CERTIFICATION TEST REPORT

Report Number. : S-4791427005-E5V1

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-A165M/DS, SM-A165M
FCC ID	:	A3LSMA165M
EUT Description	:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2024-09-13

Prepared by:
UL KOREA LTD.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
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IAS ACCREDITED Testing Laboratory TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-09-13	Initial issue	Myeongjun Kwon

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TABLE OF CONTENTS

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC.
MODEL NUMBER:	SM-A165M/DS, SM-A165M
SERIAL NUMBER:	R38X7005NNF, R38X7005NPM (CONDUCTED); R38X7005NXA, R38X7005NWB (RADIATED)
DATE TESTED:	2024-08-12 - 2024-09-13;

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Myeongjun Kwon
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 DTS Meas Guidance v05r02.
4. ANSI C63.10-2020.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☒ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord Loss (dB) + Cable Loss (dB)
44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.79 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.07 dB
Radiated Disturbance, 1 GHz to 18 GHz	4.99 dB
Radiated Disturbance, Above 18 GHz	5.96 dB

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

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Clause 4.4.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC.
This test report addresses the DSS(WLAN) operational mode.

Representative model	Difference	Derivative model
		SM-A165M
SM-A165M/DS	Hardware	SIM tray is single SIM
	Software	Dual SIM not supported

The model SM-A165M/DS was used for final testing and is representative of the test results in this report.

WiFi operating mode

Frequency rage	Mode	ANT 1
2.4GHz (2412 MHz ~ 2472 MHz)	802.11b SISO	TX/RX
	802.11g SISO	TX/RX
	802.11n(HT20) SISO	TX/RX

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
		ANT1	ANT1
2412 - 2472	802.11b SISO	19.19	82.99
	802.11g SISO	18.35	68.39
	802.11n(HT20) SISO	17.34	54.20

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna was Permanently attached.
Therefore, this E.U.T Complies with the requirement of §15.203.

The radio utilizes a internal antenna, with a maximum gain of: -2.02 dBi

“Antenna A(WiFi)” as indicated in antenna specification are written as ANT1 in this report.

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5.4. TESTED CHANNELS LIST

Ch.	Frequency [MHz]	11b	11g	11n(HT20)
		SISO	SISO	SISO
1	2 412	O	O	O
2	2 417			O
6	2 437	O	O	O
10	2 457		O	O
11	2 462	O	O	O
12	2 467	O	O	O
13	2 472	O	O	O

Note. Tested channels are applied to all test items.

5.5. WORST-CASE CONFIGURATION AND MODE

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z on 1TX SISO mode. It was determined that X orientation was the worst-case for 1TX SISO mode.

i. Worst case of antenna axis: X

Radiated and power line conducted tests were performed with EUT connected to AC power adapter as the worst-case configuration. Radiated harmonics spurious 1~18 GHz Low/Mid/High channels,18-26GHz were performed with the EUT set at the 1TX SISO mode. Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Simultaneous transmission with related transmitters were investigated and no noticeable emission was found.

Based on the baseline scan, the worst-case data rates were:
802.11b mode: 1 Mbps 1TX
802.11g mode: 6 Mbps 1TX
802.11n HT20 mode: MCS0 1TX

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37TC7A00JBDKA	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02115A	N/A

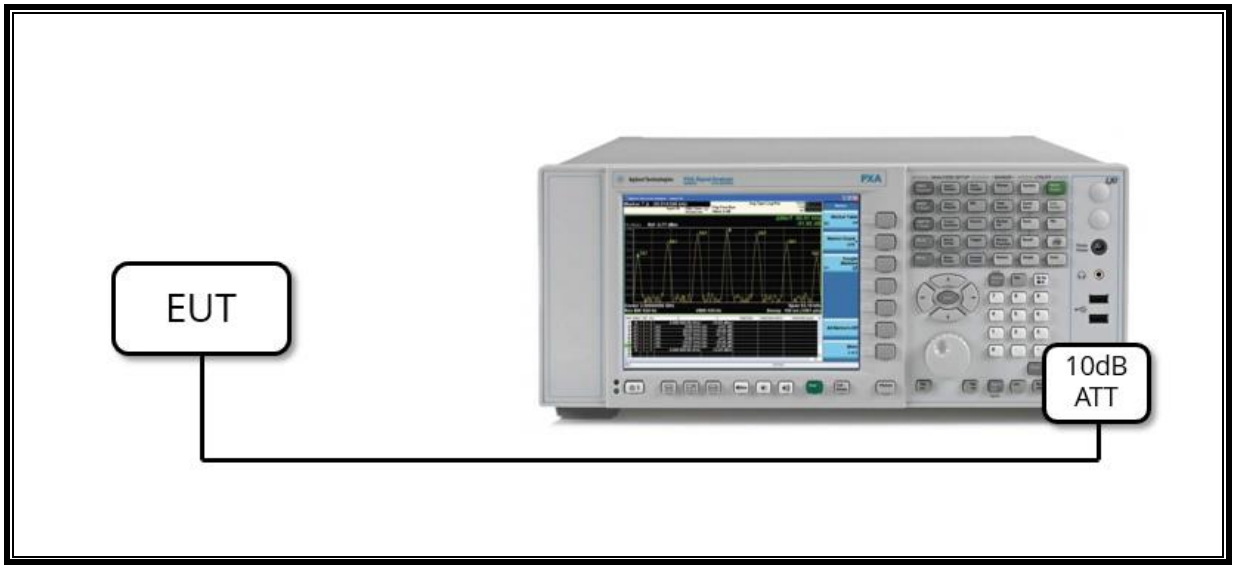
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.0 m	N/A

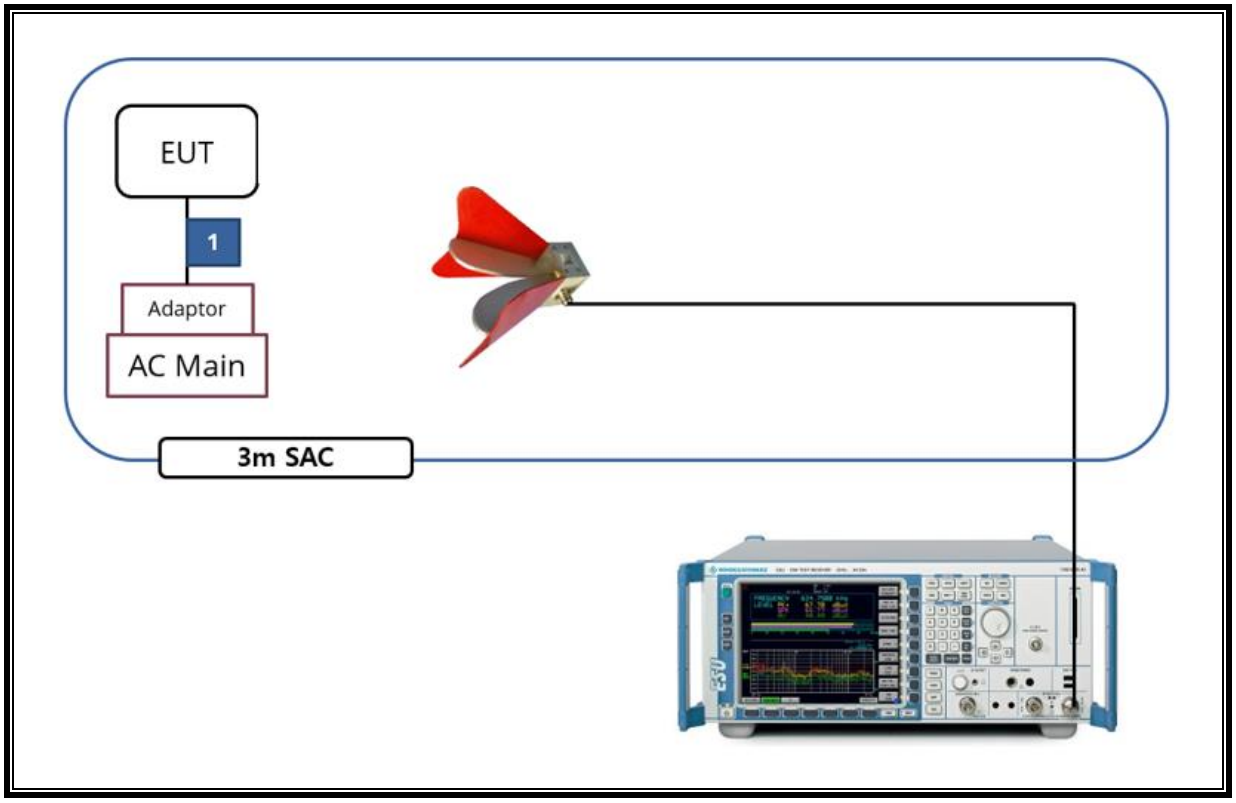
TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable DTS mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2020, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2020, Section 11.9.2.3.1 Method AVGPM

POWER SPECTRAL DENSITY : ANSI C63.10-2020, Section 11.10.3 & 11.10.5 Method AVGPSD-1 and Method AVGPSD-2

Out-of-band Emissions (Conducted) : ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands: ANSI C63.10-2020, Section 11.12 Emissions in restricted frequency bands

AC Power Line Conducted Emission : ANSI C63.10-2020, Section 6.2

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7. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB 9163	750	2026-07-30
Antenna, Horn, 18 GHz	ETS	3117	00168717	2026-07-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2026-07-23
Preamplifier	ETS	3116C-PA	00168841	2025-07-25
Preamplifier, 1000 MHz	Sonoma	310N	341282	2025-07-22
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2025-07-23
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2025-07-24
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2025-01-03
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-01-03
RF Switching Unit	TA Engineering	TA-018S-16	SW-1	N/A
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2025-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2025-07-23
Attenuator	PASTERNACK	PE7087-10	A001	2025-07-23
Attenuator	PASTERNACK	PE7087-10	A008	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2025-07-22
EMI Test Receive, 3 GHz	R&S	ESR 3	101832	2025-07-22
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2025-07-22
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2025-07-22
High Pass Filter 6GHz	Micro-Tronics	HPS17542	21	2025-07-23
LISN	R&S	ENV216	101837	2025-07-22
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-07
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	Complies
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-30 dBc		Complies
15.247 (b)(3)	TX conducted output power	< 30 dBm		Complies
15.247(e)	PSD	< 8 dBm/3kHz		Complies
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	Complies
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

Mode	On Time [ms]	Period [ms]	Duty Cycle X [Linear]	Duty Cycle X [%]	Duty Cycle Correction Factor[dB]	1/T Minimum VBW[kHz]
802.11b SISO	8.381	8.419	0.995	99.549	0.00	0.12
802.11g SISO	2.755	2.798	0.985	98.463	0.00	0.36
802.11n(HT20) SISO	1.301	1.344	0.968	96.801	0.14	0.77

Note. According to ANSI C63.10 Section 11.6, do not apply the Duty Cycle Correction Factor judging that a duty cycle of greater than or equal to 98% is continuous signal.

802.11n

9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to ANSI C63.10-2020, Section 11.8.2 Option 2: The transmitter output is connected to a spectrum analyzer with the RBW set to 1% to 5% of OBW, the VBW >= 3 x RBW, peak detector and max hold.

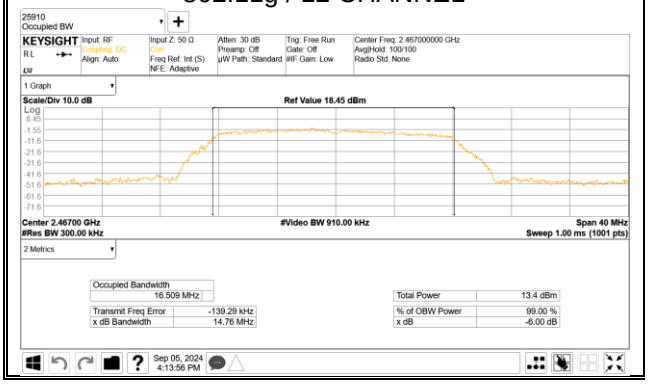
RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT1

802.11g / 12 CHANNEL



9.2.1. 802.11b SISO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
		ANT 1	
1	2 412	8.63	0.5
6	2 437	8.20	
11	2 462	8.22	
12	2 467	8.21	
13	2 472	8.19	
Worst		**8.19**	

9.2.2. 802.11g SISO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
		ANT 1	
1	2 412	16.29	0.5
6	2 437	16.25	
10	2 457	16.15	
11	2 462	16.07	
12	2 467	14.76	
13	2 472	16.24	
Worst		**14.76**	

9.2.3. 802.11n HT20 SISO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
		ANT 1	
1	2 412	17.46	0.5
2	2 417	17.30	
6	2 437	17.34	
10	2 457	17.24	
11	2 462	17.28	
12	2 467	16.03	
13	2 472	17.22	
Worst		**16.03**	

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor was entered as an offset in the power sensor to allow for direct reading of power.
Output power measurement was performed utilizing the 8.3.2.3 under KDB558074 D01 15.247 Meas Guidance.

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9.3.1. TEST RESULTS

- 802.11b, g, n mode

Mode	Channel	Frequency [MHz]	Average Power	Power Limit [dBm]
			ANT1 [dBm]	
802.11b	1	2 412	19.19	30.00
	6	2 437	18.99	
	11	2 462	18.78	
	12	2 467	7.32	
	13	2 472	5.47	
Worst Case			**19.19**	
802.11g	1	2 412	18.07	
	6	2 437	18.35	
	10	2 457	18.08	
	11	2 462	15.11	
	12	2 467	7.45	
	13	2 472	5.02	
Worst Case			**18.35**	
802.11n HT20	1	2 412	16.49	
	2	2 417	17.10	
	6	2 437	17.34	
	10	2 457	17.13	
	11	2 462	14.09	
	12	2 467	7.00	
	13	2 472	5.25	
Worst Case			**17.34**	

- Calculation of Output Power result
Average Power = Meas. Power + Duty Cycle CF

9.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Power Spectral Density was performed utilizing the section 8.4 under KDB558074 D01 15.247 Meas Guidance.

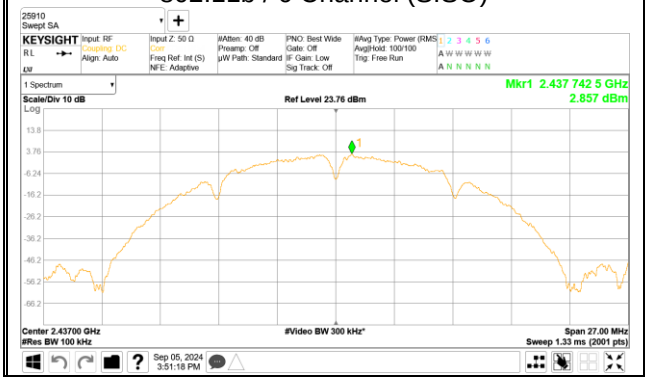
RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT 1

802.11b / 6 Channel (SISO)



9.4.1. 802.11b/g/n HT20 MODE TEST RESULTS

- SISO MODE

Mode	Channel	Frequency [MHz]	Meas PSD [dBm/100kHz]	DCCF	Total Corr'd PSD [dBm/100kHz]	PSD Limit [dBm/3kHz]
			ANT1			
802.11b	1	2 412	2.663	0.00	2.663	8.00 Note
	6	2 437	2.857	0.00	2.857	
	11	2 462	2.326	0.00	2.326	
	12	2 467	-9.481	0.00	-9.481	
	13	2 472	-9.186	0.00	-9.186	
802.11g	1	2 412	-0.966	0.00	-0.966	
	6	2 437	-0.510	0.00	-0.510	
	10	2 457	-0.585	0.00	-0.585	
	11	2 462	-3.825	0.00	-3.825	
	12	2 467	-11.143	0.00	-11.143	
	13	2 472	-12.233	0.00	-12.233	
802.11n HT20	1	2 412	-3.010	0.14	-2.870	
	2	2 417	-2.010	0.14	-1.870	
	6	2 437	-1.670	0.14	-1.530	
	10	2 457	-2.047	0.14	-1.907	
	11	2 462	-5.082	0.14	-4.942	
	12	2 467	-11.894	0.14	-11.754	
	13	2 472	-12.655	0.14	-12.515	

- Calculation of Output PSD result
- 1TX : Corr'd PSD = Meas PSD + Duty Cycle CF
Note. RBW 100kHz measurement data is lower than 3kHz limit.

9.5. CONDUCTED SPURIOUS EMISSIONS

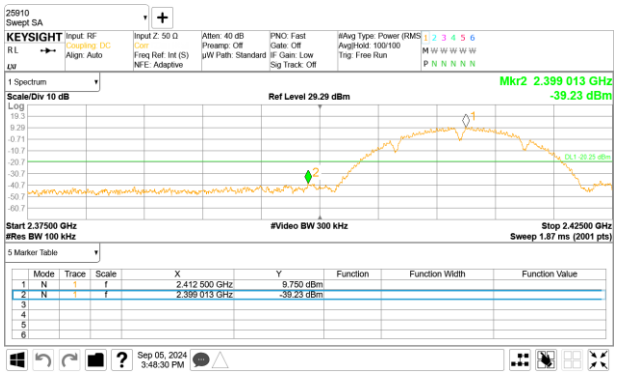
LIMITS

FCC §15.247 (d)

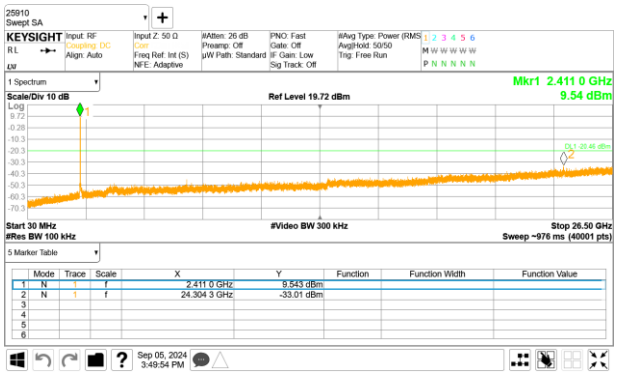
Output power was measured based on the use of average measurement therefore the required attenuation is 30 dB.

RESULTS

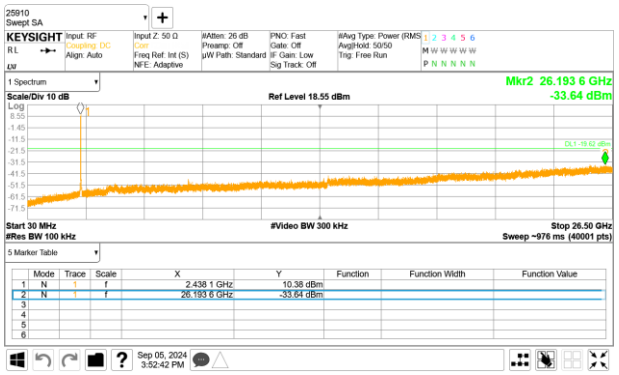
9.5.1. 802.11b MODE



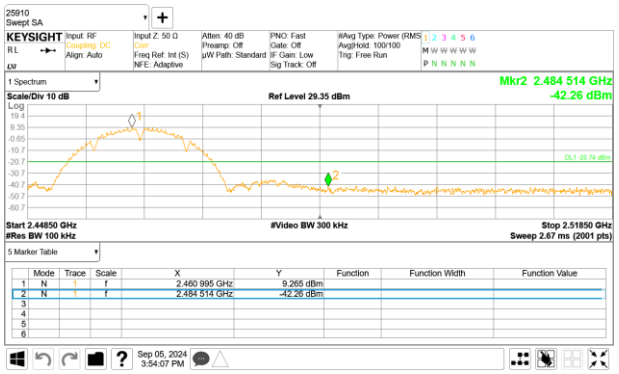
1 Channel Band-edge



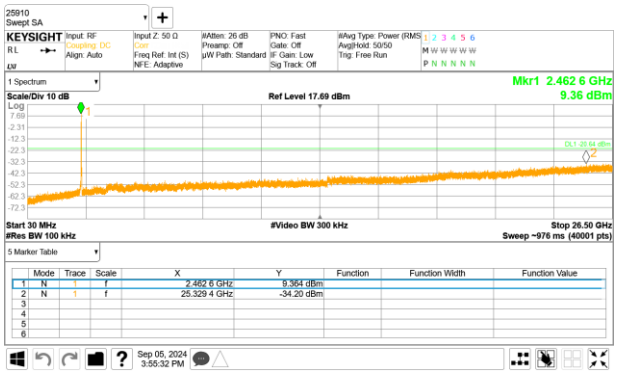
Out-Of-Band 1 Channel



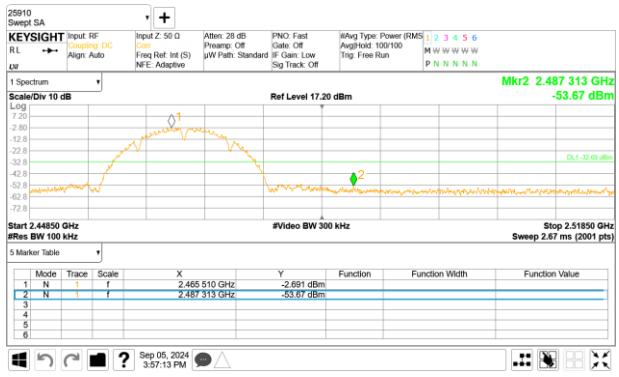
Out-Of-Band 6 Channel



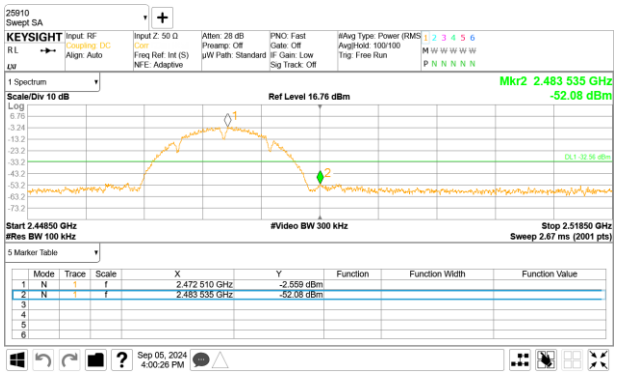
11 Channel Band-edge



Out-Of-Band 11 Channel



12 Channel Band-edge



13 Channel Band-edge

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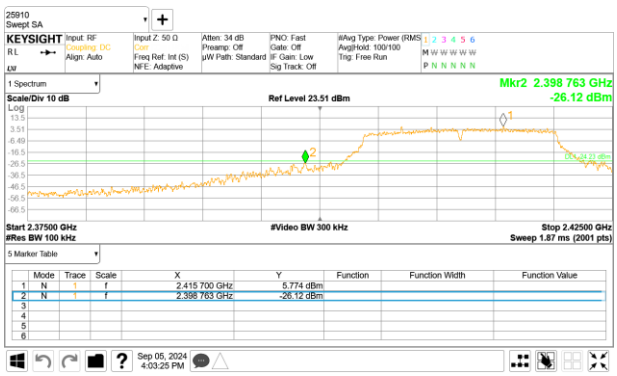
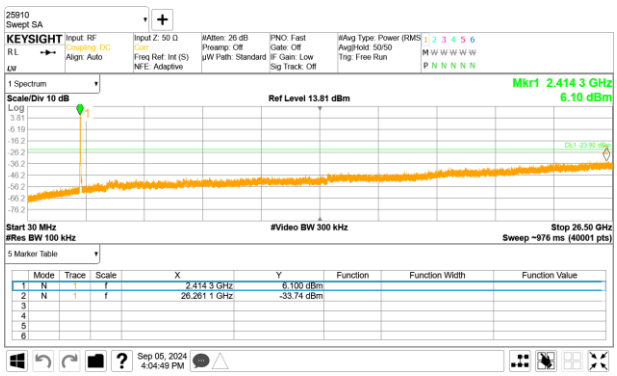
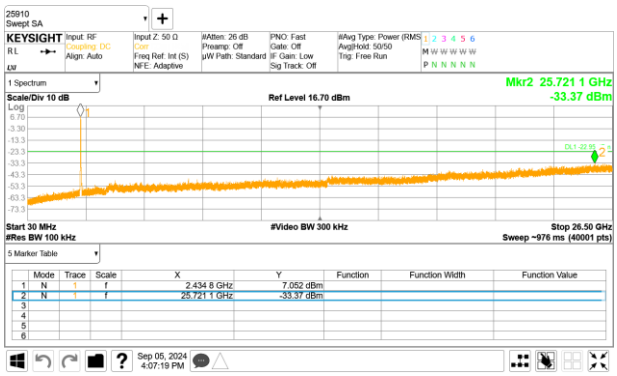
9.5.2. 802.11g MODE



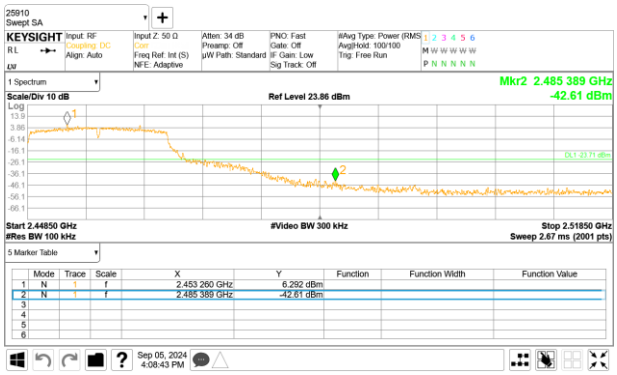
1 Channel Band-edge



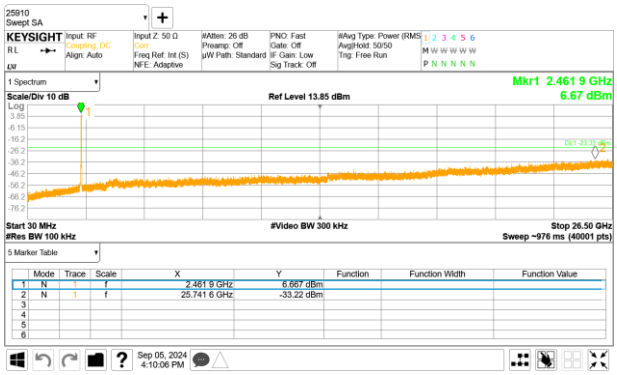
Out-Of-Band 1 Channel



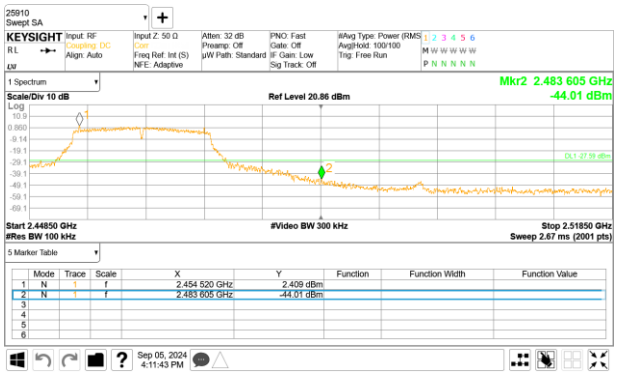
Out-Of-Band 6 Channel



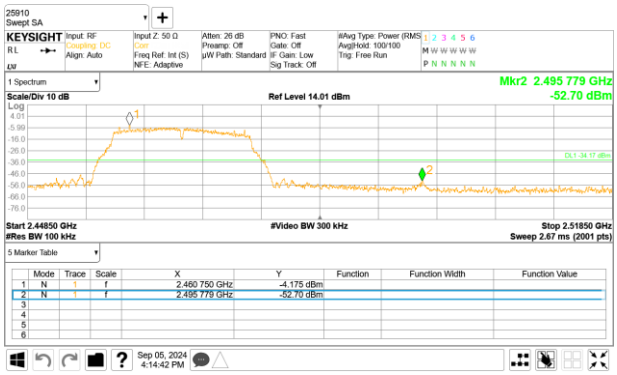
10 Channel Band-edge



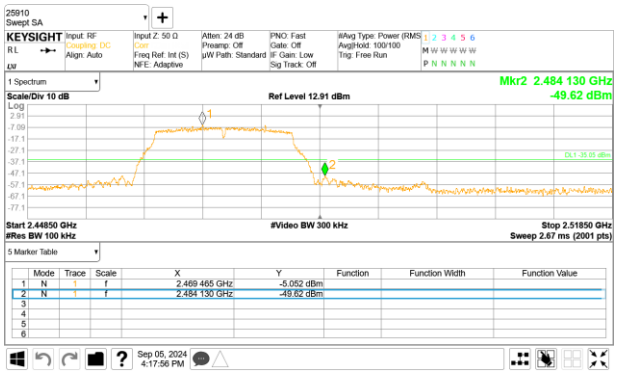
Out-Of-Band 10 Channel



11 Channel Band-edge

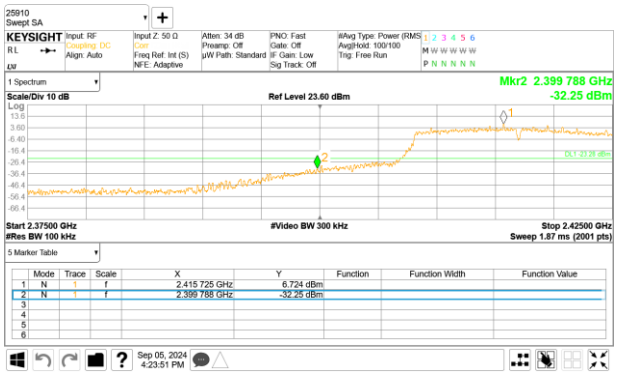


12 Channel Band-edge

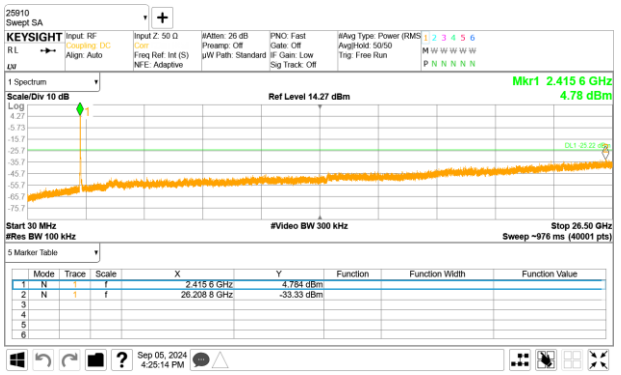


13 Channel Band-edge

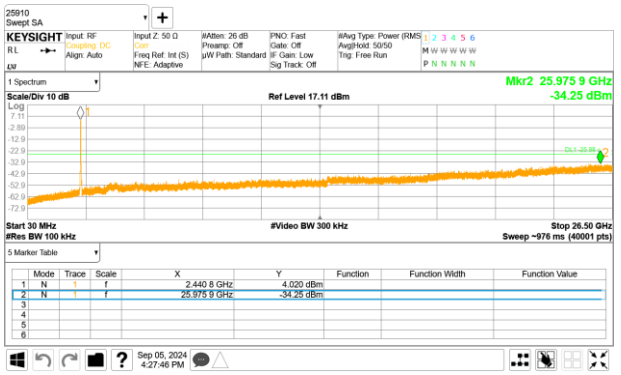
9.5.3. 802.11n HT20 MODE



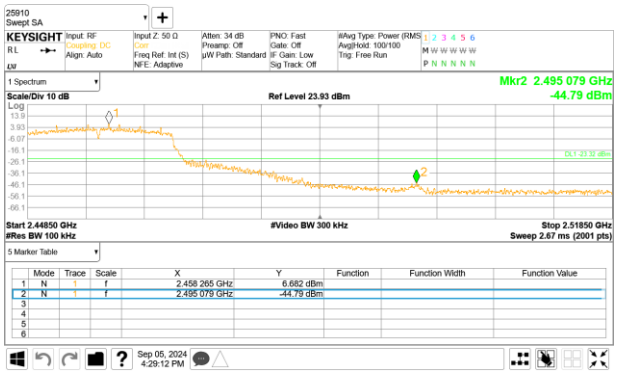
2 Channel Band-edge



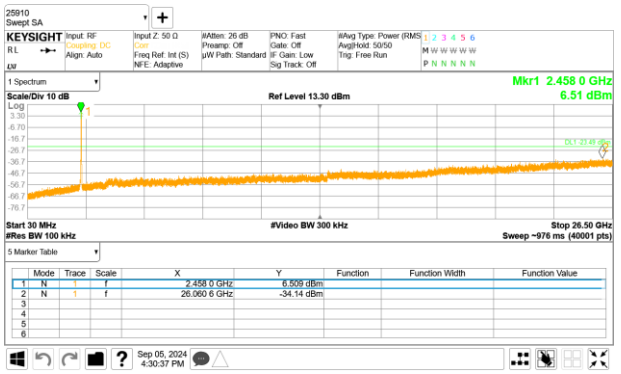
Out-Of-Band 2 Channel



Out-Of-Band 6 Channel



10 Channel Band-edge



Out-Of-Band 10 Channel

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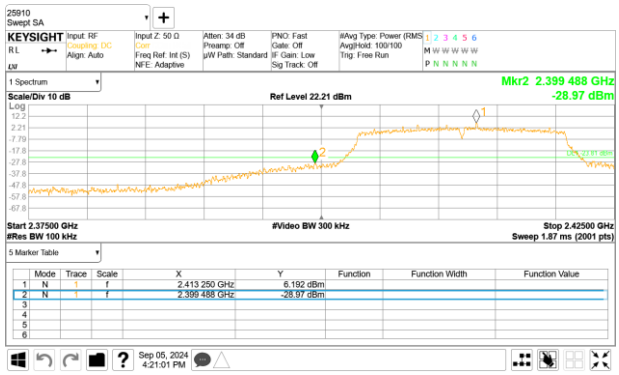
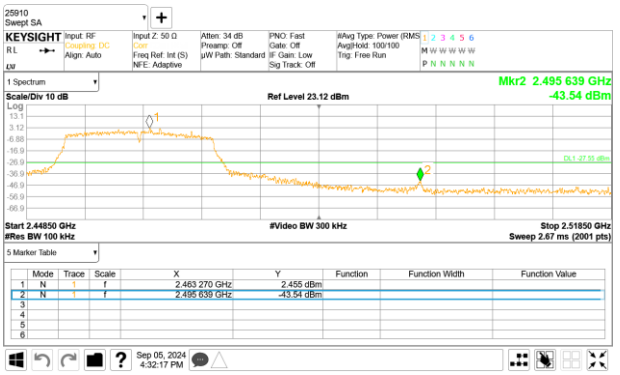
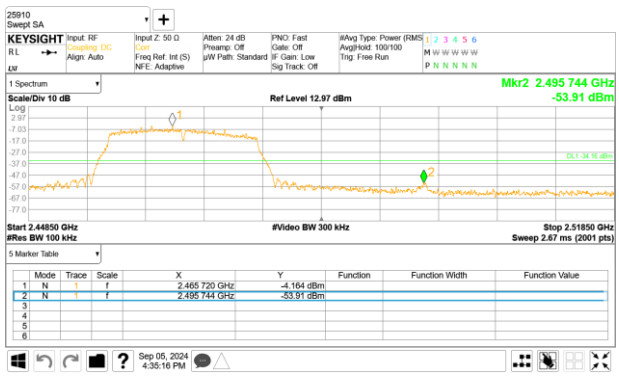


1 Channel Band-edge



11 Channel Band-edge



12 Channel Band-edge

13 Channel Band-edge

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (m)
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
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.17	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	167.72 ~ 173.2	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	240 ~ 285	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	322 ~ 335.4	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	399.90 ~ 410	3345.8 ~ 3358		
		608 ~ 614	3600 ~ 4400		
		960 ~ 1240			

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz and 150 cm for above 1 GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements.
(Restriced bandedge, Final detection of spurious harmonic emissions)

Duty cycle factor = 10log (1/x) For this sample:

802.11b SISO mode = 0.00 dB (Above 98%);
802.11g SISO mode = 0.00 dB (Above 98%);
802.11n(HT20) SISO mode = 0.14 dB (96.84%);

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9 kHz to 30 MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

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

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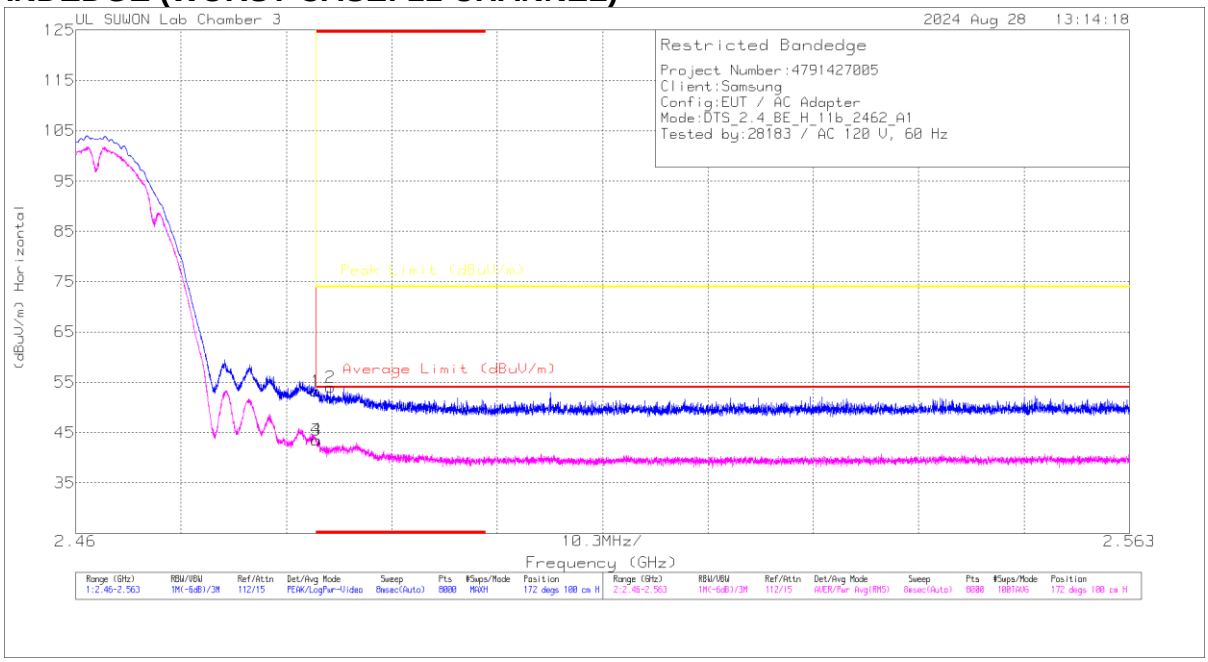
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

1TX Antenna 1

BANDEDGE (WORST CASE: 11 CHANNEL)



HORIZONTAL RESULT

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor (dB/m)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	45.66	Pk	32.4	-24.8	0	53.26	-	-	74	-20.74	172	100	H
2	* 2.48489	46.43	Pk	32.4	-24.8	0	54.03	-	-	74	-19.97	172	100	H
3	* 2.4835	35.91	RMS	32.4	-24.8	0	43.51	54	-10.49	-	-	172	100	H
4	* 2.48353	35.99	RMS	32.4	-24.8	0	43.59	54	-10.41	-	-	172	100	H

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

BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 2.39	42.35	Pk	32.10	-24.80	0.00	49.65	-	-	74.00	-24.35	128	164	H
		* 2.38774	45.24	Pk	32.10	-24.80	0.00	52.54	-	-	74.00	-21.46	128	164	H
		* 2.39	32.36	RMS	32.10	-24.80	0.00	39.66	54.00	-14.34	-	-	128	164	H
		* 2.38753	33.38	RMS	32.10	-24.80	0.00	40.68	54.00	-13.32	-	-	128	164	H
		* 2.39	42.92	Pk	32.10	-24.80	0.00	50.22	-	-	74.00	-23.78	210	395	V
		* 2.38535	44.73	Pk	32.10	-24.90	0.00	51.93	-	-	74.00	-22.07	210	395	V
		* 2.39	31.85	RMS	32.10	-24.80	0.00	39.15	54.00	-14.85	-	-	210	395	V
		* 2.38685	33.23	RMS	32.10	-24.80	0.00	40.53	54.00	-13.47	-	-	210	395	V
2462	ANT1	* 2.4835	45.66	Pk	32.40	-24.80	0.00	53.26	-	-	74.00	-20.74	172	100	H
		* 2.48489	46.43	Pk	32.40	-24.80	0.00	54.03	-	-	74.00	**-19.97**	172	100	H
		* 2.4835	35.91	RMS	32.40	-24.80	0.00	43.51	54.00	-10.49	-	-	172	100	H
		* 2.48353	35.99	RMS	32.40	-24.80	0.00	43.59	54.00	**-10.41**	-	-	172	100	H
		* 2.4835	45.11	Pk	32.40	-24.80	0.00	52.71	-	-	74.00	-21.29	223	321	V
		* 2.48646	45.59	Pk	32.40	-24.80	0.00	53.19	-	-	74.00	-20.81	223	321	V
		* 2.4835	34.53	RMS	32.40	-24.80	0.00	42.13	54.00	-11.87	-	-	223	321	V
		* 2.48367	35.12	RMS	32.40	-24.80	0.00	42.72	54.00	-11.28	-	-	223	321	V
2467	ANT1	* 2.4835	42.83	Pk	32.40	-24.80	0.00	50.43	-	-	74.00	-23.57	170	132	H
		* 2.48524	45.49	Pk	32.40	-24.80	0.00	53.09	-	-	74.00	-20.91	170	132	H
		* 2.4835	33.17	RMS	32.40	-24.80	0.00	40.77	54.00	-13.23	-	-	170	132	H
		* 2.48378	34.12	RMS	32.40	-24.80	0.00	41.72	54.00	-12.28	-	-	170	132	H
		* 2.4835	41.99	Pk	32.40	-24.80	0.00	49.59	-	-	74.00	-24.41	185	104	V
		2.511	44.88	Pk	32.40	-24.80	0.00	52.48	-	-	74.00	-21.52	185	104	V
		* 2.4835	32.80	RMS	32.40	-24.80	0.00	40.40	54.00	-13.60	-	-	185	104	V
		* 2.48382	33.34	RMS	32.40	-24.80	0.00	40.94	54.00	-13.06	-	-	185	104	V
2472	ANT1	* 2.4835	43.74	Pk	32.40	-24.80	0.00	51.34	-	-	74.00	-22.66	127	100	H
		* 2.48441	45.74	Pk	32.40	-24.80	0.00	53.34	-	-	74.00	-20.66	127	100	H
		* 2.4835	34.08	RMS	32.40	-24.80	0.00	41.68	54.00	-12.32	-	-	127	100	H
		* 2.4836	35.18	RMS	32.40	-24.80	0.00	42.78	54.00	-11.22	-	-	127	100	H
		* 2.4835	43.65	Pk	32.40	-24.80	0.00	51.25	-	-	74.00	-22.75	209	355	V
		* 2.48441	45.47	Pk	32.40	-24.80	0.00	53.07	-	-	74.00	-20.93	209	355	V
		* 2.4835	33.49	RMS	32.40	-24.80	0.00	41.09	54.00	-12.91	-	-	209	355	V
		* 2.48691	34.28	RMS	32.40	-24.80	0.00	41.88	54.00	-12.12	-	-	209	355	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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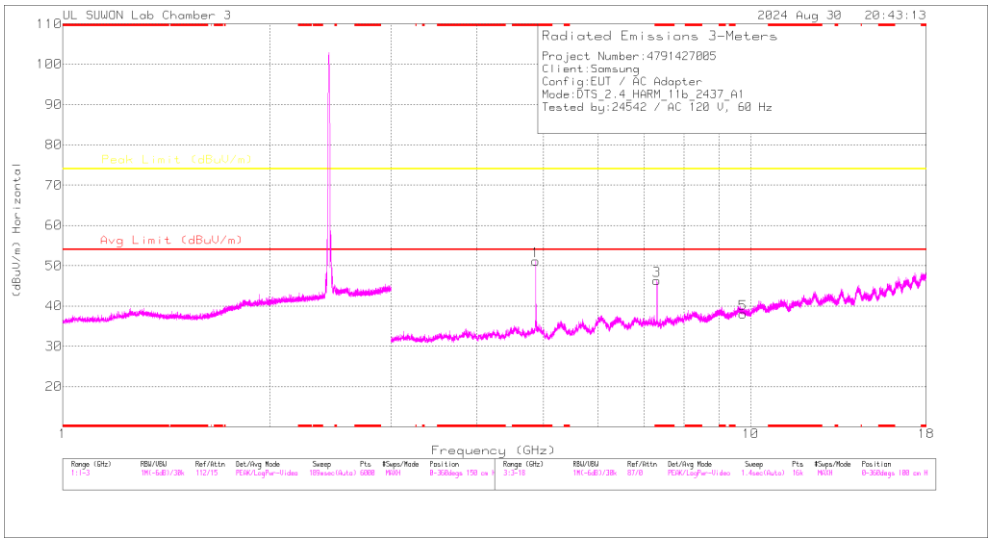
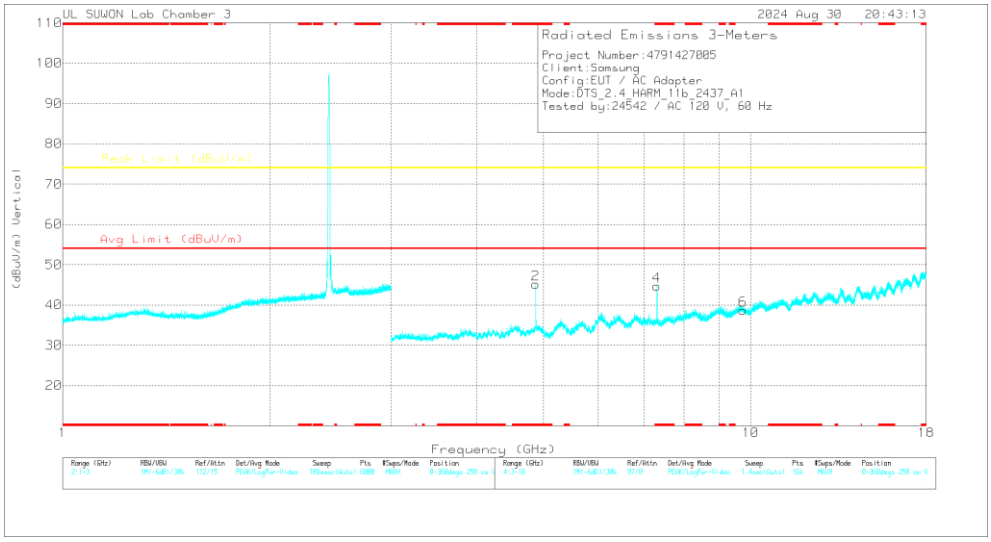
HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 6 CHANNEL)

CH 6 RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87381	49.26	PK2	34.2	-29.8	0	53.66	-	-	74	-20.34	0	100	H
* 4.87393	46.39	MAv1	34.2	-29.8	0	50.79	54	-3.21	-	-	0	100	H
* 4.87409	44.95	PK2	34.2	-29.8	0	49.35	-	-	74	-24.65	263	391	V
* 4.87399	40.46	MAv1	34.2	-29.8	0	44.86	54	-9.14	-	-	263	391	V
* 7.31074	42.5	PK2	35.8	-25.5	0	52.8	-	-	74	-21.2	102	111	H
* 7.31004	37.08	MAv1	35.8	-25.5	0	47.38	54	-6.62	-	-	102	111	H
* 7.30982	41.45	PK2	35.8	-25.5	0	51.75	-	-	74	-22.25	235	100	V
* 7.31028	35.77	MAv1	35.8	-25.5	0	46.07	54	-7.93	-	-	235	100	V
9.7427	33.01	PK2	36.9	-21.6	0	48.31	-	-	74	-25.69	0	100	H
9.7426	33.06	PK2	36.9	-21.6	0	48.36	-	-	74	-25.64	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 4.82394	47.27	PK2	34.30	-30.10	0.00	51.47	-	-	74.00	-22.53	15	101	H
		* 4.82396	44.11	MAv1	34.30	-30.10	0.00	48.31	54.00	-5.69	-	-	15	101	H
		* 4.82405	43.88	PK2	34.30	-30.10	0.00	48.08	-	-	74.00	-25.92	61	100	V
		* 4.82405	39.02	MAv1	34.30	-30.10	0.00	43.22	54.00	-10.78	-	-	61	100	V
		7.237	42.34	PK2	35.80	-25.80	0.00	52.34	-	-	74.00	-21.66	100	101	H
		7.237	42.49	PK2	35.80	-25.70	0.00	52.59	-	-	74.00	-21.41	192	100	V
		9.644	33.89	PK2	36.80	-21.80	0.00	48.89	-	-	74.00	-25.11	0	100	H
		9.652	33.41	PK2	36.80	-21.70	0.00	48.51	-	-	74.00	-25.49	0	100	V
2437	ANT1	* 4.87381	49.26	PK2	34.20	-29.80	0.00	53.66	-	-	74.00	**-20.34**	0	100	H
		* 4.87393	46.39	MAv1	34.20	-29.80	0.00	50.79	54.00	**-3.21**	-	-	0	100	H
		* 4.87409	44.95	PK2	34.20	-29.80	0.00	49.35	-	-	74.00	-24.65	263	391	V
		* 4.87399	40.46	MAv1	34.20	-29.80	0.00	44.86	54.00	-9.14	-	-	263	391	V
		* 7.31074	42.50	PK2	35.80	-25.50	0.00	52.80	-	-	74.00	-21.20	102	111	H
		* 7.31004	37.08	MAv1	35.80	-25.50	0.00	47.38	54.00	-6.62	-	-	102	111	H
		* 7.30982	41.45	PK2	35.80	-25.50	0.00	51.75	-	-	74.00	-22.25	235	100	V
		* 7.31028	35.77	MAv1	35.80	-25.50	0.00	46.07	54.00	-7.93	-	-	235	100	V
		9.743	33.01	PK2	36.90	-21.60	0.00	48.31	-	-	74.00	-25.69	0	100	H
		9.743	33.06	PK2	36.90	-21.60	0.00	48.36	-	-	74.00	-25.64	0	100	V
2462	ANT1	* 4.92399	45.89	PK2	34.20	-30.00	0.00	50.09	-	-	74.00	-23.91	13	103	H
		* 4.92403	41.69	MAv1	34.20	-30.00	0.00	45.89	54.00	-8.11	-	-	13	103	H
		* 4.92413	42.33	PK2	34.20	-30.00	0.00	46.53	-	-	74.00	-27.47	299	377	V
		* 4.92395	35.75	MAv1	34.20	-30.00	0.00	39.95	54.00	-14.05	-	-	299	377	V
		* 7.3873	39.86	PK2	35.70	-25.30	0.00	50.26	-	-	74.00	-23.74	90	100	H
		* 7.38506	33.12	MAv1	35.70	-25.40	0.00	43.42	54.00	-10.58	-	-	90	100	H
		* 7.38602	38.49	PK2	35.70	-25.40	0.00	48.79	-	-	74.00	-25.21	245	100	V
		* 7.38528	31.26	MAv1	35.70	-25.40	0.00	41.56	54.00	-12.44	-	-	245	100	V
		9.844	32.50	PK2	37.10	-21.40	0.00	48.20	-	-	74.00	-25.80	0	100	H
		9.845	32.59	PK2	37.10	-21.40	0.00	48.29	-	-	74.00	-25.71	0	100	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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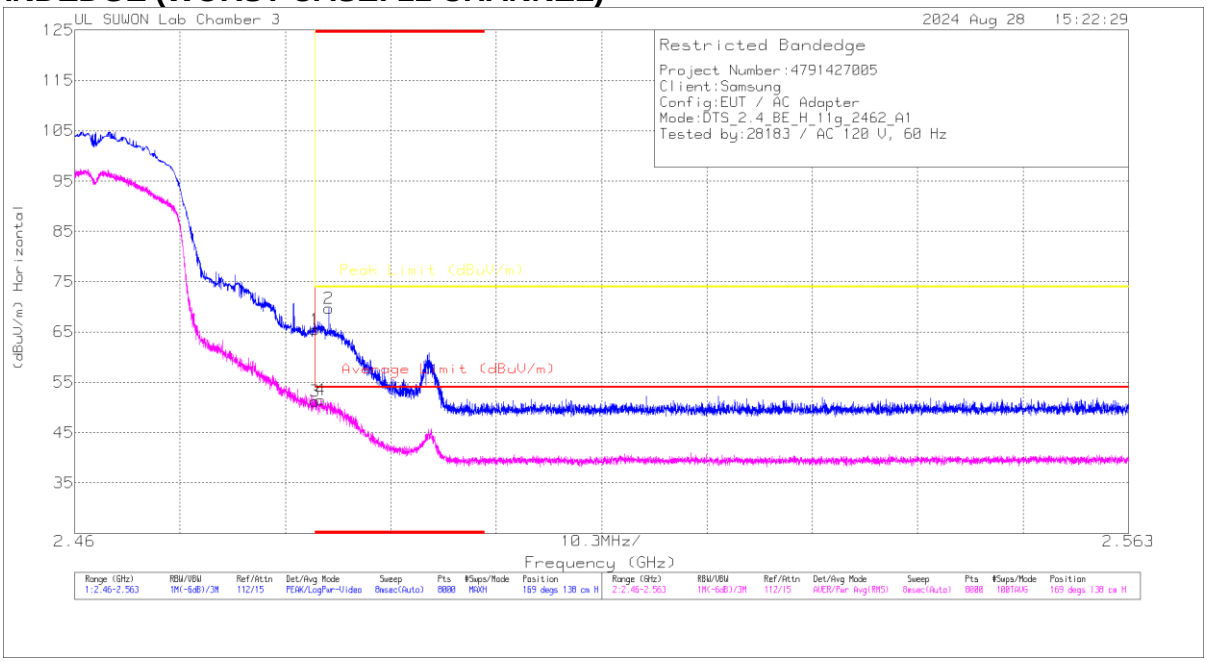
10.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

1TX Antenna 1

BANDEDGE (WORST CASE: 11 CHANNEL)



HORIZONTAL RESULT

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor (dB/m)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	57.89	Pk	32.4	-24.8	0	65.49	-	-	74	-8.51	169	138	H
2	* 2.48484	62.12	Pk	32.4	-24.8	0	69.72	-	-	74	-4.28	169	138	H
3	* 2.4835	43.66	RMS	32.4	-24.8	0	51.26	54	-2.74	-	-	169	138	H
4	* 2.48405	43.95	RMS	32.4	-24.8	0	51.55	54	-2.45	-	-	169	138	H

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

BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 2.39	55.48	Pk	32.10	-24.80	0.00	62.78	-	-	74.00	-11.22	128	164	H
		* 2.38937	56.19	Pk	32.10	-24.80	0.00	63.49	-	-	74.00	-10.51	128	164	H
		* 2.39	38.46	RMS	32.10	-24.80	0.00	45.76	54.00	-8.24	-	-	128	164	H
		* 2.38998	38.95	RMS	32.10	-24.80	0.00	46.25	54.00	-7.75	-	-	128	164	H
		* 2.39	42.05	Pk	32.10	-24.80	0.00	49.35	-	-	74.00	-24.65	127	100	V
		* 2.38834	45.60	Pk	32.10	-24.80	0.00	52.90	-	-	74.00	-21.10	127	100	V
		* 2.39	31.12	RMS	32.10	-24.80	0.00	38.42	54.00	-15.58	-	-	127	100	V
		* 2.35512	32.95	RMS	32.00	-24.80	0.00	40.15	54.00	-13.85	-	-	127	100	V
2457	ANT1	* 2.4835	54.90	Pk	32.40	-24.80	0.00	62.50	-	-	74.00	-11.50	168	138	H
		* 2.4838	56.04	Pk	32.40	-24.80	0.00	63.64	-	-	74.00	-10.36	168	138	H
		* 2.4835	40.92	RMS	32.40	-24.80	0.00	48.52	54.00	-5.48	-	-	168	138	H
		* 2.48452	42.64	RMS	32.40	-24.80	0.00	50.24	54.00	-3.76	-	-	168	138	H
		* 2.4835	48.21	Pk	32.40	-24.80	0.00	55.81	-	-	74.00	-18.19	274	100	V
		* 2.48414	50.63	Pk	32.40	-24.80	0.00	58.23	-	-	74.00	-15.77	274	100	V
		* 2.4835	35.32	RMS	32.40	-24.80	0.00	42.92	54.00	-11.08	-	-	274	100	V
		* 2.48377	37.09	RMS	32.40	-24.80	0.00	44.69	54.00	-9.31	-	-	274	100	V
2462	ANT1	* 2.4835	57.89	Pk	32.40	-24.80	0.00	65.49	-	-	74.00	-8.51	169	138	H
		* 2.48484	62.12	Pk	32.40	-24.80	0.00	69.72	-	-	74.00	**-4.28**	169	138	H
		* 2.4835	43.66	RMS	32.40	-24.80	0.00	51.26	54.00	-2.74	-	-	169	138	H
		* 2.48405	43.95	RMS	32.40	-24.80	0.00	51.55	54.00	**-2.45**	-	-	169	138	H
		* 2.4835	51.57	Pk	32.40	-24.80	0.00	59.17	-	-	74.00	-14.83	188	103	V
		* 2.48432	53.35	Pk	32.40	-24.80	0.00	60.95	-	-	74.00	-13.05	188	103	V
		* 2.4835	38.84	RMS	32.40	-24.80	0.00	46.44	54.00	-7.56	-	-	188	103	V
		* 2.48353	39.48	RMS	32.40	-24.80	0.00	47.08	54.00	-6.92	-	-	188	103	V
2467	ANT1	* 2.4835	45.12	Pk	32.40	-24.80	0.00	52.72	-	-	74.00	-21.28	170	132	H
		* 2.48354	45.95	Pk	32.40	-24.80	0.00	53.55	-	-	74.00	-20.45	170	132	H
		* 2.4835	33.97	RMS	32.40	-24.80	0.00	41.57	54.00	-12.43	-	-	170	132	H
		* 2.48472	34.69	RMS	32.40	-24.80	0.00	42.29	54.00	-11.71	-	-	170	132	H
		* 2.4835	43.09	Pk	32.40	-24.80	0.00	50.69	-	-	74.00	-23.31	188	103	V
		2.503	44.96	Pk	32.40	-24.80	0.00	52.56	-	-	74.00	-21.44	188	103	V
		* 2.4835	32.72	RMS	32.40	-24.80	0.00	40.32	54.00	-13.68	-	-	188	103	V
		* 2.48493	33.23	RMS	32.40	-24.80	0.00	40.83	54.00	-13.17	-	-	188	103	V
2472	ANT1	* 2.4835	42.16	Pk	32.40	-24.80	0.00	49.76	-	-	74.00	-24.24	127	100	H
		* 2.48402	46.15	Pk	32.40	-24.80	0.00	53.75	-	-	74.00	-20.25	127	100	H
		* 2.4835	32.24	RMS	32.40	-24.80	0.00	39.84	54.00	-14.16	-	-	127	100	H
		* 2.48416	36.43	RMS	32.40	-24.80	0.00	44.03	54.00	-9.97	-	-	127	100	H
		* 2.4835	42.26	Pk	32.40	-24.80	0.00	49.86	-	-	74.00	-24.14	215	360	V
		* 2.48358	47.72	Pk	32.40	-24.80	0.00	55.32	-	-	74.00	-18.68	215	360	V
		* 2.4835	33.45	RMS	32.40	-24.80	0.00	41.05	54.00	-12.95	-	-	215	360	V
		* 2.48435	34.93	RMS	32.40	-24.80	0.00	42.53	54.00	-11.47	-	-	215	360	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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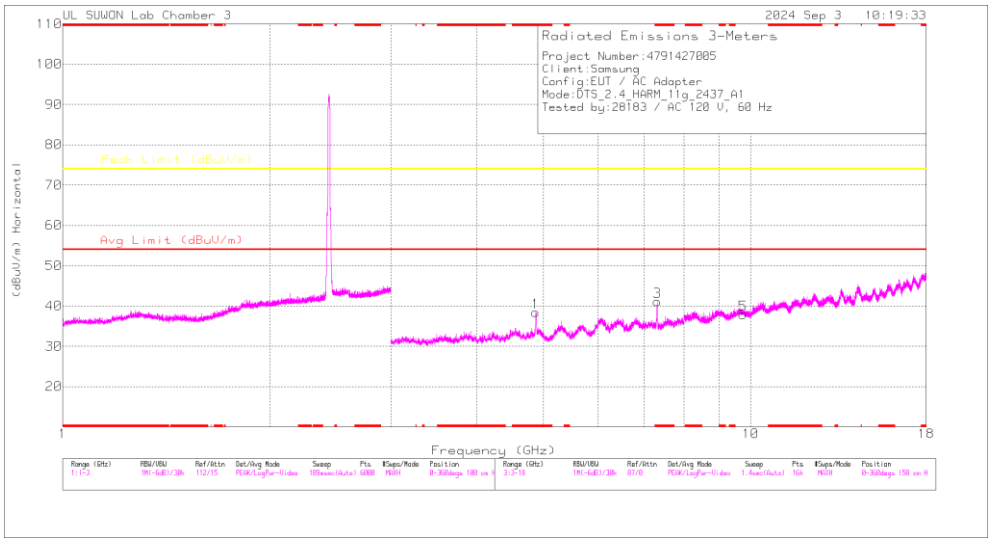
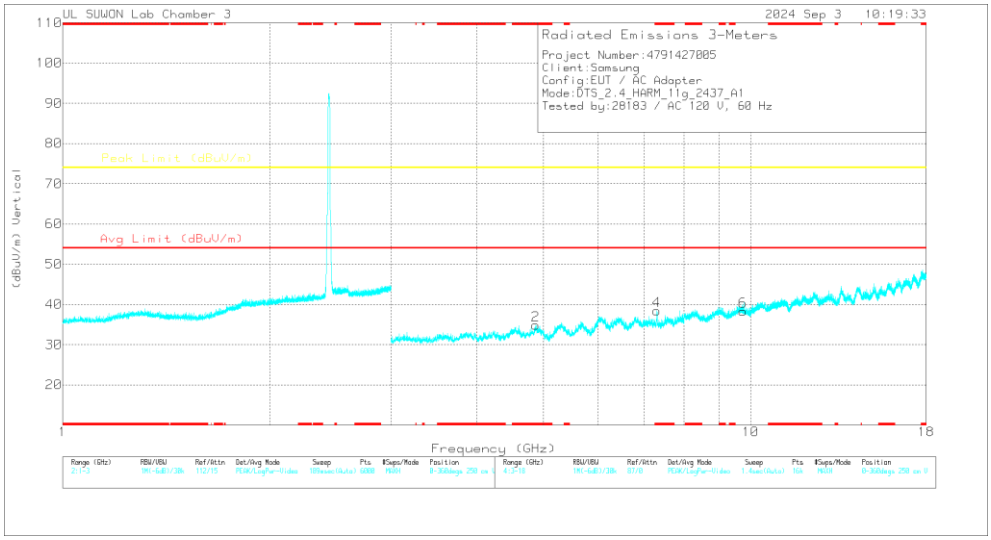
HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: 6 CHANNEL)

CH 6 RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87591	45.08	PK2	34.2	-29.8	0	49.48	-	-	74	-24.52	6	112	H
* 4.87567	32.94	MAv1	34.2	-29.8	0	37.34	54	-16.66	-	-	6	112	H
* 4.8756	42.18	PK2	34.2	-29.8	0	46.58	-	-	74	-27.42	293	363	V
* 4.87465	30.05	MAv1	34.2	-29.8	0	34.45	54	-19.55	-	-	293	363	V
* 7.31241	43.77	PK2	35.8	-25.5	0	54.07	-	-	74	-19.93	106	104	H
* 7.30774	31.19	MAv1	35.8	-25.5	0	41.49	54	-12.51	-	-	106	104	H
* 7.31228	43.75	PK2	35.8	-25.5	0	54.05	-	-	74	-19.95	200	100	V
* 7.30925	31.32	MAv1	35.8	-25.5	0	41.62	54	-12.38	-	-	200	100	V
9.74857	32.68	PK2	36.9	-21.6	0	47.98	-	-	74	-26.02	0	100	H
9.74766	33.18	PK2	36.9	-21.6	0	48.48	-	-	74	-25.52	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 4.82053	43.96	PK2	34.30	-30.00	0.00	48.26	-	-	74.00	-25.74	10	102	H
		* 4.82209	32.27	MAv1	34.30	-30.10	0.00	36.47	54.00	-17.53	-	-	10	102	H
		* 4.81832	40.88	PK2	34.30	-30.00	0.00	45.18	-	-	74.00	-28.82	59	100	V
		* 4.8169	28.77	MAv1	34.30	-30.10	0.00	32.97	54.00	-21.03	-	-	59	100	V
		7.239	46.20	PK2	35.80	-25.70	0.00	56.30	-	-	74.00	-17.70	100	100	H
		7.237	46.56	PK2	35.80	-25.70	0.00	56.66	-	-	74.00	**-17.34**	196	101	V
		9.648	33.34	PK2	36.80	-21.80	0.00	48.34	-	-	74.00	-25.66	0	100	H
		9.647	33.59	PK2	36.80	-21.70	0.00	48.69	-	-	74.00	-25.31	0	100	V
2437	ANT1	* 4.87591	45.08	PK2	34.20	-29.80	0.00	49.48	-	-	74.00	-24.52	6	112	H
		* 4.87567	32.94	MAv1	34.20	-29.80	0.00	37.34	54.00	-16.66	-	-	6	112	H
		* 4.8756	42.18	PK2	34.20	-29.80	0.00	46.58	-	-	74.00	-27.42	293	363	V
		* 4.87465	30.05	MAv1	34.20	-29.80	0.00	34.45	54.00	-19.55	-	-	293	363	V
		* 7.31241	43.77	PK2	35.80	-25.50	0.00	54.07	-	-	74.00	-19.93	106	104	H
		* 7.30774	31.19	MAv1	35.80	-25.50	0.00	41.49	54.00	-12.51	-	-	106	104	H
		* 7.31228	43.75	PK2	35.80	-25.50	0.00	54.05	-	-	74.00	-19.95	200	100	V
		* 7.30925	31.32	MAv1	35.80	-25.50	0.00	41.62	54.00	**-12.38**	-	-	200	100	V
		9.749	32.68	PK2	36.90	-21.60	0.00	47.98	-	-	74.00	-26.02	0	100	H
		9.748	33.18	PK2	36.90	-21.60	0.00	48.48	-	-	74.00	-25.52	0	100	V
2457	ANT1	* 4.91496	43.03	PK2	34.20	-29.90	0.00	47.33	-	-	74.00	-26.67	8	100	H
		* 4.9107	30.91	MAv1	34.20	-30.00	0.00	35.11	54.00	-18.89	-	-	8	100	H
		* 4.91764	41.38	PK2	34.20	-29.90	0.00	45.68	-	-	74.00	-28.32	179	362	V
		* 4.91614	29.19	MAv1	34.20	-29.90	0.00	33.49	54.00	-20.51	-	-	179	362	V
		* 7.36562	40.99	PK2	35.80	-25.40	0.00	51.39	-	-	74.00	-22.61	90	102	H
		* 7.36964	29.08	MAv1	35.80	-25.40	0.00	39.48	54.00	-14.52	-	-	90	102	H
		* 7.36589	39.81	PK2	35.80	-25.40	0.00	50.21	-	-	74.00	-23.79	232	101	V
		* 7.37286	27.28	MAv1	35.80	-25.40	0.00	37.68	54.00	-16.32	-	-	232	101	V
		9.832	32.85	PK2	37.10	-21.40	0.00	48.55	-	-	74.00	-25.45	0	100	H
		9.829	32.54	PK2	37.10	-21.40	0.00	48.24	-	-	74.00	-25.76	0	100	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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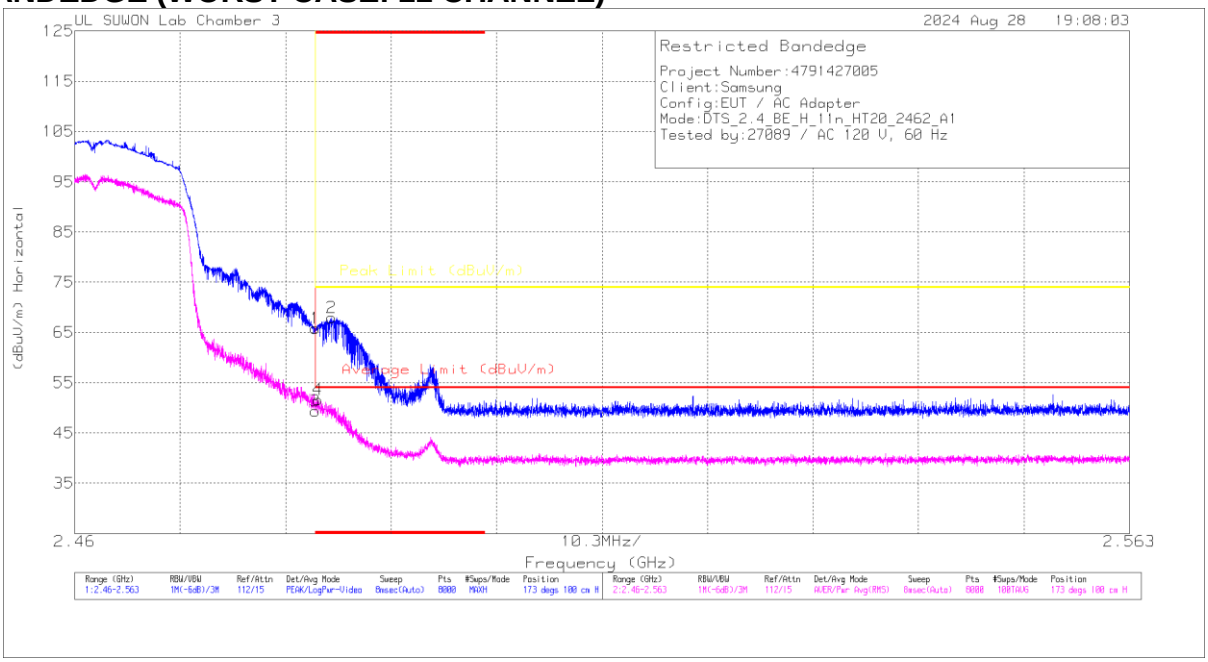
10.1.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

1TX Antenna 1

BANDEDGE (WORST CASE: 11 CHANNEL)



HORIZONTAL RESULT

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor (dB/m)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	58.22	Pk	32.4	-24.8	0	65.82	-	-	74	-8.18	173	100	H
2	* 2.48511	60.36	Pk	32.4	-24.8	0	67.96	-	-	74	-6.04	173	100	H
3	* 2.4835	41.67	RMS	32.4	-24.8	.14	49.41	54	-4.59	-	-	173	100	H
4	* 2.48372	43.9	RMS	32.4	-24.8	.14	51.64	54	-2.36	-	-	173	100	H

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

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BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 2.39	60.10	Pk	32.10	-24.80	0.00	67.40	-	-	74.00	-6.60	129	164	H
		* 2.38989	61.10	Pk	32.10	-24.80	0.00	68.40	-	-	74.00	**-5.60**	129	164	H
		* 2.39	41.35	RMS	32.10	-24.80	0.14	48.79	54.00	-5.21	-	-	129	164	H
		* 2.38976	43.21	RMS	32.10	-24.80	0.14	50.65	54.00	-3.35	-	-	129	164	H
		* 2.39	59.87	Pk	32.10	-24.80	0.00	67.17	-	-	74.00	-6.83	210	392	V
		* 2.38979	60.18	Pk	32.10	-24.80	0.00	67.48	-	-	74.00	-6.52	210	392	V
		* 2.39	39.81	RMS	32.10	-24.80	0.14	47.25	54.00	-6.75	-	-	210	392	V
		* 2.38955	42.57	RMS	32.10	-24.80	0.14	50.01	54.00	-3.99	-	-	210	392	V
2417	ANT1	* 2.39	53.59	Pk	32.10	-24.80	0.00	60.89	-	-	74.00	-13.11	132	100	H
		* 2.38998	55.00	Pk	32.10	-24.80	0.00	62.30	-	-	74.00	-11.70	132	100	H
		* 2.39	35.46	RMS	32.10	-24.80	0.14	42.90	54.00	-11.10	-	-	132	100	H
		* 2.38996	37.39	RMS	32.10	-24.80	0.14	44.83	54.00	-9.17	-	-	132	100	H
		* 2.39	53.99	Pk	32.10	-24.80	0.00	61.29	-	-	74.00	-12.71	214	395	V
		* 2.38996	54.83	Pk	32.10	-24.80	0.00	62.13	-	-	74.00	-11.87	214	395	V
		* 2.39	34.98	RMS	32.10	-24.80	0.14	42.42	54.00	-11.58	-	-	214	395	V
		* 2.38986	36.66	RMS	32.10	-24.80	0.14	44.10	54.00	-9.90	-	-	214	395	V
2457	ANT1	* 2.4835	57.21	Pk	32.40	-24.80	0.00	64.81	-	-	74.00	-9.19	169	137	H
		* 2.48377	58.28	Pk	32.40	-24.80	0.00	65.88	-	-	74.00	-8.12	169	137	H
		* 2.4835	40.29	RMS	32.40	-24.80	0.14	48.03	54.00	-5.97	-	-	169	137	H
		* 2.48396	42.10	RMS	32.40	-24.80	0.14	49.84	54.00	-4.16	-	-	169	137	H
		* 2.4835	53.81	Pk	32.40	-24.80	0.00	61.41	-	-	74.00	-12.59	212	371	V
		* 2.48377	56.23	Pk	32.40	-24.80	0.00	63.83	-	-	74.00	-10.17	212	371	V
		* 2.4835	38.50	RMS	32.40	-24.80	0.14	46.24	54.00	-7.76	-	-	212	371	V
		* 2.48404	40.27	RMS	32.40	-24.80	0.14	48.01	54.00	-5.99	-	-	212	371	V
2462	ANT1	* 2.4835	58.22	Pk	32.40	-24.80	0.00	65.82	-	-	74.00	-8.18	173	100	H
		* 2.48511	60.36	Pk	32.40	-24.80	0.00	67.96	-	-	74.00	-6.04	173	100	H
		* 2.4835	41.67	RMS	32.40	-24.80	0.14	49.41	54.00	-4.59	-	-	173	100	H
		* 2.48372	43.90	RMS	32.40	-24.80	0.14	51.64	54.00	**-2.36**	-	-	173	100	H
		* 2.4835	50.65	Pk	32.40	-24.80	0.00	58.25	-	-	74.00	-15.75	188	103	V
		* 2.48479	54.81	Pk	32.40	-24.80	0.00	62.41	-	-	74.00	-11.59	188	103	V
		* 2.4835	37.59	RMS	32.40	-24.80	0.14	45.33	54.00	-8.67	-	-	188	103	V
		* 2.48417	37.68	RMS	32.40	-24.80	0.14	45.42	54.00	-8.58	-	-	188	103	V
2467	ANT1	* 2.4835	47.75	Pk	32.40	-24.80	0.00	55.35	-	-	74.00	-18.65	169	132	H
		* 2.48404	48.69	Pk	32.40	-24.80	0.00	56.29	-	-	74.00	-17.71	169	132	H
		* 2.4835	33.94	RMS	32.40	-24.80	0.14	41.68	54.00	-12.32	-	-	169	132	H
		* 2.48615	34.80	RMS	32.40	-24.80	0.14	42.54	54.00	-11.46	-	-	169	132	H
		* 2.4835	41.97	Pk	32.40	-24.80	0.00	49.57	-	-	74.00	-24.43	187	103	V
		* 2.48425	45.55	Pk	32.40	-24.80	0.00	53.15	-	-	74.00	-20.85	187	103	V
		* 2.4835	32.68	RMS	32.40	-24.80	0.14	40.42	54.00	-13.58	-	-	187	103	V
		* 2.48488	33.77	RMS	32.40	-24.80	0.14	41.51	54.00	-12.49	-	-	187	103	V
2472	ANT1	* 2.4835	56.60	Pk	32.40	-24.80	0.00	64.20	-	-	74.00	-9.80	127	100	H
		* 2.48533	58.50	Pk	32.40	-24.80	0.00	66.10	-	-	74.00	-7.90	127	100	H
		* 2.4835	36.83	RMS	32.40	-24.80	0.14	44.57	54.00	-9.43	-	-	127	100	H
		* 2.48673	38.17	RMS	32.40	-24.80	0.14	45.91	54.00	-8.09	-	-	127	100	H
		* 2.4835	55.41	Pk	32.40	-24.80	0.00	63.01	-	-	74.00	-10.99	212	360	V
		* 2.48564	57.35	Pk	32.40	-24.80	0.00	64.95	-	-	74.00	-9.05	212	360	V
		* 2.4835	35.54	RMS	32.40	-24.80	0.14	43.28	54.00	-10.72	-	-	212	360	V
		* 2.48431	37.26	RMS	32.40	-24.80	0.14	45.00	54.00	-9.00	-	-	212	360	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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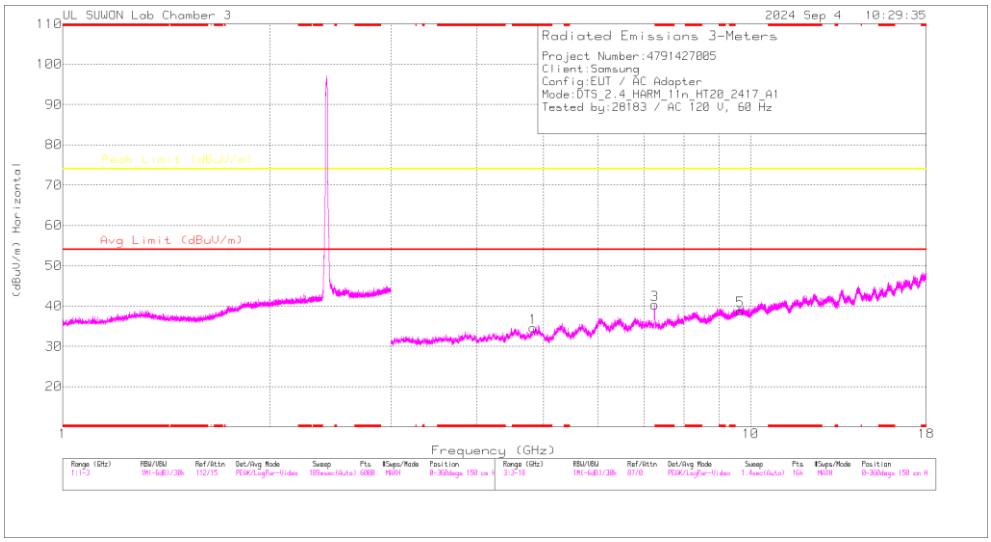
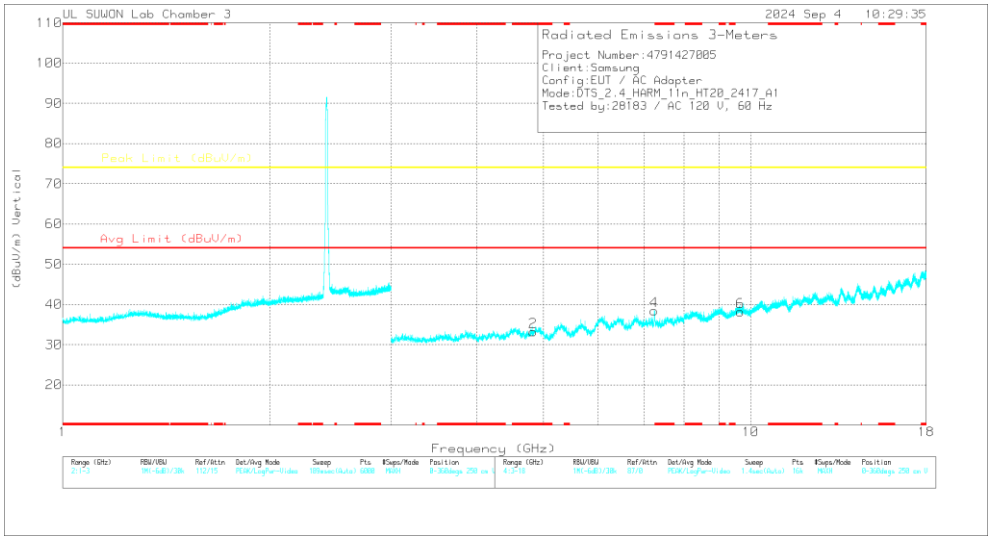
HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: 2 CHANNEL)

CH 2 RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.82517	41.7	PK2	34.2	-30	0	45.9	-	-	74	-28.1	360	100	H
* 4.84018	38.77	Pk	34.2	-30	0	42.97	-	-	74	-31.03	0	100	V
* 7.25622	44.8	PK2	35.8	-25.7	0	54.9	-	-	74	-19.1	104	106	H
* 7.25346	30.58	MAv1	35.8	-25.7	.14	40.82	54	-13.18	-	-	104	106	H
7.24718	44.54	PK2	35.8	-25.7	0	54.64	-	-	74	-19.36	189	101	V
7.24806	30.3	MAv1	35.8	-25.7	.14	40.54	-	-	-	-	189	101	V
9.67026	33.2	PK2	36.8	-21.7	0	48.3	-	-	74	-25.7	0	100	H
9.66701	33.28	PK2	36.8	-21.7	0	48.38	-	-	74	-25.62	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2417	ANT1	* 4.82517	41.70	PK2	34.20	-30.00	0.00	45.90	-	-	74.00	-28.10	360	100	H
		* 4.84018	38.77	Pk	34.20	-30.00	0.00	42.97	-	-	74.00	-31.03	0	100	V
		* 7.25622	44.80	PK2	35.80	-25.70	0.00	54.90	-	-	74.00	**-19.10**	104	106	H
		* 7.25346	30.58	MAv1	35.80	-25.70	0.14	40.82	54.00	**-13.18**	-	-	104	106	H
		7.247	44.54	PK2	35.80	-25.70	0.00	54.64	-	-	74.00	-19.36	189	101	V
		7.248	30.30	MAv1	35.80	-25.70	0.14	40.54	-	-	-	-	189	101	V
		9.670	33.20	PK2	36.80	-21.70	0.00	48.30	-	-	74.00	-25.70	0	100	H
		9.667	33.28	PK2	36.80	-21.70	0.00	48.38	-	-	74.00	-25.62	0	100	V
2437	ANT1	* 4.87487	43.85	PK2	34.20	-29.80	0.00	48.25	-	-	74.00	-25.75	8	113	H
		* 4.87677	31.46	MAv1	34.20	-29.90	0.14	35.90	54.00	-18.10	-	-	8	113	H
		* 4.87473	40.21	PK2	34.20	-29.80	0.00	44.61	-	-	74.00	-29.39	263	362	V
		* 4.87578	29.11	MAv1	34.20	-29.80	0.14	33.65	54.00	-20.35	-	-	263	362	V
		* 7.30819	42.95	PK2	35.80	-25.50	0.00	53.25	-	-	74.00	-20.75	102	103	H
		* 7.31406	28.97	MAv1	35.80	-25.50	0.14	39.41	54.00	-14.59	-	-	102	103	H
		* 7.30769	41.85	PK2	35.80	-25.50	0.00	52.15	-	-	74.00	-21.85	199	100	V
		* 7.30719	28.83	MAv1	35.80	-25.50	0.14	39.27	54.00	-14.73	-	-	199	100	V
		9.758	33.16	PK2	36.90	-21.50	0.00	48.56	-	-	74.00	-25.44	0	100	H
		9.754	33.52	PK2	36.90	-21.60	0.00	48.82	-	-	74.00	-25.18	0	100	V
2457	ANT1	* 4.9056	42.04	PK2	34.20	-30.00	0.00	46.24	-	-	74.00	-27.76	1	100	H
		* 4.90965	29.84	MAv1	34.20	-30.00	0.14	34.18	54.00	-19.82	-	-	1	100	H
		* 4.9154	40.95	PK2	34.20	-29.90	0.00	45.25	-	-	74.00	-28.75	189	301	V
		* 4.91331	28.62	MAv1	34.20	-29.90	0.14	33.06	54.00	-20.94	-	-	189	301	V
		* 7.36546	42.38	PK2	35.80	-25.40	0.00	52.78	-	-	74.00	-21.22	89	101	H
		* 7.36406	27.98	MAv1	35.80	-25.50	0.14	38.42	54.00	-15.58	-	-	89	101	H
		* 7.36553	41.30	PK2	35.80	-25.40	0.00	51.70	-	-	74.00	-22.30	232	100	V
		* 7.36738	26.82	MAv1	35.80	-25.40	0.14	37.36	54.00	-16.64	-	-	232	100	V
		9.829	32.70	PK2	37.10	-21.50	0.00	48.30	-	-	74.00	-25.70	0	100	H
		9.829	33.11	PK2	37.10	-21.50	0.00	48.71	-	-	74.00	-25.29	0	100	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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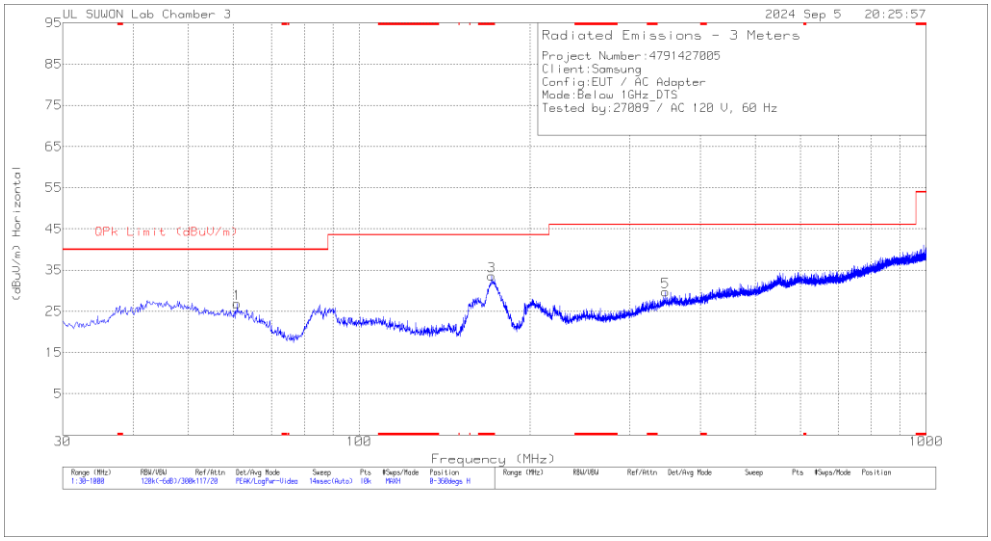
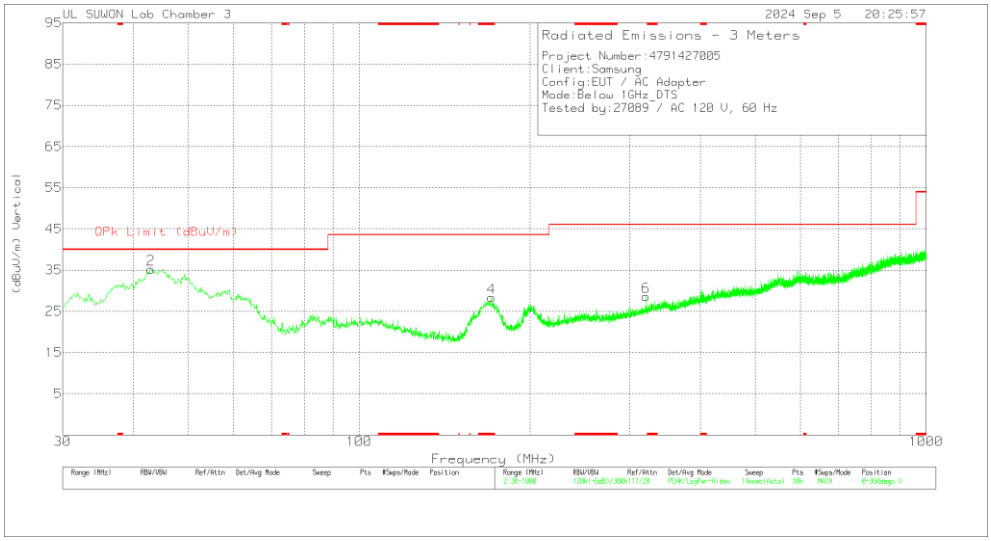
10.2. WORST CASE BELOW 1 GHZ



HORIZONTAL



VERTICAL

Below 1GHz DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna_845_Factor(dB/m)	Below_1G_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	60.9462	40.48	Pk	18.1	-31.7	0	26.88	40	-13.12	0-360	300	H
3	* 171.1496	50.04	Pk	14.5	-31	0	33.54	43.52	-9.98	0-360	100	H
5	346.9317	39.58	Pk	20.4	-30.2	0	29.78	46.02	-16.24	0-360	100	H
2	42.9023	47.87	Pk	19.4	-32	0	35.27	40	-4.73	0-360	100	V
4	* 171.1011	44.86	Pk	14.5	-31	0	28.36	43.52	-15.16	0-360	100	V
6	320.545	39.69	Pk	19.2	-30.3	0	28.59	46.02	-17.43	0-360	300	V

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

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna_845_Factor(dB/m)	Below_1G_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
42.9023	45.08	Qp	19.4	-32	0	32.48	40	-7.52	206	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

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11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

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

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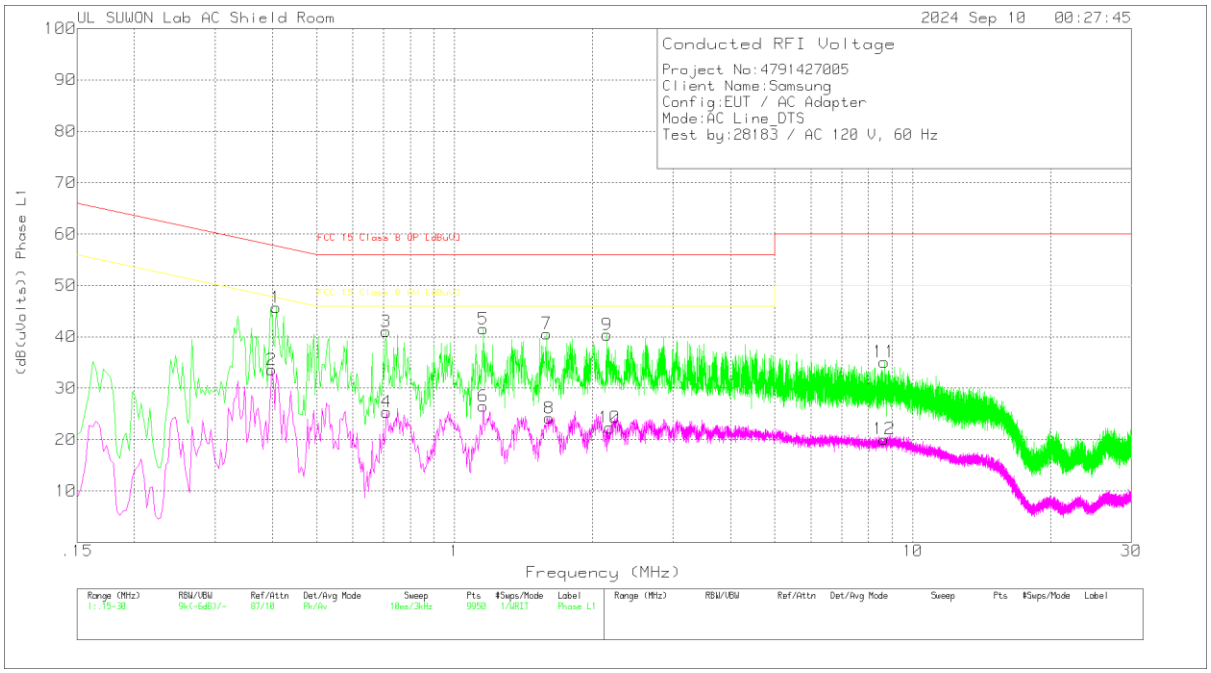
11.1.1. AC Power Line

LINE 1 RESULTS



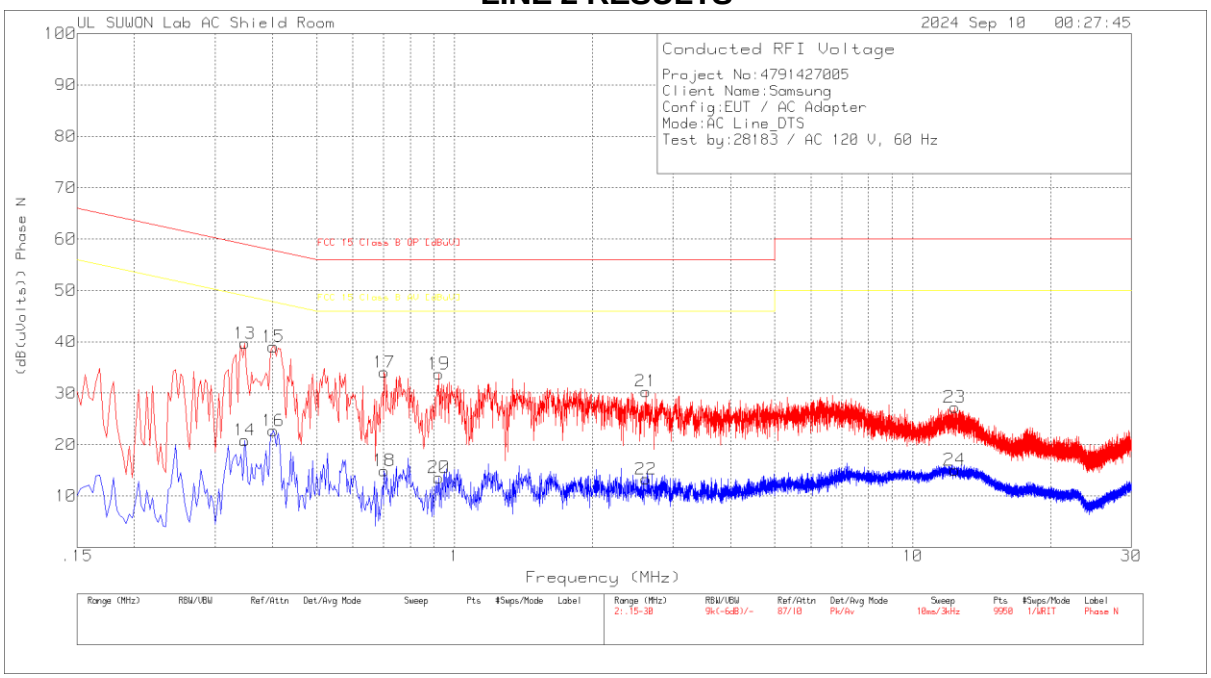
Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	101836_With EX_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
1	.408	35.77	Pk	9.8	.1	45.67	57.69	-12.02	-	-
2	.399	23.7	Av	9.8	.1	33.6	-	-	47.87	-14.27
3	.708	31.15	Pk	9.8	.1	41.05	56	-14.95	-	-
4	.711	15.46	Av	9.8	.1	25.36	-	-	46	-20.64
5	1.155	31.74	Pk	9.7	.1	41.54	56	-14.46	-	-
6	1.155	16.71	Av	9.7	.1	26.51	-	-	46	-19.49
7	1.587	30.8	Pk	9.7	.1	40.6	56	-15.4	-	-
8	1.608	14.38	Av	9.7	.1	24.18	-	-	46	-21.82
9	2.151	30.61	Pk	9.7	.1	40.41	56	-15.59	-	-
10	2.178	12.5	Av	9.7	.1	22.3	-	-	46	-23.7
11	8.664	25.08	Pk	9.8	.2	35.08	60	-24.92	-	-
12	8.658	10.08	Av	9.8	.2	20.08	-	-	50	-29.92

Pk - Peak detector
Av - Average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	101836_With EX_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
13	.348	29.81	Pk	9.8	.1	39.71	59.01	-19.3	-	-
14	.348	10.93	Av	9.8	.1	20.83	-	-	49.01	-28.18
15	.402	29.16	Pk	9.8	.1	39.06	57.81	-18.75	-	-
16	.402	12.8	Av	9.8	.1	22.7	-	-	47.81	-25.11
17	.702	24.18	Pk	9.8	.1	34.08	56	-21.92	-	-
18	.702	5.03	Av	9.8	.1	14.93	-	-	46	-31.07
19	.924	23.85	Pk	9.8	.1	33.75	56	-22.25	-	-
20	.924	3.68	Av	9.8	.1	13.58	-	-	46	-32.42
21	2.616	20.55	Pk	9.7	.1	30.35	56	-25.65	-	-
22	2.616	3.49	Av	9.7	.1	13.29	-	-	46	-32.71
23	12.348	17.05	Pk	10	.2	27.25	60	-32.75	-	-
24	12.348	4.85	Av	10	.2	15.05	-	-	50	-34.95

Pk - Peak detector
Av - Average detection

END OF TEST REPORT

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