

Prüfbericht-Nr.: <i>Test report No.:</i>	60381593 001	Auftrags-Nr.: <i>Order No.:</i>	168266209	Seite 1 von 16 <i>Page 1 of 16</i>
Kunden-Referenz-Nr.: <i>Client reference No.:</i>	N/A	Auftragsdatum: <i>Order date.:</i>	22.05.2020	
Auftraggeber: <i>Client:</i>	Hangzhou Hikvision Digital Technology Co., Ltd. No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052 Zhejiang, P.R. China			
Prüfgegenstand: <i>Test item:</i>	Fingerprint Access Control Terminal			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	DS-K1T201AMF, DS-K1T201AMFUHK, DS-K1T201AMFCKV, DS-K1T201AMFUVS, DS-K1T201AMFKVO, DS-K1T201AMFHUN (Trademark: HIKVISION)			
Auftrags-Inhalt: <i>Order content:</i>	FCC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247			
Wareneingangsdatum: <i>Date of receipt:</i>	27.05.2020	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A002831817-002 A002831817-004			
Prüfzeitraum: <i>Testing period:</i>	27.05.2020 - 08.06.2020			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 15.06.2020 Ryan Yang / Assistant Project Manager		 15.06.2020 Winnie Hou / Technical Certifier		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
Sonstiges / Other:				
This report is for FCC Part 15C(Conducted) of Wi-Fi 802.11 b/g/n requirements only.				
Refer to STS report STS2005284W03 for details of FCC Part 15C(Radiated) of Wi-Fi 802.11 b/g/n requirements.				
FCC ID: 2ADTD-K1T201AMF				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende: 1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
Legend: 1 = very good P(ass) = passed a.m. test specifications(s)	2 = good F(ail) = failed a.m. test specifications(s)	3 = satisfactory F(ail) = failed a.m. test specifications(s)	4 = sufficient N/A = not applicable	5 = poor 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>				

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Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 6dB BANDWIDTH

RESULT: Pass

5.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Conducted Testing

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

FCC Accreditation Designation No.: CN1260

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

TÜV Rheinland (Shenzhen) Co., Ltd.

Radio Spectrum Testing (TS8997)				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Signal Analyzer	R&S	FSV 40	101441	20.08.2020
OSP	R&S	OSP 150	101017	17.12.2020
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Power Meter	R&S	NRP2	107105	17.12.2020
Wideband Power Sensor	R&S	NRP-Z81	105350	17.12.2020

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 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.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power (conducted)	± 2.5 dB
Temperature	± 1 °C
Humidity	± 5 %
Voltage (DC)	± 1 %
Voltage (AC, <10kHz)	± 2 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd.. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is an optical fingerprint access control terminal with multiple advanced technologies including fingerprint recognition, Wi-Fi 802.11 b/g/n, card recognition(RFID), 2.8-inch LCD display screen. It is equipped with optical fingerprint recognition module, and supports offline operation.

According to the declaration of the applicant, the electrical circuit design, PCB layout and components used are identical for all models, only the model number is different.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Fingerprint Access Control Terminal
Type Designation	DS-K1T201AMF, DS-K1T201AMFUHK, DS-K1T201AMFCKV, DS-K1T201AMFUVS, DS-K1T201AMFKVO, DS-K1T201AMFHUN
Trade Mark	HIKVISION
FCC ID	2ADTD-K1T201AMF
Operating Voltage	DC 12.0V@1.5A input via AC/DC adapter
Testing Voltage	AC 120V@60Hz
Technical Specification of Wi-Fi 802.11 b/g/n	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20) 2422 - 2452 MHz for 802.11n(HT40)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number	11 channels for 802.11b/g/n(HT20) 7 channels for 802.11n(HT40)
Channel Separation	5 MHz
Antenna Type	Integral antenna
Gain2 of Wi-fi	2.13 dBi

Table 3: RF Channel and Frequency of Wi-Fi 802.11 b/g/n

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
	Frequency (MHz)	Frequency (MHz)
01	2412	/
02	2417	/
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	/
11	2462	/

Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Wi-Fi 802.11 b/g/n wireless transmitting mode
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Normal operation with Wi-Fi mode
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- FCC/IC Label and Location Info
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model *DS-K1T201AMF* in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Adapter	HOIOTO	ADS-26FSG-12 12018EPG	1.5m	Input: 100-240V ~ 50/60Hz 0.7A Output: 12V/1.5A

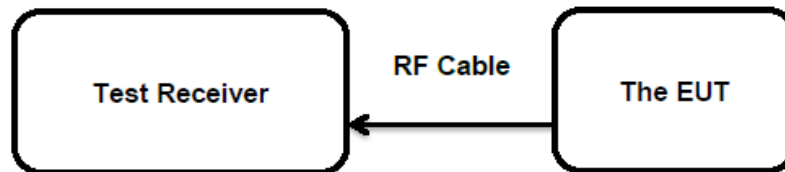
4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antennas, the directional gain of antenna is 2.13 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 Basic standard : ANSI C63.10: 2013
 Limits : 1.0 Watts
 Kind of test site : Shielded Room

Test Setup

Date of testing : 05.06.2020
 Input voltage : AC 120V@60Hz
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 5: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	Measured Conducted Output Power			Limit (W)
			Average (dBm)	Peak (dBm)	(W)	
802.11b	1 Mbps	2412	12.95	15.62	0.0365	< 1.0
		2437	13.75	16.16	0.0413	
		2462	13.83	16.76	0.0474	
802.11g	6 Mbps	2412	13.89	24.30	0.2692	
		2437	13.84	23.35	0.2163	
		2462	13.90	24.96	0.3133	
802.11n (HT20)	MCS0	2412	13.20	23.49	0.2234	
		2437	13.77	23.13	0.2056	
		2462	13.82	24.20	0.2630	
802.11n (HT40)	MCS0	2422	11.30	20.59	0.1146	
		2437	10.12	19.36	0.0863	
		2452	10.98	19.87	0.0971	
Maximum Measured Value			13.90	24.96	0.3133	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 2.13 dBi,

5.1.3 Conducted Power Spectral Density

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(e)
 Basic standard : ANSI C63.10: 2013
 Limits : < 8 dBm / 3kHz
 Kind of test site : Shielded Room

Test Setup

Date of testing : 02.06.2020
 Input voltage : AC 120V@60Hz
 Operation mode : B
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 6: Test Result of Power Spectral Density, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	1 Mbps	2412	-11.65	8 dBm / 3kHz
		2437	-11.66	
		2462	-11.80	
802.11g	6 Mbps	2412	-14.92	
		2437	-14.36	
		2462	-14.74	
802.11n (HT20)	MCS0	2412	-15.48	
		2437	-15.23	
		2462	-15.58	
802.11n (HT40)	MCS0	2422	-16.24	
		2437	-17.12	
		2452	-16.44	
Maximum Measured Value			-11.65	

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix A.

5.1.4 6dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(2)
 Basic standard : ANSI C63.10: 2013
 Limits : > 500 KHz
 Kind of test site : Shielded Room

Test Setup

Date of testing : 02.06.2020
 Input voltage : AC 120V@60Hz
 Operation mode : B
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 7: Test Result of 6dB Bandwidth, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	-6dB Bandwidth (MHz)	Limit (kHz)
802.11b	1 Mbps	2412	10.04	> 500
		2437	10.07	
		2462	10.04	
802.11g	6 Mbps	2412	16.19	
		2437	16.21	
		2462	16.37	
802.11n (HT20)	MCS0	2412	17.61	
		2437	17.60	
		2462	17.53	
802.11n (HT40)	MCS0	2422	35.16	
		2437	35.39	
		2452	35.44	
Minimum Measured Value			10.04	

For the measurement records, refer to the appendix A.

5.1.5 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 02.06.2020
Input voltage	: AC 120V@60Hz
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix A.

6 List of Tables

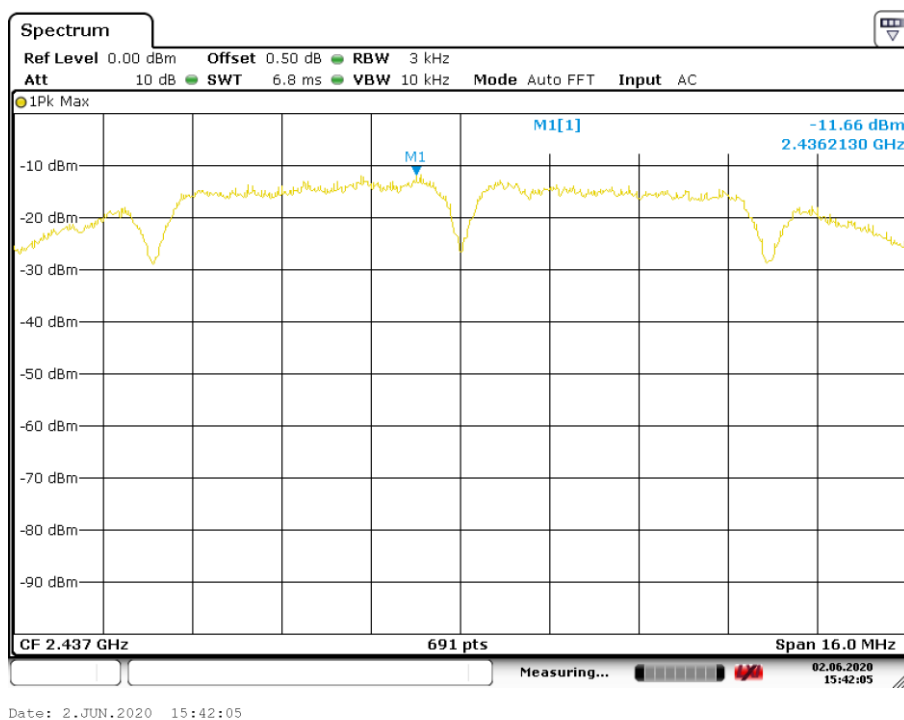
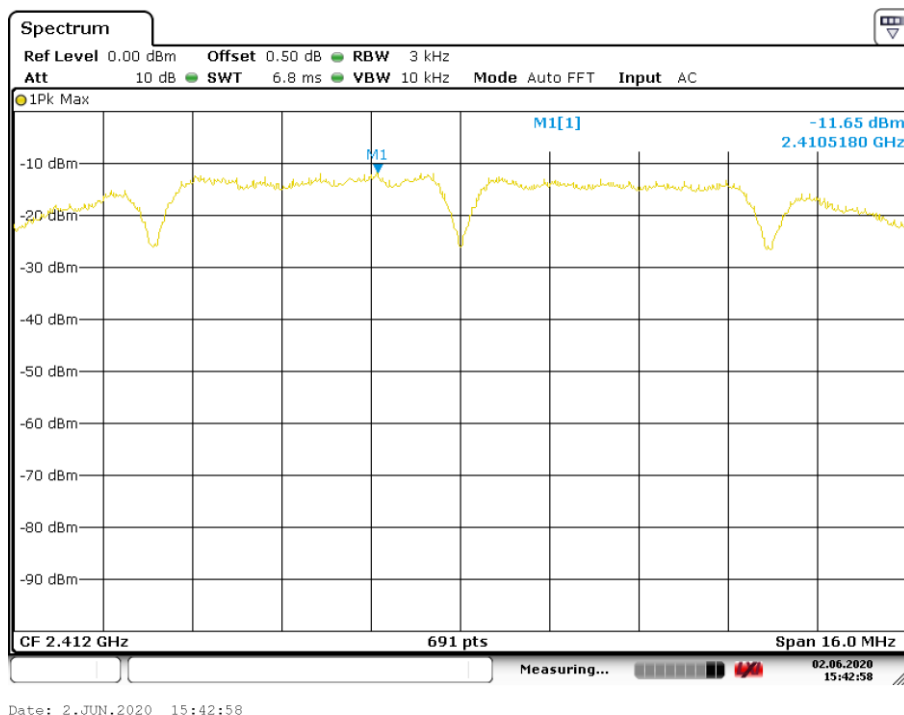
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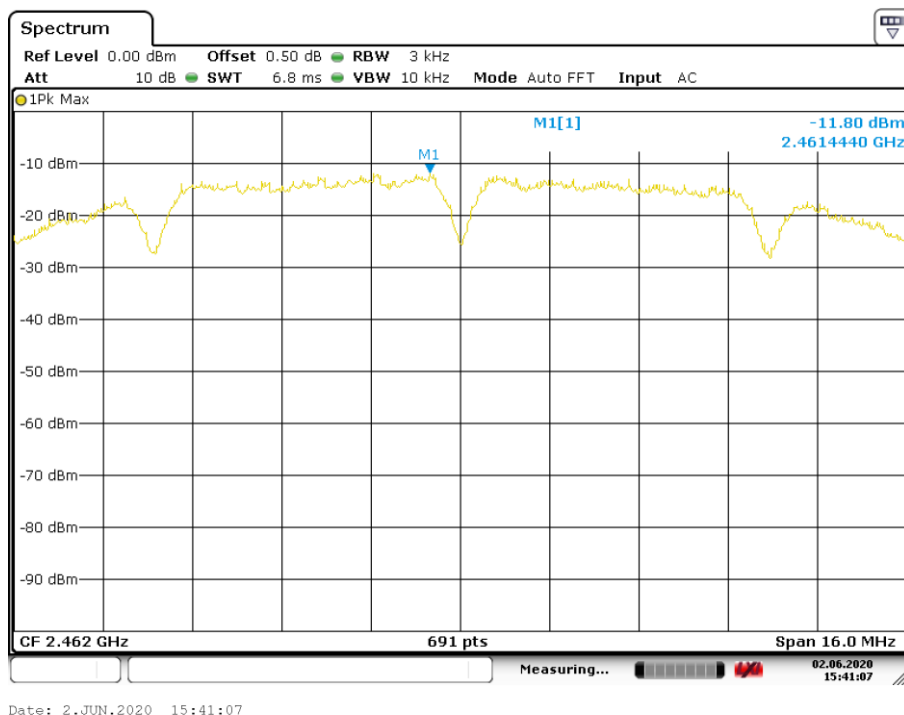
Appendix A: Test Results of Wi-Fi(Conducted) Testing

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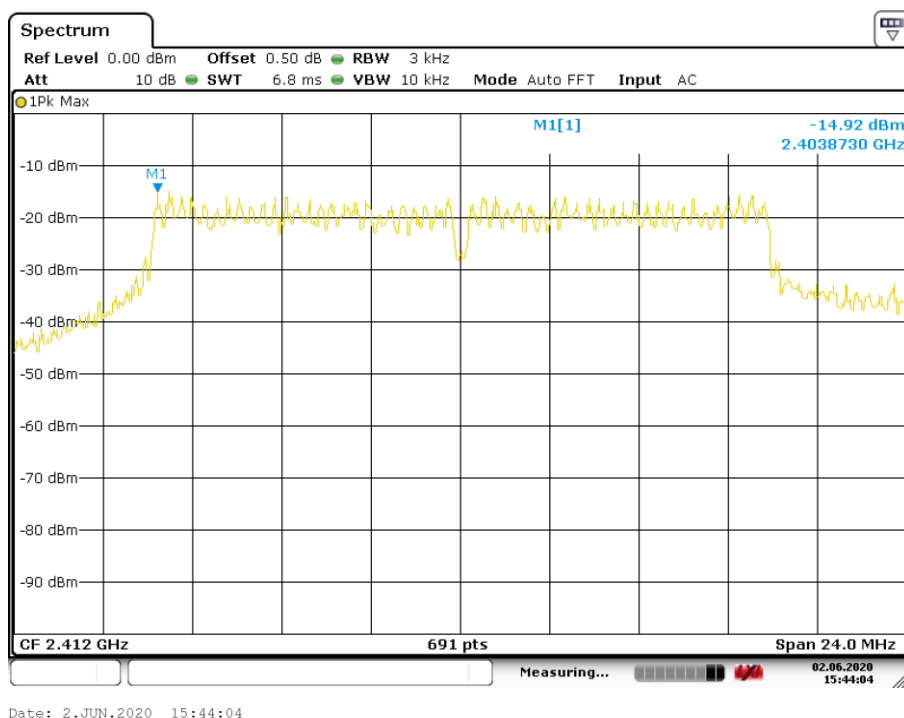
Appendix A.1: Test Results of Conducted Power Spectral Density

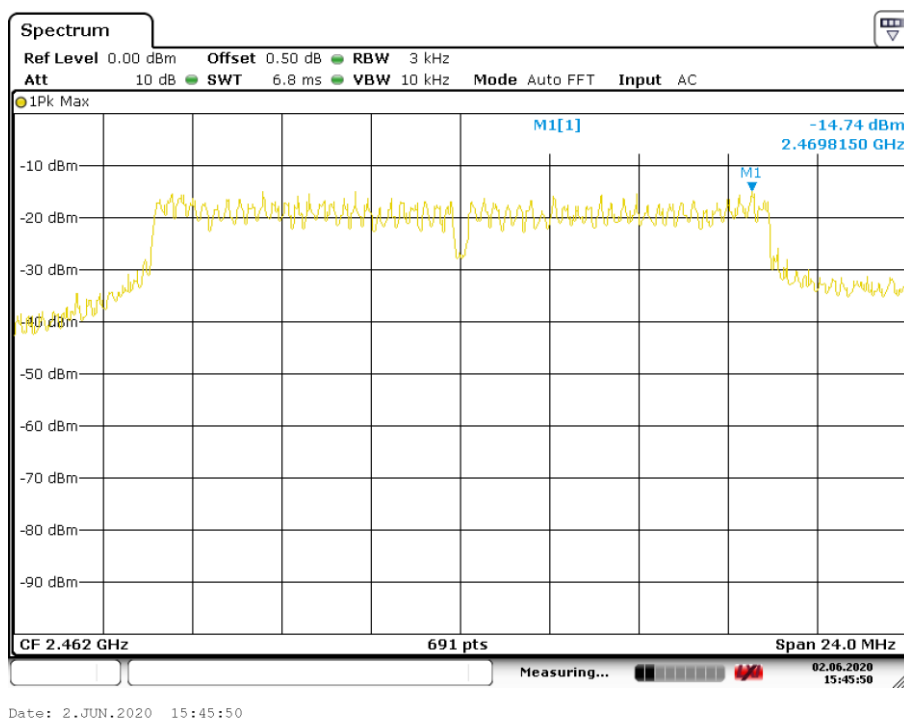
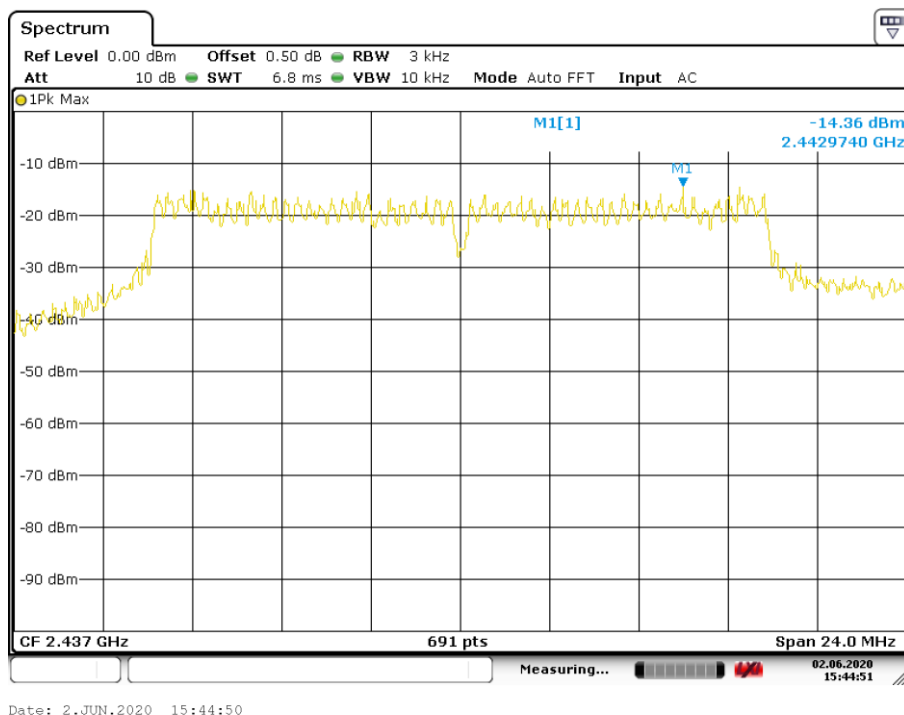
Wi-Fi 802.11 b mode, 1 Mbps



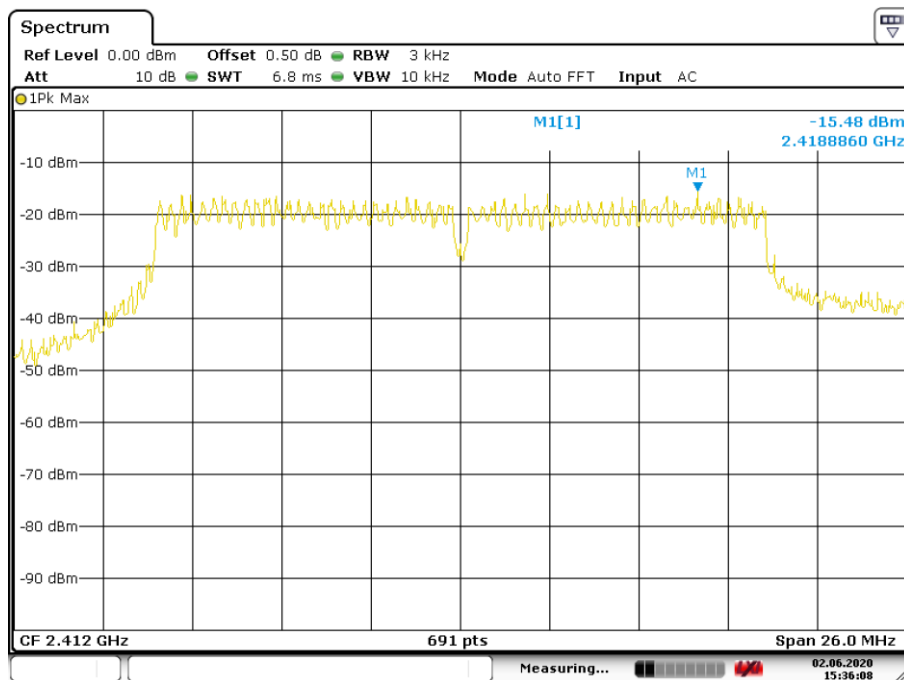


Wi-Fi 802.11 g mode, 6 Mbps

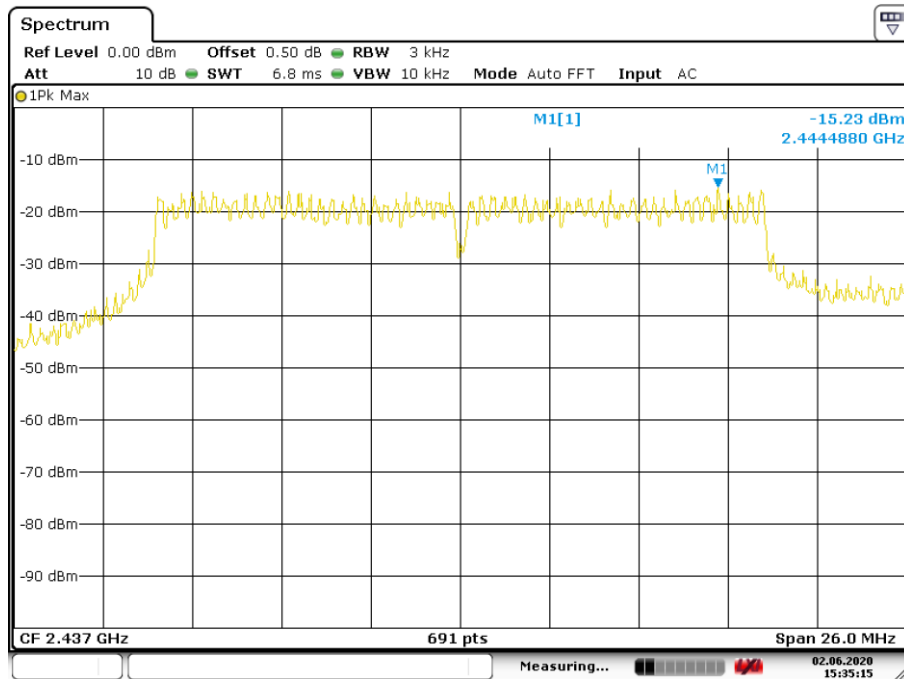




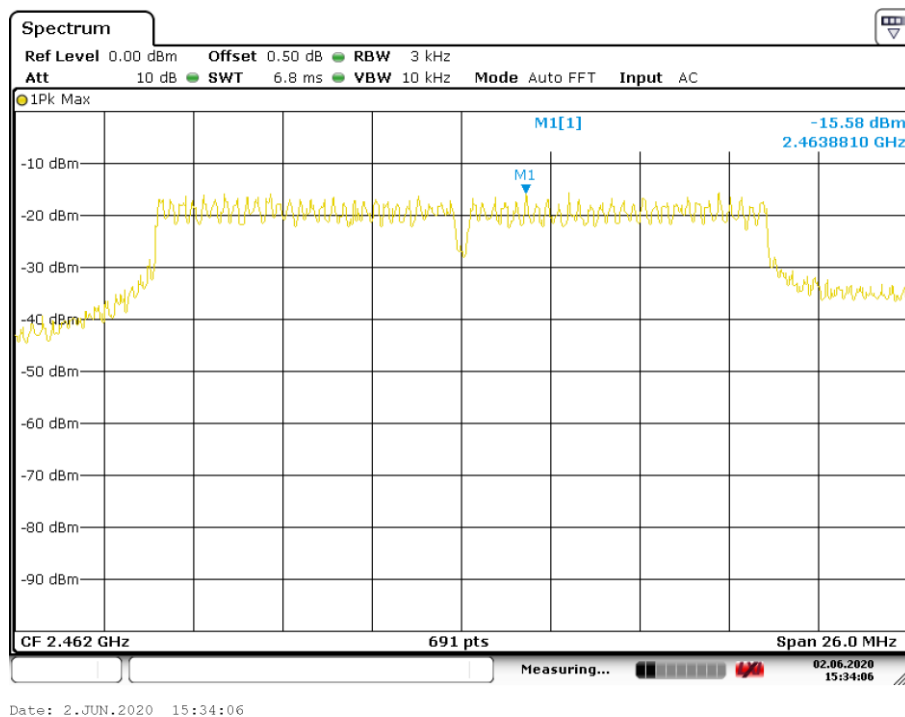
Wi-Fi 802.11 n(HT20) mode, MCS0



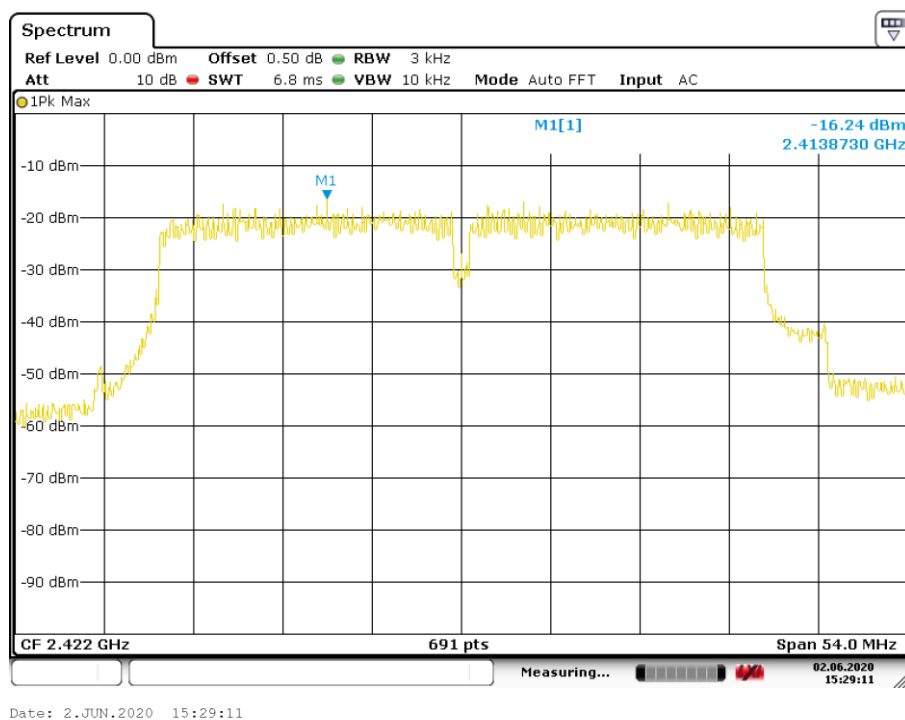
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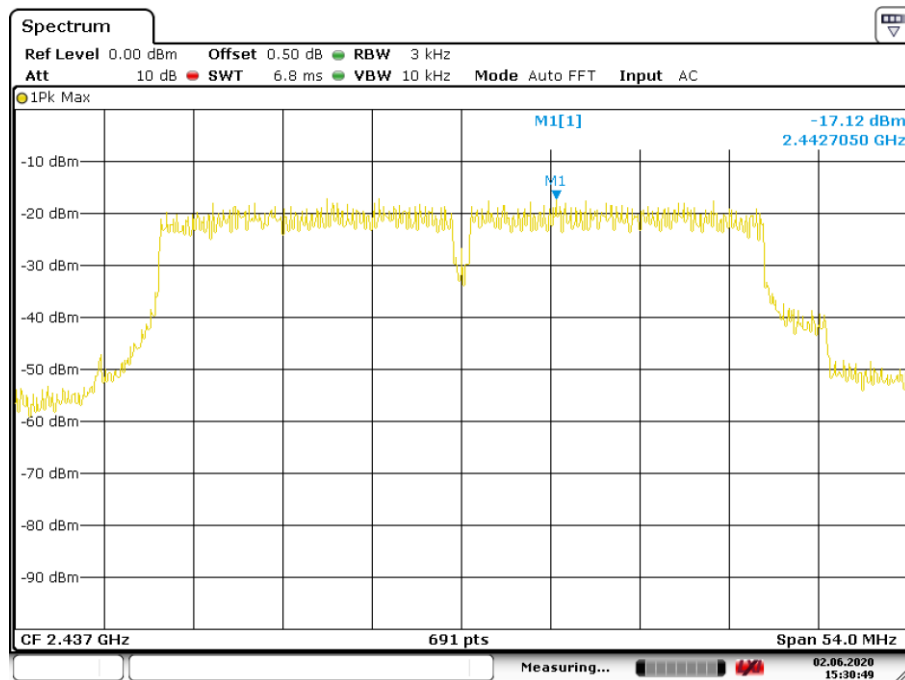


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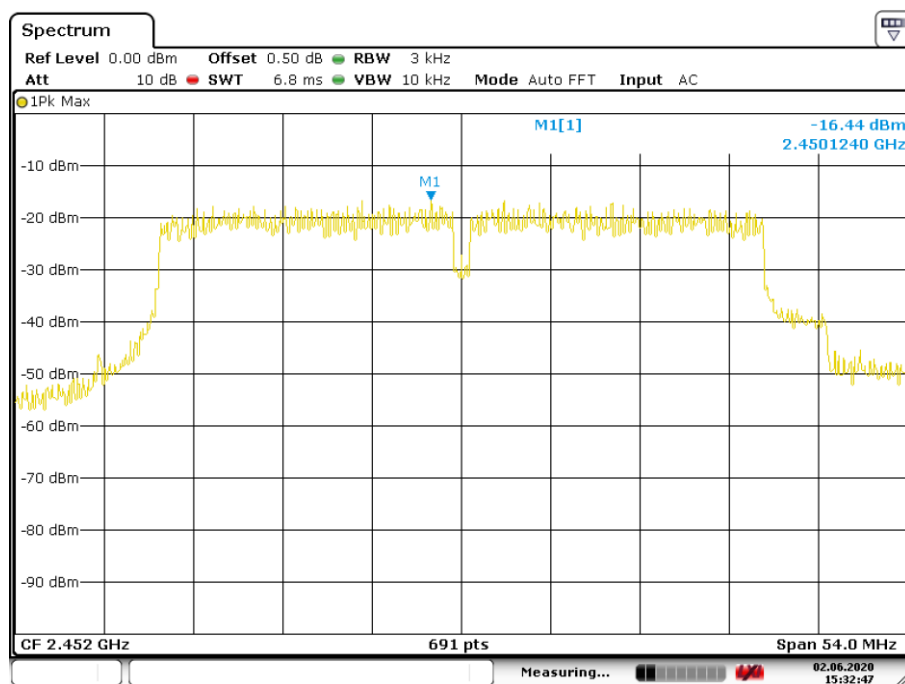


Wi-Fi 802.11 n(HT40) mode, MCS0





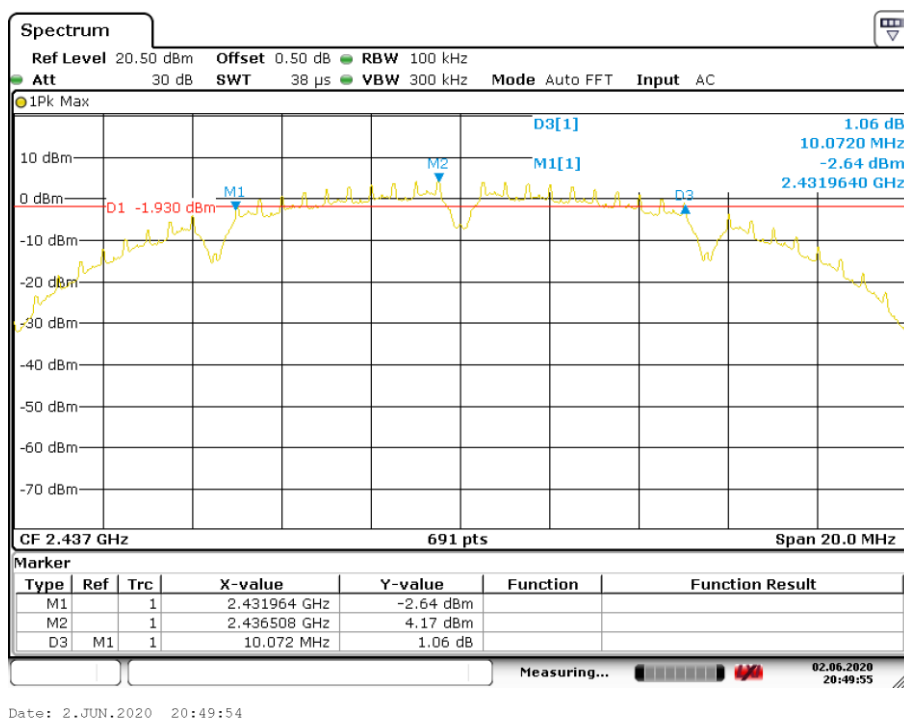
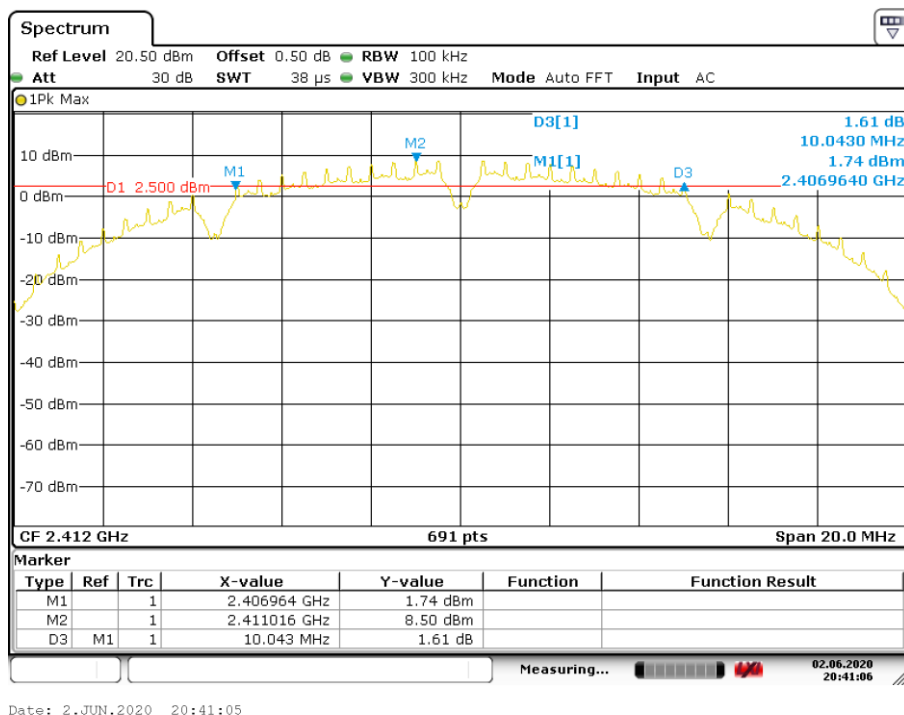
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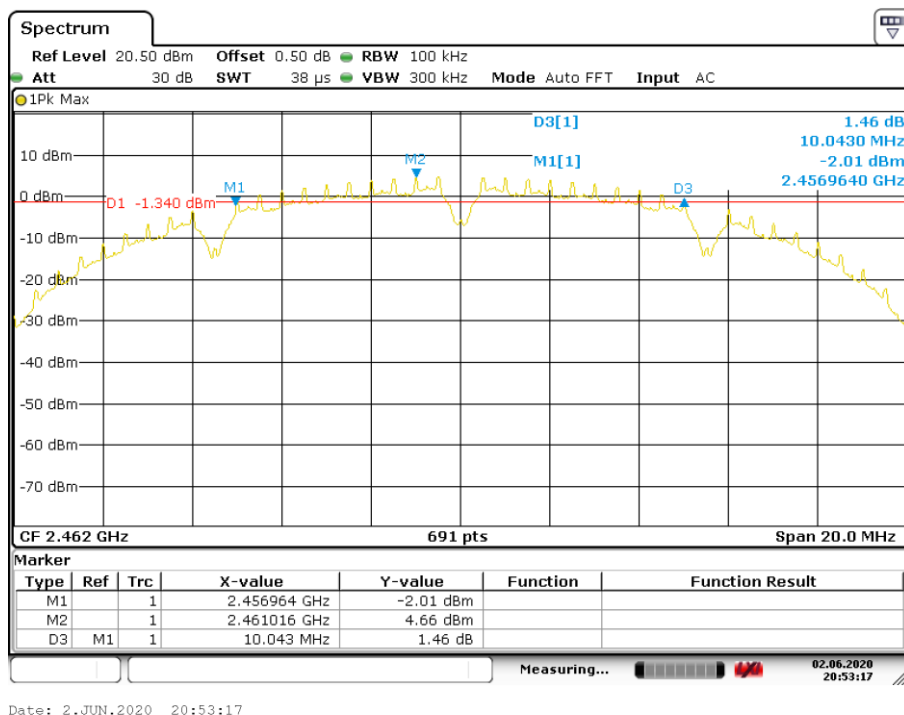


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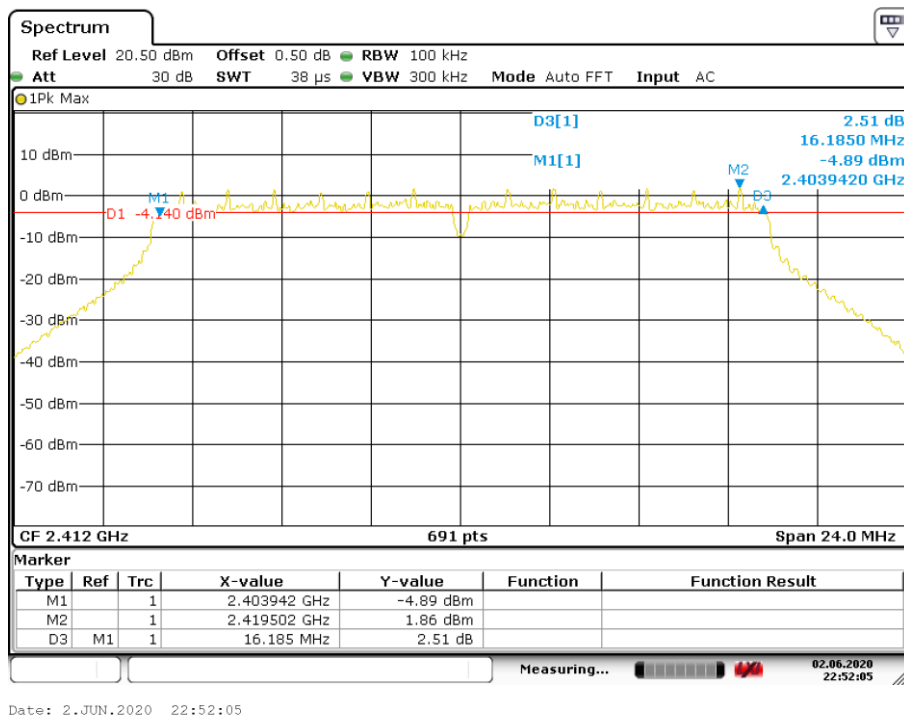
Appendix A2: Test Results of 6dB Bandwidth

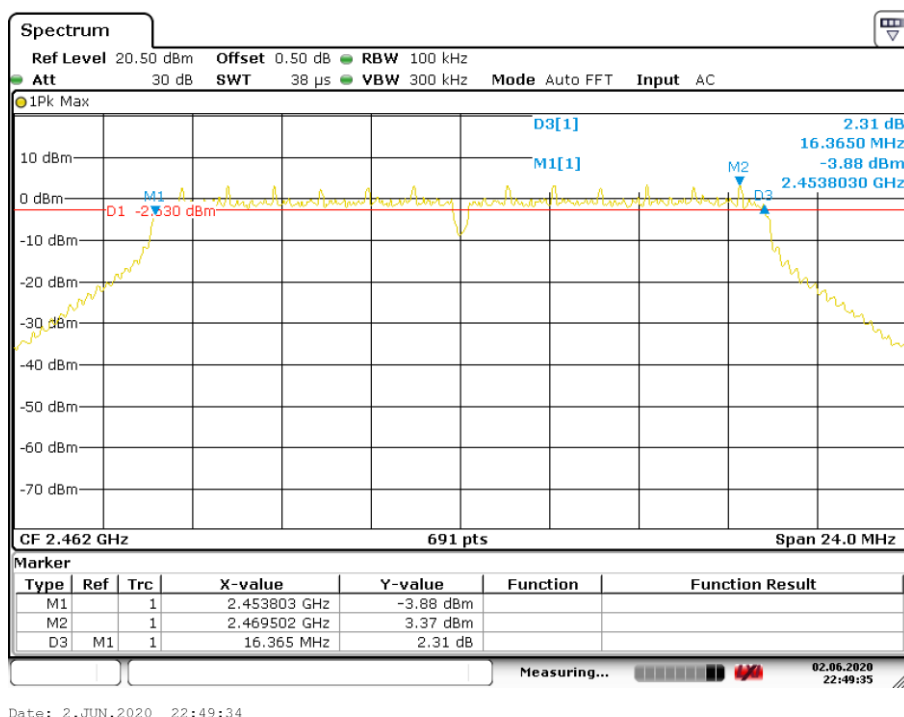
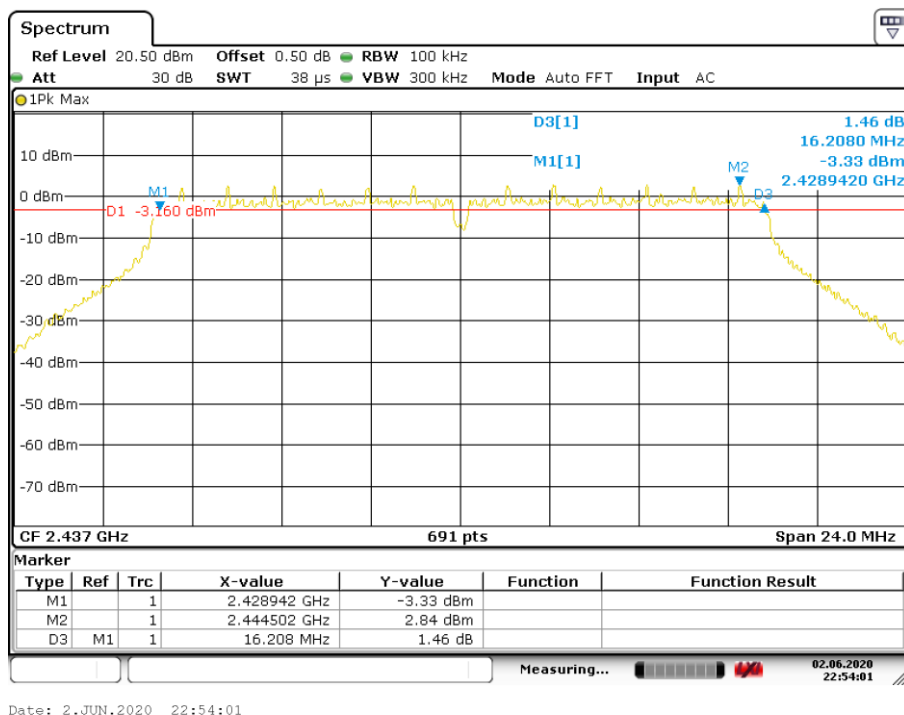
Wi-Fi 802.11 b mode, 1 Mbps



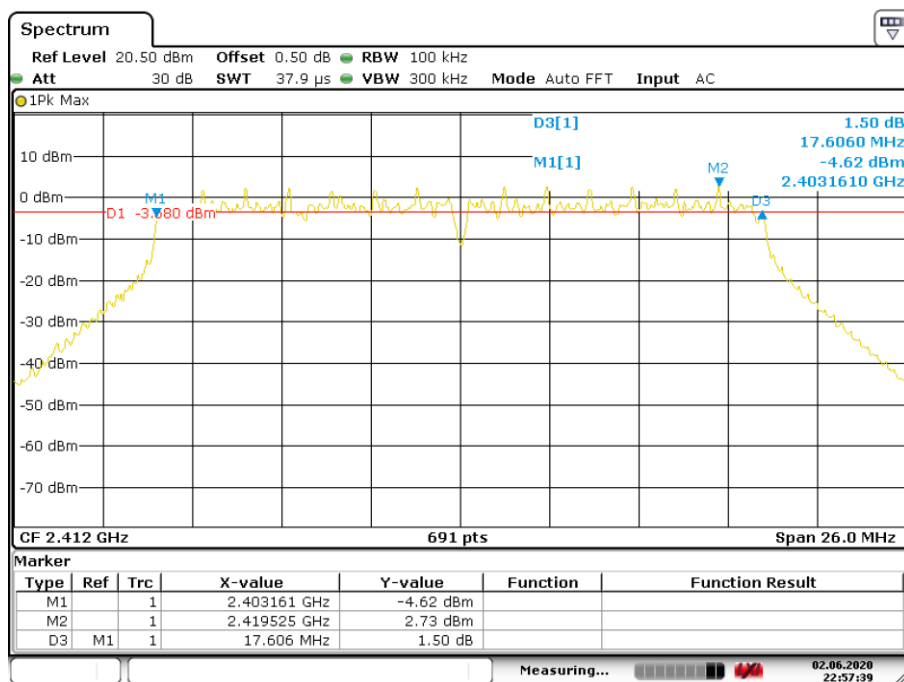


Wi-Fi 802.11 g mode, 6 Mbps

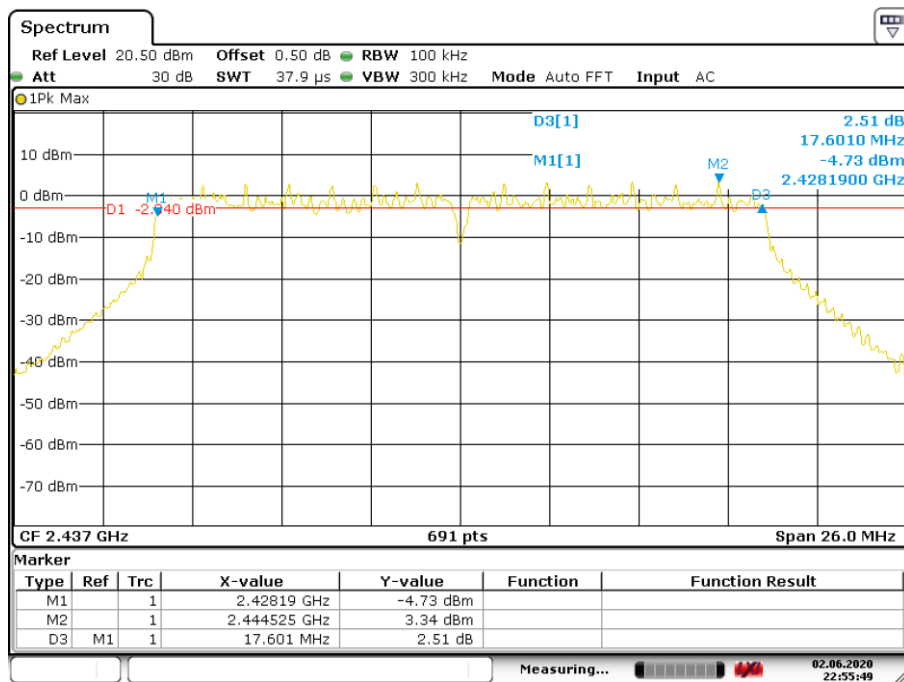




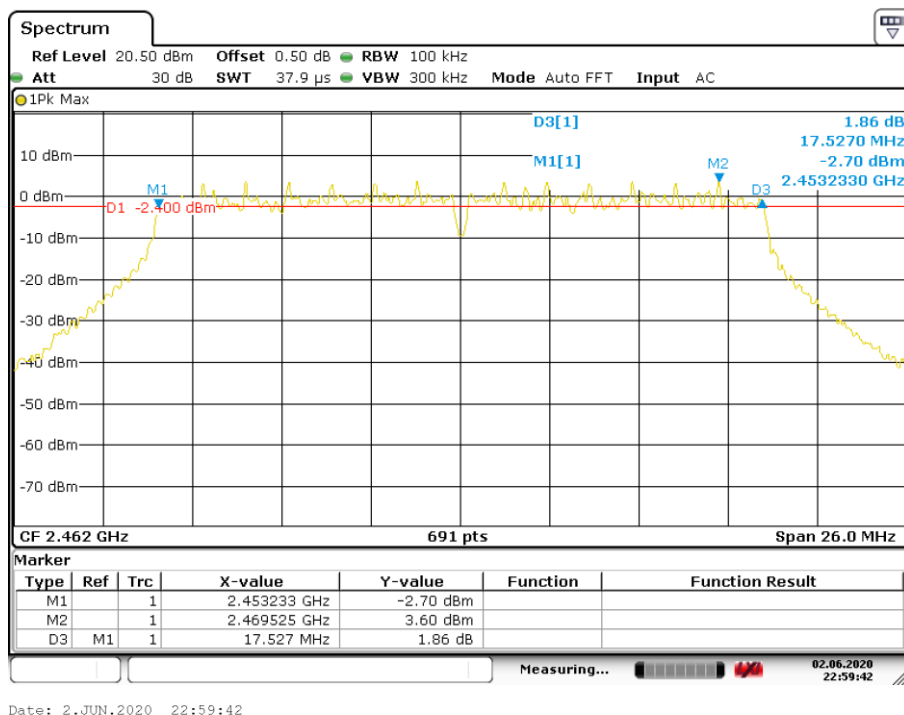
Wi-Fi 802.11 n(HT20) mode, MCS0



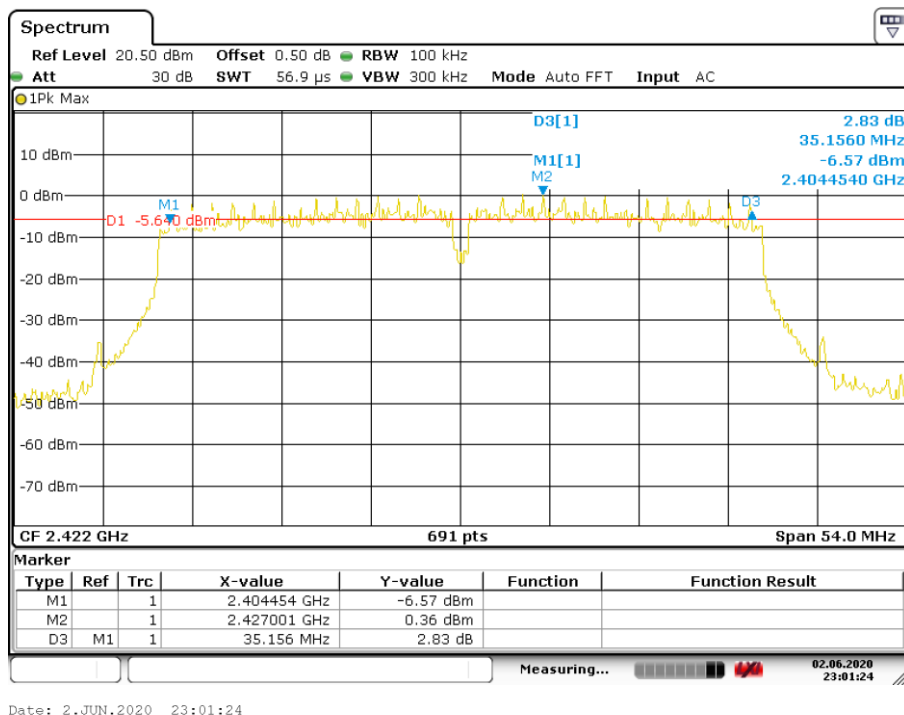
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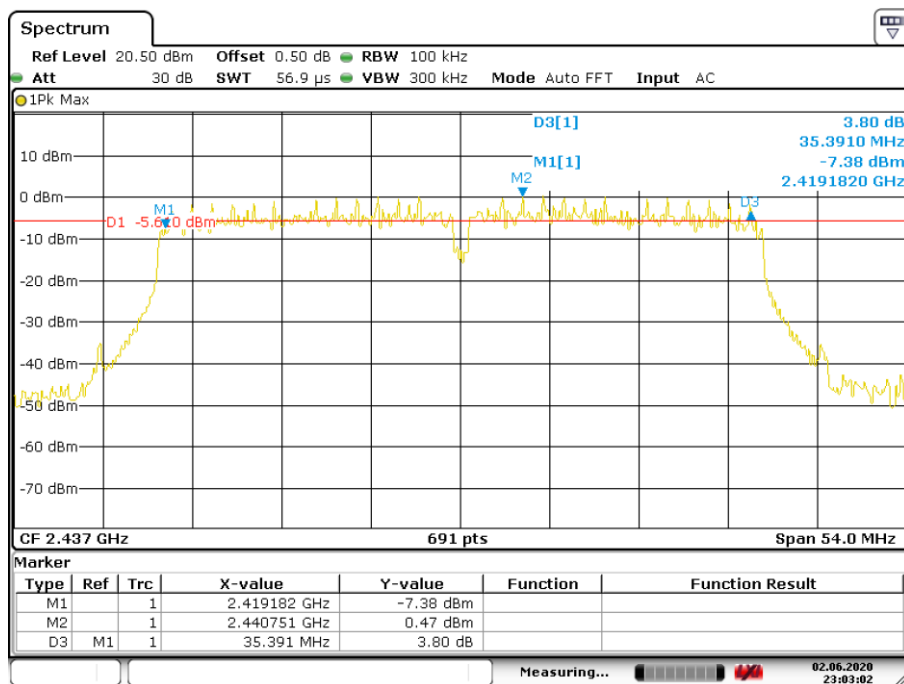


Date: 2.JUN.2020 22:55:49

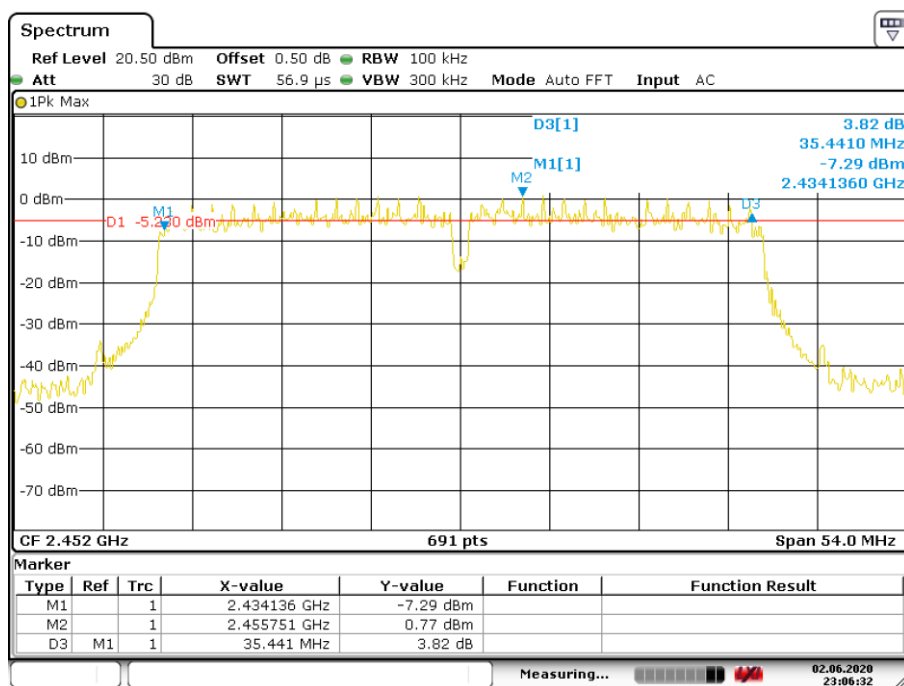


Wi-Fi 802.11 n(HT40) mode, MCS0





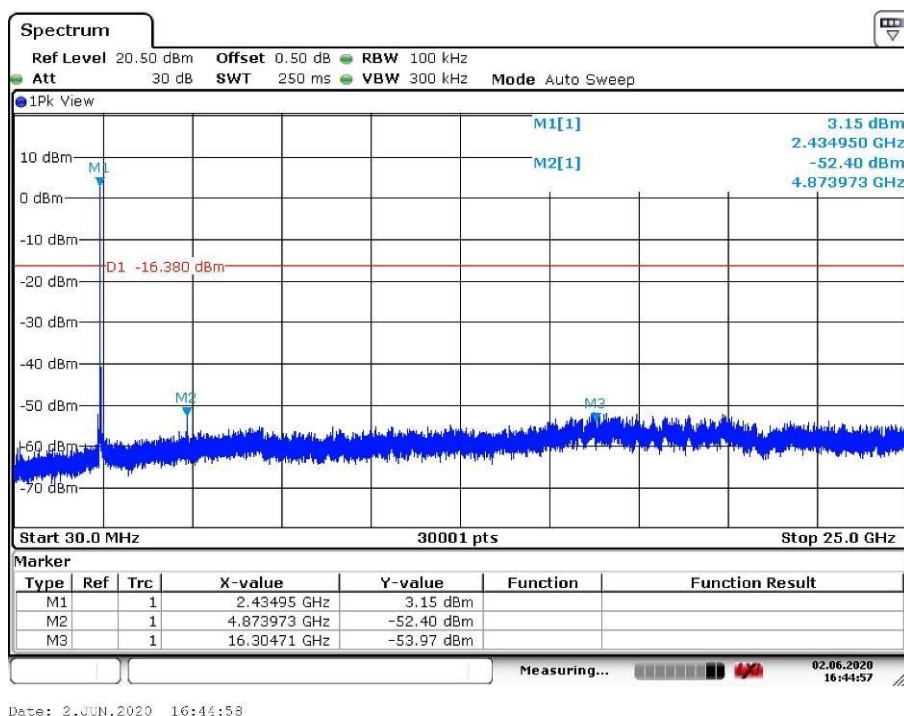
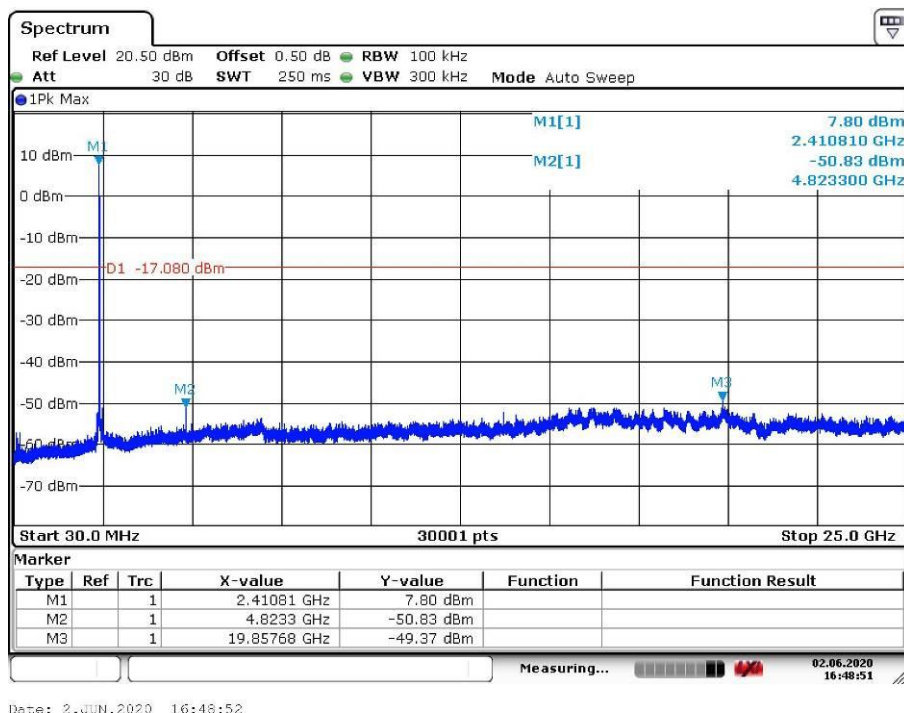
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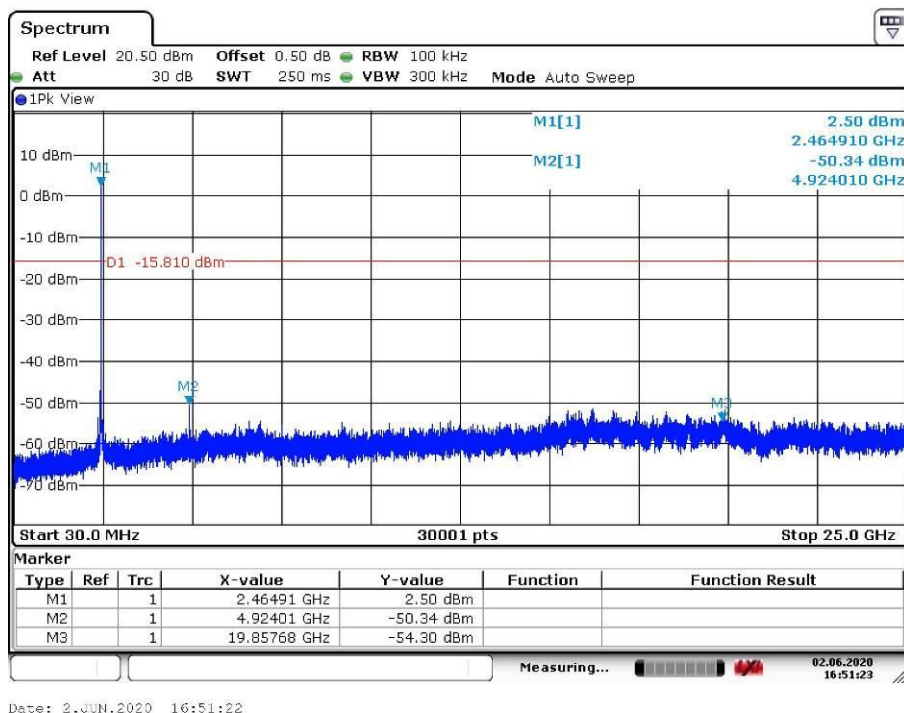


Date: 2.JUN.2020 23:06:32

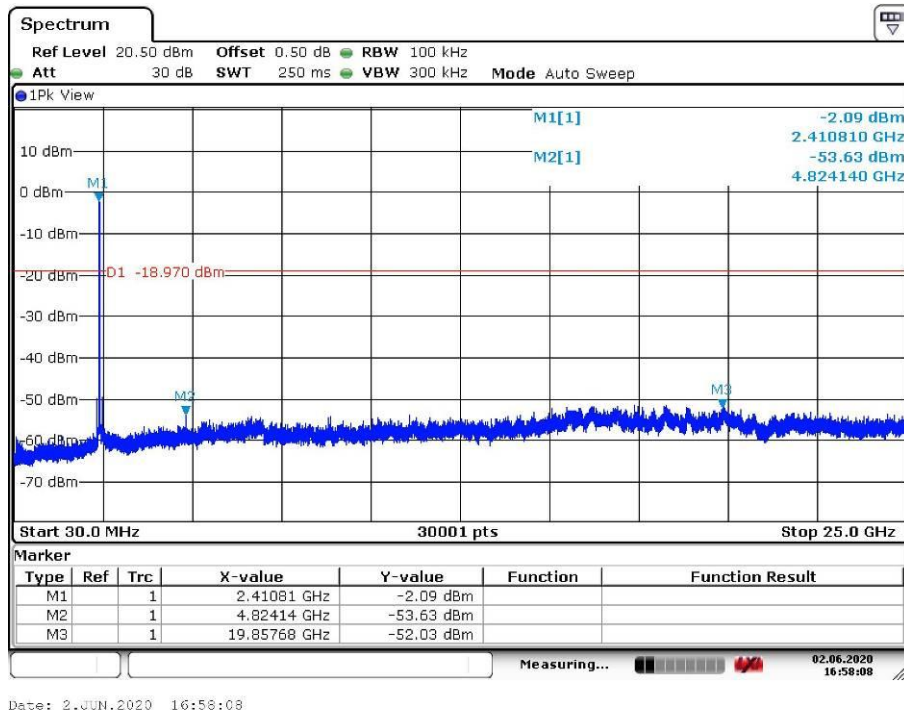
Appendix A3: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

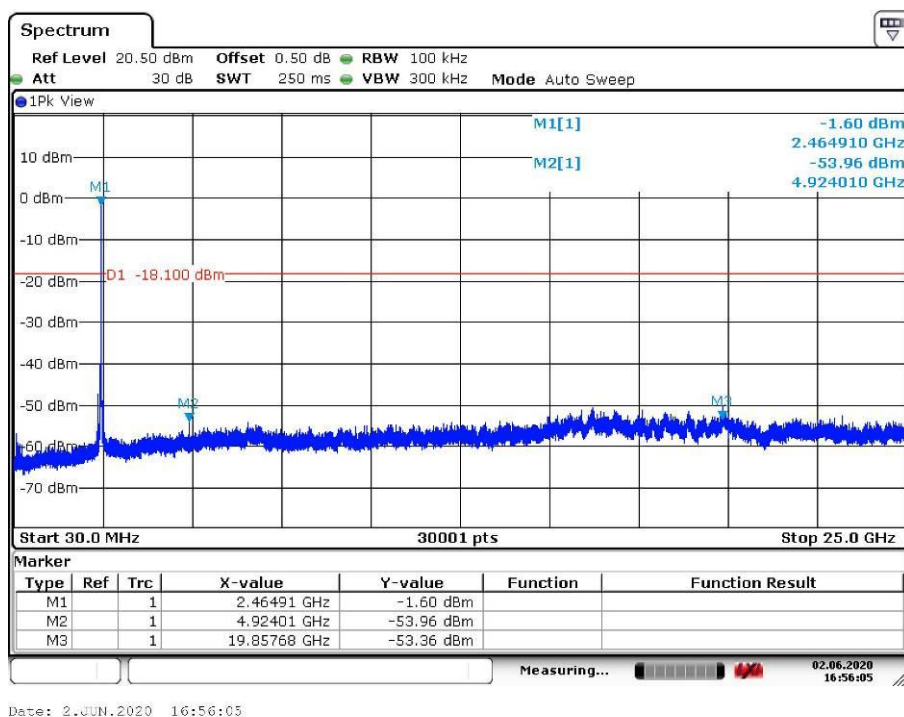
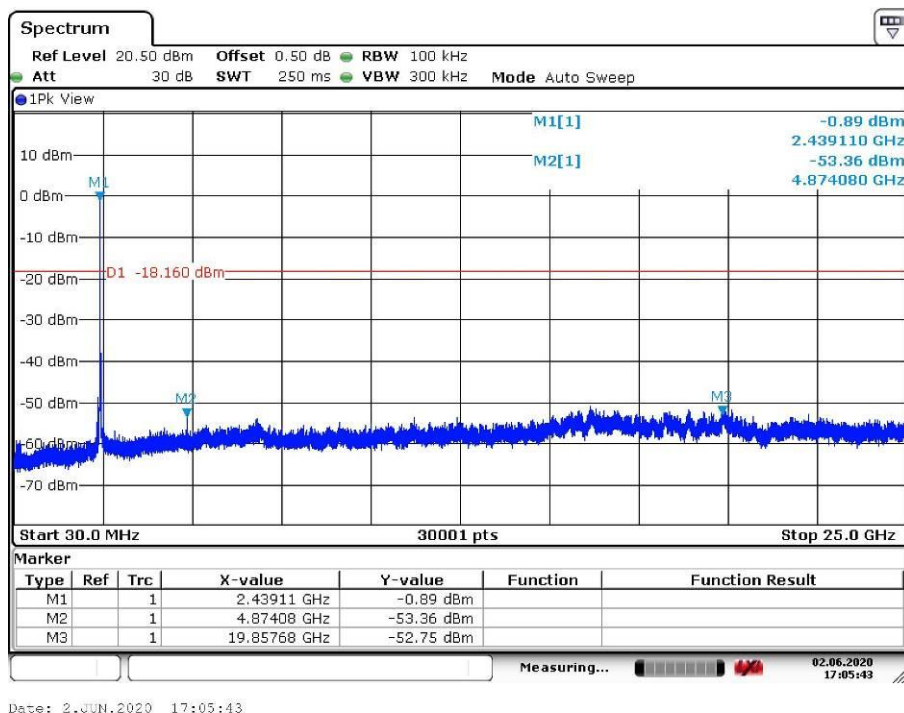
Wi-Fi 802.11 b mode, 1 Mbps



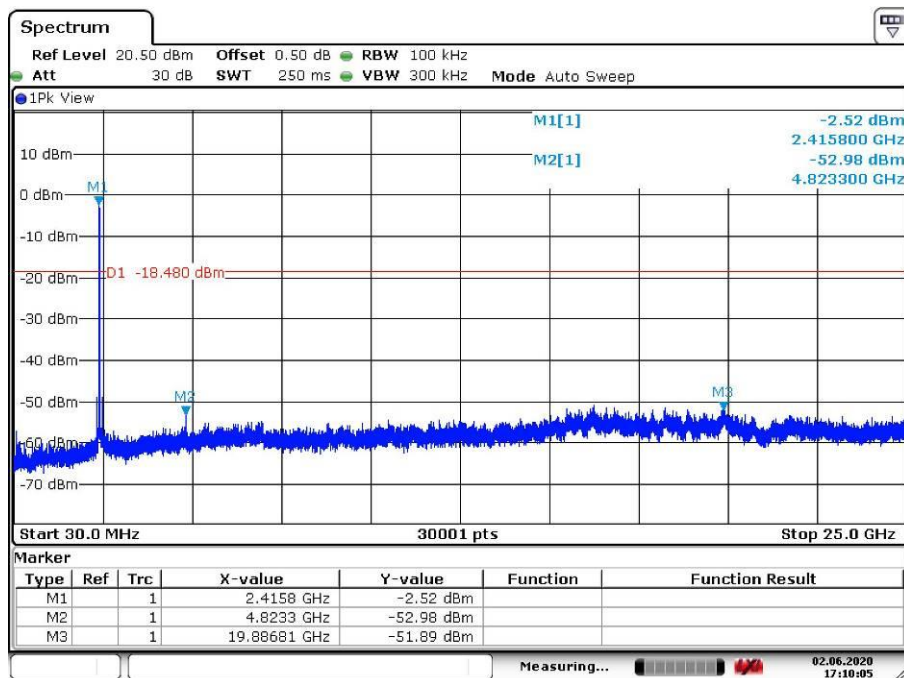


Wi-Fi 802.11 g mode, 6 Mbps

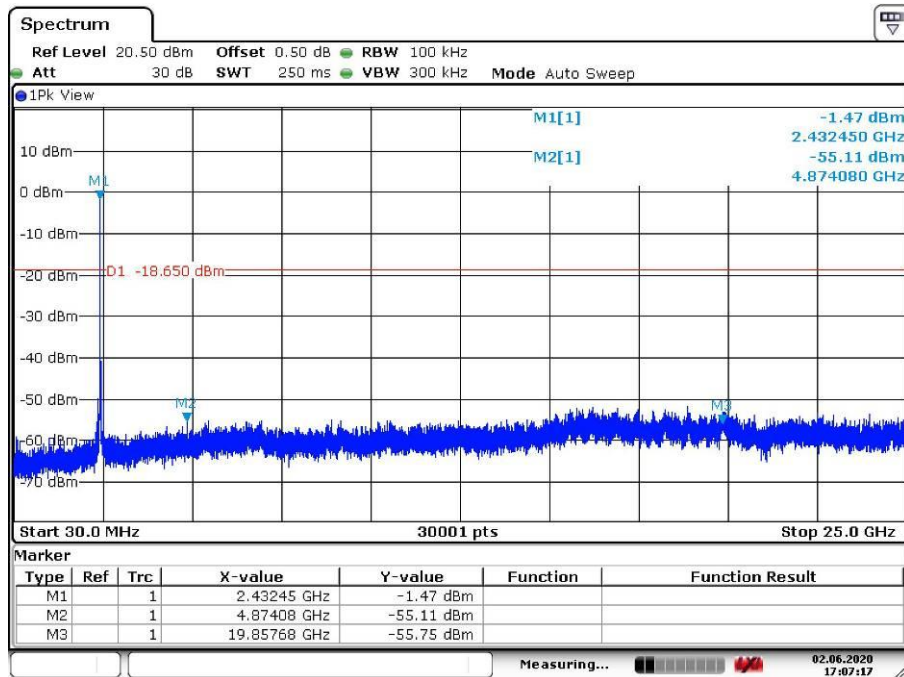




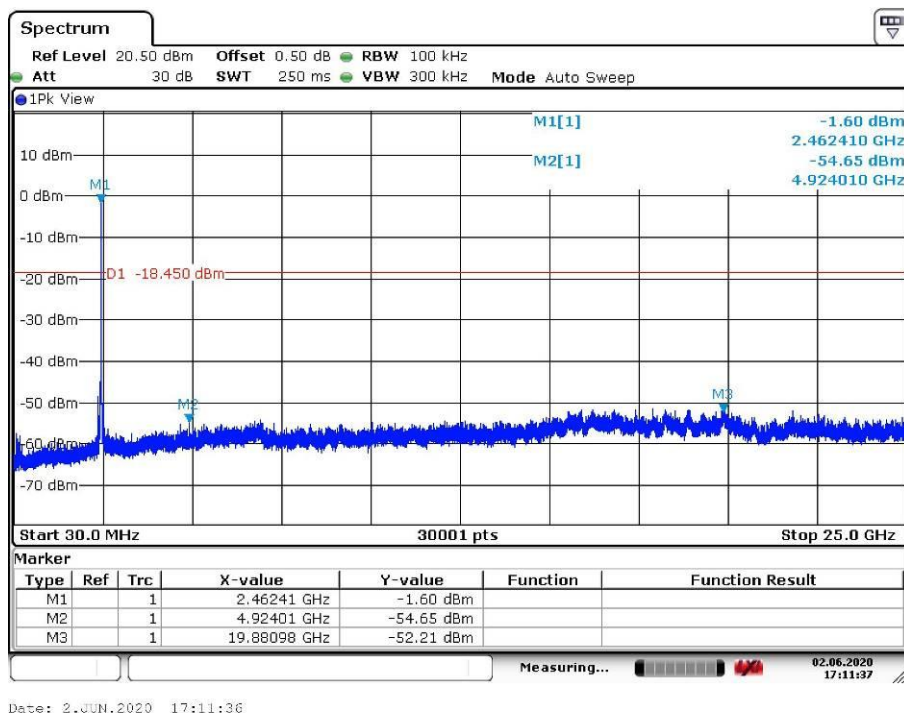
Wi-Fi 802.11 n(HT20) mode, MCS0



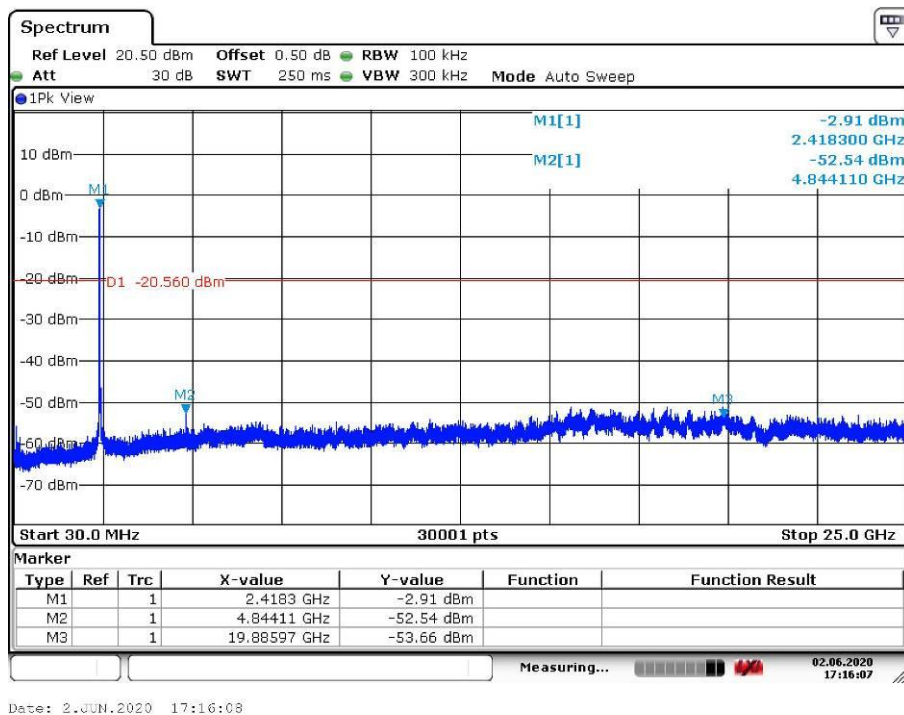
Date: 2.JUN.2020 17:10:05

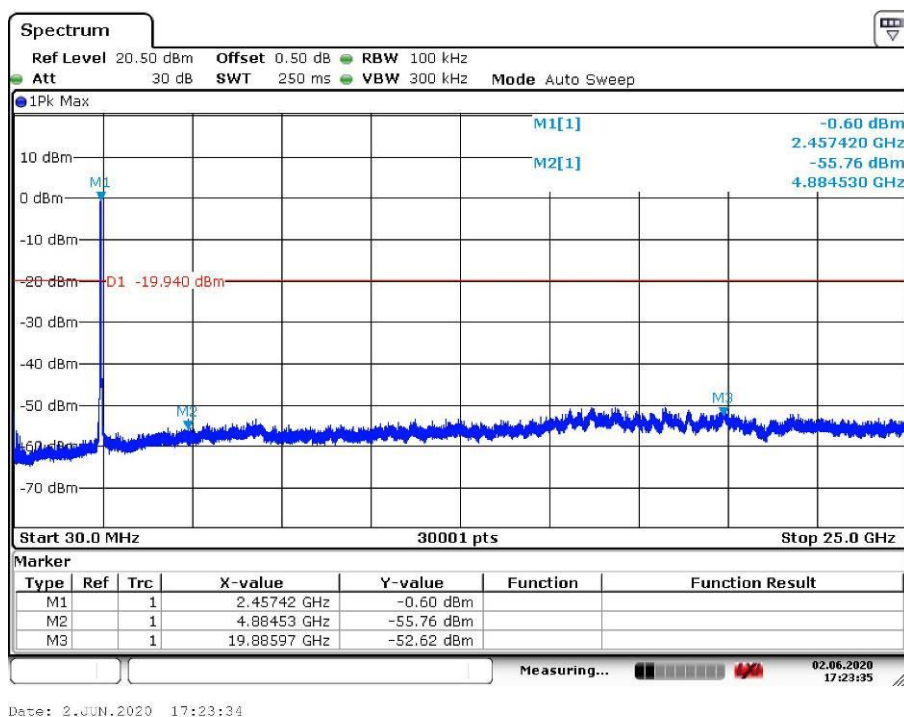
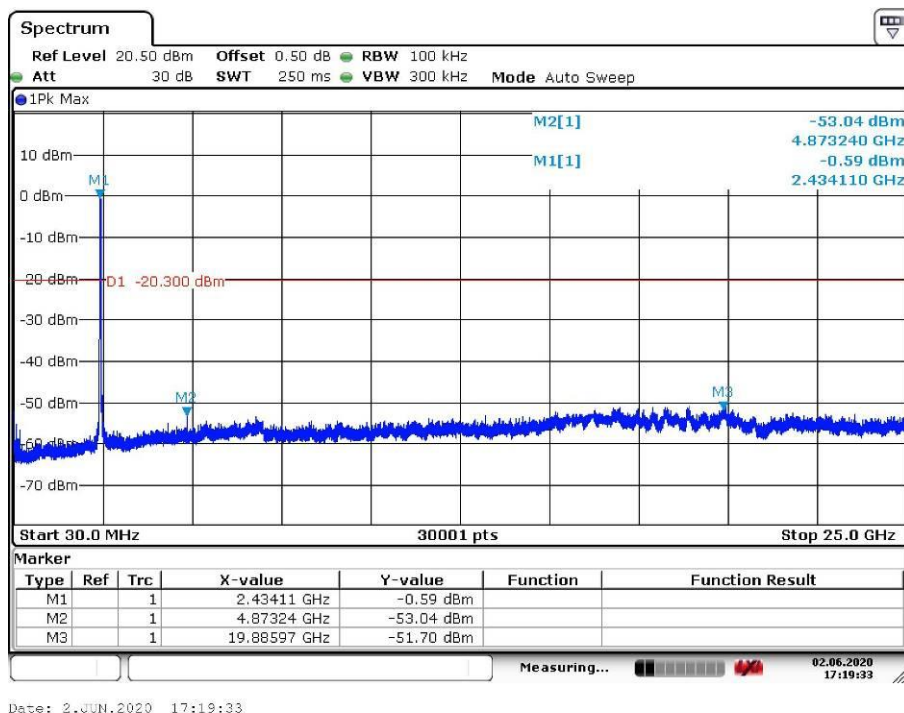


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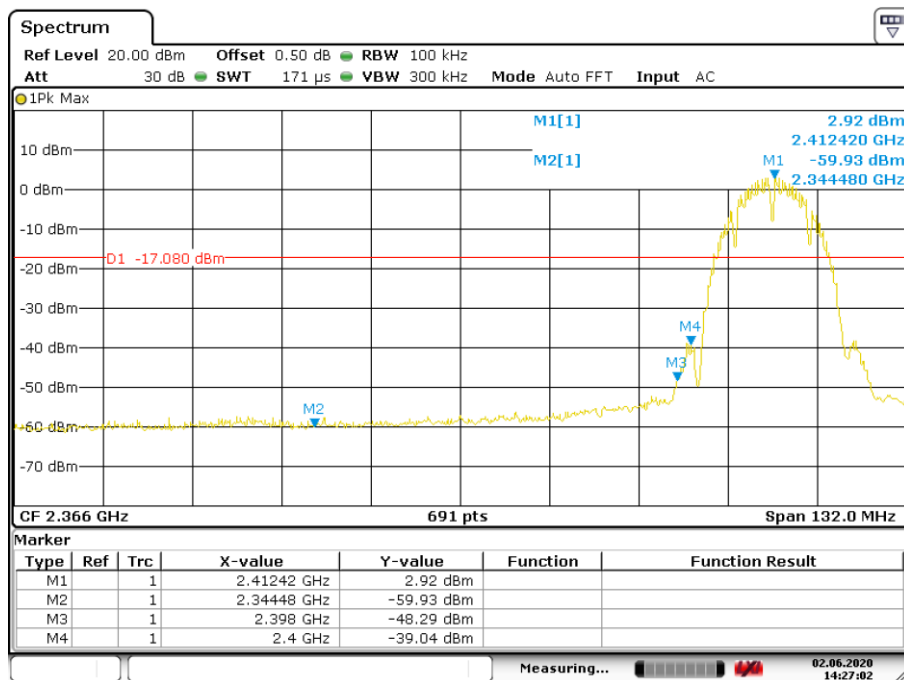


Wi-Fi 802.11 n(HT40) mode, MCS0

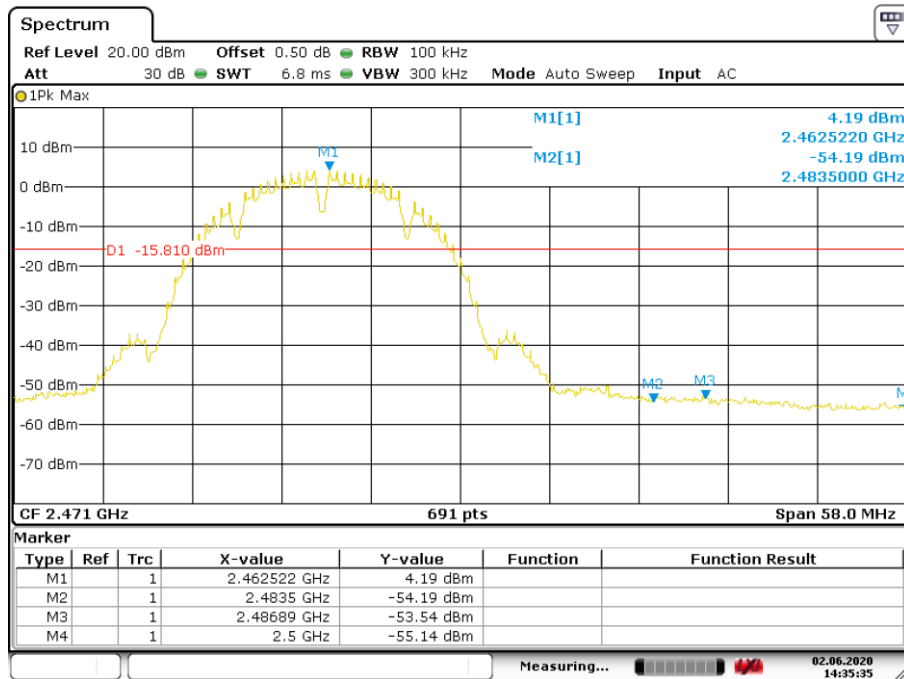




Wi-Fi 802.11 b mode, Band Edge

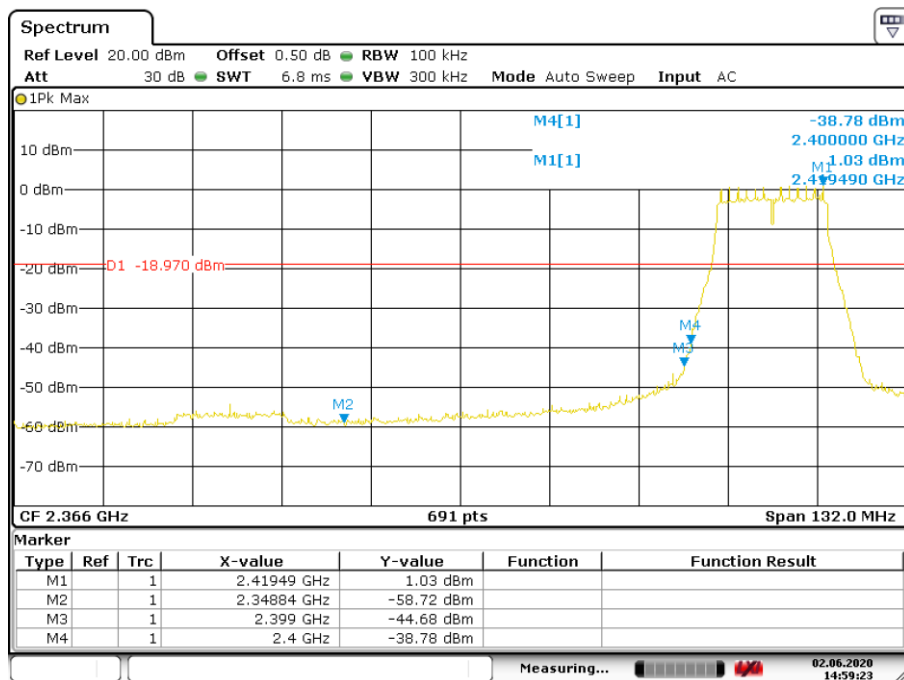


Date: 2.JUN.2020 14:27:01

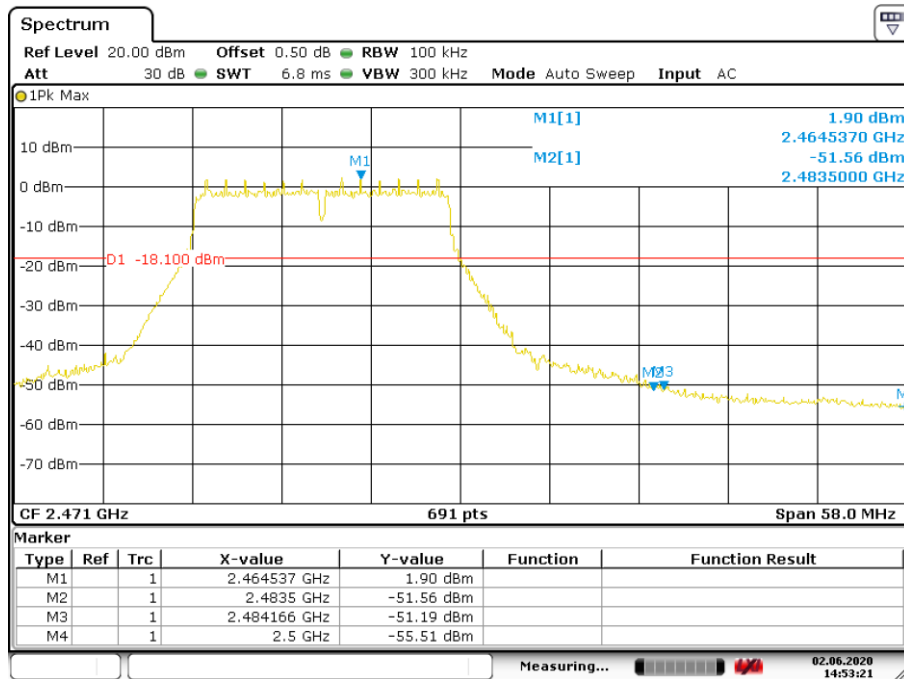


Date: 2.JUN.2020 14:35:35

Wi-Fi 802.11 g mode, Band Edge

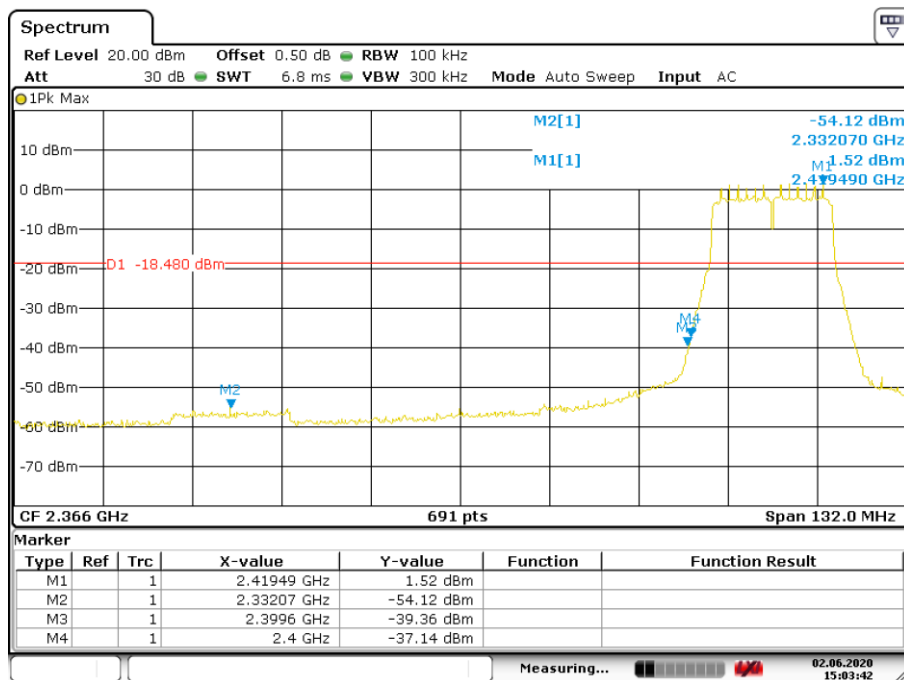


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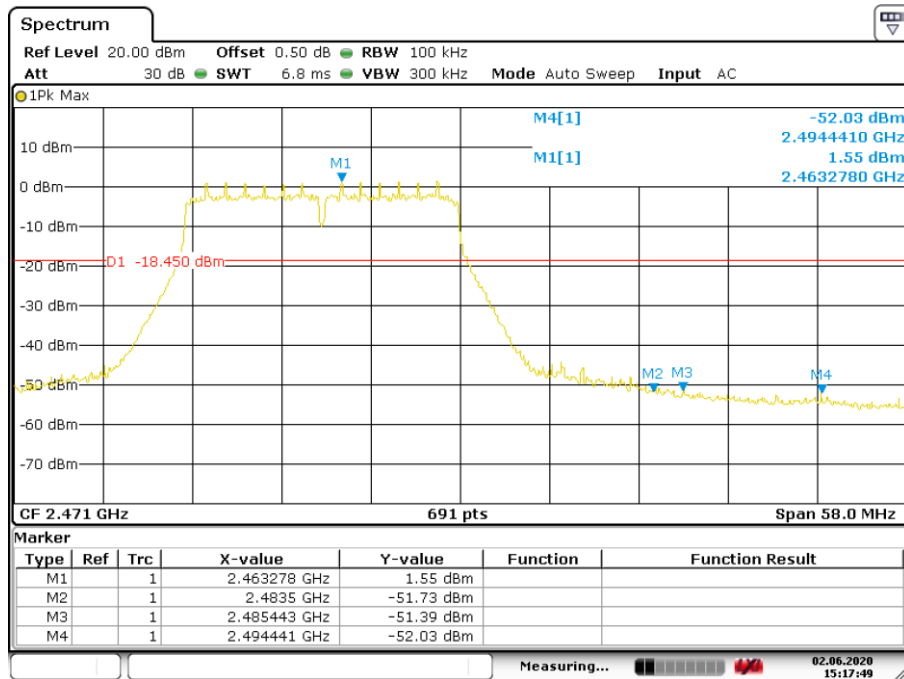


Date: 2.JUN.2020 14:53:21

Wi-Fi 802.11 n(HT20) mode, Band Edge

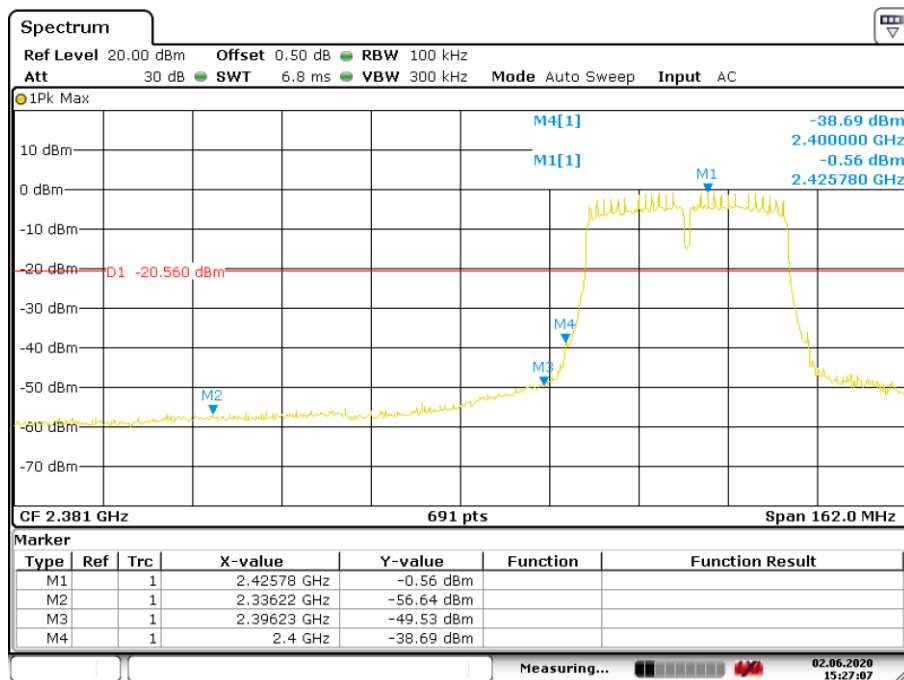


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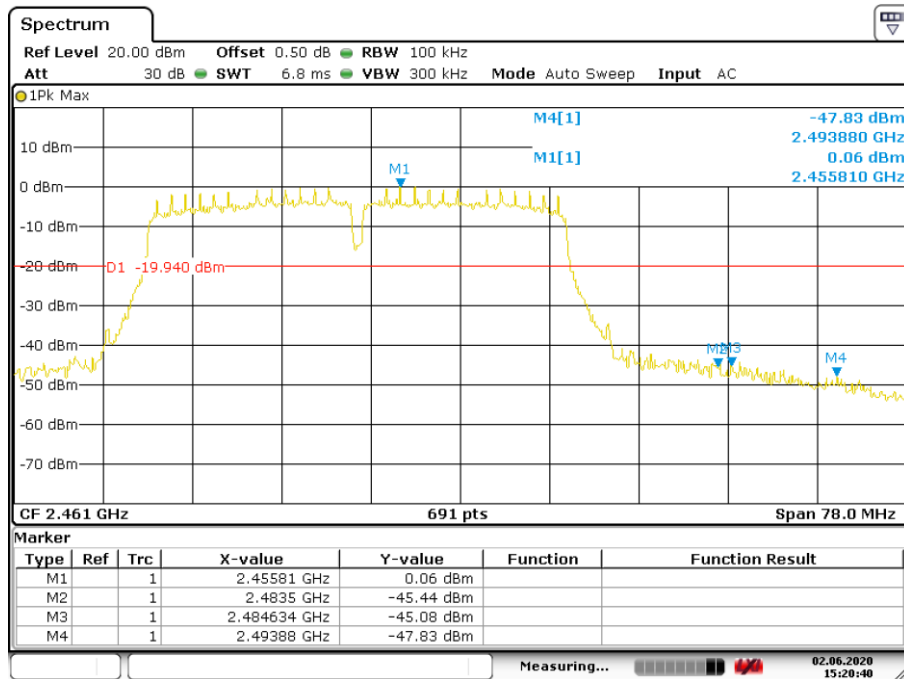


Date: 2.JUN.2020 15:17:49

Wi-Fi 802.11 n(HT40) mode, Band Edge



Date: 2.JUN.2020 15:27:07



Date: 2.JUN.2020 15:20:40