MHz, and 1559 – 1610 MHz 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.

SETUP DIAGRAM FOR Above 1GHz TESTS

SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**

8. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	Local ID	Cal Due
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	Frankenstein	231876	4/30/2025
Horn Antenna 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	226672	2/28/2026
ESW, EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223459	2/28/2025
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	236726	10/31/2024
Horn Antenna 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	80403	6/30/2024
Hybrid Antenna 30MHz-1GHz	Sunol Sciences Corp.	JB1	80508	6/30/2024
ESW, EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223460	2/28/2025
Hybrid Antenna 30MHz-1GHz Preamp (Amplifier 9 KHz - 1 GHz)	SONOMA INSTRUMENT	310N	224489	12/1/2024
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	226781	3/31/2025
ESW, EMI TEST RECEIVER	Rohde & Schwarz	ESW44	226078	2/28/2025
Horn Antenna 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	222740	8/31/2024
EMI TEST RECEIVER, with B8 option	Rohde & Schwarz	ESW44	169937	2/18/2025
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	200896	2/28/2025
Antenna, Passive Loop 30Hz - 1MHz	Electro-Metrics	EM-6871	219908	9/30/2024
Antenna, Passive Loop 100kHz - 30MHz	Electro-Metrics	EM-6872	219910	5/31/2025
Antenna, Horn 18-26.5GHz	ARA	MWH-1826/B	172353	6/30/2024
RF Amplifier 18-26.5GHz	Ampical	AMP18G26.5-60	171583	6/30/2024
Antenna, Horn 26.5-40GHz	ARA	MWH-2640/B	172367	6/30/2024
RF Amplifier 26.5-40GHz	Ampical	AMP26G40-60	172367	6/30/2024
Antenna, Horn 26.5-40GHz	ARA	MWH-2640/B	81105	8/31/2024
RF Amplifier 26.5-40GHz	Ampical	AMP26G40-60	220193	8/31/2024
EMI Test Receiver	Rohde & Schwarz	ESR	171646	2/28/2025
LISN	Fischer Custom Communications, Inc.	FCC-LISN-50/250-25-2-01-480V	175765	1/31/2025
Transient Limiter	TE	TBFL1	207996	8/31/2024
Radiated Software	UL	UL EMC	Rev 9.5 2024-05-01	
AC Line Conducted Software	UL	UL EMC	Rev 9.5 2023-03-03	

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

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 $\geq 3 \times \text{RBW}$. The sweep time is coupled.

Tabulated data provides the test results of all available test configurations. The plots for ANT1, CONFIG 9, Payload 125 on CH9 and ANT2, CONFIG 9, Payload 125 on CH5 and CH9 bandwidth measurement on are presented and same measurement settings apply to the rest of the test configurations.

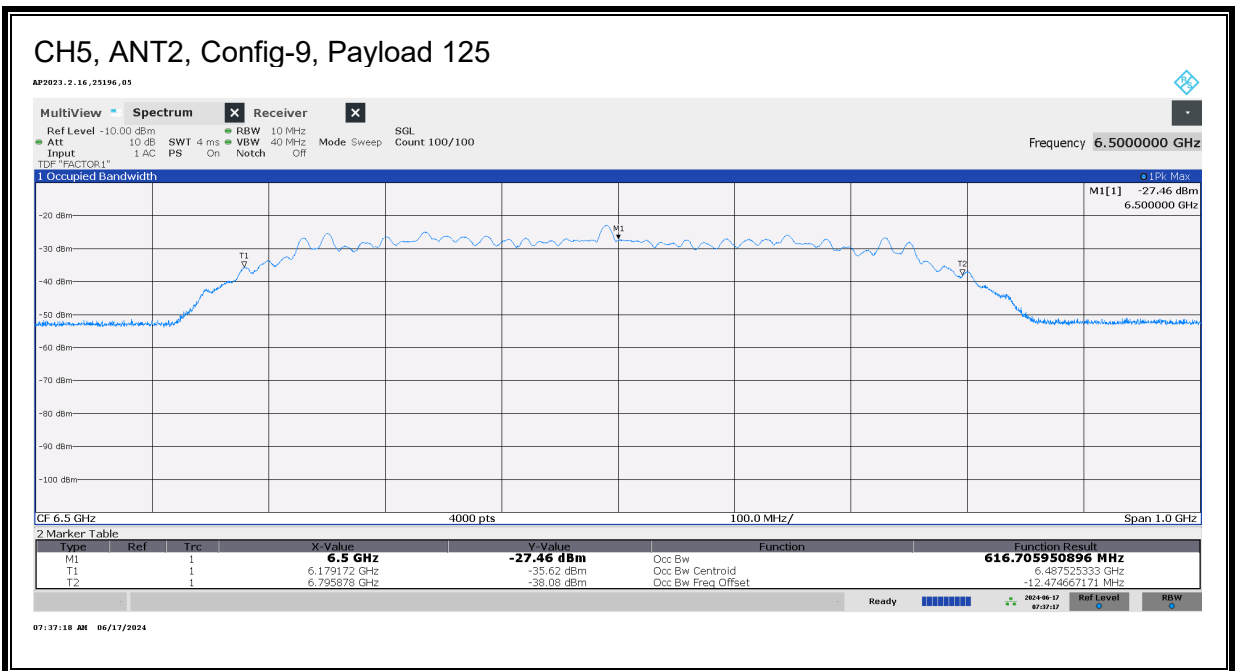
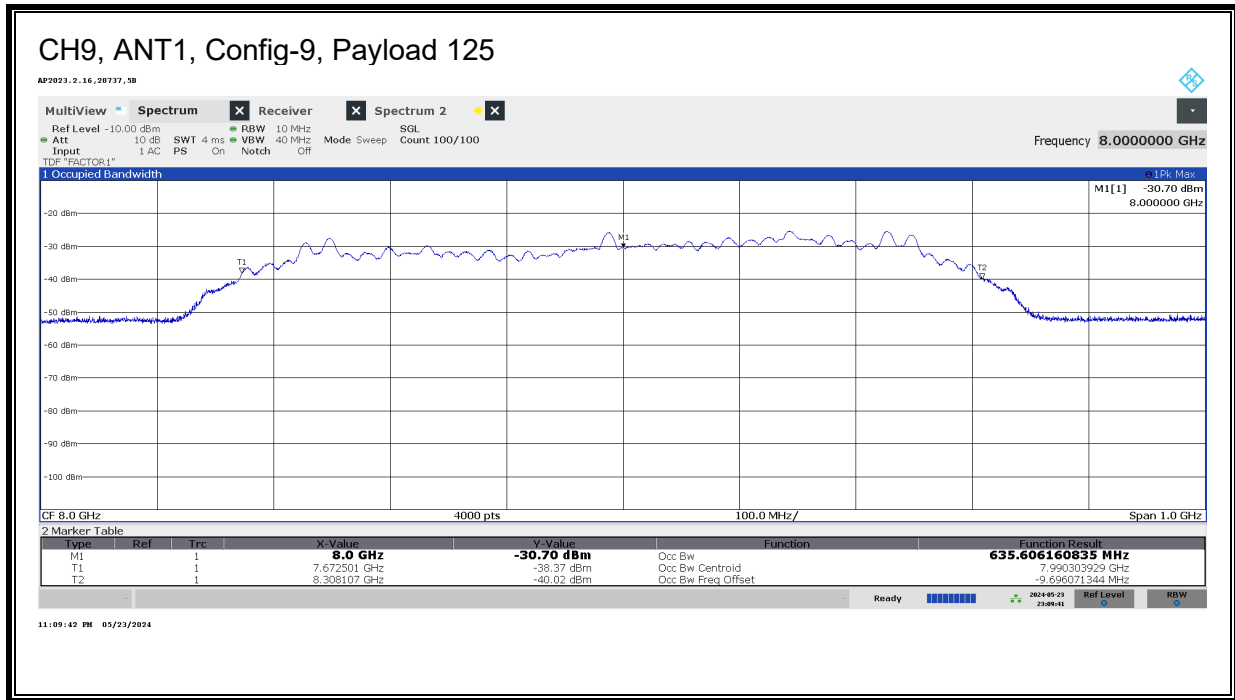
RESULTS

Employee IDs: 106020,28737,32440,32305,
Location: 05-RDE-B
Test Date: 05/07/24 – 05/25/24, 6/15/2024 - 6/18/2024

ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
1	9	0	25	Flatbed	V	618.12
1	9	1	45	Flatbed	V	618.11
1	9	6	125	Flatbed	V	632.14
1	9	9	125	Flatbed	V	635.61
1	9	10	25	Flatbed	V	620.89
1	9	11	25	Flatbed	V	621.25
1	9	11	65	Flatbed	V	620.78
1	9	101	25	Flatbed	V	621.03
1	9	101	65	Flatbed	V	621.67
1	9	102	25	Flatbed	V	621.91
1	9	102	65	Flatbed	V	621.34
1	9	103	25	Flatbed	V	622.55
1	9	103	125	Flatbed	V	625.90
1	9	202	625	Flatbed	V	742.50
1	9	402	445	Flatbed	V	675.43
1	9	501	0	Flatbed	V	610.29
1	9	503	0	Flatbed	V	609.59
1	9	601	0	Flatbed	V	625.24
1	9	605	0	Flatbed	V	625.21
1	9	607	0	Flatbed	V	625.06
1	9	701	0	Flatbed	V	612.93
1	9	702	0	Flatbed	V	614.21
1	9	703	0	Flatbed	V	612.93
1	9	704	0	Flatbed	V	642.17
1	9	705	0	Flatbed	V	634.70
1	9	706	0	Flatbed	V	637.92
1	9	405	4093	Flatbed	V	724.91
1	9	407	4093	Flatbed	V	695.48
1	9	409	4093	Flatbed	V	721.12
1	9	801	0Gap0	Flatbed	V	640.55
1	9	801	0Gap64	Flatbed	V	624.62
1	9	802	0	Flatbed	V	624.99
1	9	803	0	Flatbed	V	625.28
1	9	804	0Gap0	Flatbed	V	630.56
1	9	804	0Gap64	Flatbed	V	630.36
1	9	805	0	Flatbed	V	630.72
1	9	806	0	Flatbed	V	627.35
1	9	807	0Gap0	Flatbed	V	626.40
1	9	807	0Gap64	Flatbed	V	625.27
1	9	808	0	Flatbed	V	626.49
1	9	809	0	Flatbed	V	626.43
1	9	810	0Gap0	Flatbed	V	635.61
1	9	810	0Gap64	Flatbed	V	631.40
1	9	811	0	Flatbed	V	630.50
1	9	812	0	Flatbed	V	632.54

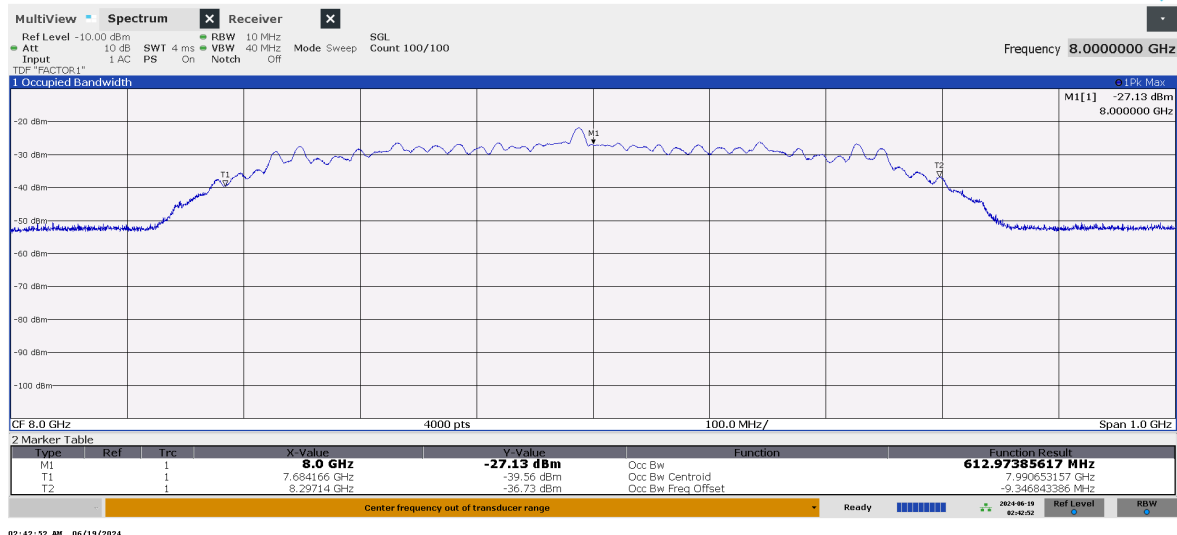
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
2	5	0	25	Portrait	H	602.2411
2	5	1	45	Portrait	H	601.1107
2	5	6	125	Portrait	H	612.2948
2	5	9	125	Portrait	H	616.706
2	5	10	25	Portrait	H	604.1518
2	5	11	25	Portrait	H	603.0113
2	5	11	65	Portrait	H	604.1587
2	5	101	25	Portrait	H	604.3719
2	5	101	65	Portrait	H	605.1083
2	5	102	25	Portrait	H	603.9339
2	5	102	65	Portrait	H	605.6531
2	5	103	25	Portrait	H	605.8709
2	5	103	125	Portrait	H	608.0406
2	5	202	625	Portrait	H	721.0797
2	5	402	445	Portrait	H	661.4629
2	5	501	0	Portrait	H	590.7857
2	5	503	0	Portrait	H	590.1289
2	5	601	0	Portrait	H	613.3902
2	5	605	0	Portrait	H	608.67
2	5	607	0	Portrait	H	608.3784
2	5	701	0	Portrait	H	597.8159
2	5	702	0	Portrait	H	592.4217
2	5	703	0	Portrait	H	591.7407
2	5	704	0	Portrait	H	624.271
2	5	705	0	Portrait	H	619.7239
2	5	706	0	Portrait	H	621.4856
2	5	405	4093	Portrait	H	689.3667
2	5	407	4093	Portrait	H	671.0848
2	5	409	4093	Portrait	H	695.5848
2	5	801	0Gap0	Portrait	H	614.4689
2	5	801	0Gap64	Portrait	H	615.4721
2	5	802	0	Portrait	H	615.7121
2	5	803	0	Portrait	H	614.9166
2	5	804	0Gap0	Portrait	H	621.8105
2	5	804	0Gap64	Portrait	H	620.8484
2	5	805	0	Portrait	H	621.0708
2	5	806	0	Portrait	H	620.4563
2	5	807	0Gap0	Portrait	H	614.349
2	5	807	0Gap64	Portrait	H	612.4204
2	5	808	0	Portrait	H	612.4556
2	5	809	0	Portrait	H	613.6495
2	5	810	0Gap0	Portrait	H	621.1742
2	5	810	0Gap64	Portrait	H	618.2951
2	5	811	0	Portrait	H	618.6734
2	5	812	0	Portrait	H	619.0036

ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	99% BW (MHz)
2	9	0	25	Landscape	H	597.74
2	9	1	45	Landscape	H	597.96
2	9	6	125	Landscape	H	610.50
2	9	9	125	Landscape	H	612.97
2	9	10	25	Landscape	H	599.00
2	9	11	25	Landscape	H	598.42
2	9	11	65	Landscape	H	600.94
2	9	101	25	Landscape	H	599.37
2	9	101	65	Landscape	H	600.43
2	9	102	25	Landscape	H	599.84
2	9	102	65	Landscape	H	600.45
2	9	103	25	Landscape	H	599.95
2	9	103	125	Landscape	H	605.73
2	9	202	625	Landscape	H	742.54
2	9	402	445	Landscape	H	678.67
2	9	501	0	Landscape	H	590.90
2	9	503	0	Landscape	H	590.73
2	9	601	0	Landscape	H	609.31
2	9	605	0	Landscape	H	606.24
2	9	607	0	Landscape	H	605.16
2	9	701	0	Landscape	H	597.28
2	9	702	0	Landscape	H	591.43
2	9	703	0	Landscape	H	591.87
2	9	704	0	Landscape	H	621.92
2	9	705	0	Landscape	H	612.36
2	9	706	0	Landscape	H	614.71
2	9	405	4093	Landscape	H	687.08
2	9	407	4093	Landscape	H	670.46
2	9	409	4093	Landscape	H	691.19
2	9	801	0Gap0	Landscape	H	607.87
2	9	801	0Gap64	Landscape	H	608.85
2	9	802	0	Landscape	H	609.60
2	9	803	0	Landscape	H	607.28
2	9	804	0Gap0	Landscape	H	613.46
2	9	804	0Gap64	Landscape	H	614.97
2	9	805	0	Landscape	H	615.82
2	9	806	0	Landscape	H	613.95
2	9	807	0Gap0	Landscape	H	611.37
2	9	807	0Gap64	Landscape	H	610.71
2	9	808	0	Landscape	H	613.02
2	9	809	0	Landscape	H	611.07
2	9	810	0Gap0	Landscape	H	618.46
2	9	810	0Gap64	Landscape	H	614.52
2	9	811	0	Landscape	H	614.56
2	9	812	0	Landscape	H	615.04

99% BW

CH9, ANT2, Config 9, Payload 125

AP2023.2.16, 28737, 58



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 f_H and the lower boundary is designated f_L . The frequency at which the highest radiated emission occurs is designated f_M .

§15.503 (b) *Center frequency*. The center frequency, f_C , equals $(f_H + f_L)/2$.

§15.503 (c) *Fractional bandwidth*. The fractional bandwidth equals $2(f_H - f_L)/(f_H + f_L)$.

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

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

RSS-220

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

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

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

$$B_{-10} = f_H - f_L$$

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

where:

f_M is the frequency of maximum UWB transmission;

f_H is the highest frequency at which the power spectral density of the UWB transmission is -10 dB relative to f_M ;

f_L is the lowest frequency at which the power spectral density of the UWB transmission is -10 dB relative to f_M ; and

$f_C = (f_H + f_L)/2$ is the centre frequency of the -10 dB bandwidth.

TEST PROCEDURE

ANSI C63.10 Clause 10.1

RSS-220 Section 2 of the Annex

Tabulated data provides the test results of all available test configurations. The plots for ANT1, CONFIG 9, Payload 125 on CH9 and ANT2, CONFIG 9, Payload 125 on CH5 and CH9 bandwidth measurement on are presented and same measurement settings apply to the rest of the test configurations.

RESULTS

Employee IDs: 106020,28737,32440,32305,

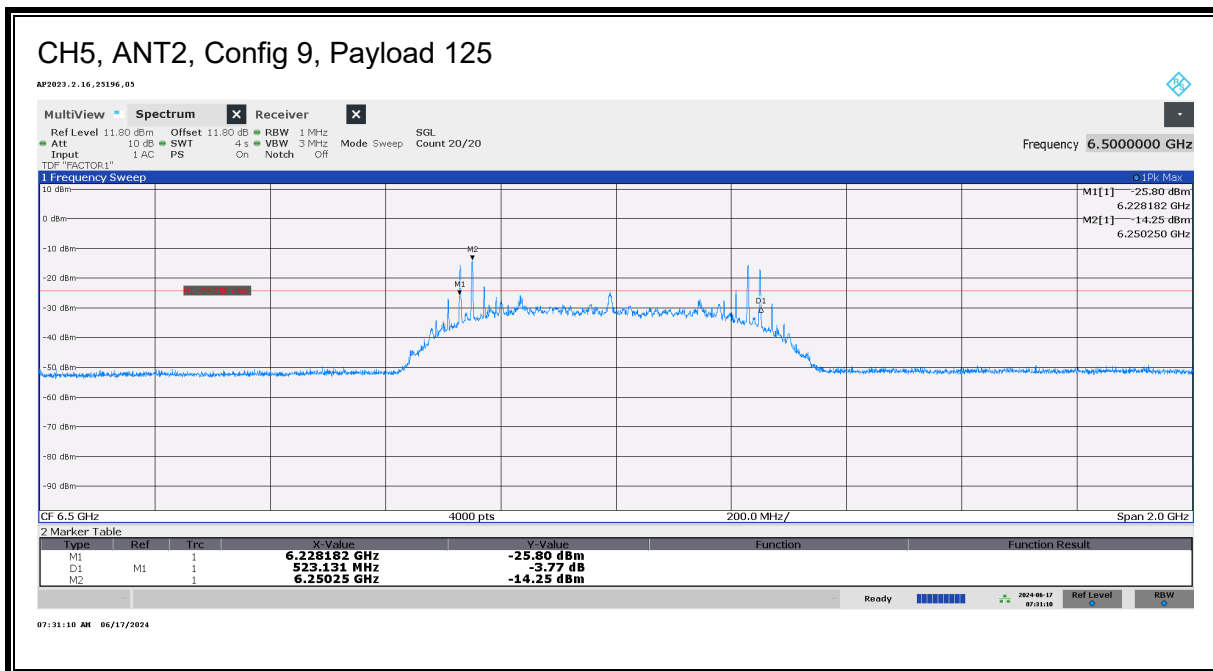
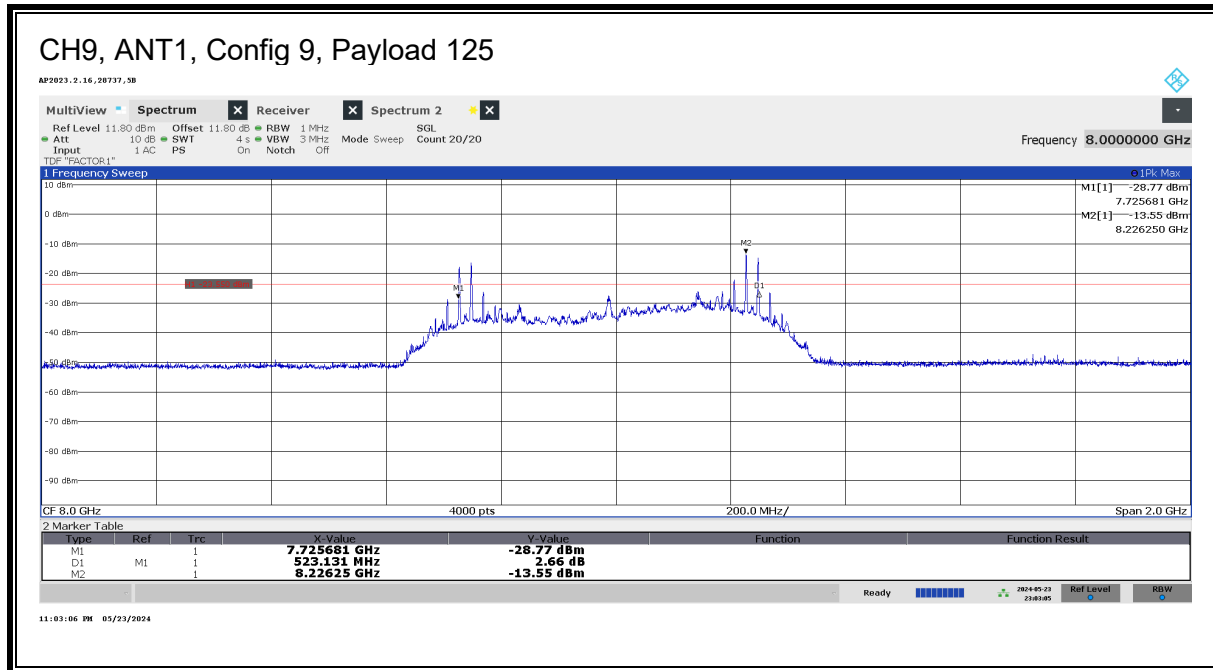
Location: 05-RDE-B

Test Date: 05/07/24 – 05/25/24, 6/15/2024 - 6/18/2024

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	Flatbed	V	8.22625	7.724681	8.250813	7.987747	526.132	500	26.132	P
1	9	1	45	Flatbed	V	8.22625	7.724181	8.250313	7.987247	526.132	500	26.132	P
1	9	6	125	Flatbed	V	8.22625	7.725681	8.249312	7.9874965	523.631	500	23.631	P
1	9	9	125	Flatbed	V	8.22625	7.725681	8.248812	7.9872465	523.131	500	23.131	P
1	9	10	25	Flatbed	V	8.22625	7.724681	8.250813	7.987747	526.132	500	26.132	P
1	9	11	25	Flatbed	V	8.22625	7.724681	8.250813	7.987747	526.132	500	26.132	P
1	9	11	65	Flatbed	V	8.22675	7.724681	8.250312	7.9874965	525.631	500	25.631	P
1	9	101	25	Flatbed	V	8.22625	7.72439	8.25008	7.987235	525.69	500	25.69	P
1	9	101	65	Flatbed	V	8.22625	7.72438	8.25033	7.987355	525.95	500	25.95	P
1	9	102	25	Flatbed	V	8.22675	7.72401	8.25045	7.98723	526.44	500	26.44	P
1	9	102	65	Flatbed	V	8.22675	7.72439	8.25071	7.98755	526.32	500	26.32	P
1	9	103	25	Flatbed	V	8.22625	7.72418	8.250813	7.9874965	526.633	500	26.633	P
1	9	103	125	Flatbed	V	8.22625	7.72418	8.25081	7.987495	526.63	500	26.63	P
1	9	202	625	Flatbed	V	8.22625	7.72418	8.25031	7.987245	526.13	500	26.13	P
1	9	402	445	Flatbed	V	8.22625	7.724181	8.25031	7.9872455	526.129	500	26.129	P
1	9	501	0	Flatbed	V	8.22625	7.72418	8.25031	7.987245	526.13	500	26.13	P
1	9	503	0	Flatbed	V	8.22625	7.724181	8.250813	7.987497	526.632	500	26.632	P
1	9	601	0	Flatbed	V	8.22625	7.724181	8.250813	7.987497	526.632	500	26.632	P
1	9	605	0	Flatbed	V	8.22625	7.724181	8.250813	7.987497	526.632	500	26.632	P
1	9	607	0	Flatbed	V	8.22625	7.72418	8.250813	7.9874965	526.633	500	26.633	P
1	9	701	0	Flatbed	V	8.22625	7.72318	8.25181	7.987495	528.63	500	28.63	P
1	9	702	0	Flatbed	V	8.22625	7.72318	8.251813	7.9874965	528.633	500	28.633	P
1	9	703	0	Flatbed	V	8.22625	7.72318	8.251813	7.9874965	528.633	500	28.633	P
1	9	704	0	Flatbed	V	8.22625	7.72318	8.266317	7.9947485	543.137	500	43.137	P
1	9	705	0	Flatbed	V	8.2263	7.7232	8.26934	7.99627	546.14	500	46.14	P
1	9	706	0	Flatbed	V	8.22625	7.72318	8.271818	7.997499	548.638	500	48.638	P
1	9	405	4093	Flatbed	V	8.22625	7.72225	8.27133	7.99679	549.08	500	49.08	P
1	9	407	4093	Flatbed	V	8.22625	7.72401	8.27435	7.99918	550.34	500	50.34	P
1	9	409	4093	Flatbed	V	8.22675	7.72489	8.25021	7.98755	525.32	500	25.32	P
1	9	801	0Gap0	Flatbed	V	8.22625	7.723681	8.299825	8.011753	576.144	500	76.144	P
1	9	801	0Gap64	Flatbed	V	8.22625	7.723181	8.274819	7.999	551.638	500	51.638	P
1	9	802	0	Flatbed	V	8.22875	7.715679	8.27832	7.9969995	562.641	500	62.641	P
1	9	803	0	Flatbed	V	8.22625	7.715679	8.27832	7.9969995	562.641	500	62.641	P
1	9	804	0Gap0	Flatbed	V	8.22625	7.723681	8.282821	8.003251	559.14	500	59.14	P
1	9	804	0Gap64	Flatbed	V	8.22575	7.715679	8.274819	7.995249	559.14	500	59.14	P
1	9	805	0	Flatbed	V	8.22625	7.715679	8.274319	7.994999	558.64	500	58.64	P
1	9	806	0	Flatbed	V	8.22625	7.723181	8.274819	7.999	551.638	500	51.638	P
1	9	807	0Gap0	Flatbed	V	8.22625	7.723681	8.282321	8.003001	558.64	500	58.64	P
1	9	807	0Gap64	Flatbed	V	8.22625	7.715679	8.282821	7.99925	567.142	500	67.142	P
1	9	808	0	Flatbed	V	8.22625	7.723181	8.282821	8.003001	559.64	500	59.64	P
1	9	809	0	Flatbed	V	8.22575	7.723681	8.283321	8.003501	559.64	500	59.64	P
1	9	810	0Gap0	Flatbed	V	8.22625	7.723681	8.282321	8.003001	558.64	500	58.64	P
1	9	810	0Gap64	Flatbed	V	8.22625	7.723681	8.299825	8.011753	576.144	500	76.144	P
1	9	811	0	Flatbed	V	8.22625	7.723681	8.282821	8.003251	559.14	500	59.14	P
1	9	812	0	Flatbed	V	8.22625	7.723681	8.282321	8.003001	558.64	500	58.64	P

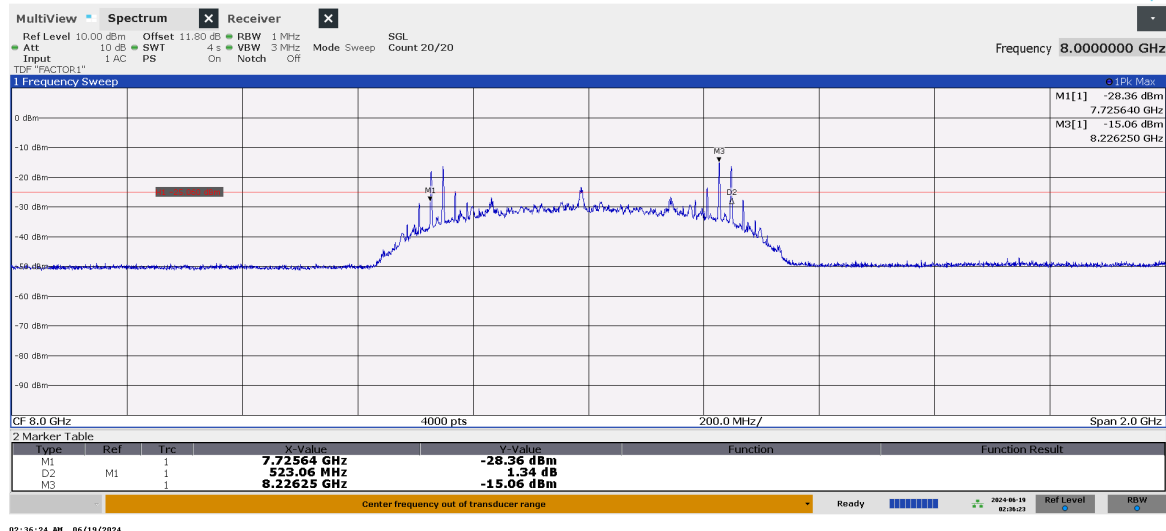
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	FM (GHz)	FL (GHz)	FH (GHz)	FC (GHz)	OBW (MHz)	Min. OBW (MHz)	OBW Margin (MHz)	OBW Pass/Fail
2	5	0	25	Portrait	H	6.25025	6.226182	6.752814	6.489498	526.63	500	26.632	P
2	5	1	45	Portrait	H	6.25025	6.226682	6.752814	6.489748	526.13	500	26.132	P
2	5	6	125	Portrait	H	6.25025	6.227682	6.751313	6.4894975	523.63	500	23.631	P
2	9	9	125	Portrait	H	6.25025	6.228182	6.751313	6.4897475	523.13	500	23.131	P
2	5	10	25	Portrait	H	6.25025	6.226682	6.752814	6.489748	526.13	500	26.132	P
2	5	11	25	Portrait	H	6.25025	6.226182	6.752814	6.489498	526.63	500	26.632	P
2	5	11	65	Portrait	H	6.25025	6.226182	6.752814	6.489498	526.63	500	26.632	P
2	5	101	25	Portrait	H	6.25025	6.226682	6.752313	6.4894975	525.63	500	25.631	P
2	5	101	65	Portrait	H	6.24975	6.226682	6.751813	6.4892475	525.13	500	25.131	P
2	5	102	25	Portrait	H	6.25075	6.226682	6.752313	6.4894975	525.63	500	25.631	P
2	5	102	65	Portrait	H	6.25025	6.227182	6.752313	6.4897475	525.13	500	25.131	P
2	5	103	25	Portrait	H	6.25075	6.226182	6.752814	6.489498	526.63	500	26.632	P
2	5	103	125	Portrait	H	6.25025	6.226682	6.752313	6.4894975	525.63	500	25.631	P
2	5	202	625	Portrait	H	6.25025	6.226682	6.752814	6.489748	526.13	500	26.132	P
2	5	402	445	Portrait	H	6.25025	6.226182	6.752314	6.489248	526.13	500	26.132	P
2	5	501	0	Portrait	H	6.25075	6.22675	6.75233	6.48954	525.58	500	25.58	P
2	5	503	0	Portrait	H	6.25025	6.226182	6.752314	6.489248	526.13	500	26.132	P
2	5	601	0	Portrait	H	6.25075	6.22618	6.75231	6.489245	526.13	500	26.13	P
2	5	605	0	Portrait	H	6.25025	6.22675	6.75231	6.48953	525.56	500	25.56	P
2	5	607	0	Portrait	H	6.25025	6.22618	6.75231	6.489245	526.13	500	26.13	P
2	5	701	0	Portrait	H	6.25075	6.225181	6.753313	6.489247	528.13	500	28.132	P
2	5	702	0	Portrait	H	6.25075	6.225181	6.753313	6.489247	528.13	500	28.132	P
2	5	703	0	Portrait	H	6.25075	6.225181	6.753313	6.489247	528.13	500	28.132	P
2	5	704	0	Portrait	H	6.25075	6.216679	6.753313	6.484996	536.63	500	36.634	P
2	5	705	0	Portrait	H	6.25075	6.215679	6.753313	6.484496	537.63	500	37.634	P
2	5	706	0	Portrait	H	6.25075	6.205176	6.753313	6.4792445	548.14	500	48.137	P
2	5	405	4093	Portrait	H	6.25025	6.21218	6.75881	6.485495	546.63	500	46.63	P
2	5	407	4093	Portrait	H	6.25025	6.20218	6.75232	6.47725	550.14	500	50.14	P
2	5	409	4093	Portrait	H	6.25025	6.22668	6.75231	6.489495	525.63	500	25.63	P
2	5	801	0Gap0	Portrait	H	6.25075	6.20568	6.75331	6.479495	547.63	500	47.63	P
2	5	801	0Gap64	Portrait	H	6.25075	6.202676	6.75331	6.477993	550.63	500	50.634	P
2	5	802	0	Portrait	H	6.25075	6.202676	6.75331	6.477993	550.63	500	50.634	P
2	5	803	0	Portrait	H	6.25075	6.202676	6.761316	6.481996	558.64	500	58.64	P
2	5	804	0Gap0	Portrait	H	6.25075	6.19367	6.75731	6.47549	563.64	500	63.64	P
2	5	804	0Gap64	Portrait	H	6.25075	6.202676	6.76132	6.481998	558.64	500	58.644	P
2	5	805	0	Portrait	H	6.25075	6.202676	6.76132	6.481998	558.64	500	58.644	P
2	5	806	0	Portrait	H	6.25075	6.20218	6.76132	6.48175	559.14	500	59.14	P
2	5	807	0Gap0	Portrait	H	6.25075	6.194174	6.753814	6.473994	559.64	500	59.64	P
2	5	807	0Gap64	Portrait	H	6.25075	6.193673	6.753313	6.473493	559.64	500	59.64	P
2	5	808	0	Portrait	H	6.25075	6.194174	6.753314	6.473744	559.14	500	59.14	P
2	5	809	0	Portrait	H	6.25075	6.194174	6.753314	6.473744	559.14	500	59.14	P
2	5	810	0Gap0	Portrait	H	6.25075	6.194174	6.753314	6.473744	559.14	500	59.14	P
2	5	810	0Gap64	Portrait	H	6.25075	6.193673	6.754813	6.474243	561.14	500	61.14	P
2	5	811	0	Portrait	H	6.25075	6.193673	6.759815	6.476744	566.14	500	66.142	P
2	5	812	0	Portrait	H	6.25125	6.205676	6.759314	6.482495	553.64	500	53.638	P

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	Landscape	H	8.22625	7.724181	8.250313	7.987247	526.132	500	26.132	P
2	9	1	45	Landscape	H	8.22675	7.724181	8.250813	7.987497	526.632	500	26.632	P
2	9	6	125	Landscape	H	8.22625	7.72525	8.24945	7.98735	524.2	500	24.2	P
2	9	9	125	Landscape	H	8.22625	7.72564	8.2487	7.98717	523.06	500	23.06	P
2	9	10	25	Landscape	H	8.22625	7.24181	7.767942	7.504876	526.132	500	26.132	P
2	9	11	25	Landscape	H	8.22625	7.724181	8.250313	7.987247	526.132	500	26.132	P
2	9	11	65	Landscape	H	8.22675	7.72418	8.25031	7.987245	526.13	500	26.13	P
2	9	101	25	Landscape	H	8.22625	7.7244	8.25081	7.987605	526.41	500	26.41	P
2	9	101	65	Landscape	H	8.22675	7.72418	8.25031	7.987245	526.13	500	26.13	P
2	9	102	25	Landscape	H	8.22675	7.72418	8.25031	7.987245	526.13	500	26.13	P
2	9	102	65	Landscape	H	8.22625	7.72414	8.25032	7.98723	526.18	500	26.18	P
2	9	103	25	Landscape	H	8.22625	7.72418	8.25031	7.987245	526.13	500	26.13	P
2	9	103	125	Landscape	H	8.22625	7.72437	8.25019	7.98728	525.82	500	25.82	P
2	9	202	625	Landscape	H	8.22625	7.72426	8.25046	7.98736	526.2	500	26.2	P
2	9	402	445	Landscape	H	8.22625	7.72439	8.25008	7.987235	525.69	500	25.69	P
2	9	501	0	Landscape	H	8.22675	7.72415	8.25046	7.987305	526.31	500	26.31	P
2	9	503	0	Landscape	H	8.22675	7.72425	8.2502	7.987225	525.95	500	25.95	P
2	9	601	0	Landscape	H	8.22625	7.72439	8.25008	7.987235	525.69	500	25.69	P
2	9	605	0	Landscape	H	8.22625	7.724681	8.250813	7.987747	526.132	500	26.132	P
2	9	607	0	Landscape	H	8.22625	7.724681	8.250312	7.9874965	525.631	500	25.631	P
2	9	701	0	Landscape	H	8.22625	7.723181	8.251813	7.987497	528.632	500	28.632	P
2	9	702	0	Landscape	H	8.22625	7.723181	8.251813	7.987497	528.632	500	28.632	P
2	9	703	0	Landscape	H	8.22575	7.723181	8.251813	7.987497	528.632	500	28.632	P
2	9	704	0	Landscape	H	8.22625	7.723181	8.272818	7.9979995	549.637	500	49.637	P
2	9	705	0	Landscape	H	7.74825	7.72118	8.265816	7.993498	544.636	500	44.636	P
2	9	706	0	Landscape	H	7.74875	7.71918	8.271818	7.995499	552.638	500	52.638	P
2	9	405	4093	Landscape	H	8.22625	7.7101778	8.2718178	7.9909978	561.64	500	61.64	P
2	9	407	4093	Landscape	H	8.22675	7.700175	8.273818	7.9869965	573.643	500	73.643	P
2	9	409	4093	Landscape	H	7.98725	7.724181	8.250313	7.987247	526.132	500	26.132	P
2	9	801	0Gap0	Landscape	H	7.74825	7.707177	8.28282	7.9949985	575.643	500	75.643	P
2	9	801	0Gap64	Landscape	H	7.74825	7.703176	8.274319	7.9887475	571.143	500	71.143	P
2	9	802	0	Landscape	H	7.74875	7.713678	8.274318	7.993998	560.64	500	60.64	P
2	9	803	0	Landscape	H	7.74875	7.700175	8.274819	7.987497	574.644	500	74.644	P
2	9	804	0Gap0	Landscape	H	7.74825	7.704676	8.28282	7.993748	578.144	500	78.144	P
2	9	804	0Gap64	Landscape	H	8.22625	7.70318	8.27432	7.98875	571.14	500	71.14	P
2	9	805	0	Landscape	H	7.74875	7.703676	8.274319	7.9889975	570.643	500	70.643	P
2	9	806	0	Landscape	H	7.74875	7.70018	8.27432	7.98725	574.14	500	74.14	P
2	9	807	0Gap0	Landscape	H	8.22625	7.723181	8.282821	8.003001	559.64	500	59.64	P
2	9	807	0Gap64	Landscape	H	8.03275	7.715679	8.283321	7.9995	567.642	500	67.642	P
2	9	808	0	Landscape	H	8.03275	7.708677	8.282821	7.995749	574.144	500	74.144	P
2	9	809	0	Landscape	H	8.22625	7.707177	8.281821	7.994499	574.644	500	74.644	P
2	9	810	0Gap0	Landscape	H	8.22625	7.717179	8.28282	7.9999995	565.641	500	65.641	P
2	9	810	0Gap64	Landscape	H	8.22625	7.708677	8.282821	7.995749	574.144	500	74.144	P
2	9	811	0	Landscape	H	7.98725	7.708677	8.282821	7.995749	574.144	500	74.144	P
2	9	812	0	Landscape	H	7.98725	7.708677	8.282821	7.995749	574.144	500	74.144	P

OPERATING BANDWIDTH

CH9, ANT2, Config 9, Payload 125

AP2023.2.16.20737.3B



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

RSS-220

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

TEST PROCEDURE

ANSI C63.10 Clause 10.3

RSS-220 Annex

Peak EIRP 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. Plots for ANT1, CONFIG 9, Payload 125 on CH9 and ANT2, CONFIG 9, Payload 125 on CH5 and CH9 peak and maximum average power measurements are presented and same measurement settings apply to the rest of test configurations.

RESULTS

Employee IDs: 106020,28737,32440,32305,

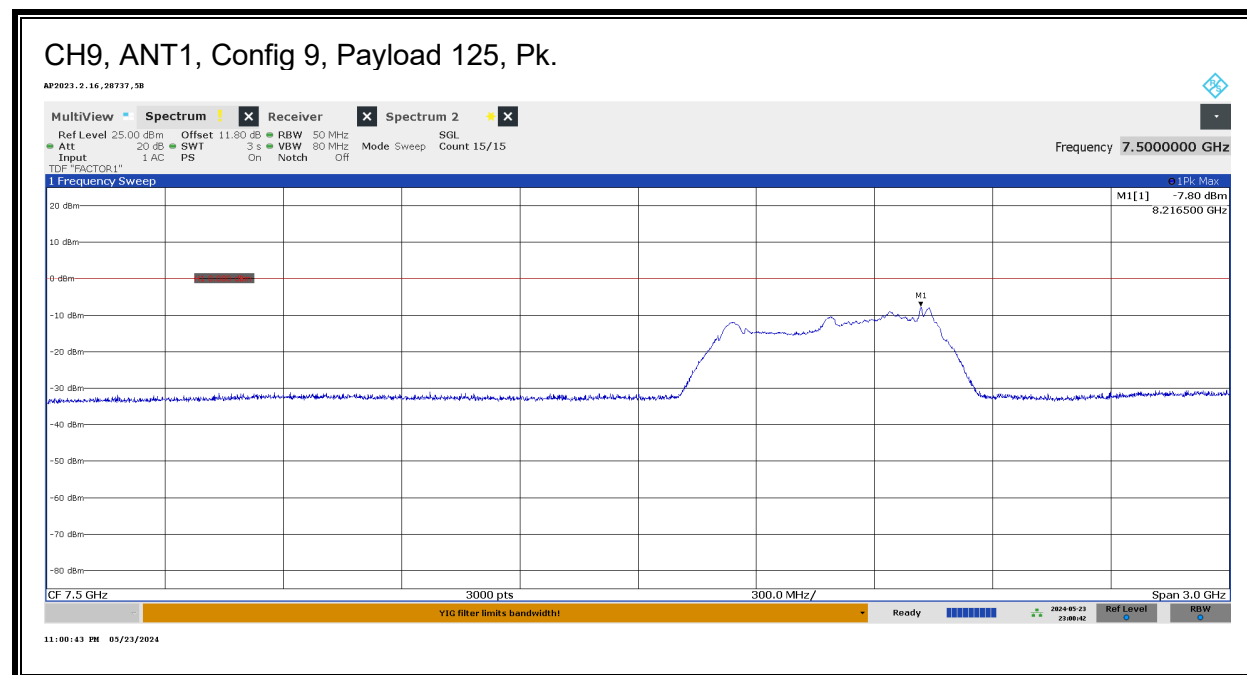
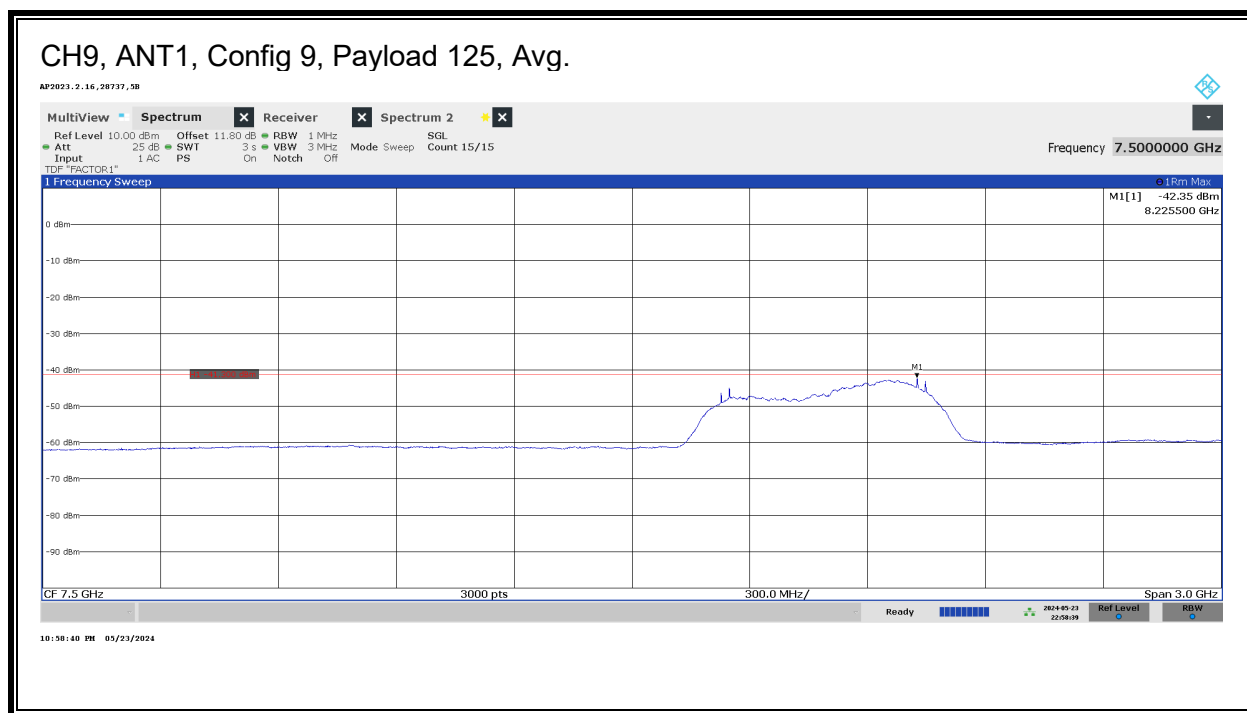
Location: 05-RDE-B

Test Date: 05/07/24 – 05/25/24, 6/15/2024 - 6/18/2024

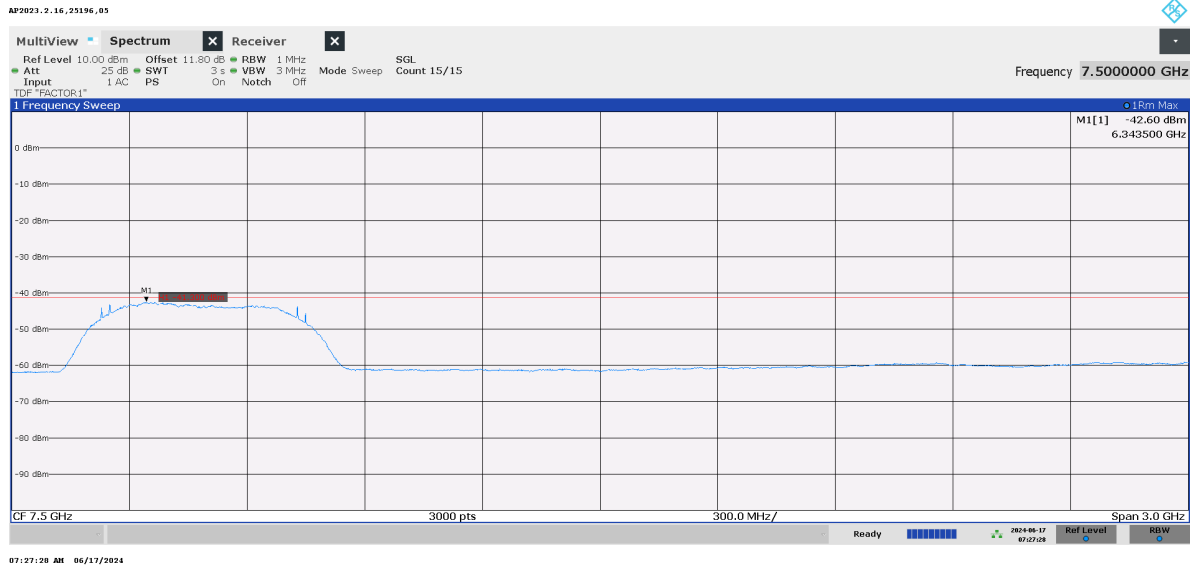
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	Peak EIRP Power				Average EIRP Power			
						FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
1	9	0	25	Flatbed	V	8.2165	-1.02	0	-1.02	8.1545	-42.53	-41.3	-1.23
1	9	1	45	Flatbed	V	8.2165	-1.16	0	-1.16	8.1275	-43.43	-41.3	-2.13
1	9	6	125	Flatbed	V	8.2375	-6.64	0	-6.64	8.1535	-42.47	-41.3	-1.17
1	9	9	125	Flatbed	V	8.2165	-7.80	0	-7.80	8.2255	-42.35	-41.3	-1.05
1	9	10	25	Flatbed	V	8.2175	-1.12	0	-1.12	8.1535	-42.45	-41.3	-1.15
1	9	11	25	Flatbed	V	8.2165	-1.11	0	-1.11	8.1275	-44.13	-41.3	-2.83
1	9	11	65	Flatbed	V	8.2165	-1.07	0	-1.07	8.1435	-42.55	-41.3	-1.25
1	9	101	25	Flatbed	V	8.2175	-1.04	0	-1.04	8.1275	-44.09	-41.3	-2.79
1	9	101	65	Flatbed	V	8.2165	-1.27	0	-1.27	8.1275	-42.77	-41.3	-1.47
1	9	102	25	Flatbed	V	8.2165	-1.29	0	-1.29	8.1275	-44.16	-41.3	-2.86
1	9	102	65	Flatbed	V	8.2165	-1.44	0	-1.44	8.1435	-42.49	-41.3	-1.19
1	9	103	25	Flatbed	V	8.2395	-1.28	0	-1.28	8.1825	-42.65	-41.3	-1.35
1	9	103	125	Flatbed	V	8.2385	-3.54	0	-3.54	8.1435	-42.51	-41.3	-1.21
1	9	202	625	Flatbed	V	8.2395	-10.06	0	-10.06	8.1695	-42.64	-41.3	-1.34
1	9	402	445	Flatbed	V	8.2395	-7.54	0	-7.54	8.1725	-42.52	-41.3	-1.22
1	9	501	0	Flatbed	V	8.2375	-1.23	0	-1.23	8.2265	-45.23	-41.3	-3.93
1	9	503	0	Flatbed	V	8.2385	-1.16	0	-1.16	8.2265	-45.17	-41.3	-3.87
1	9	601	0	Flatbed	V	8.2395	-1.14	0	-1.14	8.2265	-43.17	-41.3	-1.87
1	9	605	0	Flatbed	V	8.2375	-1.19	0	-1.19	8.2265	-44.92	-41.3	-3.62
1	9	607	0	Flatbed	V	8.2375	-1.10	0	-1.10	8.2265	-44.81	-41.3	-3.51
1	9	701	0	Flatbed	V	8.2375	-1.30	0	-1.30	8.1745	-43.77	-41.3	-2.47
1	9	702	0	Flatbed	V	8.2385	-1.35	0	-1.35	8.1715	-45.90	-41.3	-4.60
1	9	703	0	Flatbed	V	8.2375	-1.34	0	-1.34	8.2255	-45.59	-41.3	-4.29
1	9	704	0	Flatbed	V	8.2385	-4.62	0	-4.62	8.1735	-42.48	-41.3	-1.18
1	9	705	0	Flatbed	V	8.1145	-3.30	0	-3.30	8.1715	-42.54	-41.3	-1.24
1	9	706	0	Flatbed	V	8.2375	-3.52	0	-3.52	8.1705	-42.43	-41.3	-1.13
1	9	405	4093	Flatbed	V	8.2375	-10.25	0	-10.25	8.2035	-42.68	-41.3	-1.38
1	9	407	4093	Flatbed	V	8.2175	-9.21	0	-9.21	8.2035	-42.43	-41.3	-1.13
1	9	409	4093	Flatbed	V	8.2345	-9.46	0	-9.46	8.2005	-42.37	-41.3	-1.07
1	9	801	0Gap0	Flatbed	V	8.2355	-1.19	0	-1.19	8.2275	-43.83	-41.3	-2.53
1	9	801	0Gap64	Flatbed	V	8.2375	-1.33	0	-1.33	8.1495	-42.45	-41.3	-1.15
1	9	802	0	Flatbed	V	8.2175	-1.31	0	-1.31	8.1485	-42.51	-41.3	-1.21
1	9	803	0	Flatbed	V	8.2175	-1.31	0	-1.31	8.1495	-43.32	-41.3	-2.02
1	9	804	0Gap0	Flatbed	V	8.2385	-4.53	0	-4.53	8.1535	-42.36	-41.3	-1.06
1	9	804	0Gap64	Flatbed	V	8.2175	-4.16	0	-4.16	8.1565	-42.51	-41.3	-1.21
1	9	805	0	Flatbed	V	8.2175	-4.16	0	-4.16	8.1565	-42.43	-41.3	-1.13
1	9	806	0	Flatbed	V	8.2375	-2.81	0	-2.81	8.1565	-42.35	-41.3	-1.05
1	9	807	0Gap0	Flatbed	V	8.2165	-1.61	0	-1.61	8.1535	-42.50	-41.3	-1.20
1	9	807	0Gap64	Flatbed	V	8.2165	-1.27	0	-1.27	8.1745	-43.15	-41.3	-1.85
1	9	808	0	Flatbed	V	8.2375	-1.13	0	-1.13	8.1435	-43.53	-41.3	-2.23
1	9	809	0	Flatbed	V	8.2375	-1.08	0	-1.08	8.1405	-43.10	-41.3	-1.80
1	9	810	0Gap0	Flatbed	V	8.2365	-4.14	0	-4.14	8.1535	-42.34	-41.3	-1.04
1	9	810	0Gap64	Flatbed	V	8.2375	-3.29	0	-3.29	8.1485	-42.69	-41.3	-1.39
1	9	811	0	Flatbed	V	8.2365	-3.15	0	-3.15	8.1425	-42.53	-41.3	-1.23
1	9	812	0	Flatbed	V	8.2365	-3.39	0	-3.39	8.1485	-42.59	-41.3	-1.29

ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	Peak EIRP Power				Average EIRP Power			
						FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
2	5	0	25	Portrait	H	6.5005	-2.58	0	-2.58	6.3495	-42.65	-41.3	-1.35
2	5	1	45	Portrait	H	6.5025	-2.03	0	-2.03	6.3495	-42.53	-41.3	-1.23
2	5	6	125	Portrait	H	6.4925	-6.27	0	-6.27	6.3495	-42.38	-41.3	-1.08
2	9	9	125	Portrait	H	6.4915	-7.46	0	-7.46	6.3435	-42.60	-41.3	-1.30
2	5	10	25	Portrait	H	6.4905	-2.63	0	-2.63	6.3495	-42.64	-41.3	-1.34
2	5	11	25	Portrait	H	6.5025	-1.22	0	-1.22	6.3495	-42.84	-41.3	-1.54
2	5	11	65	Portrait	H	6.4895	-2.58	0	-2.58	6.3495	-42.63	-41.3	-1.33
2	5	101	25	Portrait	H	6.5015	-1.27	0	-1.27	6.3495	-42.96	-41.3	-1.66
2	5	101	65	Portrait	H	6.4895	-2.35	0	-2.35	6.3955	-42.57	-41.3	-1.27
2	5	102	25	Portrait	H	6.4895	-1.23	0	-1.23	6.3485	-42.94	-41.3	-1.64
2	5	102	65	Portrait	H	6.4995	-2.59	0	-2.59	6.3495	-42.56	-41.3	-1.26
2	5	103	25	Portrait	H	6.5005	-2.77	0	-2.77	6.3495	-42.69	-41.3	-1.39
2	5	103	125	Portrait	H	6.4895	-5.01	0	-5.01	6.3495	-42.53	-41.3	-1.23
2	5	202	625	Portrait	H	6.2435	-12.50	0	-12.50	6.3695	-42.66	-41.3	-1.36
2	5	402	445	Portrait	H	6.2425	-10.86	0	-10.86	6.3635	-42.37	-41.3	-1.07
2	5	501	0	Portrait	H	6.2395	-1.14	0	-1.14	6.4065	-43.35	-41.3	-2.05
2	5	503	0	Portrait	H	6.2405	-1.21	0	-1.21	6.3855	-43.60	-41.3	-2.30
2	5	601	0	Portrait	H	6.2405	-3.01	0	-3.01	6.3815	-42.49	-41.3	-1.19
2	5	605	0	Portrait	H	6.2405	-1.17	0	-1.17	6.3815	-43.23	-41.3	-1.93
2	5	607	0	Portrait	H	6.2395	-1.20	0	-1.20	6.3815	-43.27	-41.3	-1.97
2	5	701	0	Portrait	H	6.2405	-2.80	0	-2.80	6.3575	-42.48	-41.3	-1.18
2	5	702	0	Portrait	H	6.2405	-1.20	0	-1.20	6.3915	-42.88	-41.3	-1.58
2	5	703	0	Portrait	H	6.2415	-1.18	0	-1.18	6.3605	-42.84	-41.3	-1.54
2	5	704	0	Portrait	H	6.2395	-7.53	0	-7.53	6.3935	-42.43	-41.3	-1.13
2	5	705	0	Portrait	H	6.3645	-3.16	0	-3.16	6.3595	-42.40	-41.3	-1.10
2	5	706	0	Portrait	H	6.3635	-4.72	0	-4.72	6.3595	-42.44	-41.3	-1.14
2	5	405	4093	Portrait	H	6.2435	-14.49	0	-14.49	6.3615	-42.55	-41.3	-1.25
2	5	407	4093	Portrait	H	6.2465	-13.67	0	-13.67	6.3885	-42.50	-41.3	-1.20
2	5	409	4093	Portrait	H	6.2415	-13.85	0	-13.85	6.3975	-42.49	-41.3	-1.19
2	5	801	0Gap0	Portrait	H	6.2415	-3.33	0	-3.33	6.3645	-42.56	-41.3	-1.26
2	5	801	0Gap64	Portrait	H	6.2405	-3.40	0	-3.40	6.3865	-42.51	-41.3	-1.21
2	5	802	0	Portrait	H	6.2405	-3.39	0	-3.39	6.3865	-42.48	-41.3	-1.18
2	5	803	0	Portrait	H	6.2415	-2.68	0	-2.68	6.4015	-42.51	-41.3	-1.21
2	5	804	0Gap0	Portrait	H	6.2405	-6.42	0	-6.42	6.3645	-42.52	-41.3	-1.22
2	5	804	0Gap64	Portrait	H	6.2395	-6.08	0	-6.08	6.3865	-42.39	-41.3	-1.09
2	5	805	0	Portrait	H	6.2435	-6.17	0	-6.17	6.3435	-42.45	-41.3	-1.15
2	5	806	0	Portrait	H	6.2385	-5.52	0	-5.52	6.3865	-42.58	-41.3	-1.28
2	5	807	0Gap0	Portrait	H	6.2405	-3.38	0	-3.38	6.3645	-42.53	-41.3	-1.23
2	5	807	0Gap64	Portrait	H	6.2415	-3.07	0	-3.07	6.3935	-42.34	-41.3	-1.04
2	5	808	0	Portrait	H	6.2405	-3.08	0	-3.08	6.3935	-42.46	-41.3	-1.16
2	5	809	0	Portrait	H	6.2425	-3.39	0	-3.39	6.3935	-42.47	-41.3	-1.17
2	5	810	0Gap0	Portrait	H	6.2395	-6.54	0	-6.54	6.3645	-42.42	-41.3	-1.12
2	5	810	0Gap64	Portrait	H	6.2425	-5.66	0	-5.66	6.4015	-42.64	-41.3	-1.34
2	5	811	0	Portrait	H	6.2425	-5.65	0	-5.65	6.4015	-42.47	-41.3	-1.17
2	5	812	0	Portrait	H	6.2435	-5.71	0	-5.71	6.4015	-42.43	-41.3	-1.13

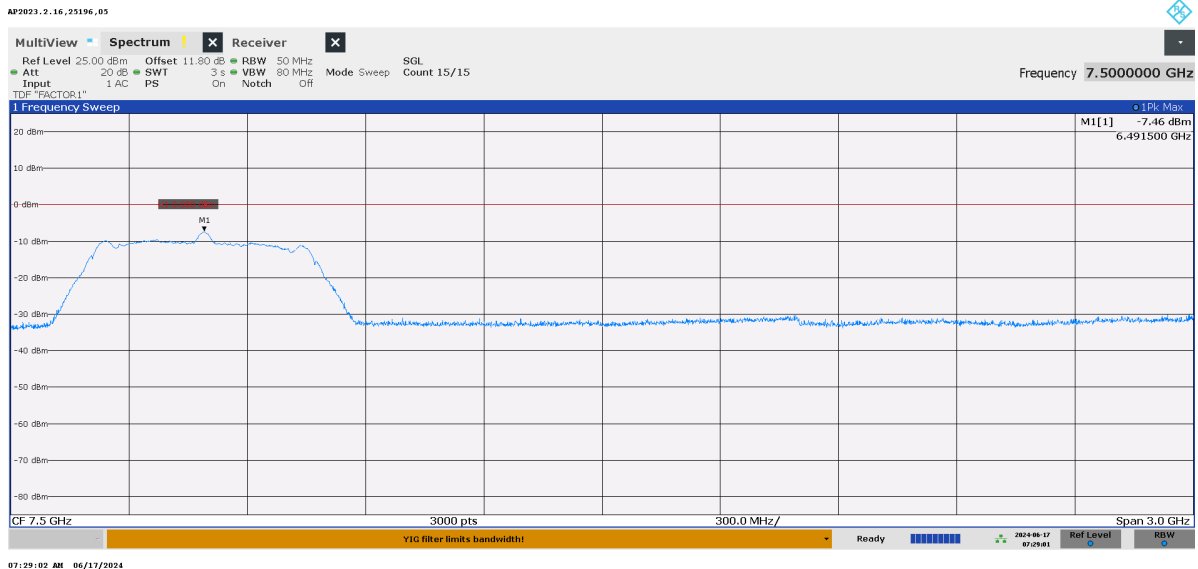
ANT	CH	CF	PL	EUT Orientation	Ant. Polarity	Peak ERP Power				Average ERP Power			
						FM (GHz)	Adj Pk	Pk Limit	Margin (dB)	FM (GHz)	Adj Av	Avg Limit	Margin (dB)
2	9	0	25	Landscape	V	7.9765	-1.36	0	-1.36	7.9715	-42.45	-41.3	-1.15
2	9	1	45	Landscape	V	7.9765	-1.16	0	-1.16	7.9555	-42.99	-41.3	-1.69
2	9	6	125	Landscape	V	7.9875	-5.30	0	-5.30	7.9675	-42.37	-41.3	-1.07
2	9	9	125	Landscape	V	7.9875	-6.60	0	-6.60	7.9655	-42.51	-41.3	-1.21
2	9	10	25	Landscape	V	7.9765	-1.78	0	-1.78	7.9715	-42.60	-41.3	-1.30
2	9	11	25	Landscape	V	7.9905	-1.49	0	-1.49	7.9715	-44.16	-41.3	-2.86
2	9	11	65	Landscape	V	7.9885	-1.87	0	-1.87	7.9555	-42.54	-41.3	-1.24
2	9	101	25	Landscape	V	7.9765	-1.34	0	-1.34	7.9555	-44.13	-41.3	-2.83
2	9	101	65	Landscape	V	7.9865	-1.75	0	-1.75	7.9555	-42.55	-41.3	-1.25
2	9	102	25	Landscape	V	7.9875	-1.30	0	-1.30	7.9555	-44.01	-41.3	-2.71
2	9	102	65	Landscape	V	7.9755	-2.05	0	-2.05	7.9555	-42.61	-41.3	-1.31
2	9	103	25	Landscape	V	7.9755	-1.78	0	-1.78	7.9665	-42.55	-41.3	-1.25
2	9	103	125	Landscape	V	7.9775	-4.36	0	-4.36	7.9555	-42.76	-41.3	-1.46
2	9	202	625	Landscape	V	8.2365	-12.11	0	-12.11	7.9765	-42.45	-41.3	-1.15
2	9	402	445	Landscape	V	8.2165	-10.44	0	-10.44	7.9755	-42.57	-41.3	-1.27
2	9	501	0	Landscape	V	8.2365	-1.23	0	-1.23	7.9715	-43.75	-41.3	-2.45
2	9	503	0	Landscape	V	8.2395	-1.41	0	-1.41	7.9665	-43.74	-41.3	-2.44
2	9	601	0	Landscape	V	8.2345	-3.07	0	-3.07	7.9695	-42.49	-41.3	-1.19
2	9	605	0	Landscape	V	8.2345	-1.48	0	-1.48	7.9705	-43.31	-41.3	-2.01
2	9	607	0	Landscape	V	8.2355	-1.49	0	-1.49	7.9705	-43.55	-41.3	-2.25
2	9	701	0	Landscape	V	8.2365	-2.66	0	-2.66	7.9805	-42.65	-41.3	-1.35
2	9	702	0	Landscape	V	8.2375	-1.44	0	-1.44	7.9645	-43.19	-41.3	-1.89
2	9	703	0	Landscape	V	8.2365	-1.48	0	-1.48	7.9685	-43.03	-41.3	-1.73
2	9	704	0	Landscape	V	8.2375	-7.84	0	-7.84	7.9645	-42.72	-41.3	-1.42
2	9	705	0	Landscape	V	7.9885	-3.28	0	-3.28	7.9725	-42.47	-41.3	-1.17
2	9	706	0	Landscape	V	7.9875	-5.08	0	-5.08	7.9695	-42.63	-41.3	-1.33
2	9	405	4093	Landscape	V	8.2365	-14.29	0	-14.29	7.9695	-42.40	-41.3	-1.10
2	9	407	4093	Landscape	V	8.2355	-13.43	0	-13.43	7.9685	-42.35	-41.3	-1.05
2	9	409	4093	Landscape	V	8.2385	-13.84	0	-13.84	7.9825	-42.54	-41.3	-1.24
2	9	801	0Gap0	Landscape	V	8.2415	-3.68	0	-3.68	7.9875	-42.67	-41.3	-1.37
2	9	801	0Gap64	Landscape	V	8.2395	-3.58	0	-3.58	7.9655	-42.55	-41.3	-1.25
2	9	802	0	Landscape	V	8.2405	-3.59	0	-3.59	7.9655	-42.46	-41.3	-1.16
2	9	803	0	Landscape	V	8.2395	-2.76	0	-2.76	7.9655	-42.37	-41.3	-1.07
2	9	804	0Gap0	Landscape	V	8.2405	-6.15	0	-6.15	8.0295	-42.46	-41.3	-1.16
2	9	804	0Gap64	Landscape	V	8.2395	-6.34	0	-6.34	7.9555	-42.46	-41.3	-1.16
2	9	805	0	Landscape	V	8.2395	-6.34	0	-6.34	7.9655	-42.44	-41.3	-1.14
2	9	806	0	Landscape	V	8.2405	-5.44	0	-5.44	7.9655	-42.37	-41.3	-1.07
2	9	807	0Gap0	Landscape	V	8.2175	-2.99	0	-2.99	7.9875	-42.53	-41.3	-1.23
2	9	807	0Gap64	Landscape	V	8.2175	-2.56	0	-2.56	8.0165	-42.31	-41.3	-1.01
2	9	808	0	Landscape	V	8.2165	-2.76	0	-2.76	7.9775	-42.37	-41.3	-1.07
2	9	809	0	Landscape	V	8.2175	-2.85	0	-2.85	7.9775	-42.39	-41.3	-1.09
2	9	810	0Gap0	Landscape	V	8.2375	-6.21	0	-6.21	7.9875	-42.59	-41.3	-1.29
2	9	810	0Gap64	Landscape	V	8.2345	-5.02	0	-5.02	7.9775	-42.30	-41.3	-1.00
2	9	811	0	Landscape	V	8.2365	-5.02	0	-5.02	7.9765	-42.31	-41.3	-1.01
2	9	812	0	Landscape	V	8.2375	-5.08	0	-5.08	7.9775	-42.58	-41.3	-1.28

PEAK POWER AND MAXIMUM AVERAGE EMISSIONS

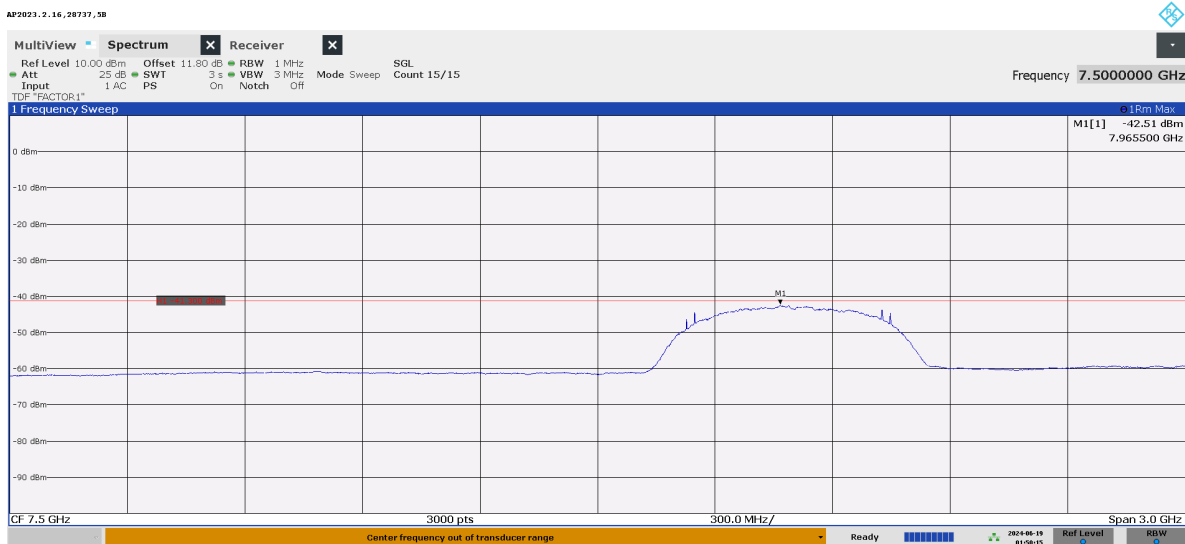
CH5, ANT2, Config 9, Payload 125, Avg.



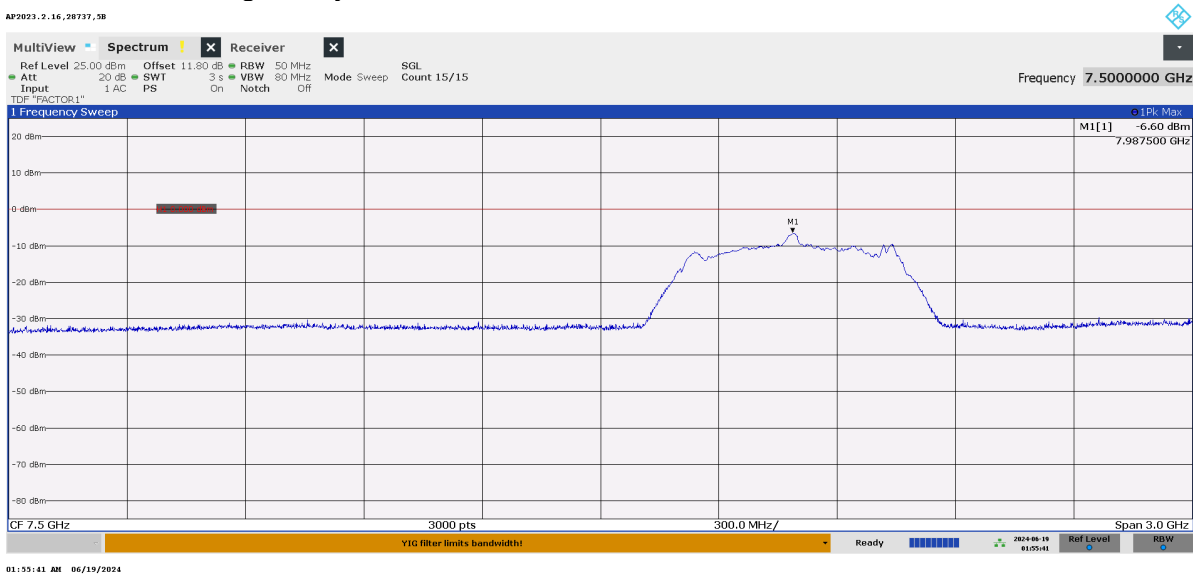
CH5, ANT2, Config 9, Payload 125, Pk.



CH9, ANT2, Config 9, Payload 125, Avg.



CH9, ANT2, Config 9, Payload 125, Pk.



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.

RESULTS

Employee ID: 26051

Location: 02-RDE-D

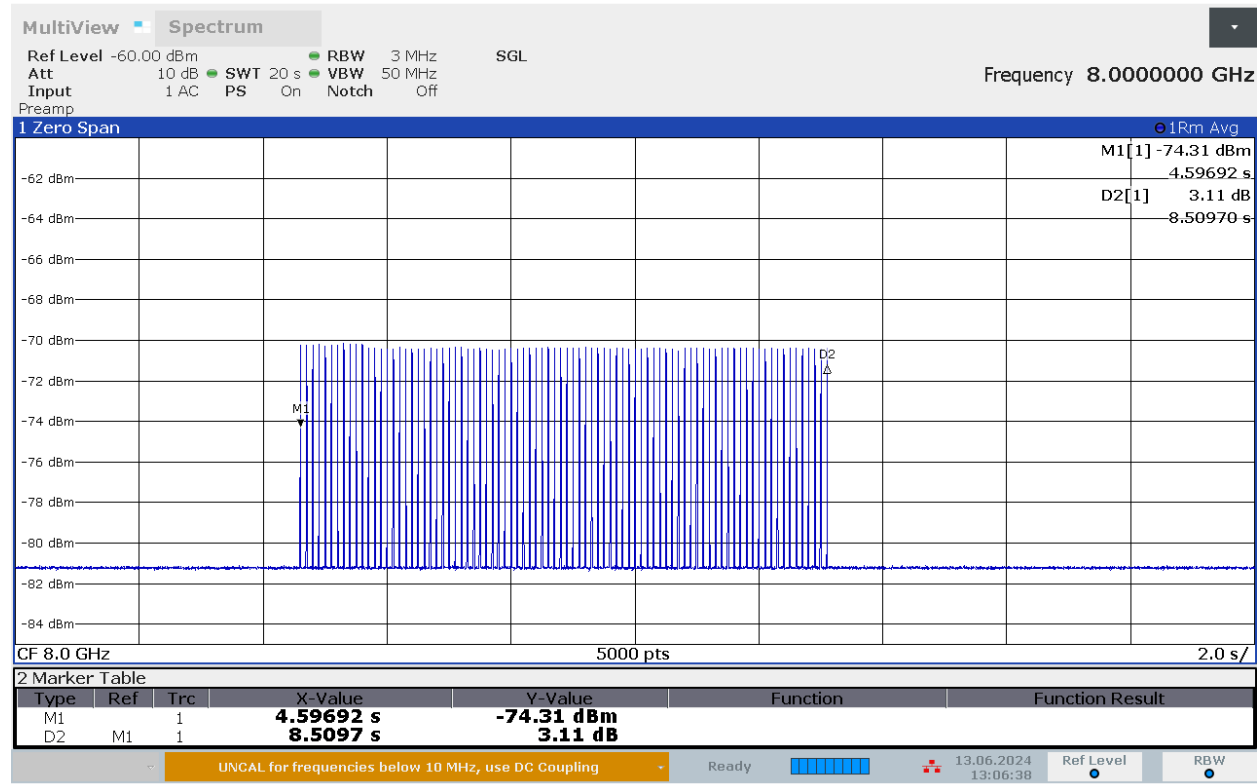
Test Date: 06/13/24

Signal Levels on all Plots

- Initiator is Low Amplitude
- Responder is High Amplitude

Case 1: Initiator ends the UWB link

AP2021.8.4,26051,2D



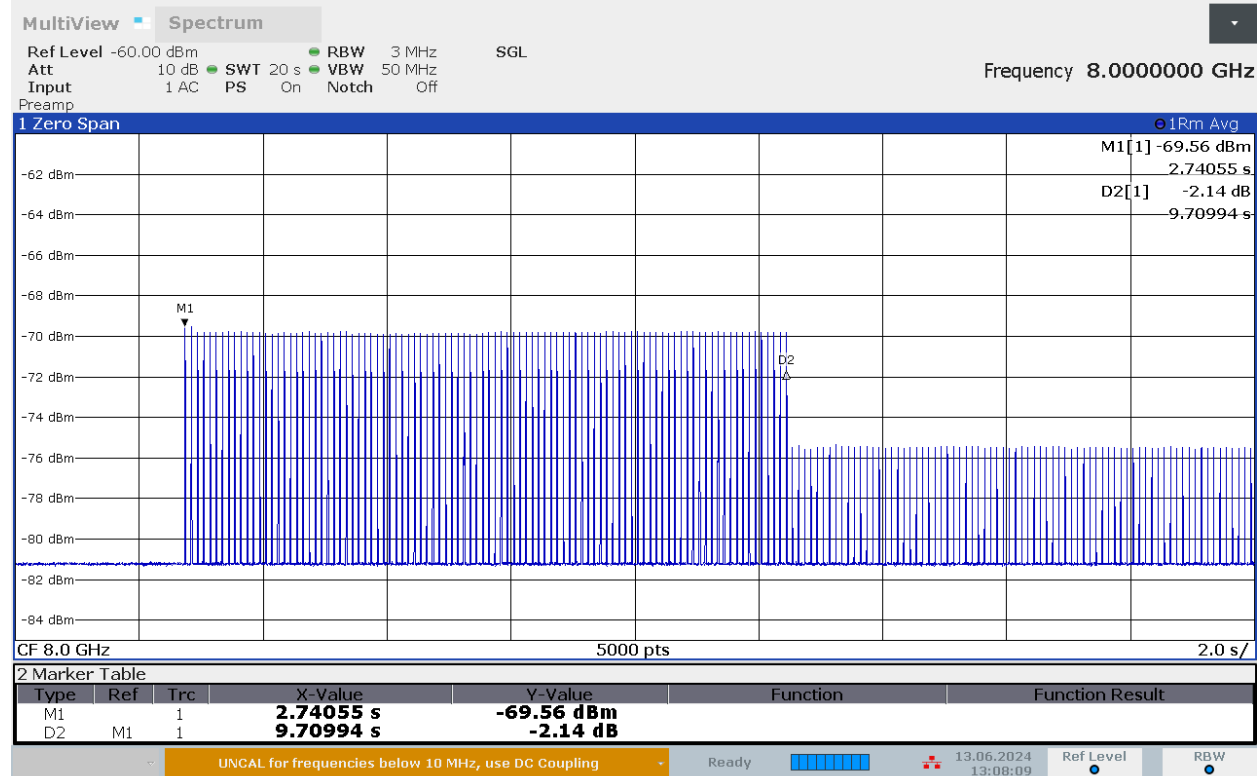
13:06:39 13.06.2024

RESULT

- M1: The Initiator receives an Acknowledgement from the Responder and starts transmitting.
- D2: The Initiator ceases transmission and polling.

Case 2: Responder ends the UWB link

AP2021.8.4,26051,2D



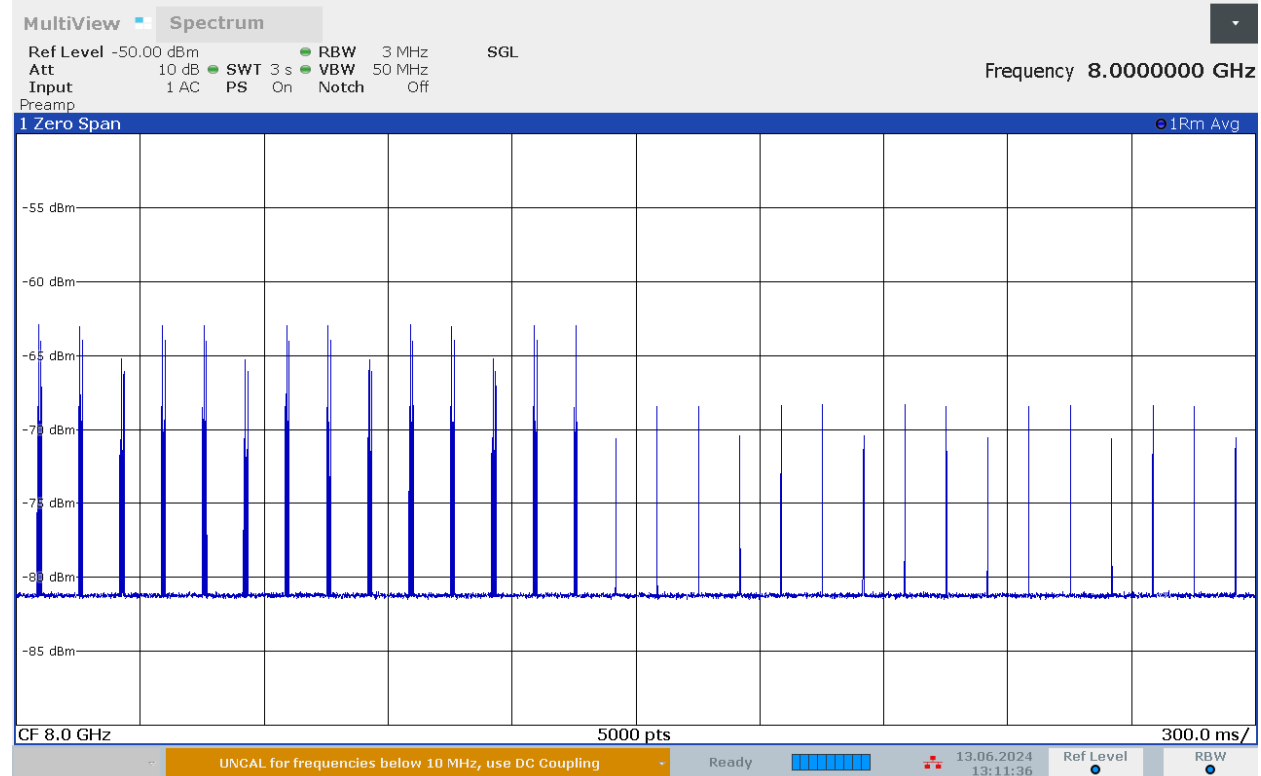
13:08:10 13.06.2024

RESULT

- M1: The Initiator receives an acknowledgement from the Responder and starts transmitting.
- D2: The Responder stops sending acknowledgments and the Initiator continues polling.

Zoom-in Plot during On-Off Transition

AP2021.8.4,26051,2D



13:11:37 13.06.2024

RESULT

- M1: Shows Link Traffic, Acknowledgements and Polling Signals while Link is established
- D2: Shows Polling Signals after Link has ended.

9.5. EMISSIONS BELOW 960 MHz

LIMITS

FCC

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

15.209 (a)

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3

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.

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.

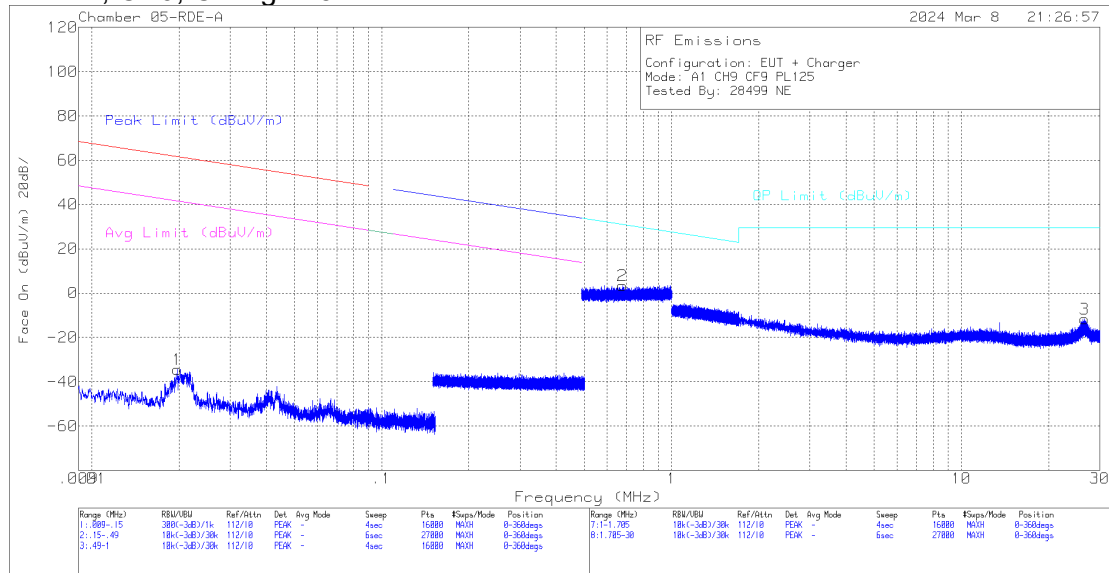
RESULTS**Emissions Summary**

Employee IDs: 28499, 32067

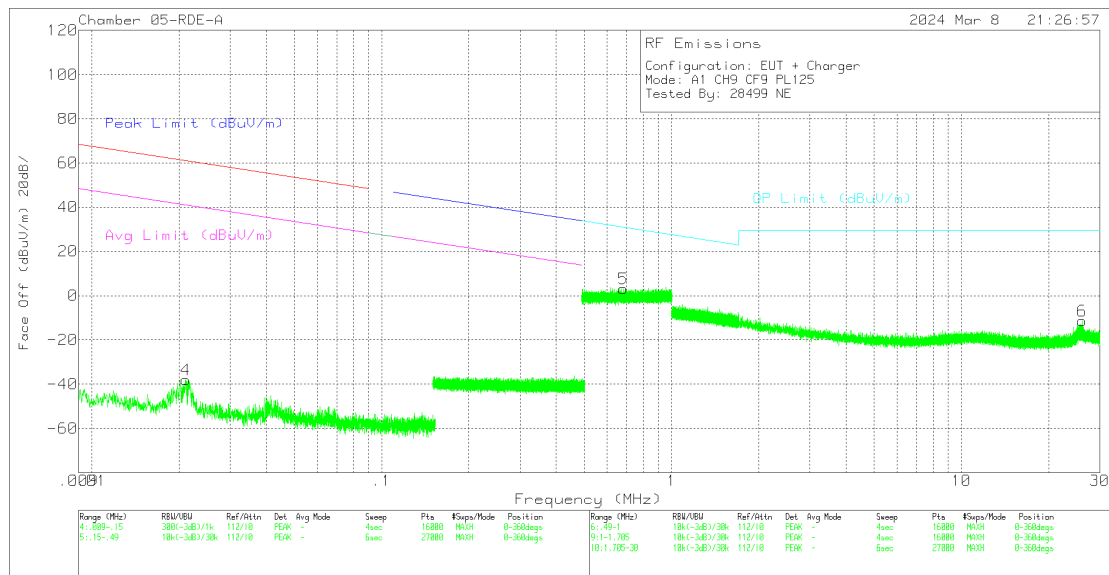
Location: 05-RDE-A

Test Date: 03/08/24 -03/11/24, 06/14/24 – 06/17/24

Ant	CH	Config	Payload	Power Setting	Frequency Range	
					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 125**

FCC 15.209 Below 30MHz.TST_jv4323 13 Dec 2023 Rev 9.5 01 May 2023



FCC 15.209 Below 30MHz.TST_jv4323 13 Dec 2023 Rev 9.5 01 May 2023

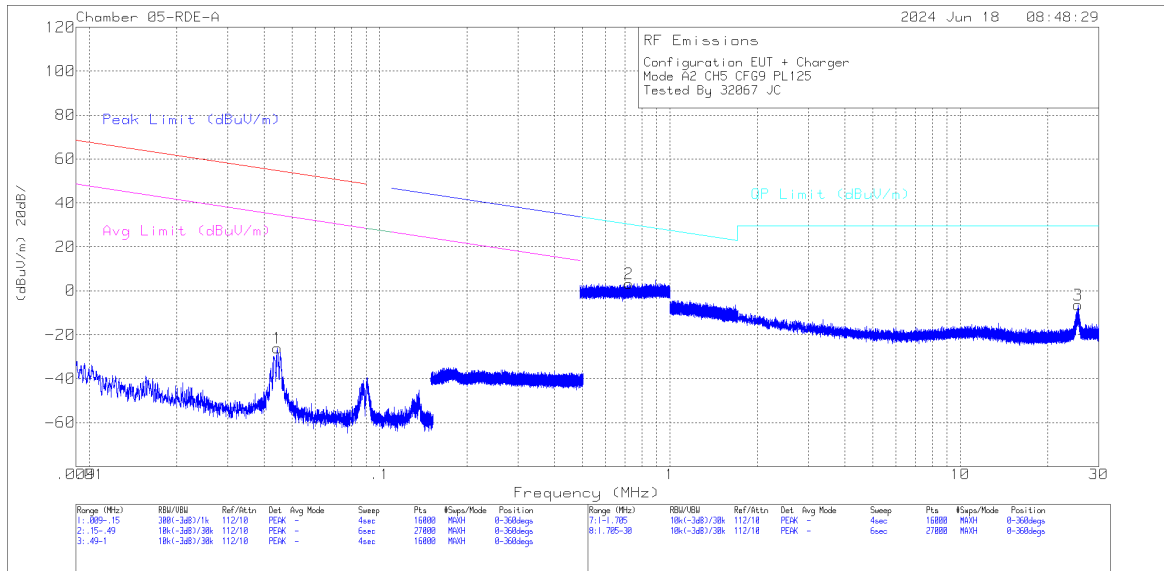
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (dB/m)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0197	19.16	Pk	59.1	-32.6	-80	-34.34	61.68	-96.02	41.68	-76.02	0-360	Face On
4	.0211	15.8	Pk	59	-32.7	-80	-37.9	61.1	-99	41.1	-79	0-360	Face Off

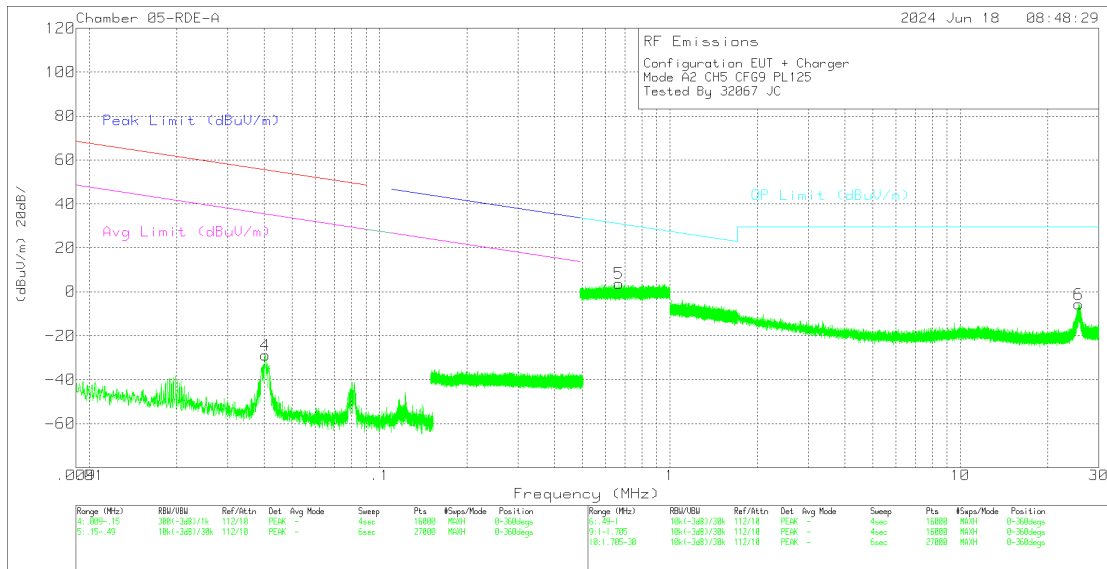
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.6771	20.18	Pk	56.3	-33	-40	3.48	31	-27.52	0-360	Face On
5	.6815	19.88	Pk	56.3	-33	-40	3.18	30.94	-27.76	0-360	Face Off
6	26.0637	27.87	Pk	33.4	-32.6	-40	-11.33	29.5	-40.83	0-360	Face Off
3	26.5478	27.45	Pk	33.5	-32.6	-40	-11.65	29.5	-41.15	0-360	Face On

Pk - Peak detector

ANT. 2, CH5, Config 125



FCC 15.209 Below 30MHz.TST jv4323 13 Dec 2023 Rev 9.5 01 May 2023



FCC 15.209 Below 30MHz.TST jv4323 13 Dec 2023 Rev 9.5 01 May 2023

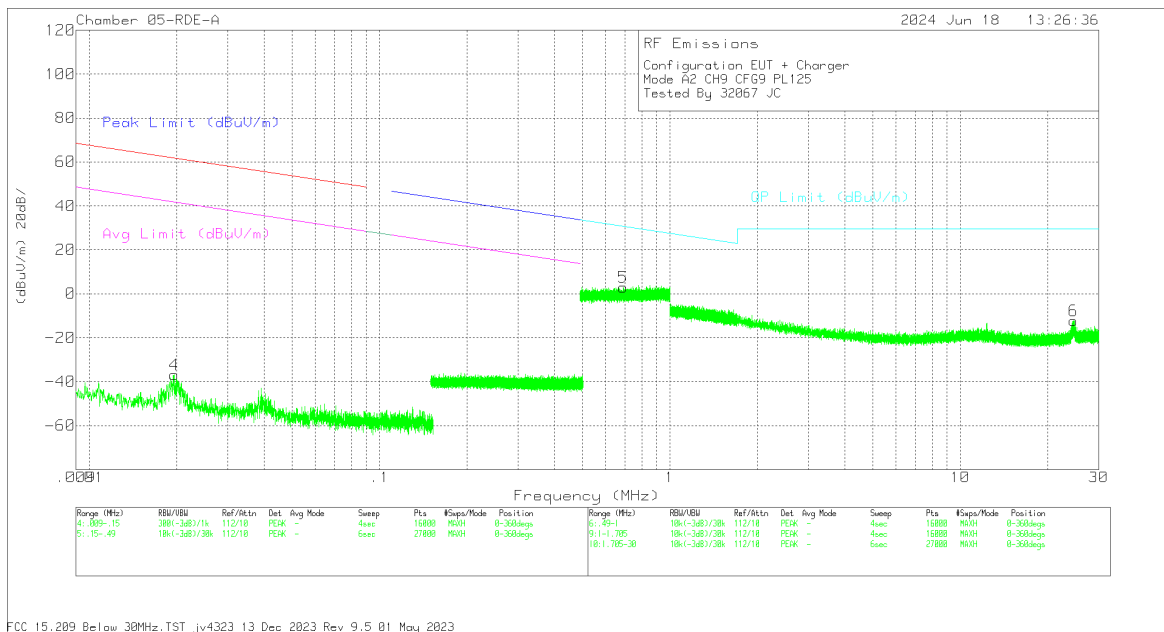
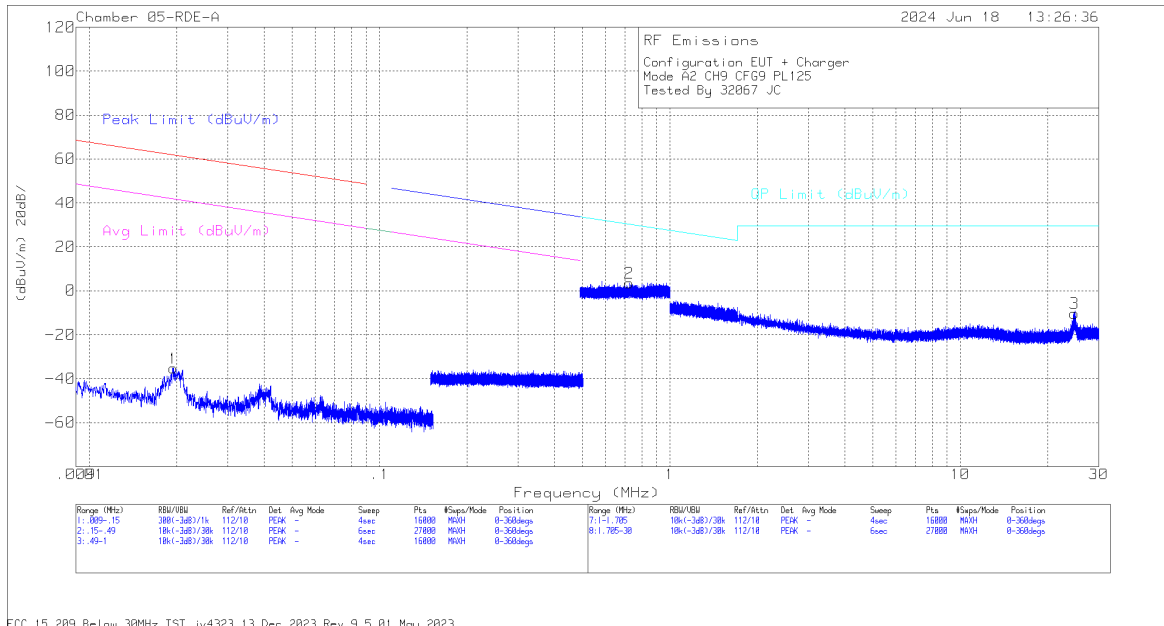
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(dB/m)	Amp /Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
4	.0405	26.32	Pk	57.3	-32.5	-80	-28.88	55.44	-84.32	35.44	-64.32	0-360	Face off
1	.0444	29.53	Pk	57.3	-32.9	-80	-26.07	54.63	-80.7	34.63	-60.7	0-360	Face on

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
5	.6666	20.39	Pk	56.3	-33	-40	3.69	31.13	-27.44	0-360	Face off
2	.7223	19.99	Pk	56.3	-33	-40	3.29	30.44	-27.15	0-360	Face on
3	25.4495	32.39	Pk	33.5	-32.3	-40	-6.41	29.5	-35.91	0-360	Face on
6	25.5648	33.06	Pk	33.5	-32.2	-40	-5.64	29.5	-35.14	0-360	Face off

Pk - Peak detector

ANT. 2, CH9, Config 125



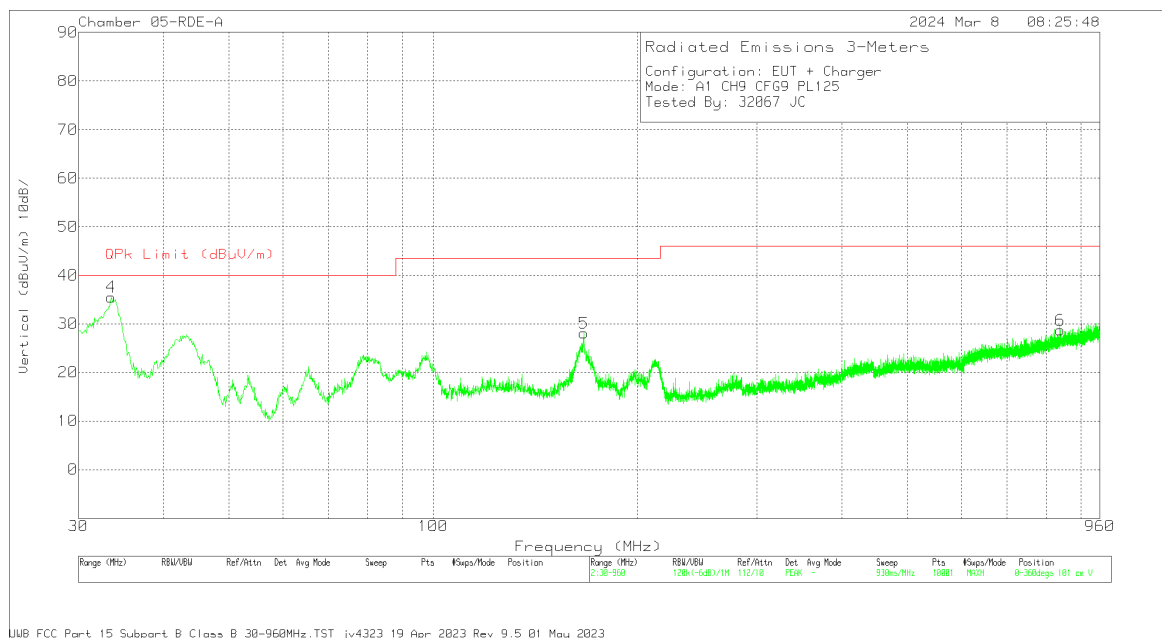
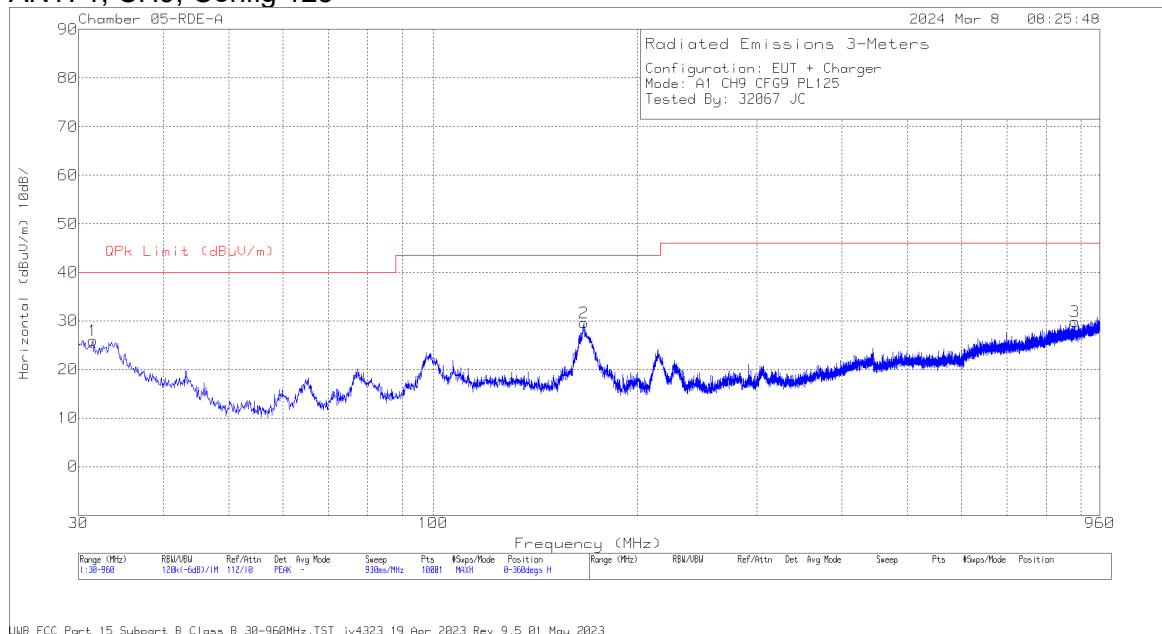
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(dB/m)	Amp /Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0195	17.46	Pk	59.2	-32	-80	-35.34	61.79	-97.13	41.79	-77.13	0-360	Face on
4	.0196	15.87	Pk	59.2	-32	-80	-36.93	61.75	-98.68	41.75	-78.68	0-360	Face off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
5	.6906	19.81	Pk	56.3	-33.1	-40	3.01	30.83	-27.82	0-360	Face off
2	.7255	20.03	Pk	56.3	-32.9	-40	3.43	30.4	-26.97	0-360	Face on
6	24.5545	26.46	Pk	33.6	-32.3	-40	-12.24	29.5	-41.74	0-360	Face off
3	24.7621	28.83	Pk	33.6	-32.7	-40	-10.27	29.5	-39.77	0-360	Face on

Pk - Peak detector

Qp - Quasi-Peak detector

9.5.2. EMISSIONS, 30 - 960 MHz**ANT. 1, CH9, Config 125**

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.488	32.42	Pk	26.2	-32.6	26.02	40	-13.98	0-360	199	H
4	33.534	43.55	Pk	24.6	-32.6	35.55	40	-4.45	0-360	101	V
2	166.617	43.85	Pk	17.6	-31.8	29.65	43.52	-13.87	0-360	99	H
5	166.803	42.28	Pk	17.6	-31.8	28.08	43.52	-15.44	0-360	199	V
6	840.03	31.08	Pk	27.6	-29.9	28.78	46.02	-17.24	0-360	199	V
3	882.438	31.8	Pk	27.8	-29.7	29.90	46.02	-16.12	0-360	99	H

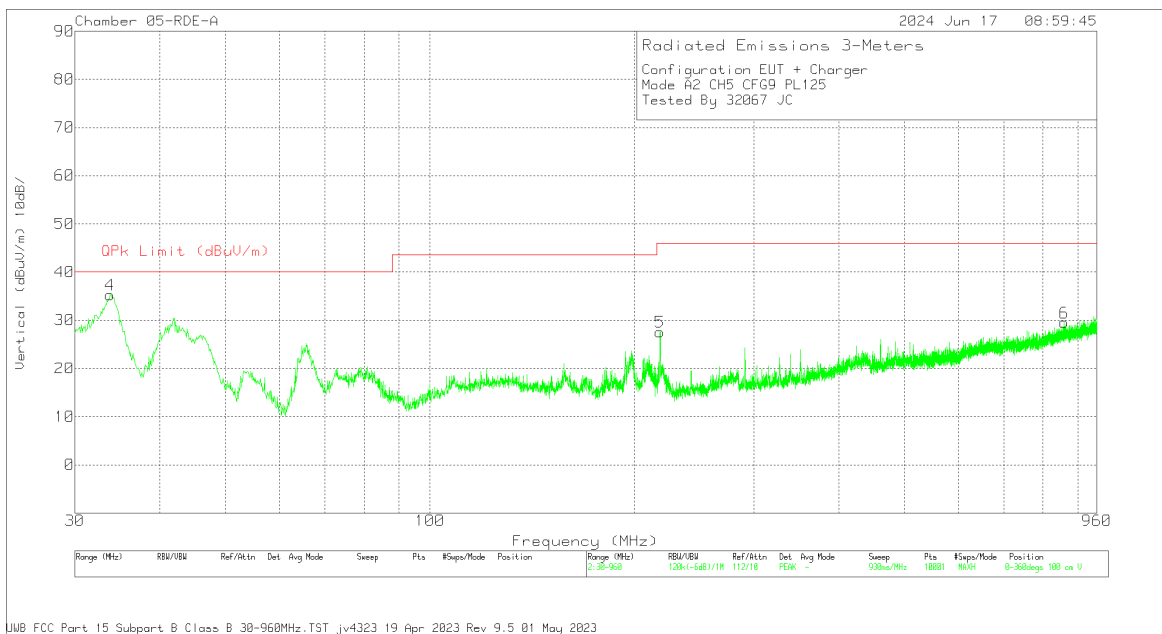
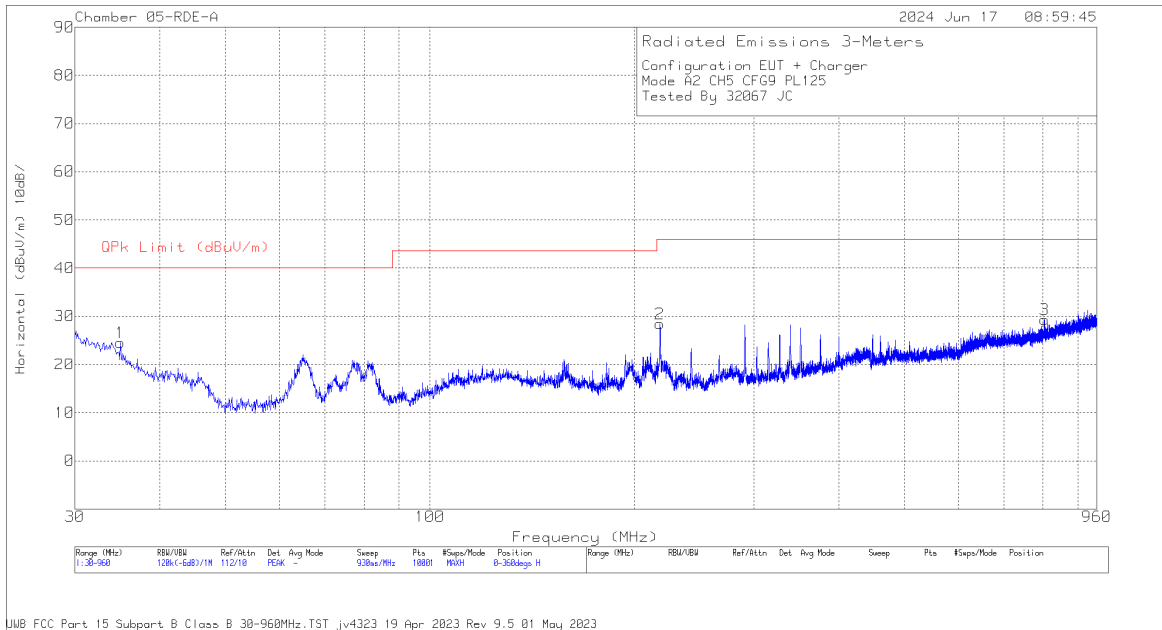
Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
33.8685	39.92	Qp	24.4	-32.6	31.72	40	-8.28	172	105	V

Qp - Quasi-Peak detector

ANT. 2, CH5, Config 125



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	33.813	43.56	Pk	24.4	-32.7	35.26	40	-4.74	0-360	100	V
1	35.022	33.44	Pk	23.5	-32.4	24.54	40	-15.46	0-360	200	H
5	218.046	42.51	Pk	16.4	-31.3	27.61	46.02	-18.41	0-360	100	V
2	218.139	43.32	Pk	16.4	-31.3	28.42	46.02	-17.6	0-360	200	H
3	803.388	32.1	Pk	27.1	-29.9	29.3	46.02	-16.72	0-360	399	H
6	859.746	31.22	Pk	27.8	-29.5	29.52	46.02	-16.5	0-360	100	V

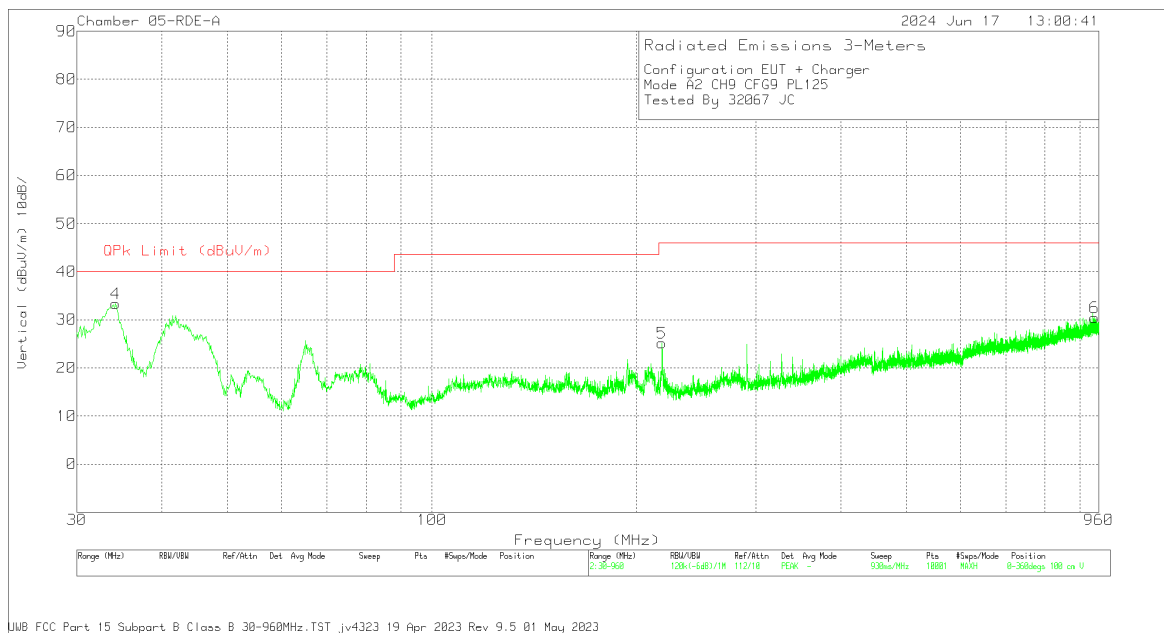
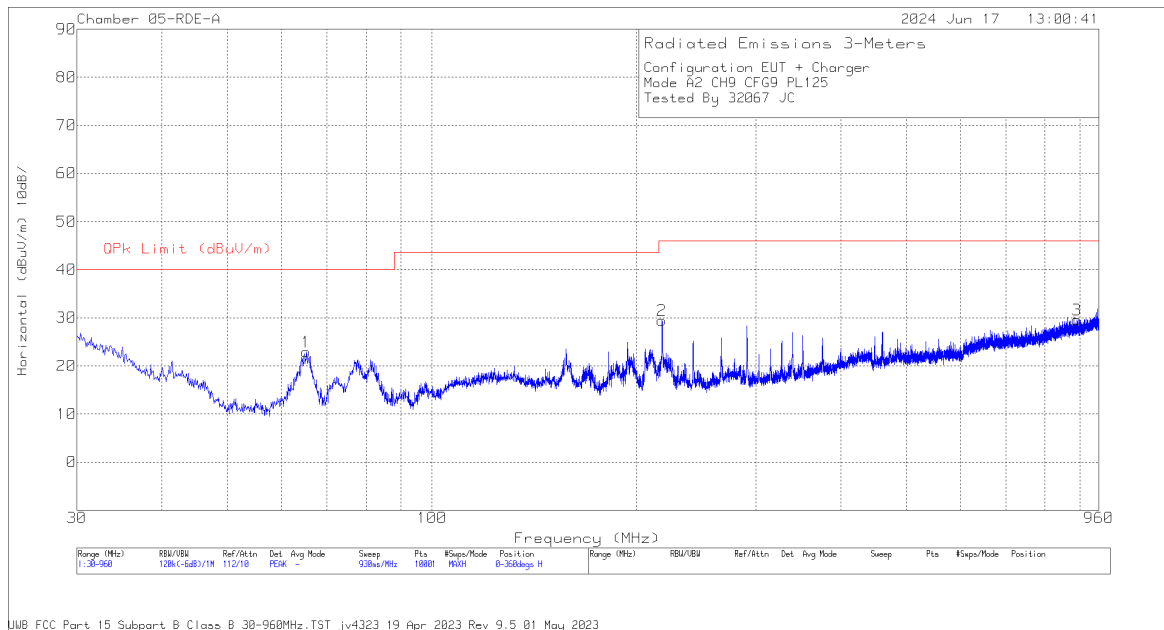
Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
33.9969	39.26	Qp	24.3	-32.6	30.96	40	-9.04	323	124	V

Qp - Quasi-Peak detector

ANT. 2, CH9, Config 125



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	34.185	41.8	Pk	24.2	-32.6	33.4	40	-6.6	0-360	100	V
1	65.34	41.06	Pk	13.8	-32	22.86	40	-17.14	0-360	200	H
5	218.139	40.07	Pk	16.4	-31.3	25.17	46.02	-20.85	0-360	100	V
2	218.232	44.32	Pk	16.4	-31.3	29.42	46.02	-16.6	0-360	100	H
3	892.017	30.93	Pk	28	-29.3	29.63	46.02	-16.39	0-360	200	H
6	946.236	30.33	Pk	28.5	-28.4	30.43	46.02	-15.59	0-360	100	V

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

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 for 18-40GHz and 0.5m for 0.96-6GHz, 1.164-1.240GHz, and 1.559-1.610GHz 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 for 18-40GHz and 0.5m for 0.96-6GHz, 1.164-1.240GHz, and 1.559-1.610GHz 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 5.4 GHz is used to suppress the fundamental and perform measurement for 0.96 - 6 GHz.

Distance Correction Factor from 3m to 0.5m = $20 \cdot \log(0.5\text{m}/3\text{m}) = -15.56 \text{ dB}$

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 = $20 \cdot \log(0.5\text{m}/3\text{m}) = -15.56 \text{ dB}$

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 = $20 \cdot \log(0.5\text{m}/3\text{m}) = -15.56 \text{ dB}$

PROCEDURE FOR 1.559 TO 1.610 GHz

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

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

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

Distance Correction Factor from 3m to 0.5m = $20 \cdot \log(0.5\text{m}/3\text{m}) = -15.56 \text{ dB}$

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 = $20 \cdot \log(1\text{m}/3\text{m}) = -9.54 \text{ dB}$

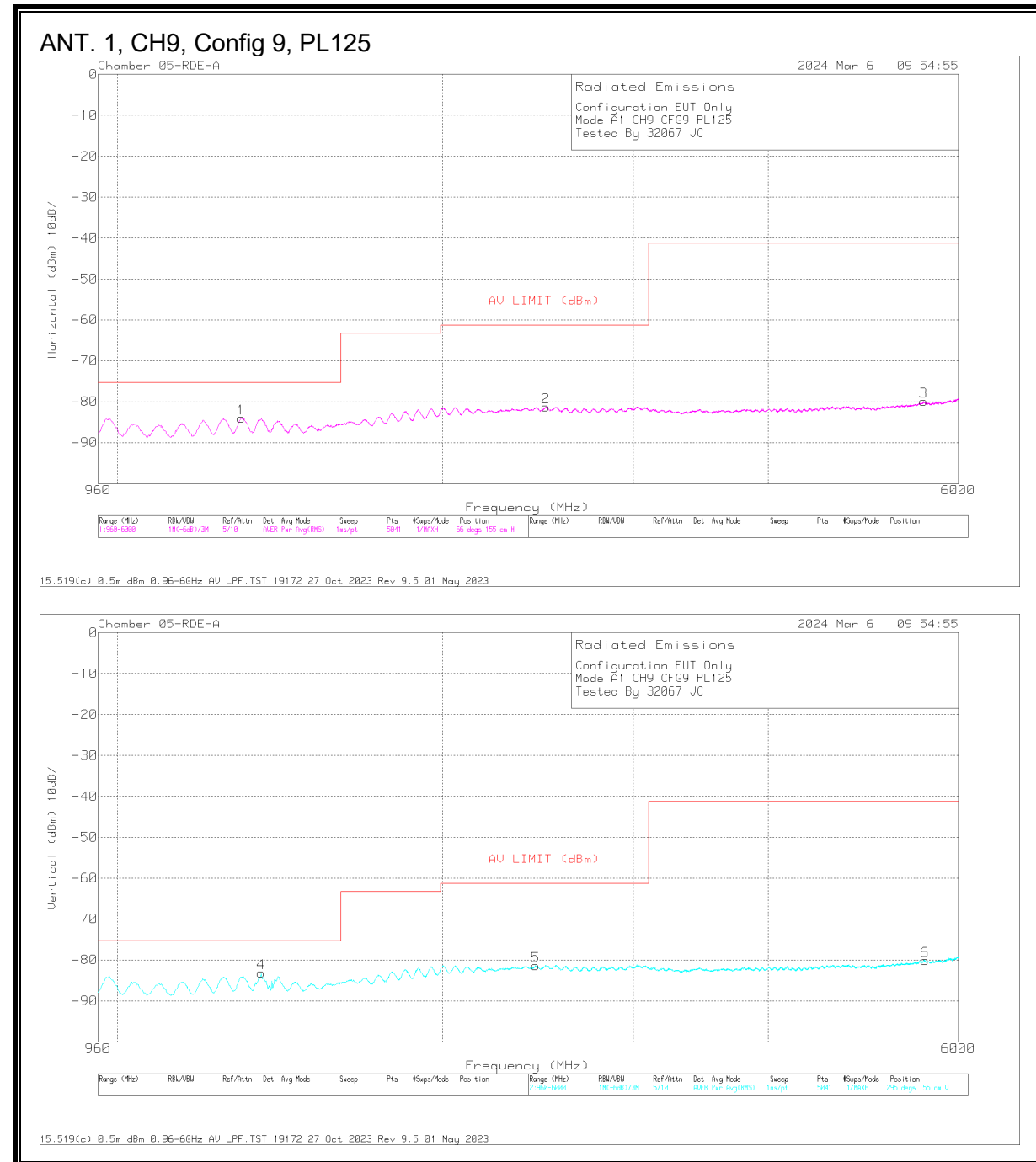
RESULTS**Average Emissions Summary**

Employee IDs: 32067, 28499, 32440,

Location: Chamber 05-RDE-A, 05-RDE-E

Test Date: 03/01/24 – 03/08/24, 06/14/24 – 06/17/24

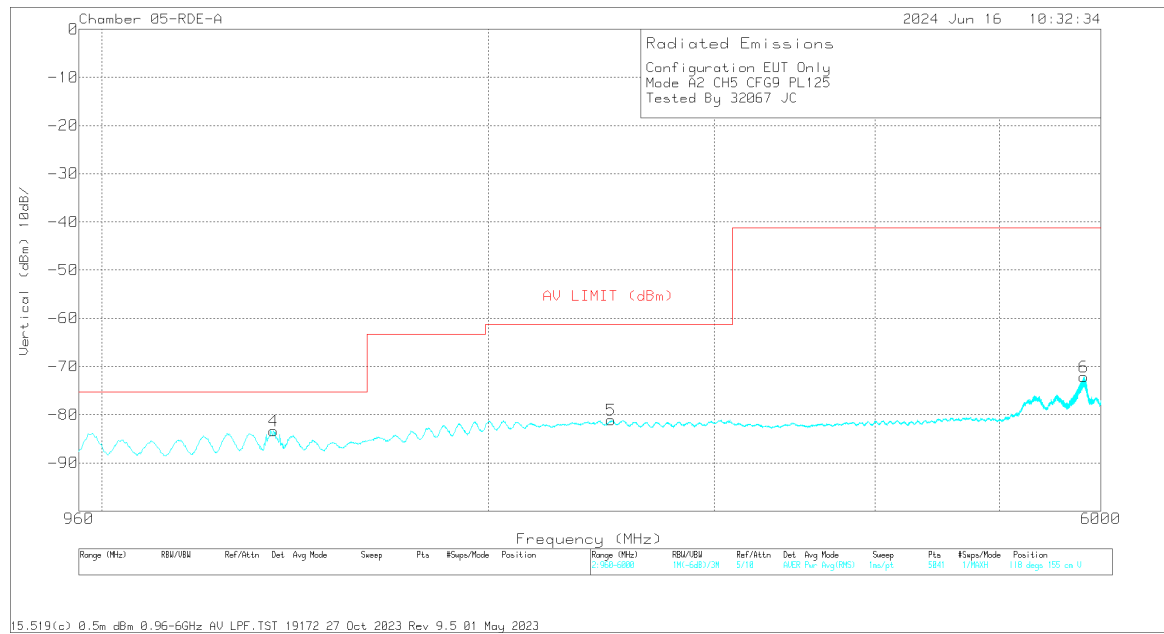
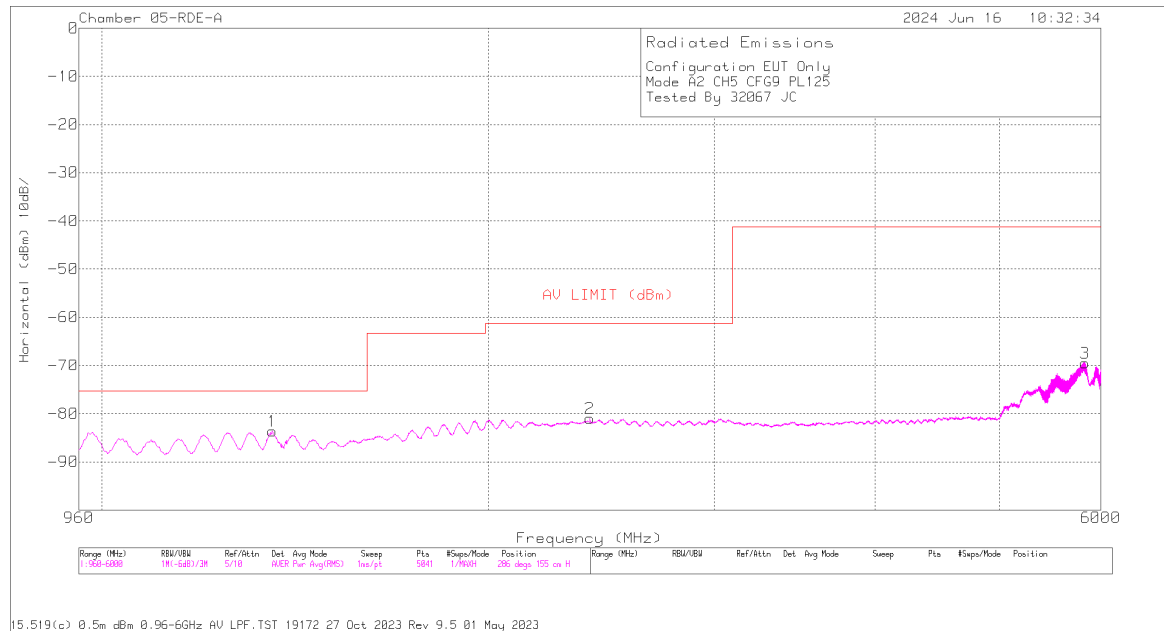
Ant	CH	Config	Payload	Power Setting	Frequency Ranges				
					1164 - 1240 MHz	1559 - 1610 MHz	0.96 - 18 GHz	18 - 26.5 GHz	26.5 - 40 GHz
1	9	9	125	Max	PASS	PASS	PASS	PASS	PASS
2	5	9	125	Max	PASS	PASS	PASS	PASS	PASS
2	9	9	125	Max	PASS	PASS	PASS	PASS	PASS

9.6.1. AVERAGE EMISSIONS, 0.96 – 6 GHz**FCC15.519 (C)****Trace Markers**

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	80403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1302	-59.64	RMS	29.1	-15.6	11.8	-49.7	-84.04	-75.3	-8.74	198	155	H
2	* 2492.5	-61.23	RMS	33	-15.6	11.8	-49.3	-81.33	-61.3	-20.03	88	155	H
4	* 1359	-58.56	RMS	28.8	-15.6	11.8	-49.6	-83.16	-75.3	-7.86	359	155	V
5	2439	-61.29	RMS	32.9	-15.6	11.8	-49.2	-81.39	-61.3	-20.09	250	155	V
3	5574	-64.73	RMS	35.3	-15.6	11.8	-46.7	-79.93	-41.3	-38.63	286	155	H
6	5591	-64.96	RMS	35.3	-15.6	11.8	-46.7	-80.16	-41.3	-38.86	52	155	V

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

ANT. 2, CH5, Config 9, PL125

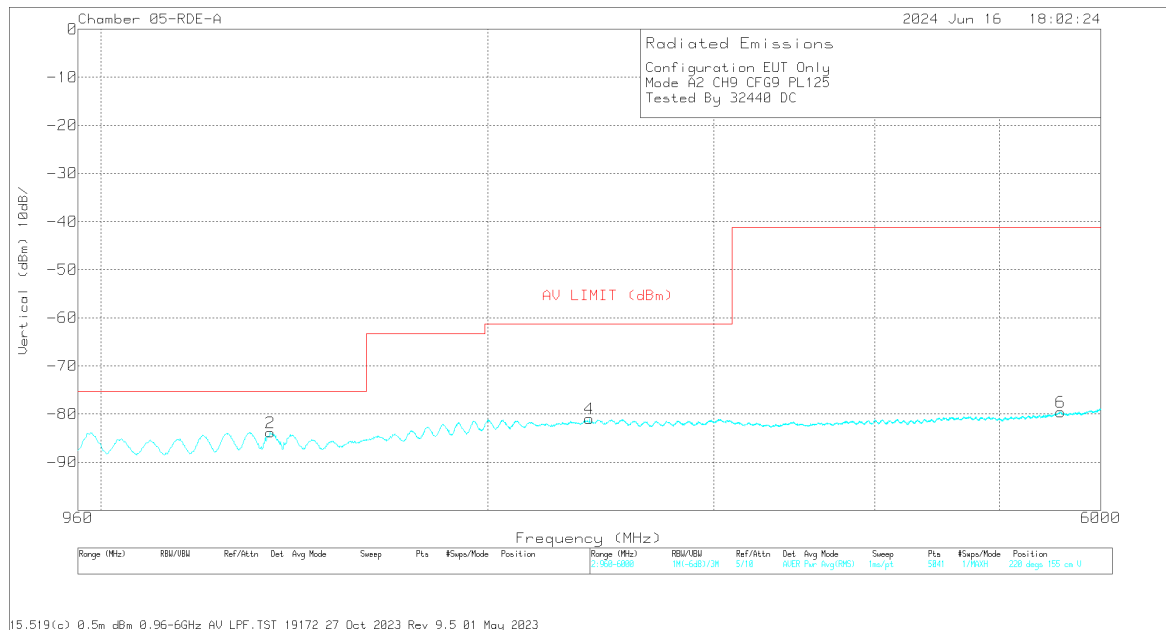
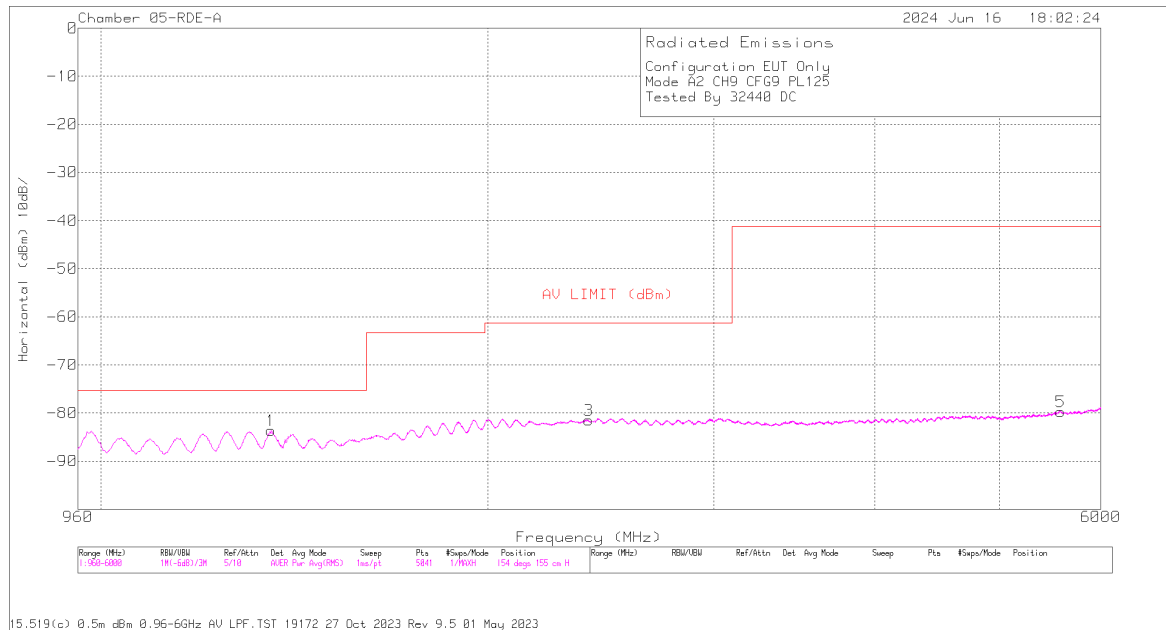


Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	80403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1358	-58.98	RMS	28.8	-15.6	11.8	-49.6	-83.58	-75.3	-8.28	110	155	H
4	* 1361	-58.75	RMS	28.8	-15.6	11.8	-49.6	-83.35	-75.3	-8.05	31	155	V
5	* 2494	-61.04	RMS	33	-15.6	11.8	-49.3	-81.14	-61.3	-19.84	360	155	V
2	2400	-60.56	RMS	32.7	-15.6	11.8	-49.3	-80.96	-61.3	-19.66	43	155	H
6	5822	-57.68	RMS	35.5	-15.6	11.8	-46.2	-72.18	-41.3	-30.88	162	155	V
3	5830	-54.98	RMS	35.5	-15.6	11.8	-46.2	-69.48	-41.3	-28.18	220	155	H

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

ANT. 2, CH9, Config 9, PL125



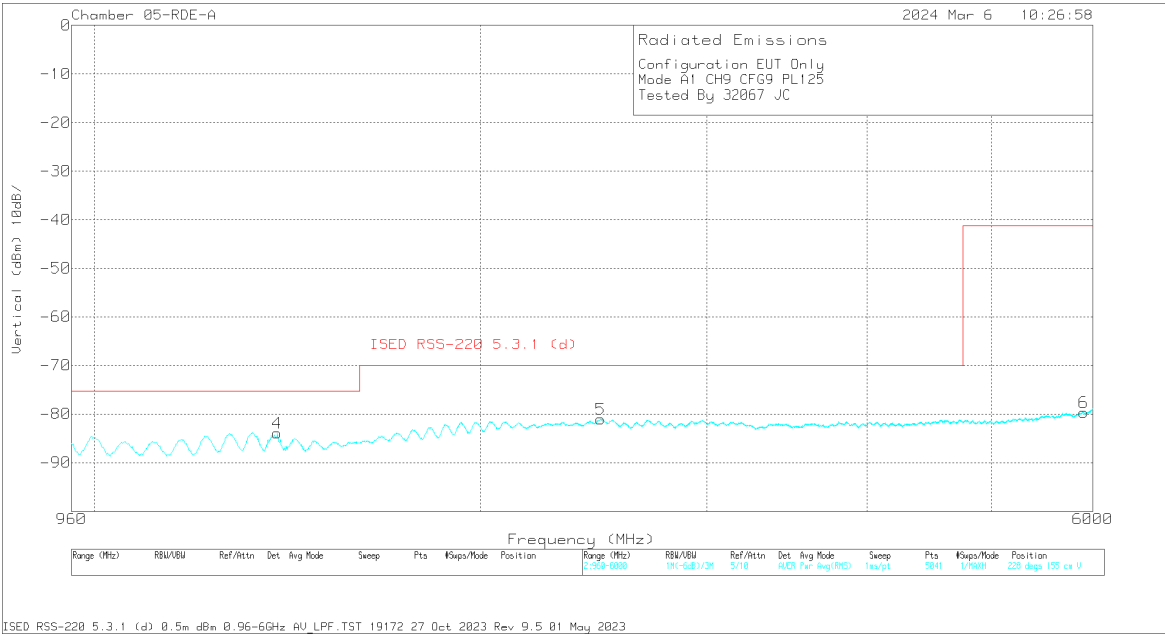
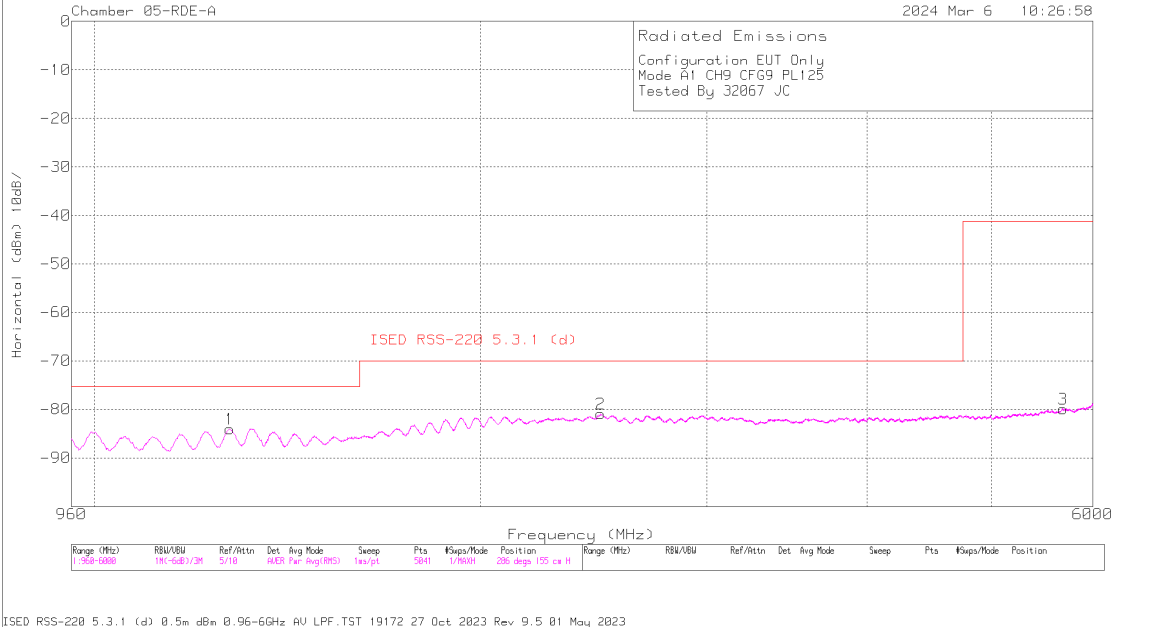
Trace Markers

Marker	Frequency (MHz)	Motor Reading (dBm)	Det	80403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	AV LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1357	-59.06	RMS	28.8	-15.6	11.8	-49.6	-83.66	-75.3	-8.36	110	155	H
2	* 1355	-59.22	RMS	28.8	-15.6	11.8	-49.6	-83.82	-75.3	-8.52	44	155	V
3	2396	-61.09	RMS	32.7	-15.6	11.8	-49.3	-81.49	-61.3	-20.19	66	155	H
4	2400	-60.54	RMS	32.7	-15.6	11.8	-49.3	-80.94	-61.3	-19.64	1	155	V
5	5581	-64.49	RMS	35.3	-15.6	11.8	-46.7	-79.69	-41.3	-38.39	132	155	H
6	5582	-64.39	RMS	35.3	-15.6	11.8	-46.7	-79.59	-41.3	-38.29	176	155	V

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

RSS-220 5.3.1 (d)

ANT. 1, CH9, Config 9, PL125

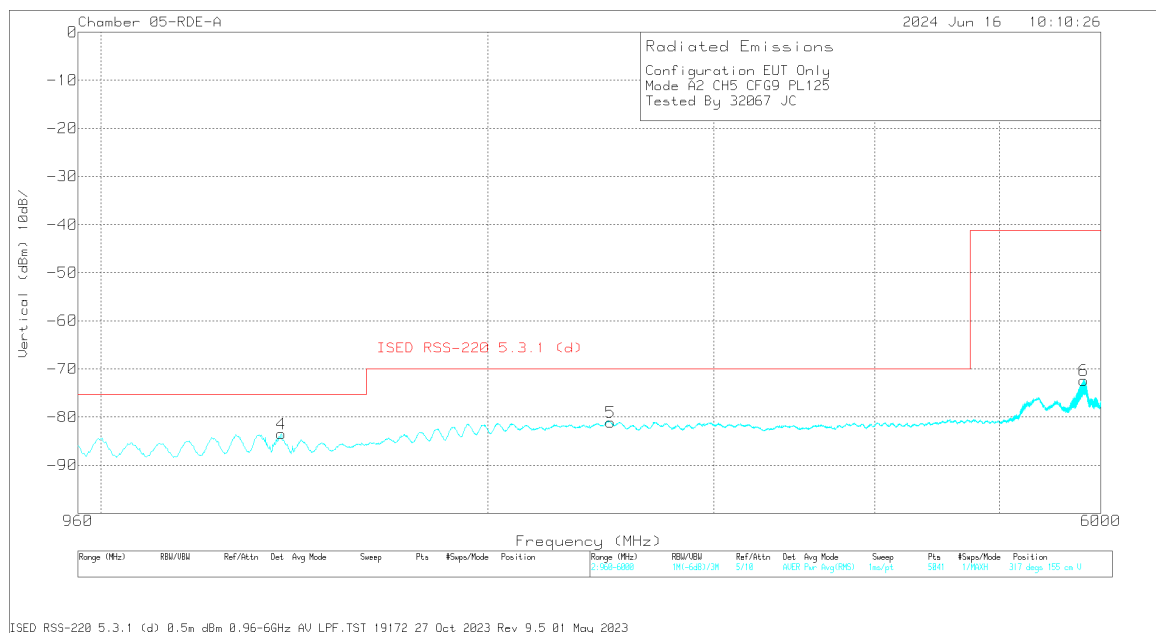
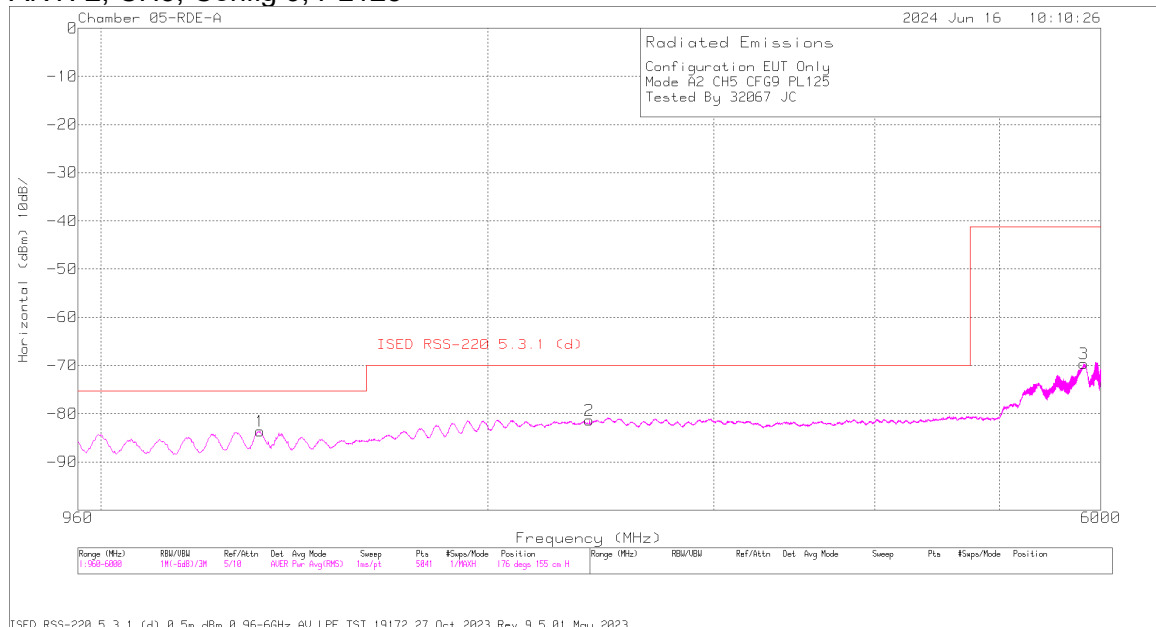


Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	80403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1275	-59.53	RMS	29.1	-15.6	11.8	-49.8	-84.03	-75.3	-8.73	22	155	H
4	* 1389	-59.36	RMS	28.6	-15.6	11.8	-49.4	-83.96	-75.3	-8.66	316	155	V
2	2481	-60.92	RMS	33	-15.6	11.8	-49.2	-80.92	-70	-10.92	330	155	H
5	2481	-61.03	RMS	33	-15.6	11.8	-49.2	-81.03	-70	-11.03	228	155	V
3	5689	-65.19	RMS	35.3	-15.6	11.8	-46.2	-79.89	-41.3	-38.59	176	155	H
6	5905	-65.71	RMS	35.7	-15.6	11.8	-45.9	-79.71	-41.3	-38.41	272	155	V

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

ANT. 2, CH5, Config 9, PL125

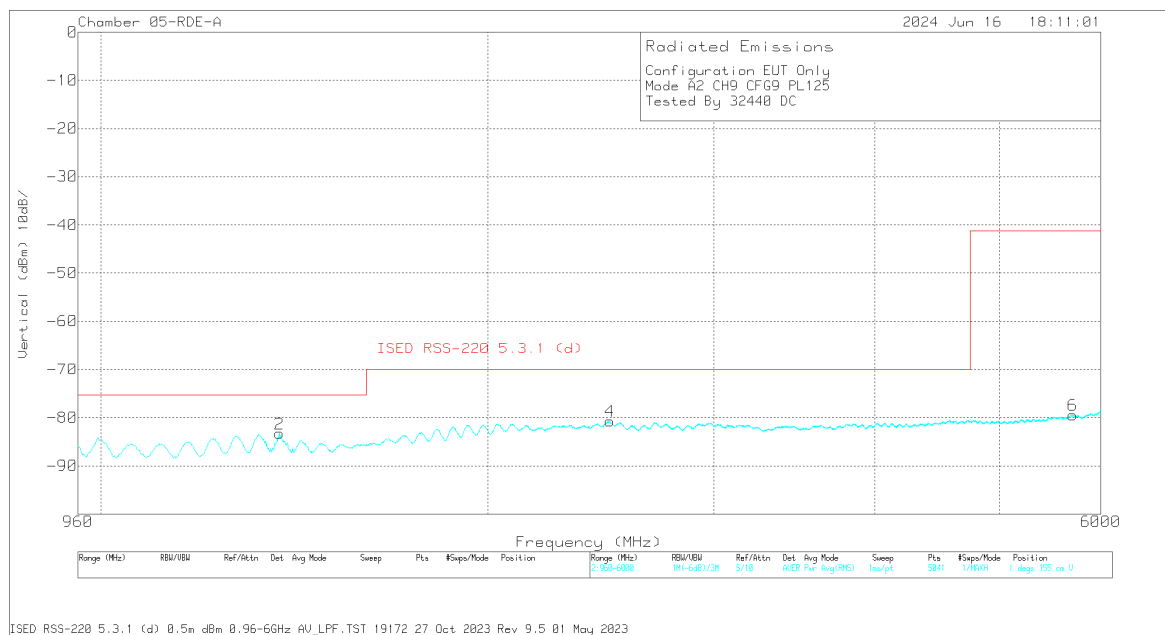
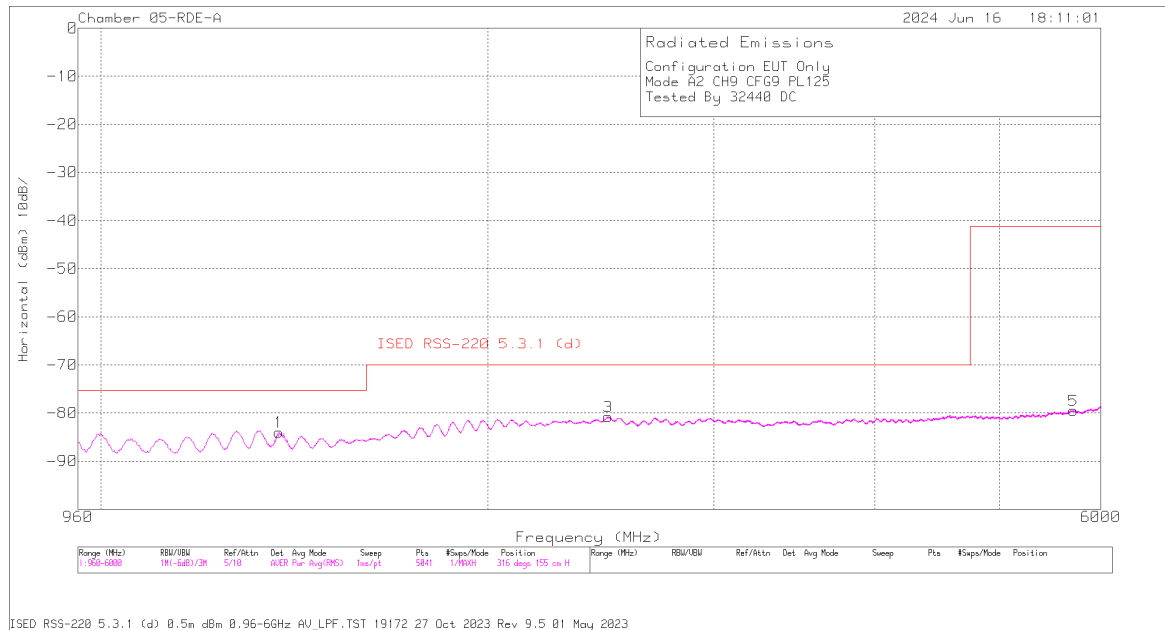


Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	80403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	ISED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1330	-59.21	RMS	29	-15.6	11.8	-49.6	-83.61	-75.3	-8.31	44	155	H
4	* 1382	-58.79	RMS	28.6	-15.6	11.8	-49.5	-83.49	-75.3	-8.19	272	155	V
5	* 2491.5	-61.19	RMS	33	-15.6	11.8	-49.1	-81.09	-70	-11.09	339	155	V
2	2400	-60.89	RMS	32.7	-15.6	11.8	-49.4	-81.39	-70	-11.39	44	155	H
3	5821	-55.22	RMS	35.5	-15.6	11.8	-46.1	-69.62	-41.3	-28.32	154	155	H
6	5822	-57.99	RMS	35.5	-15.6	11.8	-46.1	-72.39	-41.3	-31.09	162	155	V

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

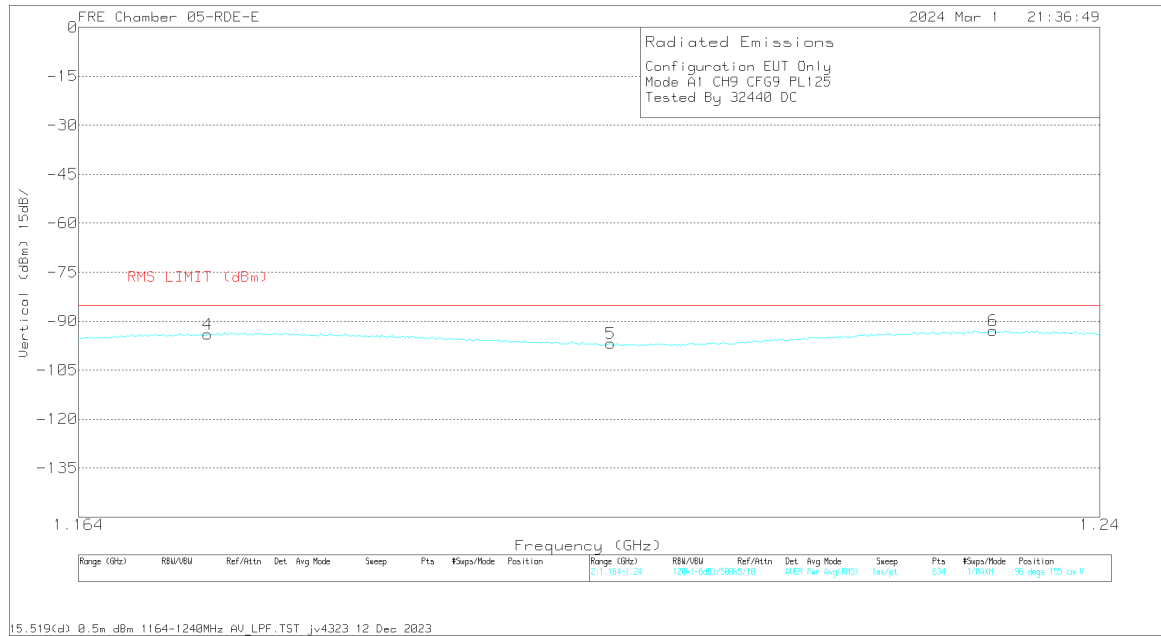
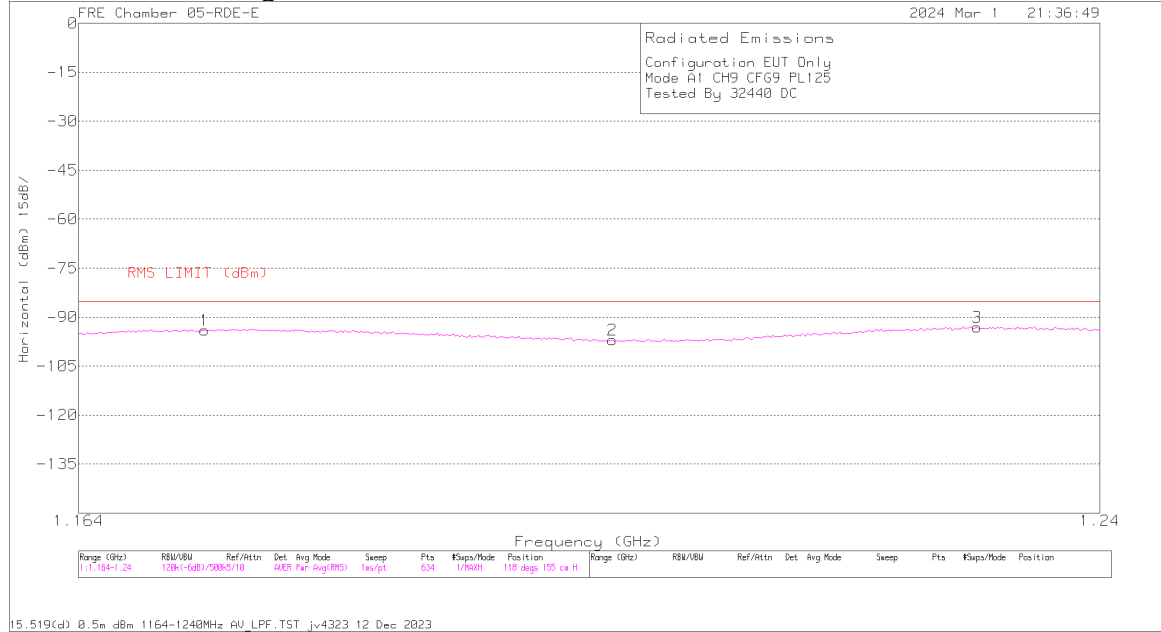
ANT. 2, CH9, Config 9, PL125



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	50403 ACF 1m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	ISSED RSS-220 5.3.1 (d)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1376	-59.52	RMS	28.7	-15.6	11.8	-49.4	-84.02	-75.3	-8.72	229	155	H
2	* 1377	-58.81	RMS	28.7	-15.6	11.8	-49.4	-83.31	-75.3	-8.01	22	155	V
4	* 2489	-60.87	RMS	33	-15.6	11.8	-49.1	-80.77	-70	-10.77	88	155	V
3	2482	-60.78	RMS	33	-15.6	11.8	-49.2	-80.78	-70	-10.78	294	155	H
6	5707	-64.65	RMS	35.3	-15.6	11.8	-46.3	-79.45	-41.3	-38.15	22	155	V
5	5710	-64.72	RMS	35.3	-15.6	11.8	-46.3	-79.52	-41.3	-38.22	119	155	H

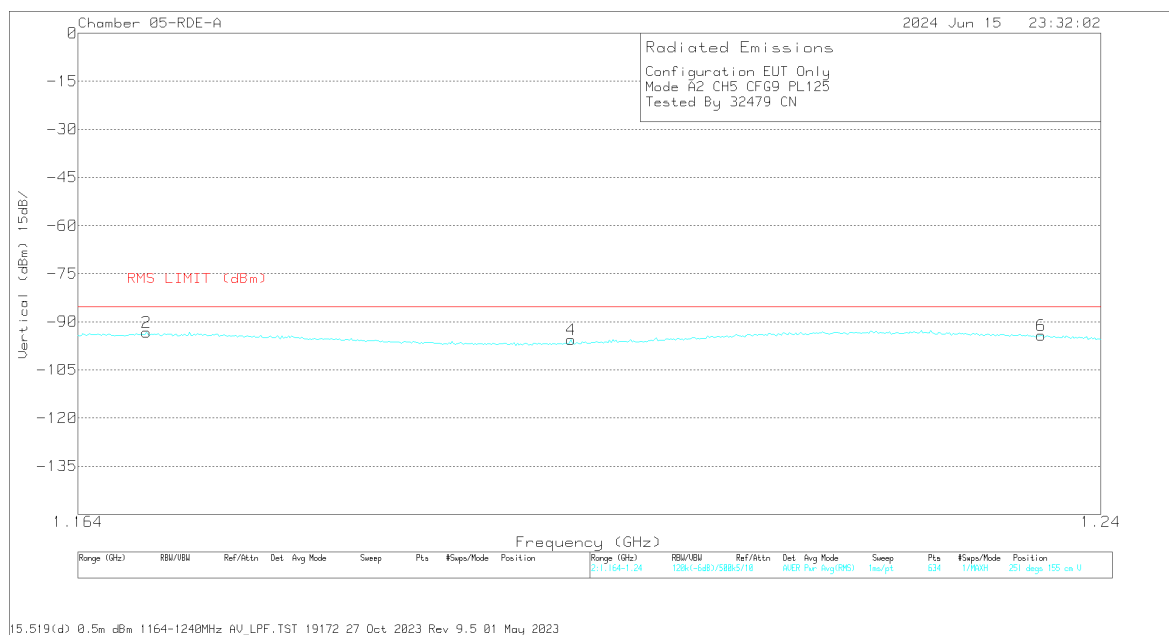
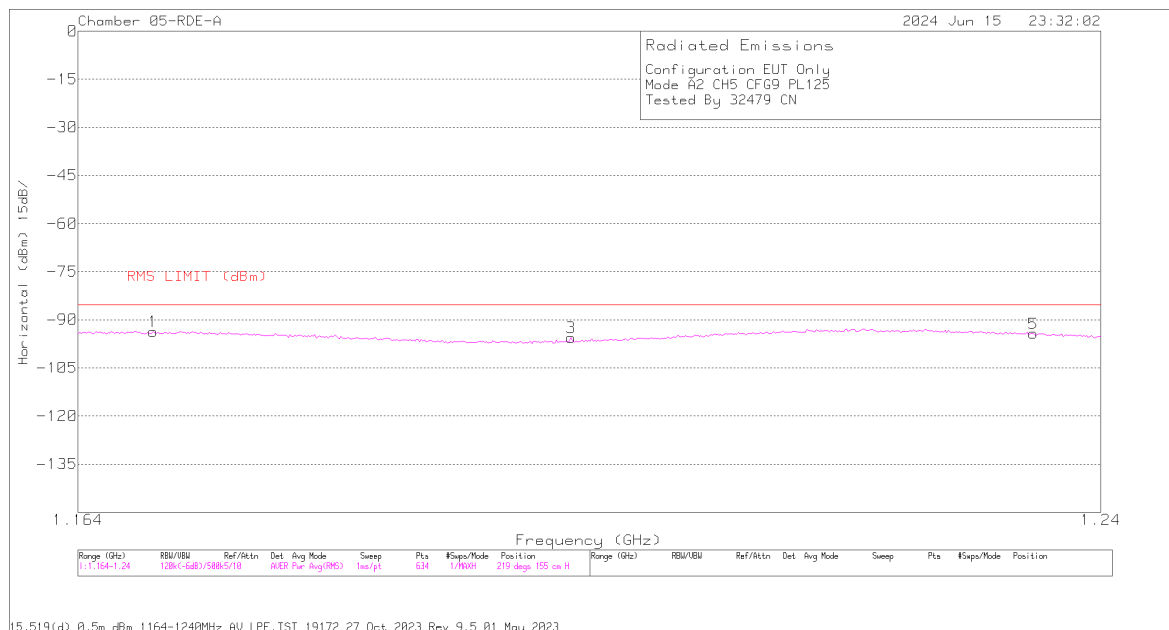
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
RMS - RMS detection

9.6.2. AVERAGE EMISSIONS, 1.164 – 1.240 GHz**ANT. 1, CH9, Config 9, PL125****Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	222740 ACF (dB/m)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.173125	-70.94	RMS	28.2	-15.6	11.8	-47.39	-93.93	-85.3	-8.63	162	155	H
4	1.173365	-70.96	RMS	28.2	-15.6	11.8	-47.36	-93.92	-85.3	-8.62	272	155	V
5	1.20302	-74.29	RMS	28.5	-15.6	11.8	-47.2	-96.79	-85.3	-11.49	52	155	V
2	1.203141	-74.46	RMS	28.5	-15.6	11.8	-47.2	-96.96	-85.3	-11.66	251	155	H
3	1.230635	-71.05	RMS	28.8	-15.6	11.8	-47.1	-93.15	-85.3	-7.85	339	155	H
6	1.231836	-70.85	RMS	28.8	-15.6	11.8	-47.1	-92.95	-85.3	-7.65	294	155	V

RMS - RMS detection

ANT. 2, CH5, Config 9, PL125

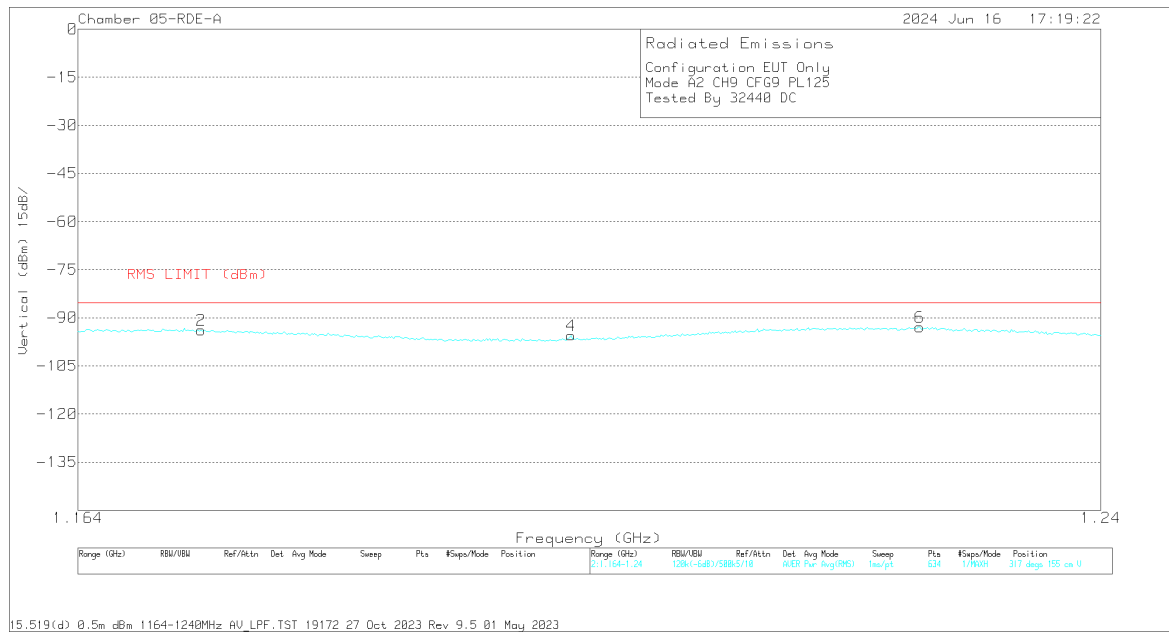
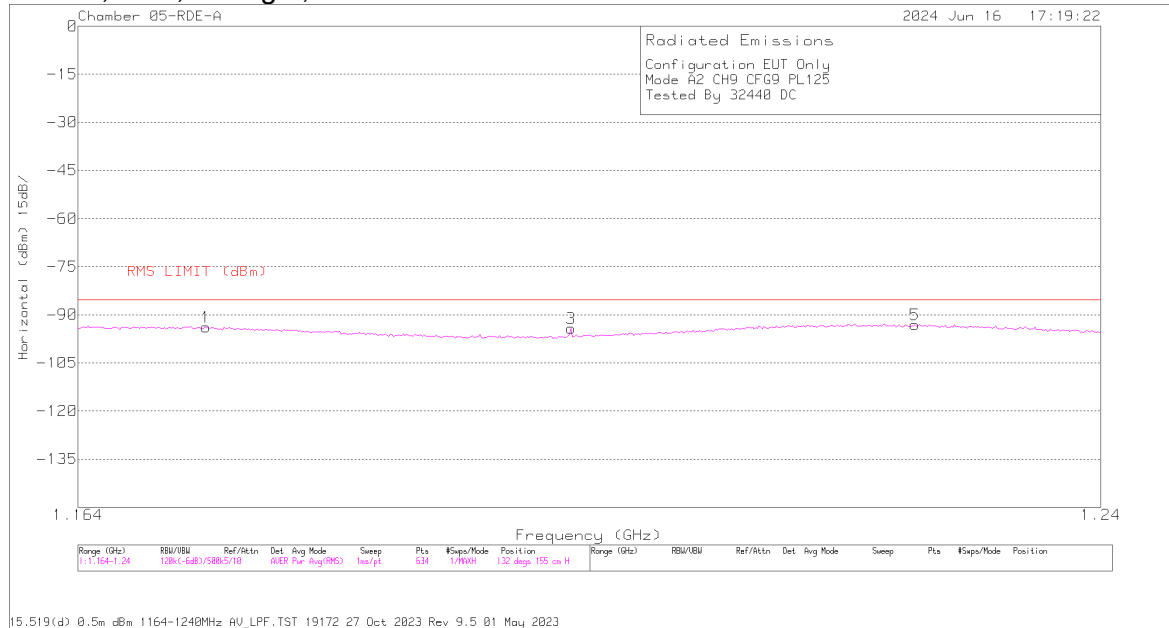


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	222740 ACF (dB/m)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.169403	-67.99	RMS	28.1	-15.6	11.8	-49.9	-93.59	-85.3	-8.29	198	155	H
3	* 1.200019	-70.28	RMS	28.4	-15.6	11.8	-49.9	-95.58	-85.3	-10.28	242	155	H
5	* 1.234837	-69.31	RMS	28.6	-15.6	11.8	-49.8	-94.31	-85.3	-9.01	44	155	H
2	* 1.168923	-67.72	RMS	28.1	-15.6	11.8	-49.9	-93.32	-85.3	-8.02	96	155	V
4	* 1.200019	-70.3	RMS	28.4	-15.6	11.8	-49.9	-95.6	-85.3	-10.3	338	155	V
6	* 1.235437	-69.18	RMS	28.6	-15.6	11.8	-49.84	-94.22	-85.3	-8.92	273	155	V

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

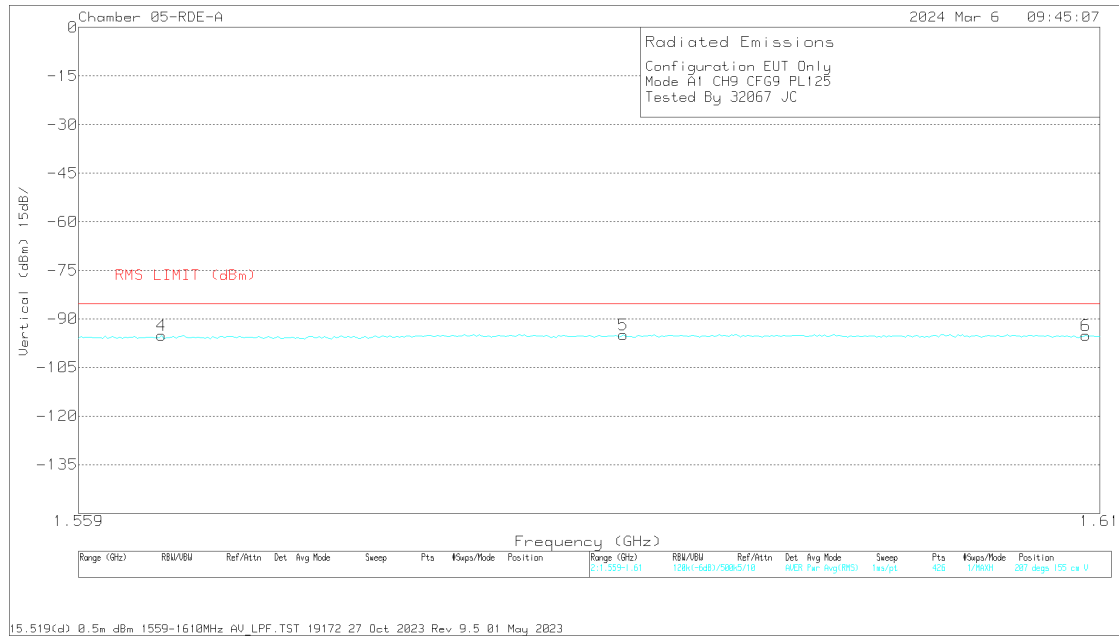
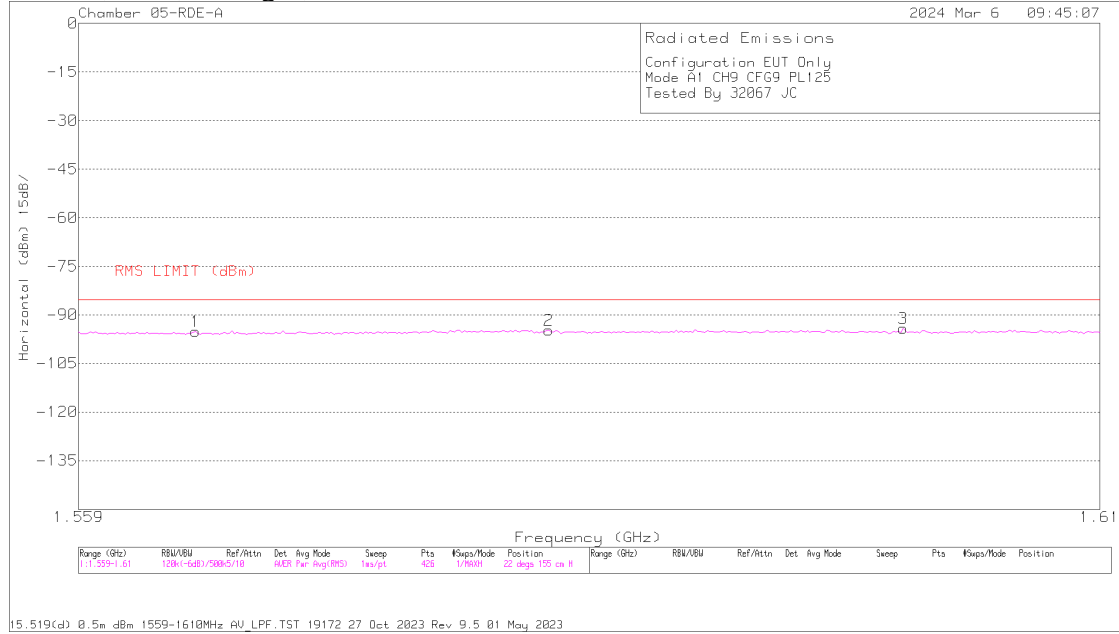
ANT. 2, CH9, Config 9, PL125



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	80403 ACF 3m (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.173245	-68.29	RMS	28.1	-15.6	11.8	-49.82	-93.81	-85.3	-8.51	198	155	H
3	* 1.200019	-68.84	RMS	28.4	-15.6	11.8	-49.9	-94.14	-85.3	-8.84	132	155	H
5	* 1.225832	-68.14	RMS	28.6	-15.6	11.8	-49.72	-93.06	-85.3	-7.76	176	155	H
2	* 1.172885	-68.28	RMS	28.1	-15.6	11.8	-49.8	-93.78	-85.3	-8.48	96	155	V
4	* 1.200019	-70.16	RMS	28.4	-15.6	11.8	-49.9	-95.46	-85.3	-10.16	140	155	V
6	* 1.226193	-68.03	RMS	28.6	-15.6	11.8	-49.7	-92.93	-85.3	-7.63	140	155	V

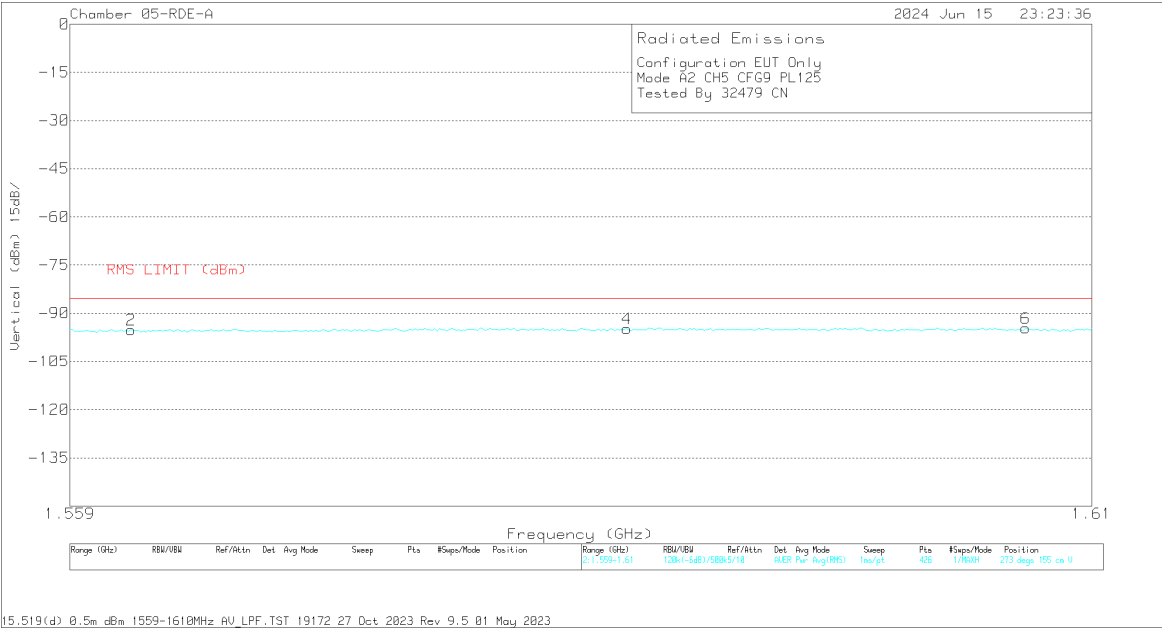
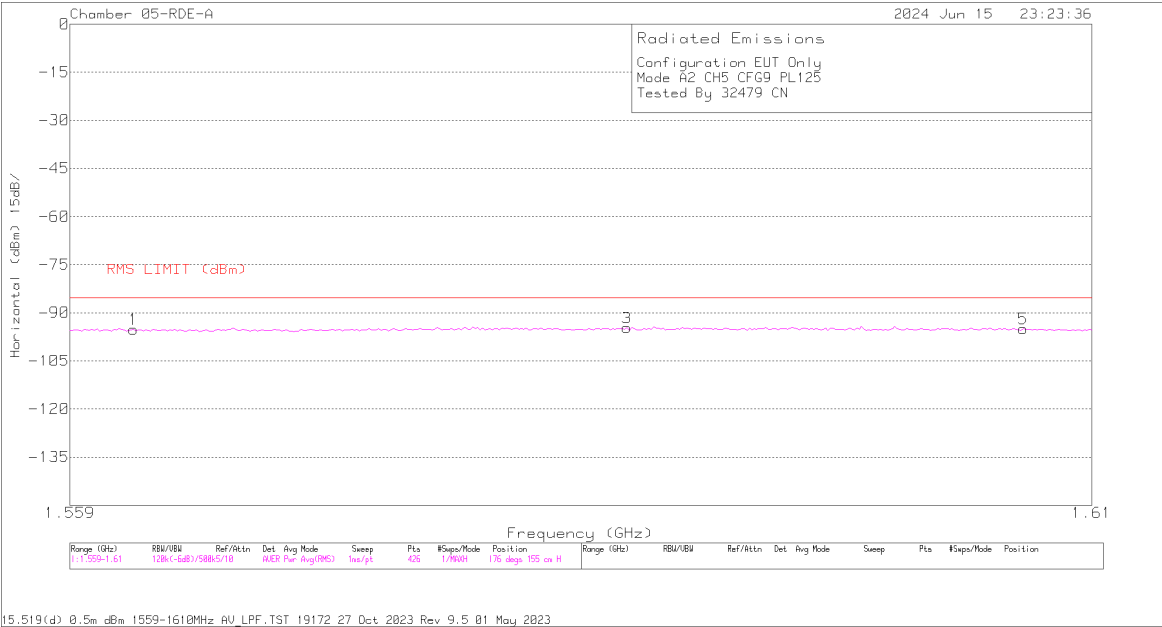
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
RMS - RMS detection

9.6.3. AVERAGE EMISSIONS, 1.559 – 1.610 GHz**ANT. 1, CH9, Config 9, PL125****Trace Markers**

Marker	Frequency (GHz)	Motor Reading (dBm)	Det	80403 ACF (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.56476	-70.02	RMS	28	-15.6	11.8	-49.3	-95.12	-85.3	-9.82	0	155	H
2	* 1.58228	-69.68	RMS	28	-15.6	11.8	-49.23	-94.71	-85.3	-9.41	264	155	H
3	* 1.60004	-69.23	RMS	28.1	-15.6	11.8	-49.3	-94.23	-85.3	-8.93	308	155	H
4	* 1.56308	-70.03	RMS	28	-15.6	11.8	-49.3	-95.13	-85.3	-9.83	74	155	V
5	* 1.586	-69.87	RMS	28	-15.6	11.8	-49.3	-94.97	-85.3	-9.67	207	155	V
6	* 1.60928	-70.18	RMS	28.2	-15.6	11.8	-49.37	-95.15	-85.3	-9.85	250	155	V

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

ANT. 2, CH5, Config 9, PL125

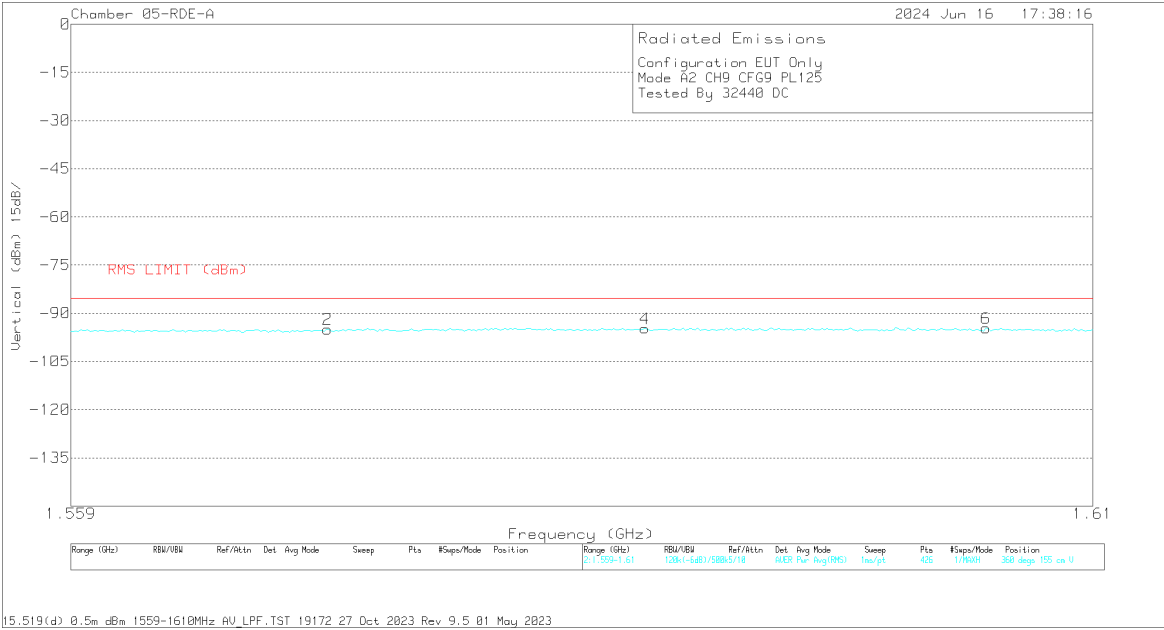
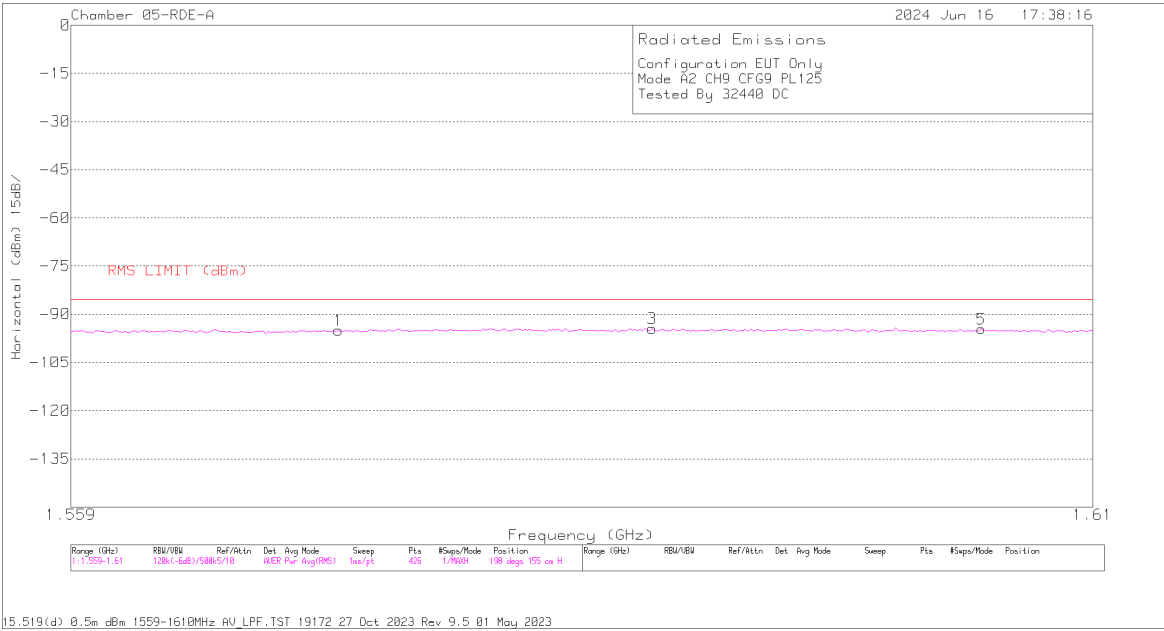


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	222740 ACF (dB/m)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.56212	-70.05	RMS	28	-15.6	11.8	-49.3	-95.15	-85.3	-9.85	308	155	H
3	* 1.5866	-69.68	RMS	28.1	-15.6	11.8	-49.3	-94.68	-85.3	-9.38	264	155	H
5	* 1.60652	-70.01	RMS	28.2	-15.6	11.8	-49.3	-94.91	-85.3	-9.61	66	155	H
2	* 1.562	-70.08	RMS	28	-15.6	11.8	-49.3	-95.18	-85.3	-9.88	251	155	V
4	* 1.5866	-69.84	RMS	28.1	-15.6	11.8	-49.3	-94.84	-85.3	-9.54	228	155	V
6	* 1.60664	-69.78	RMS	28.2	-15.6	11.8	-49.3	-94.68	-85.3	-9.38	273	155	V

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

ANT. 2, CH9, Config 9, PL125



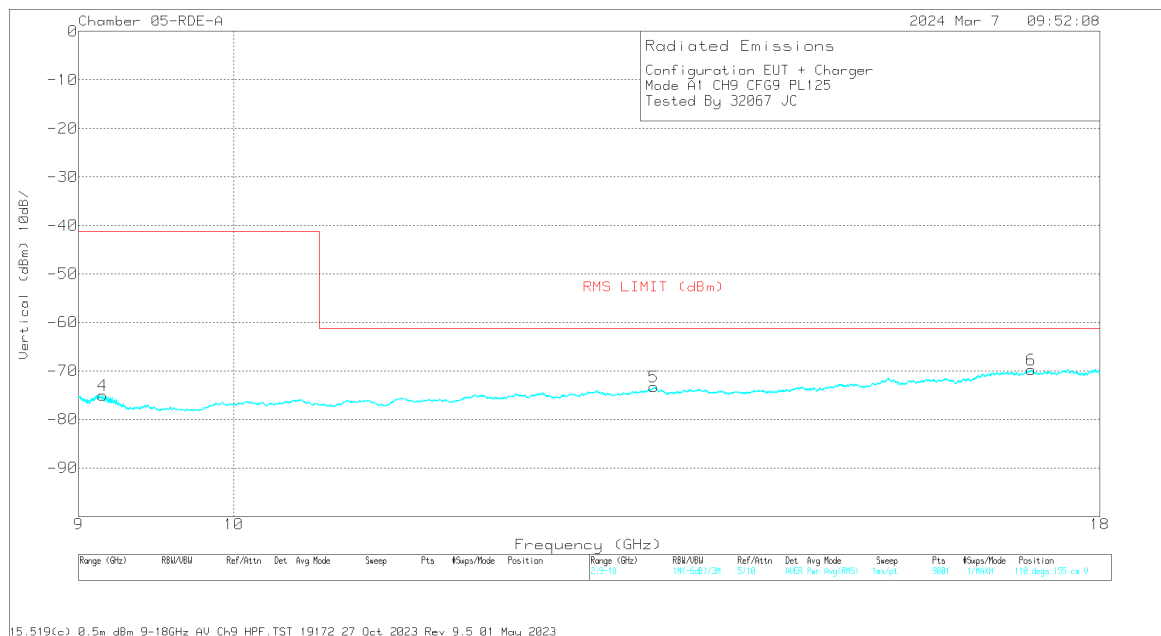
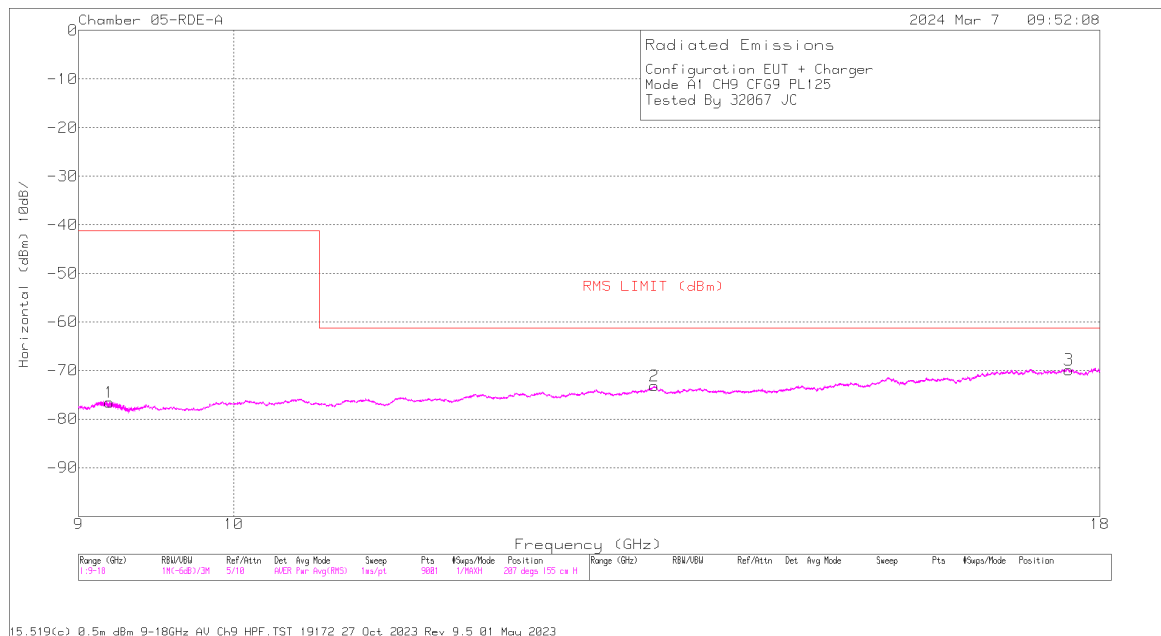
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	80403 ACF (dB/m)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.5722	-69.79	RMS	28	-15.6	11.8	-49.38	-94.97	-85.3	-9.67	242	155	H
3	* 1.5878	-69.39	RMS	28.1	-15.6	11.8	-49.3	-94.39	-85.3	-9.09	308	155	H
5	* 1.60436	-69.61	RMS	28.2	-15.6	11.8	-49.3	-94.51	-85.3	-9.21	286	155	H
2	* 1.57166	-69.71	RMS	28	-15.6	11.8	-49.4	-94.91	-85.3	-9.61	250	155	V
4	* 1.58744	-69.7	RMS	28.1	-15.6	11.8	-49.3	-94.7	-85.3	-9.4	316	155	V
6	* 1.6046	-69.78	RMS	28.2	-15.6	11.8	-49.3	-94.68	-85.3	-9.38	273	155	V

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

9.6.4. AVERAGE EMISSIONS, 9 – 18 GHz

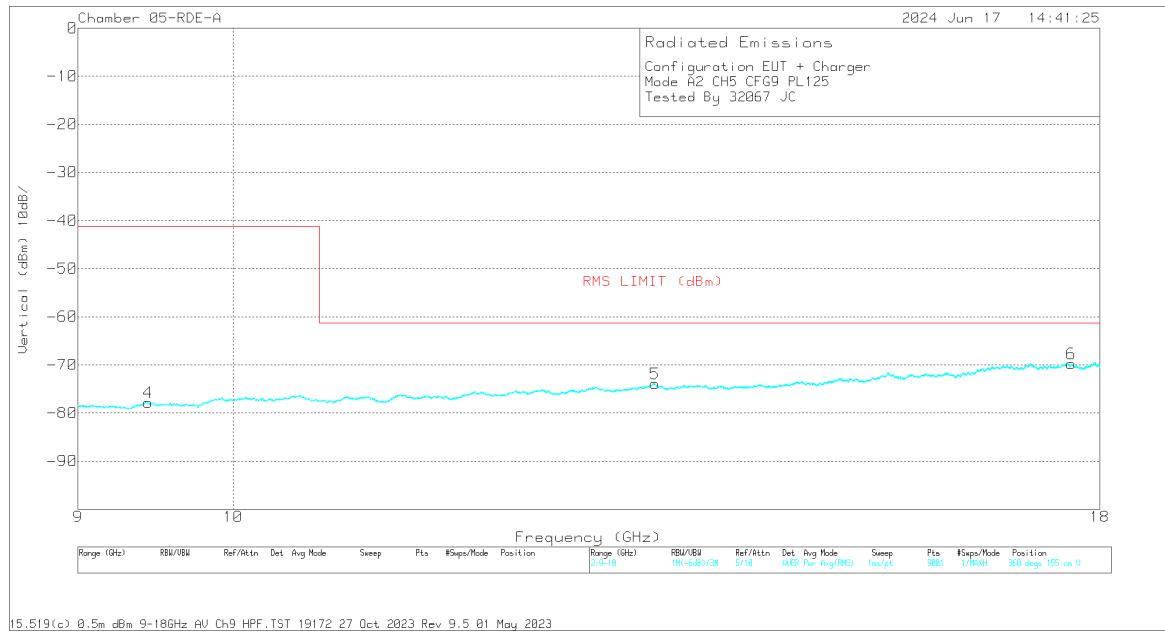
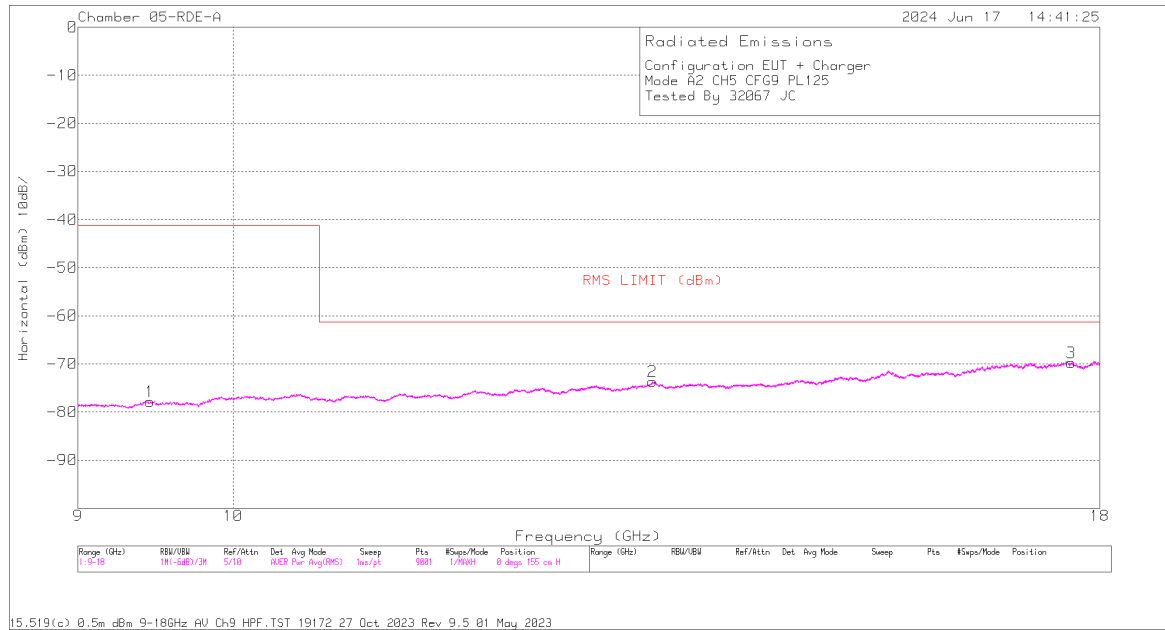
ANT. 1, CH9, Config 9, PL125

**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	80403 ACF (dB/m)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 9.189	-65.13	RMS	36.2	-15.6	11.8	-43.8	-76.53	-41.3	-35.23	185	155	H
2	* 13.302	-66.89	RMS	39.1	-15.6	11.8	-41.6	-73.19	-61.3	-11.89	228	155	H
4	* 9.15	-63.68	RMS	36.1	-15.6	11.8	-43.7	-75.08	-41.3	-33.78	154	155	V
5	* 13.3	-67.02	RMS	39.1	-15.6	11.8	-41.6	-73.32	-61.3	-12.02	154	155	V
6	17.182	-69.43	RMS	41.6	-15.6	11.8	-38.1	-69.73	-61.3	-8.43	264	155	V
3	17.627	-70.44	RMS	41.5	-15.6	11.8	-37.1	-69.84	-61.3	-8.54	317	155	H

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

ANT. 2, CH5, Config 9, PL125

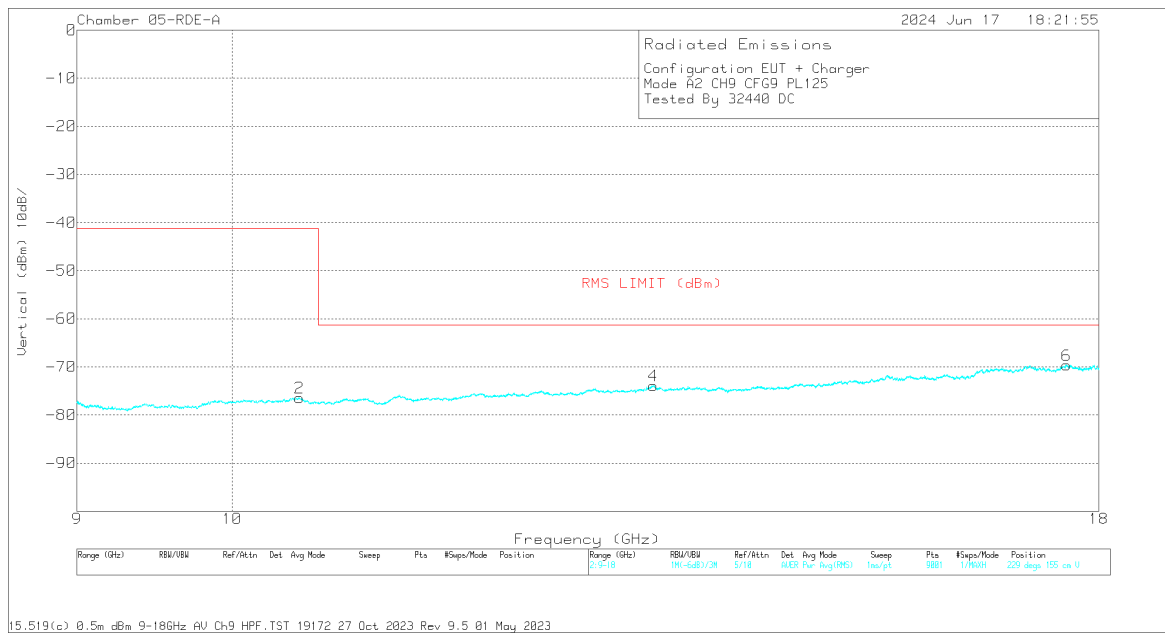
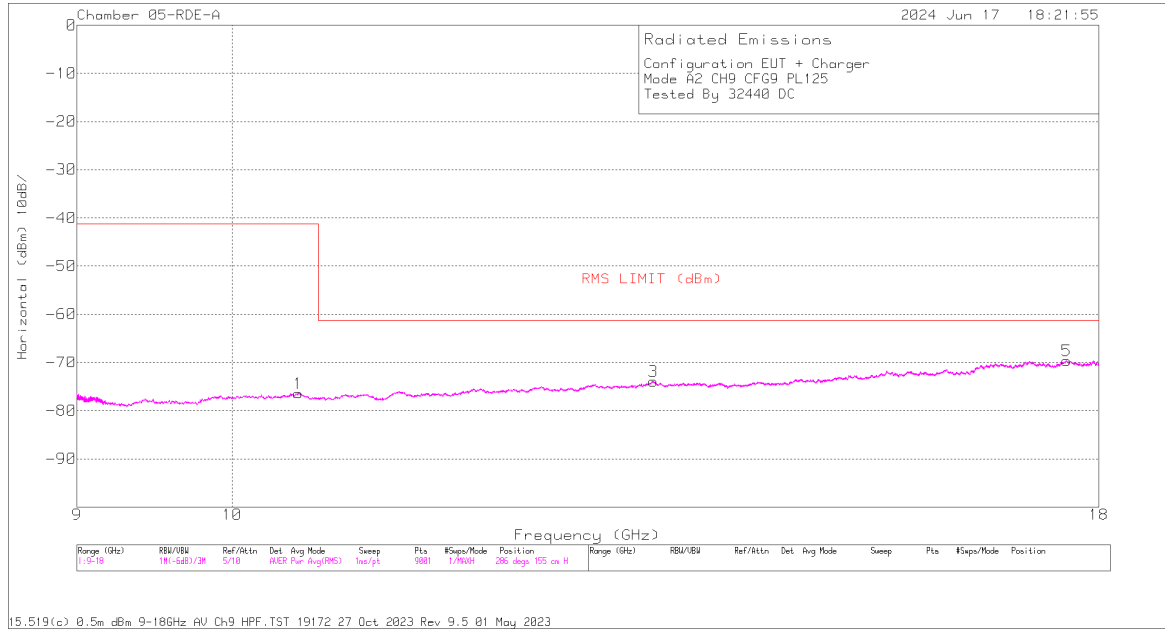


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	80403 ACF (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 9.452	-65.97	RMS	36.4	-15.6	11.8	-44.5	-77.87	-41.3	-36.57	154	155	H
2	* 13.291	-67.3	RMS	39.1	-15.6	11.8	-41.7	-73.7	-61.3	-12.4	87	155	H
4	* 9.439	-66.35	RMS	36.4	-15.6	11.8	-44.1	-77.85	-41.3	-36.55	141	155	V
5	* 13.312	-67.61	RMS	39.1	-15.6	11.8	-41.6	-73.91	-61.3	-12.61	272	155	V
6	17.655	-69.97	RMS	41.5	-15.6	11.8	-37.5	-69.77	-61.3	-8.47	228	155	V
3	17.657	-69.92	RMS	41.5	-15.6	11.8	-37.5	-69.72	-61.3	-8.42	87	155	H

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

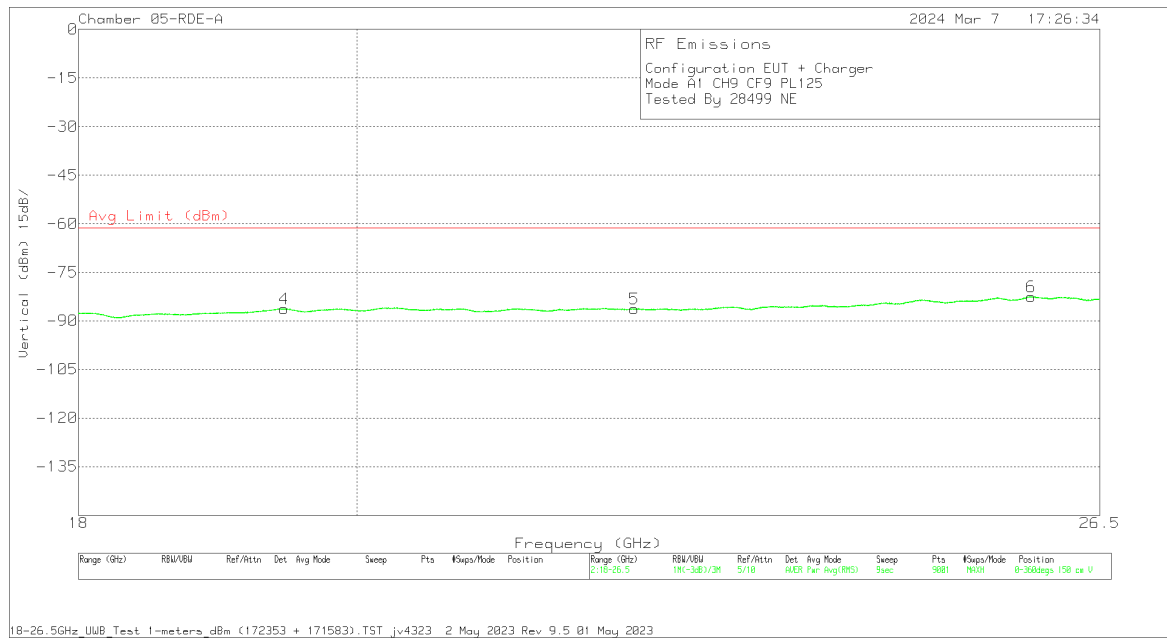
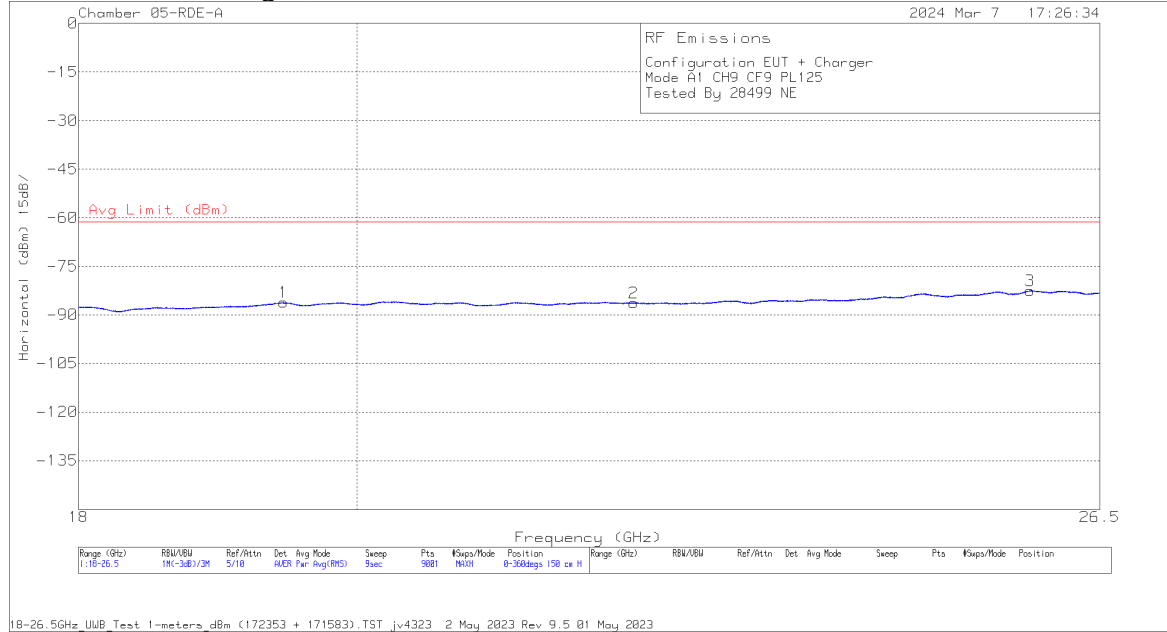
ANT. 2, CH9, Config 9, PL125



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	80403 ACF (dBm)	Dist. Corr. (dB)	Conversion Factor (dB)	Gain/Loss (dB)	Corrected Reading (dBm)	RMS LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 13.305	-67.64	RMS	39.1	-15.6	11.8	-41.6	-73.94	-61.3	-12.64	242	155	H
4	* 13.306	-67.61	RMS	39.1	-15.6	11.8	-41.6	-73.91	-61.3	-12.61	229	155	V
1	10.459	-65.98	RMS	37.9	-15.6	11.8	-44.5	-76.38	-41.3	-35.08	132	155	H
2	10.466	-66.07	RMS	37.9	-15.6	11.8	-44.5	-76.47	-41.3	-35.17	141	155	V
5	17.613	-70.04	RMS	41.6	-15.6	11.8	-37.4	-69.64	-61.3	-8.34	308	155	H
6	17.613	-70.08	RMS	41.6	-15.6	11.8	-37.4	-69.68	-61.3	-8.38	250	155	V

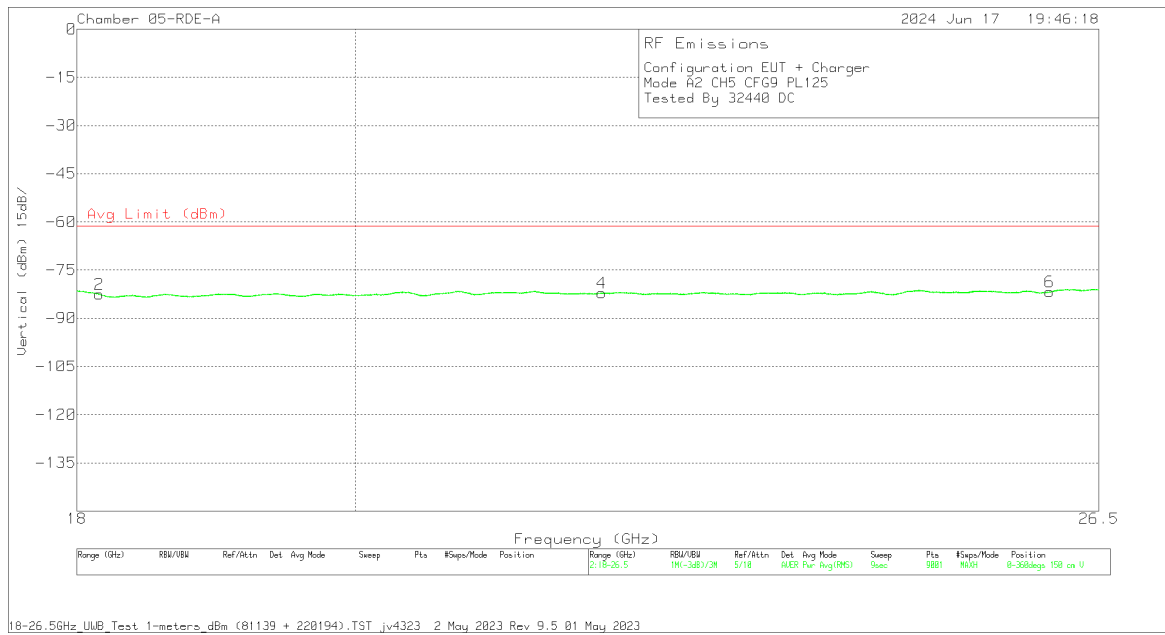
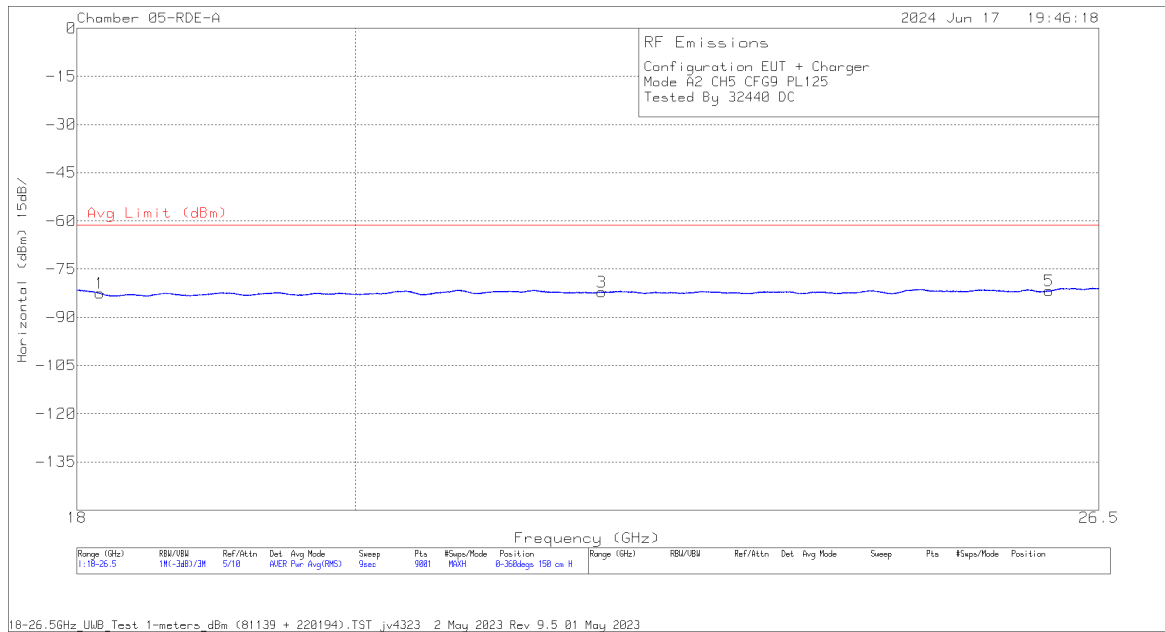
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
RMS - RMS detection

9.6.5. AVERAGE EMISSIONS, 18 – 26.5 GHz**ANT. 1, CH9, Config 9, PL125****Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172353 ACF (dBm) - 1mst	171583 Amp Assembly (dB)	CBL (dB)	Dist Corr (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*	-63.49	RMS	33.2	-65.2	13.2	-15.6	11.8	-86.09	-61.3	-24.79	0-360	150	H
2	*	-65.1	RMS	34	-65.5	14.2	-15.6	11.8	-86.2	-61.3	-24.9	0-360	150	H
4	*	-63.63	RMS	33.2	-65.2	13.2	-15.6	11.8	-86.23	-61.3	-24.93	0-360	150	V
5	*	-65.17	RMS	34	-65.5	14.2	-15.6	11.8	-86.27	-61.3	-24.97	0-360	150	V
3	25.809607	-66.24	RMS	35.1	-63.1	15.5	-15.6	11.8	-82.54	-61.3	-21.24	0-360	150	H
6	25.818107	-66.22	RMS	35.1	-63.1	15.5	-15.6	11.8	-82.52	-61.3	-21.22	0-360	150	V

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

ANT. 2, CH5, Config 9, PL125

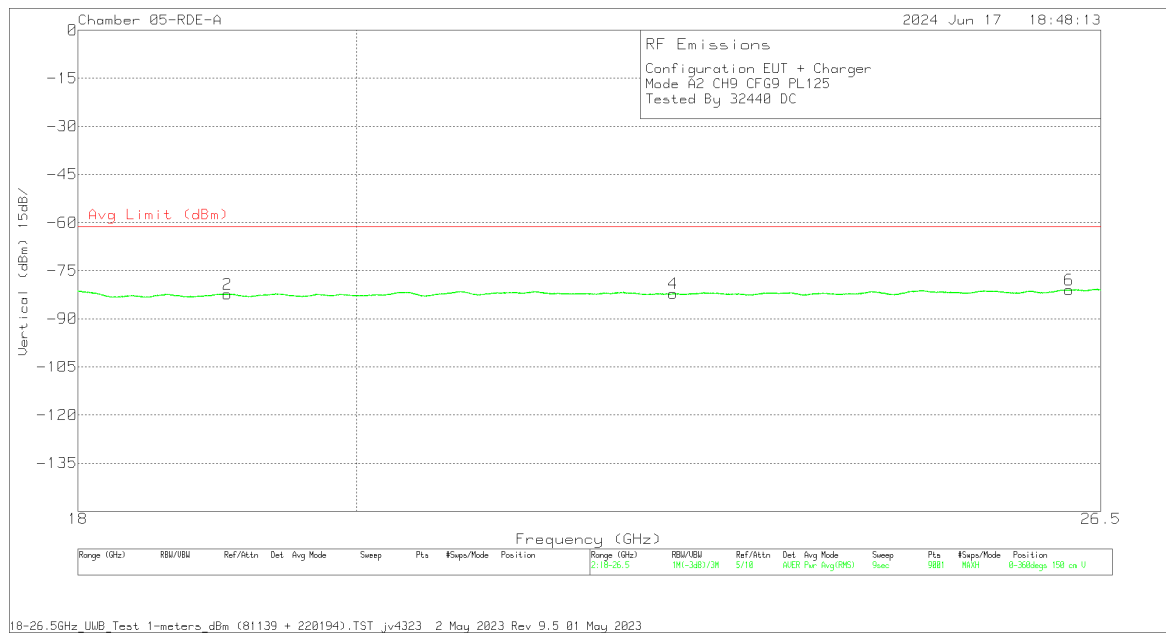
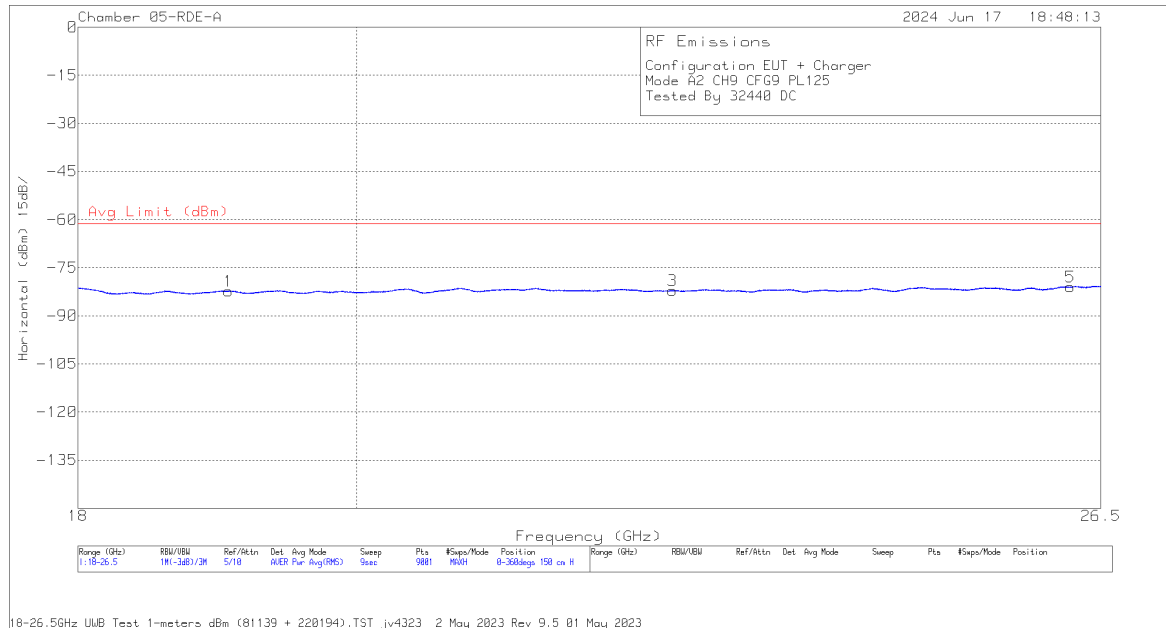


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172583 ACP (dBm) - 1m	171683 Amp Assembly (dB)	CBL (dB)	Dist Corr (dB)	Conv. Fact (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Altitude (feet)	Height (cm)	Polarity
1	* 18.155833	-62.62	RMS	32.7	-62.1	13.4	-15.6	11.8	-82.42	-61.3	-21.12	0-360	150	H
2	* 18.151111	-62.63	RMS	32.7	-62.1	13.4	-15.6	11.8	-82.43	-61.3	-21.13	0-360	150	V
3	21.954387	-65.25	RMS	33.8	-61.3	14.5	-15.6	11.8	-82.05	-61.3	-20.75	0-360	150	H
4	21.956276	-65.26	RMS	33.8	-61.3	14.5	-15.6	11.8	-82.06	-61.3	-20.76	0-360	150	V
5	26.006052	-67.43	RMS	35	-61.2	15.7	-15.6	11.8	-81.73	-61.3	-20.43	0-360	150	H
6	26.00983	-67.38	RMS	35	-61.2	15.7	-15.6	11.8	-81.68	-61.3	-20.38	0-360	150	V

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

ANT. 2, CH9, Config 9, PL125



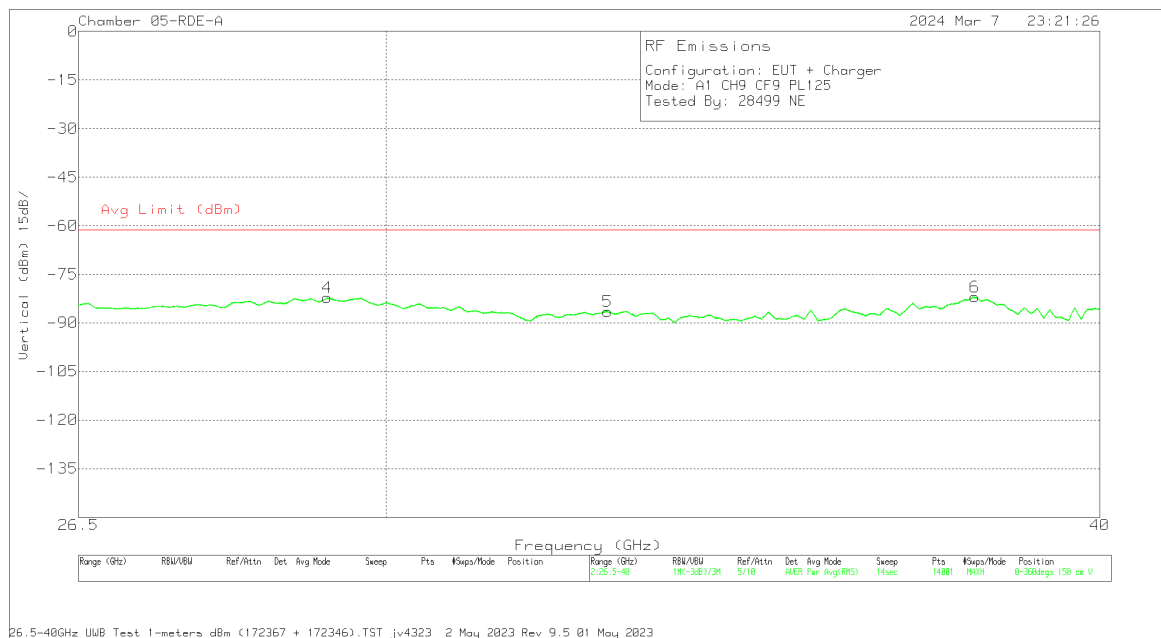
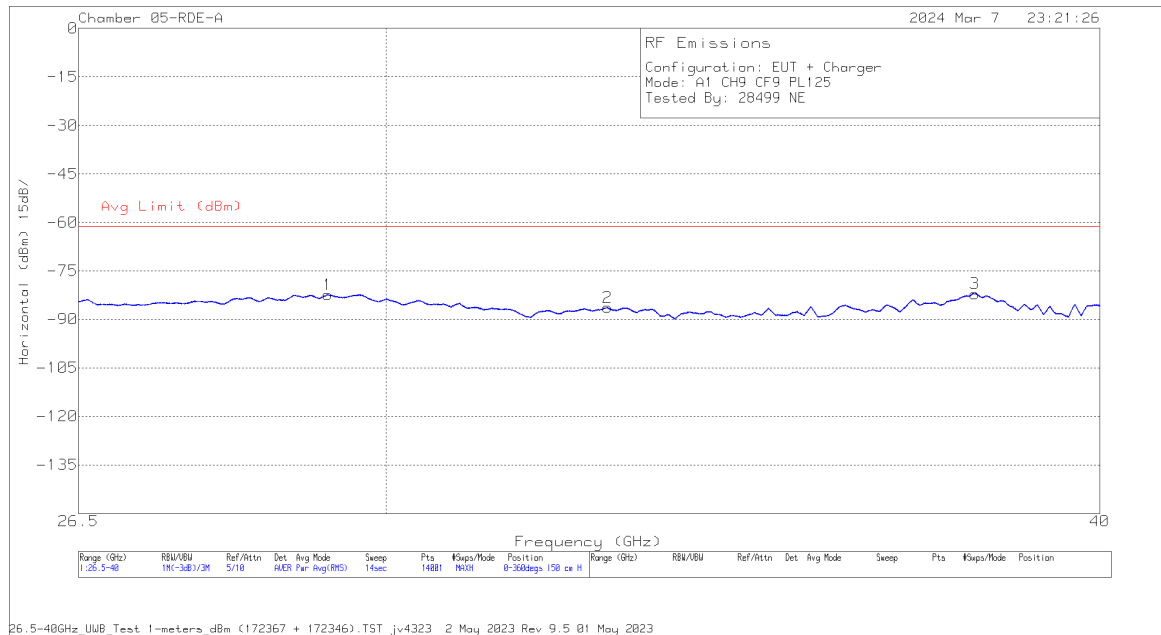
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172353 ACP (dBm) - Test	171583 Amp Assembly (dB)	CBL (dB)	Dist Corr (dB)	Conv. Fact. (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19.053055	-63.58	RMS	33.2	-61.8	13.7	-15.6	11.8	-82.28	-61.3	-20.98	0-360	150	H
3	* 22.539053	-65.03	RMS	33.7	-61.7	14.7	-15.6	11.8	-82.13	-61.3	-20.83	0-360	150	H
2	* 19.047388	-63.46	RMS	33.1	-61.8	13.6	-15.6	11.8	-82.36	-61.3	-21.06	0-360	150	V
4	* 22.541831	-65.08	RMS	33.7	-61.7	14.7	-15.6	11.8	-82.18	-61.3	-20.88	0-360	150	V
6	26.186441	-67.1	RMS	35.3	-61.1	15.7	-15.6	11.8	-81	-61.3	-19.7	0-360	150	V
5	26.194941	-67.1	RMS	35.3	-61.1	15.7	-15.6	11.8	-81	-61.3	-19.7	0-360	150	H

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

9.6.6. AVERAGE EMISSIONS, 26.5 – 40 GHz

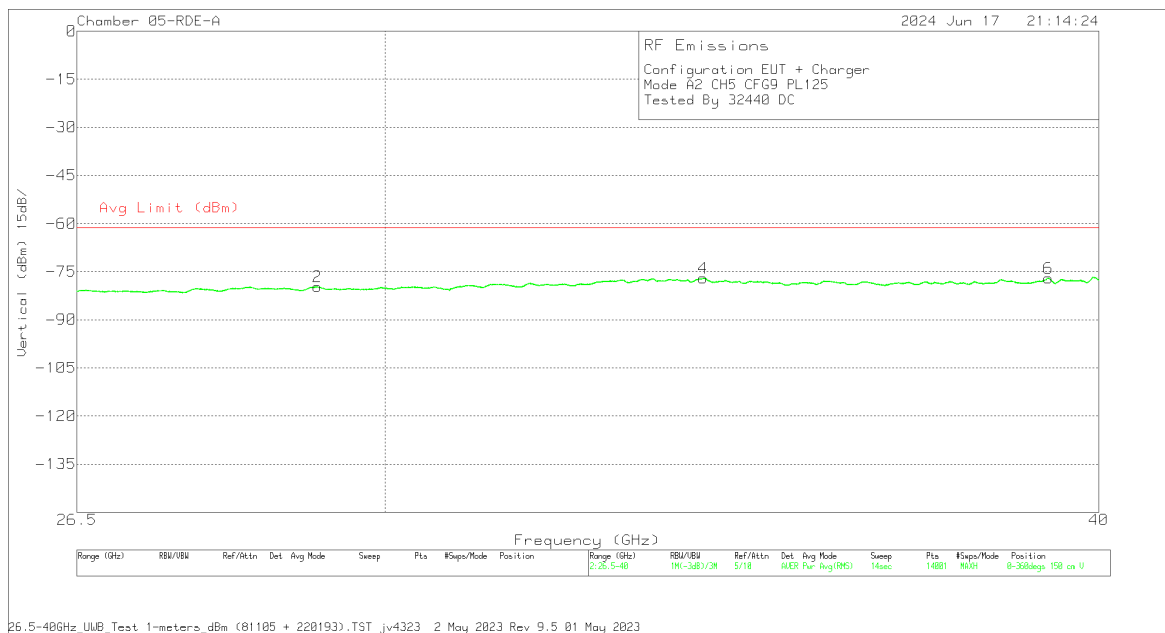
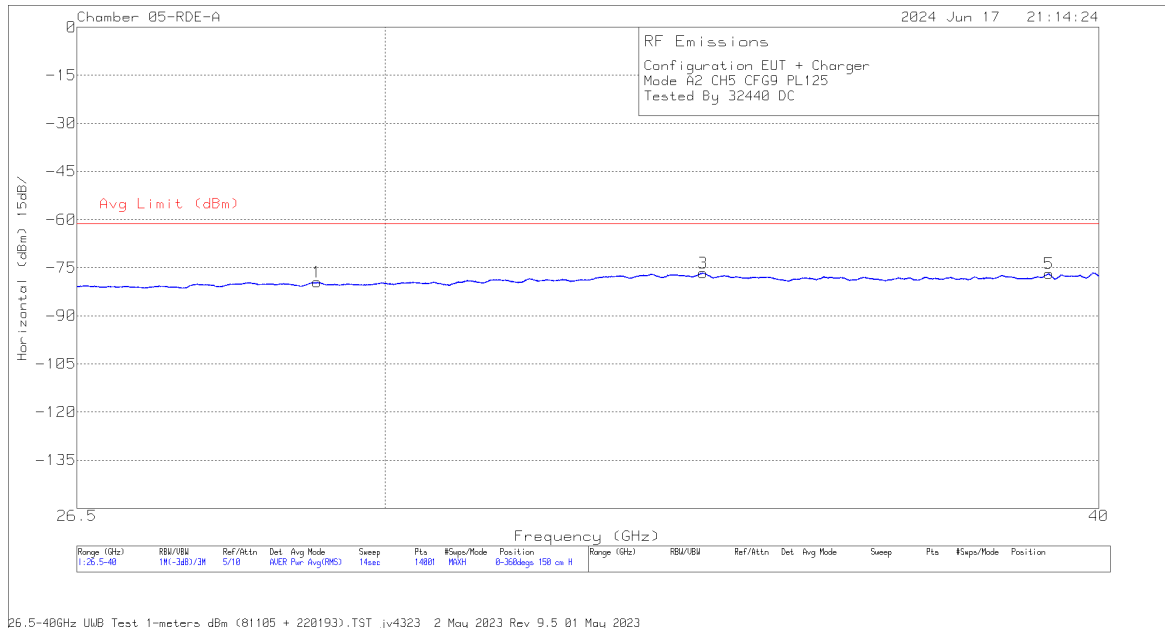
ANT. 1, CH9, Config 9, PL125

**Trace Markers**

Marker	Frequency (GHz)	Marker Reading (dBm)	Det	172367 ACI (dBm) - 1mH	172346 Amp Assembly (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	26.298358	-66.12	RMS	37	-65.9	-15.6	11.8	16.6	-82.22	-61.3	-20.92	0-360	150	V
1	29.300287	-66.21	RMS	37	-65.9	-15.6	11.8	16.6	-82.31	-61.3	-21.01	0-360	150	H
5	32.800645	-66.22	RMS	37.4	-69.3	-15.6	11.8	17.5	-86.42	-61.3	-25.12	0-360	150	V
2	32.801609	-68	RMS	37.4	-69.3	-15.6	11.8	17.5	-86.2	-61.3	-24.9	0-360	150	H
6	38.030932	-66.04	RMS	38.9	-70.2	-15.6	11.8	19.2	-81.94	-61.3	-20.64	0-360	150	V
3	38.032861	-66.15	RMS	38.9	-70.2	-15.6	11.8	19.2	-82.05	-61.3	-20.75	0-360	150	H

RMS - RMS detection

ANT. 2, CH5, Config 9, PL125

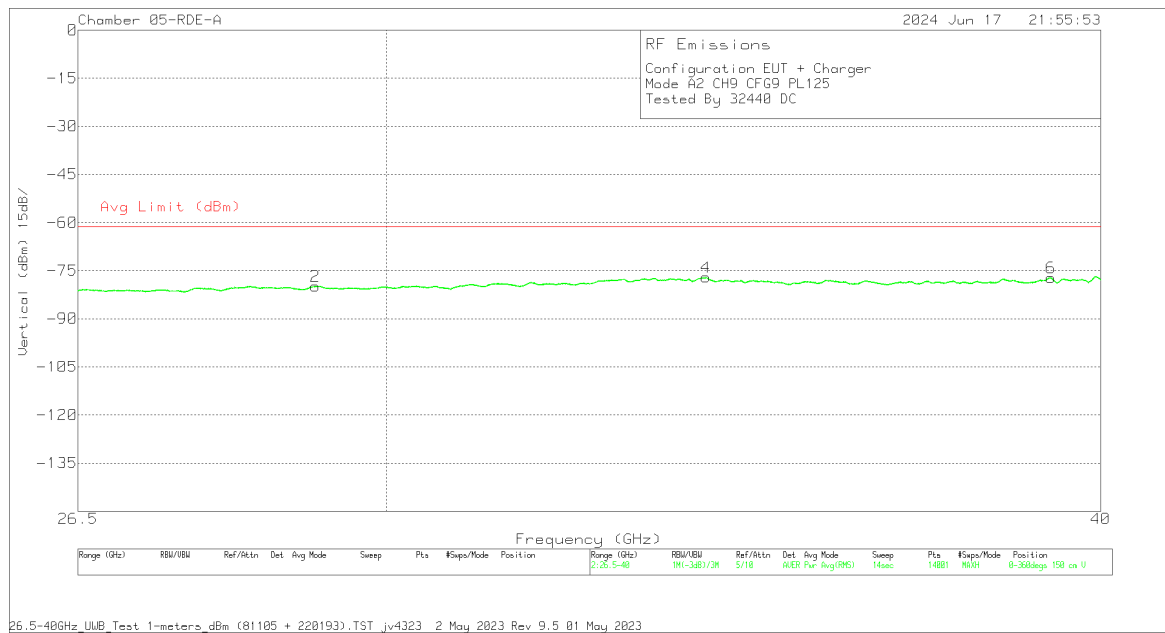
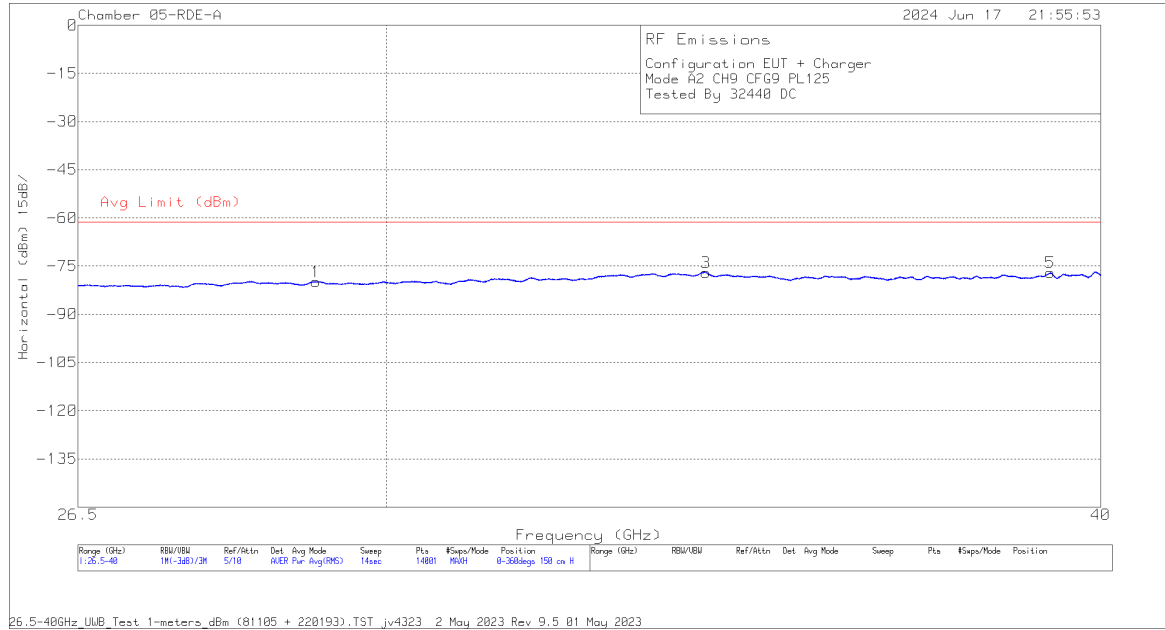


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172367 ACF (dBm) - test	172346 Amp Assembly (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	29.194215	-65.2	RMS	36.7	-64	-15.6	11.8	16.8	-79.5	-61.3	-18.2	0-360	150	H
2	29.195144	-65.39	RMS	36.7	-64	-15.6	11.8	16.8	-79.69	-61.3	-18.39	0-360	150	V
4	34.102431	-66.25	RMS	36.1	-63.6	-15.6	11.8	18.5	-77.05	-61.3	-15.75	0-360	150	V
3	34.107252	-65.76	RMS	36.1	-63.7	-15.6	11.8	18.5	-76.66	-61.3	-15.36	0-360	150	H
6	39.197718	-67.24	RMS	36.9	-65	-15.6	11.8	20.2	-76.94	-61.3	-15.64	0-360	150	V
5	39.203504	-67.18	RMS	36.9	-65	-15.6	11.8	20.2	-76.88	-61.3	-15.58	0-360	150	H

RMS - RMS detection

ANT. 2, CH9, Config 9, PL125



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	172367 ACF (dBm) - 1mH	172346 Amp Assembly (dB)	Dist Corr (dB)	Conversion Factor (dB)	CBL (dB)	Corrected Reading (dBm)	Avg Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	29.157572	-65.57	RMS	36.7	-64	-15.6	11.8	16.8	-79.87	-61.3	-18.57	0-360	150	V
1	29.165287	-65.55	RMS	36.7	-64	-15.6	11.8	16.8	-79.85	-61.3	-18.55	0-360	150	H
3	34.119788	-66.02	RMS	38.1	-63.7	-15.6	11.8	18.5	-78.92	-61.3	-15.62	0-360	150	H
4	34.124629	-66.08	RMS	38.1	-63.8	-15.6	11.8	18.5	-77.08	-61.3	-15.78	0-360	150	V
5	39.199647	-67.34	RMS	38.9	-65	-15.6	11.8	20.2	-77.04	-61.3	-15.74	0-360	150	H
6	39.205432	-67.34	RMS	38.9	-65.1	-15.6	11.8	20.2	-77.14	-61.3	-15.84	0-360	150	V

RMS - RMS detection

9.7. AC POWER-LINE CONDUCTED EMISSIONS**LIMITS**

FCC §15.207 (a) & RSS-Gen 8.8

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

^{*} Decreases with the logarithm of the frequency.**TEST PROCEDURE**

ANSI C63.10 Section 6.2

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

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

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

RESULTS

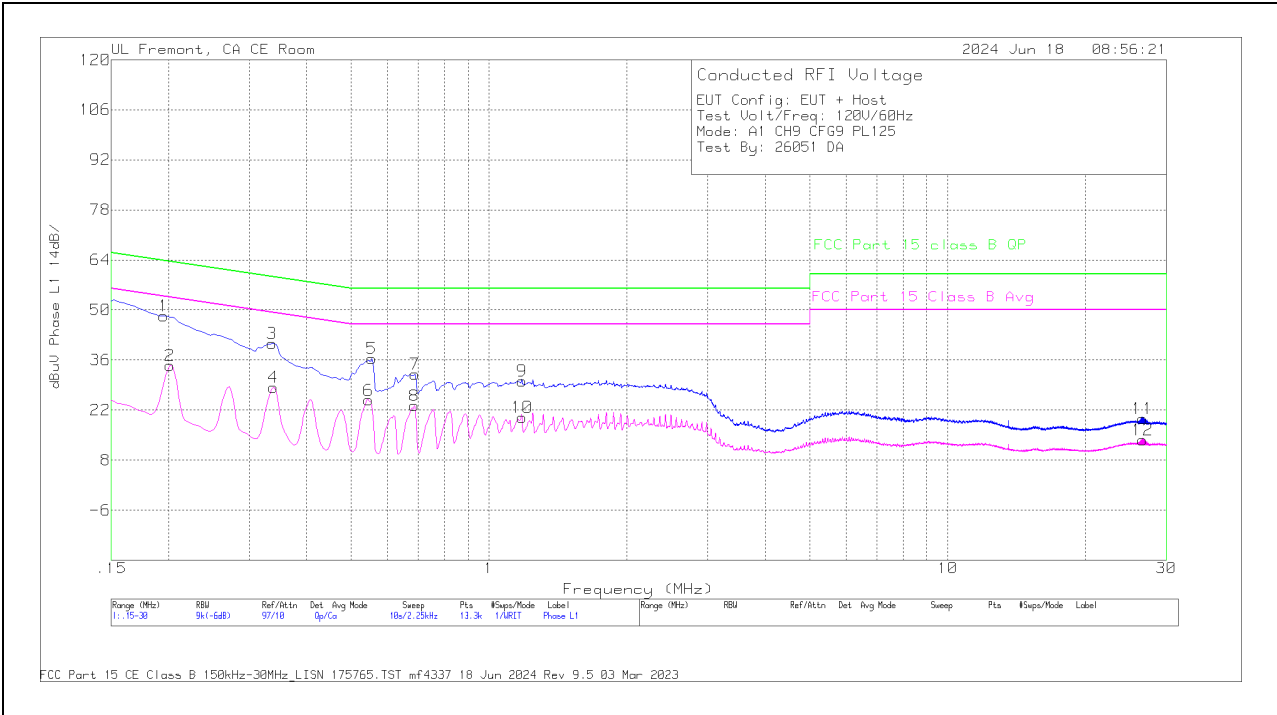
Employee IDs: 26051

Location: Immunity Room

Test Date: Jun 18, 2024

9.7.1. AC Power Line With Laptop

LINE 1 RESULTS

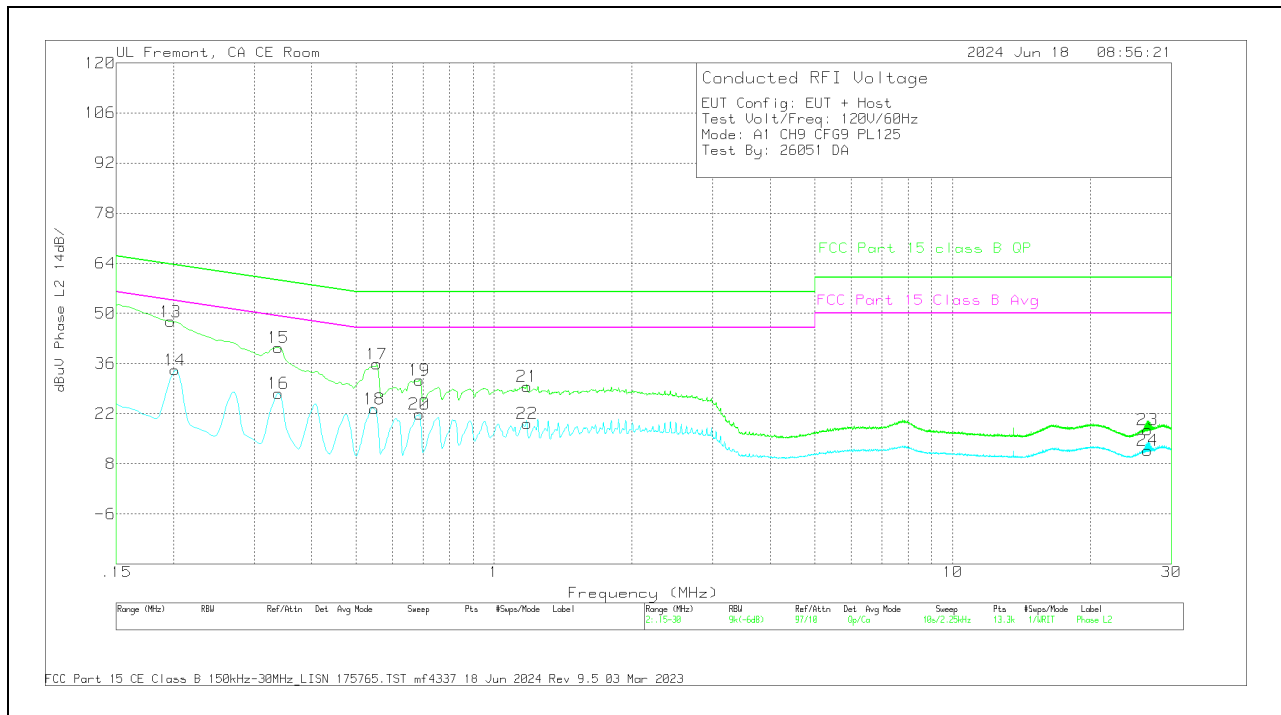


Trace Markers

Range 1: Phase L1 15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Cbl (dB)	LISN (dB)	Tms Limiter (dB)	10dB Atten (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
2	.2018	14.92	Ca	.1	0	9.4	10	34.42	53.54	-19.12	-	-
4	.339	9	Ca	0	0	9.4	10	28.4	49.23	-20.83	-	-
6	.546	5.36	Ca	.1	0	9.3	10	24.76	46	-21.24	-	-
8	.6878	3.79	Ca	.1	0	9.3	10	23.19	46	-22.81	-	-
10	1.1805	.38	Ca	.1	0	9.4	10	19.88	46	-26.12	-	-
12	26.6235	-6.27	Ca	.3	.2	9.4	10	13.63	50	-36.37	-	-
1	.195	28.74	Qp	.1	.1	9.4	10	48.34	-	-	63.82	-15.48
3	.3368	21.27	Qp	0	0	9.4	10	40.67	-	-	59.28	-18.61
5	.555	16.99	Qp	.1	0	9.3	10	36.39	-	-	56	-19.61
7	.69	12.71	Qp	.1	0	9.3	10	32.11	-	-	56	-23.89
9	1.1805	10.57	Qp	.1	0	9.4	10	30.07	-	-	56	-25.93
11	26.6235	-.32	Qp	.3	.2	9.4	10	19.58	-	-	60	-40.42

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS

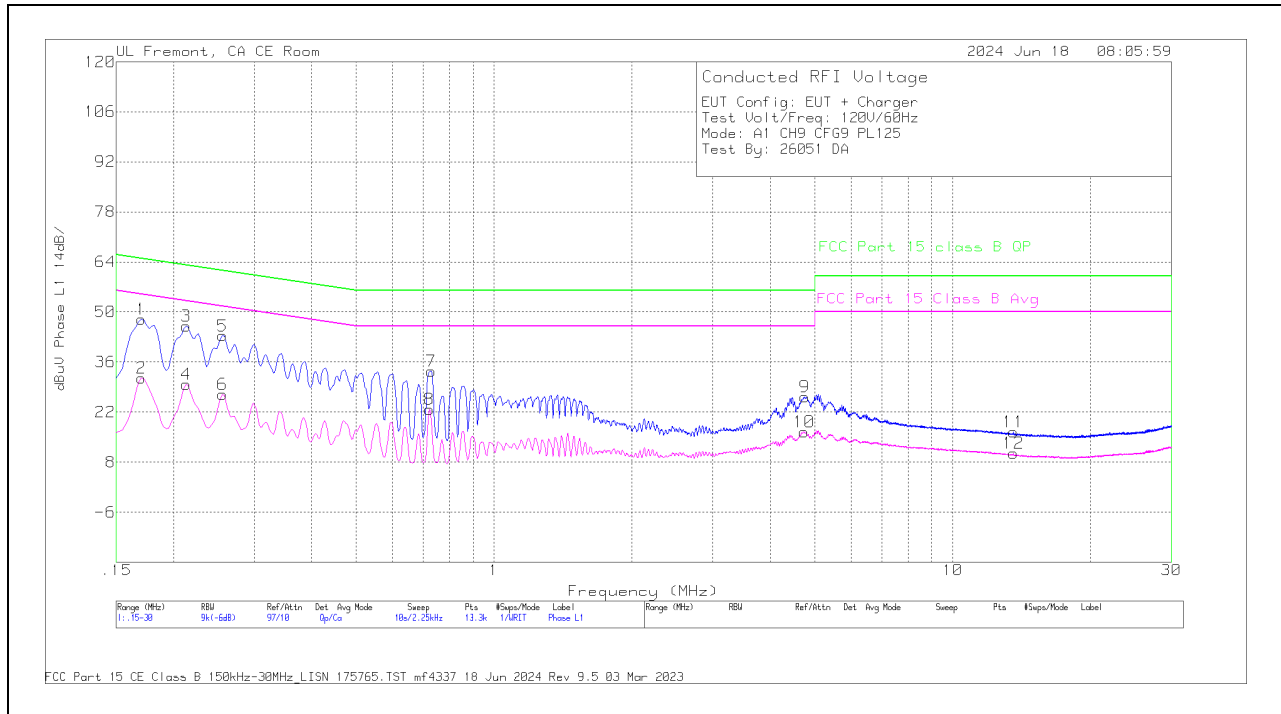


Trace Markers

Range 2: Phase L2 15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Cbl (dB)	LISN (dB)	Tms Limiter (dB)	10dB Atten (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B OP (dBuV)	Margin (dB)
14	.2018	14.72	Ca	.1	0	9.4	10	34.22	53.54	-19.32	-	-
16	.339	8.2	Ca	.1	0	9.4	10	27.7	49.23	-21.53	-	-
18	.5483	4.05	Ca	0	0	9.3	10	23.35	46	-22.65	-	-
20	.6878	2.64	Ca	0	0	9.3	10	21.94	46	-24.06	-	-
22	1.1805	-32	Ca	.1	0	9.4	10	19.18	46	-26.82	-	-
24	26.619	-8.18	Ca	.3	.2	9.4	10	11.72	50	-38.28	-	-
13	.1973	28.22	Qp	.1	0	9.4	10	47.72	-	-	63.73	-16.01
15	.339	20.94	Qp	.1	0	9.4	10	40.44	-	-	59.23	-18.79
17	.555	16.52	Qp	0	0	9.3	10	35.82	-	-	56	-20.18
19	.6878	12	Qp	0	0	9.3	10	31.3	-	-	56	-24.7
21	1.1805	10.08	Qp	.1	0	9.4	10	29.58	-	-	56	-26.42
23	26.619	-2.35	Qp	.3	.2	9.4	10	17.55	-	-	60	-42.45

Qp - Quasi-Peak detector

Ca - CISPR average detection

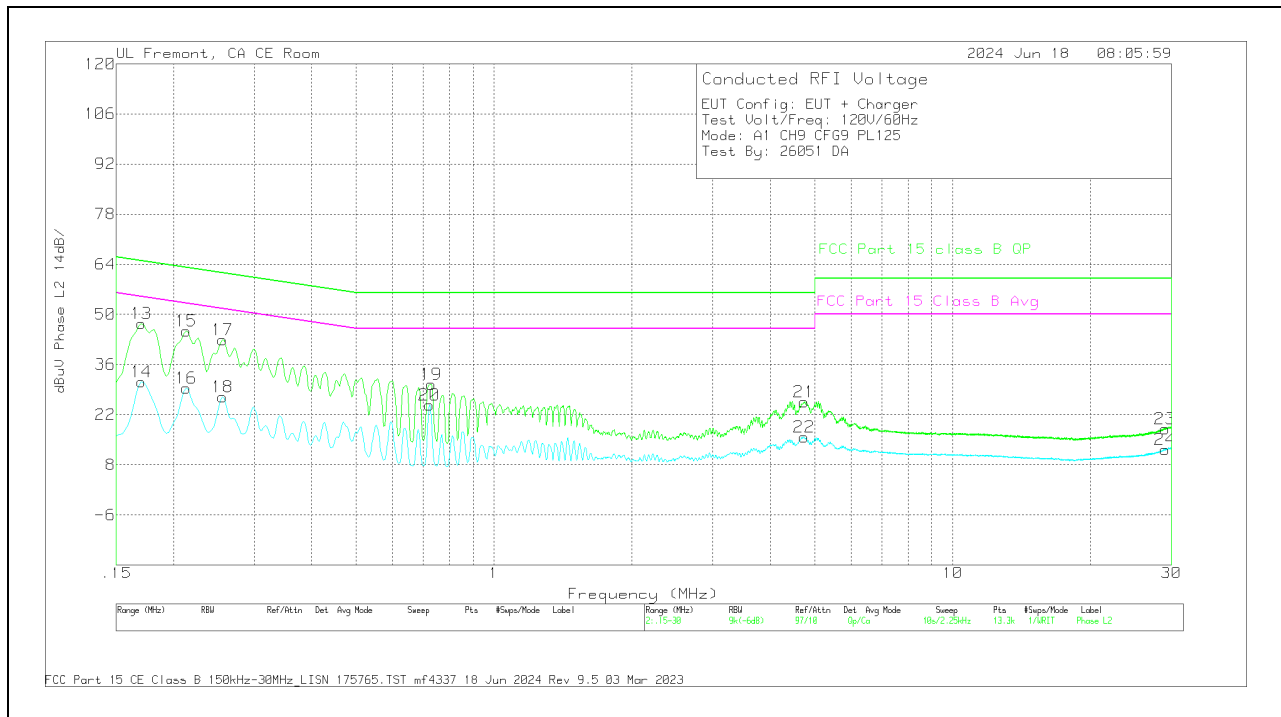
9.7.2. AC Power Line With AC/DC Adapter**LINE 1 RESULTS****Trace Markers**

Range 1: Phase L1 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Cbl (dB)	LISN (dB)	Trms Limiter (dB)	10dB Atten (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
2	.1703	11.92	Ca	0	.1	9.5	10	31.52	54.95	-23.43	-	-
4	.213	10.22	Ca	.1	0	9.4	10	29.72	53.09	-23.37	-	-
6	.2558	7.61	Ca	0	0	9.4	10	27.01	51.57	-24.56	-	-
8	.7238	3.35	Ca	.1	0	9.3	10	22.75	46	-23.25	-	-
10	4.7434	-3.08	Ca	.1	0	9.4	10	16.42	46	-29.58	-	-
12	13.56	-9.37	Ca	.3	.1	9.5	10	10.53	50	-39.47	-	-
1	.1703	28.37	Qp	0	.1	9.5	10	47.97	-	-	64.95	-16.98
3	.213	26.5	Qp	.1	0	9.4	10	46	-	-	63.09	-17.09
5	.2558	23.94	Qp	0	0	9.4	10	43.34	-	-	61.57	-18.23
7	.7305	14.01	Qp	.1	0	9.4	10	33.51	-	-	56	-22.49
9	4.758	6.69	Qp	.1	0	9.4	10	26.19	-	-	56	-29.81
11	13.56	-3.49	Qp	.3	.1	9.5	10	16.41	-	-	60	-43.59

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	Cbl (dB)	LISN (dB)	Trms Limiter (dB)	10dB Atten (dB)	Corrected Reading (dBUV)	FCC Part 15 Class B Avg (dBUV)	Margin (dB)	FCC Part 15 class B QP (dBUV)	Margin (dB)
14	.1703	11.69	Ca	0	0	9.5	10	31.19	54.95	-23.76	-	-
16	.213	9.94	Ca	.1	0	9.4	10	29.44	53.09	-23.65	-	-
18	.2558	7.55	Ca	0	0	9.4	10	26.95	51.57	-24.62	-	-
20	.7238	5.37	Ca	0	0	9.3	10	24.67	46	-21.33	-	-
22	4.7456	-3.81	Ca	.1	0	9.4	10	15.69	46	-30.31	-	-
24	29.0603	-7.74	Ca	.4	.2	9.4	10	12.26	50	-37.74	-	-
13	.1703	27.9	Qp	0	0	9.5	10	47.4	-	-	64.95	-17.55
15	.213	25.8	Qp	.1	0	9.4	10	45.3	-	-	63.09	-17.79
17	.2558	23.47	Qp	0	0	9.4	10	42.87	-	-	61.57	-18.7
19	.7305	11.05	Qp	0	0	9.4	10	30.45	-	-	56	-25.55
21	4.749	6.1	Qp	.1	0	9.4	10	25.6	-	-	56	-30.4
23	29.058	-1.95	Qp	.4	.2	9.4	10	18.05	-	-	60	-41.95

Qp - Quasi-Peak detector

Ca - CISPR average detection

10. SETUP PHOTOS

Please refer to 14982484-EP1V1 for setup photos.

END OF REPORT