FCC PART 15C
TEST REPORT
No.23T04Z70553-03

for

SAMSUNG Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

SM-A057M/DS，SM-A057M

With

FCC ID: ZCASMA057M

Hardware Version: REV1.0

Software Version: A057M.001

Issued Date: 2023-11-24

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

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CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
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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

Conducted testing Location 1:CTTL(Huayuan North Road)

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

Radiated testing Location 2:CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, 100191, P. R. China

1.3. Testing Environment

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

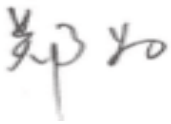
1.4. Project date

Testing Start Date:	2023-07-05
Testing End Date:	2023-11-24

1.5. Signature

Dong Jiaxuan

(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:	SAMSUNG Electronics Co., Ltd.
Address:	19 Chapin Rd.,Building D Pine Brook, NJ 07058
City:	New Jersey
Postal Code:	/
Country:	United States
Telephone:	+1-201-937-4203
Fax:	/

2.2. Manufacturer Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
City:	Suwon
Postal Code:	/
Country:	Korea
Telephone:	+82-10-2722-4159
Fax:	/

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

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model name	SM-A057M/DS，SM-A057M
FCC ID	ZCASMA057M
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	24.61dBm
Power Supply	3.85V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
UT01a	2370553UT01a	REV1.0	A057M.001
UT04a	2370553UT04a	REV1.0	A057M.001

*EUT ID: is used to identify the test sample in the lab internally.
UT04a is used for Conduction test, UT01a is used for Radiation test.

3.3. Internal Identification of AE

AE ID*	Name	Model	Manufacturer
AE1	Battery	SLC-51	Ningde Amperex Technology Limited
AE2	Adapter1	EP-TA800	SoluM Co.,Ltd.
AE3-1	Date Cable1 C-C	EP-DN980BWE	Guangxi Broad Telecommunication Co.,Ltd.
AE3-2	Date Cable2 C-C	EP-DN980BWE	CRESYN HANOI Co., Ltd
AE5	Headset	ESH61ASFWE	Shenzhen Grandsound Electronics Co.,Ltd

*AE ID: is used to identify the test sample in the lab internally.
*AE2 and A5 are not the AE for EUT, provided by the client for relevant tests.

3.4. General Description

The Equipment under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN 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: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	2021
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division 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. Test Results

5.1. 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
Transmitter Spurious Emission - Radiated	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

5.2. Statements

The test cases as listed in section 5.1 of this report for the EUT specified in section 3 was performed by CTTL and according to the standards or reference documents listed in section 4.2

The EUT met all requirements of the standards or reference documents, and only the WLAN function was tested in this report.

5.3. Test Conditions

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage

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

Temperature	T nom	26°C
Voltage	V nom	3.85V
Humidity	H nom	20-75%

6. 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	2024-07-04
2	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103144	R&S	1 year	2023-10-25
2	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2023-12-22
3	EMI Antenna	VULB9163	01223	Schwarzbeck	1 year	2024-04-28
4	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2024-04-25
5	EMI Antenna	3116	2661	ETS-Lindgren	1 year	2024-01-30

AC Power Line Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESCI	100344	R&S	1 year	2024-02-21
2	LISN	ENV216	101200	R&S	1 year	2024-06-04

7. Measurement Uncertainty

7.1. Maximum Output Power

Measurement Uncertainty: 0.387dB,k=1.96

7.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

7.3. DTS 6-dB Signal Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

7.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

7.5. Transmitter Spurious Emission

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤3.6GHz	1.22
3.6GHz ≤ f ≤8GHz	1.22
8GHz ≤ f ≤12.75GHz	1.51
12.75GHz ≤ f ≤26GHz	1.51
26GHz ≤ f ≤40GHz	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
30MHz ≤ f ≤ 1GHz	4.72
1GHz ≤ f ≤18GHz	4.84
18GHz ≤ f ≤40GHz	5.12

7.6. 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

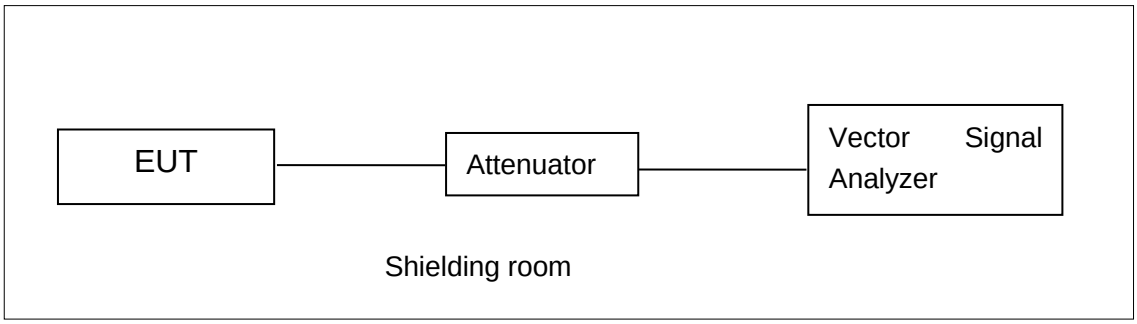


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

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;

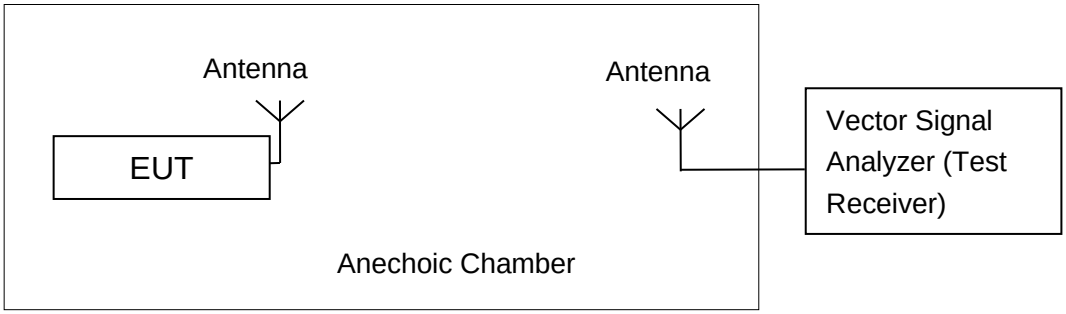


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

A.2. Maximum Output Power

Method of Measurement: See ANSI C63.10-2013-clause 11.9.1.1

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

Measurement Limit:

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

EUT ID: UT04a

A.2.1. Peak Output Power-conducted

Measurement Results:

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	21.27	/	/
	2	21.32	20.48	21.17
	5.5	21.20	/	/
	11	21.28	/	/
802.11g	6	22.09	/	/
	9	22.09	/	/
	12	21.90	/	/
	18	23.73	/	/
	24	22.91	/	/
	36	24.18	/	/
	48	23.82	/	/
	54	24.61	24.12	24.23

The data rate 2Mbps and 54Mbps 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	21.50	/	/
	MCS1	21.33	/	/
	MCS2	23.04	/	/
	MCS3	22.70	/	/
	MCS4	24.00	23.76	23.71
	MCS5	23.52	/	/
	MCS6	23.80	/	/
	MCS7	23.87	/	/

The data rate MCS4 is selected as worst condition, and the following cases are performed with this condition.

The duty cycle of all mode are

Mode	802.11b	802.11g	802.11n20
Duty Cycle	98%	98%	98%

Conclusion: Pass

A.3. Peak Power Spectral Density

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

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to RBW = 3 kHz.
d) Set the VBW = 10 kHz.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) 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

Measurement Results:

802.11b/g mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.A.3.1	-6.25	**P**
	6	Fig.A.3.2	-6.13	**P**
	11	Fig.A.3.3	-5.95	**P**
802.11g	1	Fig.A.3.4	-9.75	**P**
	6	Fig.A.3.5	-10.12	**P**
	11	Fig.A.3.6	-8.99	**P**

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.A.3.7	-10.78	**P**
	6	Fig.A.3.8	-10.83	**P**
	11	Fig.A.3.9	-10.86	**P**
	9	Fig.A.3.10	-12.60	**P**

Conclusion: Pass

Test graphs as below:

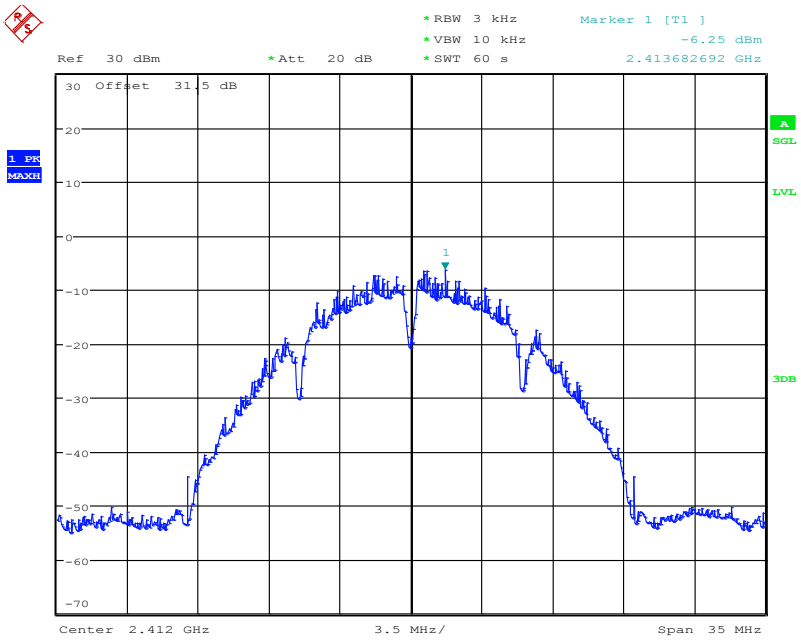


Fig.A.3.1 Power Spectral Density(802.11b,Ch1)

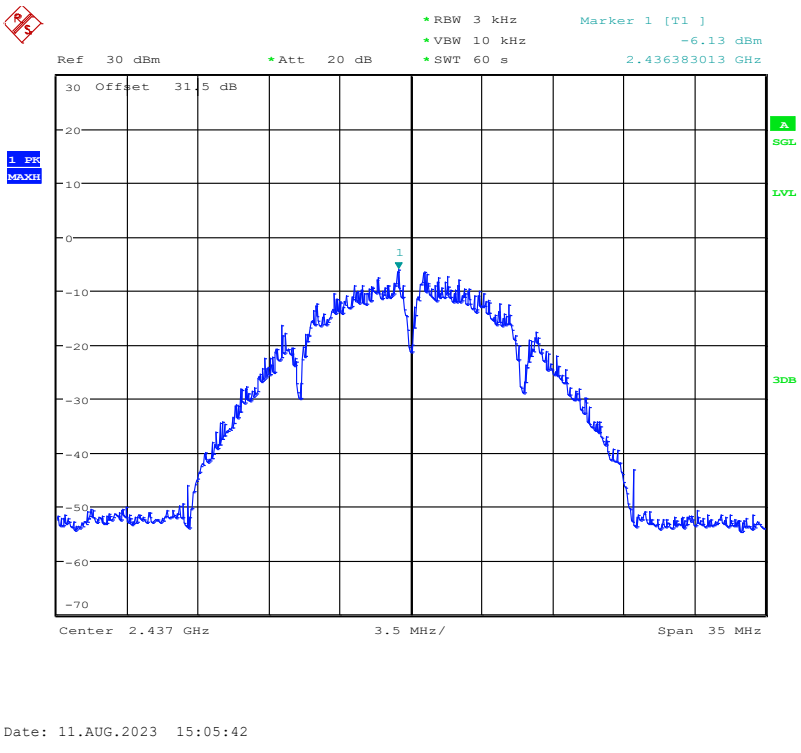


Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)

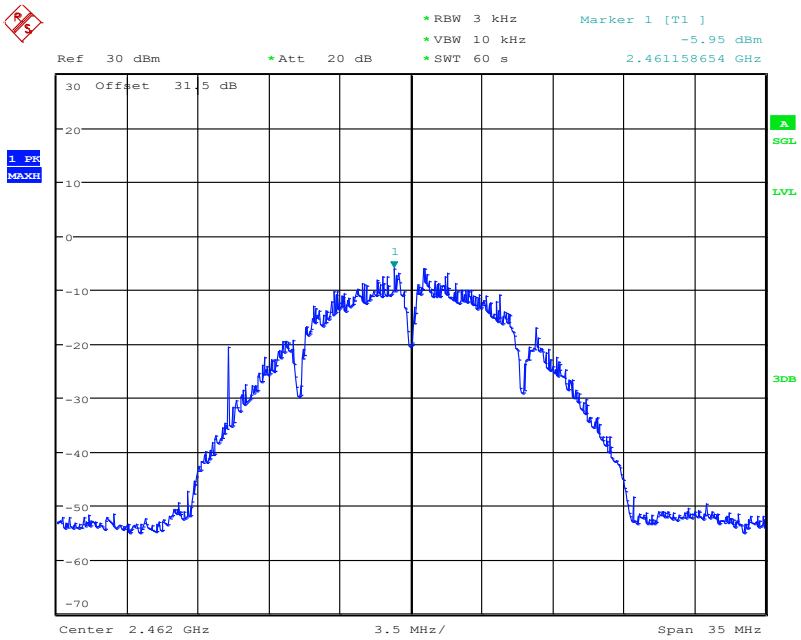


Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)

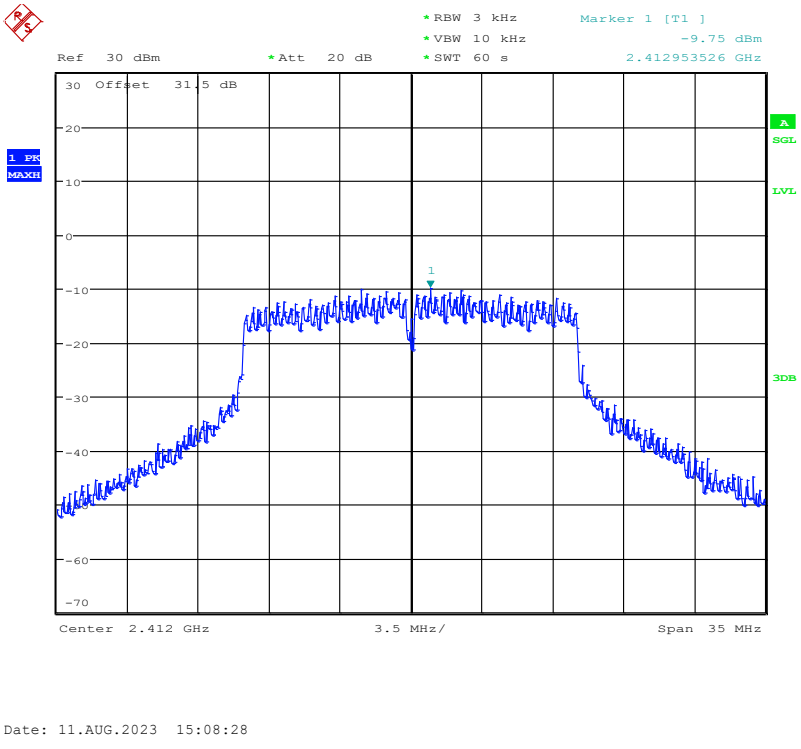


Fig.A.3.4 Power Spectral Density (802.11g, Ch 1)

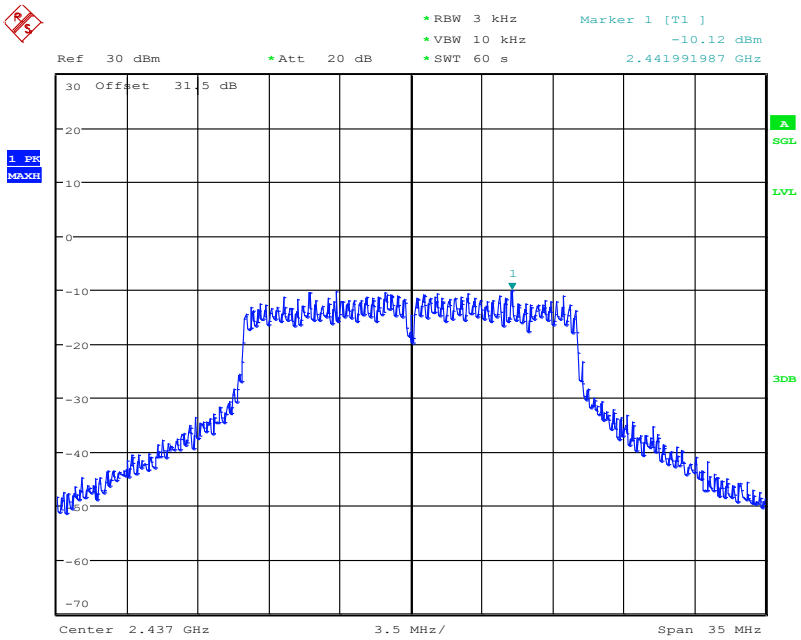


Fig.A.3.5 Power Spectral Density (802.11g, Ch 6)

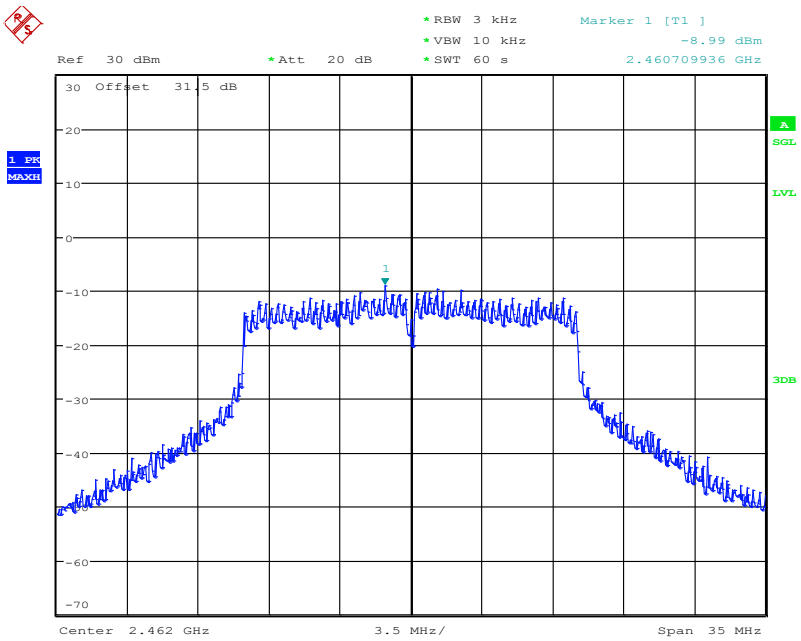


Fig.A.3.6 Power Spectral Density (802.11g, Ch 11)

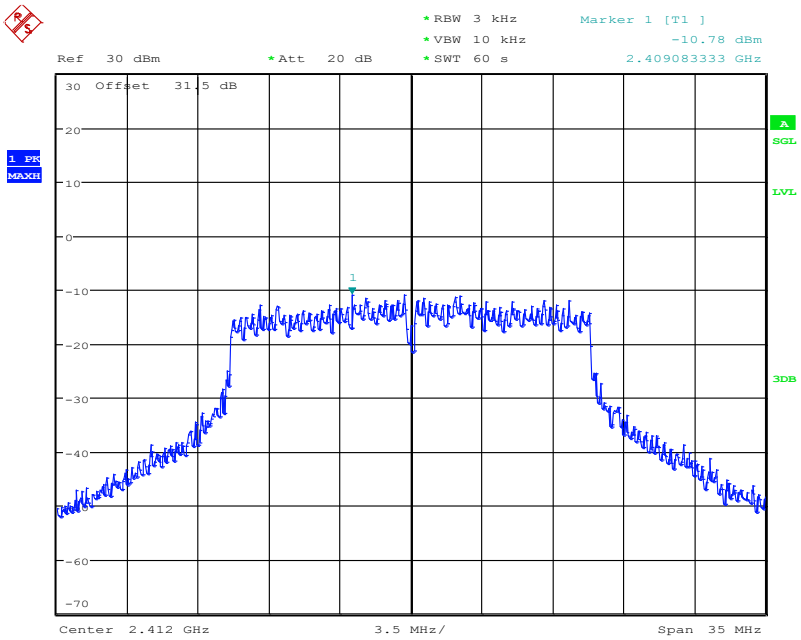


Fig.A.3.7 Power Spectral Density (802.11n-HT20, Ch 1)

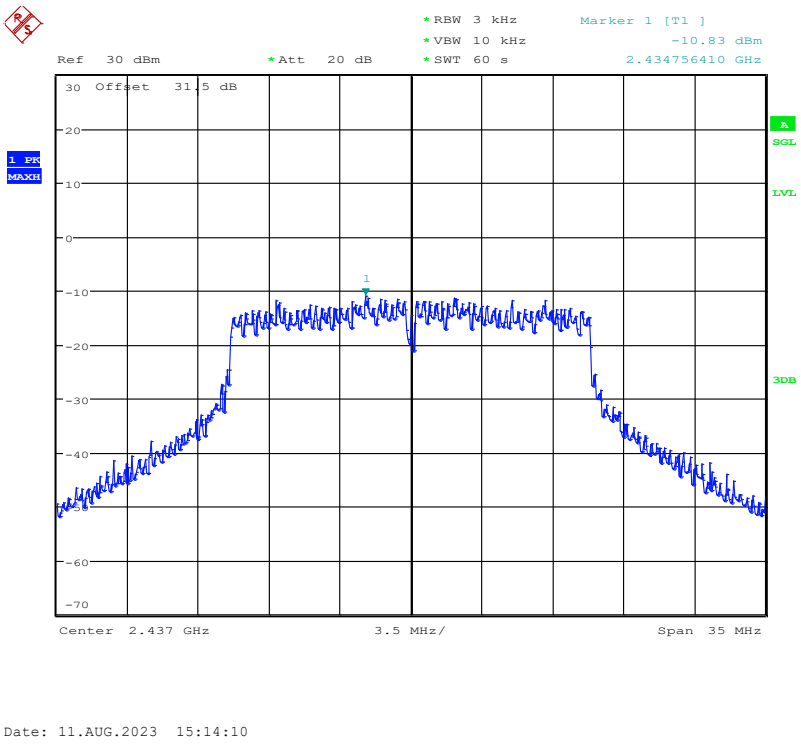


Fig.A.3.8 Power Spectral Density (802.11n-HT20, Ch 6)

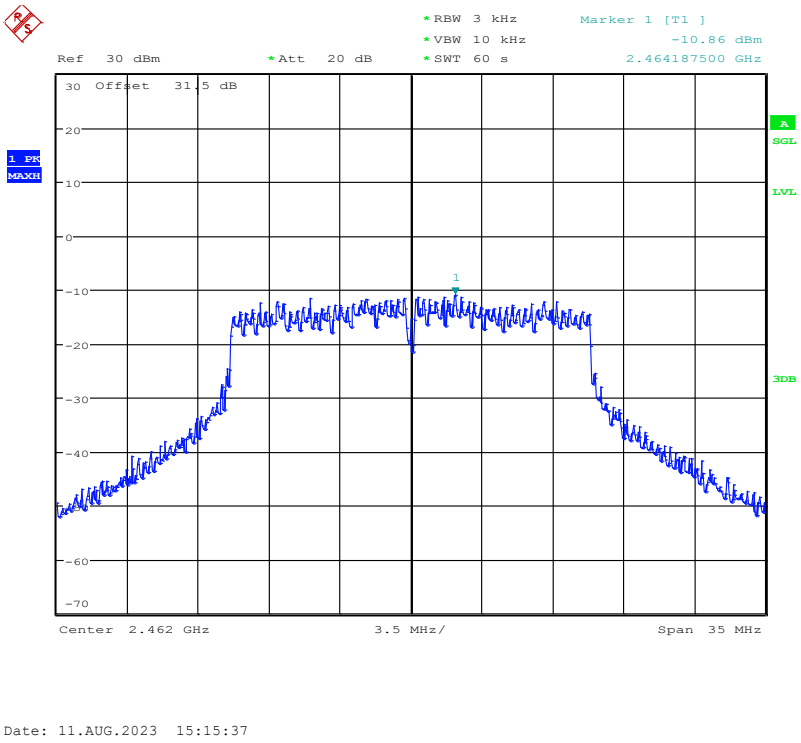


Fig.A.3.9 Power Spectral Density (802.11n-HT20, Ch 11)

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: UT04a

Measurement Result:

802.11b/g mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11b	1	Fig.A.4.1	9.05	**P**
	6	Fig.A.4.2	8.09	**P**
	11	Fig.A.4.3	9.05	**P**
802.11g	1	Fig.A.4.4	15.44	**P**
	6	Fig.A.4.5	15.66	**P**
	11	Fig.A.4.6	15.54	**P**

802.11n-HT20 mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (HT20)	1	Fig.A.4.7	15.96	**P**
	6	Fig.A.4.8	16.54	**P**
	11	Fig.A.4.9	16.54	**P**

Conclusion: Pass

Test graphs as below:

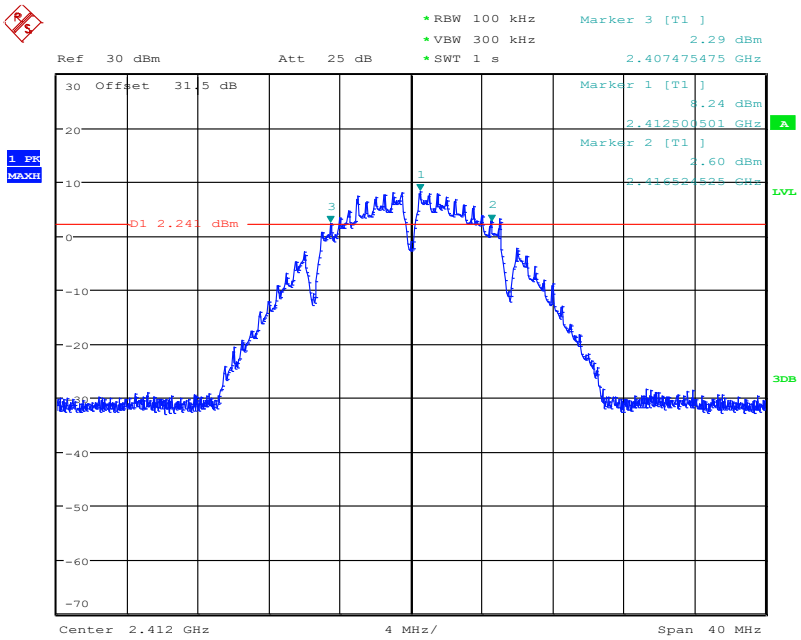


Fig.A.4.1 Occupied 6dB Bandwidth(802.11b,Ch 1)

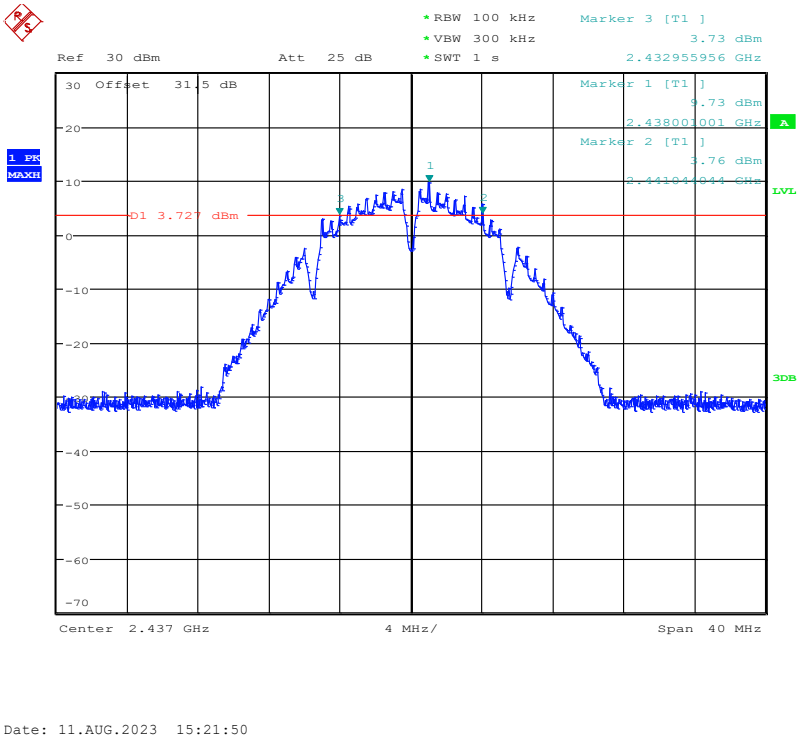


Fig.A.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)

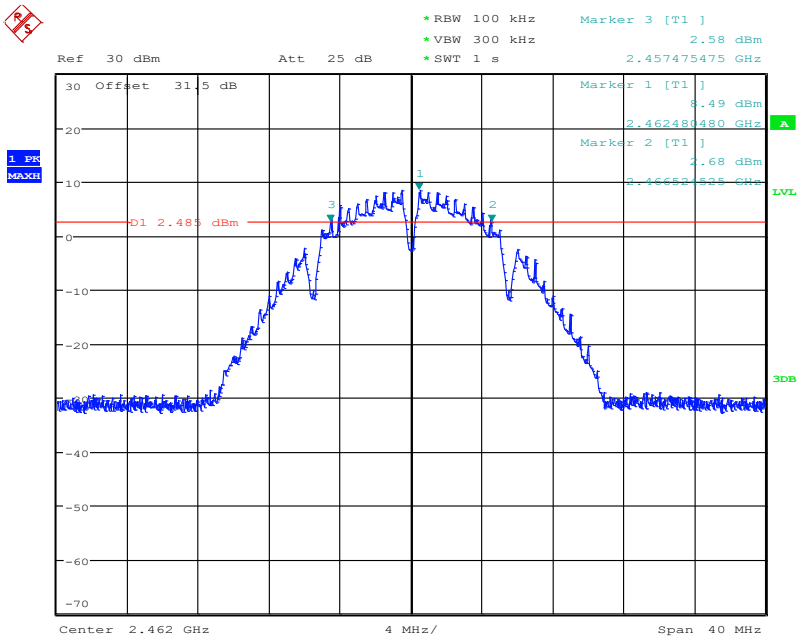


Fig.A.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

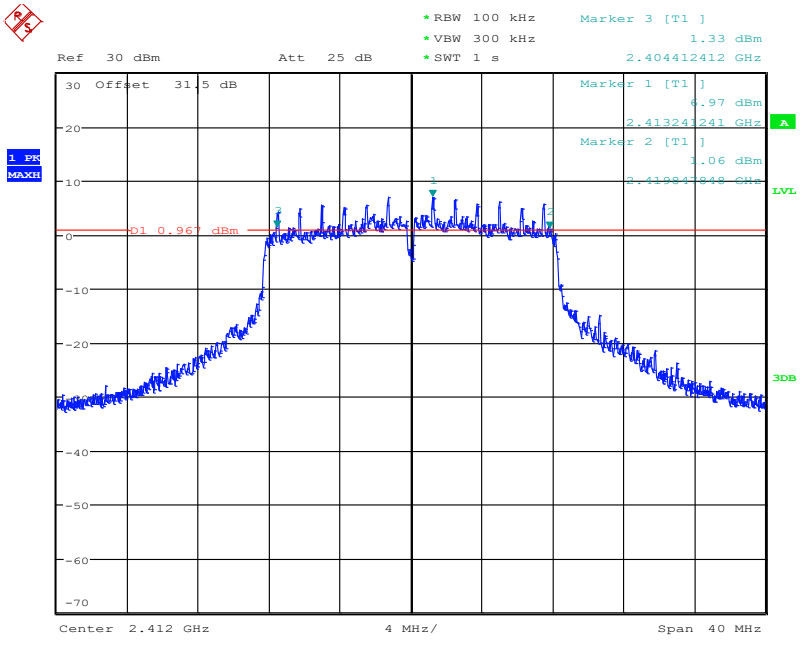


Fig.A.4.4 Occupied 6dB Bandwidth (802.11g, Ch 1)

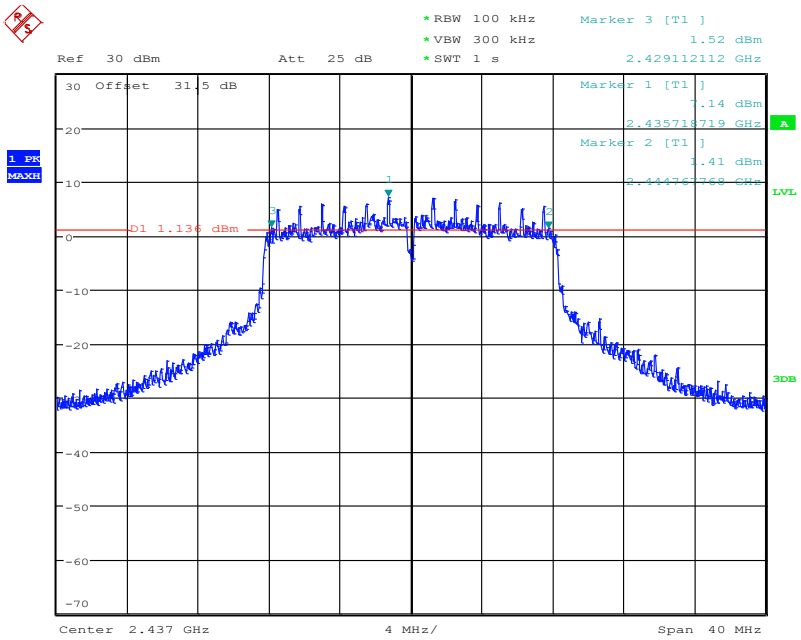


Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)

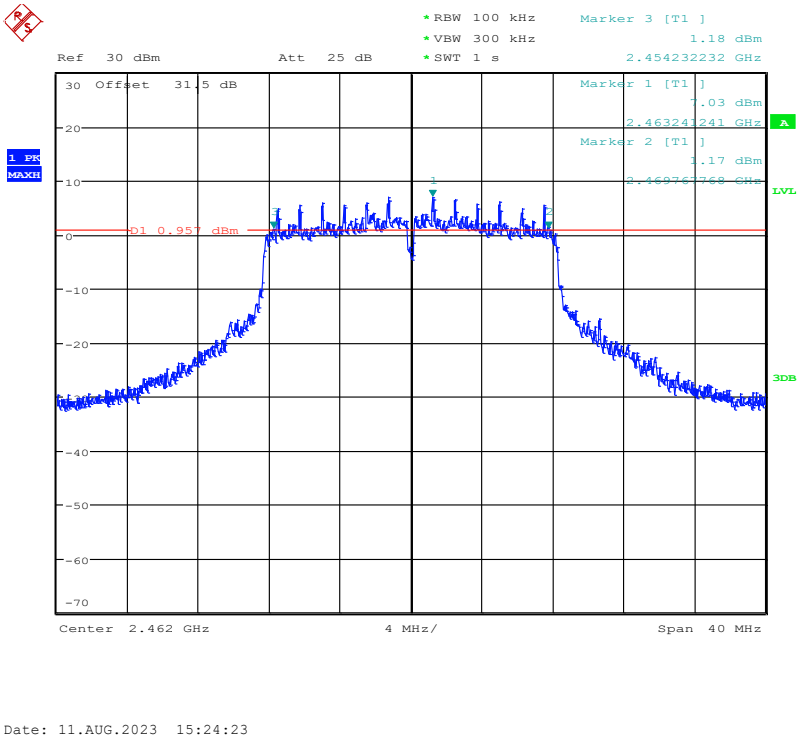


Fig.A.4.6 Occupied 6dB Bandwidth (802.11g, Ch 11)

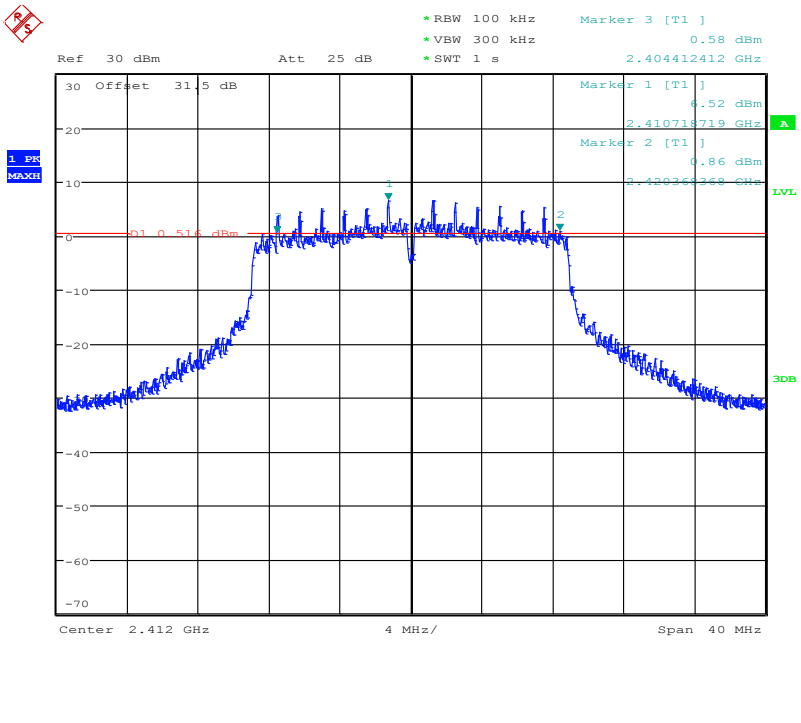


Fig.A.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

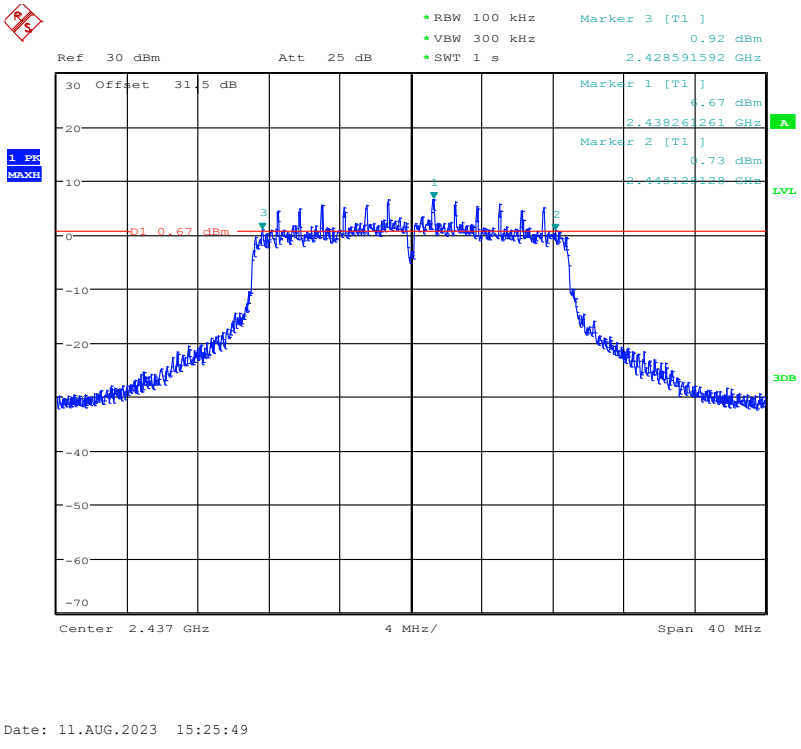


Fig.A.4.8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)

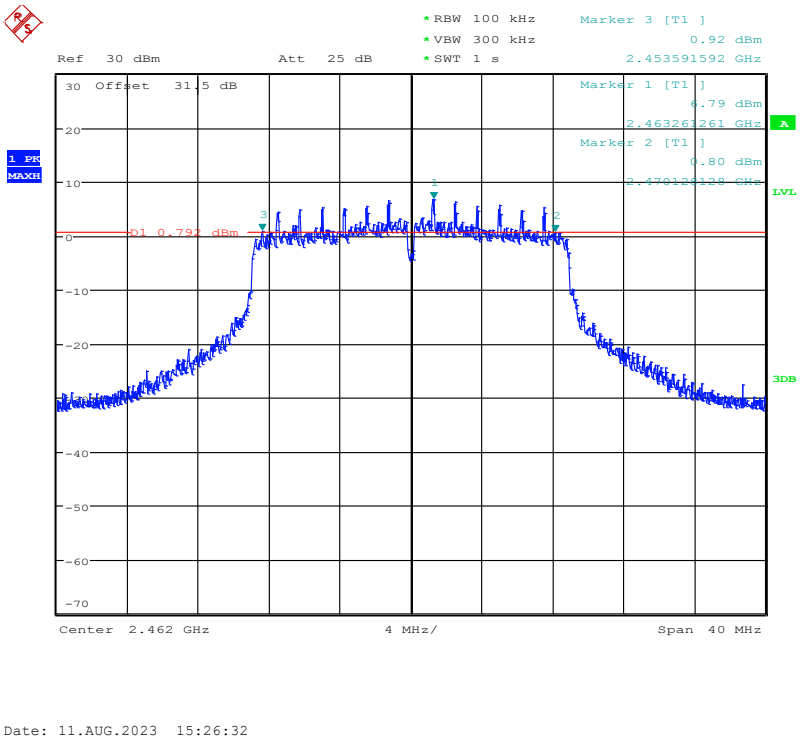


Fig.A.4.9 Occupied 6dB Bandwidth (802.11n-HT20, Ch 11)

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.

a) Set Span = 100MHz
b) Sweep Time: coupled
c) Set the RBW= 100 kHz
c) Set the VBW= 300 kHz
d) Detector: Peak
e) Trace: Max hold

Measurement Limit:

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

EUT ID: UT04a

Measurement Result:

802.11b/g mode

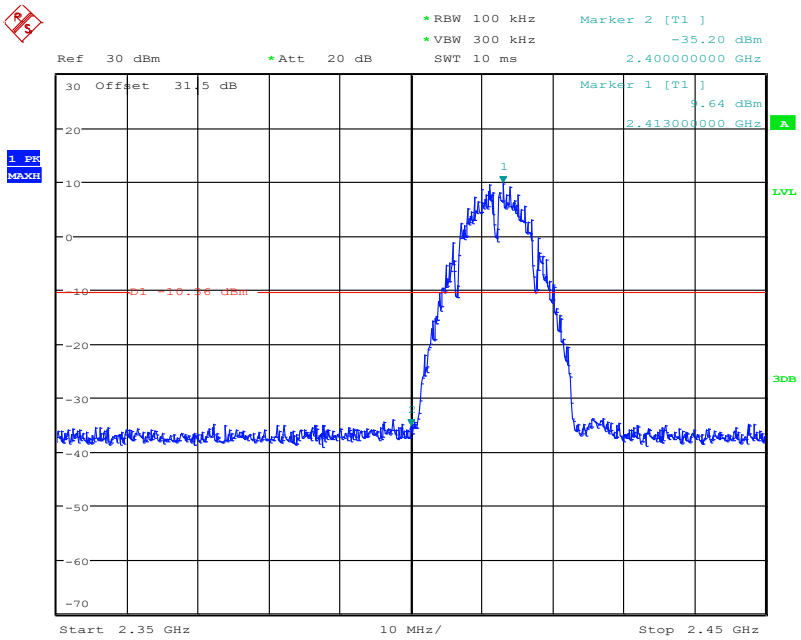
Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.A.5.1	**P**
	11	Fig.A.5.2	**P**
802.11g	1	Fig.A.5.3	**P**
	11	Fig.A.5.4	**P**

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.5.5	**P**
	11	Fig.A.5.6	**P**

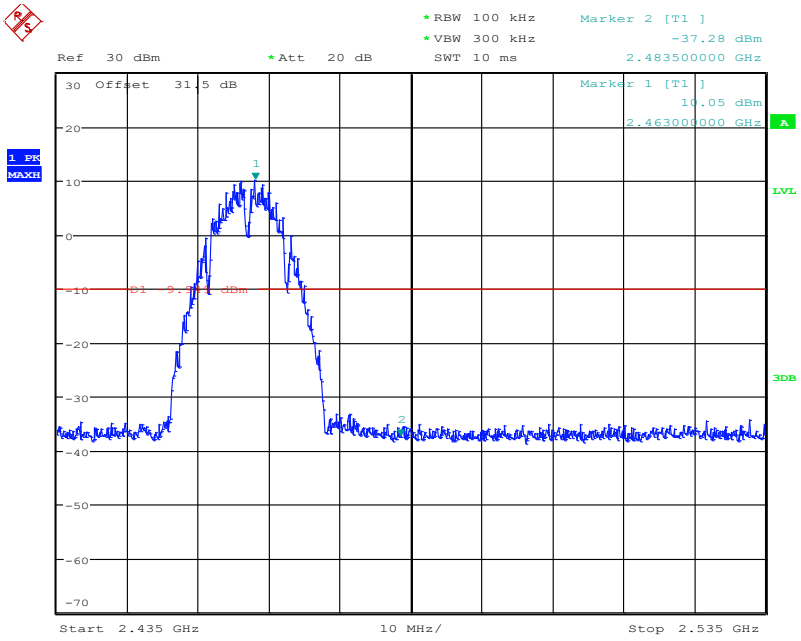
Conclusion: Pass

Test graphs as below:



Date: 11.AUG.2023 15:34:18

Fig.A.5.1 Band Edges (802.11b, Ch 1)



Date: 11.AUG.2023 15:34:45

Fig.A.5.2 Band Edges (802.11b, Ch 11)

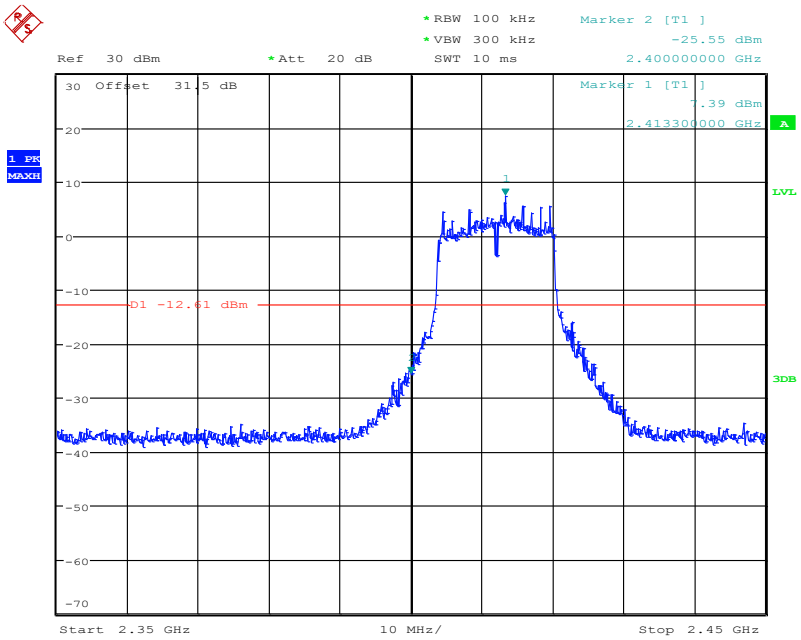


Fig.A.5.3 Band Edges (802.11g, Ch 1)

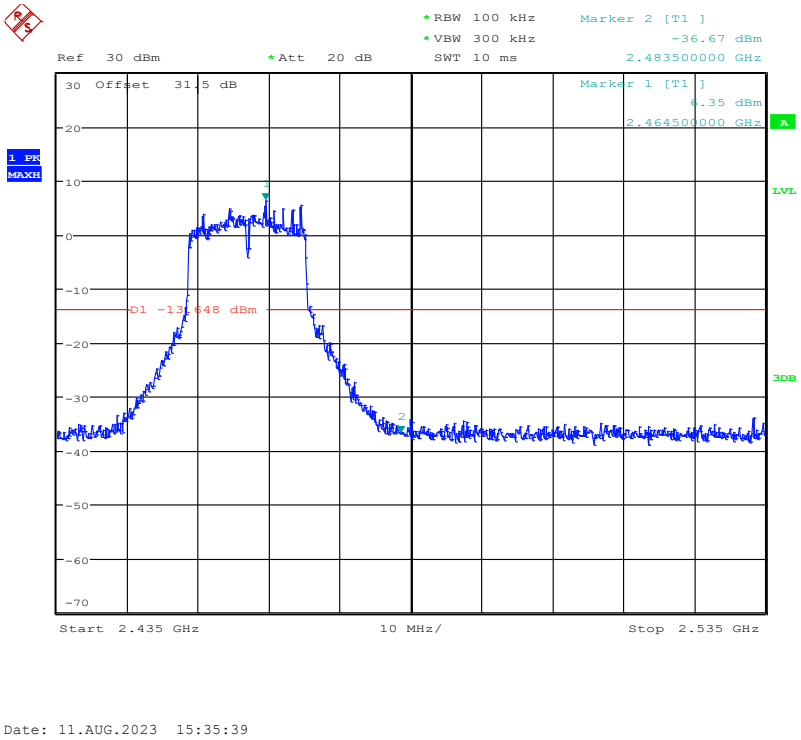


Fig.A.5.4 Band Edges (802.11g, Ch 11)

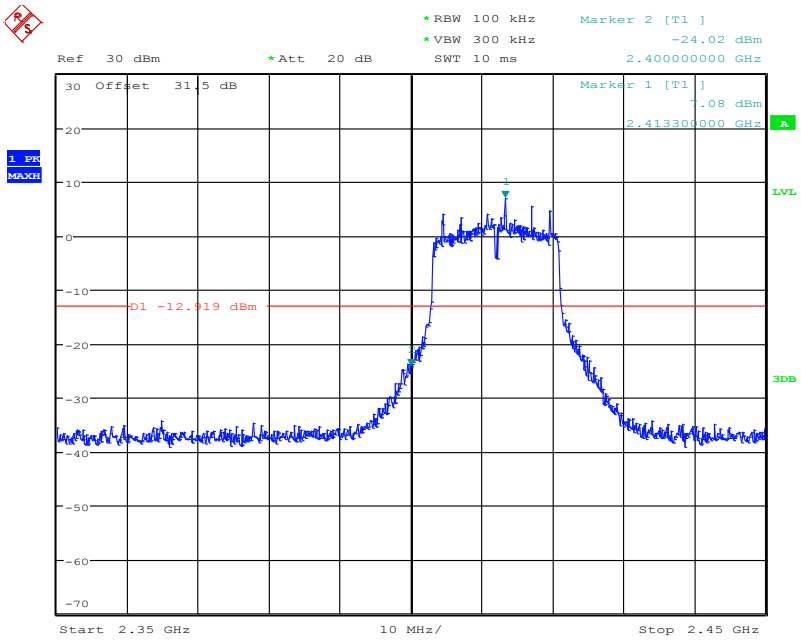


Fig.A.5.5 Band Edges (802.11n-HT20, Ch 1)

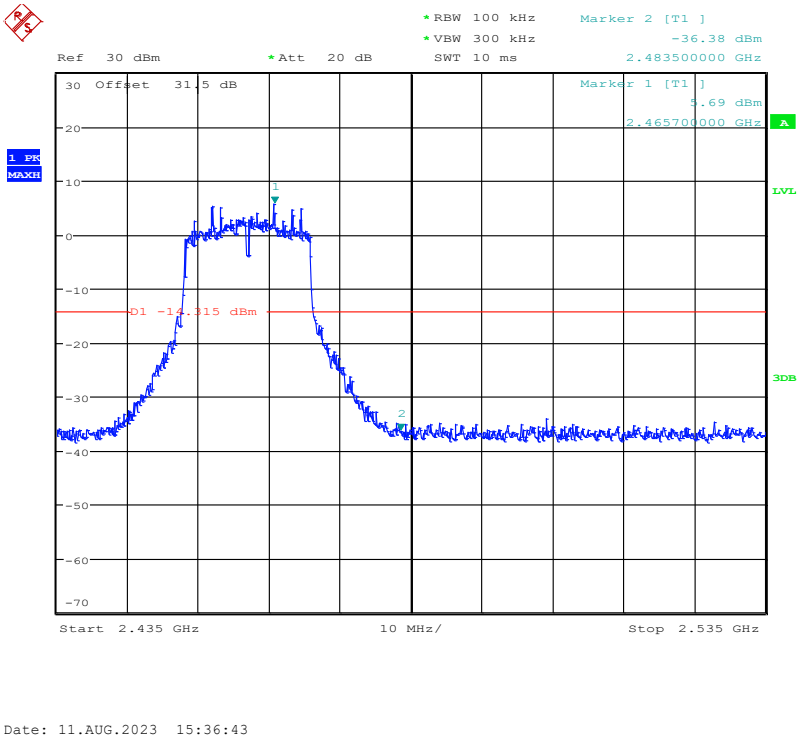


Fig.A.5.6 Band Edges (802.11n-HT20, Ch 11)

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:

a) Set instrument center frequency to DTS channel center frequency

b) Set the span to ≥ 1.5 times the DTS bandwidth

c) Set the RBW= 100 kHz

d) Set the VBW= 300 kHz

e) Detector = Peak

f) Sweep time = auto couple

g) Trace mode = max hold

h) Allow trace to fully stabilize

i) 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:

a) Set the center frequency and span to encompass frequency range to be measured.

b) Set the RBW = 100 kHz.

c) Set the VBW = 300 kHz.

d) Detector = peak.

e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) 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: UT04a

Measurement Results:

802.11b mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412 GHz	Fig.A.6.1.1	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.2	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.3	**P**
	6	2.437 GHz	Fig.A.6.1.4	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.5	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.6	**P**
	11	2.462 GHz	Fig.A.6.1.7	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.8	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.9	**P**

802.11g mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11g	1	2.412 GHz	Fig.A.6.1.10	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.11	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.12	**P**
	6	2.437 GHz	Fig.A.6.1.13	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.14	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.15	**P**
	11	2.462 GHz	Fig.A.6.1.16	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.17	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.18	**P**

802.11n-HT20 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.412 GHz	Fig.A.6.1.19	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.20	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.21	**P**
	6	2.437 GHz	Fig.A.6.1.22	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.23	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.24	**P**
	11	2.462 GHz	Fig.A.6.1.25	**P**
		30 MHz ~ 1 GHz	Fig.A.6.1.26	**P**
		1 GHz ~ 26.5 GHz	Fig.A.6.1.27	**P**

Conclusion: Pass

Test graphs as below:

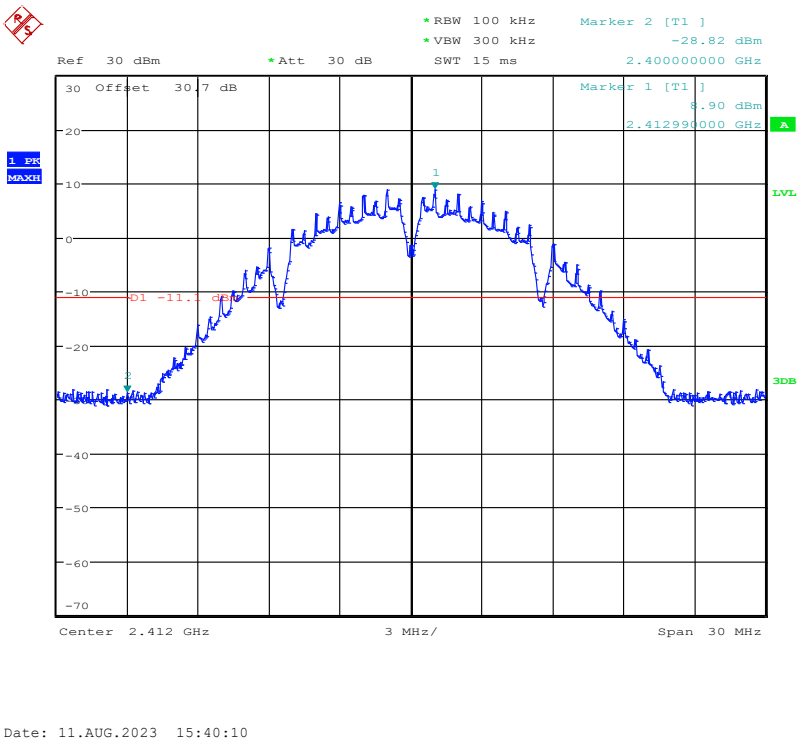


Fig.A.6.1.1 Transmitter Spurious Emission - Conducted (802.11b, Ch1, Center Frequency)

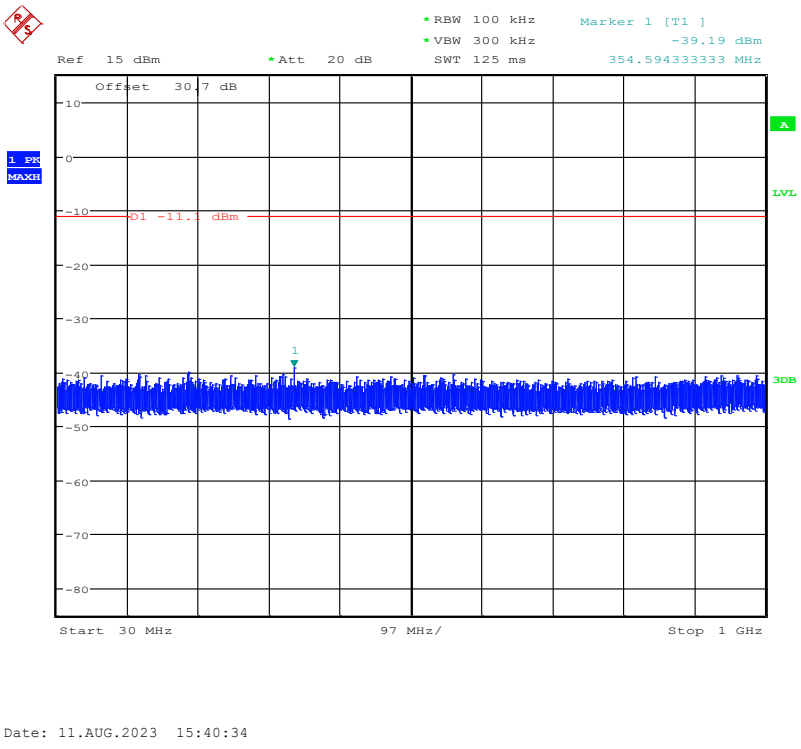


Fig.A.6.1.2 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 30 MHz-1 GHz)

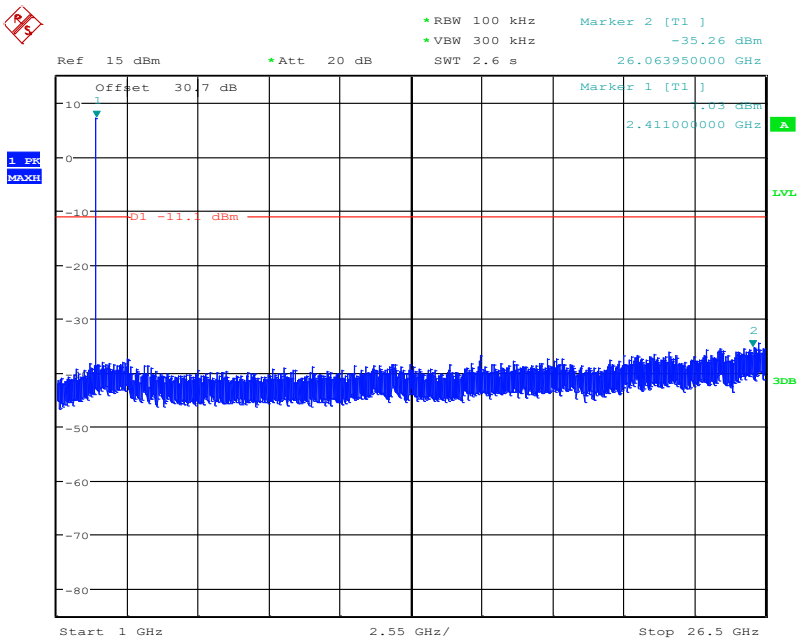


Fig.A.6.1.3 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 1 GHz-26 GHz)

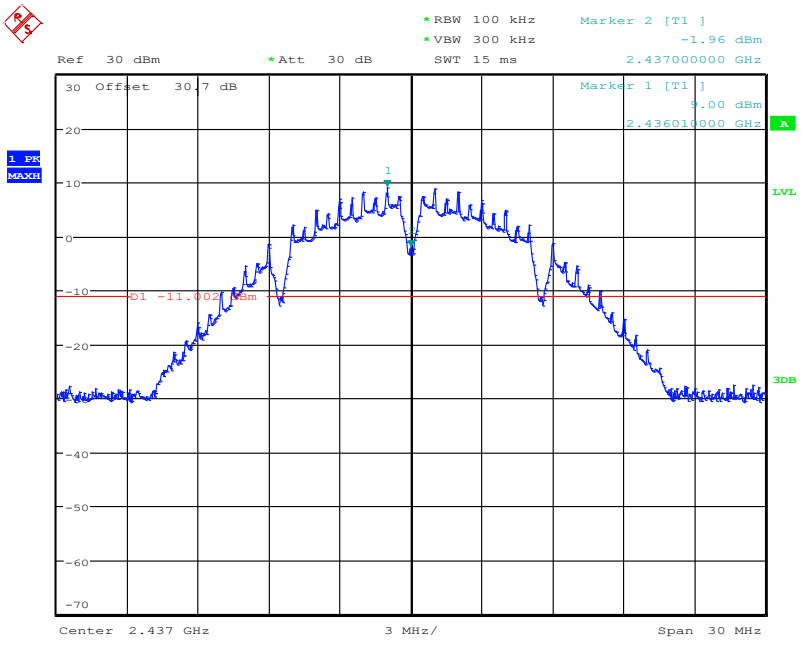


Fig.A.6.1.4 Transmitter Spurious Emission - Conducted (802.11b, Ch6, Center Frequency)

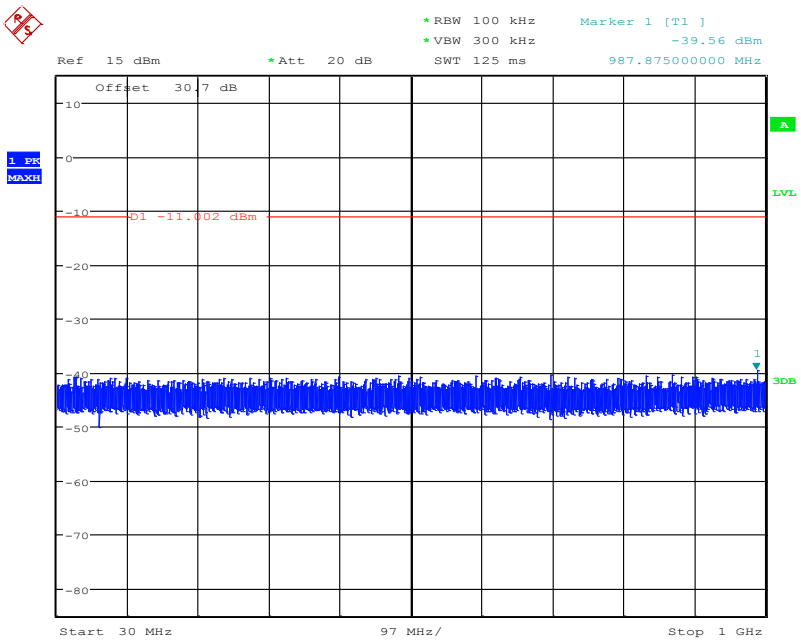


Fig.A.6.1.5 Transmitter Spurious Emission - Conducted (802.11b, Ch6, 30 MHz-1 GHz)

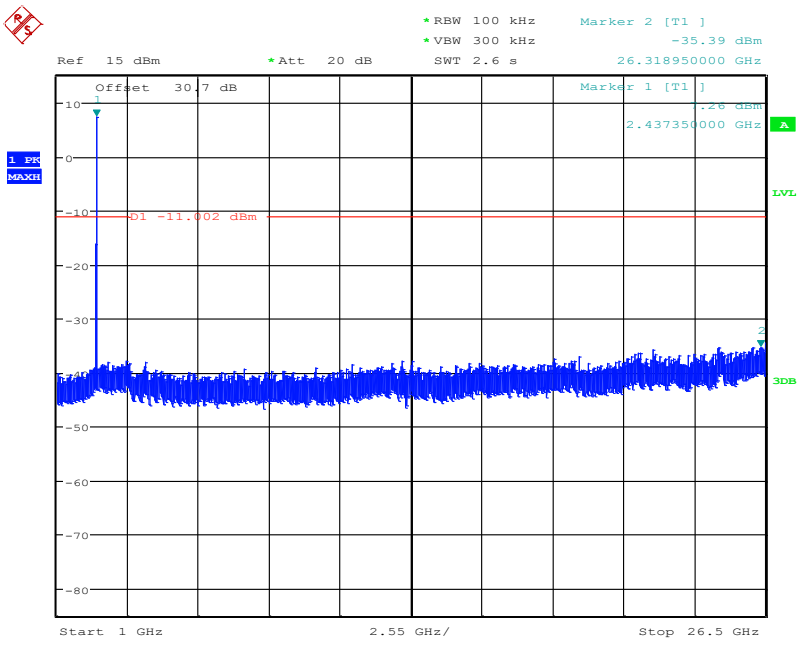


Fig.A.6.1.6 Transmitter Spurious Emission - Conducted (802.11b, Ch6, 1 GHz-26 GHz)

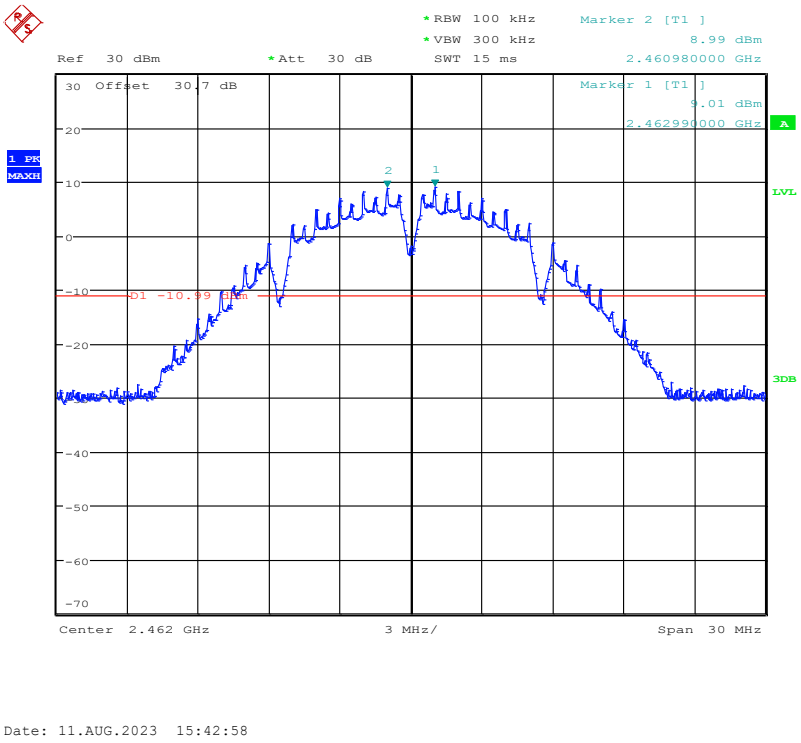


Fig.A.6.1.7 Transmitter Spurious Emission - Conducted (802.11b, Ch11, Center Frequency)

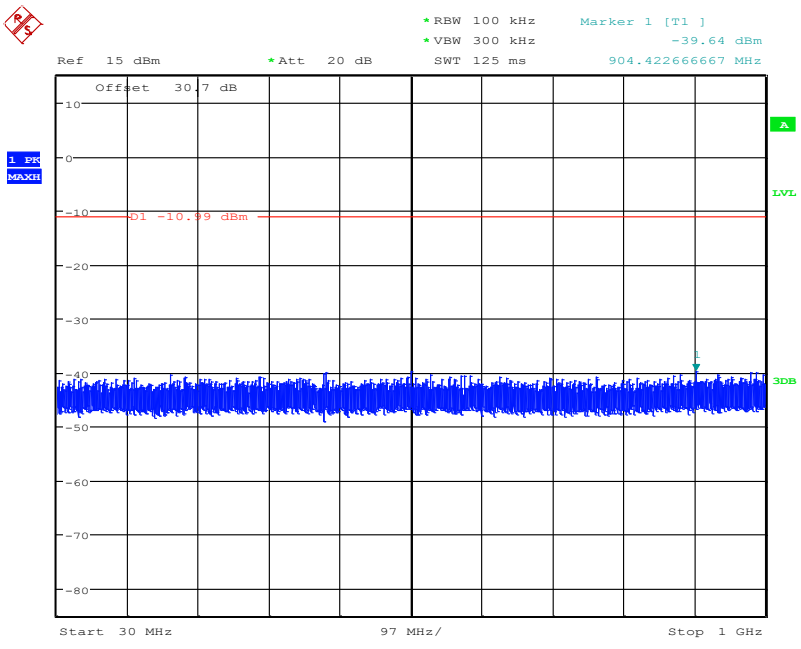


Fig.A.6.1.8 Transmitter Spurious Emission - Conducted (802.11b, Ch11, 30 MHz-1 GHz)

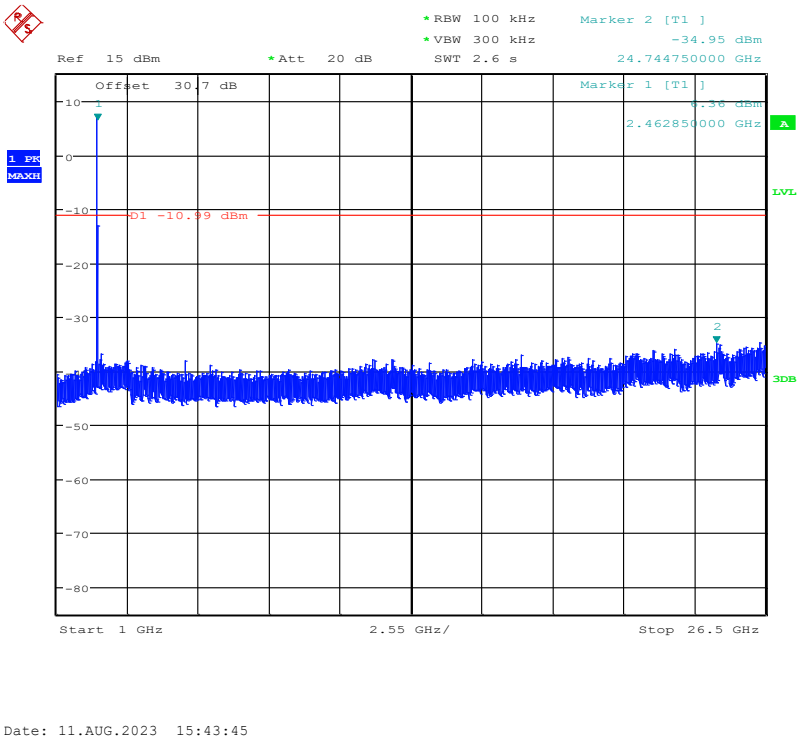


Fig.A.6.1.9 Transmitter Spurious Emission - Conducted (802.11b, Ch11, 20 GHz-26 GHz)

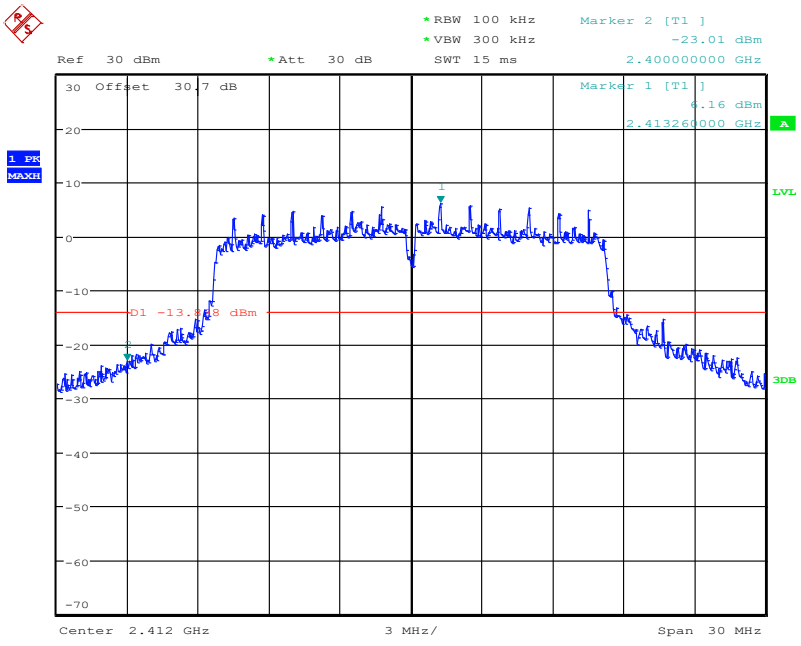


Fig.A.6.1.10 Transmitter Spurious Emission - Conducted (802.11g, Ch1, Center Frequency)

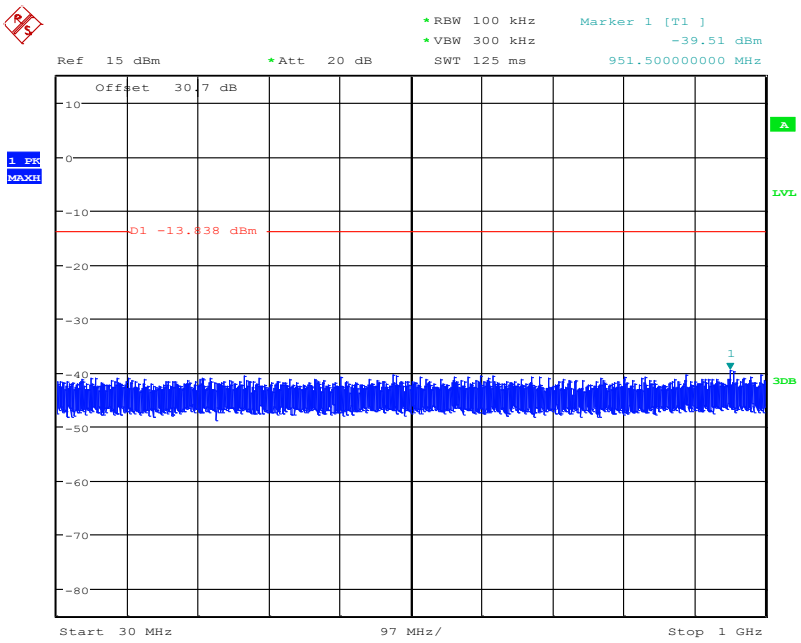


Fig.A.6.1.11 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 30 MHz-1 GHz)

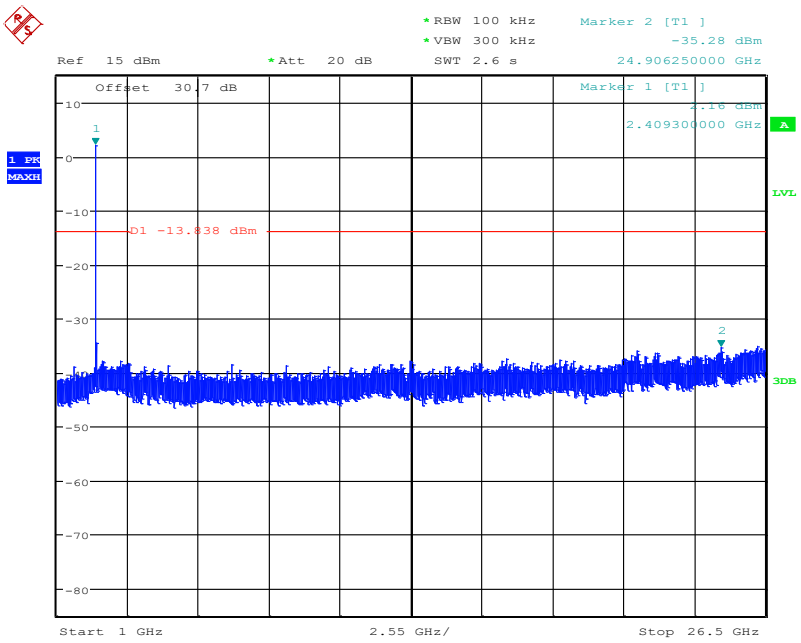


Fig.A.6.1.12 Transmitter Spurious Emission - Conducted (802.11g, Ch1, 1 GHz-26 GHz)

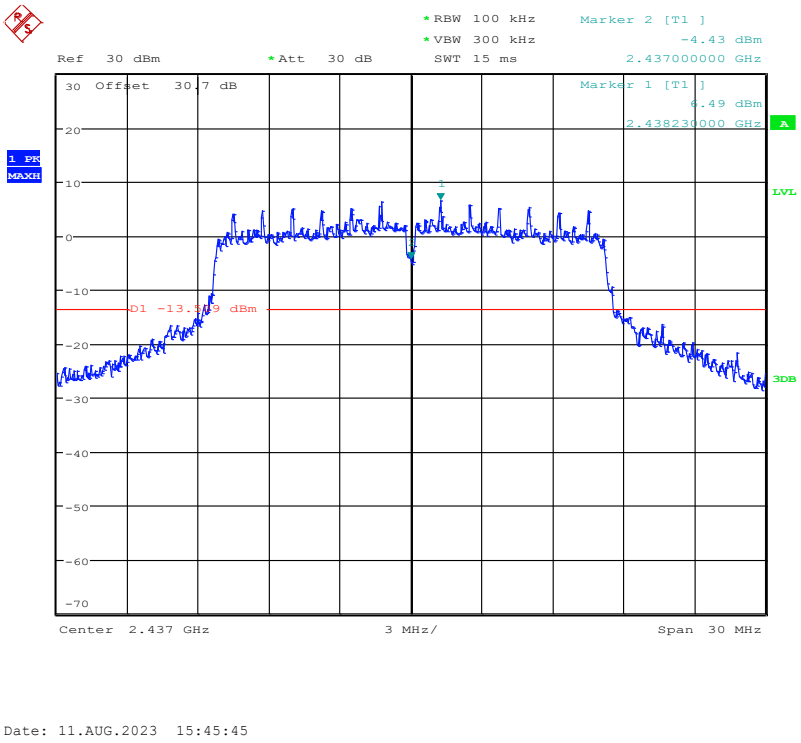


Fig.A.6.1.13 Transmitter Spurious Emission - Conducted (802.11g, Ch6, Center Frequency)

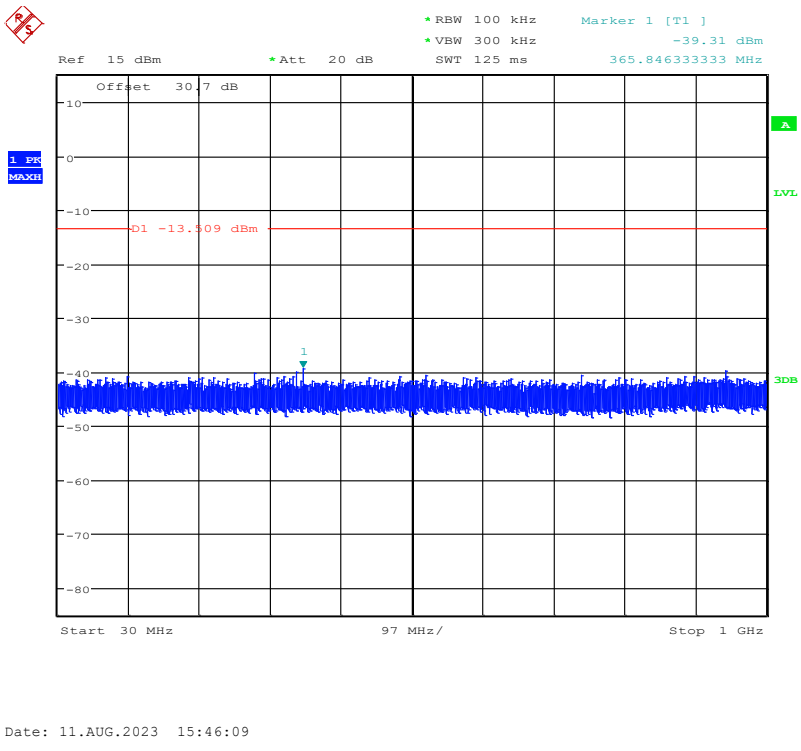


Fig.A.6.1.14 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 30 MHz-1 GHz)

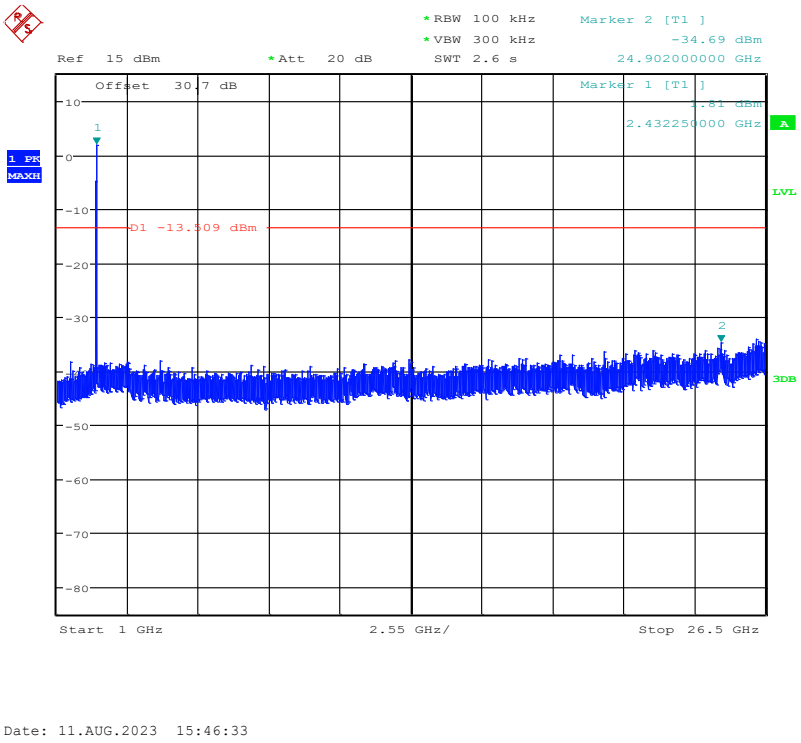


Fig.A.6.1.15 Transmitter Spurious Emission - Conducted (802.11g, Ch6, 1 GHz-26 GHz)

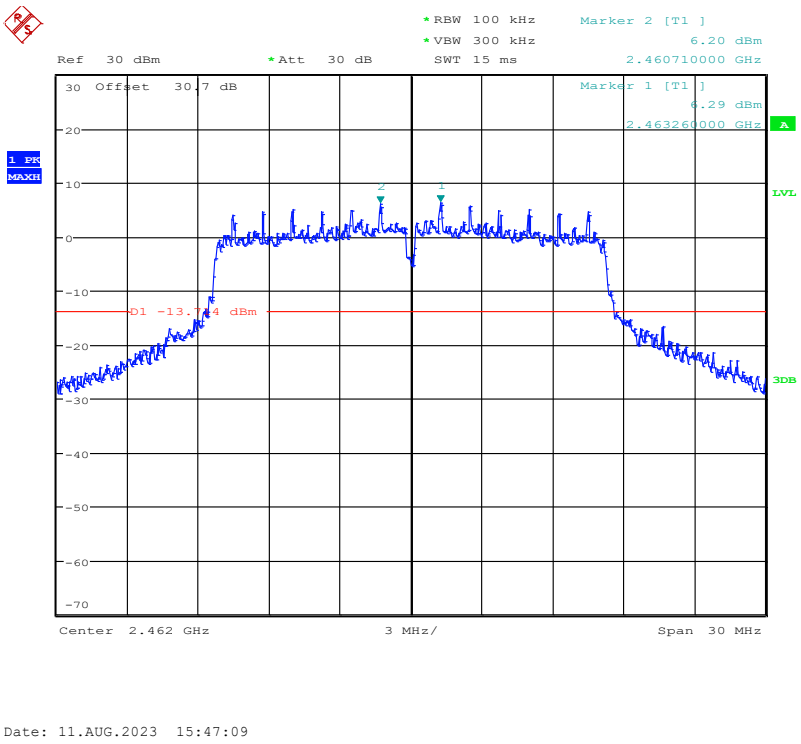


Fig.A.6.1.16 Transmitter Spurious Emission - Conducted (802.11g, Ch11, Center Frequency)

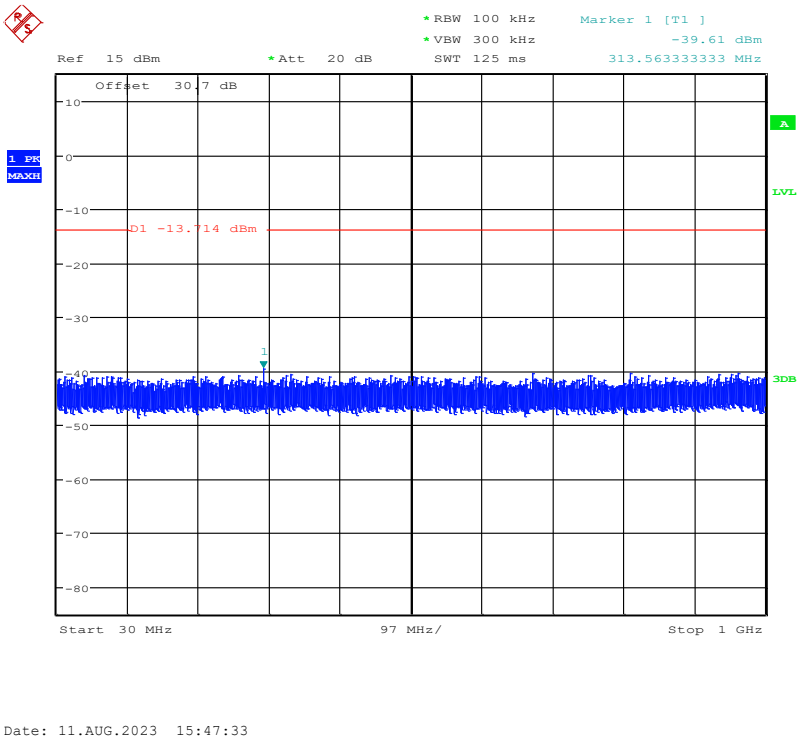


Fig.A.6.1.17 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 30 MHz-1 GHz)

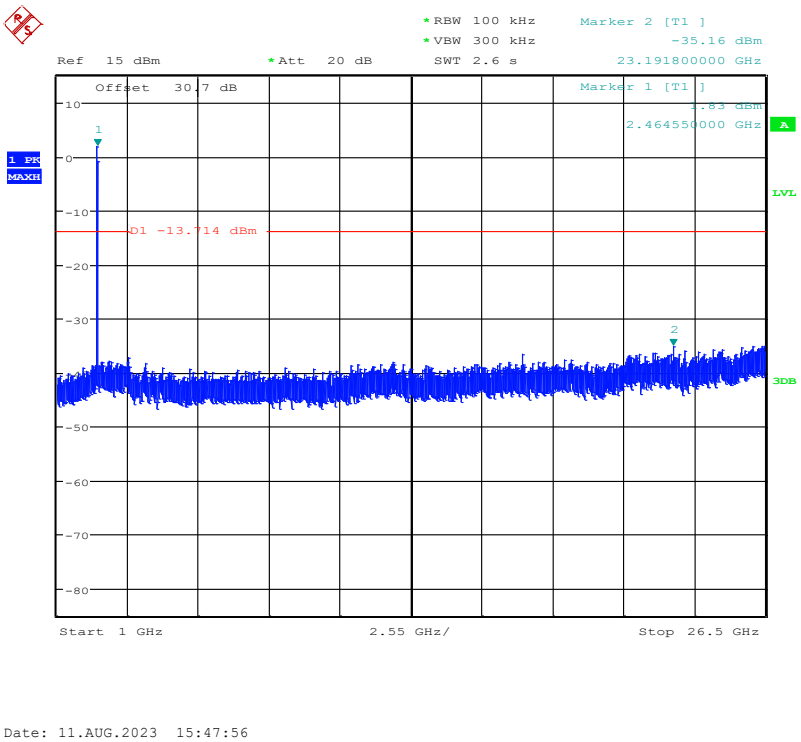


Fig.A.6.1.18 Transmitter Spurious Emission - Conducted (802.11g, Ch11, 1 GHz-26 GHz)

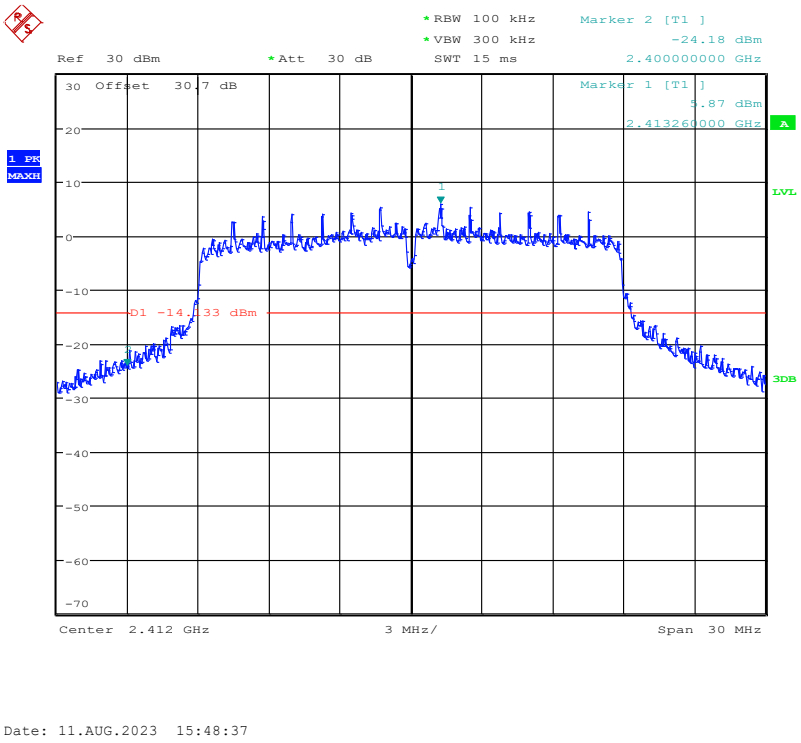


Fig.A.6.1.19 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, Center Frequency)

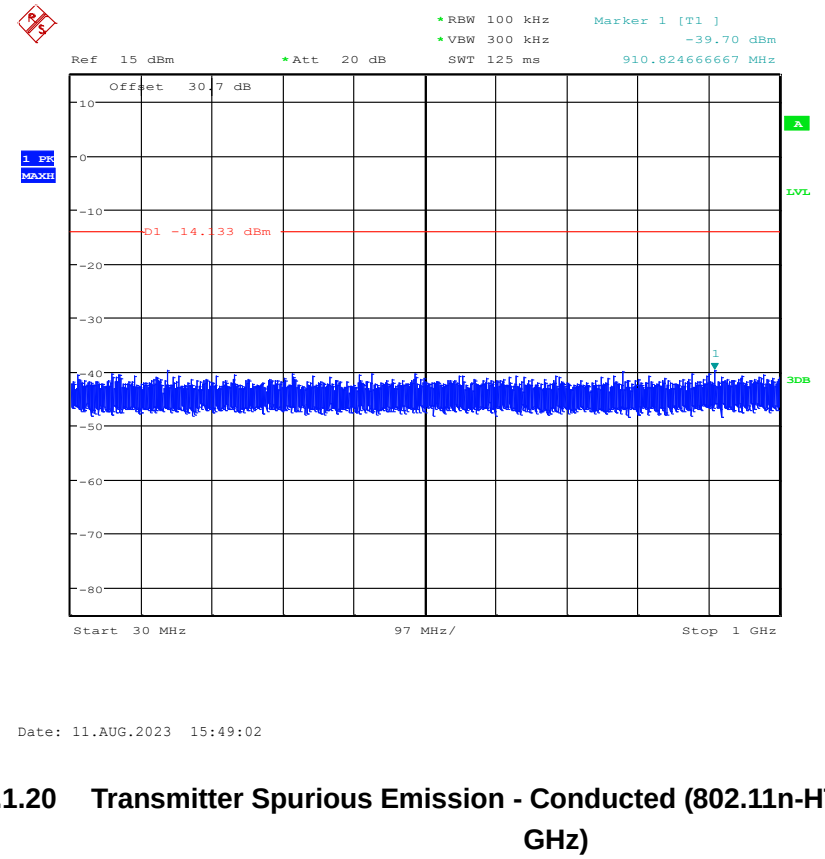


Fig.A.6.1.20 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 30 MHz-1 GHz)

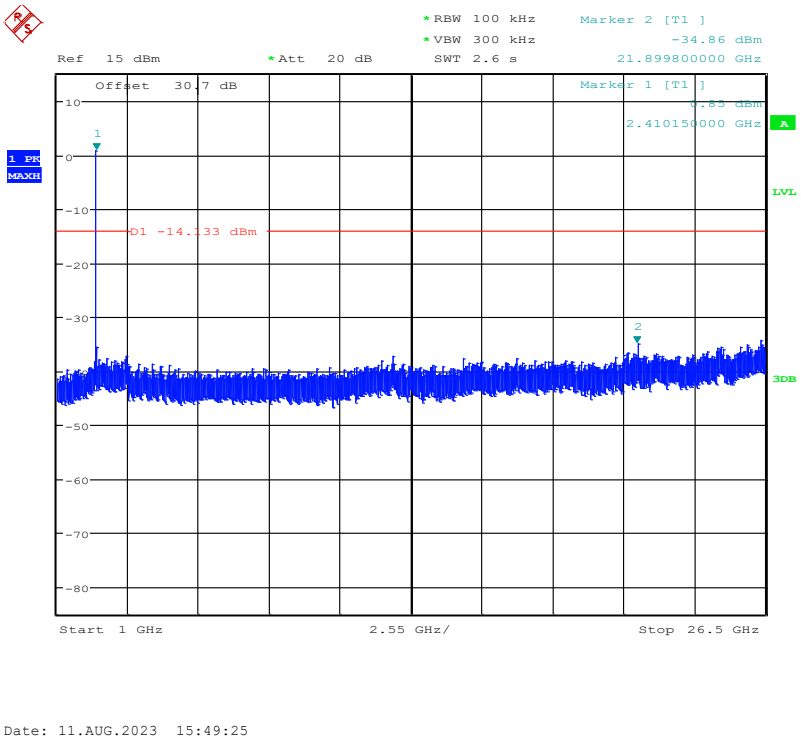


Fig.A.6.1.21 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch1, 1 GHz-26 GHz)

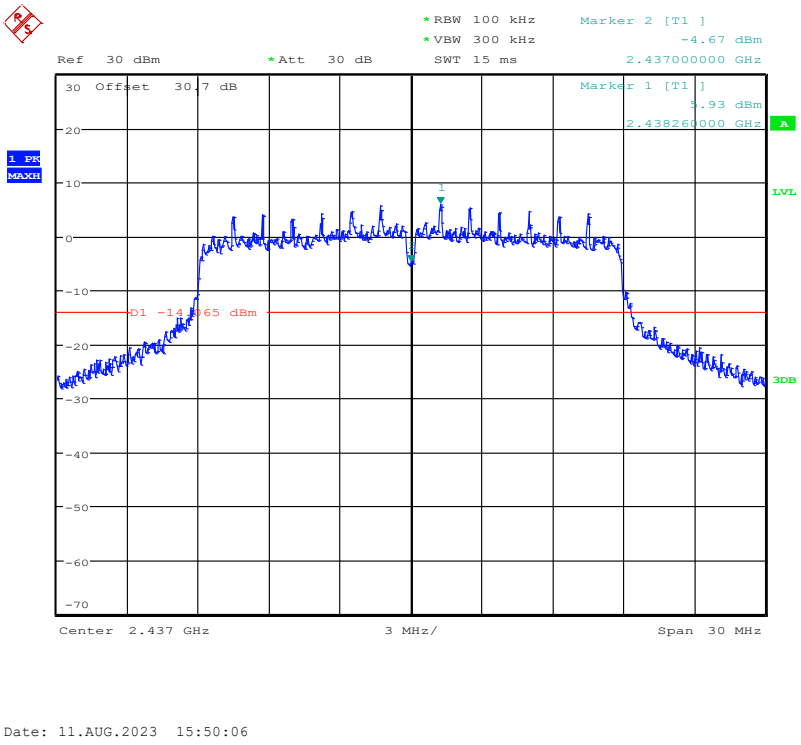


Fig.A.6.1.22 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, Center Frequency)

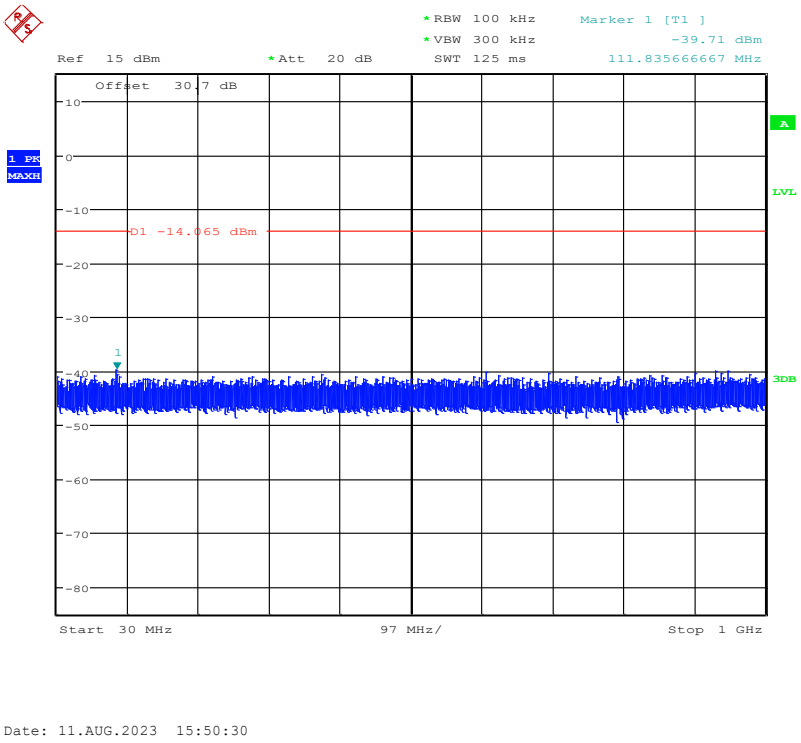


Fig.A.6.1.23 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 30 MHz-1 GHz)

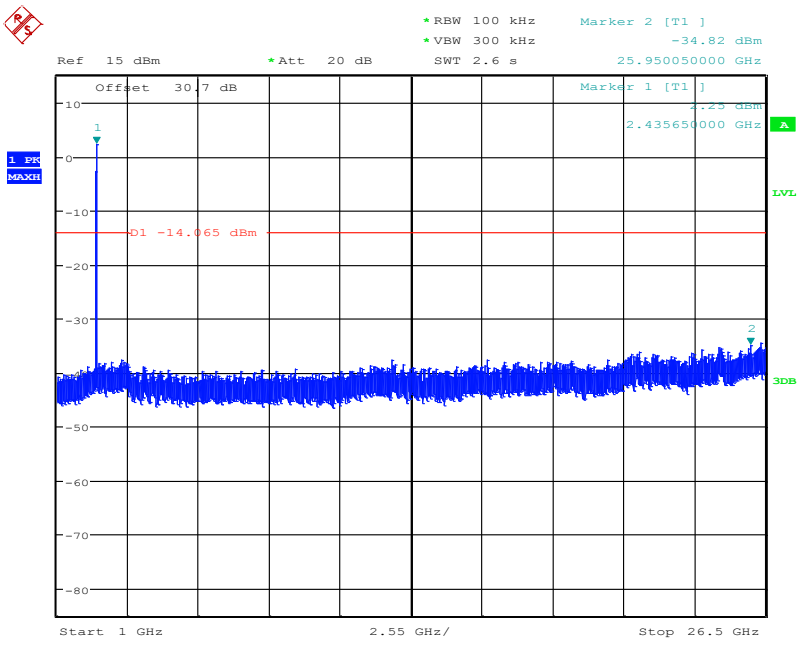


Fig.A.6.1.24 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch6, 1 GHz-26 GHz)

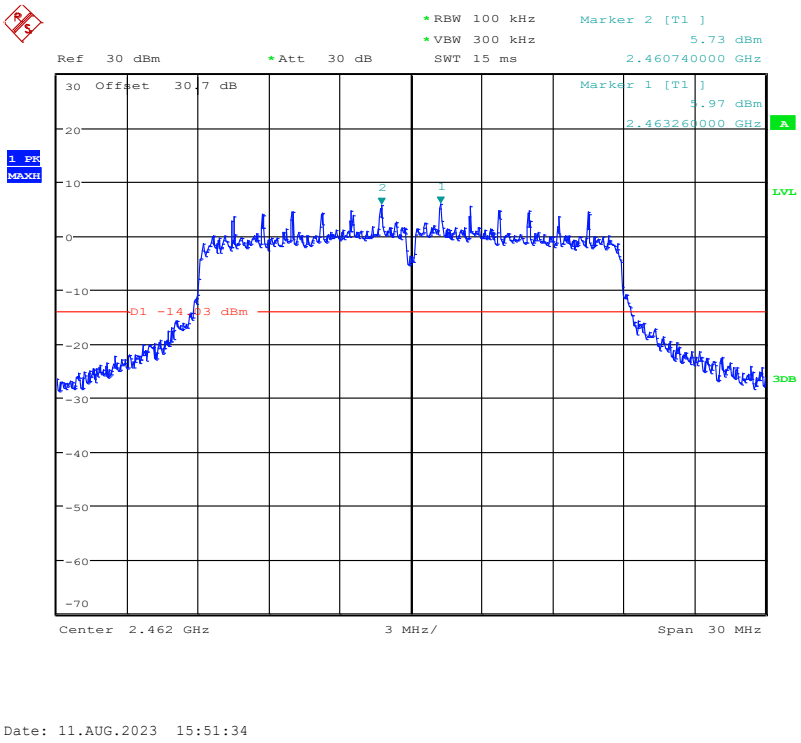


Fig.A.6.1.25 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, Center Frequency)

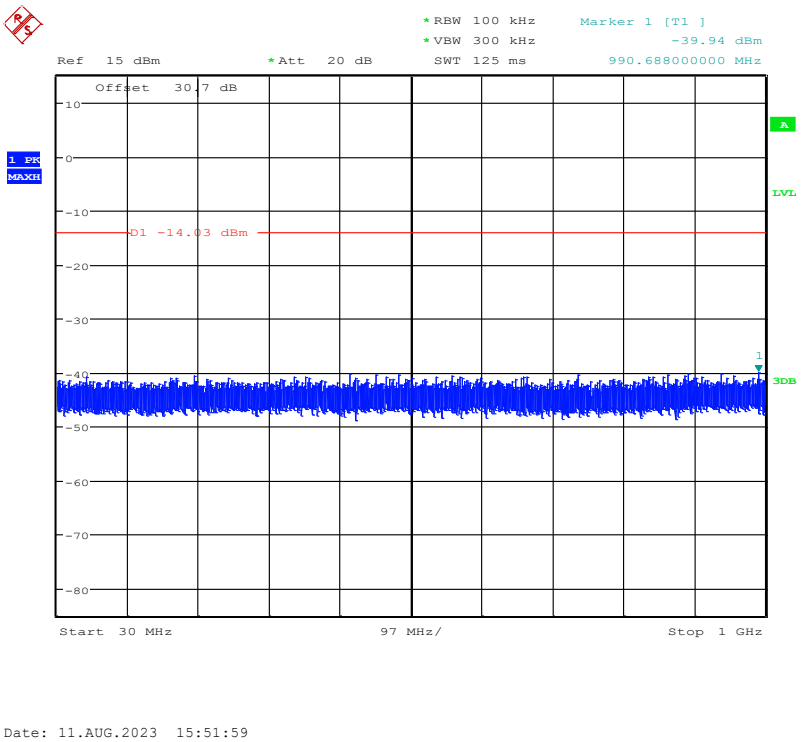


Fig.A.6.1.26 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 30 MHz-1 GHz)

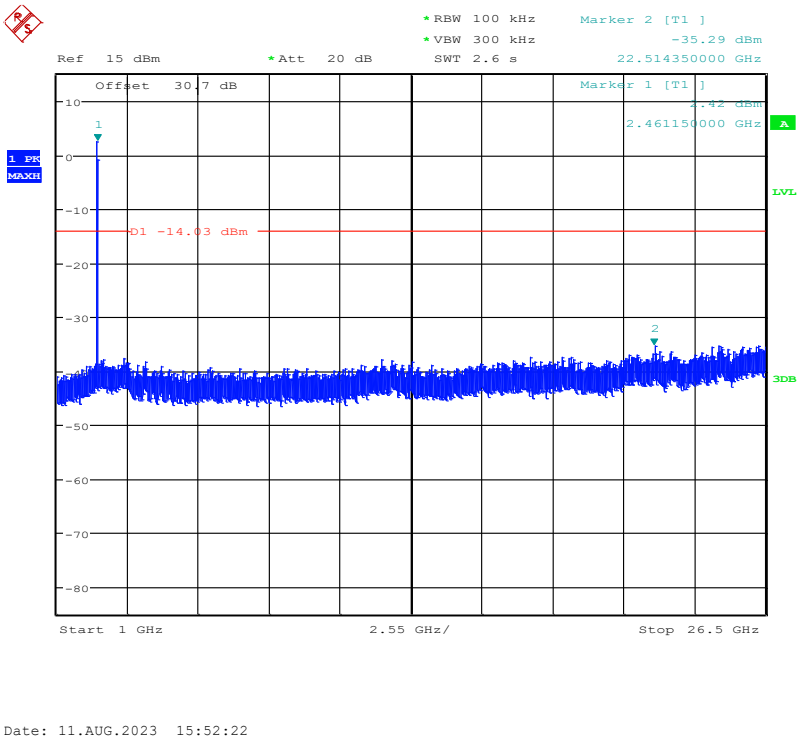


Fig.A.6.1.27 Transmitter Spurious Emission - Conducted (802.11n-HT20, Ch11, 1 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-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)	Measurement distance (m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

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

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m

The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-3000	1MHz/3MHz	15
3000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Measurement results:

802.11b mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.31GHz~2.43GHz---L	Fig.A.6.2.1	**P**
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.2	**P**

802.11g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11g	1	2.31GHz~2.43GHz---L	Fig.A.6.2.3	**P**
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.4	**P**

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	1	2.31GHz~2.43GHz---L	Fig.A.6.2.5	**P**
	11	2.45GHz~2.50GHz---H	Fig.A.6.2.6	**P**

Conclusion: Pass

Note:

1. 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
2. The range of evaluated frequency is from 9 kHz to 26GHz. Measurement value show only up to 6 maximum emissions noted.

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)
17416.000	50.48	-29.50	43.80	36.18	74.00	23.52	V
13594.000	48.31	-31.30	40.80	38.81	74.00	25.69	V
7233.000	45.81	-35.60	36.40	45.01	74.00	28.19	V
11781.000	45.79	-32.90	39.20	39.49	74.00	28.21	V
9383.000	44.21	-34.10	37.90	40.41	74.00	29.79	V
2368.500	55.67	-19.60	28.20	47.07	74.00	18.33	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)
17956.500	50.95	-29.40	46.00	34.35	74.00	23.05	V
13744.500	48.29	-31.00	41.10	38.19	74.00	25.71	V
12805.000	45.97	-31.50	39.80	37.67	74.00	28.03	V
7311.000	45.63	-35.40	36.60	44.43	74.00	28.37	V
8997.000	44.75	-34.70	37.70	41.75	74.00	29.25	V
4874.000	42.34	-37.50	33.40	46.44	74.00	31.66	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)
17352.000	50.74	-28.60	43.40	35.94	74.00	23.26	H
14536.500	48.30	-30.60	41.90	37.00	74.00	25.70	H
12166.500	46.04	-32.30	38.90	39.44	74.00	27.96	V
9503.500	44.76	-34.60	37.70	41.66	74.00	29.24	V
7387.000	44.25	-35.10	36.60	42.75	74.00	29.75	V
2486.100	56.53	-19.70	28.20	48.03	74.00	17.47	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)
17955.500	51.69	-29.40	46.00	35.09	74.00	22.31	V
14217.000	48.50	-30.60	41.80	37.40	74.00	25.50	V
12171.000	45.95	-32.30	38.90	39.35	74.00	28.05	V
7234.500	45.44	-35.60	36.40	44.64	74.00	28.56	V
9027.000	44.14	-34.30	37.80	40.64	74.00	29.86	V
2389.500	64.89	-19.80	28.20	56.49	74.00	9.11	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)
17566.500	50.94	-29.20	44.90	35.24	74.00	23.06	V
14565.500	48.17	-29.00	41.90	35.27	74.00	25.83	H
12783.000	46.69	-31.50	39.80	38.39	74.00	27.31	V
9034.000	44.36	-34.30	37.80	40.86	74.00	29.64	V
7323.000	44.33	-35.40	36.60	43.13	74.00	29.67	V
4869.500	40.26	-37.50	33.40	44.36	74.00	33.74	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)
17444.000	51.74	-28.50	44.20	36.04	74.00	22.26	V
13699.500	48.39	-31.00	41.00	38.39	74.00	25.61	H
11892.000	45.83	-32.40	39.10	39.13	74.00	28.17	H
9600.000	44.08	-34.30	37.50	40.88	74.00	29.92	H
7389.500	44.03	-35.10	36.60	42.53	74.00	29.97	V
2485.200	59.31	-19.70	28.20	50.81	74.00	14.69	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)
17313.500	51.05	-29.50	42.90	37.65	74.00	22.95	V
13753.500	47.94	-31.00	41.10	37.84	74.00	26.06	V
12718.000	46.24	-31.90	39.50	38.64	74.00	27.76	H
7231.000	44.70	-35.60	36.40	43.90	74.00	29.30	H
9589.000	43.83	-34.30	37.50	40.63	74.00	30.17	H
2388.700	64.18	-19.80	28.20	55.78	74.00	9.82	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)
17901.000	51.20	-29.40	46.00	34.60	74.00	22.80	V
13622.000	48.34	-31.30	40.90	38.74	74.00	25.66	V
11775.000	46.39	-32.90	39.20	40.09	74.00	27.61	V
7313.500	44.32	-35.40	36.60	43.12	74.00	29.68	V
8710.500	43.69	-34.40	37.70	40.39	74.00	30.31	V
4876.000	39.31	-37.50	33.40	43.41	74.00	34.69	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)
17946.500	50.72	-29.40	46.00	34.12	74.00	23.28	V
13756.000	48.42	-31.00	41.10	38.32	74.00	25.58	V
12778.500	46.92	-31.50	39.80	38.62	74.00	27.08	H
7627.000	43.84	-35.50	36.30	43.04	74.00	30.16	H
8733.000	43.74	-34.80	37.90	40.64	74.00	30.26	V
2485.100	60.70	-19.70	28.20	52.20	74.00	13.30	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)
17436.500	41.04	-28.50	44.20	25.34	54.00	12.96	V
4824.000	38.69	-37.70	33.00	43.39	54.00	15.31	H
7236.500	38.45	-35.60	36.40	37.65	54.00	15.55	V
13805.500	38.26	-30.90	41.20	27.96	54.00	15.74	V
11787.000	36.54	-32.00	39.20	29.34	54.00	17.46	V
2373.100	43.98	-19.60	28.20	35.38	54.00	10.02	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)
17980.500	41.39	-29.40	46.00	24.79	54.00	12.61	V
13694.500	38.76	-31.00	41.00	28.76	54.00	15.24	H
4874.000	38.18	-37.50	33.40	42.28	54.00	15.82	H
7312.000	38.05	-35.40	36.60	36.85	54.00	15.95	V
12772.500	36.38	-31.50	39.80	28.08	54.00	17.62	H
9468.000	34.92	-34.60	37.70	31.82	54.00	19.08	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)
17377.500	41.55	-29.50	43.80	27.25	54.00	12.45	V
13714.500	38.86	-31.00	41.10	28.76	54.00	15.14	V
4924.000	38.31	-37.60	33.30	42.61	54.00	15.69	H
7387.000	36.99	-35.10	36.60	35.49	54.00	17.01	V
12763.500	36.26	-31.80	39.60	28.36	54.00	17.74	V
2486.900	44.34	-19.70	28.20	35.84	54.00	9.66	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)
17559.000	41.73	-29.20	44.90	26.03	54.00	12.27	H
14108.500	38.83	-30.20	41.70	27.33	54.00	15.17	H
12378.000	36.36	-31.90	38.90	29.36	54.00	17.64	V
7237.000	35.95	-35.60	36.40	35.15	54.00	18.05	V
9472.500	34.45	-34.60	37.70	31.35	54.00	19.55	V
2389.900	50.40	-19.80	28.20	42.00	54.00	3.60	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)
17378.000	41.14	-29.50	43.80	26.84	54.00	12.86	H
13728.500	38.47	-31.00	41.10	28.37	54.00	15.53	V
12787.500	36.15	-31.50	39.80	27.85	54.00	17.85	V
7308.000	35.62	-35.40	36.60	34.42	54.00	18.38	V
8567.500	34.44	-35.00	37.50	31.94	54.00	19.56	V
4874.000	32.01	-37.50	33.40	36.11	54.00	21.99	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)
17965.500	40.84	-29.40	46.00	24.24	54.00	13.16	V
13750.000	38.53	-31.00	41.10	28.43	54.00	15.47	V
12550.500	36.01	-31.20	39.20	28.01	54.00	17.99	V
7321.000	34.29	-35.40	36.60	33.09	54.00	19.71	V
9509.000	34.24	-33.80	37.60	30.44	54.00	19.76	H
2485.100	47.09	-19.70	28.20	38.59	54.00	6.91	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)
17242.500	41.27	-29.30	42.40	28.17	54.00	12.73	V
13716.000	38.64	-31.00	41.10	28.54	54.00	15.36	V
12778.000	36.73	-31.50	39.80	28.43	54.00	17.27	H
7231.000	35.08	-35.60	36.40	34.28	54.00	18.92	V
9396.000	34.35	-34.10	37.90	30.55	54.00	19.65	V
2389.400	51.00	-19.80	28.20	42.60	54.00	3.00	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)
17560.000	41.10	-29.20	44.90	25.40	54.00	12.90	V
13675.500	38.44	-31.00	41.00	28.44	54.00	15.56	V
12778.000	35.97	-31.50	39.80	27.67	54.00	18.03	H
7317.000	35.11	-35.40	36.60	33.91	54.00	18.89	V
9499.000	34.47	-34.60	37.70	31.37	54.00	19.53	V
4876.000	29.91	-37.50	33.40	34.01	54.00	24.09	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)
17443.000	41.31	-28.50	44.20	25.61	54.00	12.69	H
13744.000	38.42	-31.00	41.10	28.32	54.00	15.58	H
12763.500	36.52	-31.80	39.60	28.62	54.00	17.48	H
9500.000	34.41	-34.60	37.70	31.31	54.00	19.59	H
7221.500	34.23	-35.40	36.20	33.43	54.00	19.77	V
2485.300	47.82	-19.70	28.20	39.32	54.00	6.18	H

Test graphs as below:

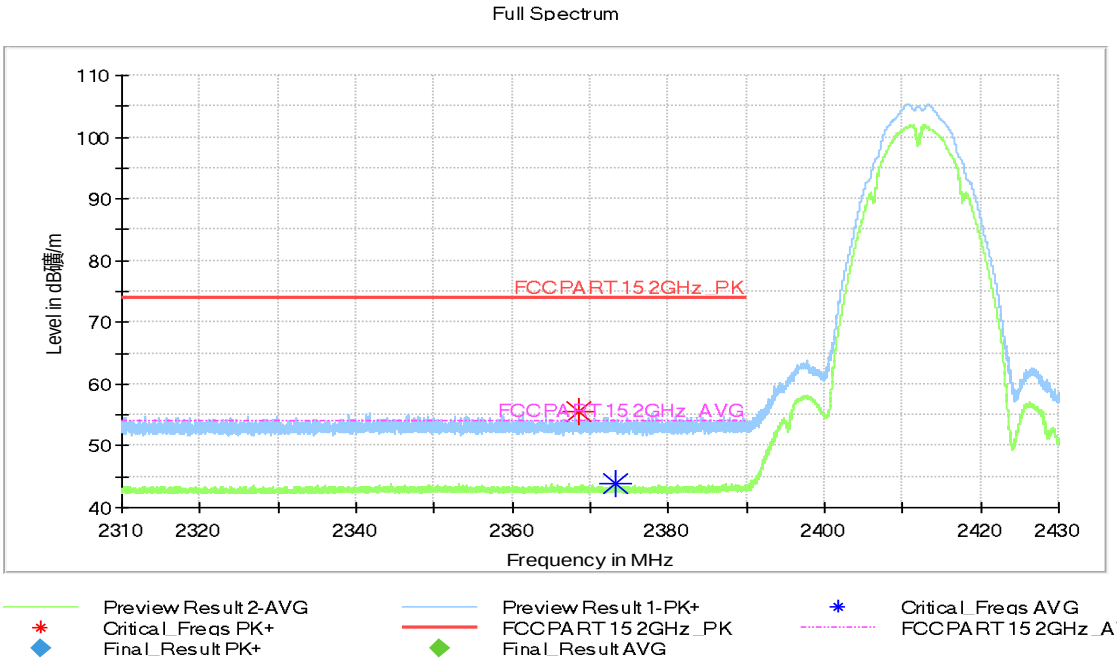


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch1, 2.31 GHz – 2.45GHz

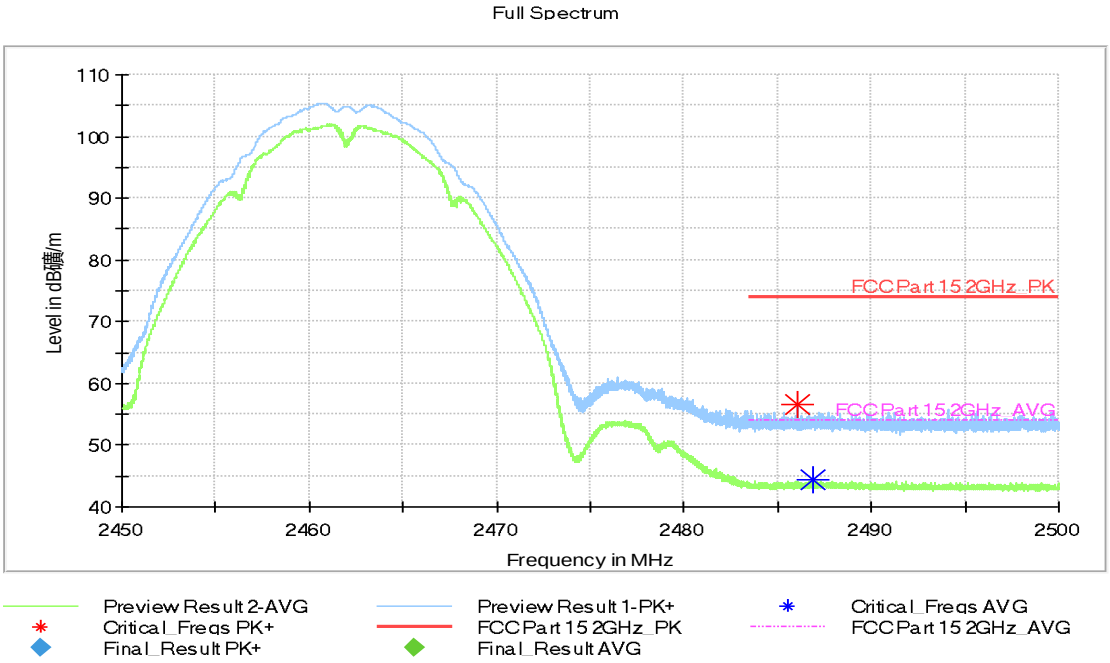


Fig.A.6.2.2 Transmitter Spurious Emission - Radiated (Power): 802.11b, ch11, 2.45 GHz - 2.50GHz

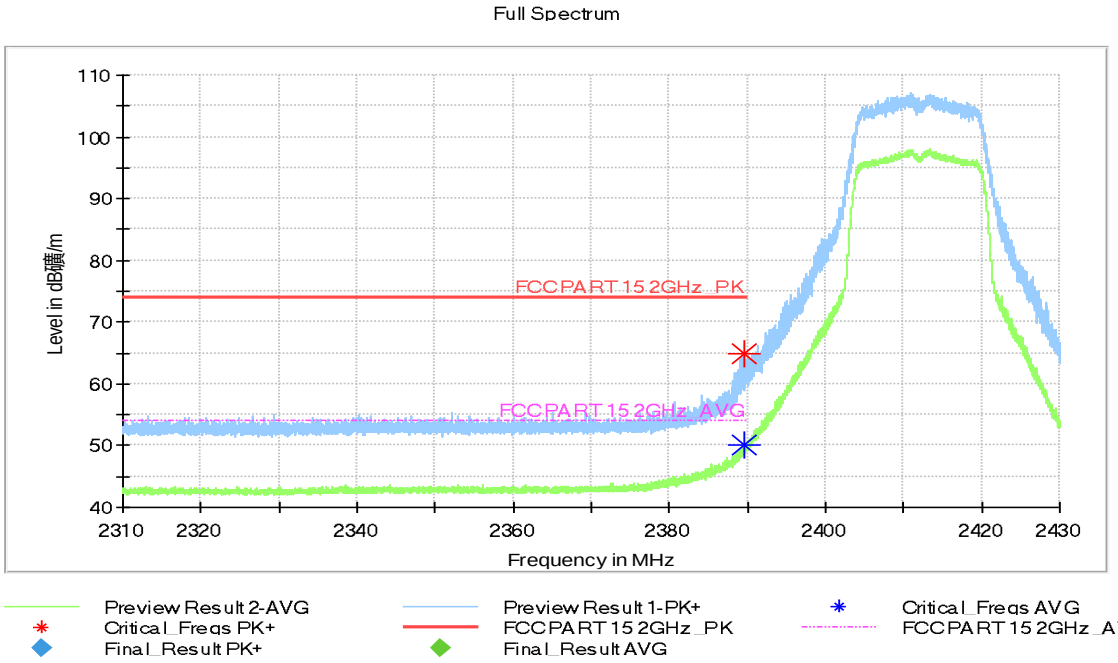


Fig.A.6.2.3 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch1, 2.31 GHz - 2.45GHz

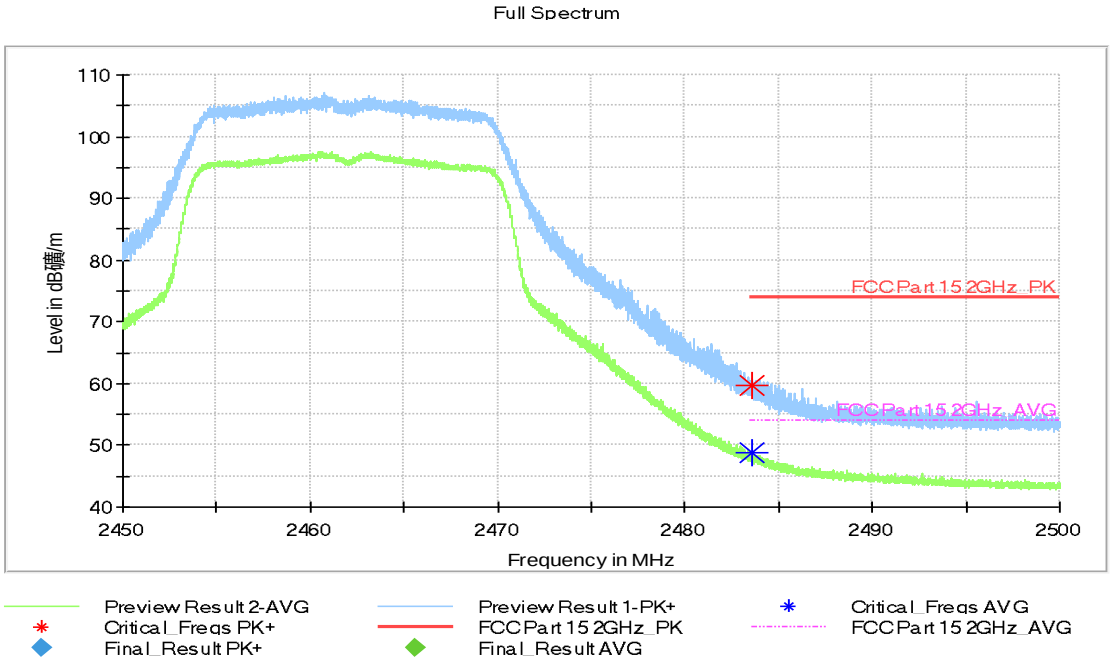


Fig.A.6.2.4 Transmitter Spurious Emission - Radiated (Power): 802.11g, ch11, 2.45 GHz - 2.50GHz

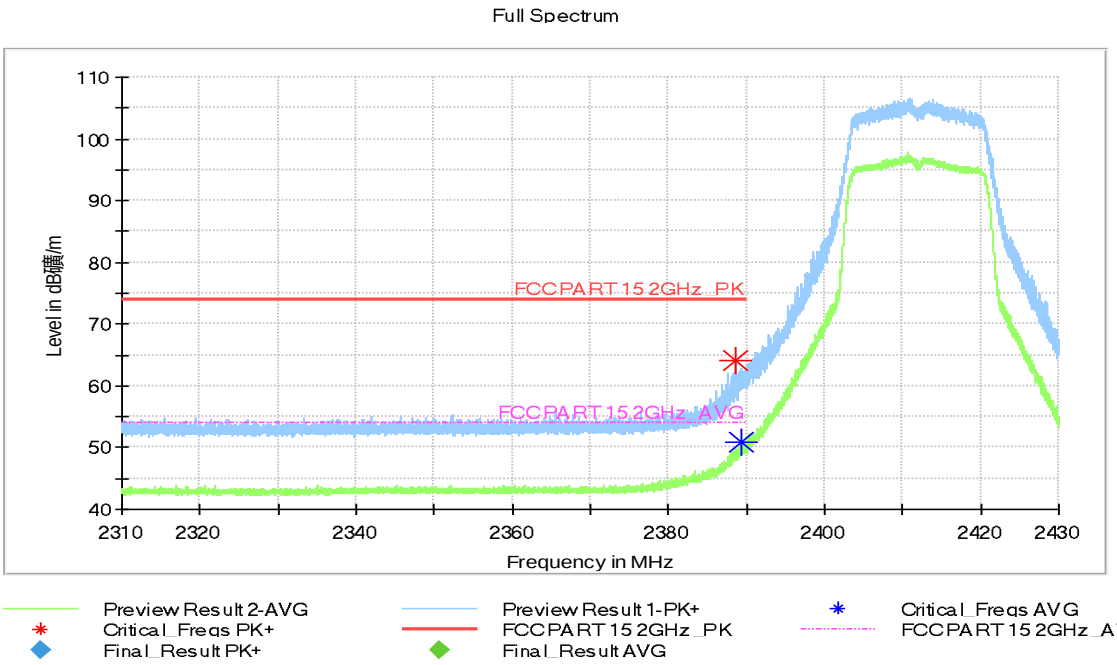


Fig.A.6.2.5 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch1, 2.31 GHz - 2.45GHz

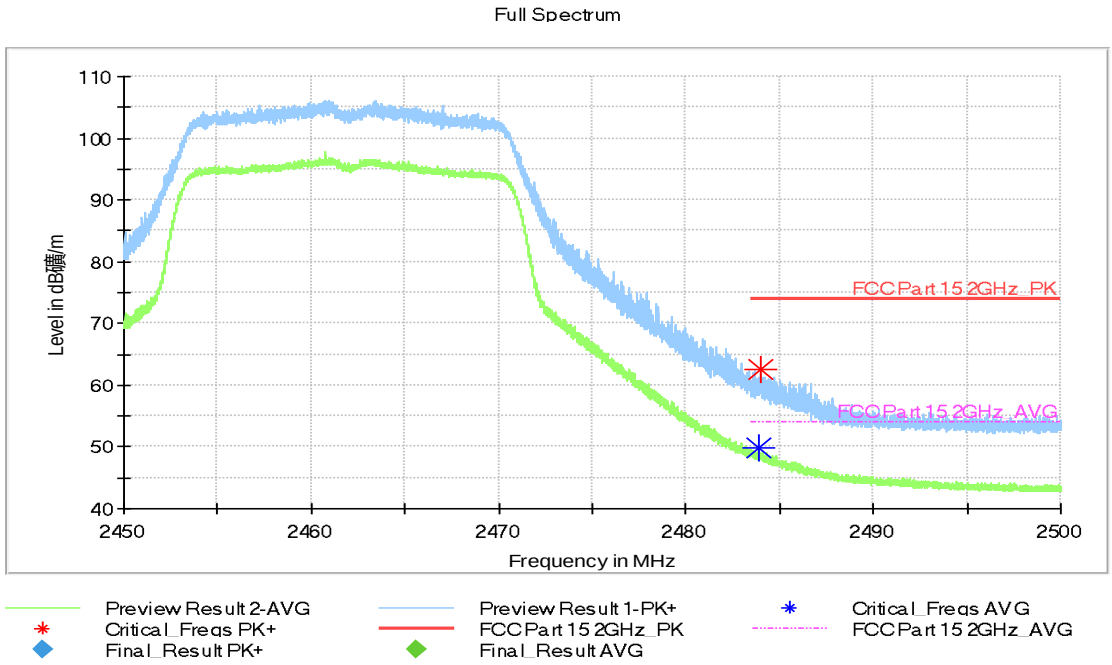


Fig.A.6.2.1 Transmitter Spurious Emission - Radiated (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.50GHz

A.7. AC Power-line Conducted Emission

Summary

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section

Method of Measurement:

See Clause 6.2 of ANSI C63.10 specifically.

See Clause 4 and Clause 5 of ANSI C63.10 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

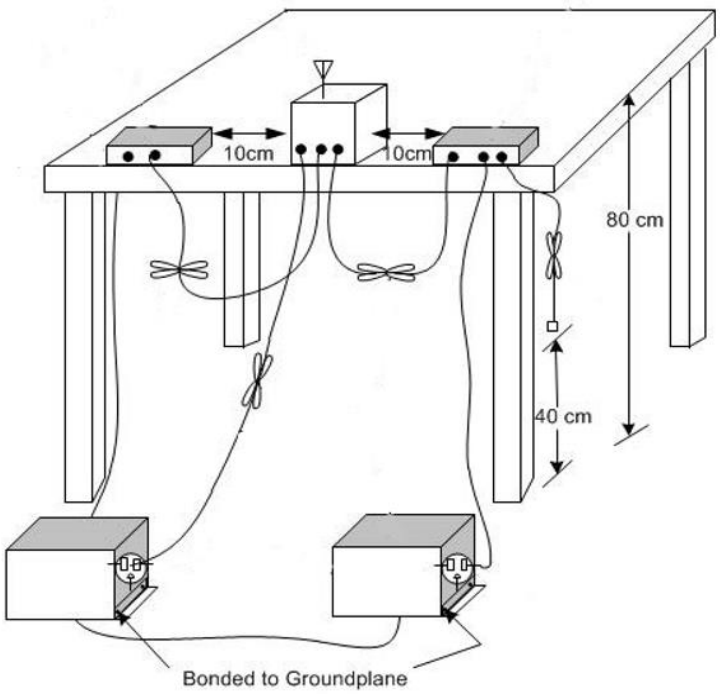
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth
0.15-30	9kHz

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Setup



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:

Result for Traffic:

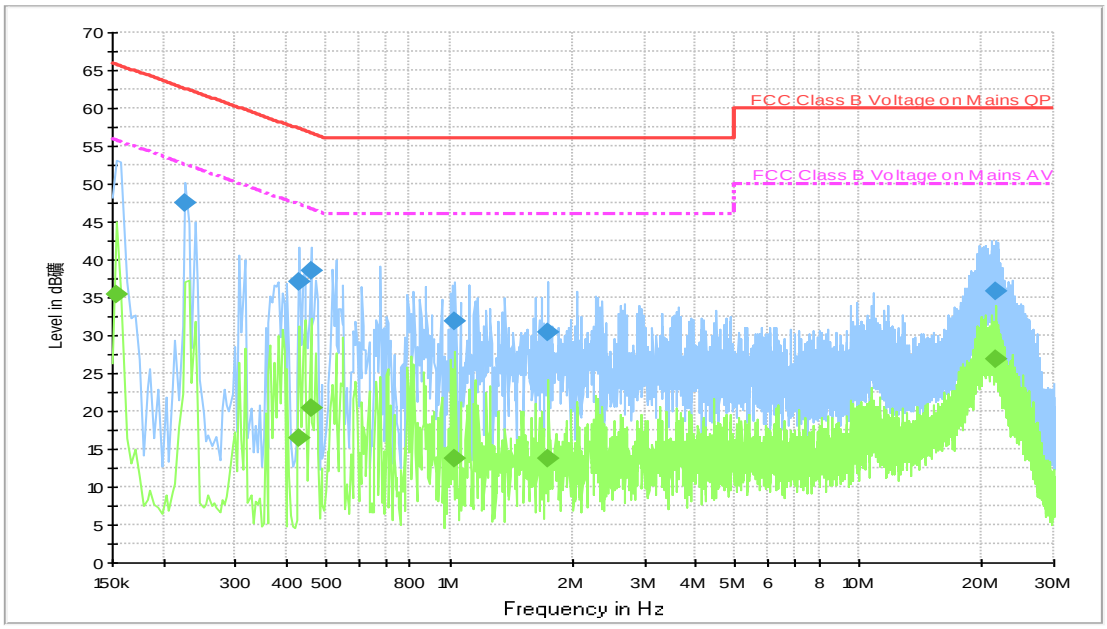


Fig.A.7.1 AC Powerline Conducted Emission-802.11b

Note1: 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 (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.226000	47.4	2000.	9.000	L1	19.7	15.2	62.6
0.430000	37.0	2000.	9.000	L1	19.7	20.2	57.3
0.458000	38.6	2000.	9.000	L1	19.7	18.1	56.7
1.034000	31.9	2000.	9.000	L1	19.7	24.1	56.0
1.734000	30.4	2000.	9.000	L1	19.6	25.6	56.0
21.642000	35.8	2000.	9.000	L1	19.7	24.2	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	35.4	2000.0	9.000	L1	19.9	20.4	55.8
0.430000	16.4	2000.0	9.000	L1	19.7	30.8	47.3
0.458000	20.4	2000.0	9.000	L1	19.7	26.3	46.7
1.034000	13.7	2000.0	9.000	L1	19.7	32.3	46.0
1.734000	13.8	2000.0	9.000	L1	19.6	32.2	46.0
21.642000	26.8	2000.0	9.000	L1	19.7	23.2	50.0

Result for Idle:

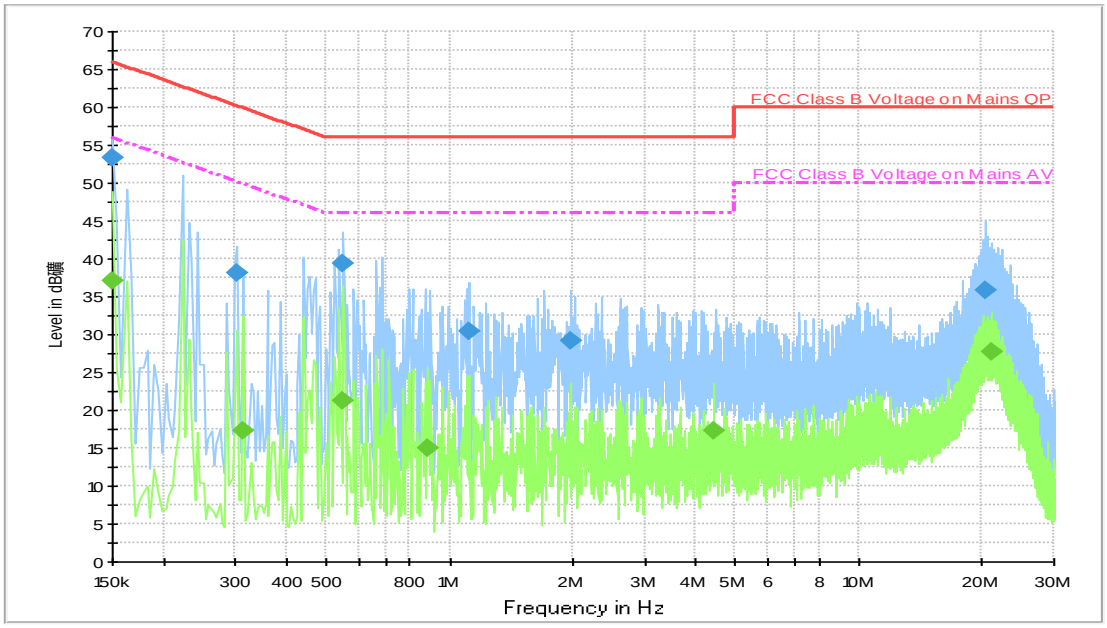


Fig.A.7.2 AC Powerline Conducted Emission-Idle

Note1: 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 (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	53.4	2000.	9.000	L1	20.0	12.6	66.0
0.302000	38.0	2000.	9.000	N	19.7	22.1	60.2
0.550000	39.5	2000.	9.000	L1	19.7	16.5	56.0
1.114000	30.5	2000.	9.000	L1	19.6	25.6	56.0
1.978000	29.2	2000.	9.000	L1	19.6	26.8	56.0
20.370000	35.9	2000.	9.000	L1	19.8	24.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	37.1	2000.0	9.000	L1	20.0	18.9	56.0
0.314000	17.3	2000.0	9.000	N	19.7	32.6	49.9
0.550000	21.2	2000.0	9.000	L1	19.7	24.8	46.0
0.882000	15.0	2000.0	9.000	L1	19.7	31.0	46.0
4.430000	17.3	2000.0	9.000	L1	19.6	28.7	46.0
21.230000	27.6	2000.0	9.000	L1	19.7	22.4	50.0

ANNEX B: EUT parameters

Disclaimer: The antenna gain 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

Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 26th day of June 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

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