

Prüfbericht-Nr.: Test Report No.:	50349152 001	Auftrags-Nr.: Order No.:	238134131	Seite 1 von 52 Page 1 of 52
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	03-Feb-2020	
Auftraggeber: Client:	聯天科技股份有限公司 台北市中山區中山北路2段44號11樓			
Prüfgegenstand: Test item:	多功能刷卡機底座			
Bezeichnung / Typ-Nr.: Identification / Type No.:	APOS A8 Multi-functions Base			
Auftrags-Inhalt: Order content:	NCC LP0002 Test report (WiFi 2.4GHz)			
Prüfgrundlage: Test specification:	NCC Low-power Radio-frequency Devices Technical Regulations LP0002(2018) Section 3.10			
Wareneingangsdatum: Date of receipt:	05-Feb-2020			
Prüfmuster-Nr.: Test sample No.:	A001062504-006			
Prüfzeitraum: Testing period:	6-Feb-2020~6-Mar-2020			
Ort der Prüfung: Place of testing:	EMC/RF Laboratory Taipei			
Prüflaboratorium: Testing laboratory:	TUV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
Report date / tested by:		kontrolliert von / reviewed by:		
 06-Mar-2020 Mars Y.J. Lin/ Project Engineer		 06-Mar-2020 Arvin Hsu/ Vice General Manager		
Datum Date(Report Date)	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: *Passed*

5.1.2 PEAK OUTPUT POWER

RESULT: *Passed*

5.1.3 6dB BANDWIDTH

RESULT: *Passed*

5.1.4 POWER DENSITY

RESULT: *Passed*

5.1.5 CONDUCTED SPURIOUS EMISSIONS AND FREQUENCY BAND EDGE MEASURED IN 100kHz BANDWIDTH

RESULT: *Passed*

5.1.6 SPURIOUS EMISSION

RESULT: *Passed*

5.2.1 MAINS CONDUCTED EMISSIONS

RESULT: *Passed*

Contents

1.	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS	5
1.2	DECISION RULE OF CONFORMITY	5
2.	TEST SITES	6
2.1	TEST LABORATORY	6
2.2	TEST FACILITY	6
2.3	LIST OF TEST AND MEASUREMENT INSTRUMENTS	7
2.4	TRACEABILITY	8
2.5	CALIBRATION	8
2.6	MEASUREMENT UNCERTAINTY	8
3.	GENERAL PRODUCT INFORMATION	9
3.1	PRODUCT FUNCTION AND INTENDED USE	9
3.2	SYSTEM DETAILS AND RATINGS	9
3.3	INDEPENDENT OPERATION MODES	10
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	10
3.5	SUBMITTED DOCUMENTS	10
4.	TEST SET-UP AND OPERATION MODES	11
4.1	PRINCIPLE OF CONFIGURATION SELECTION	11
4.2	TEST OPERATION AND TEST SOFTWARE	12
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	13
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	13
4.5	TEST SETUP DIAGRAM	13
5.	TEST RESULTS	15
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	15
5.1.1	Antenna Requirement	15
5.1.2	Peak Output Power	16
5.1.3	6dB Bandwidth	18
5.1.4	Power Density	26
5.1.5	Conducted spurious emissions and Frequency Band Edge measured in 100kHz Bandwidth	34
5.1.6	Spurious Emission	45
5.2	MAINS EMISSIONS	46
5.2.1	Mains Conducted Emissions	46
6.	PHOTOGRAPHS OF THE TEST SET-UP	47

Prüfbericht - Nr.: 50349152 001
Test Report No.

Seite 4 von 52
Page 4 of 52

7.	LIST OF TABLES.....	52
8.	LIST OF PHOTOGRAPHS	52

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix P: Photo Documentation

(File Name: 50349152 001 Appendix P)

Appendix D: Test Result of Radiated Emissions

(File Name: 50349152 001 Appendix D)

Test Specifications

Table 1: Applied Standard and Test Levels

Radio
ANSI C63.10:2013 NCC Low-power Radio-frequency Devices Technical Regulations LP0002(2018)(107年1月10日)

1.2 Decision Rule of conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2. Test Sites

2.1 Test Laboratory

TUV Rheinland Taiwan Ltd.

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

TUV Rheinland Taiwan Ltd.

AC Mains Conduction:
11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)
FCC Registration No.: 180491
IC Canada Registration No.: 9465A

Conducted Test / Radiated Test:
No. 458-18, Sec 2, Fenliao., Linkou Dist.
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
IC Canada Registration No.: 25563

TAF Accredited NCC Test Lab. No.:3567
TAF ISO17025 Certification effective period: 6th-May-2019 to 05th-May-2022



2.3 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESR7	102108	2019/4/17	2020/4/16
Spectrum Analyzer	R&S	FSV40	101508	2019/10/15	2020/10/15
Pre-Amplifier	Agilent	8447D	2944A10772	2020/2/14	2021/2/13
Pre-Amplifier	EMCI	EMC051845SE	980633	2020/2/07	2021/2/06
Pre-Amplifier	EMCI	EMC184045SE	980657	2020/2/07	2021/2/06
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2020/1/14	2021/1/13
Horn Antenna	ETS-Lindgren	3117	00218930	2020/12/27	2021/12/26
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2019/4/12	2020/4/11
Loop Antenna	EMCI	LPA600	287	2019/12/20	2020/12/19
Test Software	Audix	e3	Ver. 9	N/A	N/A
Test Cable	HUBER+SUHNER	SUCOFLEX 104EA_9k~18G	800056/4EA	2019/4/18	2020/4/17
Test Cable	HUBER+SUHNER	SUCOFLEX 104_9k~18G	804680/4	2019/4/18	2020/4/17
Test Cable	HUBER+SUHNER	SUCOFLEX 104_9k~18G	MY37202/4	2019/4/18	2020/4/17
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	800898/2EA	2019/4/18	2020/4/17
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	800901/2EA	2019/4/18	2020/4/17
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	801027/2EA	2019/4/18	2020/4/17
Thermo Chamber	Giant Force	GHT-150-40-CP-SD	MAA1902-010	2020/2/1	2021/2/1
Signal Generator	R&S	SMB100A03	181335	2020/1/23	2021/1/23
Power Meter	Anritsu	ML2495A	1901008	2019/4/29	2020/4/28
Power Sensor	Anritsu	MA2411B	1725269	2019/4/29	2020/4/28
EXG-B RF Analog Signal Generator	Agilent	N5171B	MY53050377	2019/04/22	2020/04/21
MXG-B RF Vector Signal Generator	Agilent	N5182B	MY53050524	2019/04/22	2020/04/21
EMI Test Receiver	Rohde & Schwarz	ESR 7	101062	2019/10/15	2020/10/15
Two-Line V-Network (for EUT)	Rohde & Schwarz	ENV216	101243	2019/06/23	2020/06/23
Two-Line V-Network	Rohde & Schwarz	ENV216	101262	2019/07/16	2020/07/16
Telecom ISN 4 Line	Fischer Custom Communications	FFCC-TLISN- T4-02-09	101168	2020/02/03	2021/02/03
Impedance Stabilization Network	TESEQ	ISN T800	51949	2020/02/25	2021/02/25
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	0357.8810.54- 102102-HN	2019/07/25	2020/07/25

2.4 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.5 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.6 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements are $\pm 3\text{dB}$.

Table 3: Emission Measurement Uncertainty

Parameter	Uncertainty
RF power, conducted	$\pm 1.5 \text{ dB}$
Adjacent channel power	$\pm 3 \text{ dB}$
Radiated emission of transmitter, valid up to 26 GHz	$\pm 6 \text{ dB}$
Radiated emission of receiver, valid up to 26 GHz	$\pm 6 \text{ dB}$
Temperature	$\pm 2 \text{ }^{\circ}\text{C}$
Humidity	$\pm 10 \text{ } \%$

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Charging Base. It contains a WiFi 2.4GHz compatible module enabling the user to communicate data through a Wireless interface.
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Table 4: Basic Information of EUT

Item	EUT information
Kind of Equipment	多功能刷卡機底座
Type Designation	APOS A8 Multi-functions Base
Brand Name	Ingenico

Table 5: Technical Specification of EUT

Technical Specification	Value
Operating Frequencies	2412~2462 MHz
Channel Spacing	5 MHz
Channel number	802.11b/g/n: 11 802.11n40: 7
Operation Voltage	5Vdc
Modulation	802.11b: DSSS 802.11g/n: OFDM with BPSK, QPSK, QAM
Antenna gain	-1 dBi

3.3 Independent Operation Modes

Basic operation modes are:

- A. Transmitting
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. Receiving
- C. Normal

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- | | |
|-------------------------|----------------------|
| - Block Diagram | - Circuit Diagram |
| - PCB Layout | - Instruction Manual |
| - Photo Document | - Rating Label |
| - Technical Description | |

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Table 6: Table for Parameters of Test Software Setting

Mode	Channel Frequency		
	2412 MHz	2437 MHz	2462 MHz
802.11b	45	45	45
802.11g	43	43	43
802.11n20	42	42	42
Mode	2422 MHz	2437 MHz	2452 MHz
802.11n40	42	42	42

4.2 Test Operation and Test Software

Setup for testing: Test samples are provided with a USB interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed in section 3.3 as appropriate.

The samples were used as follows:

A001062504-006

Full test was applied on all test modes, but only worst case was shown

IEEE 802.11b mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 mode:

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

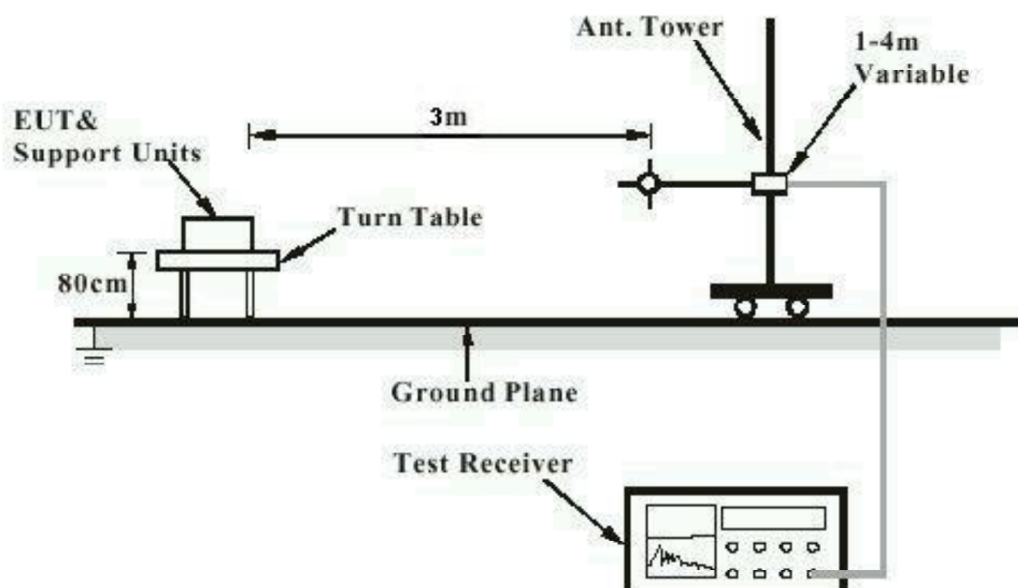
Description	Manufacturer	Model No.	Serial No.
Notebook(EMC-06)	Lenovo	TP00048A	PB-0F8B2

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1 GHz are done with a table height of 1.5m.

Diagram of Measurement Equipment Configuration for Mains Conduction Measurement (if applicable)

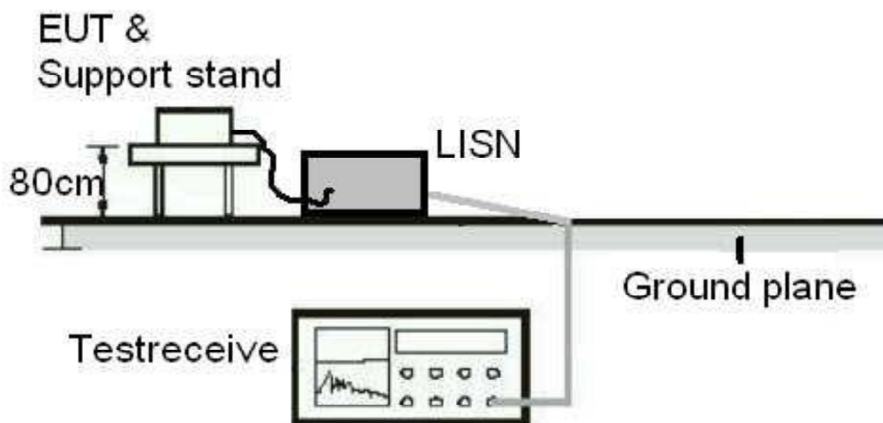
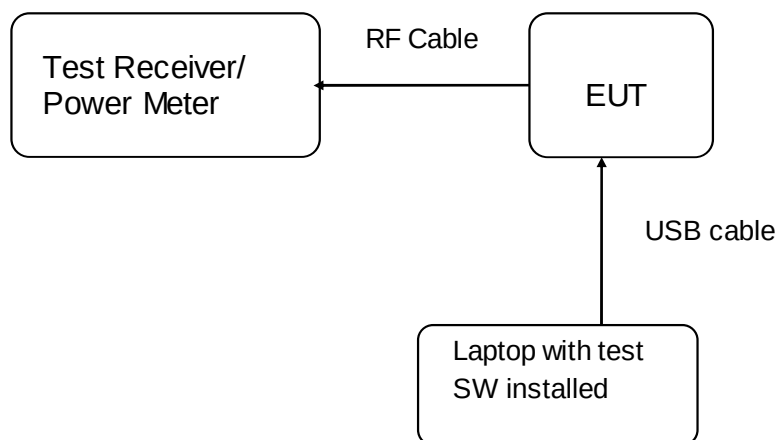


Diagram of Measurement Equipment Configuration for Conducted Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Passed**

Test standard	:	LP0002(2018): 3.10.1.3 (3), 3.10.1.4
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declaration, the EUT has an antenna with a directional gain of -1 dBi. The antenna is a printed PCB trace with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Refer to EUT photo for details.

5.1.2 Peak Output Power

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.2 (1)(C)
 Basic standard : ANSI C63.10:2013, LP0002(2018)
 Limit : 1 Watt
 Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
 Operation Mode : A

 Ambient temperature : 22-26 °C
 Relative humidity : 50-65 %
 Atmospheric pressure : 100-103 kPa

Table 7: Test result of Peak Output Power (802.11b)

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2412	20.2	0.10471	1
Middle Channel	2437	19.91	0.09795	1
High Channel	2462	19.5	0.08913	1

Table 8: Test result of Peak Output Power (802.11g)

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2412	23.45	0.22131	1
Middle Channel	2437	23.12	0.20512	1
High Channel	2462	22.81	0.19099	1

Table 9: Test result of Peak Output Power (802.11n HT20)

Channel	Channel Frequency (MHz)	Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2412	22.91	0.19543	1
Middle Channel	2437	22.63	0.18323	1
High Channel	2462	22.29	0.16943	1

Table 10: Test result of Peak Output Power (802.11n HT40)

Channel	Channel Frequency (MHz)	Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2422	18.01	0.06324	1
Middle Channel	2437	17.75	0.05957	1
High Channel	2452	17.57	0.05715	1

5.1.3 6dB Bandwidth

RESULT:**Passed**

Test standard : LP0002(2018): 3.10.1.6 (2)(A)
Basic standard : ANSI C63.10:2013, LP0002(2018)
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A

Ambient temperature : 22-26°C
Relative humidity : 50-65%
Atmospheric pressure : 100-103 kPa

Table 11: Test result of 6dB Bandwidth (802.11b)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	10.0699	0.5	Pass
Mid Channel	2437	10.0699	0.5	Pass
High Channel	2462	10.0699	0.5	Pass

Table 12: Test result of 6dB Bandwidth (802.11g)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	16.4635	0.5	Pass
Mid Channel	2437	16.4635	0.5	Pass
High Channel	2462	16.4635	0.5	Pass

Table 13: Test result of 6dB Bandwidth (802.11n HT20)

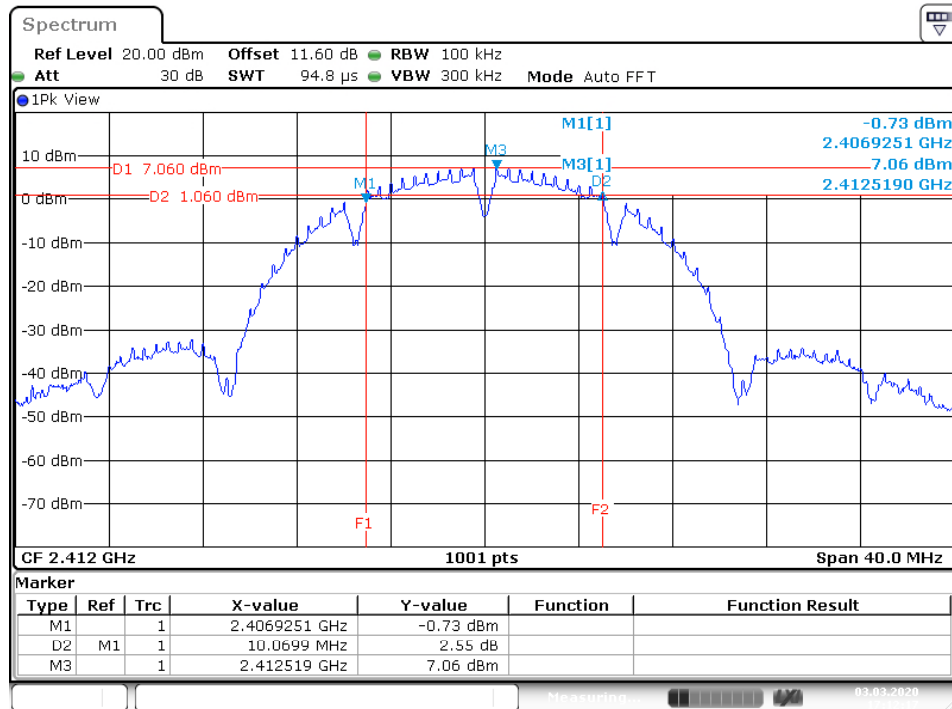
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	17.5425	0.5	Pass
Mid Channel	2437	17.5425	0.5	Pass
High Channel	2462	17.5425	0.5	Pass

Table 14: Test result of 6dB Bandwidth (802.11n HT40)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2422	36.4436	0.5	Pass
Mid Channel	2437	36.4436	0.5	Pass
High Channel	2452	36.4436	0.5	Pass

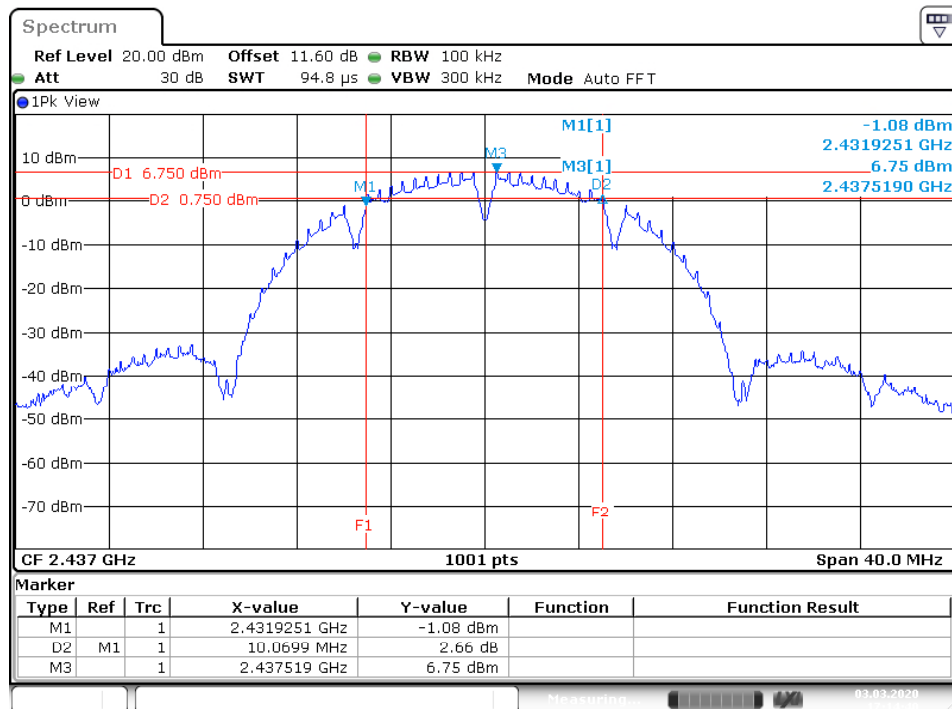
Test Plot of 6dB Bandwidth (802.11b)

Low Channel



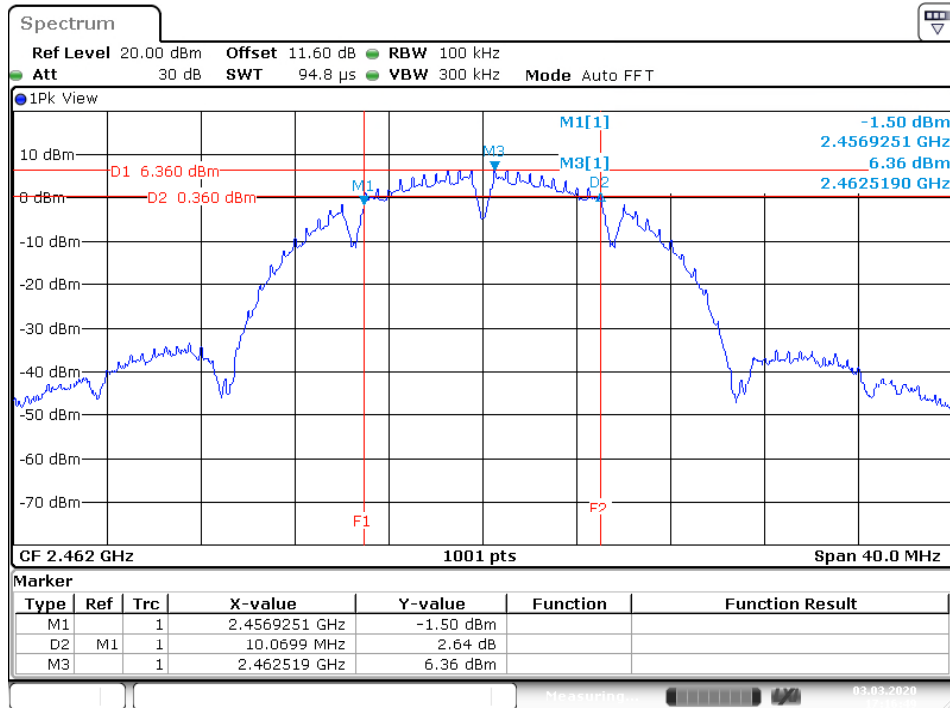
Date: 3.MAR.2020 17:12:17

Middle Channel



Date: 3.MAR.2020 17:14:40

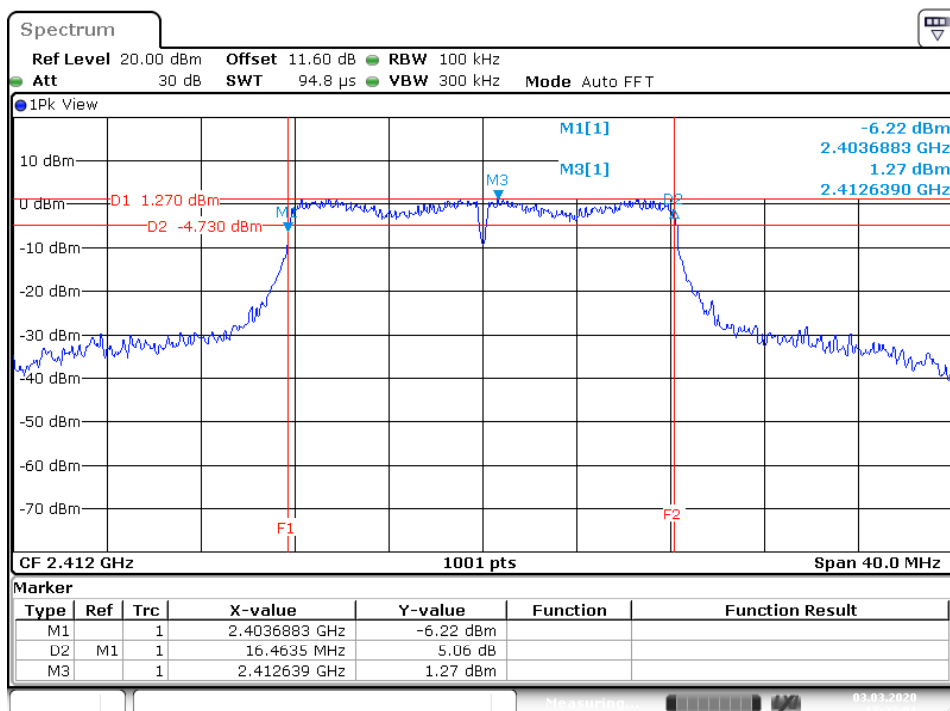
High Channel



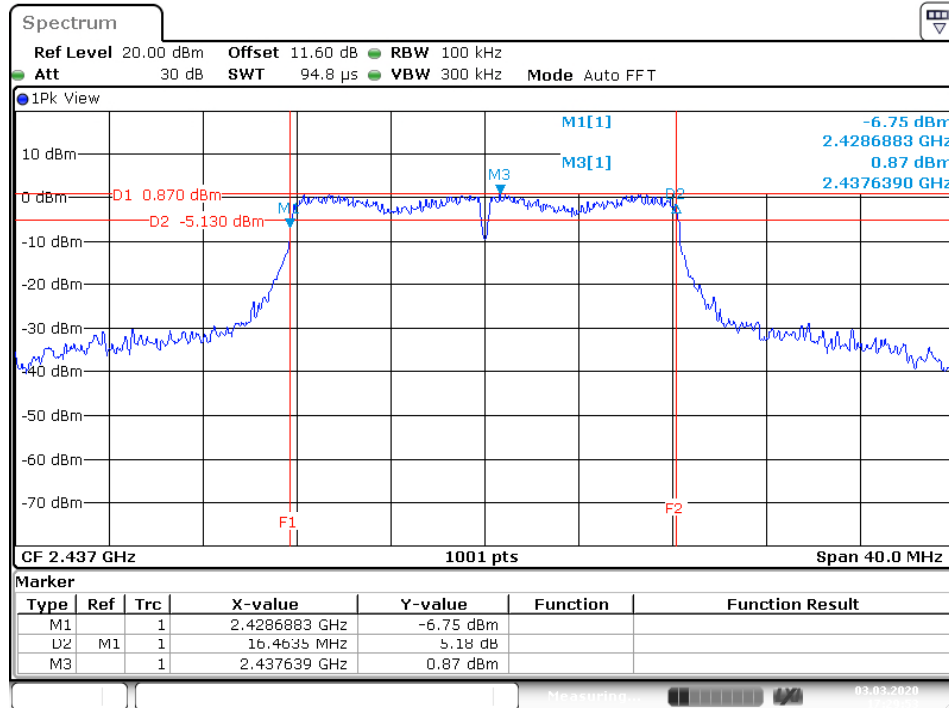
Date: 3.MAR.2020 17:16:49

Test Plot of 6dB Bandwidth (802.11g)

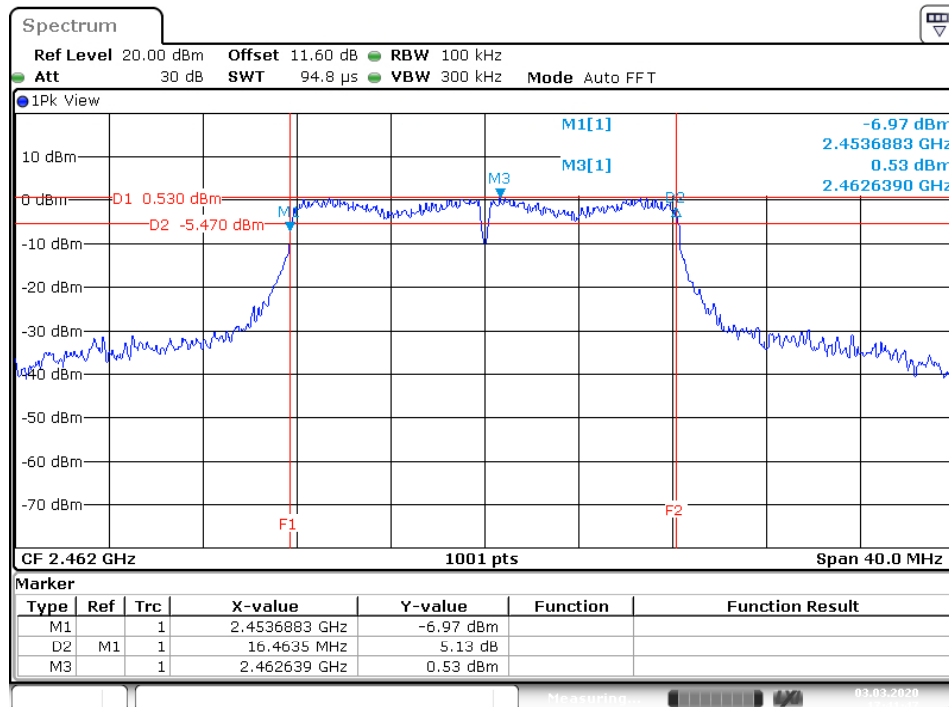
Low Channel



Date: 3.MAR.2020 17:22:02

Middle Channel


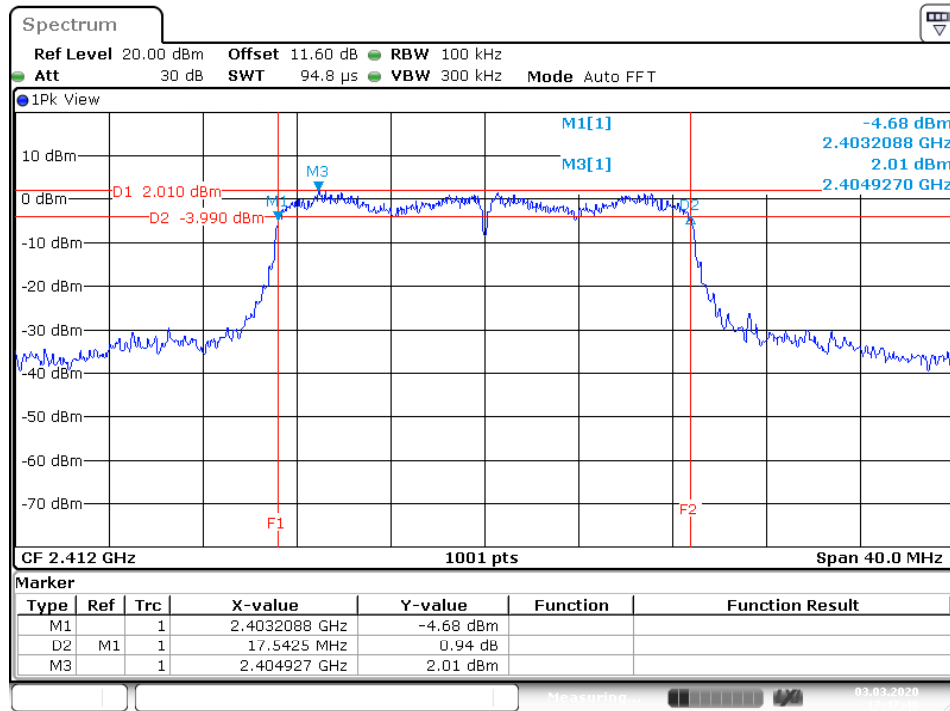
Date: 3.MAR.2020 17:29:54

High Channel


Date: 3.MAR.2020 17:41:47

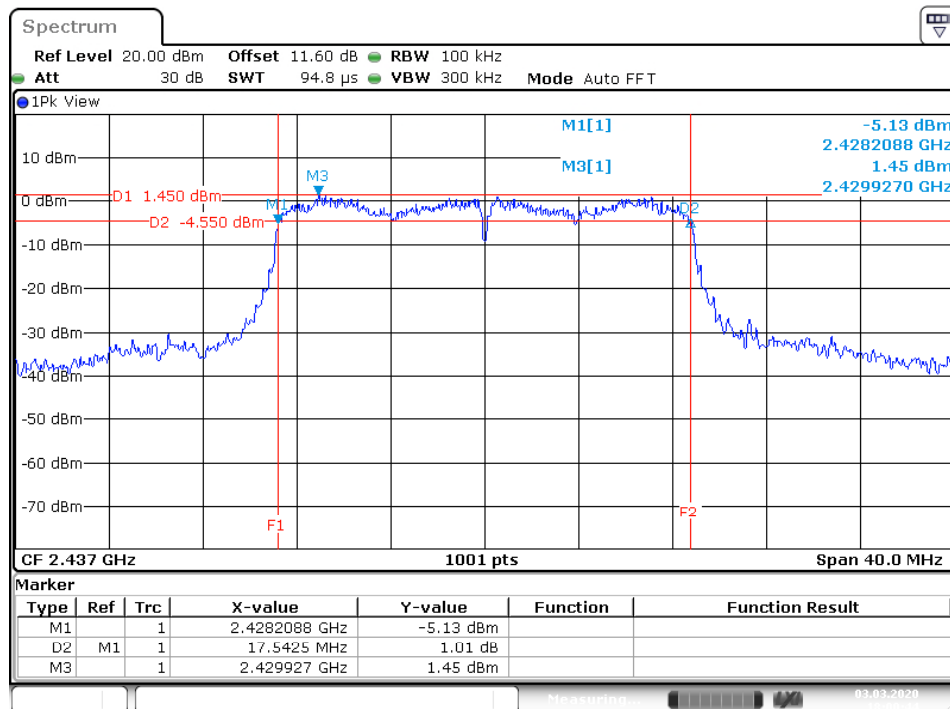
Test Plot of 6dB Bandwidth (802.11n HT20)

Low Channel



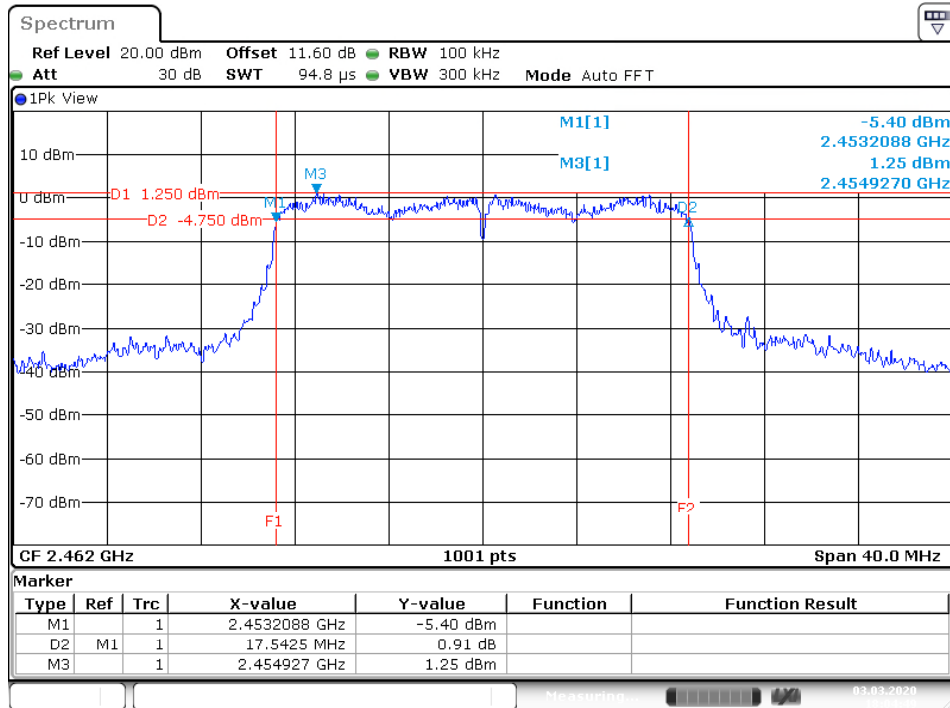
Date: 3.MAR.2020 17:47:40

Middle Channel



Date: 3.MAR.2020 18:00:44

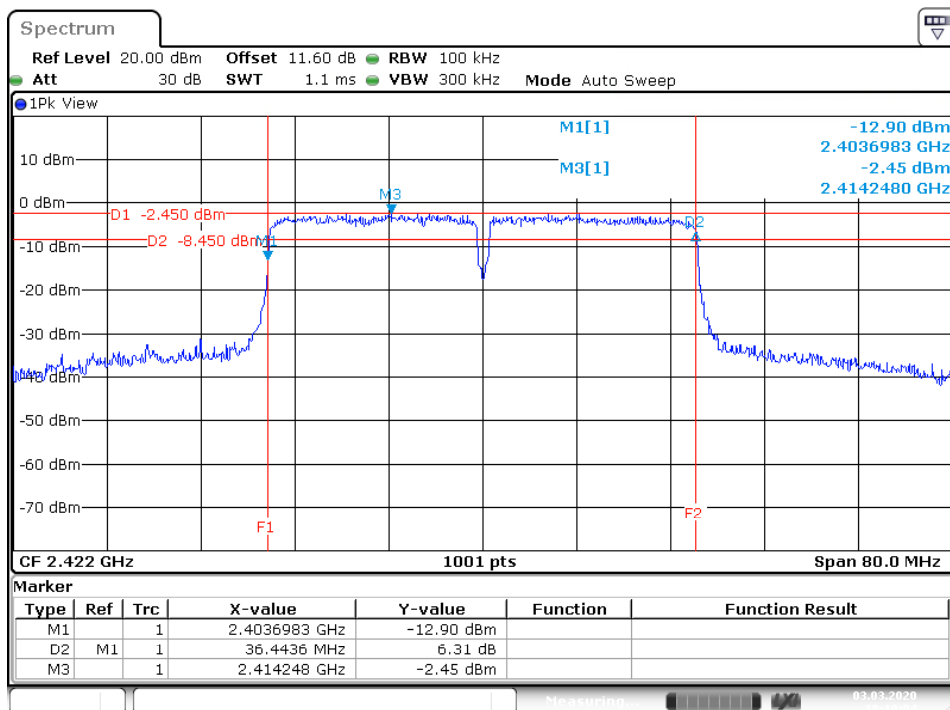
High Channel



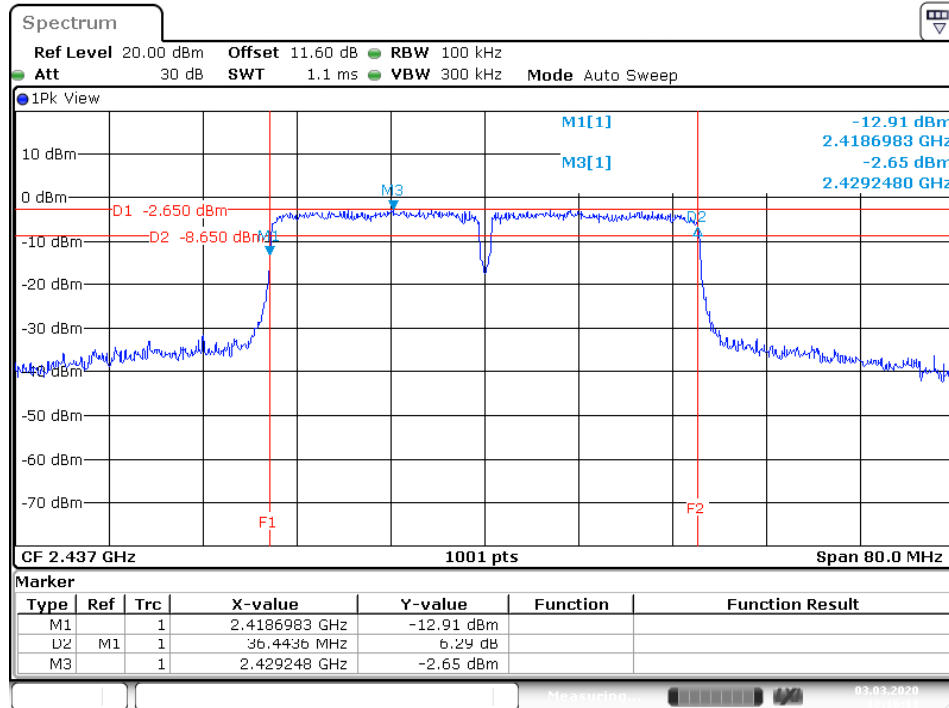
Date: 3.MAR.2020 18:04:49

Test Plot of 6dB Bandwidth (802.11n HT40)

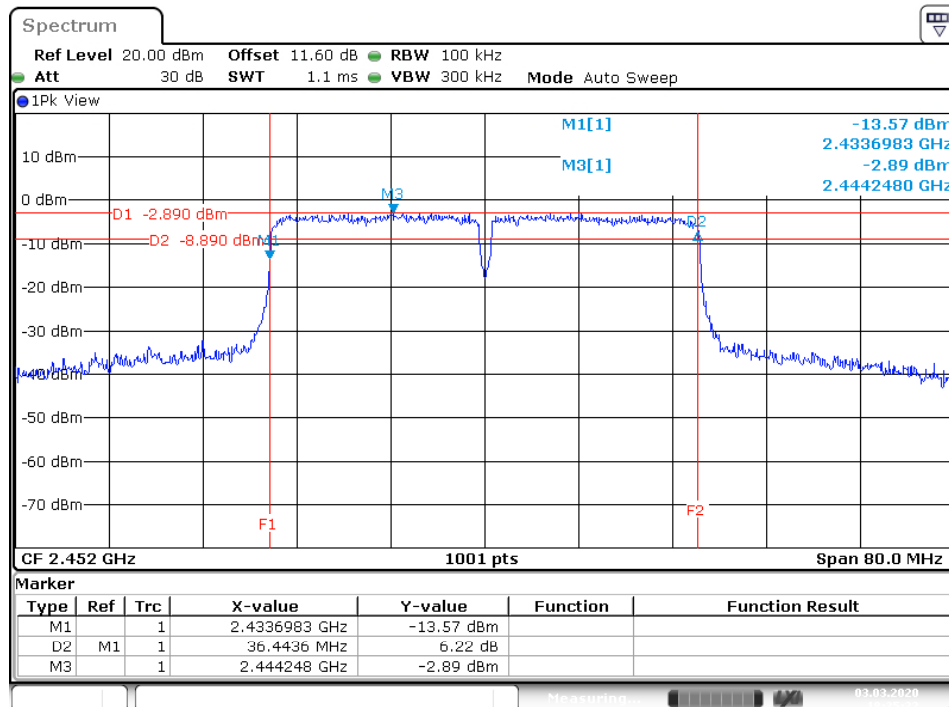
Low Channel



Date: 3.MAR.2020 18:10:05

Middle Channel


Date: 3.MAR.2020 18:16:11

High Channel


Date: 3.MAR.2020 18:25:22

5.1.4 Power Density

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.6 (2)(B)
 Basic standard : ANSI C63.10:2013, LP0002(2018)
 Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
 Operation Mode : A
 Ambient temperature : 22-26°C
 Relative humidity : 50-65%
 Atmospheric pressure : 100-103 kPa

Table 15: Test result of Power Density (802.11b)

Channel	Channel Frequency (MHz)	Power Density	Limit
		(dBm)	(dBm)
Low Channel	2412	-13.62	8
Middle Channel	2437	-13.29	8
High Channel	2462	-14.32	8

Table 16: Test result of Power Density (802.11g)

Channel	Channel Frequency (MHz)	Power Density	Limit
		(dBm)	(dBm)
Low Channel	2412	-13.27	8
Middle Channel	2437	-13.63	8
High Channel	2462	-14.03	8

Table 17: Test result of Power Density (802.11n HT20)

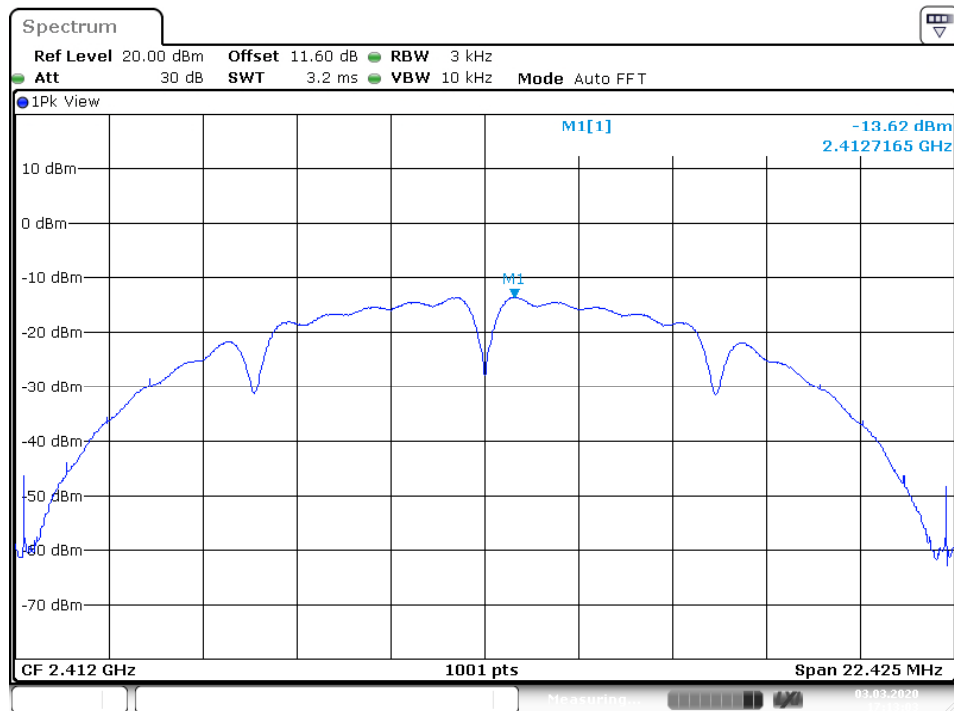
Channel	Channel Frequency (MHz)	Power Density	Limit
		(dBm)	(dBm)
Low Channel	2412	-12.61	8
Middle Channel	2437	-12.98	8
High Channel	2462	-13.38	8

Table 18: Test result of Power Density (802.11n HT40)

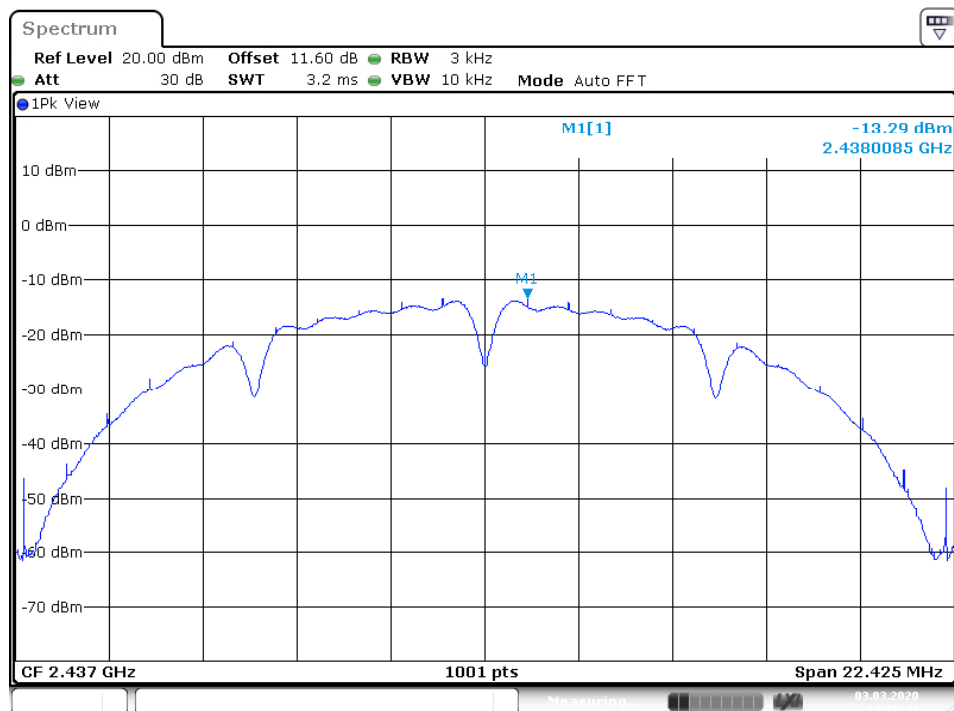
Channel	Channel Frequency (MHz)	Power Density	Limit
		(dBm)	(dBm)
Low Channel	2412	-15.74	8
Middle Channel	2437	-15.99	8
High Channel	2462	-16.17	8

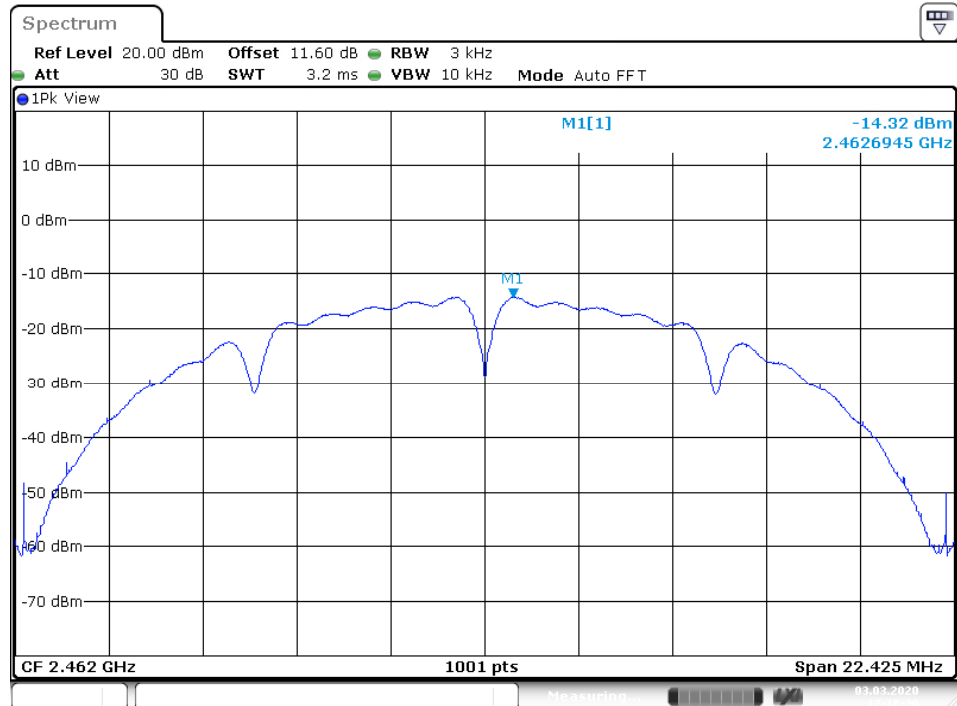
Test Plot of Power Density (802.11b)

Low Channel

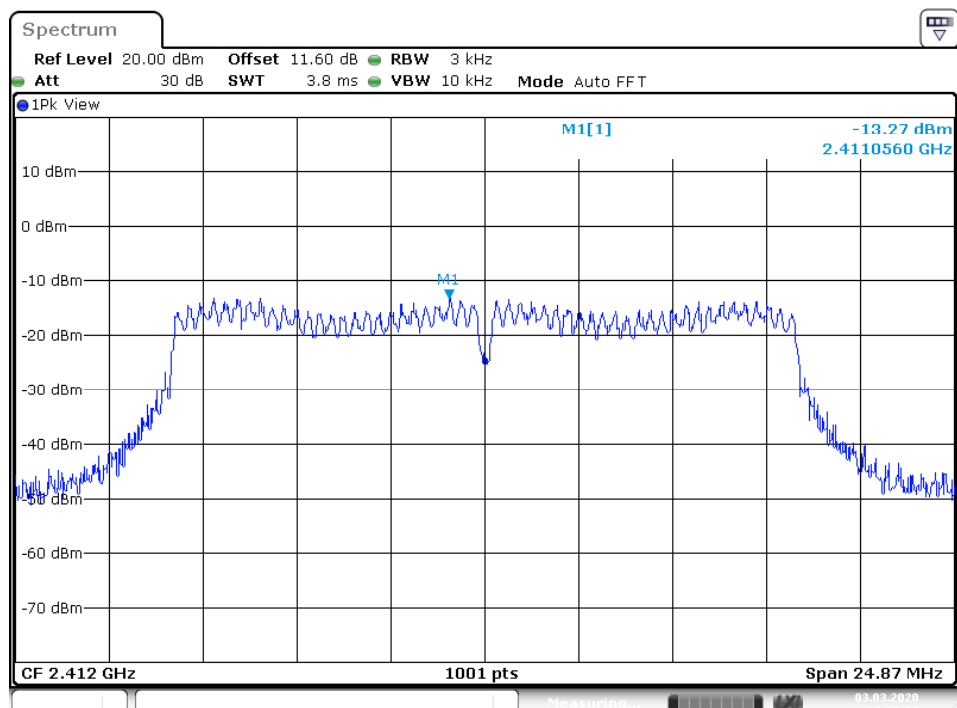


Middle Channel

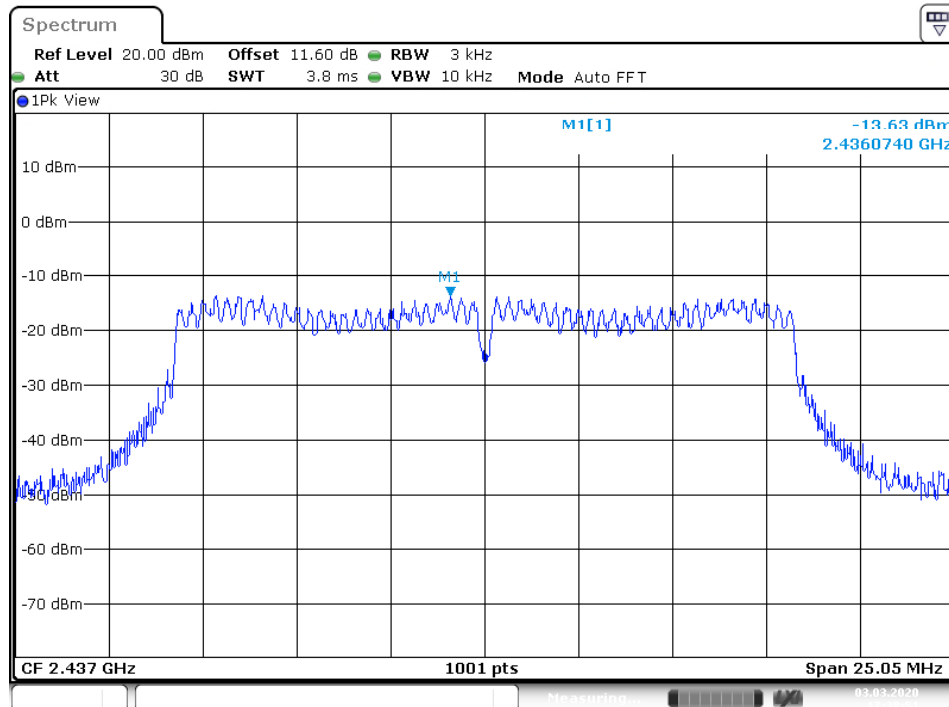


High Channel


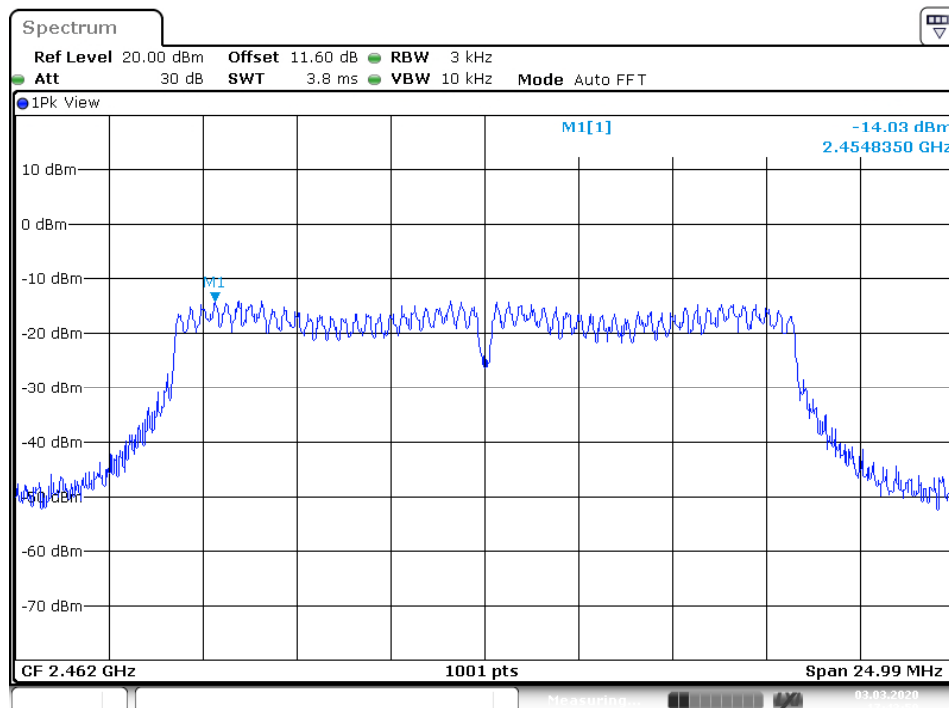
Date: 3.MAR.2020 17:18:30

Test Plot of Power Density (802.11g)
Low Channel


Date: 3.MAR.2020 17:26:08

Middle Channel


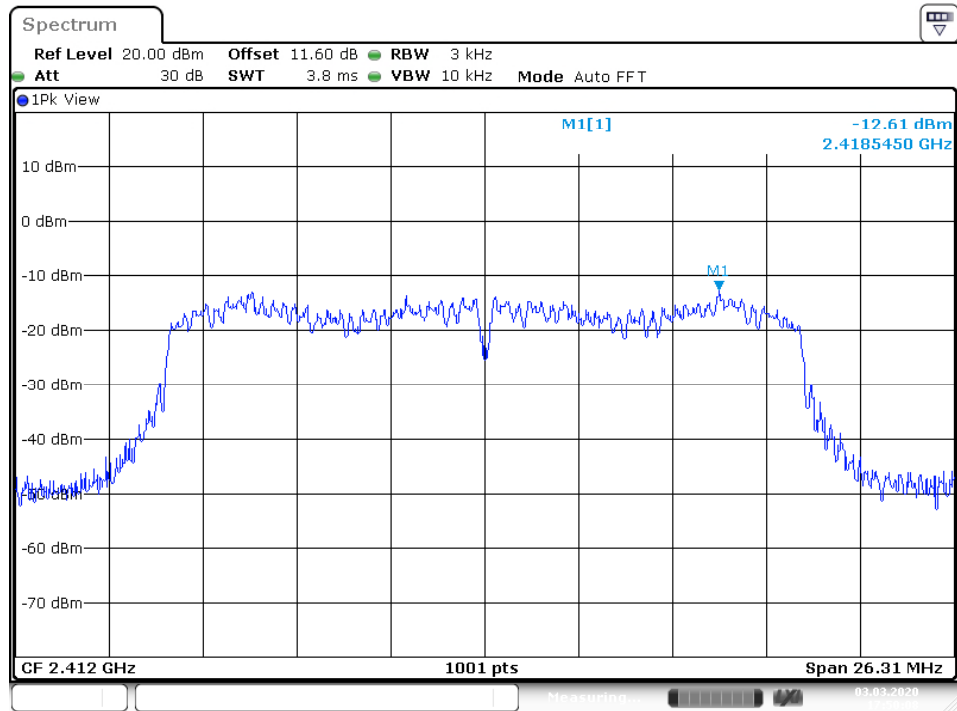
Date: 3.MAR.2020 17:38:52

High Channel


Date: 3.MAR.2020 17:43:59

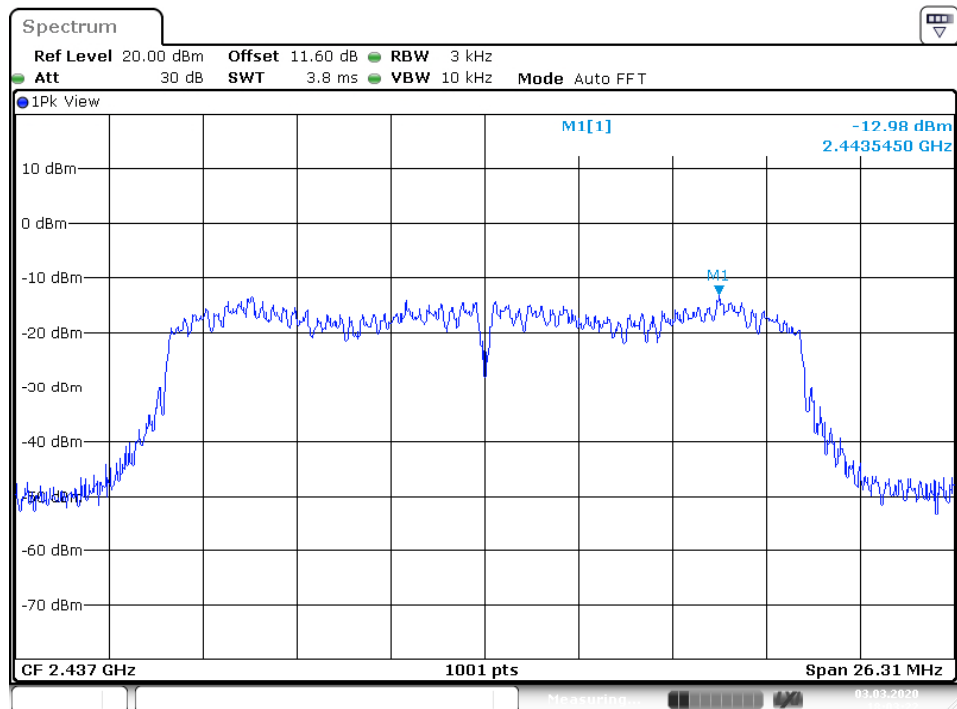
Test Plot of Power Density (802.11n HT20)

Low Channel

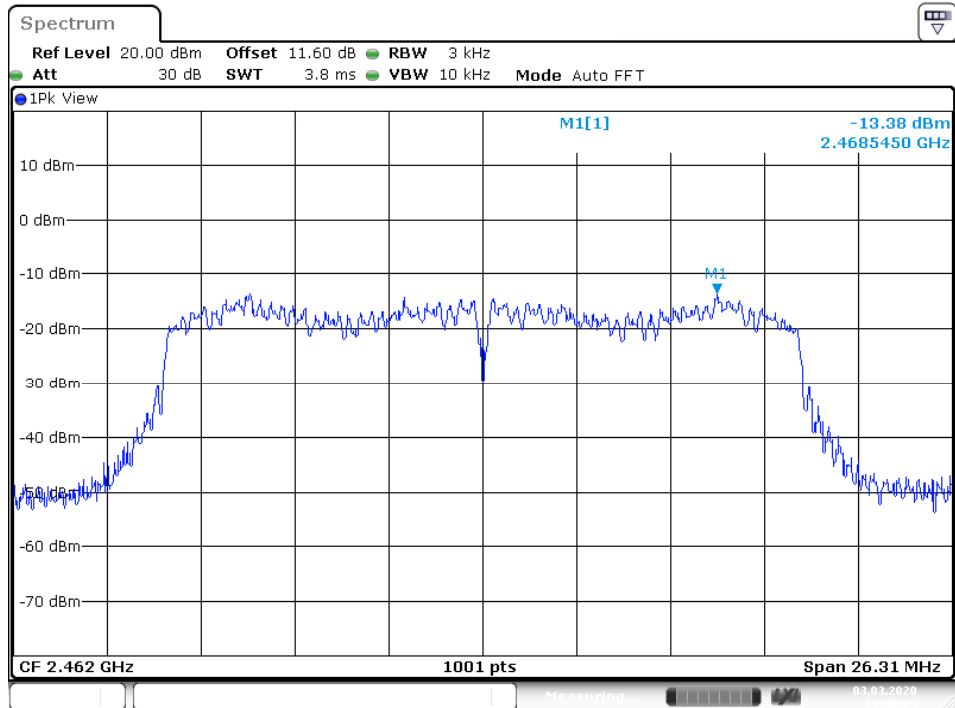


Date: 3.MAR.2020 17:50:09

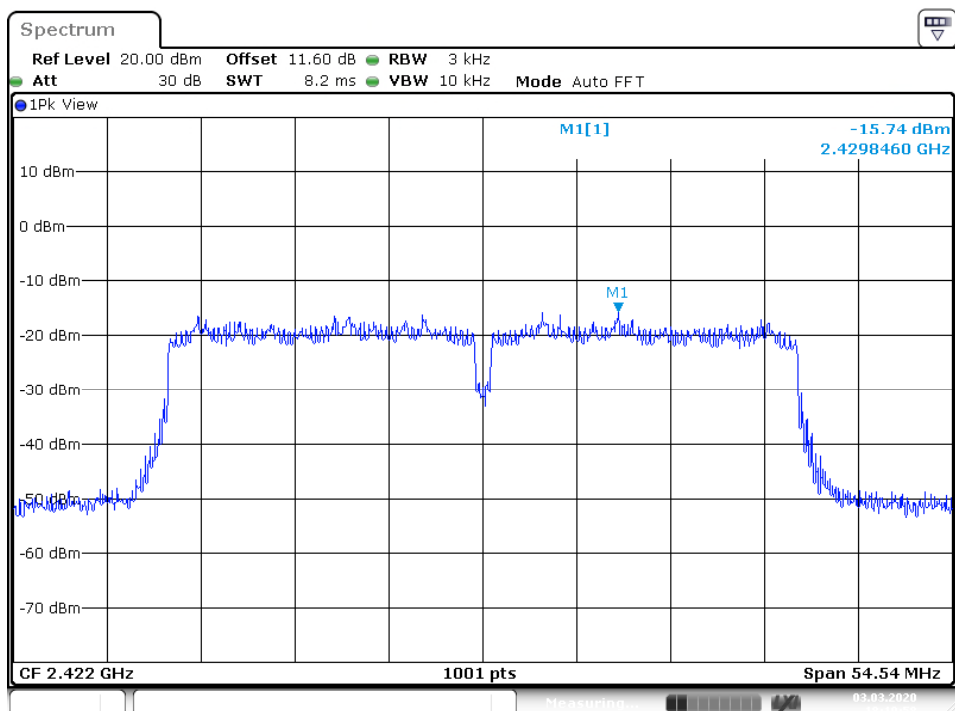
Middle Channel



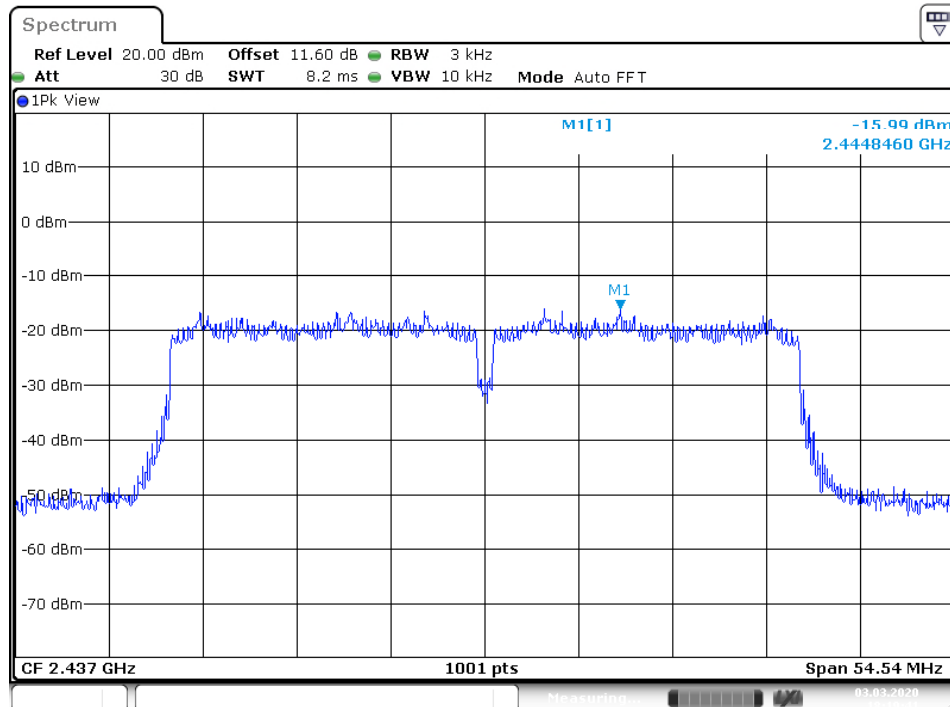
Date: 3.MAR.2020 18:03:23

High Channel


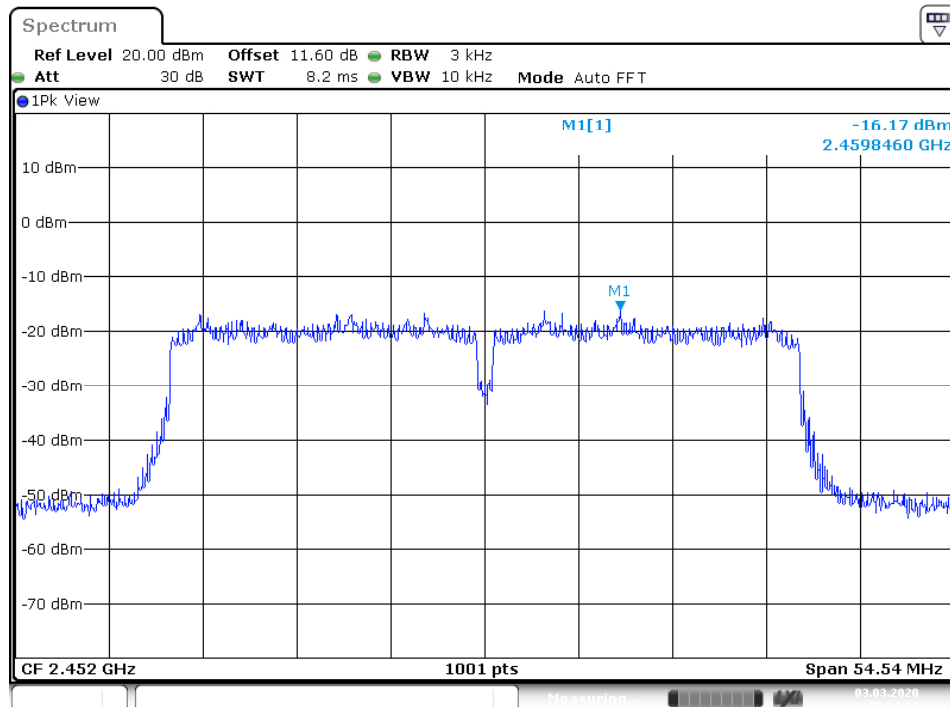
Date: 3.MAR.2020 18:06:24

Test Plot of Power Density (802.11n HT40)
Low Channel


Date: 3.MAR.2020 18:10:59

Middle Channel


Date: 3.MAR.2020 18:19:41

High Channel


Date: 3.MAR.2020 18:34:12

5.1.5 Conducted spurious emissions and Frequency Band Edge measured in 100kHz Bandwidth

RESULT:**Passed**

Test standard	:	LP0002(2018): 3.10.1.5
Basic standard	:	ANSI C63.10:2013, LP0002(2018)
Limit	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power)
Kind of test site	:	Shielded room

Test setup

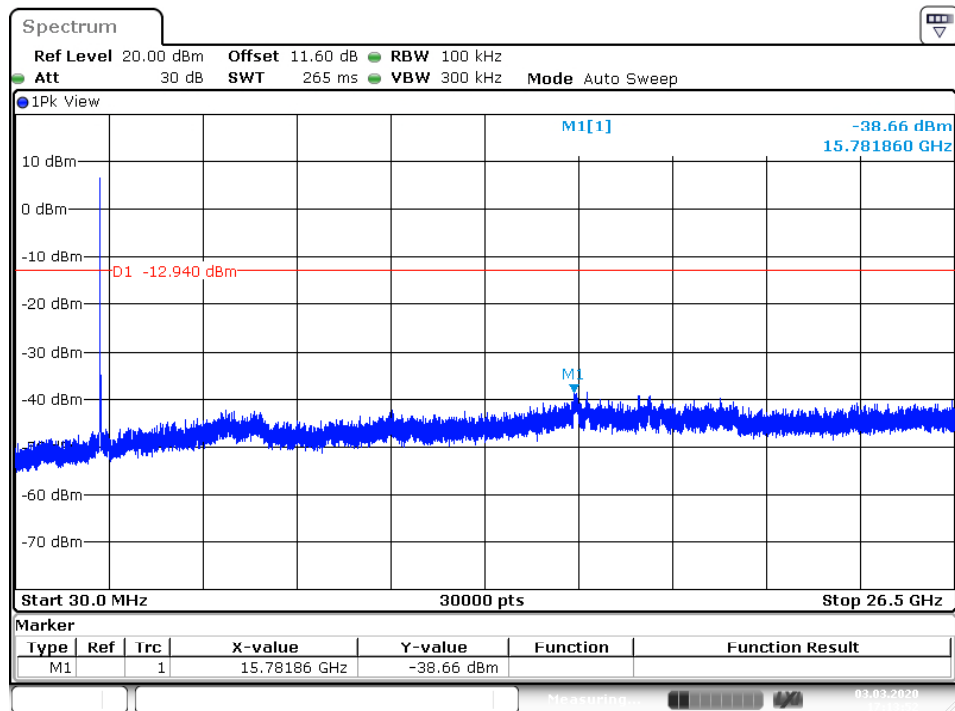
Test Channel	:	Low/ Middle/ High for Conducted Spurious Low/High for Frequency Band Edge
Operation mode	:	A
Ambient temperature	:	22-26°C
Relative humidity	:	50-65%
Atmospheric pressure	:	100-103 kPa

All emissions are more than 20dB below fundamental, details refer to following test plot, and compliance is achieved as well.

Due to the small size of the product and that there are no inductive components of significant size connected to the antenna port, 9kHz to 30MHz frequency range is not tested based on technical judgment.

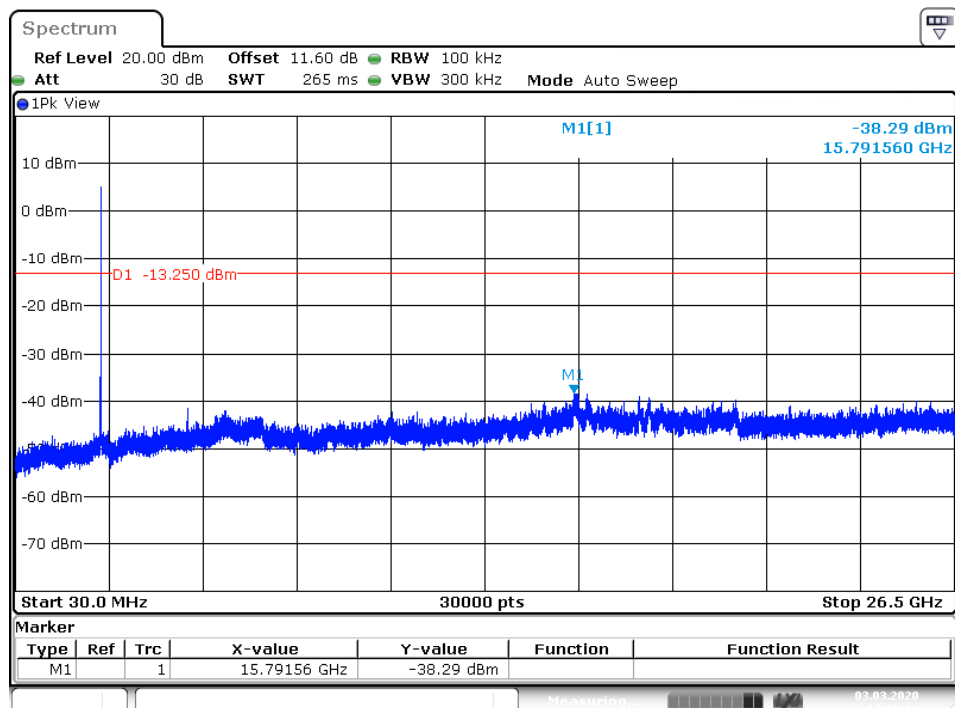
Test Plot 100kHz Conducted Emissions (802.11b)

Low Channel

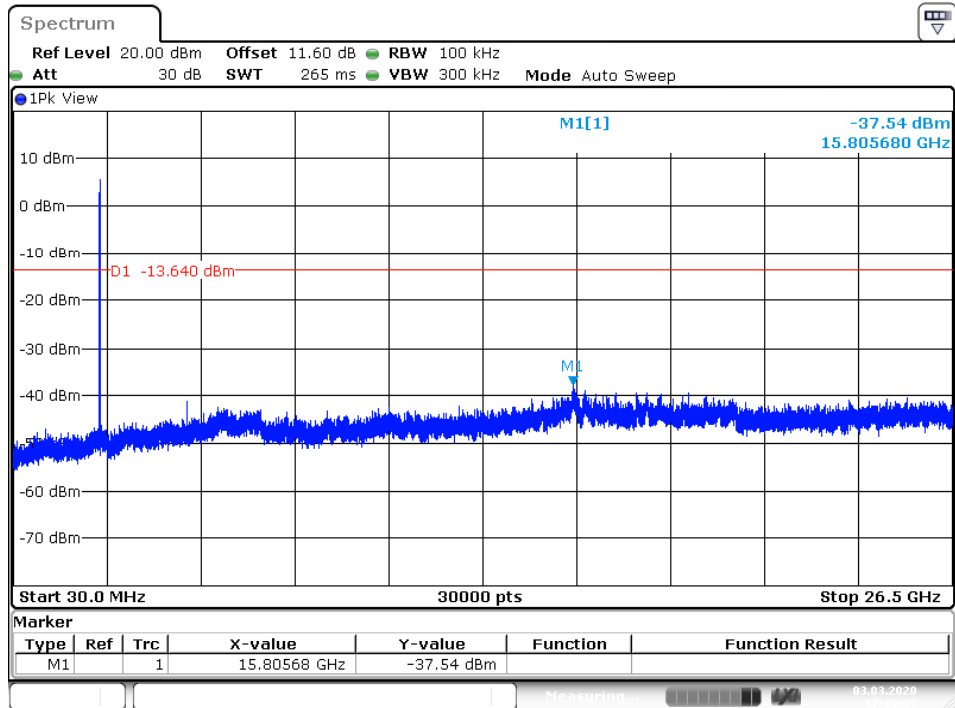


Date: 3.MAR.2020 17:13:52

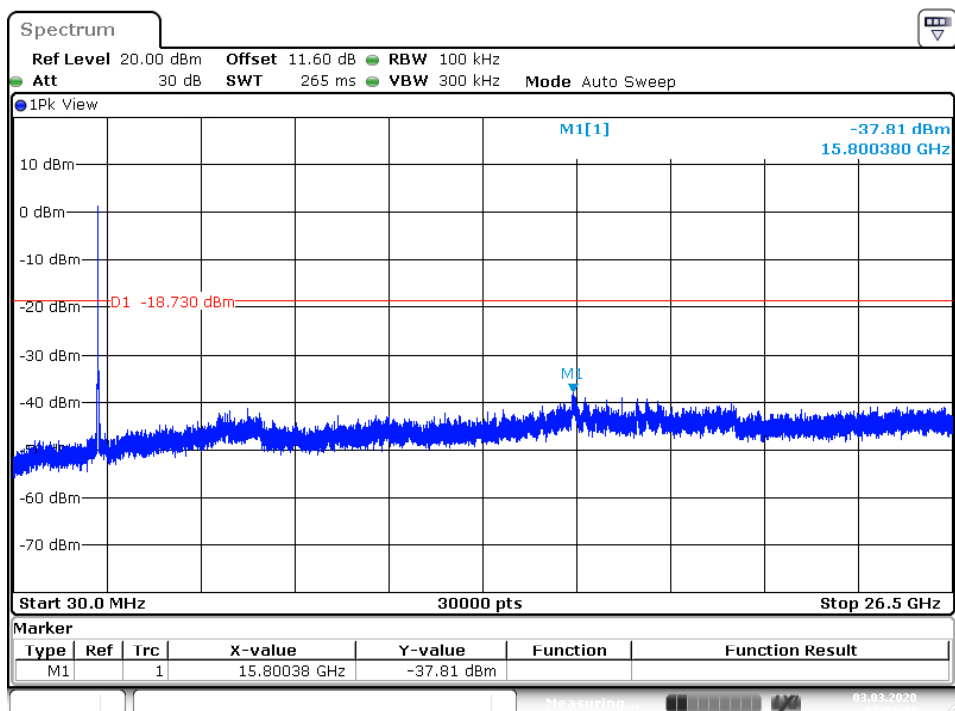
Middle Channel



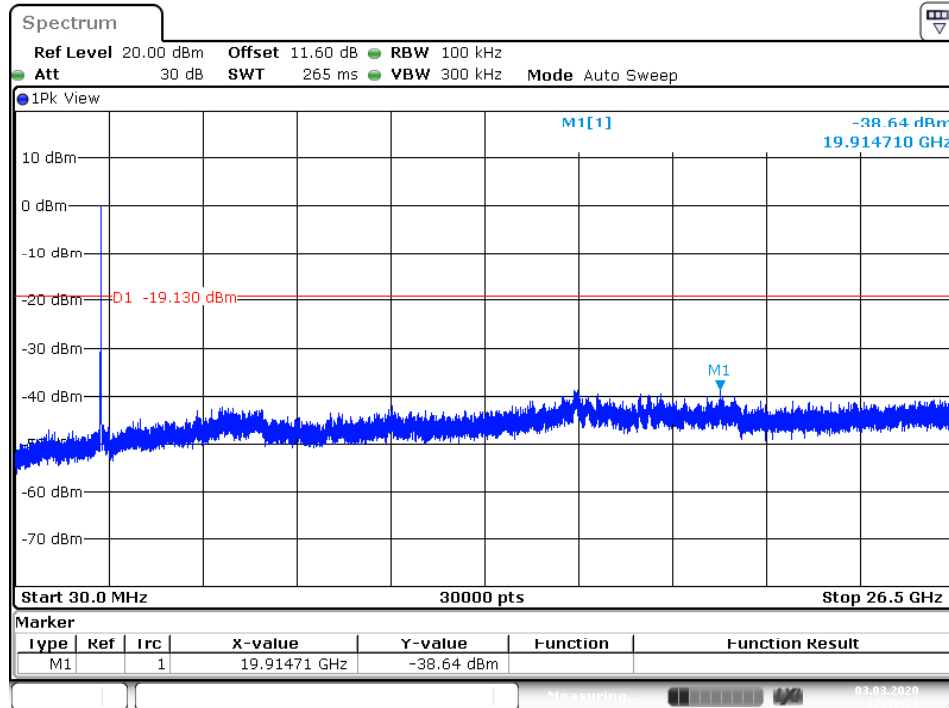
Date: 3.MAR.2020 17:16:01

High Channel


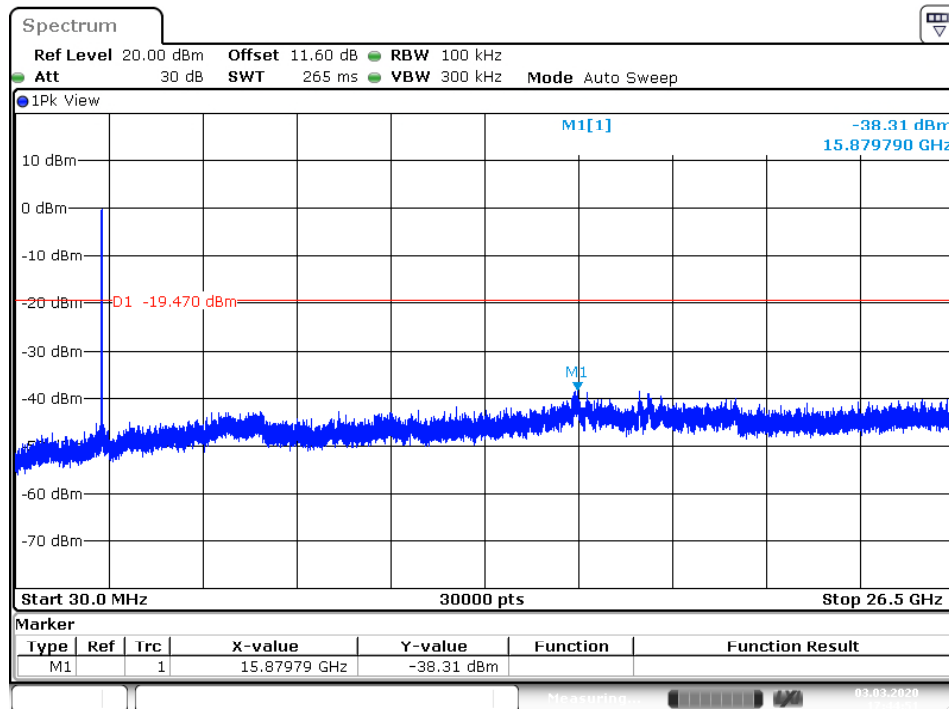
Date: 3.MAR.2020 17:19:33

Test Plot 100kHz Conducted Emissions (802.11g)
Low Channel


Date: 3.MAR.2020 17:28:32

Middle Channel


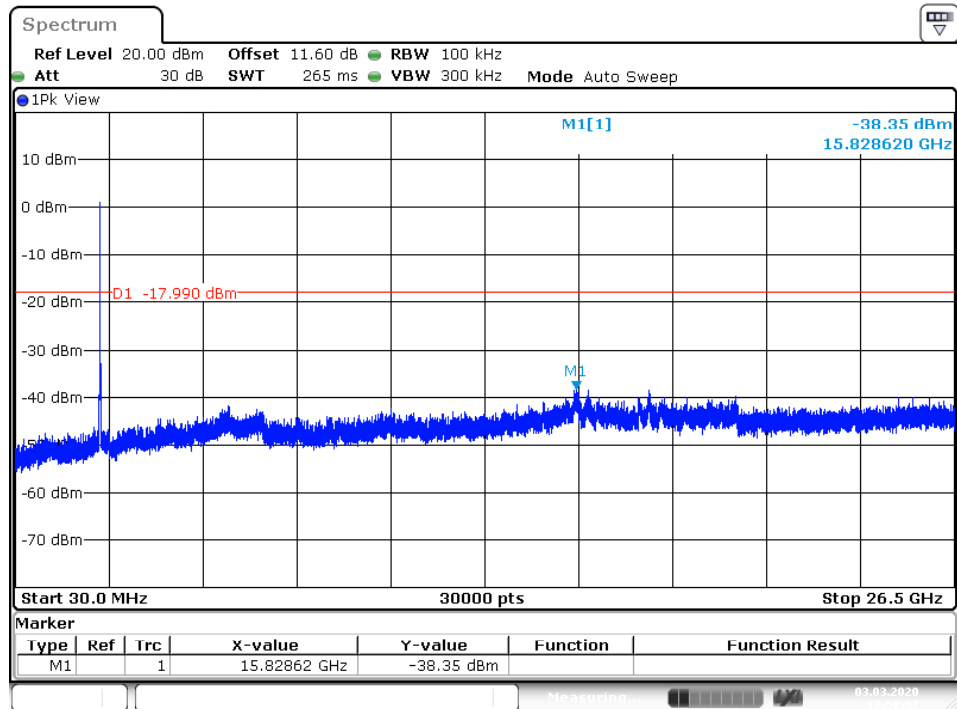
Date: 3.MAR.2020 17:40:21

High Channel


Date: 3.MAR.2020 17:44:51

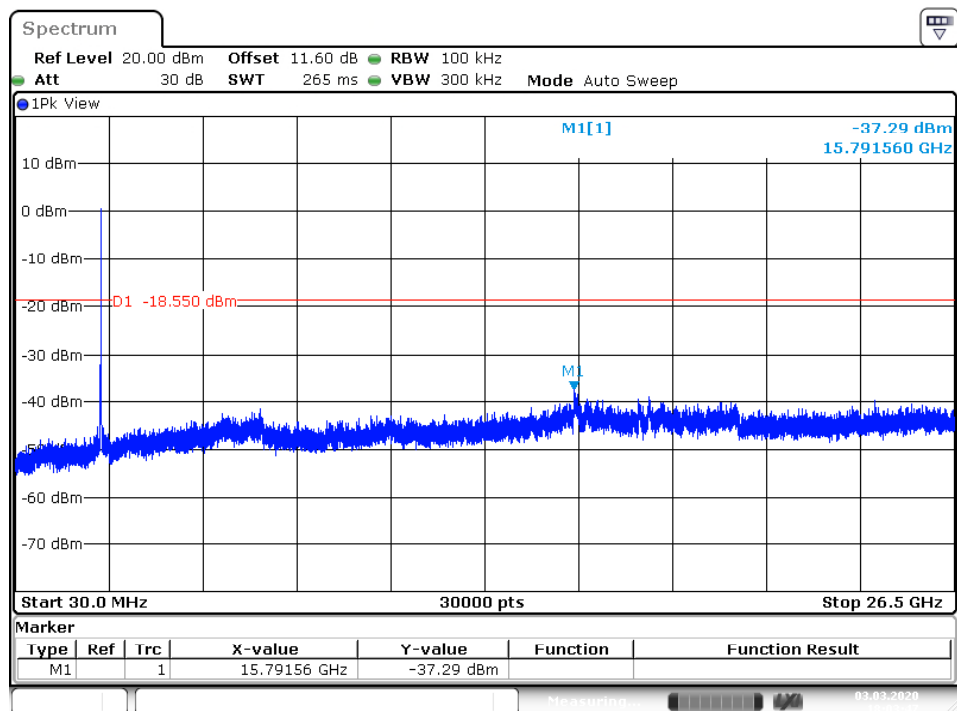
Test Plot 100kHz Conducted Emissions (802.11n HT20)

Low Channel

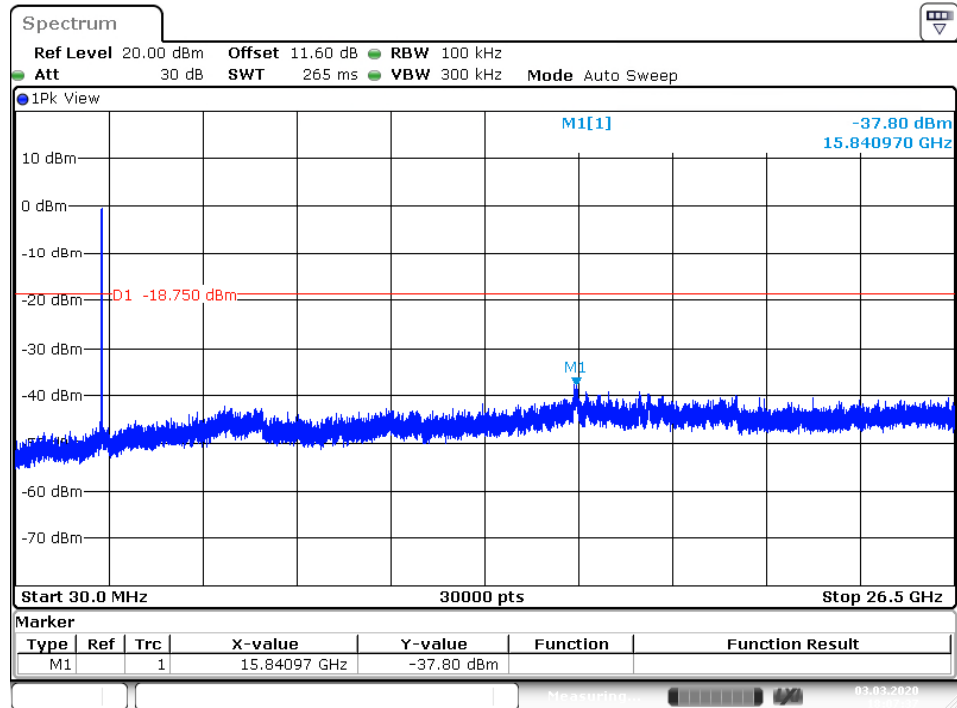


Date: 3.MAR.2020 17:58:57

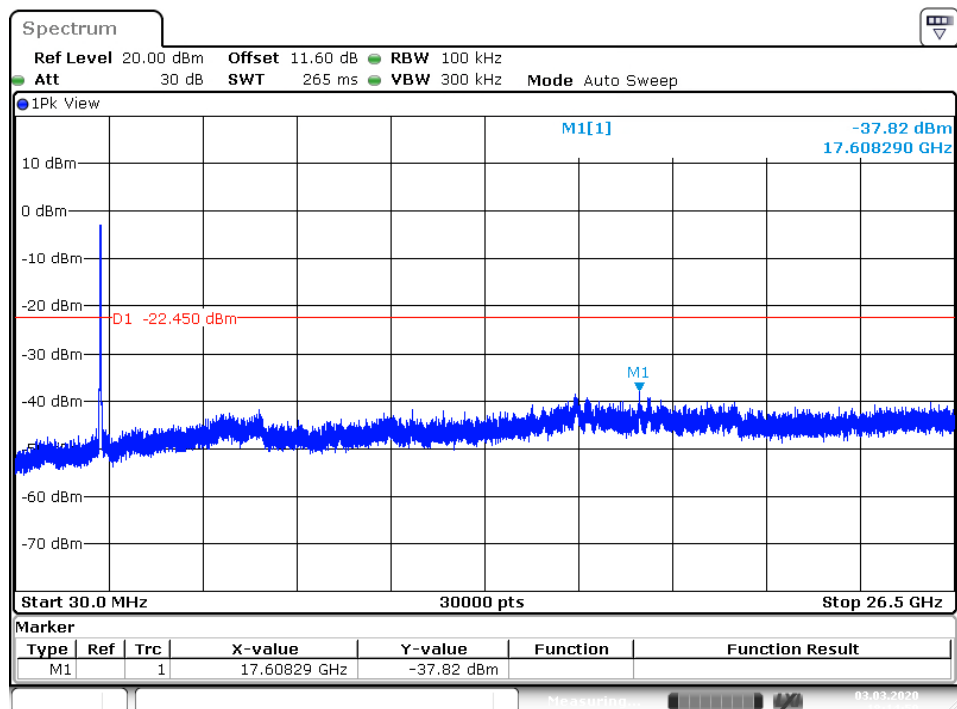
Middle Channel



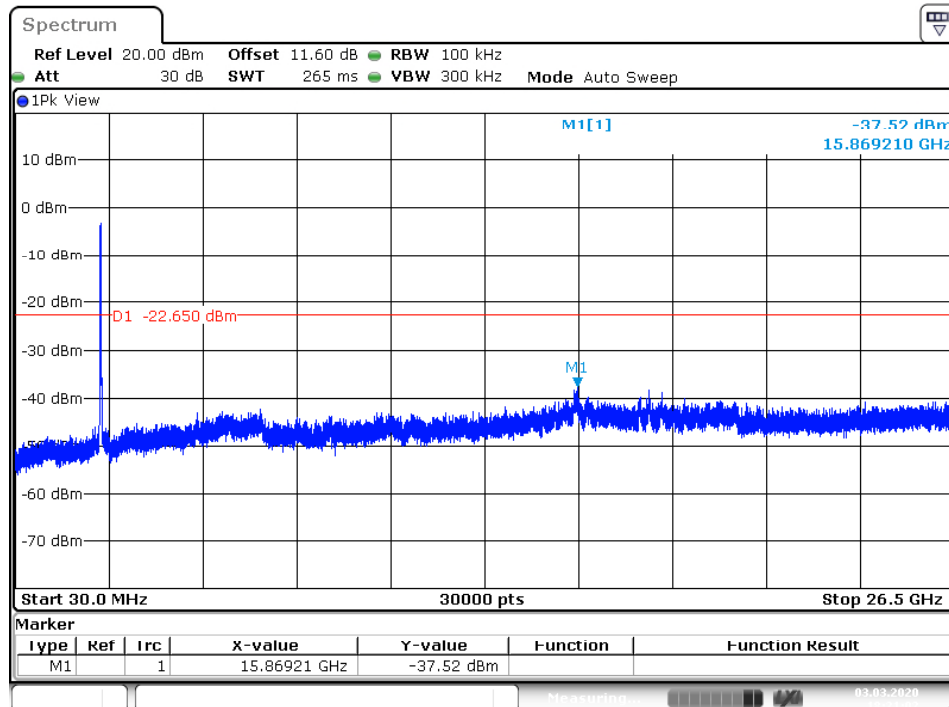
Date: 3.MAR.2020 18:03:47

High Channel


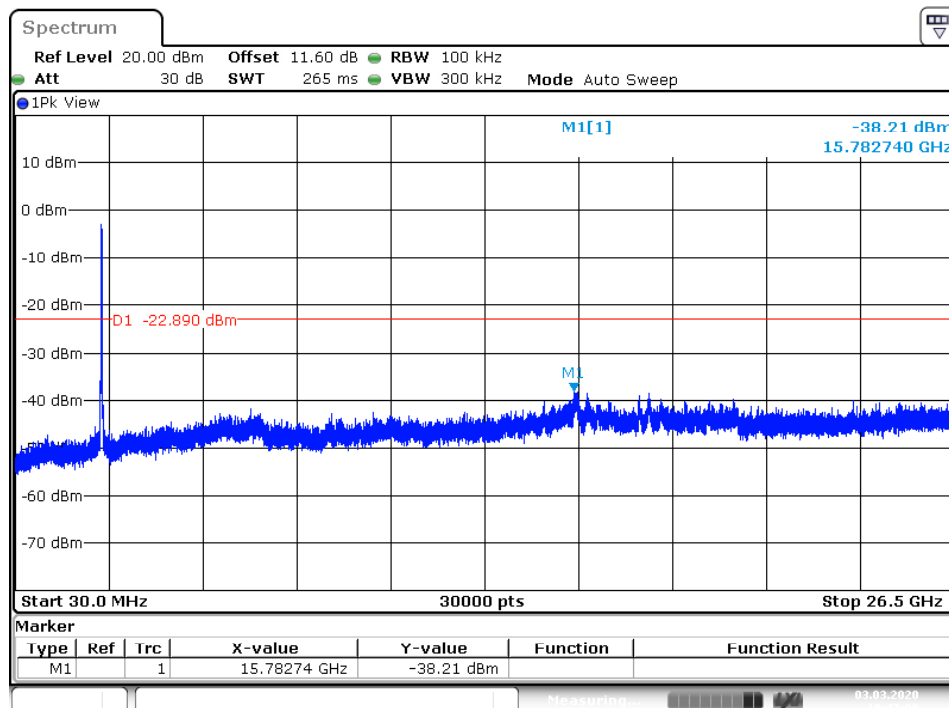
Date: 3.MAR.2020 18:07:37

Test Plot 100kHz Conducted Emissions (802.11n HT40)
Low Channel


Date: 3.MAR.2020 18:14:51

Middle Channel


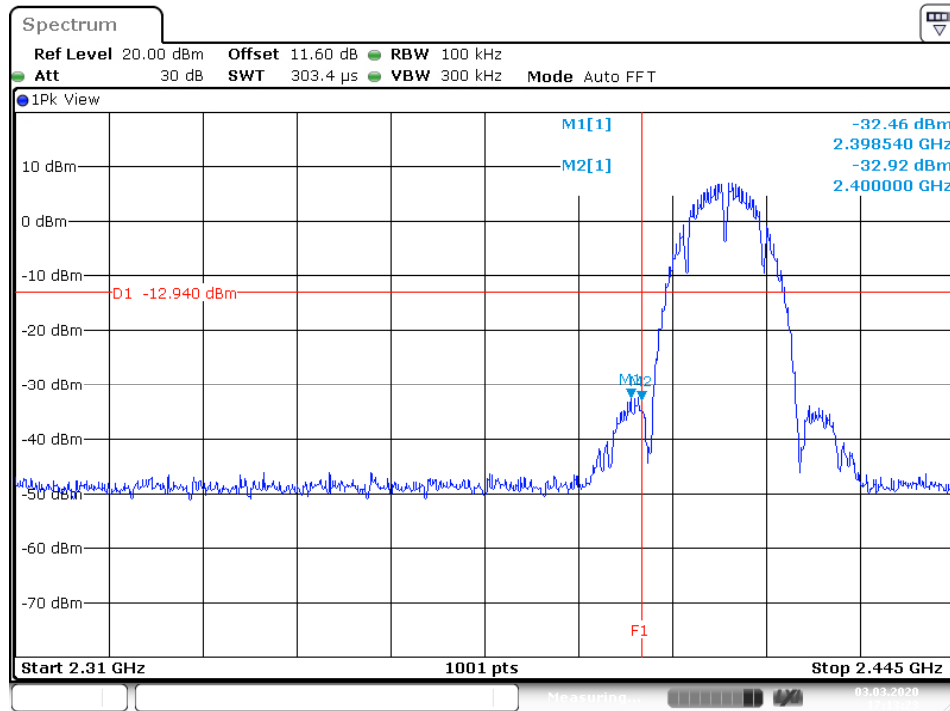
Date: 3.MAR.2020 18:21:03

High Channel


Date: 3.MAR.2020 18:47:01

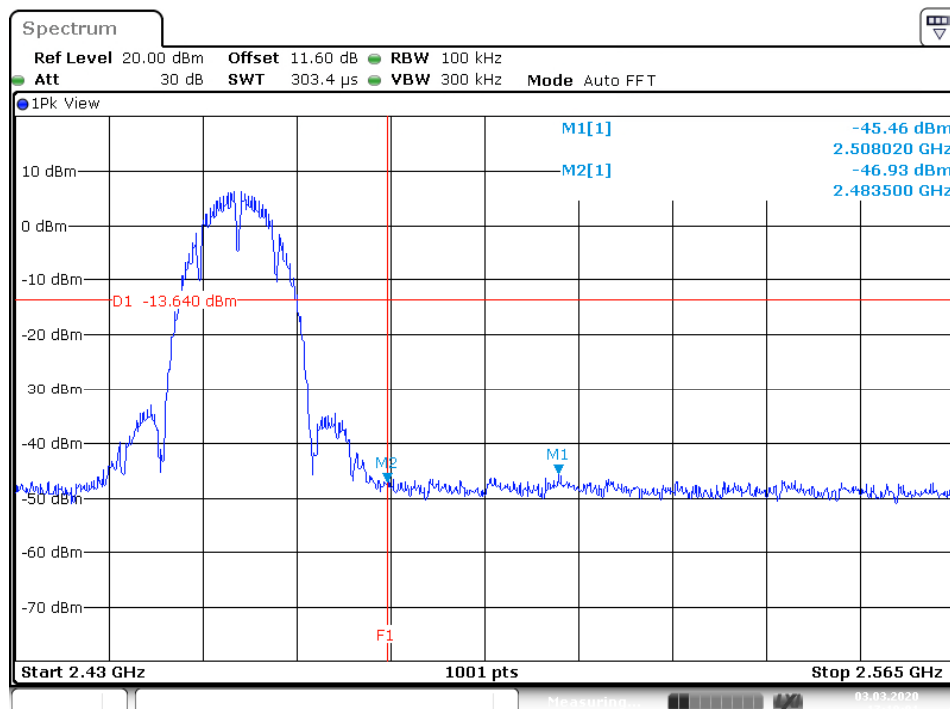
Test Plot 100kHz RBW of Band Edge (802.11b)

Low Channel



Date: 3.MAR.2020 17:13:24

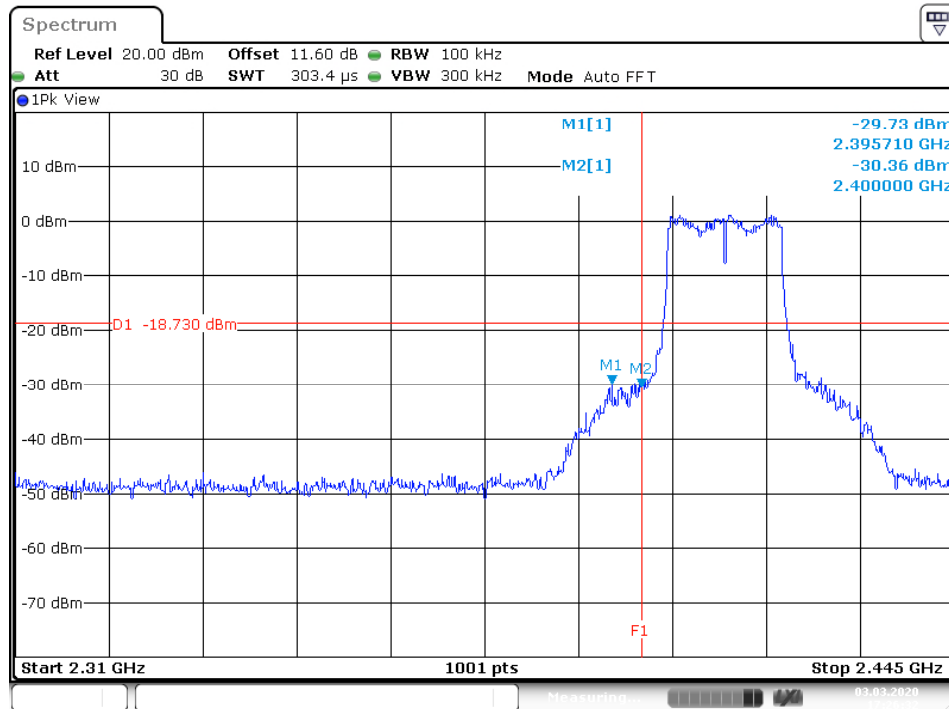
High Channel



Date: 3.MAR.2020 17:19:01

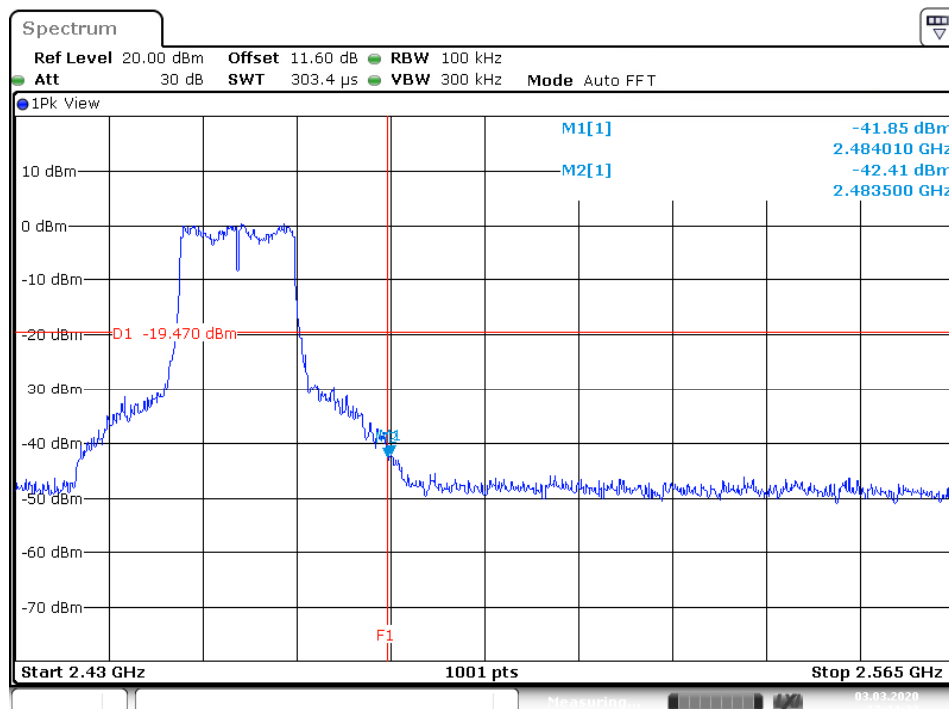
Test Plot 100kHz RBW of Band Edge (802.11g)

Low Channel



Date: 3.MAR.2020 17:26:32

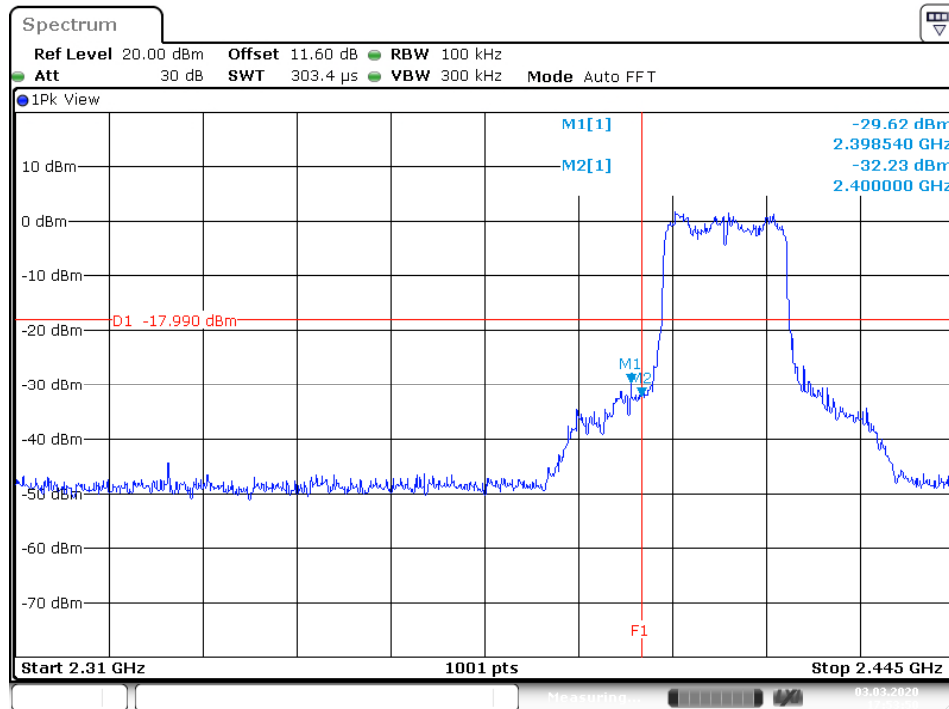
High Channel



Date: 3.MAR.2020 17:44:23

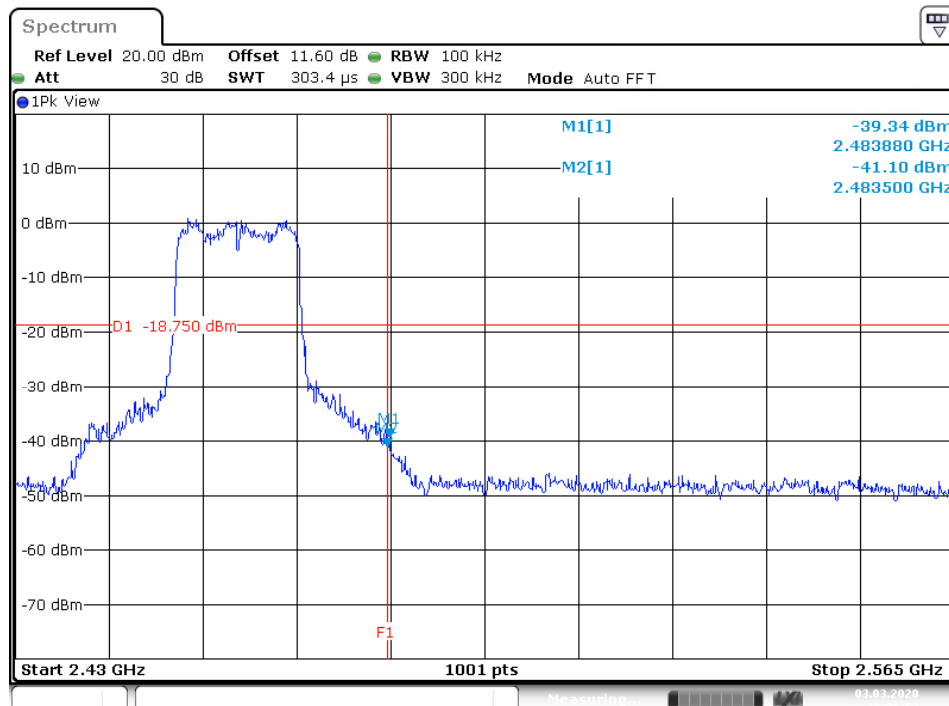
Test Plot 100kHz RBW of Band Edge (802.11n HT20)

Low Channel



Date: 3.MAR.2020 17:53:50

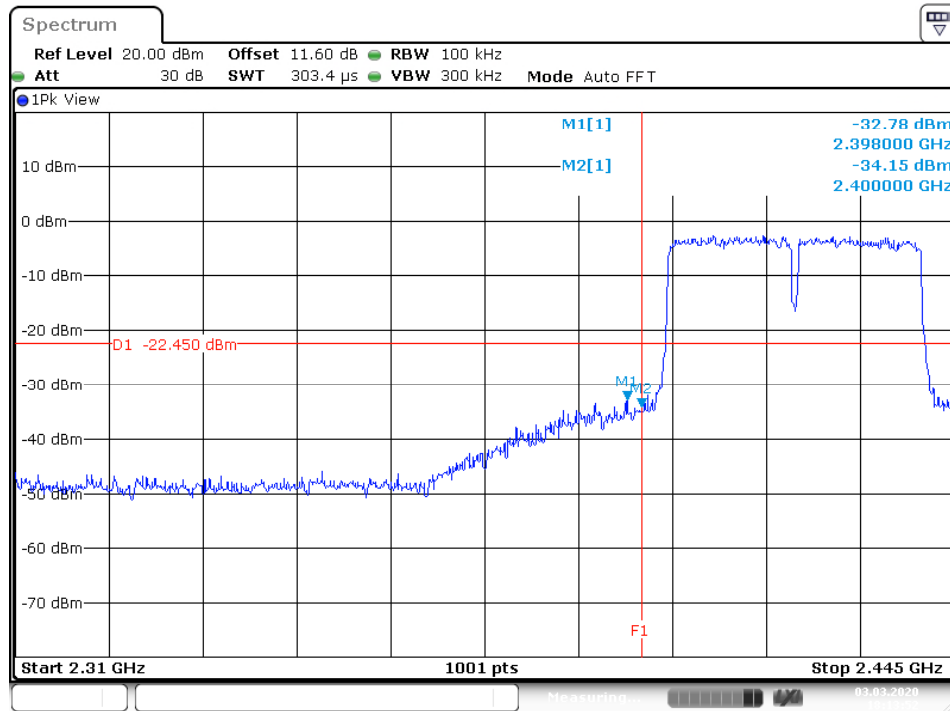
High Channel



Date: 3.MAR.2020 18:06:53

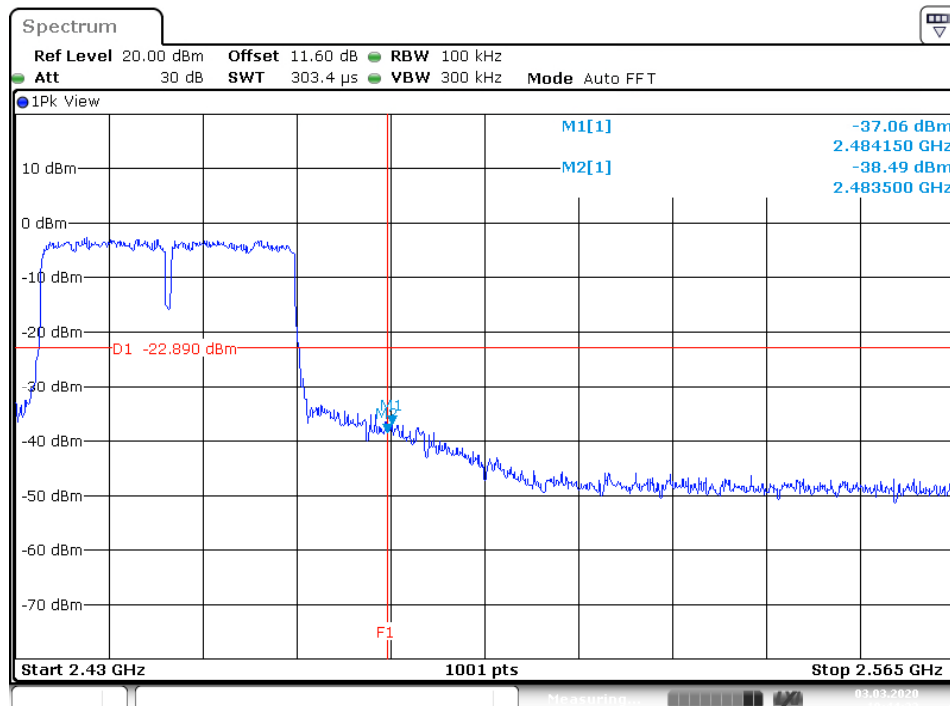
Test Plot 100kHz RBW of Band Edge (802.11n HT40)

Low Channel



Date: 3.MAR.2020 18:13:53

High Channel



Date: 3.MAR.2020 18:44:34

5.1.6 Spurious Emission

RESULT:**Passed**

Test standard : LP0002(2018): 3.10.1.5, 2.8, 2.7
Basic standard : ANSI C63.10: 2013, LP0002(2018)
Limits : Radiated emissions which fall in the restricted bands, as defined in LP0002(2018): 2.7 , must comply with the radiated emission limits specified in LP0002(2018): 2.8.

Emission radiated outside the specified frequency bands must comply with the radiated emission limits specified in LP0002(2018): 2.8.

Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : Low/ Middle/ High
Operation mode : A, B

Remark: Testing was carried out within frequency range 9kHz to the tenth harmonic.

For details refer to Appendix D.

The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The X Axis orientation is the worst-case and recorded in this test report.

5.2 Mains Emissions

5.2.1 Mains Conducted Emissions

RESULT:**Passed**

Test standard	:	LP0002(2018): 2.3
Limits	:	Mains Conducted emissions as defined in above test standards must comply with the mains conducted emission limits specified
Kind of test site	:	Shielded Room

Test setup

Test Channel	:	11b, 2462MHz
Operation mode	:	A
Ambient temperature	:	22-26°C
Relative humidity	:	50-65%
Atmospheric pressure	:	100-103 kPa

Remark: For details refer to Appendix D.

6. Photographs of the Test Set-Up

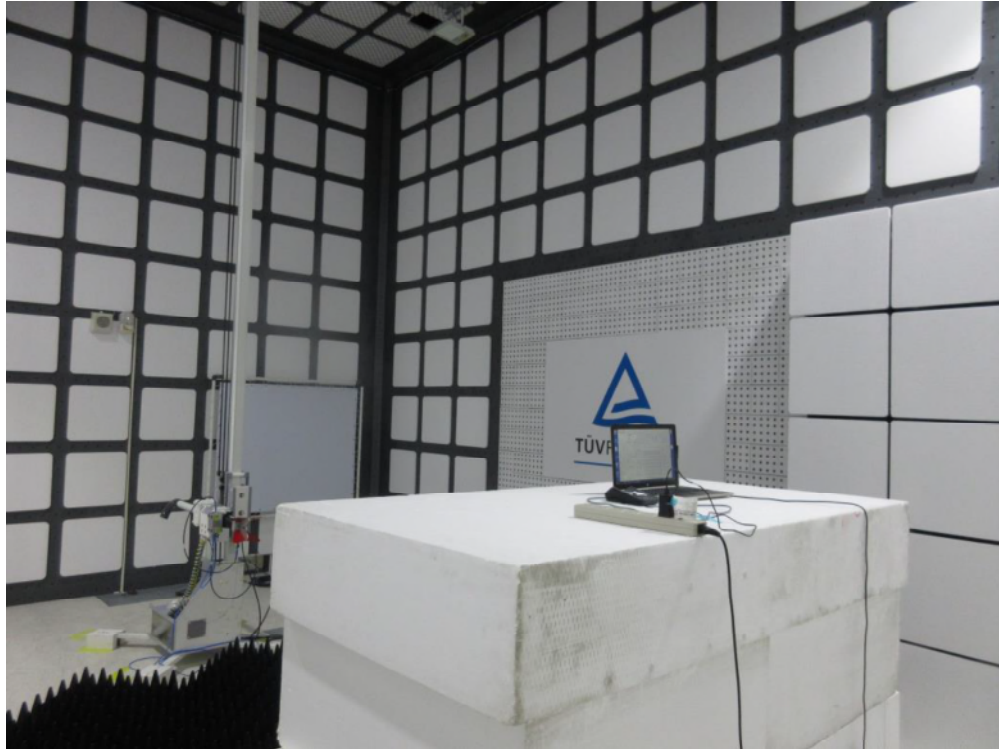
Photograph 1: Set-up for Spurious Emissions (Front View 1)



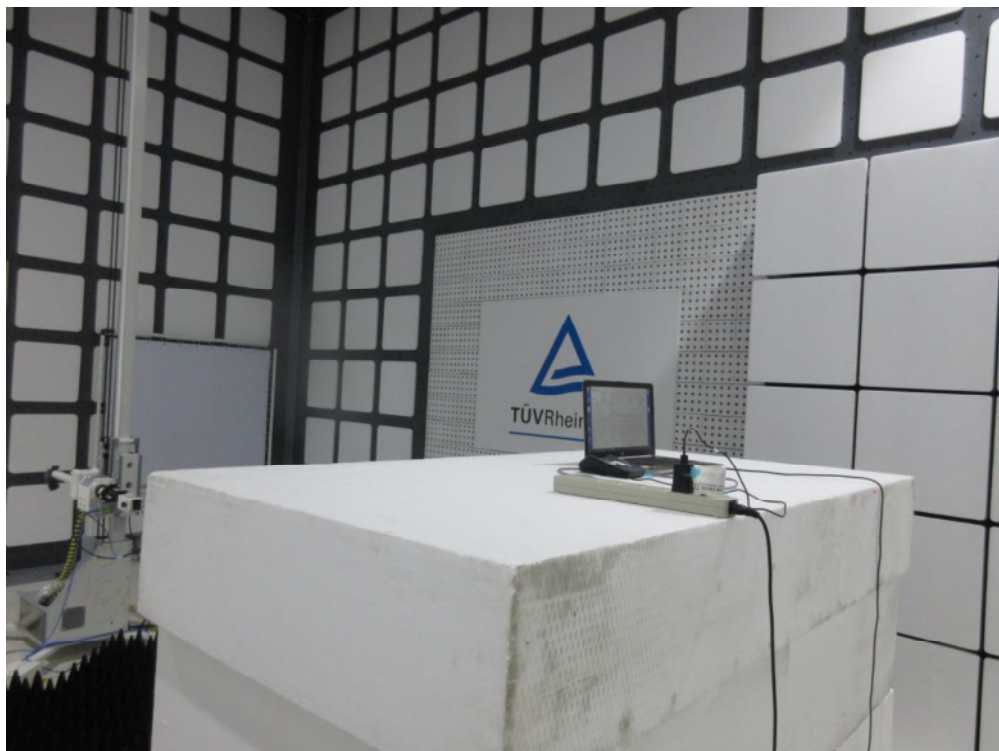
Photograph 2: Set-up for Spurious Emissions (Front View 2)



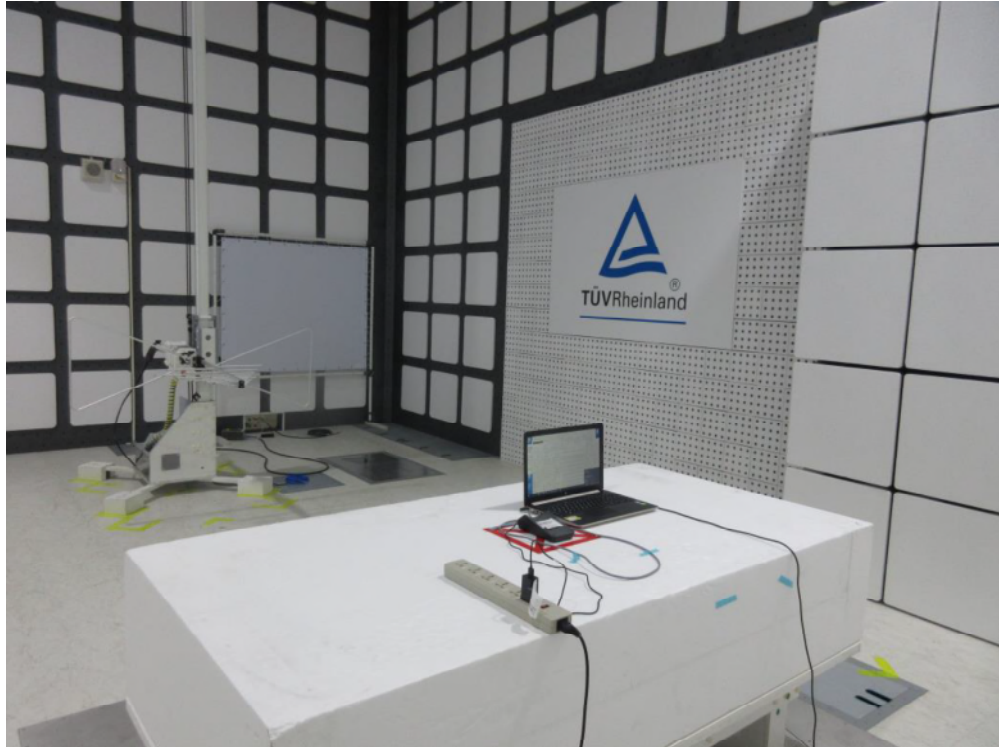
Photograph 3: Set-up for Spurious Emissions (Back View 1)



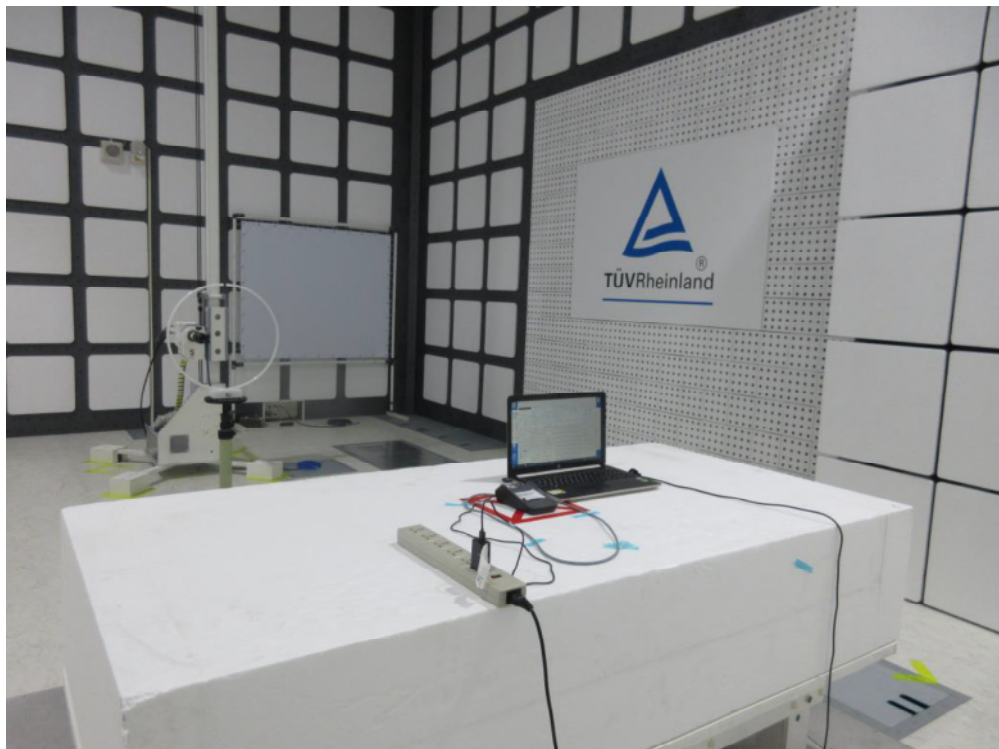
Photograph 4: Set-up for Spurious Emissions (Back View 2)



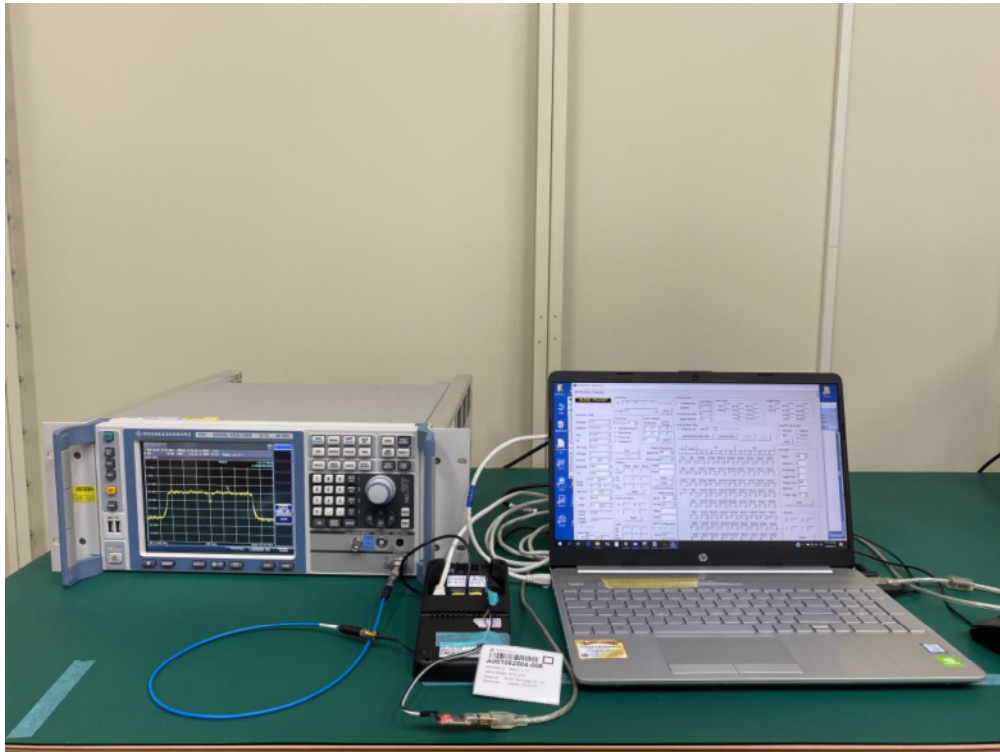
Photograph 5: Set-up for Spurious Emissions (Back View 3)



Photograph 6: Set-up for Spurious Emissions (Back View 4)



Photograph 7: Set-up for Conducted Testing (View 1)



Photograph 8: Set-up for Conducted Testing (View 2)



Photograph 9: Set-up for AC Mains (Front View)



Photograph 10: Set-up for AC Mains (Back View)



7. List of Tables

Table 1: Applied Standard and Test Levels.....	5
Table 2: List of Test and Measurement Equipment.....	7
Table 3: Emission Measurement Uncertainty	8
Table 4: Basic Information of EUT.....	9
Table 5: Technical Specification of EUT	9
Table 6: Table for Parameters of Test Software Setting	11
Table 7: Test result of Peak Output Power (802.11b)	16
Table 8: Test result of Peak Output Power (802.11g)	16
Table 9: Test result of Peak Output Power (802.11n HT20)	17
Table 10: Test result of Peak Output Power (802.11n HT40)	17
Table 11: Test result of 6dB Bandwidth (802.11b).....	19
Table 12: Test result of 6dB Bandwidth (802.11g).....	19
Table 13: Test result of 6dB Bandwidth (802.11n HT20)	19
Table 14: Test result of 6dB Bandwidth (802.11n HT40)	19
Table 15: Test result of Power Density (802.11b).....	26
Table 16: Test result of Power Density (802.11g).....	26
Table 17: Test result of Power Density (802.11n HT20)	26
Table 18: Test result of Power Density (802.11n HT40)	27

8. List of Photographs

Photograph 1: Set-up for Spurious Emissions (Front View 1).....	47
Photograph 2: Set-up for Spurious Emissions (Front View 2).....	47
Photograph 3: Set-up for Spurious Emissions (Back View 1).....	48
Photograph 4: Set-up for Spurious Emissions (Back View 2).....	48
Photograph 5: Set-up for Spurious Emissions (Back View 3).....	49
Photograph 6: Set-up for Spurious Emissions (Back View 4).....	49
Photograph 7: Set-up for Conducted Testing (View 1)	50
Photograph 8: Set-up for Conducted Testing (View 2)	50
Photograph 9: Set-up for AC Mains (Front View)	51
Photograph 10: Set-up for AC Mains (Back View).....	51