TESTING
NVLAP LAB CODE 600118-0

FCC PART 15C
TEST REPORT
No.I23Z70001-IOT02

for

Wingtech Group (Hong Kong) Limited

Flex Mirror

ODP-R133

With

FCC ID: 2APXWODPR133

Hardware Version: REV1.0

Software Version: R133.001

Issued Date: 2023-03-27

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.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I23Z70001-IOT02	Rev.0	1st edition	2023-03-20
I23Z70001-IOT02	Rev.1	Added 2/10 channel Band Edge and Peak Power	2023-03-27

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Conducted 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, 100176, P.R. China

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℃

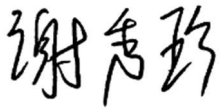
Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2023-01-13

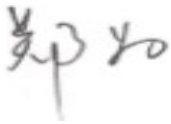
Testing End Date: 2023-03-27

1.5. Signature



Xie Xiuzhen

(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:	Wingtech Group (Hong Kong) Limited
Address:	Flat/RM 1902 19/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL, HK
City:	Hong Kong
Postal Code:	/
Country:	China
Telephone:	+86-21-53529900
Fax:	/

2.2. Manufacturer Information

Company Name:	Wingtech Group (Hong Kong) Limited
Address:	Flat/RM 1802 18/F, Podium Plaza, 5 Hanoi Road, TSIM SHA TSUI, KOWLOON, HONG KONG
City:	Hong Kong
Postal Code:	/
Country:	China
Telephone:	+86-18321929116
Fax:	/

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

3.1. About EUT

Description	Flex Mirror
Model name	ODP-R133
FCC ID	2APXWODPR133
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	27.88dBm
Power Supply	3.85V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
UT51a	2370001UT51a	REV1.0	R133.001
UT13a	2370001UT13a	REV1.0	R133.001

*EUT ID: is used to identify the test sample in the lab internally.
UT13a is used for Conduction test, UT51a is used for Radiation test.

3.3. Internal Identification of AE

AE ID*	Description	Remark
AE1	Adapter	/
AE2	Data Cable	/
AE3	Battery	/

AE1

Model	/
Manufacturer	/
Length	/

AE2

Model	21104
Manufacturer	BROAD TELECOMMUNICATION CO LTD
Length	/

AE3

Model	SCUD-WT-N19
Manufacturer	SCUD (Fujian) Electronics Co., Ltd.
Capacitance	/
Nominal voltage	/

*AE ID: is used to identify the test sample in the lab internally.
*AE1 is not the AE of EUT, provided by client for relevant test.

3.4. General Description

The Equipment under Test (EUT) is a model of Flex Mirror with integrated antenna and inbuilt battery.

It has Bluetooth (EDR) function.

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℃
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	FSW67	104051	Rohde & Schwarz	1 year	2024-03-06
2	LISN	ENV216	101200	Rohde & Schwarz	1 year	2023-06-29
3	Test Receiver	ESU26	100235	R&S	1 year	2023-04-07
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	R&S	100376	1 year	2023-09-22
2	Test Receiver	ESW44	R&S	103015	1 year	2024-01-14
3	Test Receiver	ESU26	R&S	100235	1 year	2023-03-08
4	Loop Antenna	HFH2-Z2	R&S	829324/007	1 year	2023-12-22
5	EMI Antenna	VULB9163	Schwarzbeck	01177	1 year	2023-08-03
6	EMI Antenna	3117	ETS-Lindgren	00139065	1 year	2023-09-20
8	EMI Antenna	LB-180400-25-C-KF	A-INFO	2110084000006	1 year	2024-03-02

AC Power Line Conducted Emission

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	LISN	ENV216	R&S	101459	1 year	2023-03-26
2	Test Receiver	ESCI	R&S	100766	1 year	2023-03-02

Note: The test Receiver which Serial Number is 100766 was before Calibration Due date when used.

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	5.73
1GHz ≤ f ≤18GHz	5.58
18GHz ≤ f ≤40GHz	3.37

7.6. AC Power-line Conducted Emission

Measurement Uncertainty: 3.10dB, 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

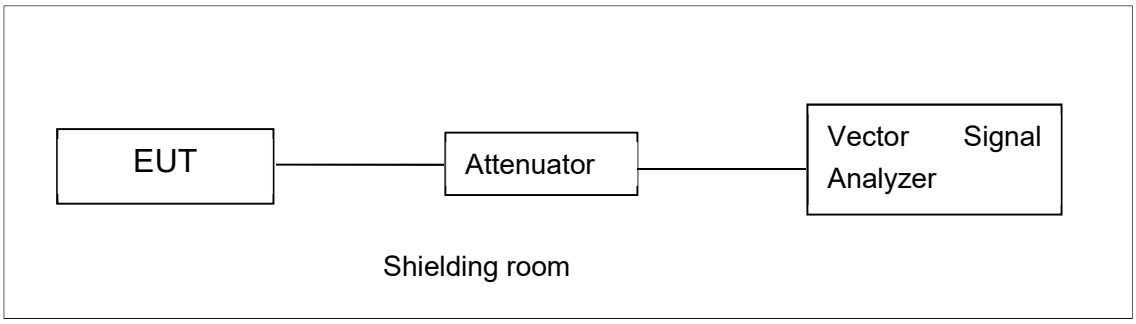


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

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;

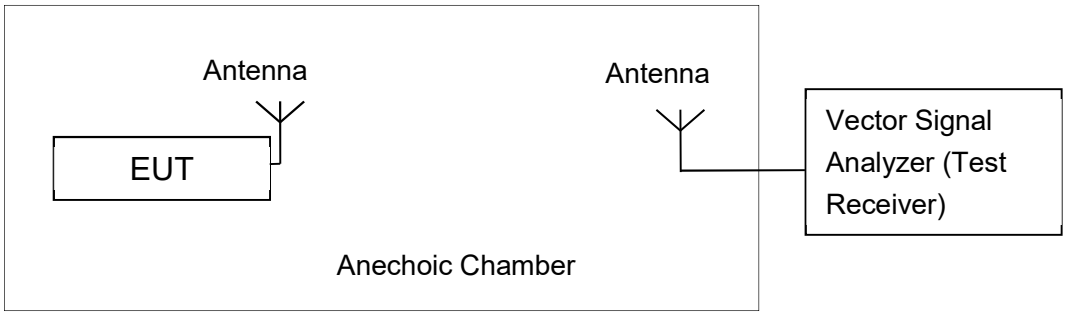


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

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: UT13a

A.2.1. Peak Output Power-conducted

Antenna Gain: -1.9dBi(Ant0)/-1.7dBi(Ant1)

Measurement Results:

SISO-ANT0

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)				
		2412MHz (Ch1)	2417MHz (Ch2)	2437MHz (Ch6)	2457MHz (Ch10)	2462 MHz (Ch11)
802.11b	1	15.50	/	/	/	/
	2	15.76	/	/	/	/
	5.5	15.72	/	/	/	/
	11	15.92	15.88	15.30	15.97	15.77
802.11g	6	/	/	24.94	/	/
	9	20.50	21.55	24.99	21.73	20.56
	12	/	/	24.83	/	/
	18	/	/	24.64	/	/
	24	/	/	23.63	/	/
	36	/	/	23.48	/	/
	48	/	/	23.09	/	/
	54	/	/	21.47	/	/

The data rate 11Mbps and 9Mbps 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)	2417MHz (Ch2)	2437MHz (Ch6)	2457MHz (Ch10)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	20.44	21.50	25.46	21.69	20.55
	MCS1	/	/	25.26	/	/
	MCS2	/	/	25.17	/	/
	MCS3	/	/	24.20	/	/
	MCS4	/	/	23.59	/	/
	MCS5	/	/	23.51	/	/
	MCS6	/	/	22.58	/	/
	MCS7	/	/	21.98	/	/

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

SISO-ANT1

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)				
		2412MHz (Ch1)	2417MHz (Ch2)	2437MHz (Ch6)	2457MHz (Ch10)	2462 MHz (Ch11)
802.11b	1	15.61	/	/	/	/
	2	16.03	16.02	16.62	16.26	16.61
	5.5	15.77	/	/	/	/
	11	15.98	/	/	/	/
802.11g	6	19.91	21.66	25.81	21.89	20.48
	9	/	/	25.61	/	/
	12	/	/	25.51	/	/
	18	/	/	25.39	/	/
	24	/	/	24.03	/	/
	36	/	/	23.77	/	/
	48	/	/	23.38	/	/
	54	/	/	21.42	/	/

The data rate 2Mbps 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)	2417MHz (Ch2)	2437MHz (Ch6)	2457MHz (Ch10)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	19.89	21.55	25.67	21.50	20.13
	MCS1	/	/	25.31	/	/
	MCS2	/	/	25.20	/	/
	MCS3	/	/	24.39	/	/
	MCS4	/	/	23.59	/	/
	MCS5	/	/	23.69	/	/
	MCS6	/	/	22.67	/	/
	MCS7	/	/	22.32	/	/

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

MIMO

802.11g mode

Mode	Data Rate (Mbps)	Test Result (dBm)								
		2412MHz (Ch1)			2437MHz (Ch6)			2462 MHz (Ch11)		
		Ant0	Ant1	Sum	Ant0	Ant1	Sum	Ant0	Ant1	Sum
802.11g	6	21.80	20.72	24.30	24.63	25.10	27.88	21.70	20.81	24.29
	9	/	/	/	24.57	24.62	27.61	/	/	/
	12	/	/	/	24.16	24.82	27.51	/	/	/
	18	/	/	/	24.02	24.72	27.39	/	/	/
	24	/	/	/	23.85	24.27	27.08	/	/	/
	36	/	/	/	23.99	24.23	27.12	/	/	/
	48	/	/	/	23.28	23.50	26.40	/	/	/
	54	/	/	/	21.48	21.63	24.57	/	/	/

Mode	Data Rate (Mbps)	2417MHz (Ch2)			2457MHz (Ch10)		
		Ant0	Ant1	Sum	Ant0	Ant1	Sum
802.11g	6	22.47	22.26	25.38	23.10	22.16	25.67
	9	/	/	/	/	/	/
	12	/	/	/	/	/	/
	18	/	/	/	/	/	/
	24	/	/	/	/	/	/
	36	/	/	/	/	/	/
	48	/	/	/	/	/	/
	54	/	/	/	/	/	/

The data rate 6Mbps is 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)		
		Ant0	Ant1	Sum	Ant0	Ant1	Sum	Ant0	Ant1	Sum
802.11n (20MHz)	MCS0	/	/	/	23.90	23.68	26.80	/	/	/
	MCS1	/	/	/	23.38	23.78	26.59	/	/	/
	MCS2	/	/	/	23.36	23.78	26.59	/	/	/
	MCS3	20.82	20.23	23.55	23.93	24.31	27.13	21.09	20.32	23.73
	MCS4	/	/	/	23.82	23.94	26.89	/	/	/
	MCS5	/	/	/	23.81	24.08	26.96	/	/	/
	MCS6	/	/	/	23.31	23.47	26.40	/	/	/
	MCS7	/	/	/	22.25	22.22	25.25	/	/	/

Mode	Data Rate (Index)	2417MHz (Ch2)			2457MHz (Ch10)		
		Ant0	Ant1	Sum	Ant0	Ant1	Sum
802.11n (20MHz)	MCS0	/	/	/	/	/	/
	MCS1	/	/	/	/	/	/
	MCS2	/	/	/	/	/	/
	MCS3	21.78	21.94	24.87	22.23	21.74	25.00
	MCS4	/	/	/	/	/	/
	MCS5	/	/	/	/	/	/
	MCS6	/	/	/	/	/	/
	MCS7	/	/	/	/	/	/

The data rate MCS3 is selected as worst condition, and the following cases are performed with this condition.

Duty Cycle

SISO

802.11b

Rate	1Mbps	2Mbps	5.5Mbps	11Mbps
Duty Cycle	99%	98%	95%	90%

802.11g

Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Duty Cycle	93%	90%	88%	81%	78%	71%	66%	64%

802.11n-20

Rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Duty Cycle	93%	87%	82%	78%	71%	66%	64%	62%

MIMO

802.11g

Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Duty Cycle	99%	99%	98%	97%	96%	95%	93%	93%

802.11n-20

Rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Duty Cycle	98%	98%	97%	96%	95%	93%	93%	92%

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:

SISO-ANT1

802.11b/g mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.A.3.1	-8.79	P
	6	Fig.A.3.2	-7.98	P
	11	Fig.A.3.3	-8.87	P
802.11g	1	Fig.A.3.4	-12.31	P
	6	Fig.A.3.5	-6.27	P
	11	Fig.A.3.6	-11.60	P

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.A.3.7	-12.58	P
	6	Fig.A.3.8	-6.78	P
	11	Fig.A.3.9	-12.19	P

MIMO

802.11g mode

Mode	Power Spectral Density (dBm/3 kHz)				Conclusion
802.11g	Ant0	2412	-11.35	/	P
	Ant1	2412	-11.86	Fig.A.3.10	P

	Total	2412	-8.59	/	P
	Ant0	2437	-7.91	/	P
	Ant1	2437	-7.64	Fig.A.3.11	P
	Total	2437	-4.76	/	P
	Ant0	2462	-10.52	/	P
	Ant1	2462	-11.61	Fig.A.3.12	P
	total	2462	-8.02	/	P

802.11n-HT20 mode

Mode	Power Spectral Density (dBm/3 kHz)				Conclusion
802.11n (HT20)	Ant0	2412	-12.69	/	P
	Ant1	2412	-12.90	Fig.A.3.13	P
	Total	2412	-9.78	/	P
	Ant0	2437	-9.32	/	P
	Ant1	2437	-9.63	Fig.A.3.14	P
	Total	2437	-6.46	/	P
	Ant0	2462	-12.25	/	P
	Ant1	2462	-13.13	Fig.A.3.15	P
	total	2462	-9.66	/	P

Note: All Antenna are tested, only the worst-case plot have been reported.

Conclusion: Pass

Test graphs as below:

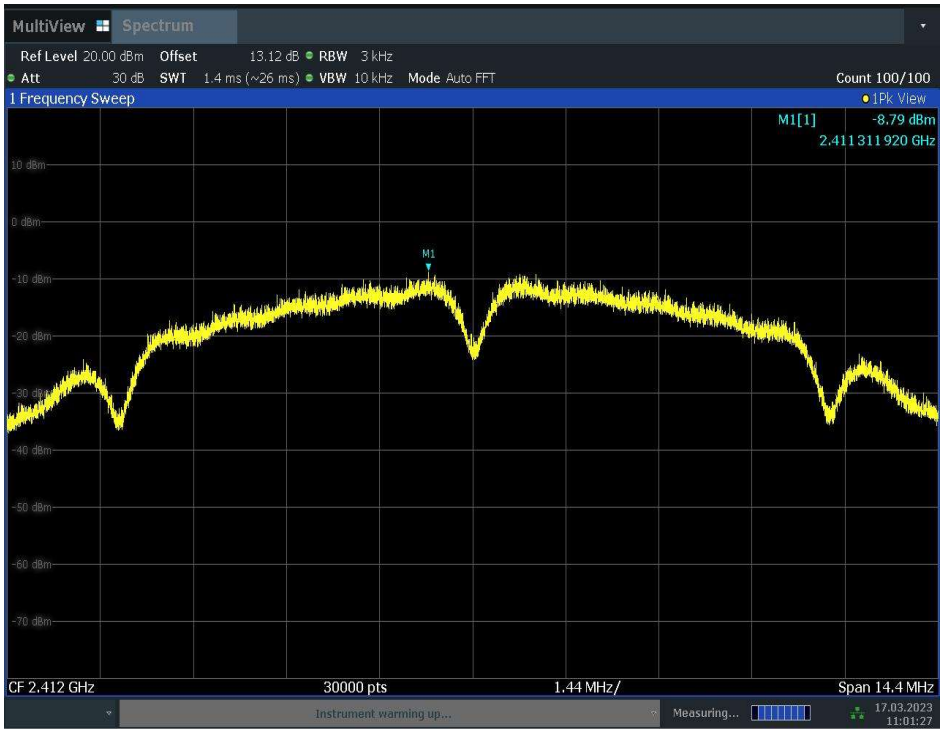


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Fig.A.3.1 Power Spectral Density (802.11b, Ch 1)

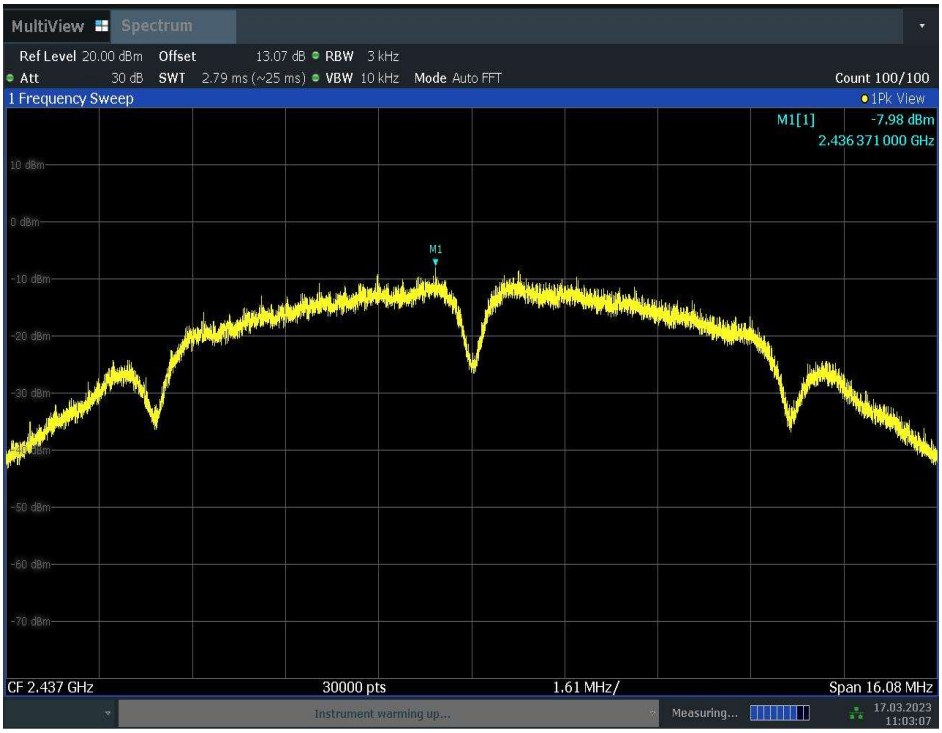

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Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)

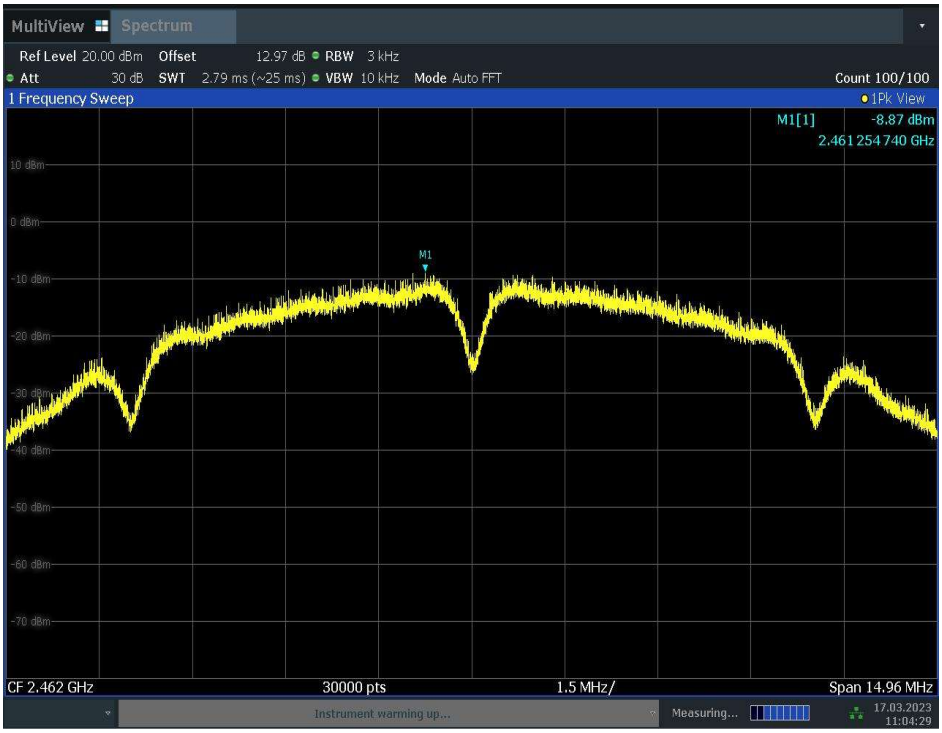

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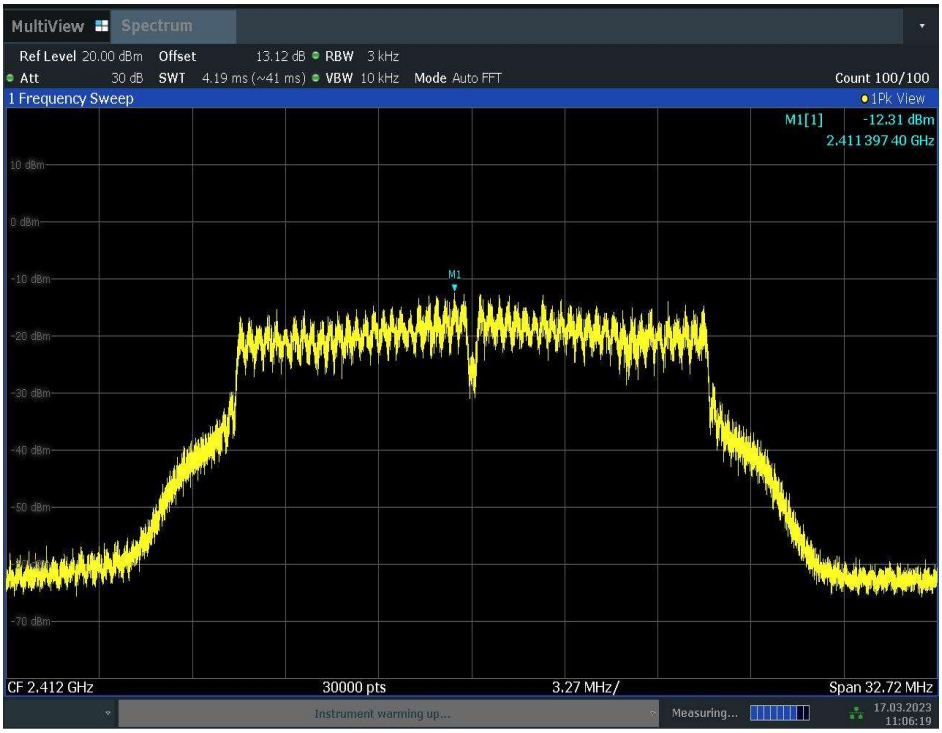
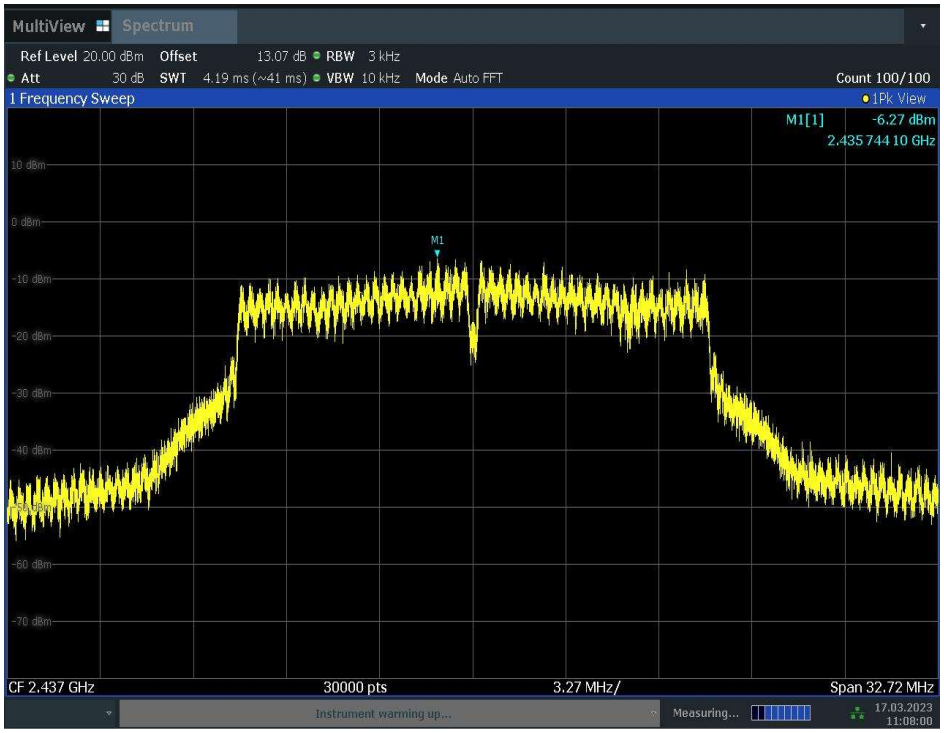
Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)



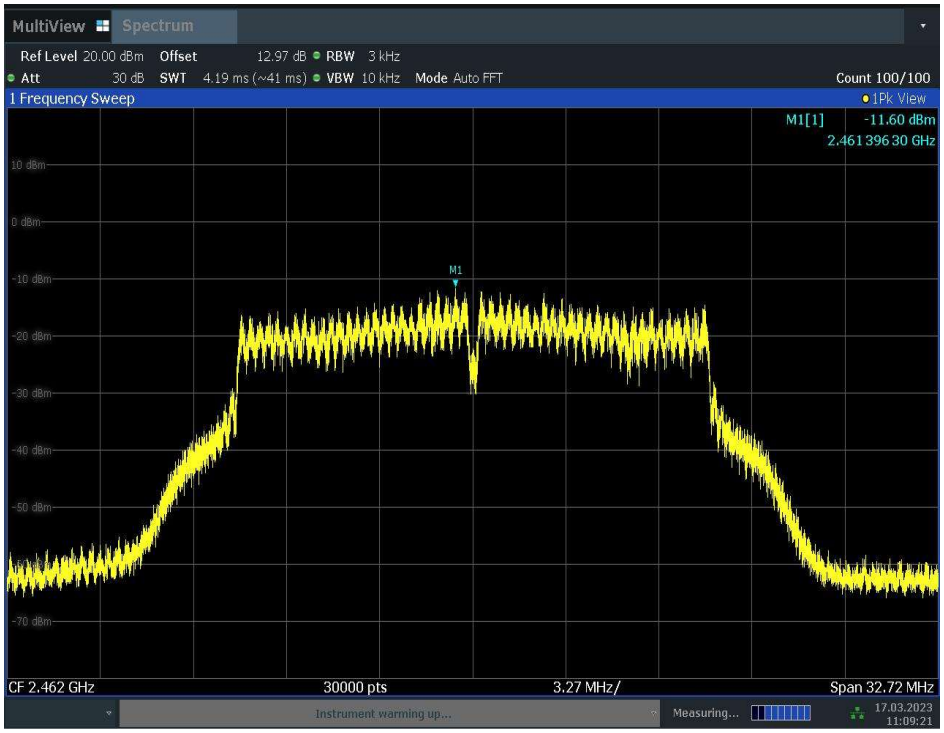
11:06:19 17.03.2023

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



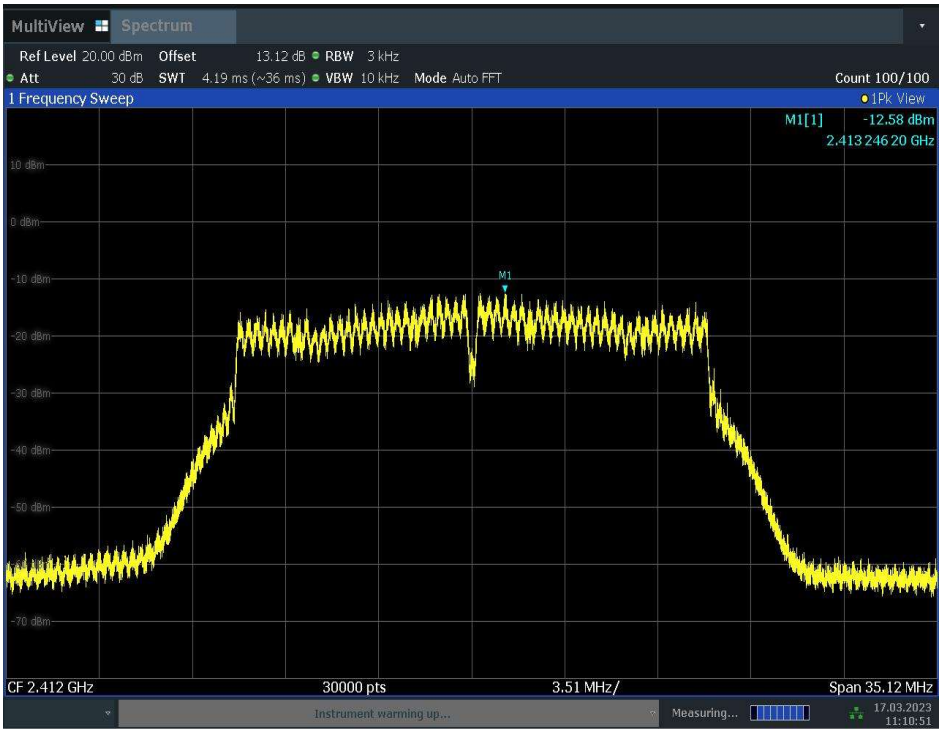
11:08:01 17.03.2023

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



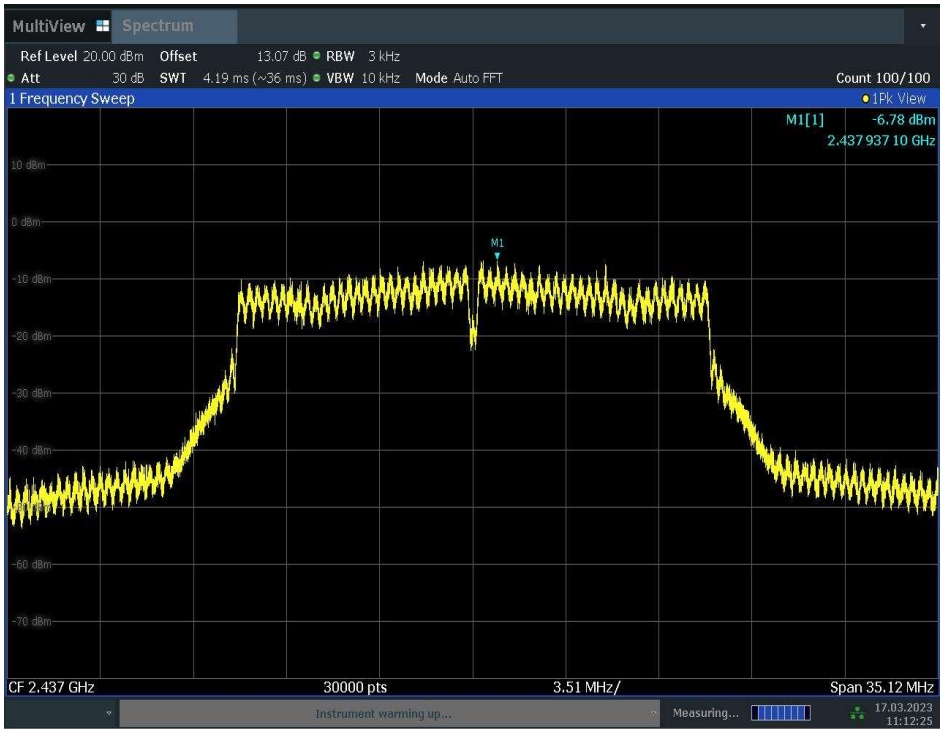
11:09:22 17.03.2023

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



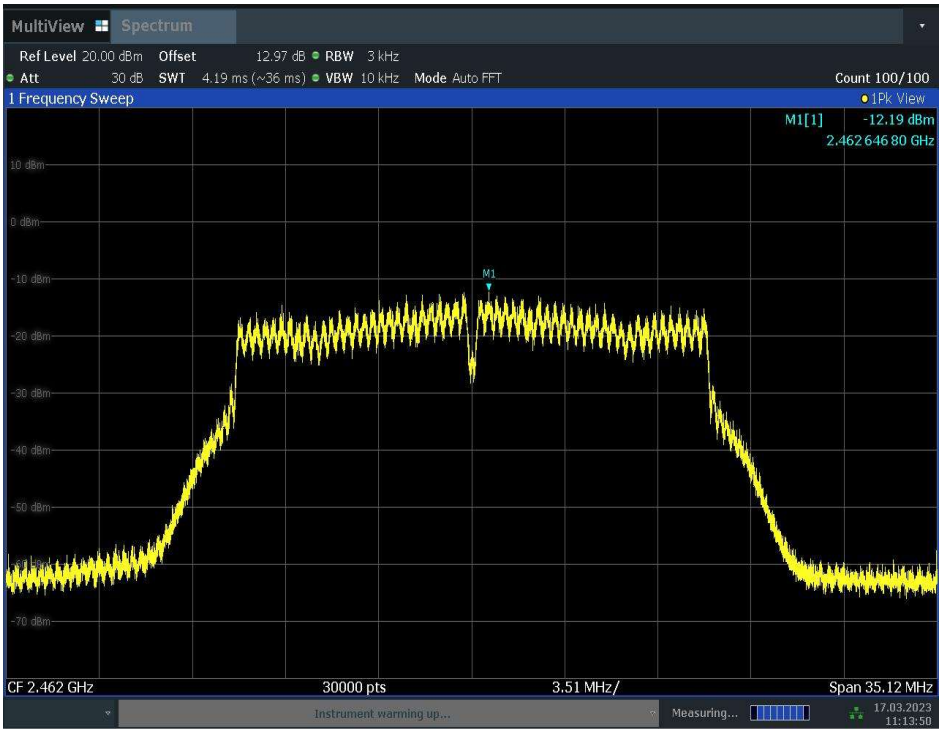
11:10:51 17.03.2023

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



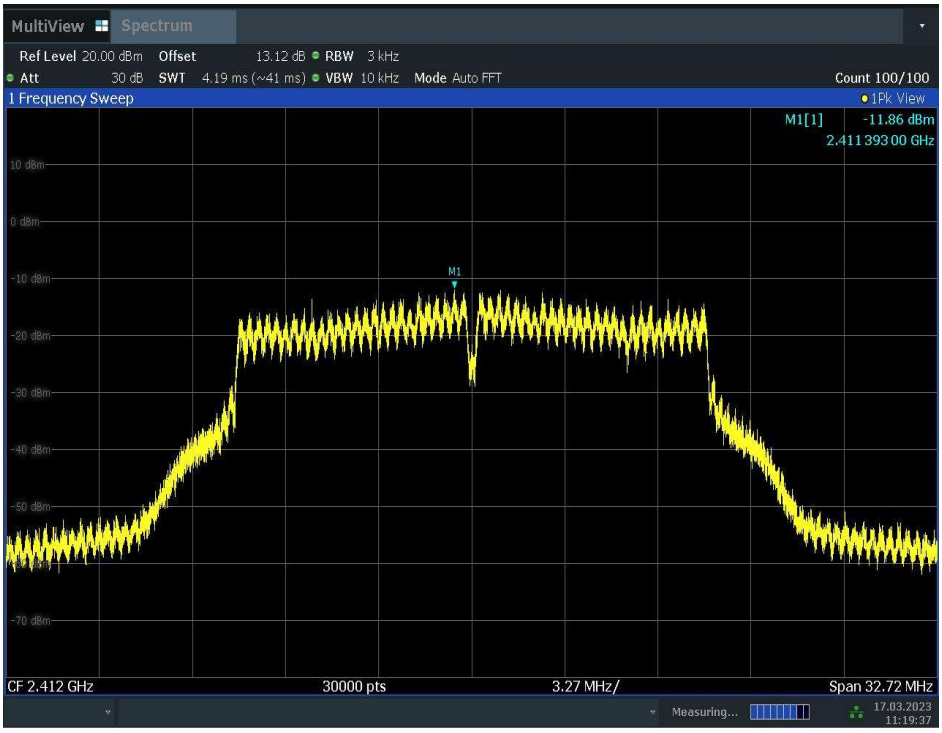
11:12:26 17.03.2023

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



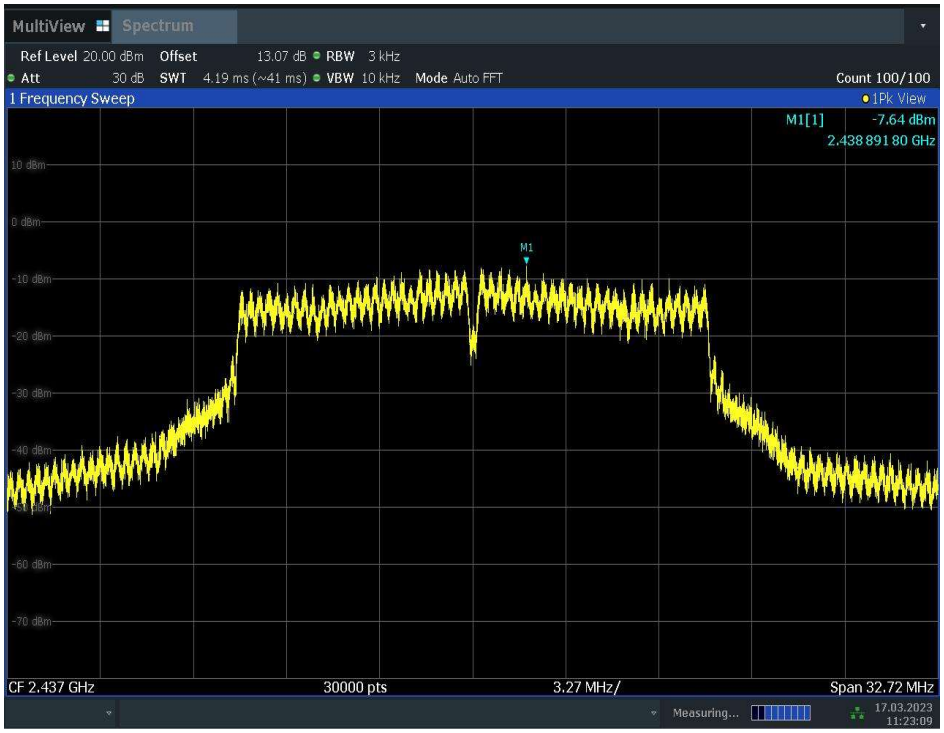
11:13:51 17.03.2023

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



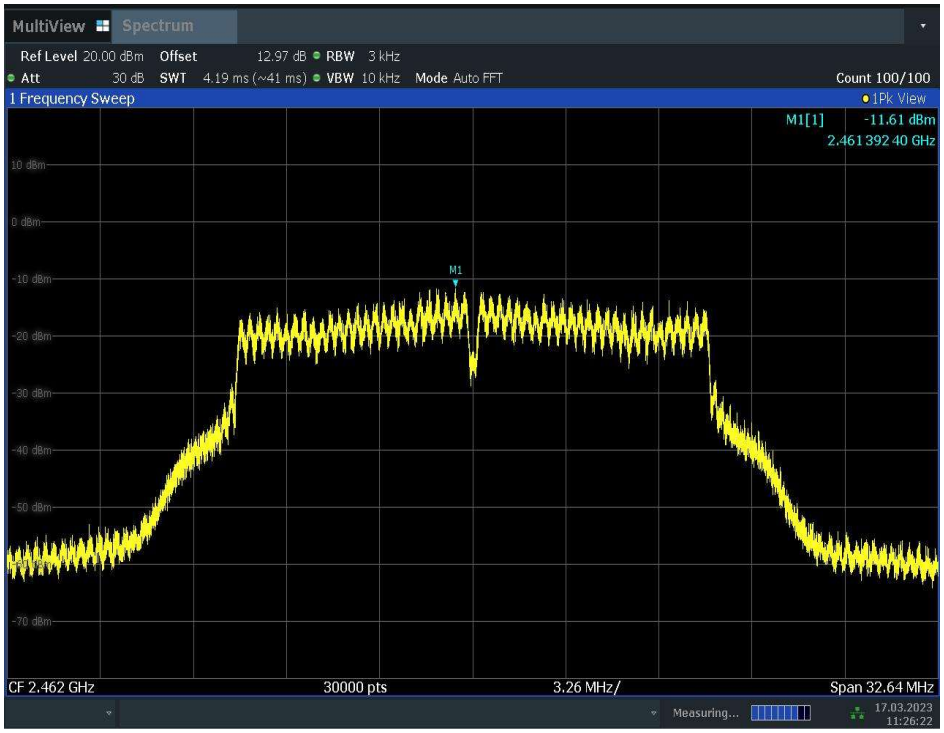
11:19:37 17.03.2023

Fig.A.3.10 Power Spectral Density (802.11g, Ch 1)



11:23:09 17.03.2023

Fig.A.3.11 Power Spectral Density (802.11g, Ch 6)



11:26:23 17.03.2023

Fig.A.3.12 Power Spectral Density (802.11g, Ch 11)

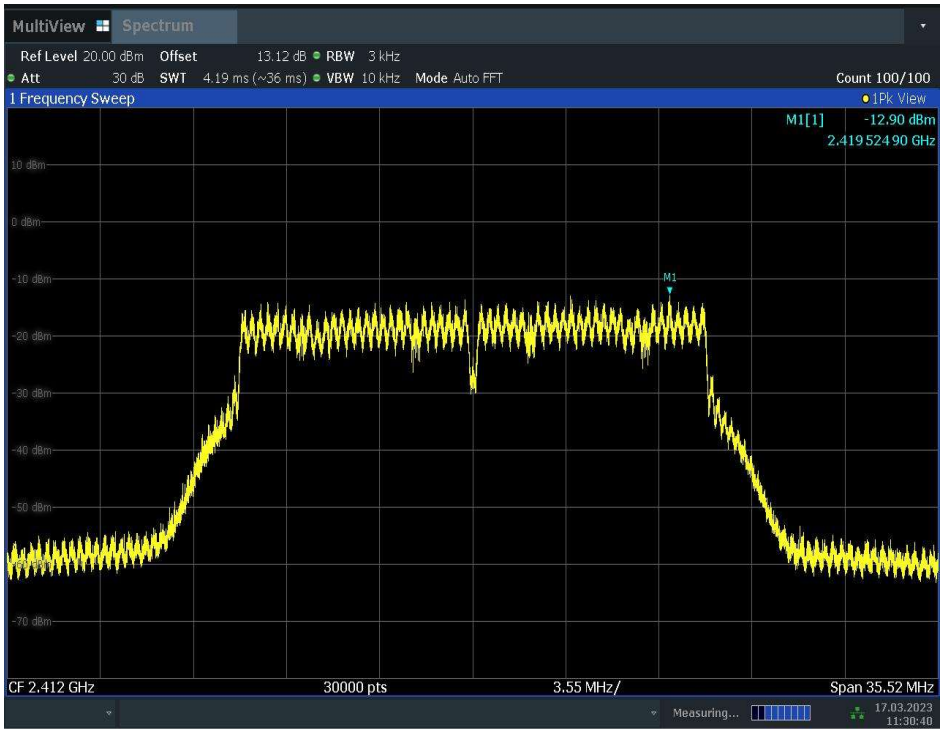


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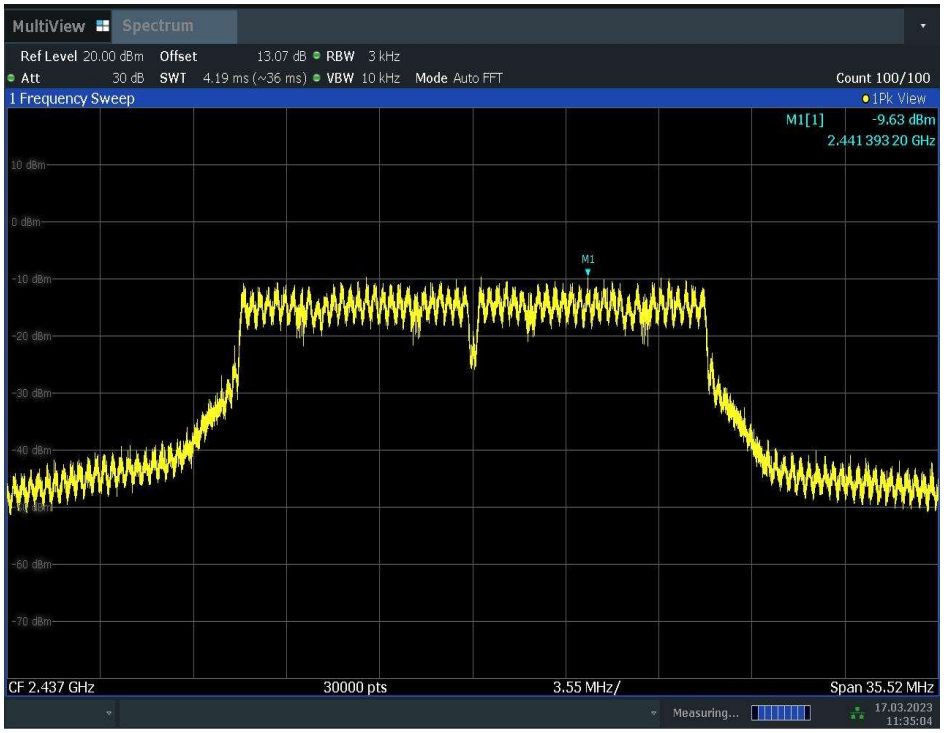
Fig.A.3.13 Power Spectral Density (802.11n-HT20, Ch 1)



11:35:04 17.03.2023

Fig.A.3.14 Power Spectral Density (802.11n-HT20, Ch 6)

Fig.A.3.15 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: UT13a

Measurement Result:

802.11b/g mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11b	1	Fig.A.4.1	7.20	P
	6	Fig.A.4.2	8.04	P
	11	Fig.A.4.3	7.48	P
802.11g	1	Fig.A.4.4	16.36	P
	6	Fig.A.4.5	16.36	P
	11	Fig.A.4.6	16.36	P

802.11n-HT20 mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (HT20)	1	Fig.A.4.7	17.56	P
	6	Fig.A.4.8	17.56	P
	11	Fig.A.4.9	17.56	P

Conclusion: Pass

Test graphs as below:

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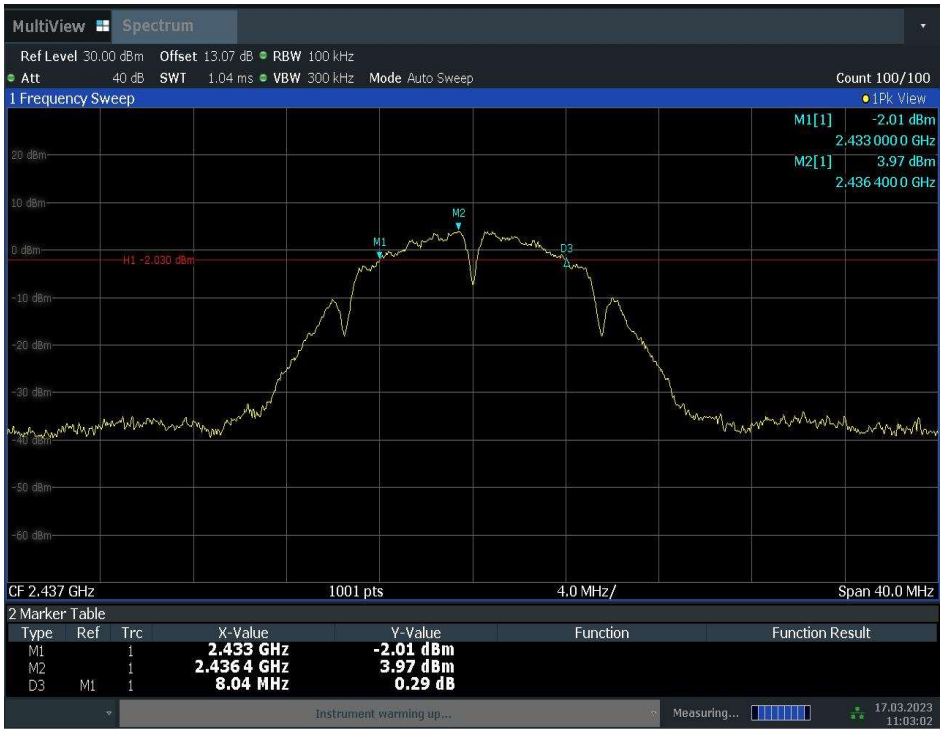
Fig.A.4.1 Occupied 6dB Bandwidth(802.11b,Ch 1)



11:03:03 17.03.2023

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

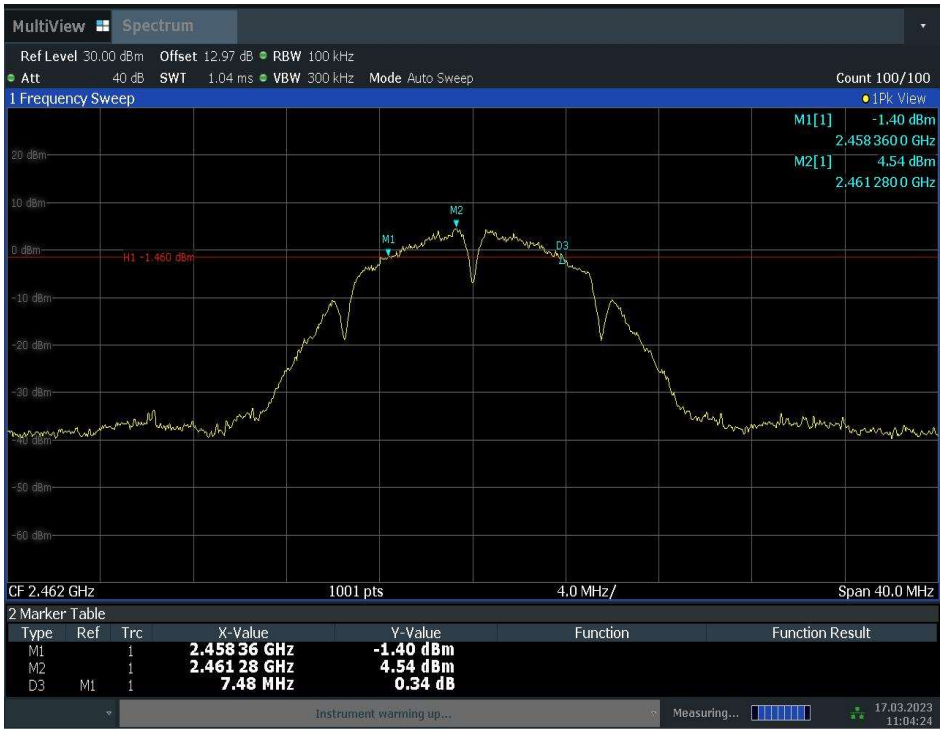


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Fig.A.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

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

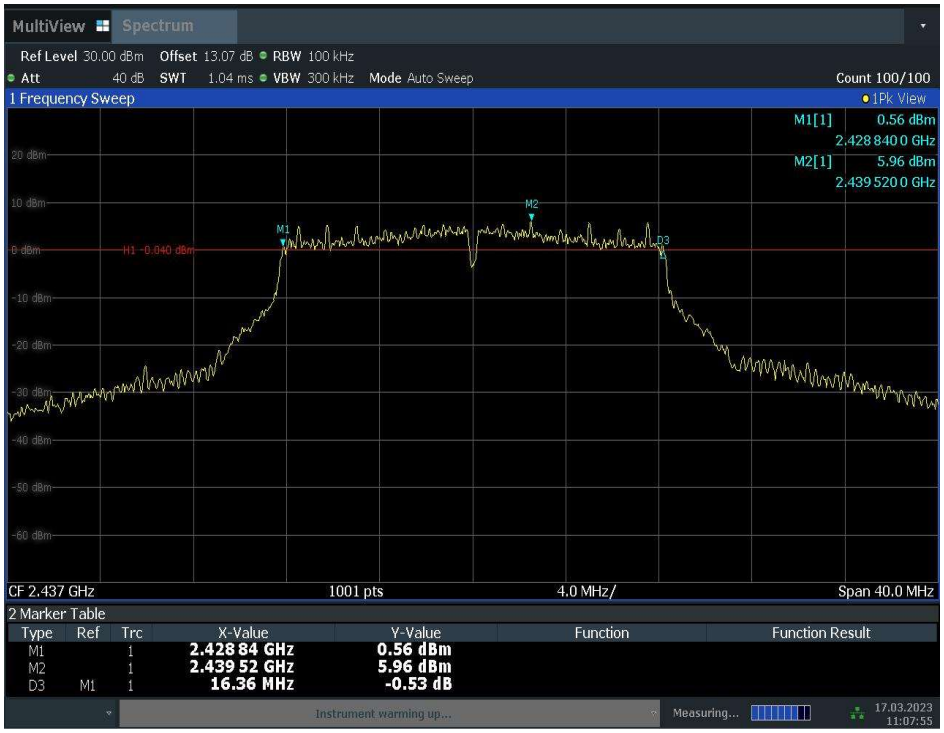

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Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)

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

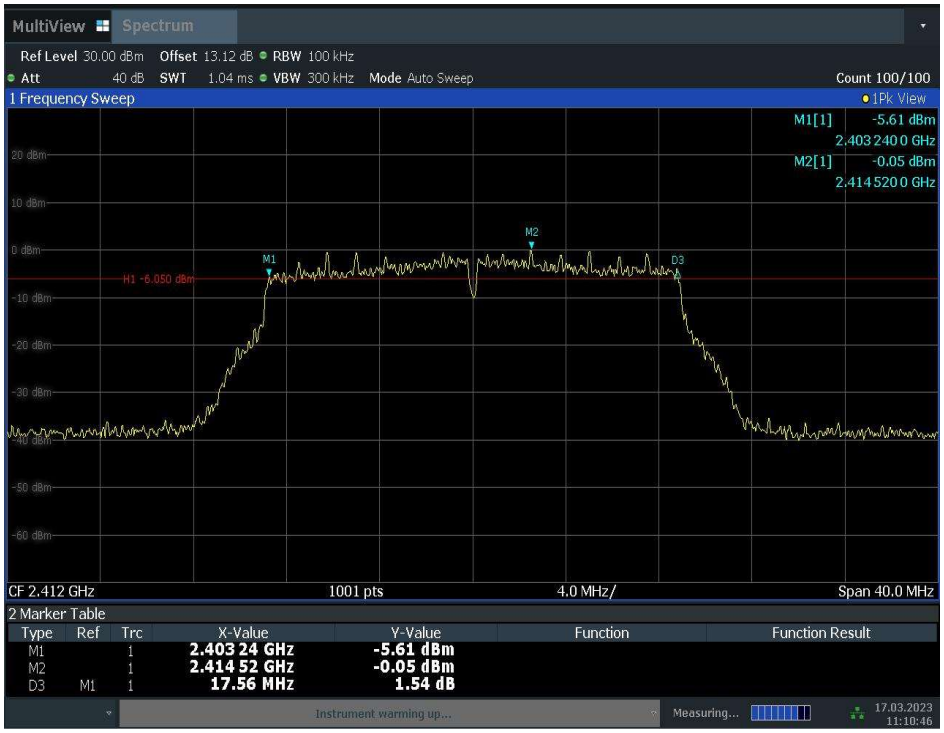

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Fig.A.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

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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: UT13a

Measurement Result:

SISO-ANT1

802.11b/g mode

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.A.5.1	P
	11	Fig.A.5.2	P
	2	Fig.A.5.3	P
	10	Fig.A.5.4	P
802.11g	1	Fig.A.5.5	P
	11	Fig.A.5.6	P
	2	Fig.A.5.7	P
	10	Fig.A.5.8	P

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.5.9	P
	11	Fig.A.5.10	P
	2	Fig.A.5.11	P
	10	Fig.A.5.12	P

MIMO-ANT1

802.11g mode

Mode	Channel	Test Results	Conclusion
802.11g	1	Fig.A.5.13	P
	11	Fig.A.5.14	P
	2	Fig.A.5.15	P
	10	Fig.A.5.16	P

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.5.17	P
	11	Fig.A.5.18	P
	2	Fig.A.5.19	P
	10	Fig.A.5.20	P

Note: All Antenna are tested, only the worst-case emissions have been reported.

Conclusion: Pass

Test graphs as below:

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

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

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Fig.A.5.3 Band Edges (802.11b, Ch 2)

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Fig.A.5.4 Band Edges (802.11b, Ch 10)

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Fig.A.5.5 Band Edges (802.11g, Ch 1)

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Fig.A.5.6 Band Edges (802.11g, Ch 11)

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Fig.A.5.7 Band Edges (802.11g, Ch 2)

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Fig.A.5.8 Band Edges (802.11g, Ch 10)

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Fig.A.5.9 Band Edges (802.11n-HT20, Ch 1)

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Fig.A.5.10 Band Edges (802.11n-HT20, Ch 11)

11:13:40 27.03.2023

Fig.A.5.11 Band Edges (802.11n-HT20, Ch 2)