



FCC PART 15C TEST REPORT No.24T04Z102397-012

for

TCL Communication Ltd.

GSM/UMTS/LTE/NR Mobile phone

T440W

FCC ID:2ACCJH185

with

Hardware Version: 04

Software Version: 7ASK

Issued Date: 2024-12-31

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z102397-012	Rev.0	1st edition	2024-12-09
24T04Z102397-012	Rev.1	Update Conducted test system on page 11. Modified the antenna gain from average gain to peak gain in page14. Add the plot of duty cycle on page 15. Add the Average power measurement procedures in page 55.	2024-12-31

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1.Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2.Testing Location

Location 1:CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology
Development Area, Beijing, P. R. China 100176

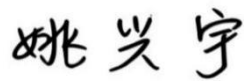
1.3. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

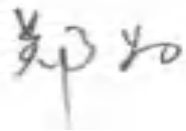
1.4. Project date

Testing Start Date: 2024-10-24
Testing End Date: 2024-12-09

1.5. Signature



Yao Xingyu
(Prepared this test report)



Zheng Wei
(Reviewed this test report)



Pang Shuai
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address/Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Contact Person: Ting Wang
Contact Email: ting.wang.hz@tcl.com
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Fax: 0086-755-36612000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address/Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Contact Person: Ting Wang
Contact Email: ting.wang.hz@tcl.com
Telephone: +86 752 2639091
Fax: 0086-755-36612000-81722

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/UMTS/LTE/NR Mobile phone
Model name	T440W
FCC ID	2ACCJH185
With WLAN Function	Yes
Frequency Band	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	11
Antenna	Integral Antenna
MAX Conducted Power	24.95dBm
Nominal Voltage	3.87V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.6V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT41a	016601000004058/ 016601000004066	04	7ASK	2024-10-22
UT39a	016601000003852/ 016601000003860	04	7ASK	2024-10-24

*EUT ID: is used to identify the test sample in the lab internally.

UT41a is used for Conduction test, UT39a is used for Radiation test.

3.3. Internal Identification of AE

AE ID*	Description	Note	Manufacturer
AE1-1	Battery	TLp029M9	FENGHUA
AE1-2	Battery	TLp029M7	VEKEN
AE2	Charger	/	/
AE3	USB cable	CDA0000302C1	Juwei
AE4	Headset	/	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of GSM/UMTS/LTE/NR Mobile phone with integrated antenna and inbuilt battery.

It consists of normal options: travel charger, USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor $k=2$.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C:	2021
	15.205 Restricted bands of operation;	
	15.209 Radiated emission limits, general requirements;	
ANSI C63.10	15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	2013
	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	
	Federal Communications Commission Office of Engineering and Technology Laboratory Division	
KDB 558074 D01	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. Test Results

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247 (b)	/	P
Peak Power Spectral Density	15.247 (e)	/	P
Occupied 6dB Bandwidth	15.247 (a)	/	P
Band Edges Compliance	15.247 (d)	/	P
Transmitter Spurious Emission - Conducted	15.247 (d)	/	P
Radiated Unwanted Emission	15.247, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

CTTL has evaluated the test cases as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	3.87V
Humidity	44%

7. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2025-08-12
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2025-04-01
3	Test Receiver	ESCI	100344	R&S	1 year	2025-04-01
4	LISN	ENV216	101200	R&S	1 year	2025-05-16
5	Attenuator	10dB/2W	/	Rosenberger	/	/
6	Shielding Room	S81	/	ETS-Lindgren	/	/
7	Data Acquisition Unit	U2531A	TW54433522	Agilent	/	/
8	Power Sensor	U2021XA	MY54460006	Agilent	1 year	2025-06-15

Radiated emission test system

Huayuan North Road

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103023	R&S	1 year	2025-06-06
2	Test Receiver	ESW44	103015	R&S	1 year	2025-01-18
3	EMI Antenna	HFH2-Z2	829324/007	R&S	1 year	2025-01-04
4	EMI Antenna	VULB 9163	01222	SCHWARZBECK	1 year	2025-09-11
5	EMI Antenna	3115	00167250	ETS-Lindgren	1 year	2025-04-11

BDA SAC/FAC 5

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103015	R&S	1 year	2025-01-18
3	EMI Antenna	3117	00139065	ETS-Lindgren	2 years	2025-10-22

Huayuan North Road

Test Item	Test Software and Version	Software Vendor
Conducted emission	EMC32 V8.53.0	R&S
Radiated emission	EMC32 V11.50.00	R&S

BDA SAC/FAC 5

Test Item	Test Software and Version	Software Vendor
Radiated emission	EMC32 V10.60.20	R&S

8. Measurement Uncertainty

8.1. Maximum Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3. DTS 6-dB Signal Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5. Transmitter Spurious Emission

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

Radiated (k=2)

Huayuan North Road

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.72
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.84
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.12

BDA SAC/FAC 5

Frequency Range	Uncertainty(dB)
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.62

8.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.08dB,k=2

ANNEX A: Detailed Test Results

A.1. Measurement Method

A.1.1. Conducted Measurements

Connect the EUT to the test system as Fig.A.1.1.1 shows.

Set the EUT to the required work mode.

Set the EUT to the required channel.

Set the Vector Signal Analyzer and start measurement.

Record the values. Vector Signal Analyzer

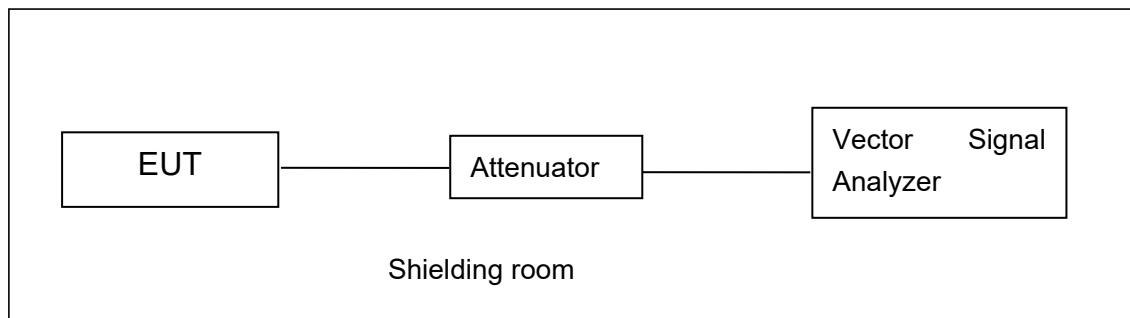


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 3MHz;

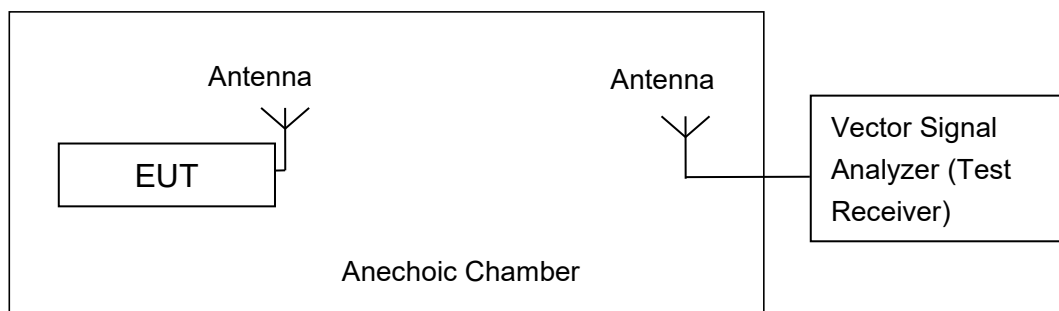


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

A.2. Maximum Output Power

Method of Measurement: See ANSI C63.10-2013-clause 11.9.1.3

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

Measurement Limit:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

A.2.1 Antenna Gain

Antenna peak gain is -2.5dBi and the value is supplied by the applicant or manufacturer.

A.2.2. Peak Output Power-conducted

EUT ID: UT41a

Measurement Results:

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	22.94	22.02	22.47
802.11g	6	24.89	24.70	24.18

The data rate 1Mbps and 6Mbps are selected as worst condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	24.95	24.35	24.83

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT40 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)
802.11n (40MHz)	MCS0	23.67	23.58	23.57

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

The duty cycle of all mode are 98%



Duty cycle

Conclusion: Pass

A.3. Peak Power Spectral Density

Method of Measurement: See ANSI C63.10-2013-clause 11.10.2

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to RBW = 3 kHz.
- Set the VBW = 10 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(e)	< 8 dBm/3 kHz

EUT ID: UT41a

Measurement Results:

TestMode	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	-2.58	≤8.00	PASS
	2437	-2.80	≤8.00	PASS
	2462	-2.62	≤8.00	PASS
11G	2412	-5.71	≤8.00	PASS
	2437	-6.24	≤8.00	PASS
	2462	-5.72	≤8.00	PASS
11N20SISO	2412	-6.05	≤8.00	PASS
	2437	-6.76	≤8.00	PASS
	2462	-6.05	≤8.00	PASS
11N40SISO	2422	-10.60	≤8.00	PASS
	2437	-11.13	≤8.00	PASS
	2452	-10.49	≤8.00	PASS

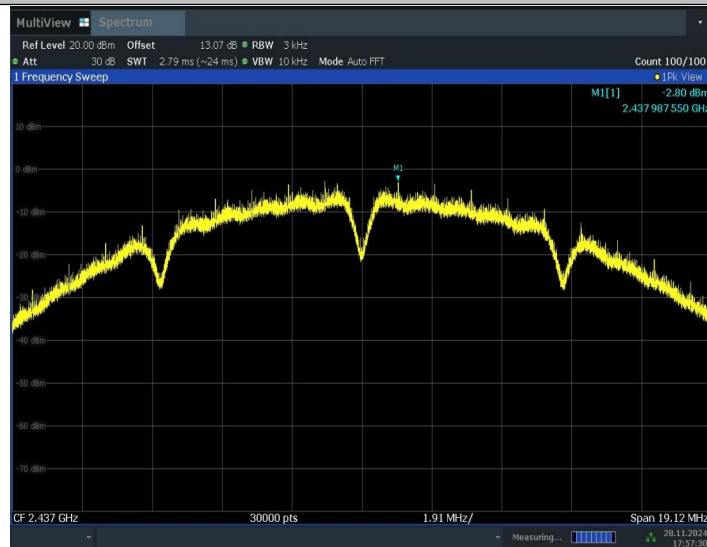
Test graphs as below:

11B_2412



17:58:18 28.11.2024

11B_2437



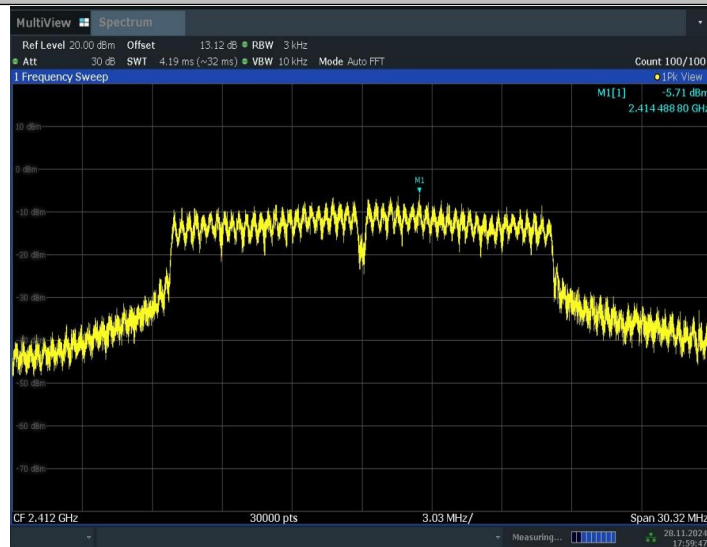
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11B_2462



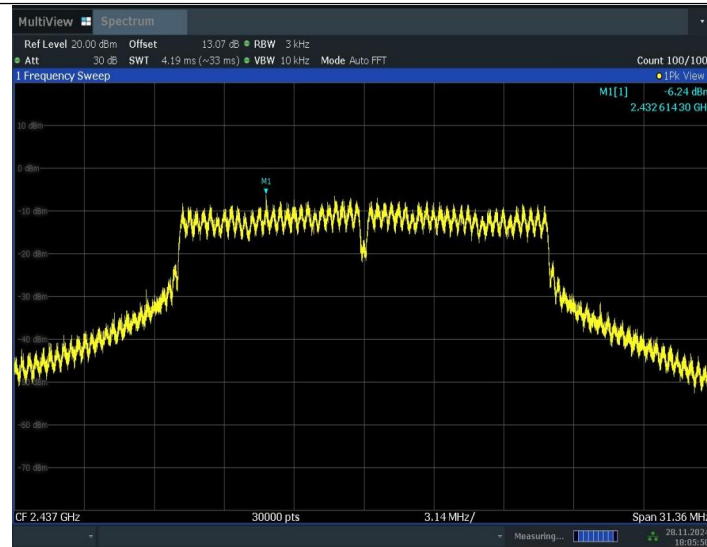
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11G_2412



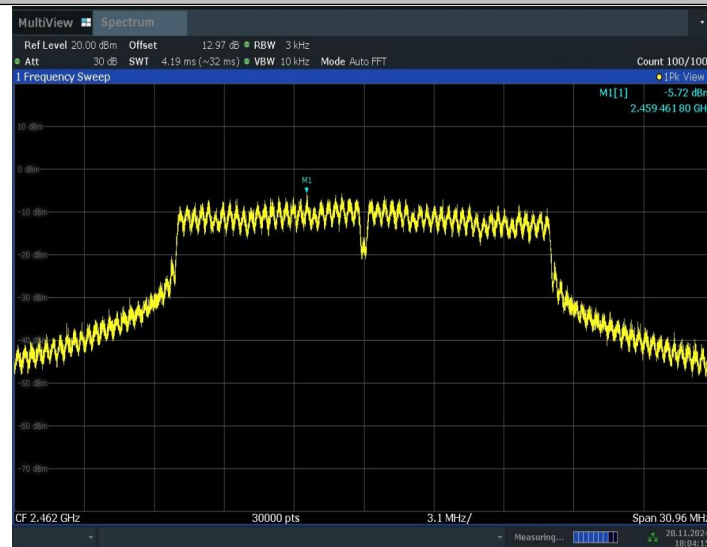
17:59:48 28.11.2024

11G_2437



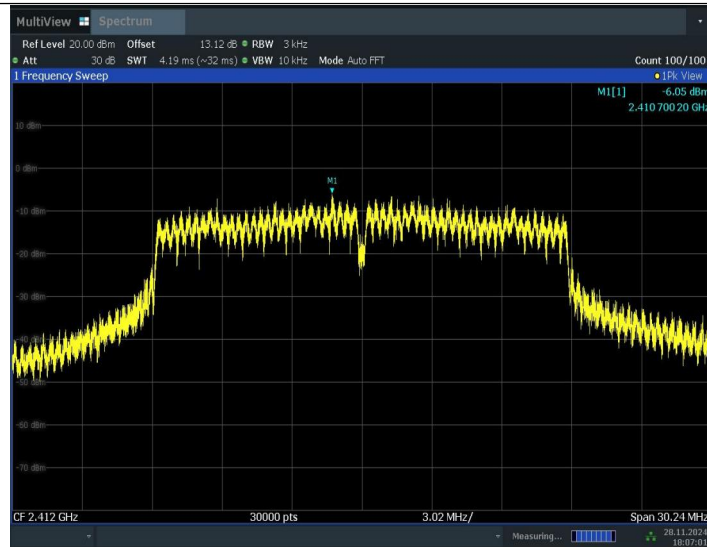
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11G_2462



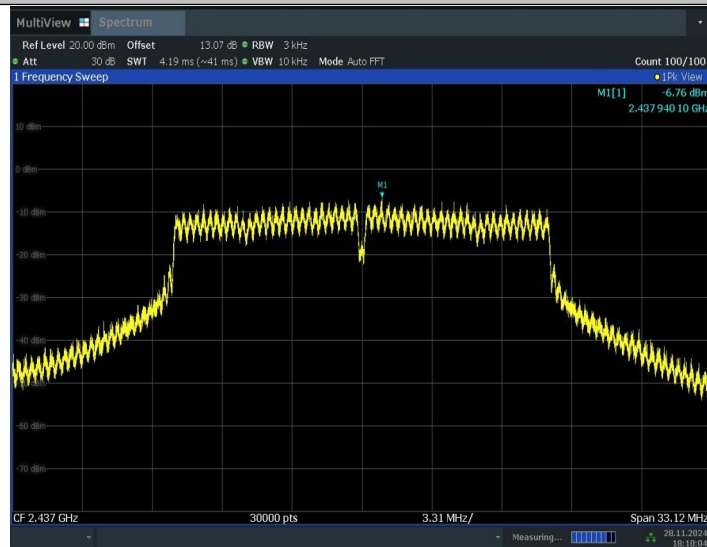
18:04:16 28.11.2024

11N20SISO_2412



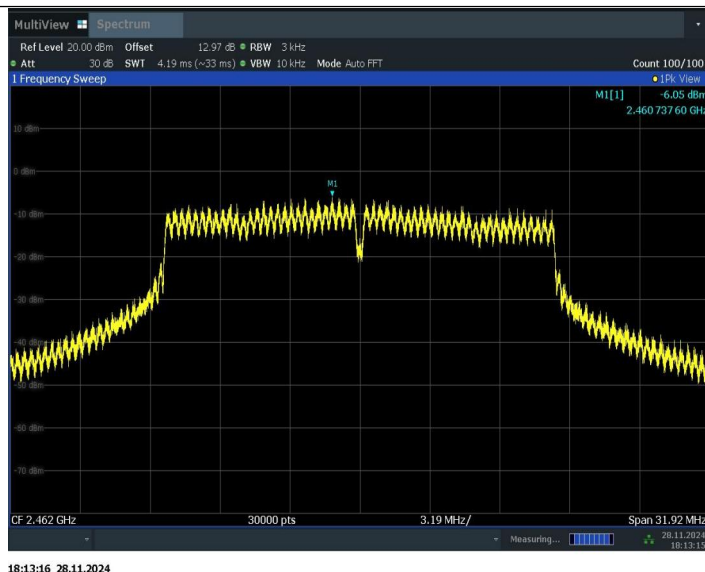
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11N20SISO_2437

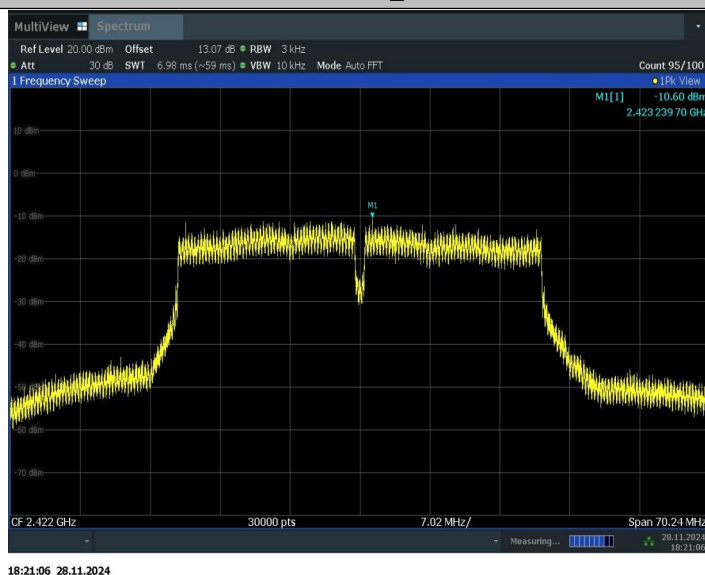


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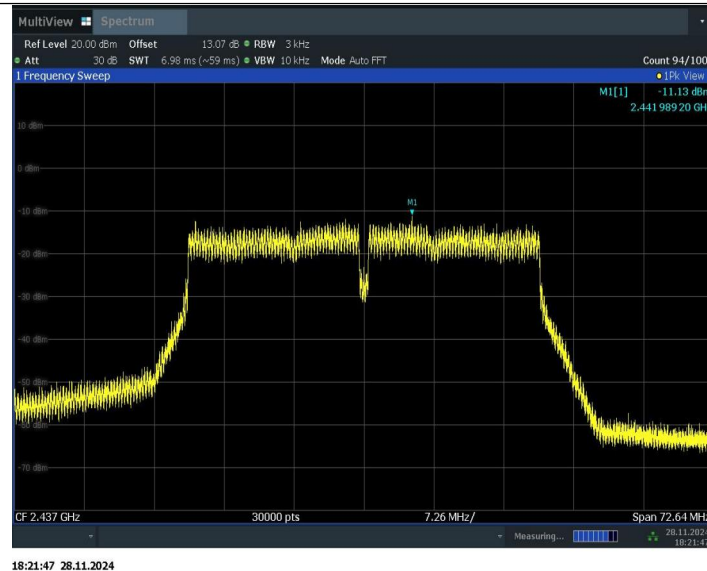
11N20SISO_2462



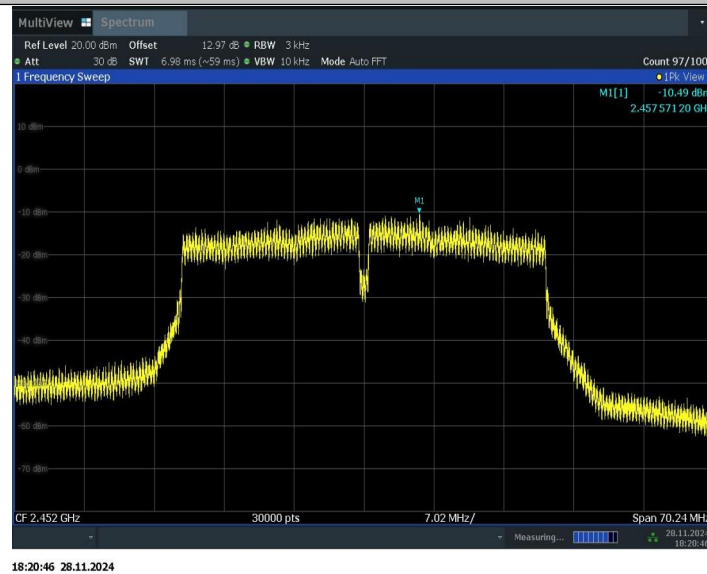
11N40SISO_2422



11N40SISO_2437



11N40SISO_2452



Conclusion: Pass

A.4. DTS 6-dB Signal Bandwidth

Method of Measurement: See ANSI C63.10-2013 section 11.8.1.

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) = 300 kHz.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

EUT ID: UT41a

Measurement Result:

TestMode	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	2412	8.12	2407.92	2416.04	0.5	PASS
	2437	9.56	2431.96	2441.52	0.5	PASS
	2462	8.08	2457.92	2466.00	0.5	PASS
11G	2412	15.16	2404.40	2419.56	0.5	PASS
	2437	15.68	2429.20	2444.88	0.5	PASS
	2462	15.48	2454.08	2469.56	0.5	PASS
11N20SISO	2412	15.12	2404.40	2419.52	0.5	PASS
	2437	16.56	2428.56	2445.12	0.5	PASS
	2462	15.96	2453.60	2469.56	0.5	PASS
11N40SISO	2422	35.12	2404.40	2439.52	0.5	PASS
	2437	36.32	2418.84	2455.16	0.5	PASS
	2452	35.12	2434.40	2469.52	0.5	PASS

Test graphs as below:

11B_2412



17:45:18 28.11.2024

11B_2437



17:49:15 28.11.2024

11B_2462



17:51:10 28.11.2024

11G_2412



17:59:24 28.11.2024

11G_2437



18:01:58 28.11.2024

11G_2462



18:03:55 28.11.2024

11N20SISO_2412



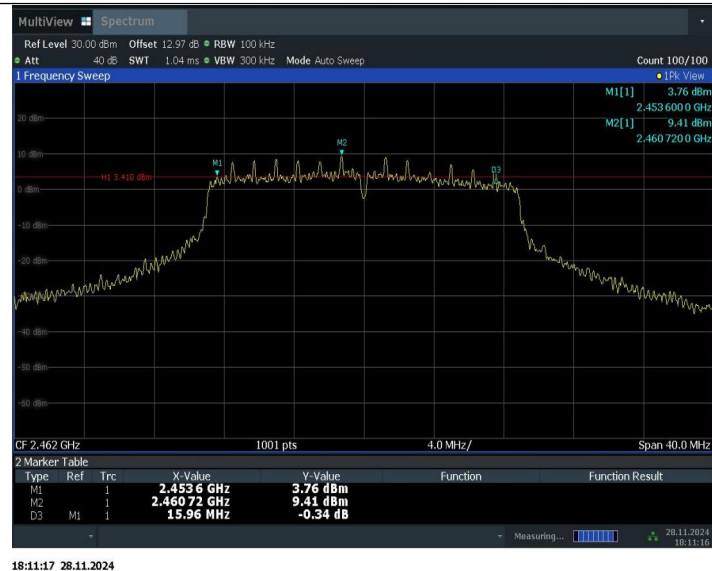
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11N20SISO_2437



18:08:43 28.11.2024

11N20SISO_2462



18:11:17 28.11.2024

11N40SISO_2422



18:14:42 28.11.2024

11N40SISO_2437



18:15:26 28.11.2024

11N40SISO_2452



18:16:14 28.11.2024

Conclusion: Pass

A.5. Band Edges Compliance

Method of Measurement: See ANSI C63.10-2013-clause 6.10.4

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below.

- Set Span = 100MHz
- Sweep Time: coupled
- Set the RBW= 100 kHz
- Set the VBW= 300 kHz
- Detector: Peak
- Trace: Max hold

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	> 20

EUT ID: UT41a

Measurement Result:

TestMode	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Low	2412	11.94	-28.7	≤-8.06	PASS
	High	2462	11.34	-41.55	≤-8.66	PASS
11G	Low	2412	9.94	-20.71	≤-10.06	PASS
	High	2462	9.35	-36.78	≤-10.65	PASS
11N20SISO	Low	2412	10.23	-22.37	≤-9.77	PASS
	High	2462	9.17	-36.61	≤-10.83	PASS
11N40SISO	Low	2422	4.09	-25.98	≤-15.91	PASS
	High	2452	3.50	-36.8	≤-16.5	PASS

Test graphs as below:

11B_Low_2412



17:45:49 28.11.2024

11B_High_2462



17:51:41 28.11.2024

11G_Low_2412



17:59:58 28.11.2024

11G_High_2462



18:04:25 28.11.2024

11N20SiSO_Low_2412



18:07:12 28.11.2024

11N20SISO_High_2462



18:11:50 28.11.2024

11N40SISO_Low_2422



18:17:18 28.11.2024

11N40SISO_High_2452



18:19:36 28.11.2024

Conclusion: Pass

A.6. Transmitter Spurious Emission

A.6.1 Transmitter Spurious Emission – Conducted

Method of Measurement: See ANSI C63.10-2013-clause 11.11

Establish a reference level by using the following procedure:

- Set instrument center frequency to DTS channel center frequency
- Set the span to ≥ 1.5 times the DTS bandwidth
- Set the RBW= 100 kHz
- Set the VBW= 300 kHz
- Detector = Peak
- Sweep time = auto couple
- Trace mode = max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum PSD level

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Establish an emission level by using the following procedure:

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW = 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

EUT ID: UT41a

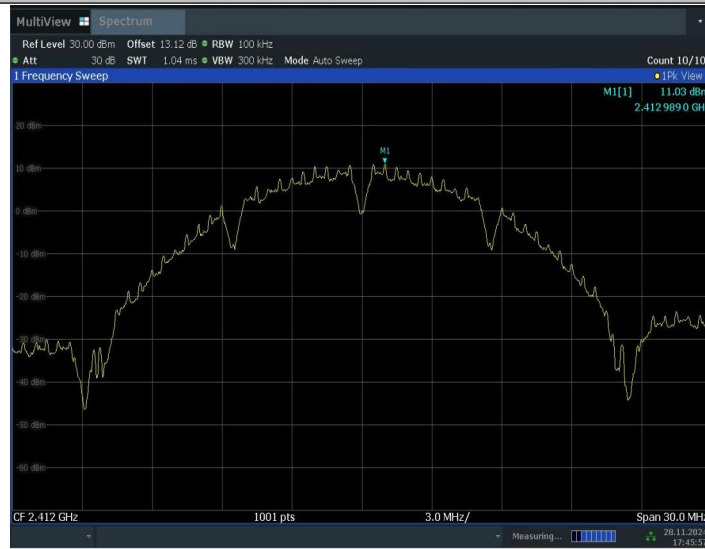
Measurement Results:

TestMode	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	Reference	11.03	11.03	---	PASS
		30~1000	11.03	-56.73	≤ -8.97	PASS
		1000~26500	11.03	-29.2	≤ -8.97	PASS
	2437	Reference	9.32	9.32	---	PASS
		30~1000	9.32	-54.51	≤ -10.68	PASS

	2462	1000~26500	9.32	-29.53	≤ -10.68	PASS
		Reference	10.48	10.48	---	PASS
		30~1000	10.48	-50.15	≤ -9.52	PASS
		1000~26500	10.48	-32.64	≤ -9.52	PASS
11G	2412	Reference	10.48	10.48	---	PASS
		30~1000	10.48	-56.51	≤ -9.52	PASS
		1000~26500	10.48	-39.93	≤ -9.52	PASS
	2437	Reference	8.60	8.60	---	PASS
		30~1000	8.60	-55.87	≤ -11.4	PASS
		1000~26500	8.60	-40.05	≤ -11.4	PASS
	2462	Reference	9.51	9.51	---	PASS
		30~1000	9.51	-56.57	≤ -10.49	PASS
		1000~26500	9.51	-42.55	≤ -10.49	PASS
11N20SISO	2412	Reference	10.55	10.55	---	PASS
		30~1000	10.55	-56.22	≤ -9.45	PASS
		1000~26500	10.55	-39.95	≤ -9.45	PASS
	2437	Reference	8.67	8.67	---	PASS
		30~1000	8.57	-57.02	≤ -11.43	PASS
		1000~26500	8.57	-37.36	≤ -11.43	PASS
	2462	Reference	9.47	9.47	---	PASS
		30~1000	9.47	-56.61	≤ -10.53	PASS
		1000~26500	9.47	-40.01	≤ -10.53	PASS
11N40SISO	2422	Reference	4.14	4.14	---	PASS
		30~1000	4.14	-56.78	≤ -15.86	PASS
		1000~26500	4.14	-44.33	≤ -15.86	PASS
	2437	Reference	2.70	2.70	---	PASS
		30~1000	2.70	-56.47	≤ -17.3	PASS
		1000~26500	2.70	-43.95	≤ -17.3	PASS
	2452	Reference	3.63	3.63	---	PASS
		30~1000	3.63	-56.09	≤ -16.37	PASS
		1000~26500	3.63	-43.7	≤ -16.37	PASS

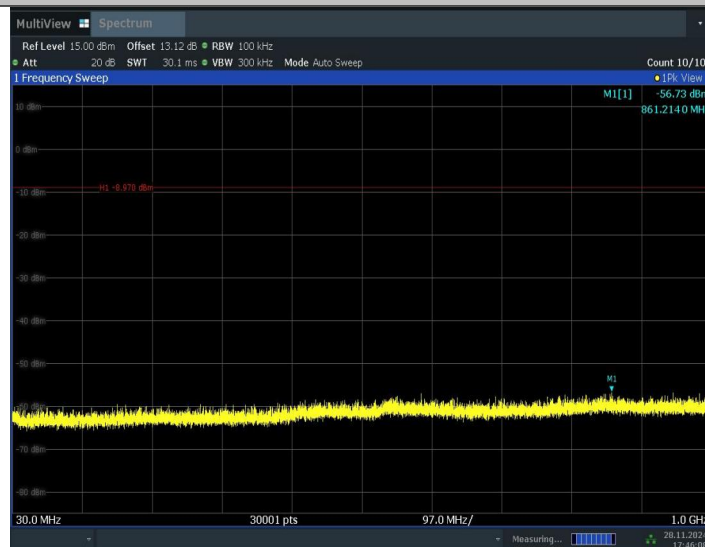
Test graphs as below:

11B_2412_0~Reference



17:45:58 28.11.2024

11B_2412_30~1000



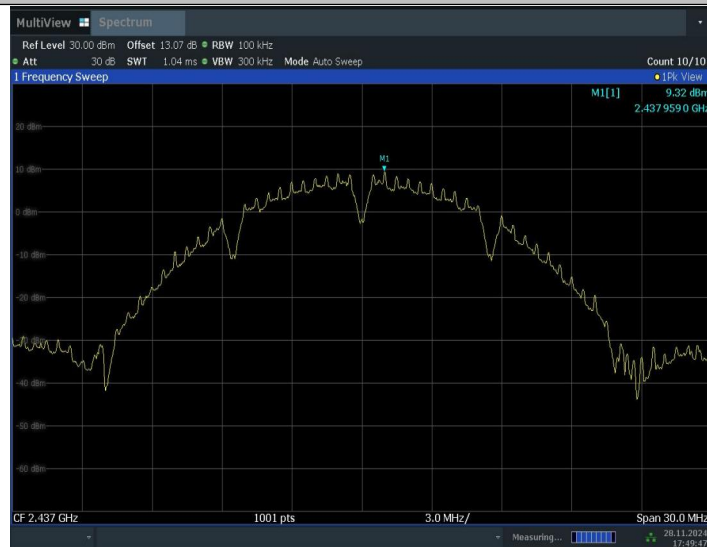
17:46:09 28.11.2024

11B_2412_1000~26500



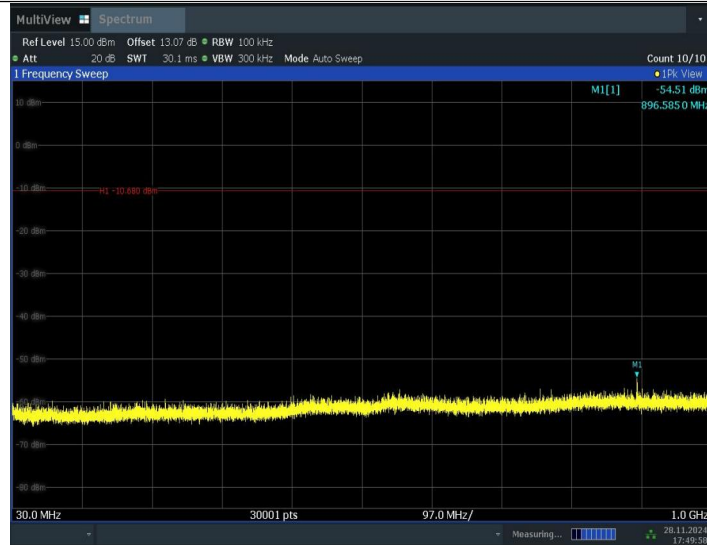
17:46:45 28.11.2024

11B_2437_0~Reference



17:49:47 28.11.2024

11B_2437_30~1000



17:49:58 28.11.2024

11B_2437_1000~26500

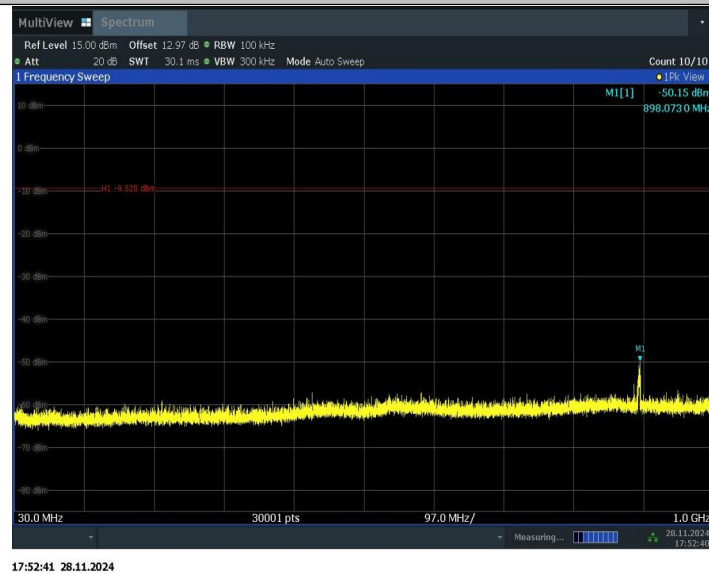


17:50:34 28.11.2024

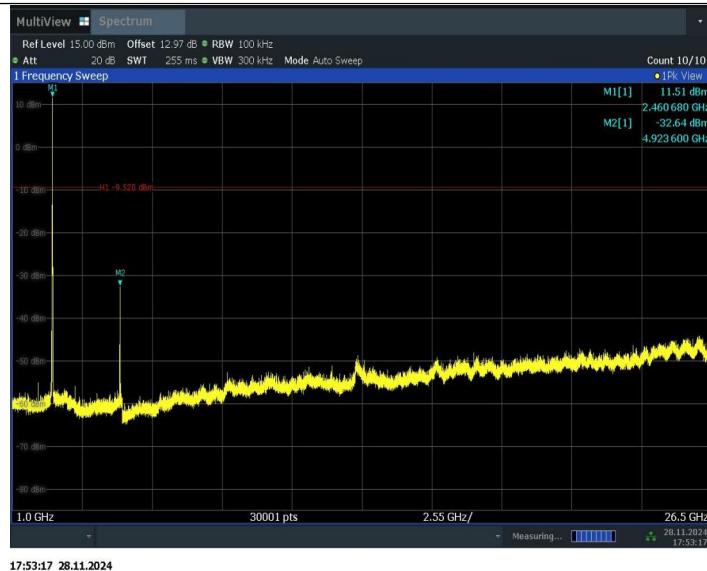
11B_2462_0~Reference



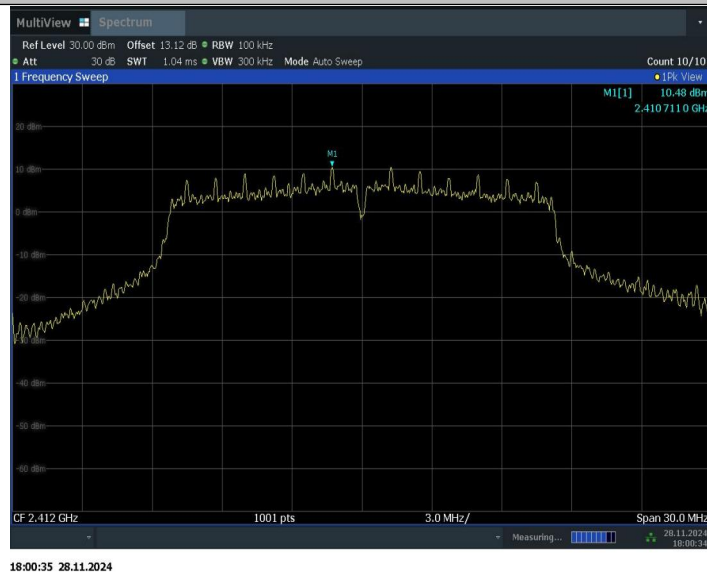
11B_2462_30~1000



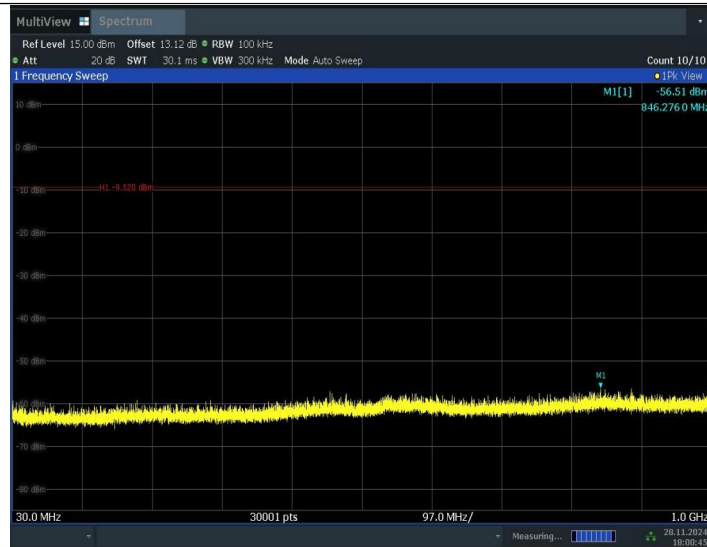
11B_2462_1000~26500



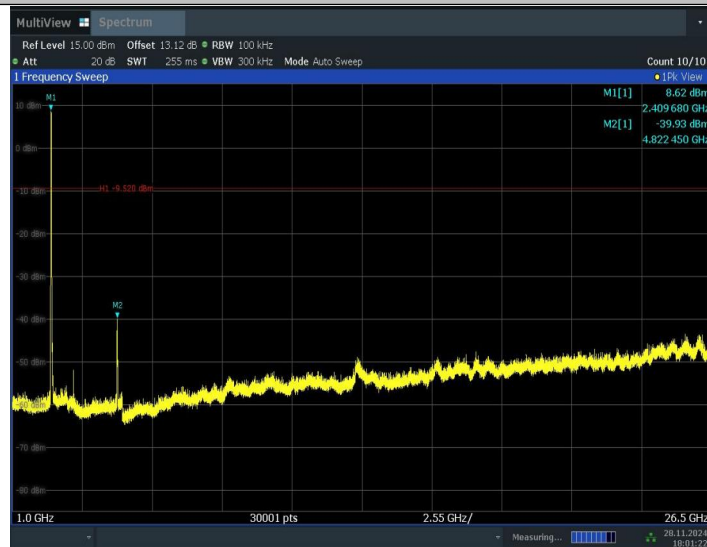
11G_2412_0~Reference



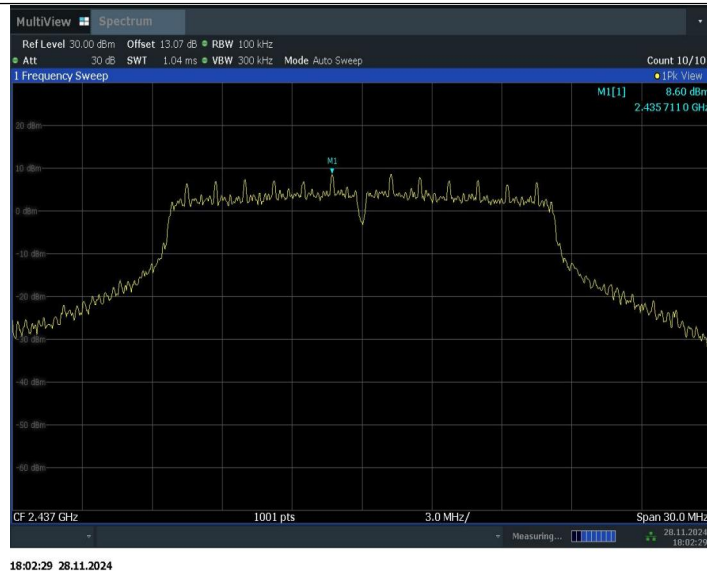
11G_2412_30~1000



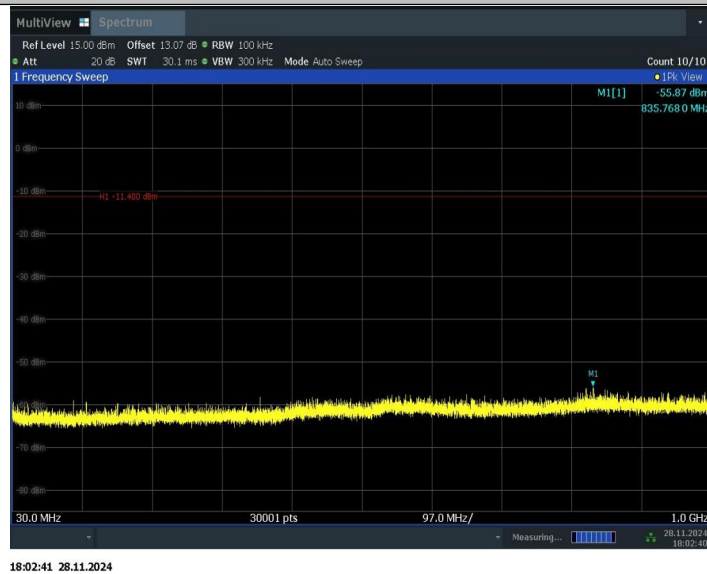
11G_2412_1000~26500



11G_2437_0~Reference



11G_2437_30~1000

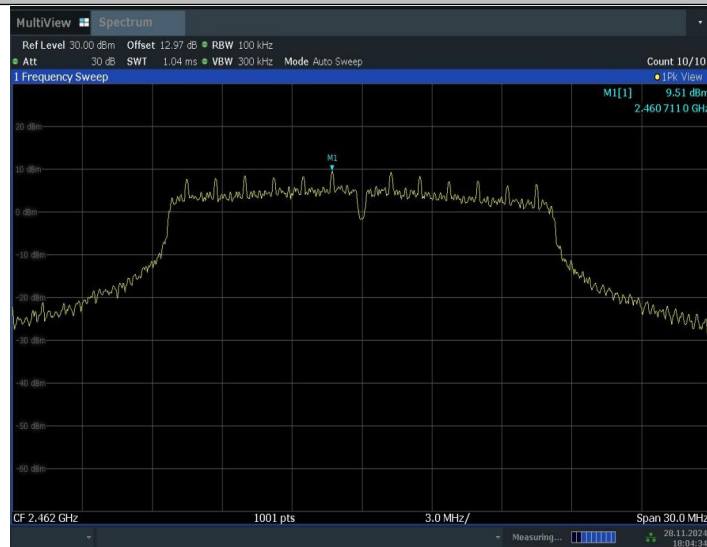


11G_2437_1000~26500



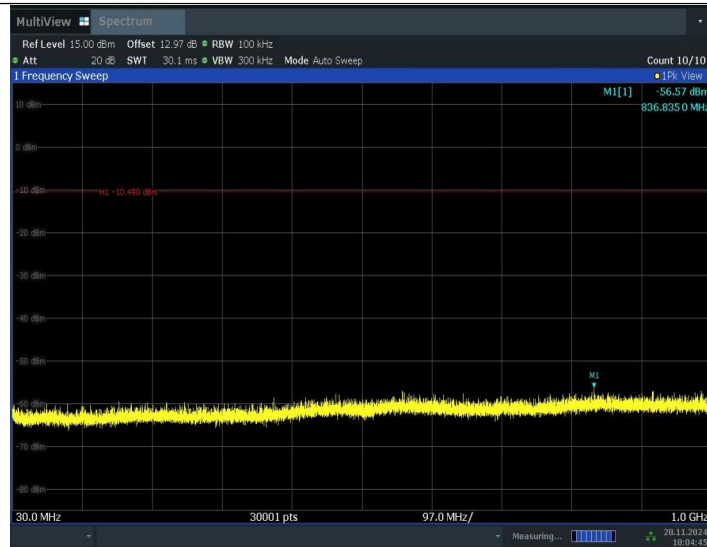
18:03:17 28.11.2024

11G_2462_0~Reference

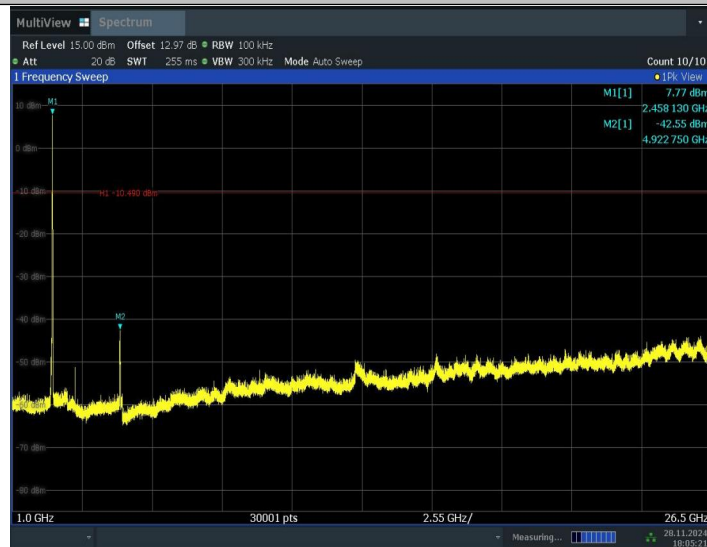


18:04:34 28.11.2024

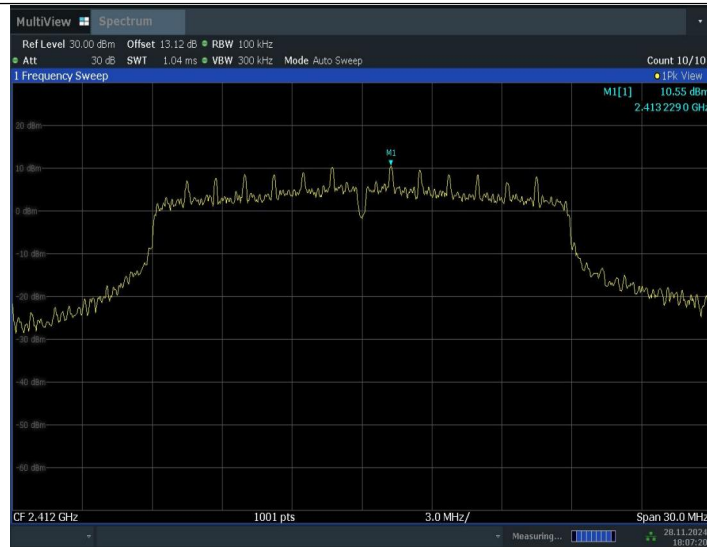
11G_2462_30~1000



11G_2462_1000~26500

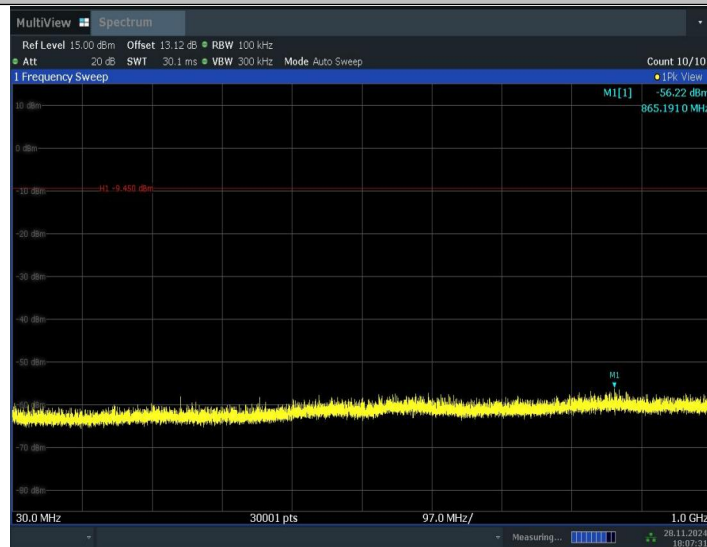


11N20SISO_2412_0~Reference



18:07:21 28.11.2024

11N20SISO_2412_30~1000

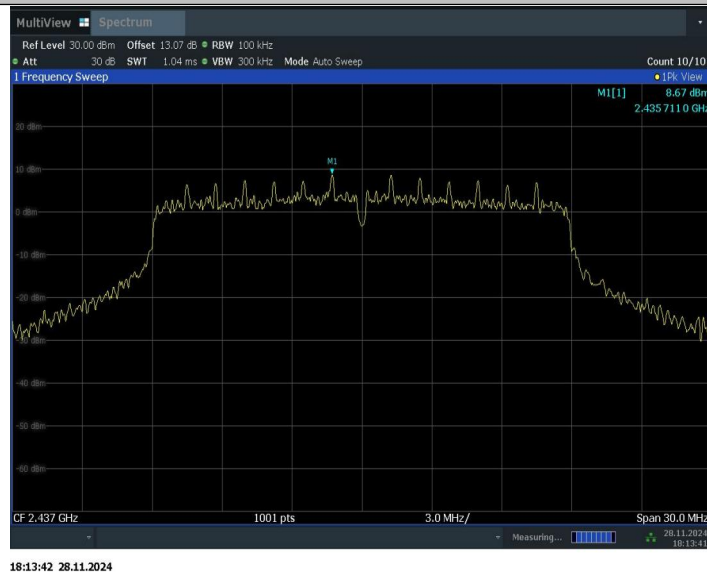


18:07:32 28.11.2024

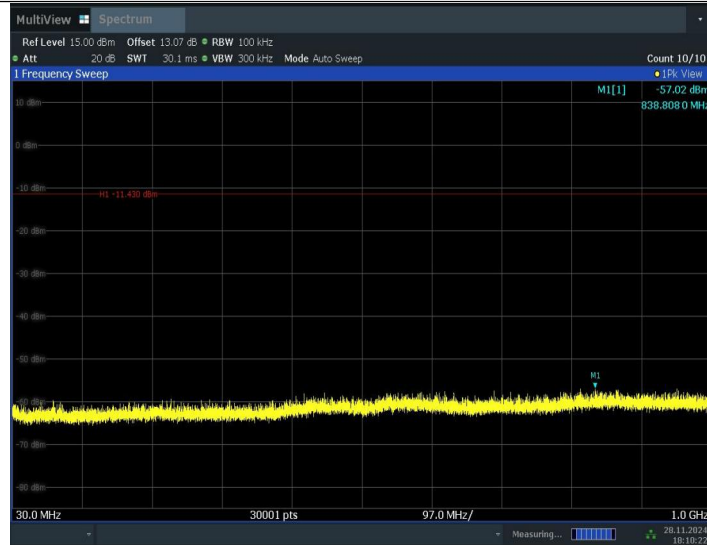
11N20SISO_2412_1000~26500



11N20SISO_2437_0~Reference



11N20SISO_2437_30~1000



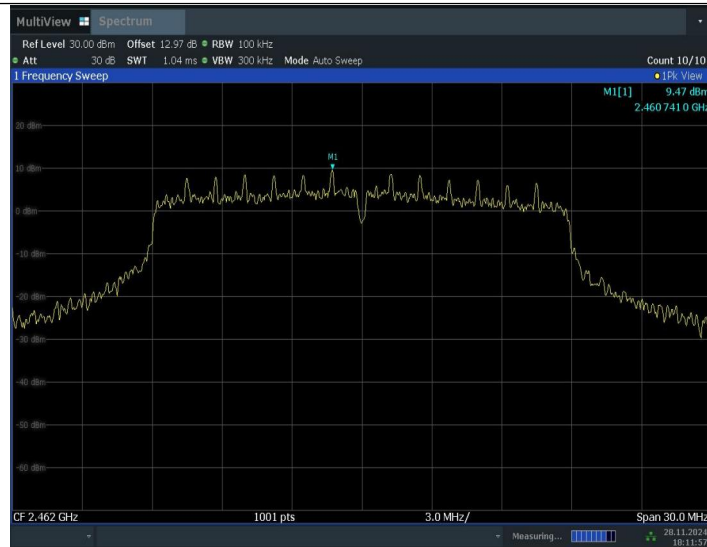
18:10:22 28.11.2024

11N20SISO_2437_1000~26500



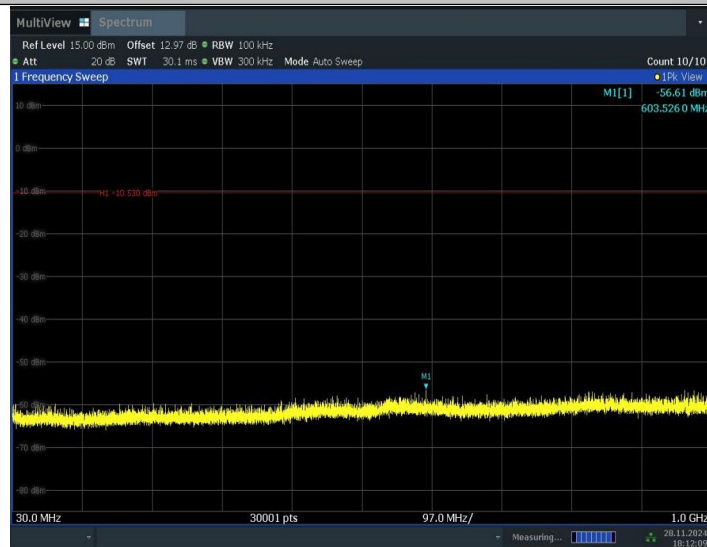
18:10:59 28.11.2024

11N20SISO_2462_0~Reference



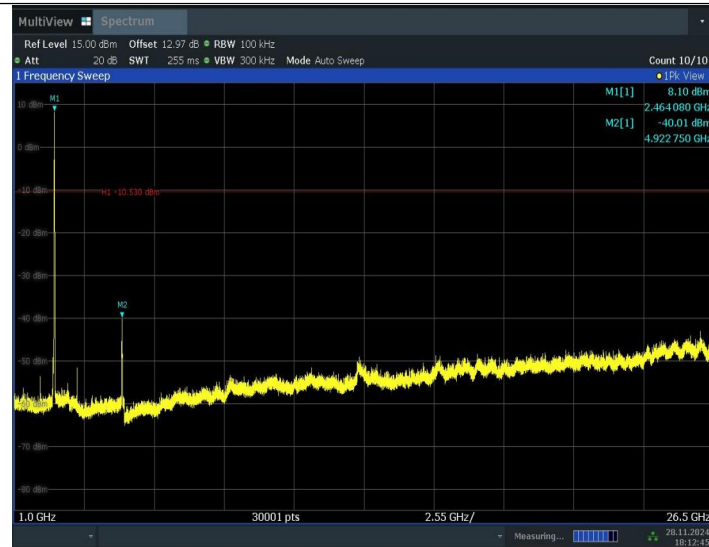
18:11:58 28.11.2024

11N20SISO_2462_30~1000



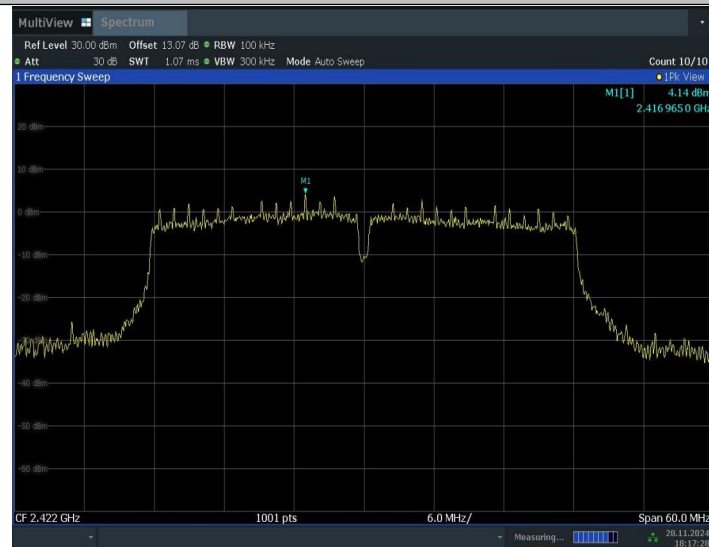
18:12:09 28.11.2024

11N20SISO_2462_1000~26500



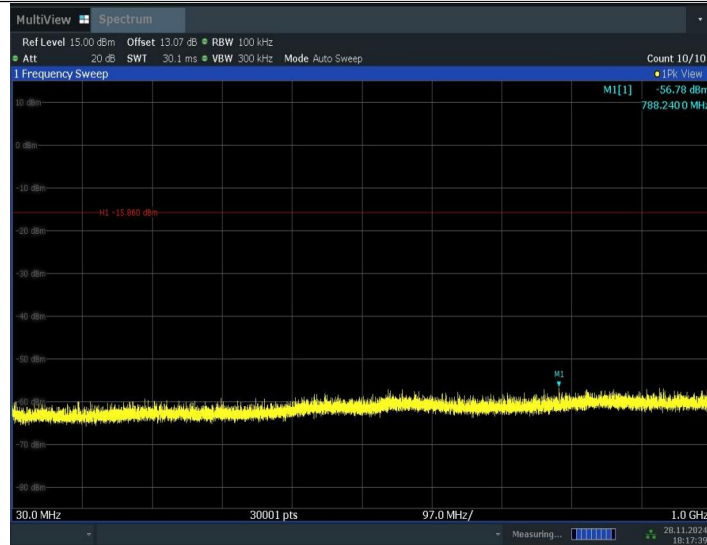
18:12:45 28.11.2024

11N40SISO_2422_0~Reference

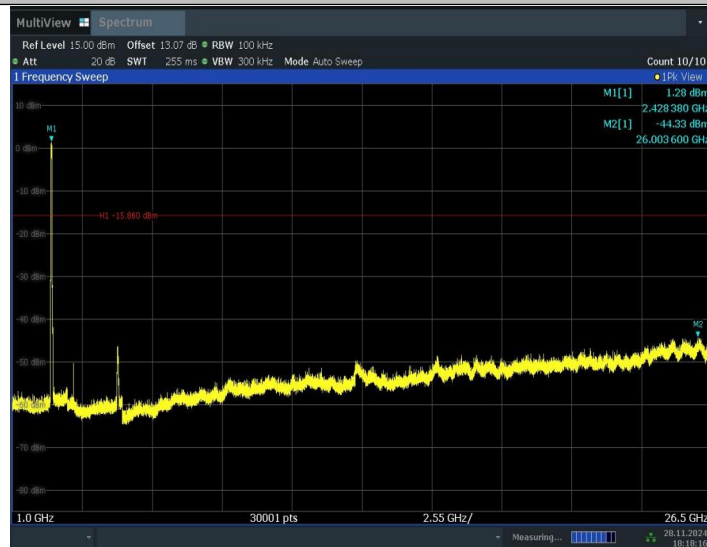


18:17:29 28.11.2024

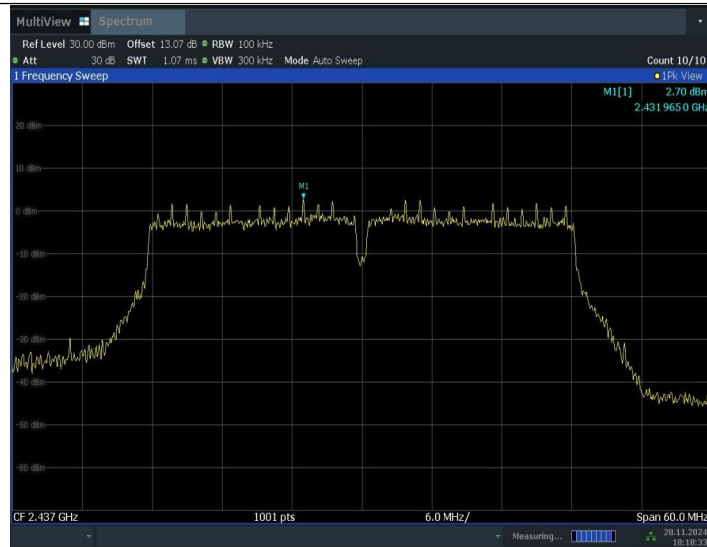
11N40SISO_2422_30~1000



11N40SISO_2422_1000~26500

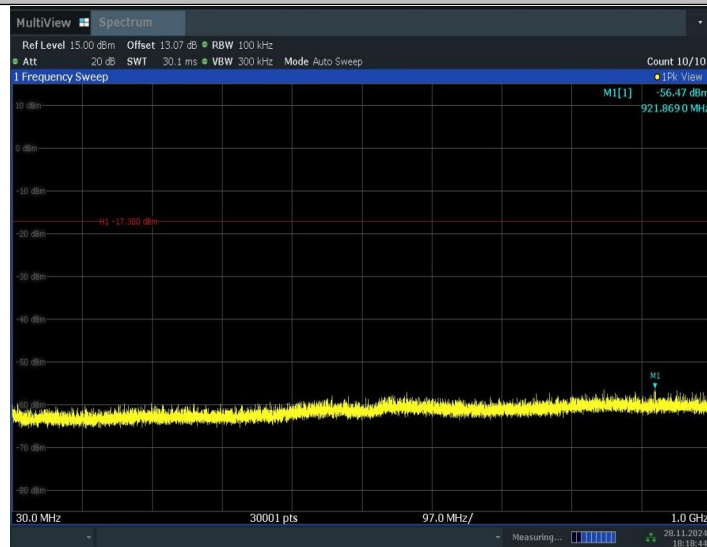


11N40SISO_2437_0~Reference



18:18:34 28.11.2024

11N40SISO_2437_30~1000



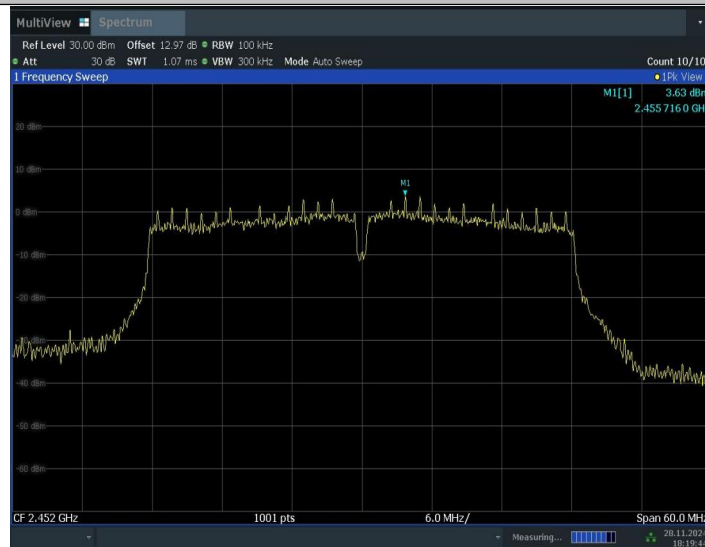
18:18:45 28.11.2024

11N40SISO_2437_1000~26500



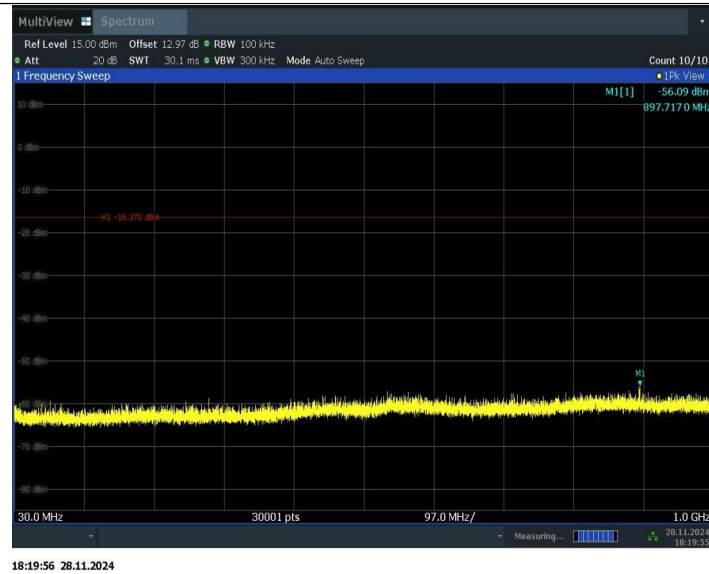
18:19:21 28.11.2024

11N40SISO_2452_0~Reference



18:19:45 28.11.2024

11N40SISO_2452_30~1000



11N40SISO_2452_1000~26500



Conclusion: Pass

A.6.2 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-2013-clause 6.4 & 6.5 & 6.6

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

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

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Frequency (MHz)	Field strength(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

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Average power measurement procedures

According the clause 6.5, 6.6 and 11.12.2.5.1.

Trace averaging with continuous EUT transmission at full power

If the EUT can be configured or modified to transmit continuously ($D \geq 98\%$), then the average emission

levels shall be measured using the following method (with EUT transmitting continuously):

- RBW = 1 MHz (unless otherwise specified).
- $VBW \geq [3 \times RBW]$.
- Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \leq (RBW / 2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- Averaging type = power (i.e., rms):
 - As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - Some instruments require linear display mode to use linear voltage averaging. Log or dB

averaging shall not be used.

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces.

The duty cycle is 98%.

EUT ID: UT39a

Measurement Results:

802.11b mode

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.A.6.2.1	P
	11	Fig.A.6.2.2	P

802.11g mode

Mode	Channel	Test Results	Conclusion
802.11g	1	Fig.A.6.2.3	P
	11	Fig.A.6.2.4	P

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.6.2.5	P
	11	Fig.A.6.2.6	P

802.11n-HT40 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT40)	3	Fig.A.6.2.7	P
	9	Fig.A.6.2.8	P

Conclusion: Pass

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result= $P_{Mea}+A_{Rpl}= P_{Mea}+Cable\ Loss+Antenna\ Factor$

Peak
802.11b
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2387.000	51.97	-27.44	31.95	47.46	74.00	22.03	H
2388.800	51.42	-27.42	31.96	46.88	74.00	22.58	H
4823.500	53.19	-33.09	34.30	51.98	74.00	20.81	H
7236.000	43.42	-30.81	35.60	38.63	74.00	30.58	V
9648.000	45.76	-30.27	36.80	39.24	74.00	28.24	V
12060.000	44.29	-29.69	38.72	35.26	74.00	29.71	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2414.000	53.01	-27.55	32.06	48.51	74.00	20.99	H
2461.200	51.05	-27.55	32.20	46.41	74.00	22.95	H
4873.500	53.80	-33.33	34.25	52.88	74.00	20.20	H
7311.000	43.88	-29.96	35.78	38.06	74.00	30.12	V
9748.000	45.21	-29.51	37.09	37.63	74.00	28.79	V
12185.000	45.85	-28.83	38.71	35.97	74.00	28.15	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2485.950	52.26	-27.10	32.20	47.16	74.00	21.74	H
2488.700	52.25	-27.02	32.20	47.07	74.00	21.75	H
4924.000	51.66	-33.02	34.15	50.53	74.00	22.34	H
7386.000	43.22	-30.60	35.63	38.19	74.00	30.78	H
9848.000	45.32	-28.88	37.10	37.11	74.00	28.68	H
12310.000	44.19	-28.45	38.79	33.85	74.00	29.81	H

802.11g

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4826.000	60.67	-37.10	32.60	65.17	74.00	13.33	H
17930.000	56.27	-25.40	42.30	39.37	74.00	17.73	V
14141.500	51.36	-29.40	40.50	40.26	74.00	22.64	H
12719.500	49.76	-30.40	39.40	40.76	74.00	24.24	H
9228.000	47.73	-33.90	38.00	43.63	74.00	26.27	V
2389.900	63.56	-19.20	27.50	55.26	74.00	10.44	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4874.500	57.91	-36.90	32.80	62.01	74.00	16.09	H
17882.500	56.97	-25.40	42.30	40.07	74.00	17.03	V
14128.000	51.79	-29.40	40.50	40.69	74.00	22.21	V
12256.000	48.88	-30.90	38.70	41.08	74.00	25.12	H
8825.000	47.04	-33.80	37.70	43.14	74.00	26.96	H
7201.500	46.11	-34.50	37.40	43.21	74.00	27.89	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4925.000	59.83	-36.90	32.90	63.83	74.00	14.17	H
17942.500	56.43	-25.40	42.30	39.53	74.00	17.57	V
13723.000	52.13	-29.10	40.70	40.53	74.00	21.87	V
12741.500	49.55	-30.40	39.40	40.55	74.00	24.45	H
9575.000	47.50	-33.20	37.90	42.80	74.00	26.50	H
2485.500	58.88	-19.00	27.90	49.98	74.00	15.12	H

802.11n-HT20
Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4826.000	61.14	-37.10	32.60	65.64	74.00	12.86	H
17895.500	55.84	-25.40	42.30	38.94	74.00	18.16	V
13834.000	52.41	-29.10	40.90	40.61	74.00	21.59	V
12793.500	49.29	-30.40	39.60	40.09	74.00	24.71	H
9718.000	47.03	-33.10	37.90	42.23	74.00	26.97	H
2389.800	64.84	-19.20	27.50	56.54	74.00	9.16	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4870.000	59.21	-36.90	32.80	63.31	74.00	14.79	H
17963.500	56.06	-25.40	42.30	39.16	74.00	17.94	V
14155.000	51.74	-29.40	40.50	40.64	74.00	22.26	H
12428.500	48.96	-30.10	38.80	40.26	74.00	25.04	H
8598.000	46.59	-33.60	37.60	42.59	74.00	27.41	H
7180.000	45.66	-34.50	37.40	42.76	74.00	28.34	H

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4926.500	61.91	-36.90	32.90	65.91	74.00	12.09	H
17900.000	55.94	-25.40	42.30	39.04	74.00	18.06	V
14145.500	51.72	-29.40	40.50	40.62	74.00	22.28	V
12716.000	48.93	-30.40	39.40	39.93	74.00	25.07	H
9926.000	47.04	-33.20	38.30	41.94	74.00	26.96	V
2485.100	58.77	-19.00	27.90	49.87	74.00	15.23	H

802.11n-HT40

Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4854.000	59.77	-36.90	32.80	63.87	74.00	14.23	H
17930.500	56.07	-25.40	42.30	39.17	74.00	17.93	V
13754.500	51.57	-29.10	40.70	39.97	74.00	22.43	H
12970.500	49.80	-29.80	39.80	39.80	74.00	24.20	H
9670.000	47.25	-33.00	37.80	42.45	74.00	26.75	H
2389.700	61.86	-19.20	27.50	53.56	74.00	12.14	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4866.000	59.43	-36.90	32.80	63.53	74.00	14.57	H
17919.500	56.75	-25.40	42.30	39.85	74.00	17.25	V
14178.500	51.55	-29.40	40.40	40.55	74.00	22.45	H
12795.000	49.65	-30.40	39.60	40.45	74.00	24.35	V
8527.500	47.28	-33.60	37.50	43.38	74.00	26.72	V
7541.500	45.97	-34.60	37.40	43.17	74.00	28.03	H

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4899.500	59.83	-36.90	32.80	63.93	74.00	14.17	H
17901.000	56.20	-25.40	42.30	39.30	74.00	17.80	H
13770.000	51.88	-29.10	40.90	40.08	74.00	22.12	V
12769.000	49.22	-30.40	39.40	40.22	74.00	24.78	H
9090.000	47.26	-33.50	37.70	43.06	74.00	26.74	V
2485.400	58.60	-19.00	27.90	49.70	74.00	15.40	H

Average

802.11b

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2387.550	39.77	-27.43	31.95	35.25	54.00	14.23	H
2389.350	40.00	-27.41	31.96	35.45	54.00	14.00	H
4824.000	50.62	-33.08	34.30	49.41	54.00	3.38	H
7236.000	33.48	-30.81	35.60	28.69	54.00	20.52	H
9648.000	35.77	-30.27	36.80	29.25	54.00	18.23	H
12060.000	35.93	-29.69	38.72	26.90	54.00	18.07	V

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2412.800	40.35	-27.55	32.05	35.85	54.00	13.65	H
2461.000	41.00	-27.56	32.20	36.35	54.00	13.00	H
4874.000	52.07	-33.31	34.25	51.12	54.00	1.93	H
7311.000	34.20	-29.96	35.78	28.38	54.00	19.80	V
9748.000	35.54	-29.51	37.09	27.95	54.00	18.46	H
12185.000	35.88	-28.83	38.71	26.00	54.00	18.12	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
2483.550	40.79	-27.16	32.20	35.75	54.00	13.21	H
2484.150	40.68	-27.15	32.20	35.62	54.00	13.32	H
4924.000	48.95	-33.02	34.15	47.82	54.00	5.05	H
7386.000	33.52	-30.60	35.63	28.50	54.00	20.48	H
9848.000	35.45	-28.88	37.10	27.23	54.00	18.55	V
12310.000	35.51	-28.45	38.79	25.17	54.00	18.49	H

802.11g

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4826.000	53.04	-37.10	32.60	57.54	54.00	0.96	H
17914.500	46.89	-25.40	42.30	29.99	54.00	7.11	V
14120.000	42.04	-29.40	40.50	30.94	54.00	11.96	V
12974.000	39.59	-29.80	39.80	29.59	54.00	14.41	V
9597.000	38.03	-33.20	37.90	33.33	54.00	15.97	V
2390.000	50.72	-19.20	27.50	42.42	54.00	3.28	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4871.500	49.54	-36.90	32.80	53.64	54.00	4.46	H
17926.500	46.34	-25.40	42.30	29.44	54.00	7.66	H
14071.000	42.31	-28.70	40.50	30.51	54.00	11.69	H
12979.500	39.32	-29.80	39.80	29.32	54.00	14.68	V
9575.000	37.26	-33.20	37.90	32.56	54.00	16.74	V
7509.500	36.83	-34.60	37.50	33.93	54.00	17.17	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4922.000	51.40	-36.90	32.90	55.40	54.00	2.60	H
17990.000	46.82	-25.40	42.30	29.92	54.00	7.18	V
14081.500	42.34	-28.70	40.50	30.54	54.00	11.66	H
12756.000	39.76	-30.40	39.40	30.76	54.00	14.24	H
8516.500	37.49	-33.60	37.50	33.59	54.00	16.51	H
2485.200	46.08	-19.00	27.90	37.18	54.00	7.92	H

802.11n-HT20

Ch1

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4821.000	51.44	-37.10	32.60	55.94	54.00	2.56	H
17959.500	46.73	-25.40	42.30	29.83	54.00	7.27	V
14099.500	42.03	-28.70	40.50	30.23	54.00	11.97	V
12825.000	39.70	-30.60	39.60	30.70	54.00	14.30	V
9619.000	37.72	-33.00	37.90	32.82	54.00	16.28	V
2390.000	51.82	-19.20	27.50	43.52	54.00	2.18	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4875.500	49.10	-36.90	32.80	53.20	54.00	4.90	H
17936.000	46.46	-25.40	42.30	29.56	54.00	7.54	V
14107.000	41.84	-28.70	40.50	30.04	54.00	12.16	V
12739.500	39.85	-30.40	39.40	30.85	54.00	14.15	H
9610.000	37.89	-33.00	37.90	32.99	54.00	16.11	H
7196.500	36.80	-34.50	37.40	33.90	54.00	17.20	V

Ch11

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4926.500	51.33	-36.90	32.90	55.33	54.00	2.67	H
17932.000	46.80	-25.40	42.30	29.90	54.00	7.20	V
14070.500	42.15	-28.70	40.50	30.35	54.00	11.85	H
12801.000	39.42	-30.40	39.60	30.22	54.00	14.58	V
8930.500	37.64	-33.60	37.70	33.54	54.00	16.36	H
2485.000	47.17	-19.00	27.90	38.27	54.00	6.83	H

802.11n-HT40

Ch3

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4843.500	52.92	-37.10	32.60	57.42	54.00	1.08	H
17945.500	46.78	-25.40	42.30	29.88	54.00	7.22	H
13772.000	42.24	-29.10	40.90	30.44	54.00	11.76	H
12389.500	39.51	-30.10	38.80	30.81	54.00	14.49	H
9566.000	37.70	-33.20	37.90	33.00	54.00	16.30	H
2389.600	52.70	-19.20	27.50	44.40	54.00	1.30	H

Ch6

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4866.000	52.04	-36.90	32.80	56.14	54.00	1.96	H
17920.500	47.06	-25.40	42.30	30.16	54.00	6.94	V
13732.500	42.10	-29.10	40.70	30.50	54.00	11.90	V
12771.500	39.71	-30.40	39.40	30.71	54.00	14.29	H
9564.000	37.64	-33.20	37.90	32.94	54.00	16.36	H
7230.000	36.56	-34.50	37.40	33.66	54.00	17.44	V

Ch9

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
4909.500	52.18	-36.90	32.90	56.18	54.00	1.82	H
17928.500	46.78	-25.40	42.30	29.88	54.00	7.22	V
13794.000	42.13	-29.10	40.90	30.33	54.00	11.87	H
12973.500	39.56	-29.80	39.80	29.56	54.00	14.44	H
9938.000	37.53	-33.20	38.30	32.43	54.00	16.47	V
2485.000	47.61	-19.00	27.90	38.71	54.00	6.39	H

Test graphs as below:

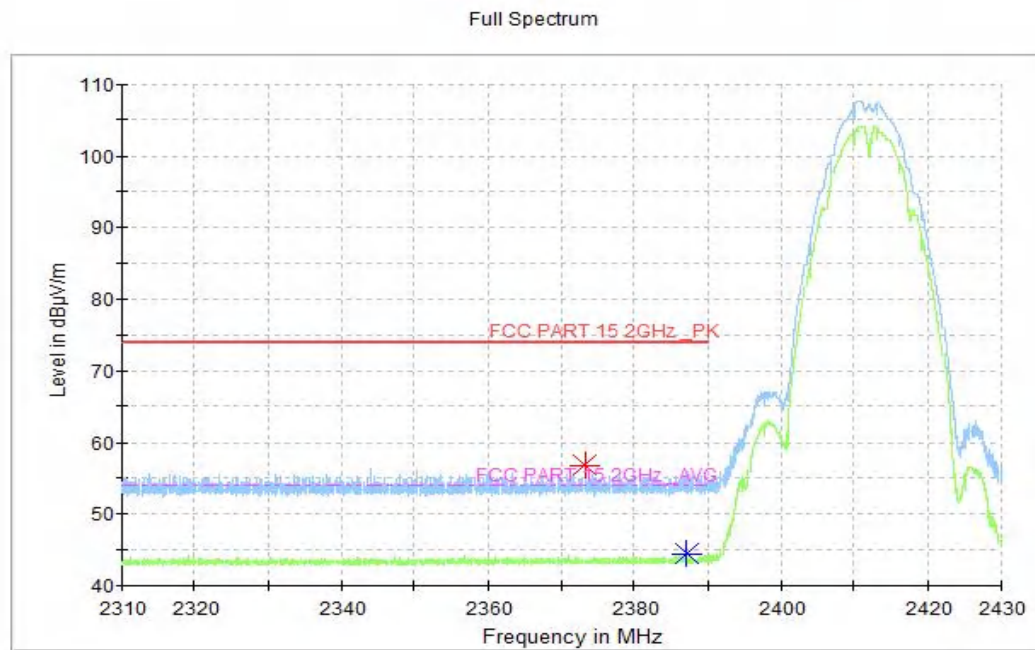


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.31 GHz – 2.43GHz

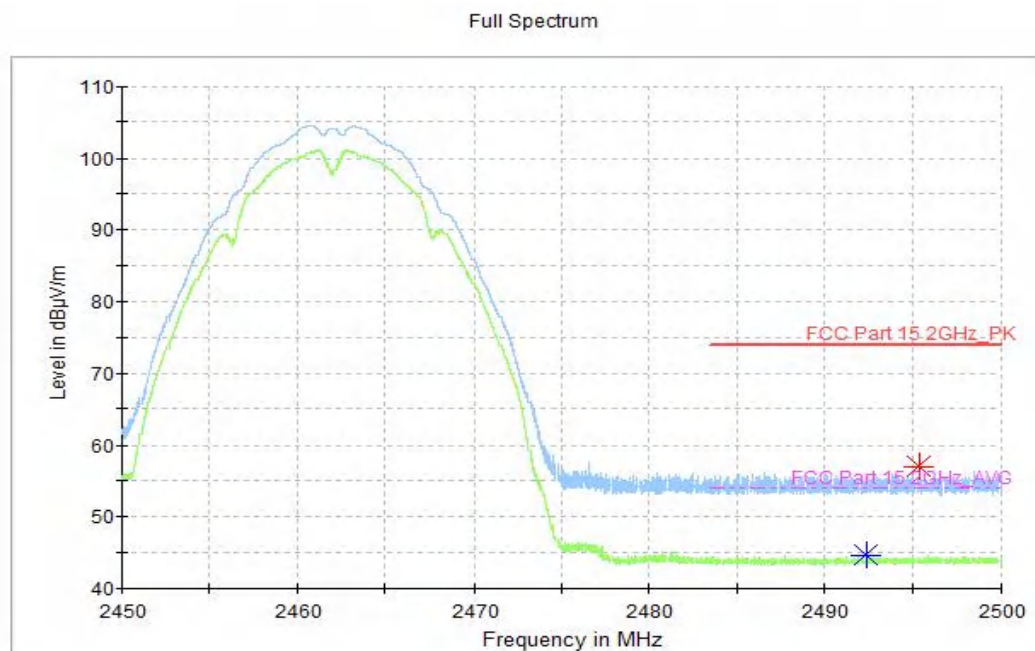


Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

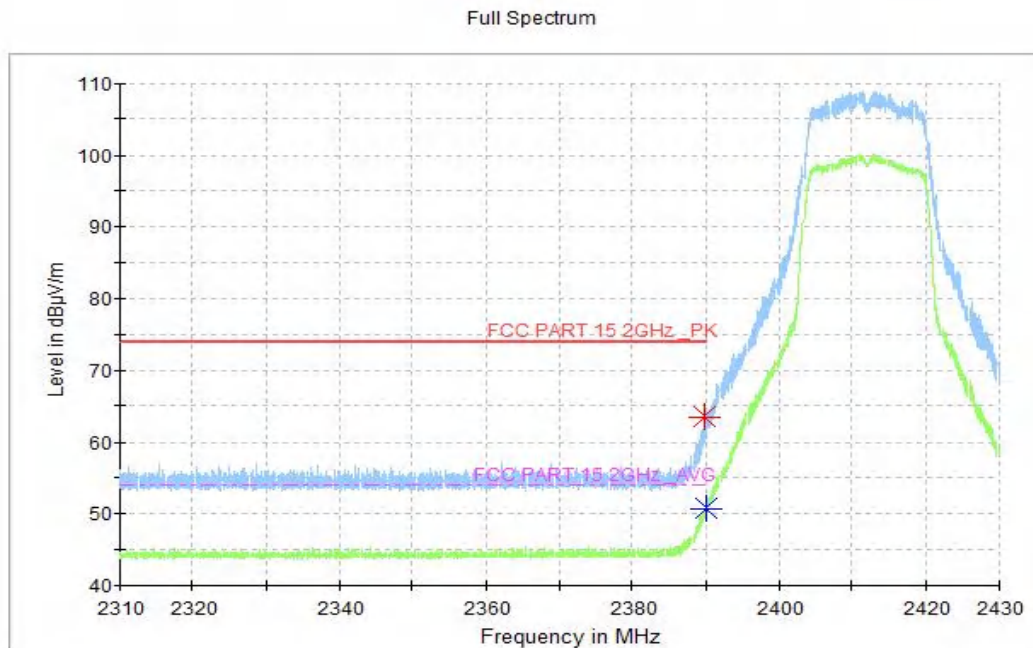


Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.31 GHz - 2.43GHz

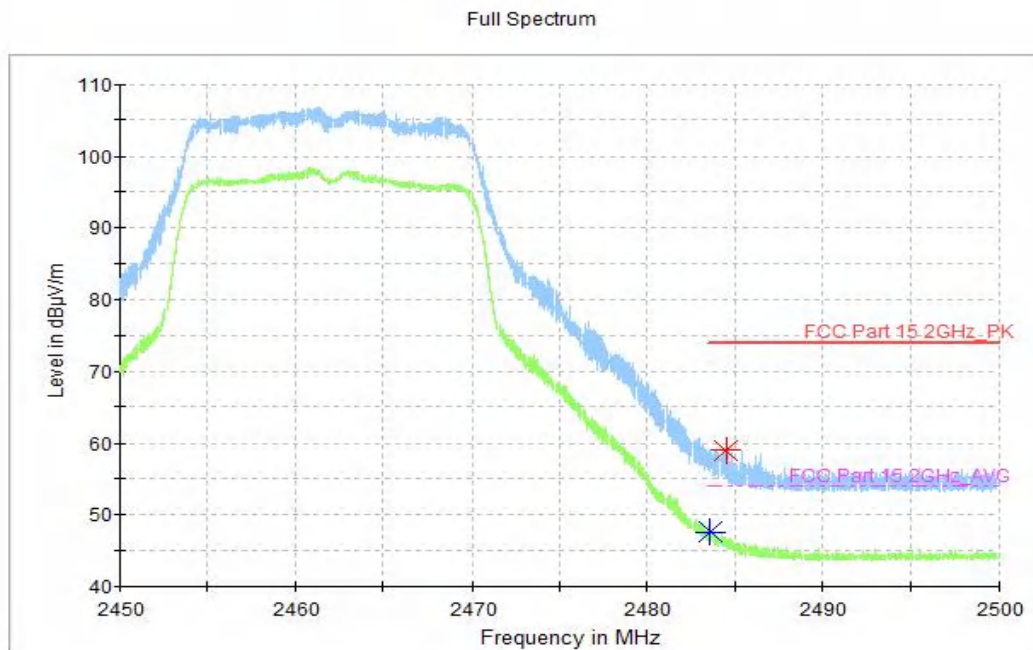
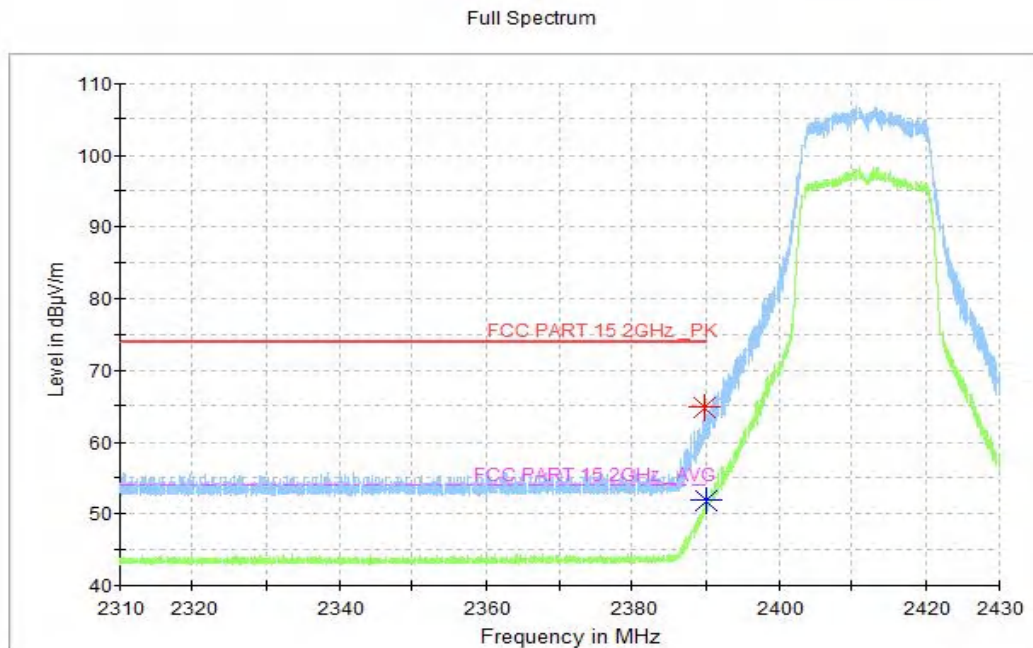
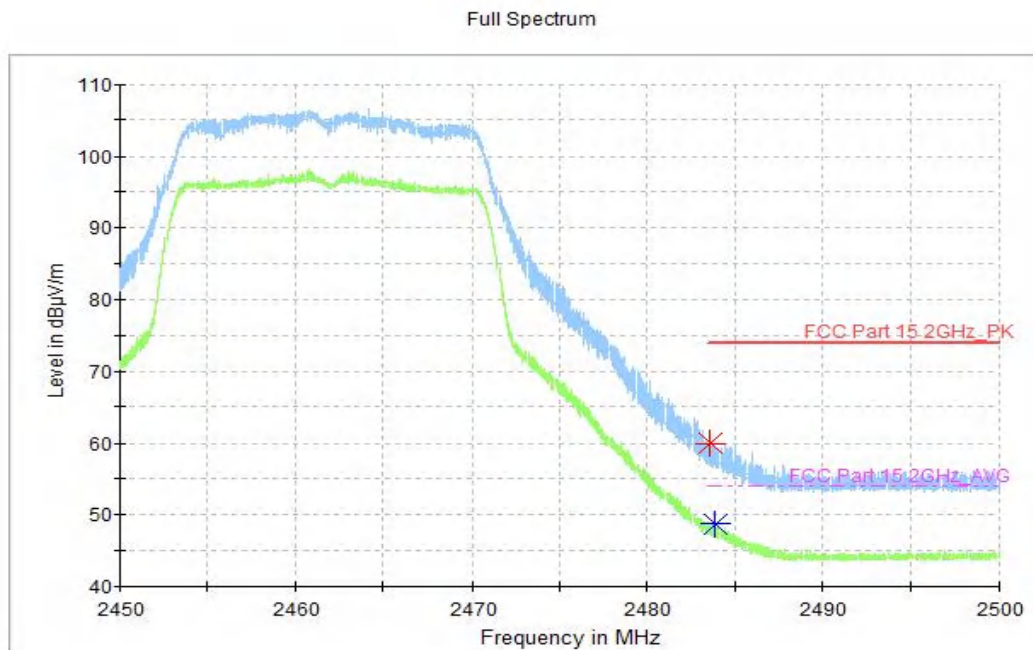


Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz



**Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1,
2.31 GHz - 2.43GHz**



**Fig.A.6.2.6 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11,
2.45 GHz - 2.50GHz**

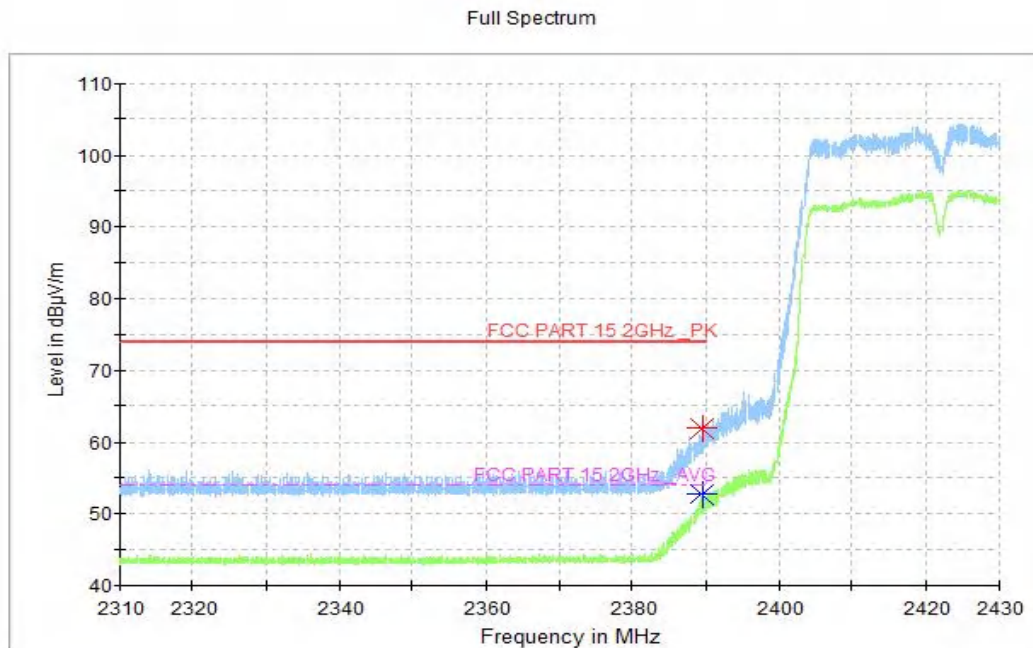


Fig.A.6.2.7 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch3, 2.31 GHz - 2.43GHz

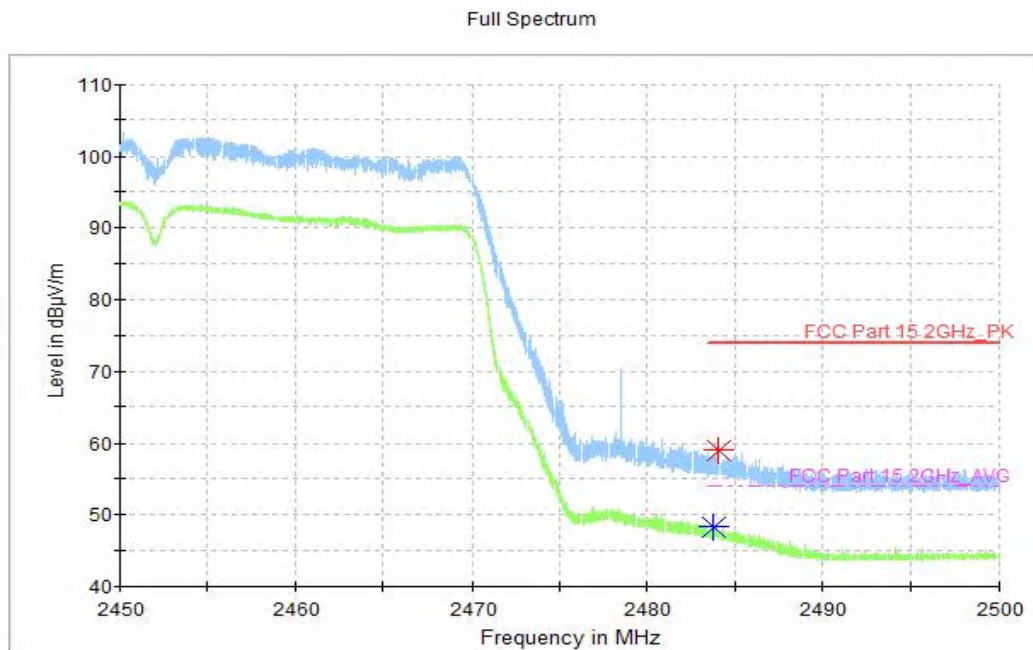


Fig.A.6.2.8 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT40, ch9, 2.45 GHz - 2.50GHz

A.7. AC Power-line Conducted Emission

Method of Measurement: See ANSI C63.10-2013-clause 6.2

- 1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
- 2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
- 3 The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
- 4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.
- 5 If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.³⁶ Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	66 to 56	Fig.A.7.1	Fig.A.7.2	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11b	Idle	
0.15 to 0.5	56 to 46	Fig.A.7.1	Fig.A.7.2	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: Pass
Test graphs as below:

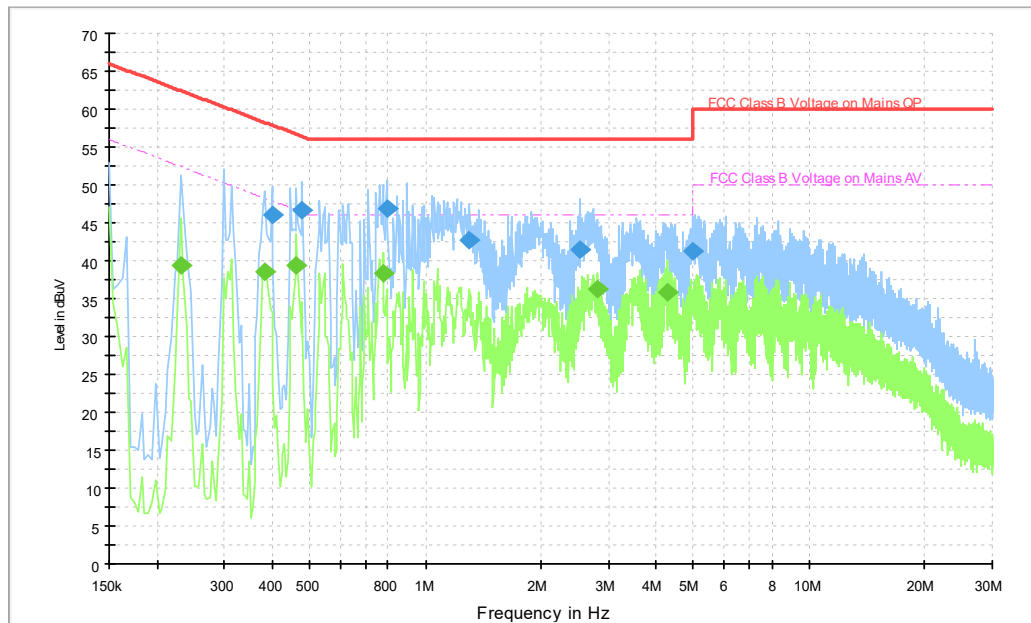


Fig.A.7.1 AC Powerline Conducted Emission-802.11b

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.398000	46.1	2000.	9.000	On	L1	20.0	11.8	57.9
0.478000	46.7	2000.	9.000	On	L1	20.0	9.7	56.4
0.794000	46.9	2000.	9.000	On	L1	19.9	9.1	56.0
1.306000	42.8	2000.	9.000	On	N	19.7	13.2	56.0
2.534000	41.5	2000.	9.000	On	L1	19.8	14.5	56.0
4.990000	41.2	2000.	9.000	On	N	19.6	14.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.230000	39.4	2000.	9.000	On	L1	19.9	13.1	52.4
0.382000	38.6	2000.	9.000	On	L1	19.9	9.6	48.2
0.462000	39.3	2000.	9.000	On	L1	20.0	7.3	46.7
0.778000	38.4	2000.	9.000	On	L1	19.9	7.6	46.0
2.802000	36.3	2000.	9.000	On	N	19.6	9.7	46.0
4.286000	35.8	2000.	9.000	On	N	19.6	10.2	46.0

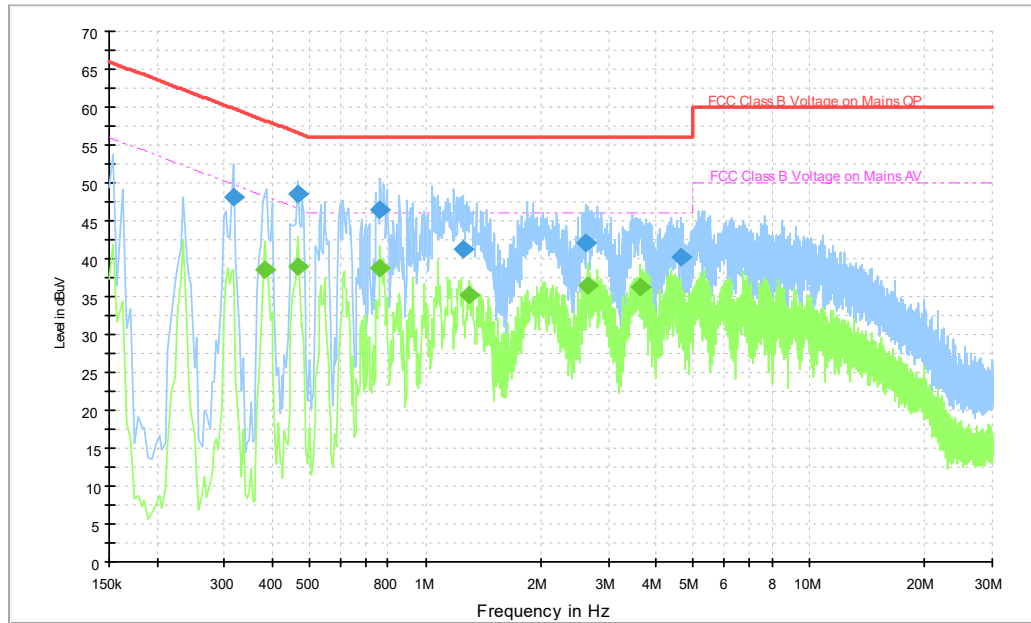


Fig.A.7.2 AC Powerline Conducted Emission-Idle

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.318000	48.1	2000.	9.000	On	L1	19.9	11.6	59.8
0.466000	48.5	2000.	9.000	On	L1	20.0	8.1	56.6
0.762000	46.4	2000.	9.000	On	N	19.8	9.6	56.0
1.258000	41.3	2000.	9.000	On	L1	19.9	14.7	56.0
2.610000	42.2	2000.	9.000	On	L1	19.8	13.8	56.0
4.614000	40.2	2000.	9.000	On	N	19.6	15.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.382000	38.6	2000.	9.000	On	L1	19.9	9.7	48.2
0.466000	39.0	2000.	9.000	On	L1	20.0	7.5	46.6
0.762000	38.8	2000.	9.000	On	L1	19.9	7.2	46.0
1.306000	35.2	2000.	9.000	On	N	19.7	10.9	46.0
2.654000	36.4	2000.	9.000	On	L1	19.8	9.6	46.0
3.638000	36.3	2000.	9.000	On	N	19.6	9.7	46.0

A.8. Antenna Requirement

The antenna of the device is permanently attached. There are no provisions for connection to an external antenna.

The unit complies with the requirement of FCC Part 15.203.

ANNEX B: EUT parameters

Disclaimer: The antenna gain and worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate



*****END OF REPORT*****