



FCC Part 15.407

TEST REPORT

For

Align Technology Inc.

2820 Orchard Parkway San Jose, CA 95134 United States

FCC ID: 2ARGX-WIFIM

Report Type: Original Report	Product Type: WiFi Module
Report Producer : <u>Himiko Chen</u> <i>Himiko Chen</i>	
Report Number : <u>RLK1810002-00B</u>	
Report Date : <u>2019-03-19</u>	
Reviewed By: <u>Jerry Chang</u> <i>Jerry Chang</i>	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Taiwan) The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.

Revision History

Revision	Report Number	Issue Date	Description	Author/ Revised by
1.0	RLK1810002-00B	2019-03-19	Original Report	Himiko Chen

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	Align Technology Inc. 2820 Orchard Parkway San Jose, CA 95134 United States
Manufacturer	AsiaRF Co., Ltd. 1F, 7, Houde Street, Younghe District, New Taipei City, 23455, Taiwan
Brand(Trade) Name	align
Product (Equipment)	WiFi Module
Main Model Name	WifiM
Frequency Range	5150 MHz ~ 5250 MHz, 5250 MHz ~ 5350 MHz, 5470 MHz ~ 5725 MHz, 5725 MHz ~ 5850 MHz
Transmit Power	IEEE 802.11a Mode: 16.26dBm (0.0422W) IEEE802.11ac VHT20 Mode: 16.96dBm (0.0496W) IEEE 802.11ac VHT40 Mode: 17.19dBm (0.0523W) IEEE 802.11ac VHT80 Mode: 17.87dBm (0.0612W)
Modulation Technique	IEEE 802.11a Mode: OFDM IEEE 802.11ac VHT 20 Mode: OFDM IEEE 802.11ac VHT 40 Mode: OFDM IEEE 802.11ac VHT80 Mode: OFDM
Transmit Data Rate	IEEE 802.11a Mode: 54-6 Mbps IEEE 802.11n HT20 Mode: MCS 0-7 IEEE 802.11n HT40 Mode: MCS 0-7 IEEE 802.11ac VHT80 Mode: MCS 0-9

Number of Channels	For UNII-1 Band I: IEEE 802.11a / IEEE802.11n HT20 Mode: 4 Channels IEEE 802.11n HT40 Mode: 2 Channels IEEE 802.11ac VHT80 Mode: 1 Channels For UNII-2A Band II: IEEE 802.11a / IEEE802.11n HT20 Mode: 4 Channels IEEE 802.11n HT40 Mode: 2 Channels IEEE 802.11ac VHT80 Mode: 1 Channels For UNII-2C Band III: IEEE 802.11a / IEEE802.11n HT20 Mode: 11 Channels IEEE 802.11n HT40 Mode: 5 Channels IEEE 802.11ac VHT80 Mode: 2 Channels For UNII-3 Band IV: IEEE 802.11a / IEEE802.11n HT20 Mode: 5 Channels IEEE 802.11n HT40 Mode: 2 Channels IEEE 802.11ac VHT80 Mode: 1 Channels
Antenna Specification	PCB Antenna / 6.5 dBi
Power Operation (Voltage Range)	<input type="checkbox"/> AC 120V/60Hz <input type="checkbox"/> Adapter: <input type="checkbox"/> By AC Power Cord <input type="checkbox"/> PoE <input type="checkbox"/> DC Type <input type="checkbox"/> Battery: <input type="checkbox"/> DC Power Supply <input type="checkbox"/> External from USB Cable <input type="checkbox"/> External DC Adapter <input checked="" type="checkbox"/> Host System
Received Date	Oct. 09, 2018
Date of Test	Feb. 15, 2019 ~ Mar. 12, 2019

**All measurement and test data in this report was gathered from production sample serial number: 1810002 (Assigned by BACL, Taiwan).*

1.2 Objective

This report is prepared on behalf of Align Technology Inc.. in accordance with Part 2, Subpart J, Part 15, Subparts A, C and E of the Federal Communication Commission’s rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, and section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

1.3 Related Submittal(s)/Grant(s)

N/A.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 662911 D01 Multiple Transmitter Output v02r01
KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

1.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Taiwan) to collect test data is located on

- 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.
 68-3, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (Taiwan) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3180) and the FCC designation No.TW3180 under the Mutual Recognition Agreement (MRA) in FCC Test. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 974454. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

2 System Test Configuration

2.1 Description of Test Configuration

The system was configured for testing in an engineering mode, which is provided by manufacture.

The system support 802.11 a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the 802.11n ht20/n ht40 were reduced since the identical parameters with 802.11ac vht20 and vht40.

SISO mode and MIMO mode have the same power level setting and base on output power testing, MIMO mode power than SISO mode large, MIMO mode was selected for full testing.

The device supports MIMO (CDD) at all modes.

For 5150 ~ 5250MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5250 ~ 5350MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5470 ~ 5725MHz

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5560		

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590		

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610

For 5725 ~ 5850MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 Test Mode

Mode: Full System (Model: WifiM) tested all measure item.

2.4 EUT Exercise Software

The EUT was programmed to be in continuously transmitting mode.

The software was used “CMD.EXE”.

UNII Band	Mode	Channel	Frequency (MHz)	Power setting	
UNII-1	802.11a	36	5180	12	
		40	5200	12	
		48	5240	12	
UNII-2A		52	5260	12	
		60	5300	12	
UNII-2C		64	5320	12	
		100	5500	10	
		116	5580	10	
UNII-3		140	5700	10	
		149	5745	16	
		157	5785	16	
UNII-1		802.11n 20 / ac20	165	5825	16
			36	5180	8
			40	5200	8
UNII-2A			48	5240	8
	52		5260	8	
UNII-2C	60		5300	8	
	64		5320	8	
	100		5500	4	
UNII-3	116		5580	4	
	140		5700	4	
	149		5745	18	
UNII-1	802.11n 40 / ac 40		157	5785	18
			165	5825	18
			38	5190	12
UNII-2A			46	5230	12
		54	5270	12	
UNII-2C		62	5310	12	
		102	5510	7	
		118	5590	6	
UNII-3		134	5670	6	
		151	5755	14	
		159	5795	15	
UNII-1		802.11n 80 / ac 80	42	5210	8
UNII-2A			58	5290	8
UNII-2C			106	5530	6
			122	5610	6
UNII-3	155		5775	17	

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number	BSMI	FCC ID	S/N
Adapter	L.T.E	LTE65ES-S2-1	N/A	N/A	174702842
NB	Dell	E6410	N/A	N/A	10912240367
Base	align	align	N/A	N/A	N/A

2.6 External Cable List and Details

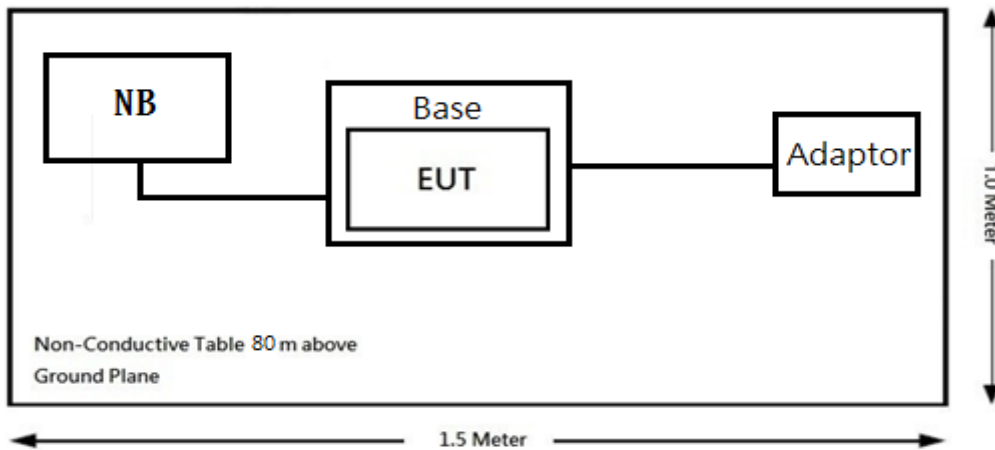
Cable Description	Length (m)	From	To
Micro USB Cable	1.5	NB	Base

2.7 Block Diagram of Test Setup

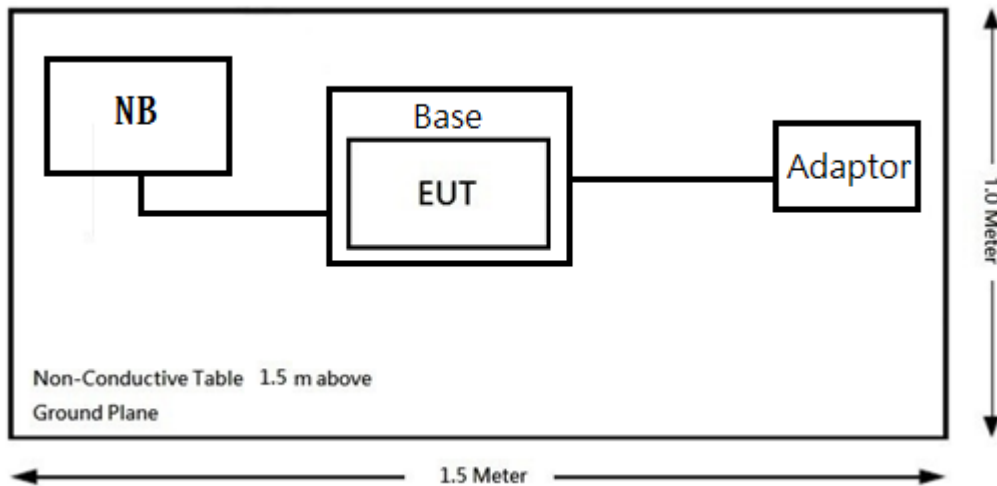
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

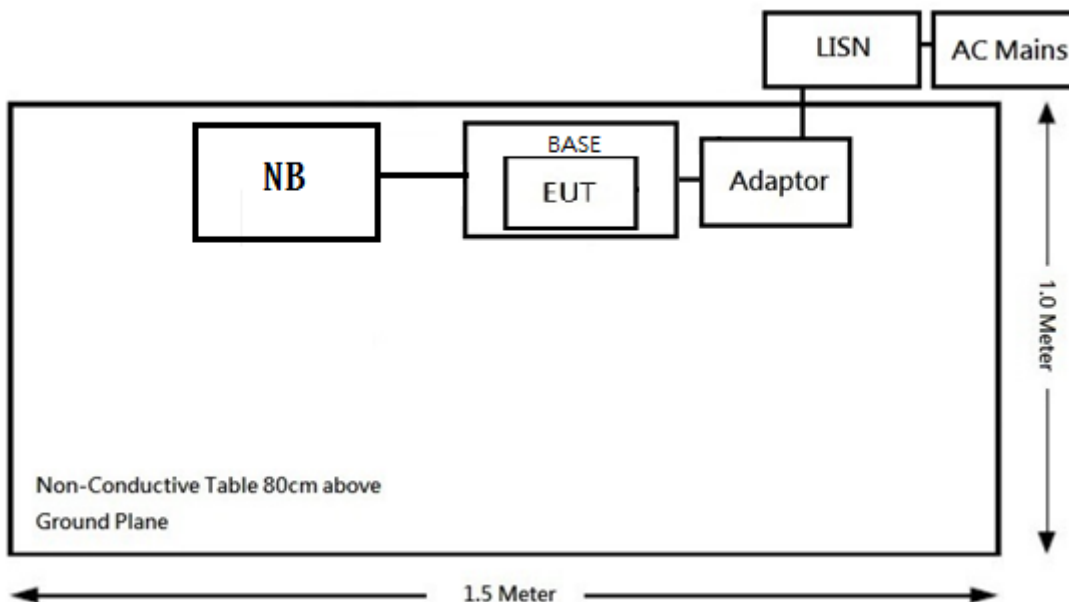
Below 1GHz:



Above 1GHz:



Conduction:



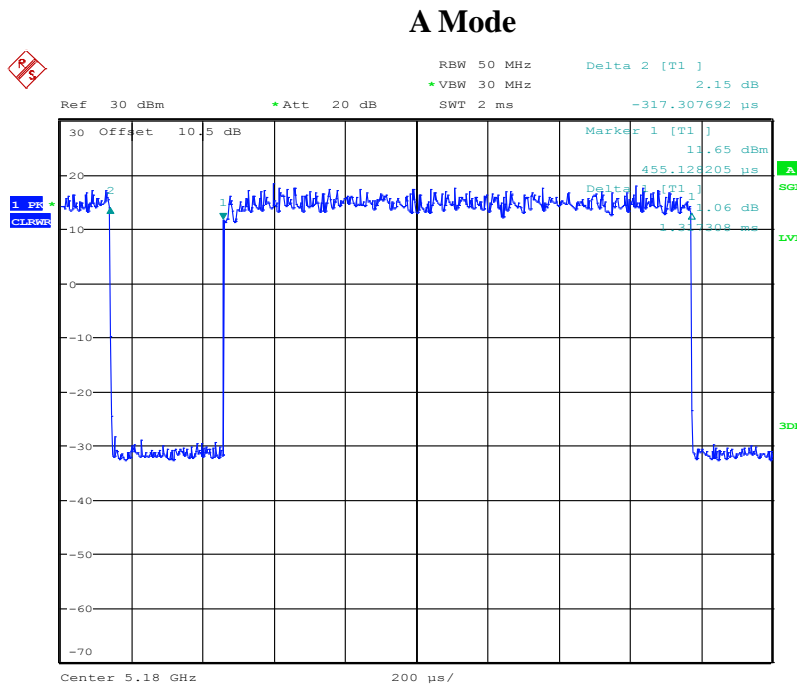
2.8 Duty Cycle

According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section B: Measurements of duty cycle, x, and maximum power transmission duration, T, are required for each tested mode of operation.

Radio Mode	On Time (ms)	Off Time (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
CDD Mode				
802.11a	1.32	0.32	0.8	0.97
802.11ac20	0.37	0.31	0.54	2.68
802.11ac40	0.21	0.31	0.4	3.98
802.11ac80	0.12	0.3	0.29	5.38

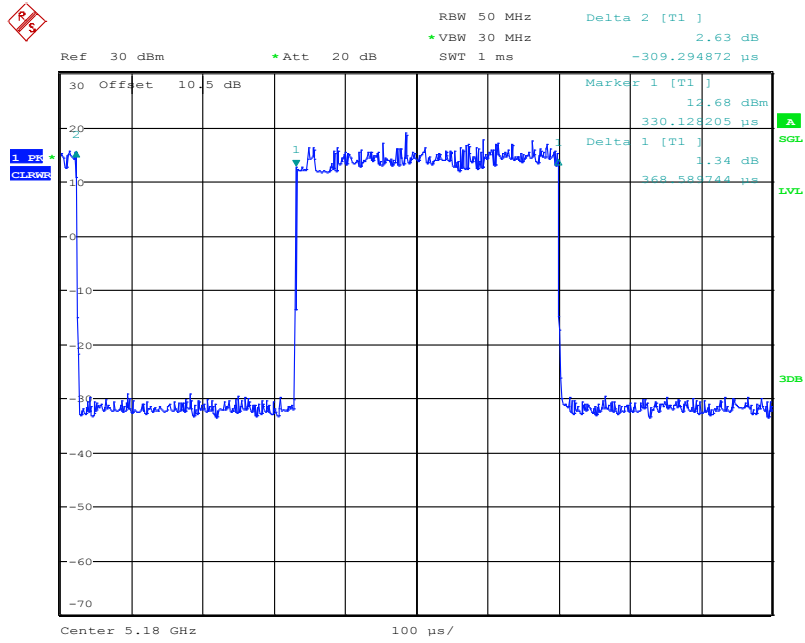
Note: Duty Cycle Correction Factor = $10 \cdot \log(1/\text{duty cycle})$

Please refer to the following plots.



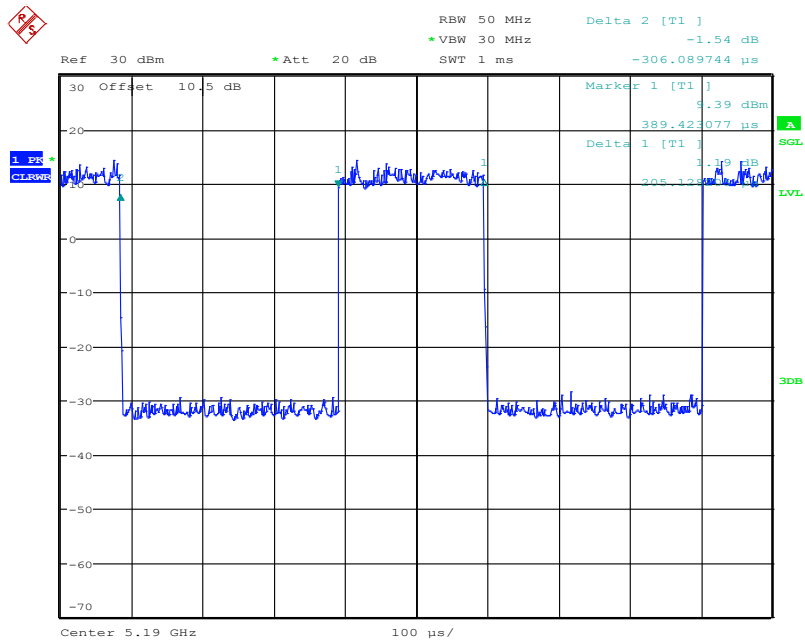
Date: 23.FEB.2019 11:04:52

AC20 Mode



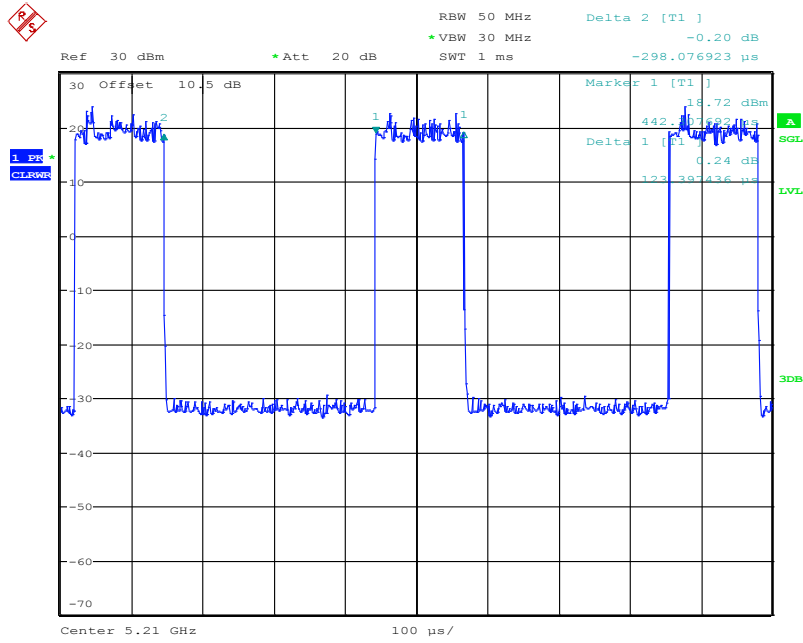
Date: 23.FEB.2019 11:10:20

AC40 Mode



Date: 23.FEB.2019 11:13:24

AC80 Mode



Date: 23.FEB.2019 11:24:03

3 Summary of Test Results

FCC Rules	Description of Test	Results
§15.407(f), §1.1310, §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6) & §15.207(a)	AC Line Conducted Emissions	Compliance
§15.205 & §15.209 & §15.407(b)(1),(2),(3),(4),(7)	Unwanted Emission	Compliance
§15.407(a)(1),(5),(e)	Emission Bandwidth	Compliance
§15.407(a)(1),(2),(3)	Conducted Transmitter Output Power	Compliance
§15.407(a)(1),(2),(3)	Power Spectral Density	Compliance

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conduction Room (CON-A)					
LISN	Rohde & Schwarz	ENV216	101612	2019/02/21	2020/02/20
EMI Test Receiver	Rohde & Schwarz	ESR7	101419	2018/10/23	2019/10/22
Pulse Limiter	Rohde & Schwarz	ESH3Z2	TXZEM104	2018/08/03	2019/08/02
RF Cable	EMEC	EM-CB5D	001	2018/07/02	2019/07/01
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R
Radiated Room (966-A)					
Active Loop Antenna	ETS-Lindgren	6502	00035796	2018/03/13	2019/03/12
Bilog Antenna with 6 dB Attenuator	SUNOL SCIENCES & MINI-CIRCUITS	JB6/UNAT-6+	A050115/1554 2_01	2018/12/11	2019/12/10
Horn Antenna	EMCO	3115	9311-4158	2018/04/20	2019/04/19
Horn Antenna	ETS-Lindgren	3116	62638	2018/08/29	2019/08/28
Preamplifier	Sonoma	310N	130602	2018/07/04	2019/07/03
Preamplifier	EM Electronics Corp.	EM01G18G	060657	2018/12/07	2019/12/06
Microwave Preamplifier	EM Electronics Corporation	EM18G40G	060656	2019/01/11	2020/01/10
EMI Test Receiver	Rohde & Schwarz	ESR7	101419	2018/10/23	2019/10/22
Spectrum Analyzer	Rohde & Schwarz	FSV40	101435	2019/02/13	2020/02/12
Micro flex Cable	UTIFLEX	FSCM 64639 / (2M)	93D0127	2018/07/31	2019/07/30
Micro flex Cable	UTIFLEX	UFA210A-1-3149-300300	MFR64639 226389-001	2018/11/16	2019/11/15
Micro flex Cable	ROSNOL	K1K50-UP0264-K1K50-450CM	160309-1	2019/03/04	2020/03/03
Micro flex Cable	ROSNOL	K1K50-UP0264-K1K50-80CM	160309-2	2019/01/16	2020/01/15
Turn Table	Champro	TT-2000	060772-T	N.C.R	N.C.R
Antenna Tower	Champro	AM-BS-4500-B	060772-A	N.C.R	N.C.R
Controller	Champro	EM1000	60772	N.C.R	N.C.R
Software	Farad	EZ EMC	BACL-03A1	N.C.R	N.C.R
NSA	BACL	966-A	N/A	2018/07/09	2019/07/08

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Taiwan)

VSWR	BACL	966-A	N/A	2018/07/16	2019/07/15
Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSU26	200268	2018/05/04	2019/05/03
Cable	WOKEN	SFL402	S02-160323-07	2019/02/11	2020/02/10
Attenuator	MINI-CIRCUITS	BW-S10W5+	N/A	2019/03/07	2020/03/06
Power Sensor	KEYSIGHT	U2021XA	MY54080018	2019/03/06	2020/03/05

**Statement of Traceability: BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements*

5 FCC §15.407(f), §1.1310, § 2.1091 - Maximum Permissible Exposure (MPE)

5.1 Applicable Standard

According to §15.407(f) and §1.1310, U-NII devices are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), and 2.1091 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

5.2 RF Exposure Evaluation Result

MPE evaluation for single transmission:

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
5G WIFI B1	5150-5250	6.5	4.467	18	63.096	20	0.0561	1
5G WIFI B2	5250-5350	6.5	4.467	18	63.096	20	0.0561	1
5G WIFI B3	5470-5725	6.5	4.467	18	63.096	20	0.0561	1
5G WIFI B4	5725-5850	6.5	4.467	17	50.119	20	0.0445	1

Note: the maximum antenna gain was used for evaluation.

Result: MPE evaluation of single and simultaneous transmission meet 20cm the requirement of standard.

6 FCC §15.203 – Antenna Requirements

6.1 Applicable Standard

According to § 15.203,

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in Db that the directional gain of the antenna exceeds 6 dBi.

6.2 Antenna List and Details

No.	Manufacturer	Model	Antenna Type	Antenna Gain	Connector Type	Result
Ant 1	AsiaRF	ANT010-DAU	PCB Antenna	6.5 dBi	I-PEX Connectors	Compliance
Ant 2	AsiaRF	ANT010-DAU	PCB Antenna	6.5 dBi	I-PEX Connectors	Compliance
Ant 3	AsiaRF	ANT010-DAU	PCB Antenna	6.5 dBi	I-PEX Connectors	Compliance
Ant 4	AsiaRF	ANT010-DAU	PCB Antenna	6.5 dBi	I-PEX Connectors	Compliance

The EUT has I-PEX connector to attach an external antenna and antenna gain is 6.5dBi, fulfill the requirement of this section, please refer to the EUT photos.

Result: Compliance

7 FCC §15.407(b)(6) & § 15.207(a) – AC Line Conducted Emissions

7.1 Applicable Standard

As per FCC §15.407(b) (6)

Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207

As per FCC §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 2}
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

Note 2: A linear average detector is required

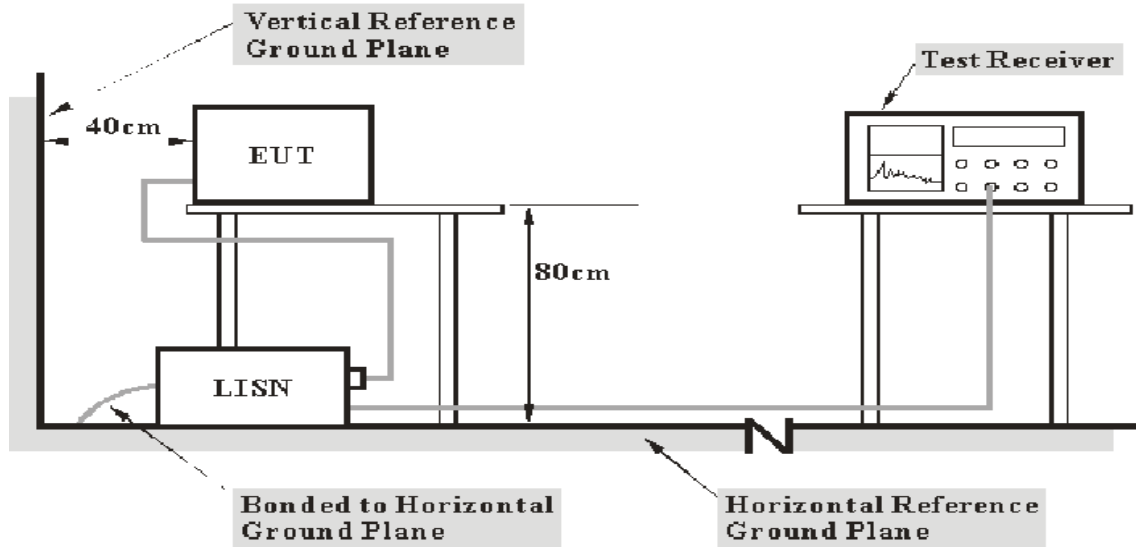
7.2 Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report.

Port	Expanded Measurement uncertainty
AC Mains	2.71 dB (k=2, 95% level of confidence)

7.3 EUT Setup



- Note:** 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

7.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150kHz – 30MHz	9kHz

7.5 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

7.6 Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

7.7 Environmental Conditions

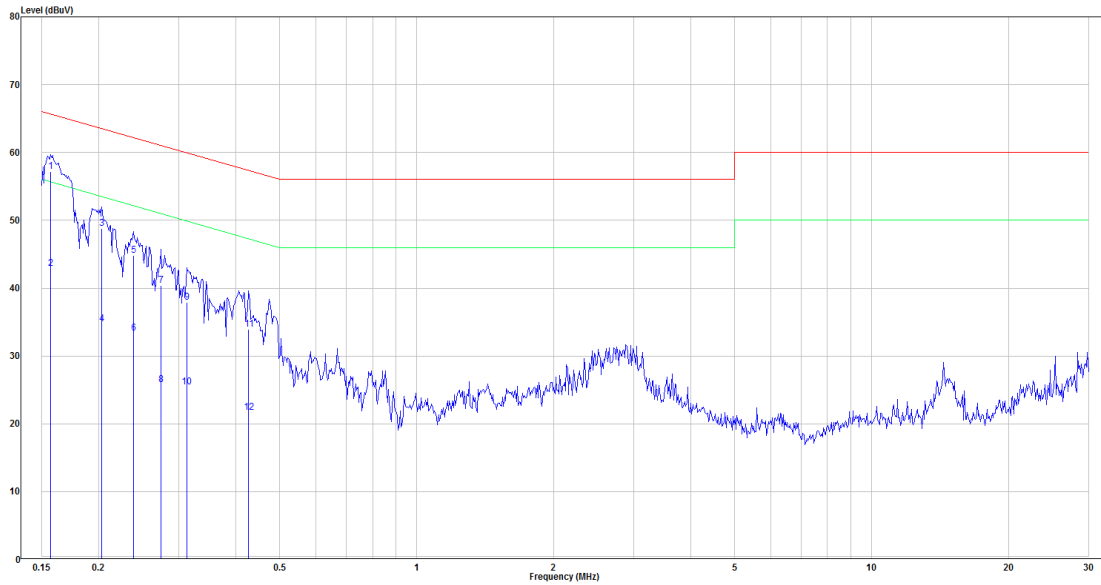
Temperature:	23.2 °C
Relative Humidity:	61 %
ATM Pressure:	1009 hPa

The testing was performed by Kevin Kao on 2019-03-12.

7.8 Test Results

Test Mode: Transmitting

Main: AC120 V, 60 Hz, Line



No.	Frequency (MHz)	Reading (dBμV)	Correct Factor(dB)	Result (dBμV)	Limit (dBμV)	Over limit (dB)	Remark
1	0.157	37.73	19.45	57.18	65.63	-8.45	QP
2	0.157	23.46	19.45	42.91	55.63	-12.71	Average
3	0.203	29.36	19.46	48.82	63.47	-14.65	QP
4	0.203	15.26	19.46	34.73	53.47	-18.75	Average
5	0.238	25.33	19.46	44.79	62.15	-17.36	QP
6	0.238	13.86	19.46	33.32	52.15	-18.83	Average
7	0.274	20.91	19.46	40.37	60.99	-20.62	QP
8	0.274	6.33	19.46	25.80	50.99	-25.19	Average
9	0.312	18.44	19.47	37.91	59.91	-22.01	QP
10	0.312	5.96	19.47	25.43	49.91	-24.49	Average
11	0.427	14.42	19.47	33.90	57.31	-23.41	QP
12	0.427	2.20	19.47	21.67	47.31	-25.63	Average

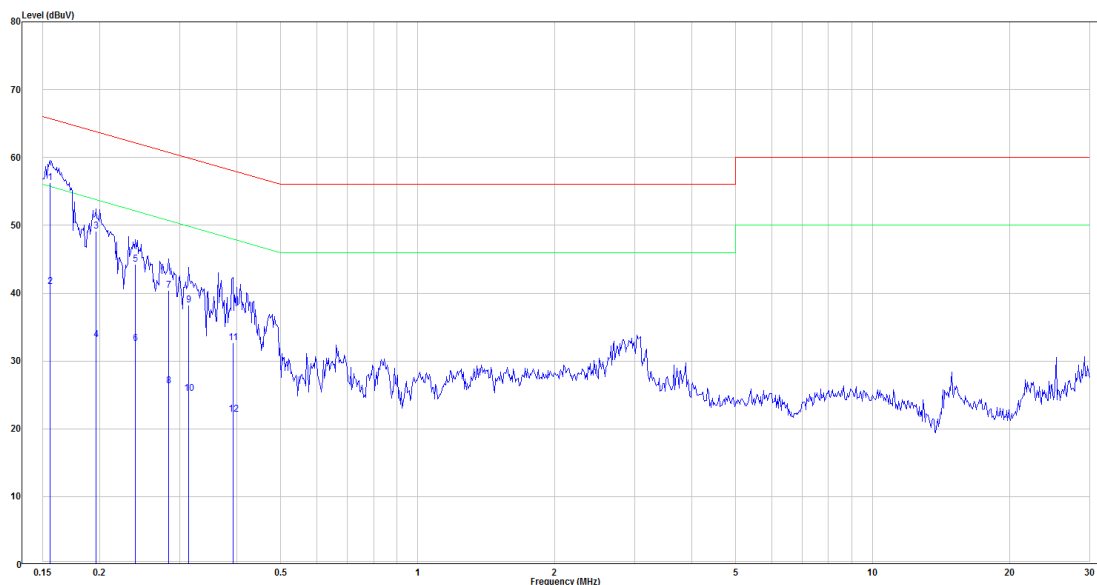
Note:

Level = Read Level + Factor

Over Limit = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

Main: AC120 V, 60 Hz, Neutral



No.	Frequency (MHz)	Reading (dBµV)	Correct Factor(dB)	Result (dBµV)	Limit (dBµV)	Over limit (dB)	Remark
1	0.155	36.84	19.44	56.28	65.71	-9.43	QP
2	0.155	21.54	19.44	40.98	55.71	-14.73	Average
3	0.196	29.72	19.46	49.18	63.76	-14.58	QP
4	0.196	13.72	19.46	33.18	53.76	-20.59	Average
5	0.240	24.77	19.46	44.23	62.11	-17.88	QP
6	0.240	13.13	19.46	32.59	52.11	-19.52	Average
7	0.284	20.92	19.46	40.38	60.70	-20.33	QP
8	0.284	6.82	19.46	26.28	50.70	-24.42	Average
9	0.314	18.77	19.46	38.23	59.87	-21.64	QP
10	0.314	5.76	19.46	25.22	49.87	-24.65	Average
11	0.393	13.21	19.46	32.67	58.01	-25.34	QP
12	0.393	2.62	19.46	22.08	48.01	-25.93	Average

Note:

Level = Read Level + Factor

Over Limit = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

8 FCC §15.209, §15.205 , §15.407(b) (1),(2),(3),(4),(6),(7) – Spurious Emissions

8.1 Applicable Standard

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3332 – 3339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	33458 – 3358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

Note 1: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC Part 15.407 (b)

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.

8.2 Measurement Uncertainty

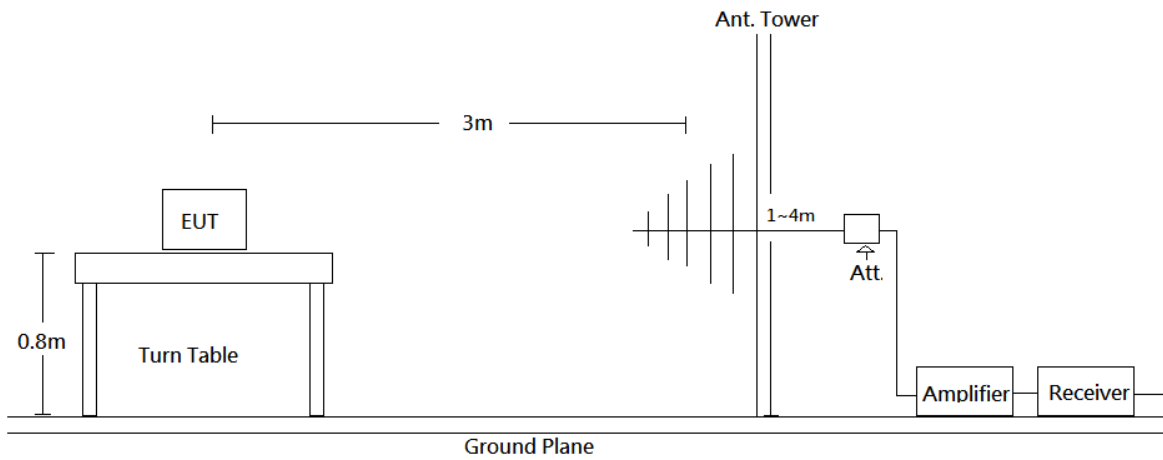
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report.

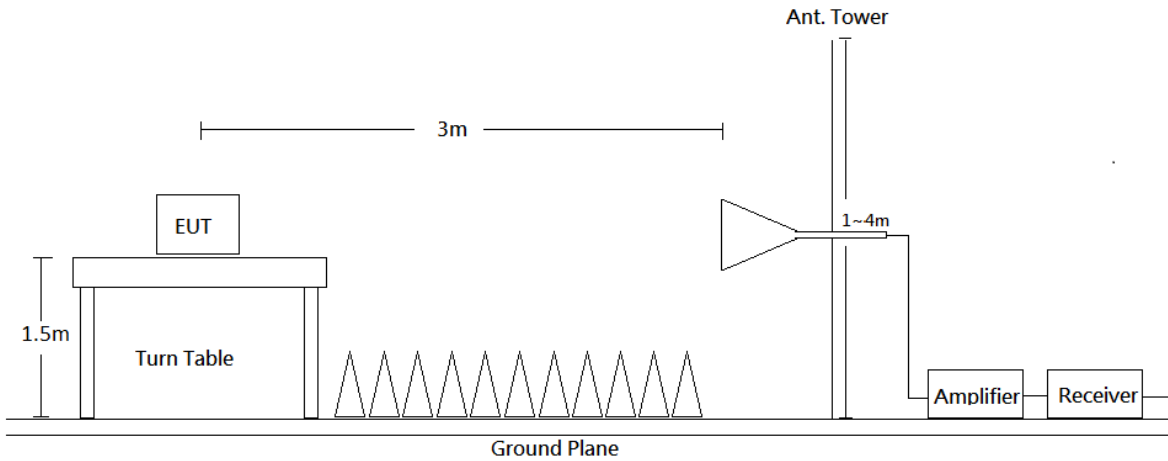
Frequency	Measurement uncertainty
30 MHz~200 MHz	3.75 dB (k=2, 95% level of confidence)
200 MHz~1 GHz	4.21 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	4.83 dB (k=2, 95% level of confidence)
6 GHz~18 GHz	5.18 dB (k=2, 95% level of confidence)
18 GHz~26 GHz	4.55 dB (k=2, 95% level of confidence)
26 GHz~40 GHz	4.67 dB (k=2, 95% level of confidence)

8.3 EUT Setup

Below 1 GHz:

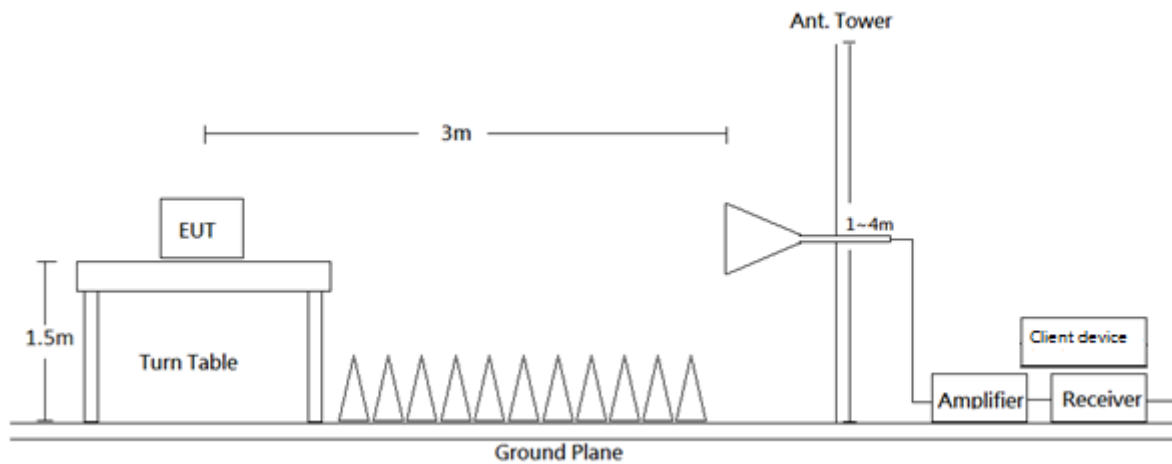


Above 1 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.407 Limits.

Beamforming Mode



During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under Telnet.
3. Executed "Lantest.exe" to link with the remote workstation to transmit and receive packet by RX device.
4. The client device is placed behind the receiving antenna to find the maximum field angle.

8.4 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Detector	Duty cycle	Measurement method
30-1000 MHz	120 kHz	/	QP		QP
Above 1 GHz	1 MHz	3 MHz	PK		PK
	1 MHz	3 MHz	RMS	>98%	Ave
	1 MHz	1/T	PK	<98%	Ave

8.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

According to C63.10-2013, emission shall be computed as: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

Frequency Band 5150~5250 MHz, EIRP Limit -27(dBm/MHz)

Equivalent Field Strength at 3m is 68.23 dB μ V/m

Frequency Band 5725~5850 MHz, EIRP is all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Equivalent Field Strength at 3m is all emissions shall be limited to a level of 68.2 dB μ V/m at 75 MHz or more above or below the band edge increasing linearly to 105.2 dB μ V/m at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 110.8 dB μ V/m at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 122.2 dB μ V/m at the band edge.

8.6 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Result} - \text{Limit}$$

8.7 Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.407 Limit.

8.8 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

The Radiation Spurious Emissions testing was performed by Tom Hsu on 2019-02-15 ~ 2019-02-20.

The Conducted Spurious Emissions testing was performed by Tom Hsu from 2019-02-21 to 2019-03-04.

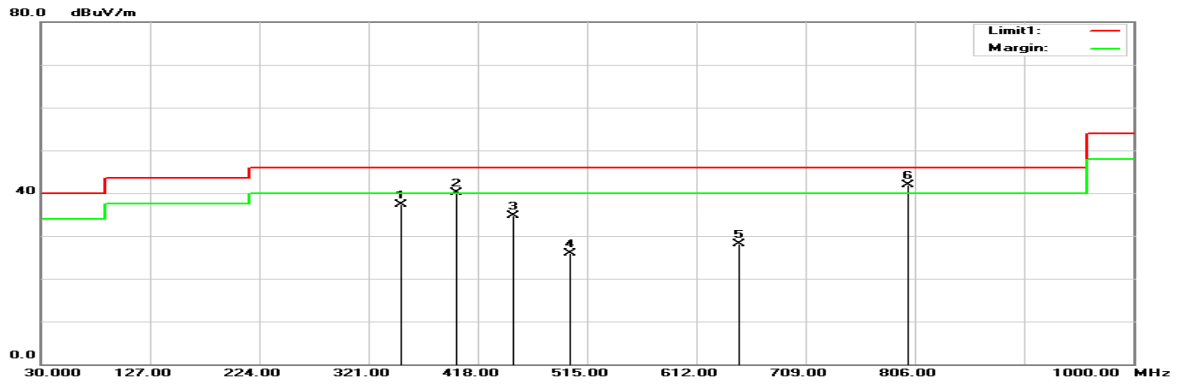
8.9 Test Results

Test Mode: Transmitting

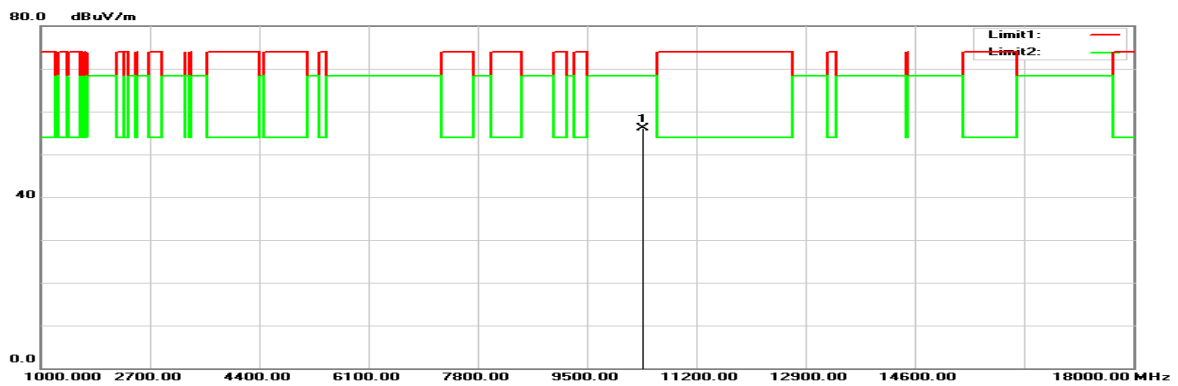
(Pre-scan with three orthogonal axis, and worse case as Z axis.)

Horizontal (worst case is Wi-Fi ac VHT40 mode 5190MHz)

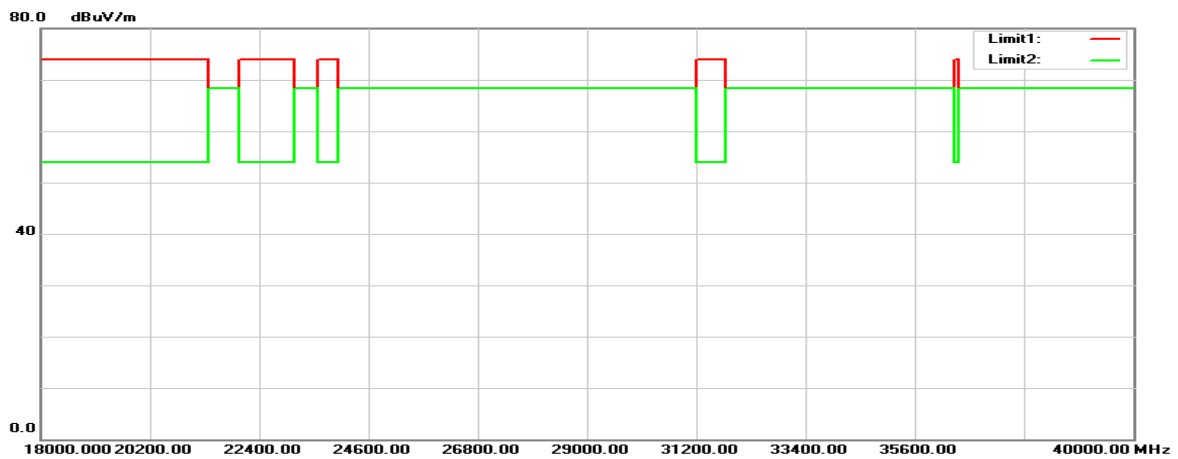
30MHz-1GHz:



1GHz-18GHz:

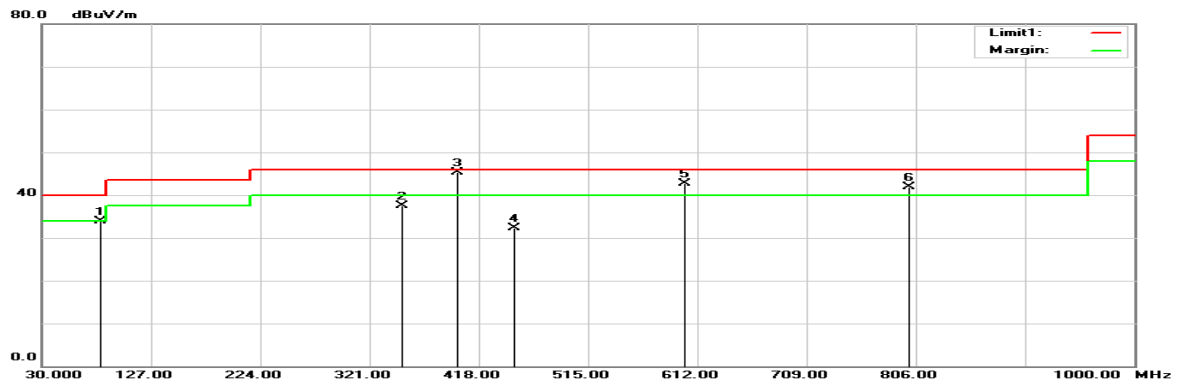


18GHz-40GHz:

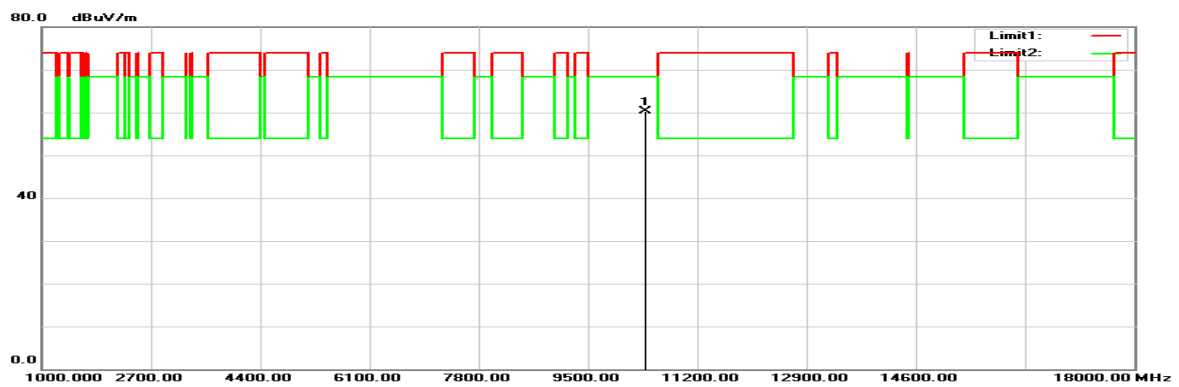


Vertical (worst case is Wi-Fi ac VHT40 mode 5190MHz)

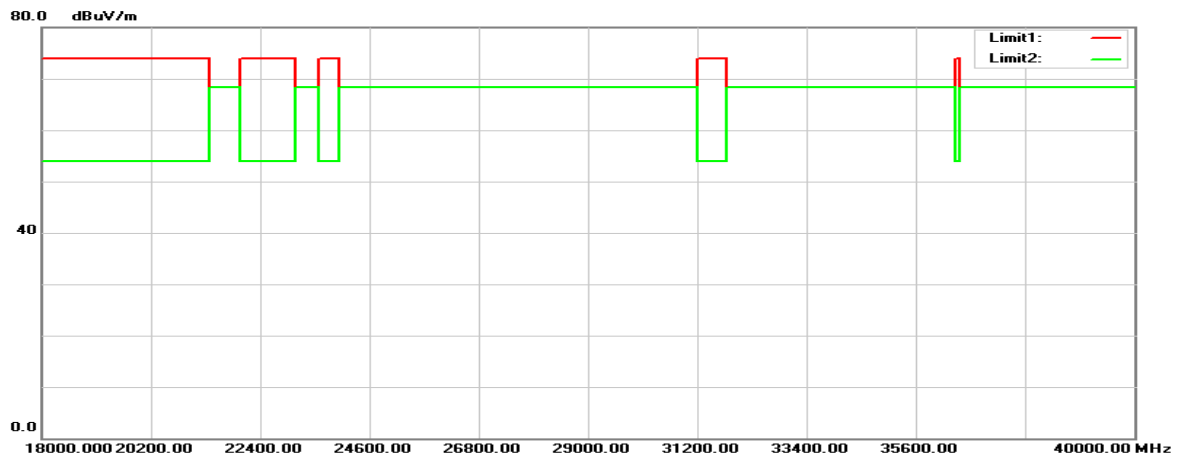
30MHz-1GHz:



1GHz-18GHz:



18GHz-40GHz:



Below 1GHz

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
350.1000	46.07	-8.78	37.29	46.00	-8.71	100	269	peak
399.5700	47.87	-7.74	40.13	46.00	-5.87	100	228	peak
450.0100	41.19	-6.54	34.65	46.00	-11.35	100	199	peak
500.4500	31.59	-5.71	25.88	46.00	-20.12	100	225	peak
649.8300	31.43	-3.35	28.08	46.00	-17.92	100	66	peak
800.1800	42.45	-0.57	41.88	46.00	-4.12	100	105	peak

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
82.3800	50.67	-16.82	33.85	40.00	-6.15	100	262	peak
350.1000	46.27	-8.78	37.49	46.00	-8.51	100	314	peak
399.5700	53.02	-7.74	45.28	46.00	-0.72	100	319	peak
450.0100	38.84	-6.54	32.30	46.00	-13.70	100	1	peak
600.3600	46.70	-3.97	42.73	46.00	-3.27	100	241	peak
800.1800	42.46	-0.57	41.89	46.00	-4.11	100	329	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

For UNII-1 Band I:

Above 1GHz

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5150.000	53.63	2.91	56.54	74.00	-17.46	180	65	peak
5150.000	40.21	2.91	43.12	54.00	-10.88	180	65	AVG
5180.000	93.04	2.92	95.96	N/A	N/A	180	265	peak
5180.000	82.97	2.92	85.89	N/A	N/A	180	265	AVG
10360.000	45.72	13.62	59.34	68.23	-8.89	100	130	peak
a Mode, Middle channel								
5200.000	93.55	2.94	96.49	N/A	N/A	180	254	peak
5200.000	83.45	2.94	86.39	N/A	N/A	180	254	AVG
10400.000	46.53	13.57	60.10	68.23	-8.13	100	230	peak
a Mode, High channel								
5240.000	95.29	2.89	98.18	N/A	N/A	180	257	peak
5240.000	84.80	2.89	87.69	N/A	N/A	180	257	AVG
5350.000	55.07	2.94	58.01	74.00	-15.99	180	84	peak
5350.000	40.62	2.94	43.56	54.00	-10.44	180	84	AVG
10480.000	42.10	13.71	55.81	68.23	-12.42	100	146	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5150.000	56.30	2.91	59.21	74.00	-14.79	300	271	peak
5150.000	42.87	2.91	45.78	54.00	-8.22	300	271	AVG
5180.000	108.52	2.92	111.44	N/A	N/A	300	190	peak
5180.000	99.21	2.92	102.13	N/A	N/A	300	190	AVG
10360.000	48.30	13.63	61.93	68.23	-6.30	100	228	peak
a Mode, Middle channel								
5200.000	108.02	2.94	110.96	N/A	N/A	300	188	peak
5200.000	98.51	2.94	101.45	N/A	N/A	300	188	AVG
10400.000	49.86	13.57	63.43	68.23	-4.80	100	359	peak
a Mode, High channel								
5240.000	107.48	2.89	110.37	N/A	N/A	300	187	peak
5240.000	97.89	2.89	100.78	N/A	N/A	300	187	AVG
5350.000	56.68	2.94	59.62	74.00	-14.38	300	19	peak
5350.000	42.18	2.94	45.12	54.00	-8.88	300	19	AVG
10480.000	46.95	13.71	60.66	68.23	-7.57	100	357	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5150.000	52.16	2.91	55.07	74.00	-18.93	180	134	peak
5150.000	40.23	2.91	43.14	54.00	-10.86	180	134	AVG
5180.000	92.64	2.92	95.56	N/A	N/A	180	265	peak
5180.000	80.58	2.92	83.50	N/A	N/A	180	265	AVG
10360.000	41.87	13.62	55.49	68.23	-12.74	100	133	peak
ac20 Mode, Middle channel								
5200.000	95.20	2.94	98.14	N/A	N/A	180	252	peak
5200.000	82.28	2.94	85.22	N/A	N/A	180	252	AVG
10400.000	46.16	13.57	59.73	68.23	-8.50	100	126	peak
ac20 Mode, High channel								
5240.000	96.35	2.89	99.24	N/A	N/A	180	257	peak
5240.000	83.04	2.89	85.93	N/A	N/A	180	257	AVG
5350.000	54.25	2.94	57.19	74.00	-16.81	180	176	peak
5350.000	41.43	2.94	44.37	54.00	-9.63	180	176	AVG
10480.000	42.69	13.71	56.40	68.23	-11.83	100	210	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5150.000	56.72	2.91	59.63	74.00	-14.37	300	33	peak
5150.000	43.66	2.91	46.57	54.00	-7.43	300	33	AVG
5180.000	108.29	2.92	111.21	N/A	N/A	300	205	peak
5180.000	95.54	2.92	98.46	N/A	N/A	300	205	AVG
10360.000	45.08	13.62	58.70	68.23	-9.53	100	221	peak
ac20 Mode, Middle channel								
5200.000	108.59	2.94	111.53	N/A	N/A	300	222	peak
5200.000	94.60	2.94	97.54	N/A	N/A	300	222	AVG
10400.000	49.57	13.57	63.14	68.23	-5.09	100	357	peak
ac20 Mode, High channel								
5240.000	107.95	2.89	110.84	N/A	N/A	300	220	peak
5240.000	94.18	2.89	97.07	N/A	N/A	300	220	AVG
5350.000	55.51	2.94	58.45	74.00	-15.55	300	159	peak
5350.000	42.67	2.94	45.61	54.00	-8.39	300	159	AVG
10480.000	43.76	13.71	57.47	68.23	-10.76	100	162	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5150.000	53.48	2.91	56.39	74.00	-17.61	180	71	peak
5150.000	41.36	2.91	44.27	54.00	-9.73	180	71	AVG
5190.000	89.67	2.93	92.60	N/A	N/A	180	256	peak
5190.000	77.80	2.93	80.73	N/A	N/A	180	256	AVG
10380.000	42.56	13.60	56.16	68.23	-12.07	100	150	peak
ac40 Mode, High channel								
5230.000	92.04	2.90	94.94	N/A	N/A	180	266	peak
5230.000	80.88	2.90	83.78	N/A	N/A	180	266	AVG
5350.000	54.97	2.94	57.91	74.00	-16.09	180	270	peak
5350.000	41.85	2.94	44.79	54.00	-9.21	180	270	AVG
10460.000	40.09	13.68	53.77	68.23	-14.46	100	133	peak

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5150.000	56.92	2.91	59.83	74.00	-14.17	300	144	peak
5150.000	44.50	2.91	47.41	54.00	-6.59	300	144	AVG
5190.000	104.81	2.93	107.74	N/A	N/A	300	190	peak
5190.000	91.69	2.93	94.62	N/A	N/A	300	190	AVG
10380.000	46.63	13.59	60.22	68.23	-8.01	100	19	peak
ac40 Mode, High channel								
5230.000	104.32	2.90	107.22	N/A	N/A	300	73	peak
5230.000	90.66	2.90	93.56	N/A	N/A	300	73	AVG
5350.000	55.37	2.94	58.31	74.00	-15.69	300	242	peak
5350.000	42.81	2.94	45.75	54.00	-8.25	300	242	AVG
10460.000	43.92	13.68	57.60	68.23	-10.63	100	1	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5150.000	54.30	2.91	57.21	74.00	-16.79	180	233	peak
5150.000	41.64	2.91	44.55	54.00	-9.45	180	233	AVG
5210.000	89.06	2.93	91.99	N/A	N/A	180	262	peak
5210.000	77.80	2.93	80.73	N/A	N/A	180	262	AVG
5350.000	54.26	2.94	57.20	74.00	-16.80	180	250	peak
5350.000	42.09	2.94	45.03	54.00	-8.97	180	250	AVG
10420.000	39.42	13.60	53.02	68.23	-15.21	100	136	peak

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5150.000	67.82	2.91	70.73	74.00	-3.27	300	224	peak
5150.000	49.81	2.91	52.72	54.00	-1.28	300	224	AVG
5210.000	103.72	2.93	106.65	N/A	N/A	300	188	peak
5210.000	93.06	2.93	95.99	N/A	N/A	300	188	AVG
5350.000	62.44	2.94	65.38	74.00	-8.62	300	228	peak
5350.000	44.00	2.94	46.94	54.00	-7.06	300	228	AVG
10420.000	45.05	13.60	58.65	68.23	-9.58	100	20	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

For UNII-2A Band II:

Above 1GHz

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5150.000	53.62	2.91	56.53	74.00	-17.47	180	85	peak
5150.000	39.91	2.91	42.82	54.00	-11.18	180	85	AVG
5260.000	94.03	2.86	96.89	N/A	N/A	180	263	peak
5260.000	84.31	2.86	87.17	N/A	N/A	180	263	AVG
10520.000	49.22	13.75	62.97	68.23	-5.26	100	122	peak
a Mode, Middle channel								
5300.000	95.32	2.81	98.13	N/A	N/A	180	264	peak
5300.000	85.79	2.81	88.60	N/A	N/A	180	264	AVG
10600.000	45.56	13.78	59.34	68.23	-8.89	100	137	peak
a Mode, High channel								
5320.000	94.73	2.87	97.60	N/A	N/A	180	264	peak
5320.000	85.21	2.87	88.08	N/A	N/A	180	264	AVG
5350.000	54.54	2.94	57.48	74.00	-16.52	180	247	peak
5350.000	40.71	2.94	43.65	54.00	-10.35	180	247	AVG
10640.000	47.77	13.88	61.65	74.00	-12.35	100	130	peak
10640.000	32.18	13.88	46.06	54.00	-7.94	100	130	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5150.000	55.84	2.91	58.75	74.00	-15.25	300	173	peak
5150.000	41.89	2.91	44.80	54.00	-9.20	300	173	AVG
5260.000	108.30	2.86	111.16	N/A	N/A	300	185	peak
5260.000	98.52	2.86	101.38	N/A	N/A	300	185	AVG
10520.000	49.00	13.75	62.75	68.23	-5.48	100	10	peak
a Mode, Middle channel								
5300.000	108.31	2.81	111.12	N/A	N/A	300	188	peak
5300.000	98.18	2.81	100.99	N/A	N/A	300	188	AVG
10600.000	47.33	13.78	61.11	68.23	-7.12	100	17	peak
a Mode, High channel								
5320.000	108.79	2.87	111.66	N/A	N/A	300	185	peak
5320.000	98.84	2.87	101.71	N/A	N/A	300	185	AVG
5350.000	56.45	2.94	59.39	74.00	-14.61	300	200	peak
5350.000	43.00	2.94	45.94	54.00	-8.06	300	200	AVG
10640.000	48.59	13.88	62.47	74.00	-11.53	100	3	peak
10640.000	36.96	13.88	50.84	54.00	-3.16	100	3	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5150.000	53.63	2.91	56.54	74.00	-17.46	180	224	peak
5150.000	40.92	2.91	43.83	54.00	-10.17	180	224	AVG
5260.000	95.36	2.86	98.22	N/A	N/A	180	266	peak
5260.000	83.15	2.86	86.01	N/A	N/A	180	266	AVG
10520.000	45.27	13.75	59.02	68.23	-9.21	100	129	peak
ac20 Mode, Middle channel								
5300.000	96.78	2.81	99.59	N/A	N/A	180	264	peak
5300.000	83.65	2.81	86.46	N/A	N/A	180	264	AVG
10600.000	41.80	13.78	55.58	68.23	-12.65	100	135	peak
ac20 Mode, High channel								
5320.000	96.03	2.87	98.90	N/A	N/A	180	264	peak
5320.000	83.28	2.87	86.15	N/A	N/A	180	264	AVG
5350.000	54.93	2.94	57.87	74.00	-16.13	180	142	peak
5350.000	41.63	2.94	44.57	54.00	-9.43	180	142	AVG
10640.000	44.30	13.88	58.18	74.00	-15.82	100	130	peak
10640.000	31.62	13.88	45.50	54.00	-8.50	100	130	AVG

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5150.000	54.81	2.91	57.72	74.00	-16.28	300	213	peak
5150.000	41.88	2.91	44.79	54.00	-9.21	300	213	AVG
5260.000	107.60	2.86	110.46	N/A	N/A	300	217	peak
5260.000	93.87	2.86	96.73	N/A	N/A	300	217	AVG
10520.000	44.77	13.75	58.52	68.23	-9.71	100	3	peak
ac20 Mode, Middle channel								
5300.000	108.53	2.81	111.34	N/A	N/A	300	217	peak
5300.000	95.67	2.81	98.48	N/A	N/A	300	217	AVG
10600.000	47.40	13.78	61.18	68.23	-7.05	100	1	peak
ac20 Mode, High channel								
5320.000	108.52	2.87	111.39	N/A	N/A	300	183	peak
5320.000	96.03	2.87	98.90	N/A	N/A	300	183	AVG
5350.000	57.34	2.94	60.28	74.00	-13.72	300	163	peak
5350.000	43.94	2.94	46.88	54.00	-7.12	300	163	AVG
10640.000	45.04	13.88	58.92	74.00	-15.08	100	28	peak
10640.000	36.41	13.88	50.29	54.00	-3.71	100	28	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5150.000	54.23	2.91	57.14	74.00	-16.86	180	229	peak
5150.000	41.32	2.91	44.23	54.00	-9.77	180	229	AVG
5270.000	92.10	2.85	94.95	N/A	N/A	180	264	peak
5270.000	80.66	2.85	83.51	N/A	N/A	180	264	AVG
10540.000	45.80	13.75	59.55	68.23	-8.68	100	126	peak
ac40 Mode, High channel								
5310.000	91.92	2.84	94.76	N/A	N/A	180	265	peak
5310.000	80.51	2.84	83.35	N/A	N/A	180	265	AVG
5350.000	54.91	2.94	57.85	74.00	-16.15	180	13	peak
5350.000	41.93	2.94	44.87	54.00	-9.13	180	13	AVG
10620.000	42.35	13.83	56.18	74.00	-17.82	100	136	peak
10620.000	30.26	13.83	44.09	54.00	-9.91	100	136	AVG

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5150.000	56.07	2.91	58.98	74.00	-15.02	300	210	peak
5150.000	42.70	2.91	45.61	54.00	-8.39	300	210	AVG
5270.000	105.98	2.85	108.83	N/A	N/A	300	185	peak
5270.000	93.16	2.85	96.01	N/A	N/A	300	185	AVG
10540.000	46.96	13.75	60.71	68.23	-7.52	100	2	peak
ac40 Mode, High channel								
5310.000	106.33	2.84	109.17	N/A	N/A	300	186	peak
5310.000	92.98	2.84	95.82	N/A	N/A	300	186	AVG
5350.000	58.16	2.94	61.10	74.00	-12.90	300	207	peak
5350.000	44.88	2.94	47.82	54.00	-6.18	300	207	AVG
10620.000	46.16	13.83	59.99	74.00	-14.01	100	4	peak
10620.000	36.63	13.83	50.46	54.00	-3.54	100	4	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5150.000	54.10	2.91	57.01	74.00	-16.99	180	122	peak
5150.000	42.55	2.91	45.46	54.00	-8.54	180	122	AVG
5290.000	91.32	2.82	94.14	N/A	N/A	180	265	peak
5290.000	79.20	2.82	82.02	N/A	N/A	180	265	AVG
5350.000	58.36	2.94	61.30	74.00	-12.70	180	251	peak
5350.000	43.36	2.94	46.30	54.00	-7.70	180	251	AVG
10580.000	41.57	13.77	55.34	68.23	-12.89	100	128	peak

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5150.000	65.16	2.91	68.07	74.00	-5.93	300	200	peak
5150.000	43.76	2.91	46.67	54.00	-7.33	300	200	AVG
5290.000	103.51	2.82	106.33	N/A	N/A	300	191	peak
5290.000	92.16	2.82	94.98	N/A	N/A	300	191	AVG
5350.000	66.88	2.94	69.82	74.00	-4.18	300	161	peak
5350.000	49.92	2.94	52.86	54.00	-1.14	300	161	AVG
10580.000	46.45	13.77	60.22	68.23	-8.01	100	16	peak

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

For UNII-2C Band III:

Above 1GHz

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5460.000	54.75	3.53	58.28	74.00	-15.72	180	27	peak
5460.000	40.71	3.53	44.24	54.00	-9.76	180	27	AVG
5500.000	94.49	3.55	98.04	N/A	N/A	180	265	peak
5500.000	84.31	3.55	87.86	N/A	N/A	180	265	AVG
11000.000	43.47	14.05	57.52	74.00	-16.48	100	137	peak
11000.000	33.95	14.05	48.00	54.00	-6.00	100	137	AVG
a Mode, Middle channel								
5580.000	95.16	3.57	98.73	N/A	N/A	180	247	peak
5580.000	85.90	3.57	89.47	N/A	N/A	180	247	AVG
11160.000	42.01	14.15	56.16	74.00	-17.84	100	136	peak
11160.000	31.88	14.15	46.03	54.00	-7.97	100	136	AVG
a Mode, High channel								
5700.000	92.83	3.70	96.53	N/A	N/A	180	222	peak
5700.000	83.07	3.70	86.77	N/A	N/A	180	222	AVG
5725.000	54.66	3.73	58.39	68.23	-9.84	180	71	peak
11400.000	39.88	14.21	54.09	74.00	-19.91	100	135	peak
11400.000	31.64	14.21	45.85	54.00	-8.15	100	135	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5460.000	56.94	3.53	60.47	74.00	-13.53	300	3	peak
5460.000	43.00	3.53	46.53	54.00	-7.47	300	3	AVG
5500.000	107.47	3.55	111.02	N/A	N/A	300	192	peak
5500.000	97.71	3.55	101.26	N/A	N/A	300	192	AVG
11000.000	44.54	14.05	58.59	74.00	-15.41	100	13	peak
11000.000	35.67	14.05	49.72	54.00	-4.28	100	13	AVG
a Mode, Middle channel								
5580.000	106.72	3.57	110.29	N/A	N/A	300	185	peak
5580.000	96.54	3.57	100.11	N/A	N/A	300	185	AVG
11160.000	43.93	14.15	58.08	74.00	-15.92	100	18	peak
11160.000	31.55	14.15	45.70	54.00	-8.30	100	18	AVG
a Mode, High channel								
5700.000	105.09	3.70	108.79	N/A	N/A	300	199	peak
5700.000	95.36	3.70	99.06	N/A	N/A	300	199	AVG
5725.000	55.92	3.73	59.65	68.23	-8.58	300	183	peak
11400.000	41.75	14.21	55.96	74.00	-18.04	100	235	peak
11400.000	29.32	14.21	43.53	54.00	-10.47	100	235	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5460.000	54.33	3.53	57.86	74.00	-16.14	180	145	peak
5460.000	41.29	3.53	44.82	54.00	-9.18	180	145	AVG
5500.000	95.68	3.55	99.23	N/A	N/A	180	266	peak
5500.000	82.82	3.55	86.37	N/A	N/A	180	266	AVG
11000.000	42.34	14.05	56.39	74.00	-17.61	100	138	peak
11000.000	33.77	14.05	47.82	54.00	-6.18	100	138	AVG
ac20 Mode, Middle channel								
5580.000	97.15	3.57	100.72	N/A	N/A	180	248	peak
5580.000	83.79	3.57	87.36	N/A	N/A	180	248	AVG
11160.000	40.97	14.15	55.12	74.00	-18.88	100	139	peak
11160.000	31.96	14.15	46.11	54.00	-7.89	100	139	AVG
ac20 Mode, High channel								
5700.000	94.12	3.70	97.82	N/A	N/A	180	232	peak
5700.000	81.40	3.70	85.10	N/A	N/A	180	232	AVG
5725.000	54.98	3.73	58.71	68.23	-9.52	180	234	peak
11400.000	38.03	14.21	52.24	74.00	-21.76	100	327	peak
11400.000	27.44	14.21	41.65	54.00	-12.35	100	327	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5460.000	57.45	3.53	60.98	74.00	-13.02	300	144	peak
5460.000	44.08	3.53	47.61	54.00	-6.39	300	144	AVG
5500.000	107.90	3.55	111.45	N/A	N/A	300	224	peak
5500.000	94.74	3.55	98.29	N/A	N/A	300	224	AVG
11000.000	45.53	14.05	59.58	74.00	-14.42	100	14	peak
11000.000	36.52	14.05	50.57	54.00	-3.43	100	14	AVG
ac20 Mode, Middle channel								
5580.000	106.64	3.57	110.21	N/A	N/A	300	226	peak
5580.000	94.07	3.57	97.64	N/A	N/A	300	226	AVG
11160.000	41.40	14.15	55.55	74.00	-18.45	100	6	peak
11160.000	33.02	14.15	47.17	54.00	-6.83	100	6	AVG
ac20 Mode, High channel								
5700.000	105.10	3.70	108.80	N/A	N/A	300	200	peak
5700.000	92.92	3.70	96.62	N/A	N/A	300	200	AVG
5725.000	56.24	3.73	59.97	68.23	-8.26	300	147	peak
11400.000	38.09	14.21	52.30	74.00	-21.70	100	11	peak
11400.000	30.30	14.21	44.51	54.00	-9.49	100	11	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
ac40 Mode, Low channel								
5460.000	54.86	3.53	58.39	74.00	-15.61	180	121	peak
5460.000	41.26	3.53	44.79	54.00	-9.21	180	121	AVG
5510.000	89.28	3.57	92.85	N/A	N/A	180	269	peak
5510.000	77.49	3.57	81.06	N/A	N/A	180	269	AVG
11020.000	37.02	14.06	51.08	74.00	-22.92	100	137	peak
11020.000	29.00	14.06	43.06	54.00	-10.94	100	137	AVG
ac40 Mode, Middle channel								
5590.000	89.82	3.55	93.37	N/A	N/A	180	247	peak
5590.000	78.53	3.55	82.08	N/A	N/A	180	247	AVG
11180.000	36.58	14.17	50.75	74.00	-23.25	100	219	peak
11180.000	27.98	14.17	42.15	54.00	-11.85	100	219	AVG
ac40 Mode, High channel								
5670.000	89.46	3.64	93.10	N/A	N/A	180	280	peak
5670.000	77.95	3.64	81.59	N/A	N/A	180	280	AVG
5725.000	55.02	3.73	58.75	68.23	-9.48	180	360	peak
11340.000	37.86	14.17	52.03	74.00	-21.97	100	221	peak
11340.000	29.59	14.17	43.76	54.00	-10.24	100	221	AVG

Result = Reading + Correct Factor

Margin = Result - Limit

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dB μ V)	Correct Factor(dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Degree ($^{\circ}$)	Remark
ac40 Mode, Low channel								
5460.000	56.62	3.53	60.15	74.00	-13.85	300	198	peak
5460.000	43.66	3.53	47.19	54.00	-6.81	300	198	AVG
5510.000	103.40	3.57	106.97	N/A	N/A	300	188	peak
5510.000	89.78	3.57	93.35	N/A	N/A	300	188	AVG
11020.000	39.65	14.06	53.71	74.00	-20.29	100	5	peak
11020.000	32.31	14.06	46.37	54.00	-7.63	100	5	AVG
ac40 Mode, Middle channel								
5590.000	103.84	3.55	107.39	N/A	N/A	300	187	peak
5590.000	90.69	3.55	94.24	N/A	N/A	300	187	AVG
11180.000	38.51	14.17	52.68	74.00	-21.32	100	23	peak
11180.000	28.87	14.17	43.04	54.00	-10.96	100	23	AVG
ac40 Mode, High channel								
5670.000	102.45	3.64	106.09	N/A	N/A	300	195	peak
5670.000	89.20	3.64	92.84	N/A	N/A	300	195	AVG
5725.000	55.46	3.73	59.19	68.23	-9.04	300	125	peak
11340.000	37.95	14.17	52.12	74.00	-21.88	100	10	peak
11340.000	30.22	14.17	44.39	54.00	-9.61	100	10	AVG

Result = Reading + Correct Factor

Margin = Result - Limit

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5460.000	55.08	3.53	58.61	74.00	-15.39	180	128	peak
5460.000	42.70	3.53	46.23	54.00	-7.77	180	128	AVG
5530.000	89.18	3.60	92.78	N/A	N/A	180	266	peak
5530.000	78.24	3.60	81.84	N/A	N/A	180	266	AVG
11060.000	39.51	14.09	53.60	74.00	-20.40	100	221	peak
11060.000	28.43	14.09	42.52	54.00	-11.48	100	221	AVG
ac80 Mode, High channel								
5610.000	88.17	3.54	91.71	N/A	N/A	180	245	peak
5610.000	77.51	3.54	81.05	N/A	N/A	180	245	AVG
5725.000	54.24	3.73	57.97	68.23	-10.26	180	348	peak
11220.000	39.24	14.17	53.41	74.00	-20.59	100	140	peak
11220.000	30.23	14.17	44.40	54.00	-9.60	100	140	AVG

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5460.000	60.92	3.53	64.45	74.00	-9.55	300	183	peak
5460.000	50.12	3.53	53.65	54.00	-0.35	300	183	AVG
5530.000	101.81	3.60	105.41	N/A	N/A	300	188	peak
5530.000	91.92	3.60	95.52	N/A	N/A	300	188	AVG
11060.000	40.00	14.09	54.09	74.00	-19.91	100	8	peak
11060.000	31.85	14.09	45.94	54.00	-8.06	100	8	AVG
ac80 Mode, High channel								
5610.000	101.48	3.54	105.02	N/A	N/A	300	187	peak
5610.000	91.16	3.54	94.70	N/A	N/A	300	187	AVG
5725.000	55.82	3.73	59.55	68.23	-8.68	300	160	peak
11220.000	42.16	14.17	56.33	74.00	-17.67	100	13	peak
11220.000	30.25	14.17	44.42	54.00	-9.58	100	13	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

For UNII-3 Band IV:

Above 1GHz

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5626.600	53.19	3.57	56.76	68.20	-11.44	180	166	peak
5654.250	53.36	3.62	56.98	71.34	-14.36	180	21	peak
5714.100	54.04	3.72	57.76	109.15	-51.39	180	290	peak
5724.950	53.18	3.73	56.91	122.09	-65.18	180	215	peak
5745.000	92.58	3.77	96.35	N/A	N/A	180	209	peak
5745.000	81.10	3.77	84.87	N/A	N/A	180	209	AVG
5851.300	54.11	3.95	58.06	119.24	-61.18	180	359	peak
5863.550	55.19	4.00	59.19	108.41	-49.22	180	347	peak
5882.800	55.00	4.07	59.07	99.43	-40.36	180	251	peak
5931.100	54.18	4.20	58.38	68.20	-9.82	180	139	peak
11490.000	39.36	14.36	53.72	74.00	-20.28	100	254	peak
11490.000	25.54	14.36	39.90	54.00	-14.10	100	254	AVG
a Mode, Middle channel								
5602.800	53.01	3.53	56.54	68.20	-11.66	180	331	peak
5674.200	53.62	3.65	57.27	86.11	-28.84	180	339	peak
5718.300	53.97	3.73	57.70	110.32	-52.62	180	147	peak
5723.200	53.13	3.73	56.86	118.10	-61.24	180	298	peak
5785.000	92.12	3.91	96.03	N/A	N/A	180	305	peak
5785.000	82.15	3.91	86.06	N/A	N/A	180	305	AVG
5850.600	54.35	3.95	58.30	120.83	-62.53	180	360	peak
5860.400	54.65	3.99	58.64	109.29	-50.65	180	347	peak
5887.700	54.88	4.10	58.98	95.80	-36.82	180	78	peak
5937.400	54.05	4.20	58.25	68.20	-9.95	180	118	peak
11570.000	38.18	14.33	52.51	74.00	-21.49	100	237	peak
11570.000	28.55	14.33	42.88	54.00	-11.12	100	237	AVG
a Mode, High channel								
5646.550	53.45	3.60	57.05	68.20	-11.15	180	56	peak
5677.700	54.15	3.65	57.80	88.70	-30.90	180	291	peak
5713.400	53.73	3.72	57.45	108.95	-51.50	180	2	peak
5721.450	53.34	3.73	57.07	114.11	-57.04	180	124	peak
5825.000	92.12	3.96	96.08	N/A	N/A	180	323	peak
5825.000	80.98	3.96	84.94	N/A	N/A	180	323	AVG
5850.250	54.22	3.95	58.17	121.63	-63.46	180	258	peak
5870.900	55.38	4.03	59.41	106.35	-46.94	180	275	peak
5913.250	54.43	4.16	58.59	76.89	-18.30	180	187	peak
5931.450	54.41	4.20	58.61	68.20	-9.59	180	205	peak
11650.000	40.33	14.43	54.76	74.00	-19.24	100	221	peak
11650.000	29.31	14.43	43.74	54.00	-10.26	100	221	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
a Mode, Low channel								
5643.750	55.23	3.60	58.83	68.20	-9.37	300	181	peak
5673.500	55.57	3.65	59.22	85.59	-26.37	300	191	peak
5718.300	54.63	3.73	58.36	110.32	-51.96	300	342	peak
5723.900	57.51	3.73	61.24	119.69	-58.45	300	199	peak
5745.000	105.23	3.77	109.00	N/A	N/A	300	191	peak
5745.000	95.23	3.77	99.00	N/A	N/A	300	191	AVG
5850.250	54.88	3.95	58.83	121.63	-62.80	300	233	peak
5869.850	55.19	4.03	59.22	106.64	-47.42	300	337	peak
5912.900	54.56	4.16	58.72	77.15	-18.43	300	181	peak
5940.200	54.17	4.21	58.38	68.20	-9.82	300	295	peak
11490.000	41.41	14.36	55.77	74.00	-18.23	100	28	peak
11490.000	31.86	14.36	46.22	54.00	-7.78	100	28	AVG
a Mode, Middle channel								
5607.000	54.20	3.54	57.74	68.20	-10.46	300	121	peak
5693.100	54.44	3.68	58.12	100.09	-41.97	300	198	peak
5715.850	54.91	3.72	58.63	109.64	-51.01	300	212	peak
5721.450	54.28	3.73	58.01	114.11	-56.10	300	6	peak
5785.000	103.11	3.91	107.02	N/A	N/A	300	195	peak
5785.000	93.32	3.91	97.23	N/A	N/A	300	195	AVG
5850.600	54.27	3.95	58.22	120.83	-62.61	300	89	peak
5866.000	54.91	4.01	58.92	107.72	-48.80	300	176	peak
5924.800	54.56	4.18	58.74	68.35	-9.61	300	340	peak
5946.150	55.12	4.22	59.34	68.20	-8.86	300	266	peak
11570.000	42.88	14.33	57.21	74.00	-16.79	100	17	peak
11570.000	32.74	14.33	47.07	54.00	-6.93	100	17	AVG
a Mode, High channel								
5647.950	53.77	3.60	57.37	68.20	-10.83	300	159	peak
5680.150	54.41	3.66	58.07	90.51	-32.44	300	202	peak
5715.150	54.80	3.72	58.52	109.44	-50.92	300	174	peak
5723.200	54.64	3.73	58.37	118.10	-59.73	300	157	peak
5825.000	101.88	3.96	105.84	N/A	N/A	300	188	peak
5825.000	91.73	3.96	95.69	N/A	N/A	300	188	AVG
5851.650	55.01	3.96	58.97	118.44	-59.47	300	264	peak
5868.800	54.46	4.03	58.49	106.94	-48.45	300	131	peak
5888.400	54.37	4.10	58.47	95.28	-36.81	300	275	peak
5930.400	54.63	4.19	58.82	68.20	-9.38	300	128	peak
11650.000	40.54	14.43	54.97	74.00	-19.03	100	19	peak
11650.000	31.60	14.43	46.03	54.00	-7.97	100	19	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5643.400	52.90	3.59	56.49	68.20	-11.71	180	185	peak
5694.500	54.12	3.68	57.80	101.13	-43.33	180	330	peak
5712.700	54.18	3.72	57.90	108.76	-50.86	180	313	peak
5722.500	53.74	3.73	57.47	116.50	-59.03	180	88	peak
5745.000	91.60	3.77	95.37	N/A	N/A	180	207	peak
5745.000	80.11	3.77	83.88	N/A	N/A	180	207	AVG
5852.700	54.81	3.97	58.78	116.04	-57.26	180	180	peak
5857.600	54.26	3.99	58.25	110.07	-51.82	180	223	peak
5906.250	54.68	4.15	58.83	82.08	-23.25	180	0	peak
5946.500	54.36	4.22	58.58	68.20	-9.62	180	194	peak
11490.000	39.87	14.36	54.23	74.00	-19.77	100	238	peak
11490.000	27.29	14.36	41.65	54.00	-12.35	100	238	AVG
ac20 Mode, Middle channel								
5632.900	52.97	3.58	56.55	68.20	-11.65	180	308	peak
5697.300	53.21	3.69	56.90	103.20	-46.30	180	328	peak
5708.850	53.85	3.71	57.56	107.68	-50.12	180	14	peak
5724.600	53.10	3.73	56.83	121.29	-64.46	180	161	peak
5785.000	94.45	3.91	98.36	N/A	N/A	180	303	peak
5785.000	82.21	3.91	86.12	N/A	N/A	180	303	AVG
5852.350	54.43	3.96	58.39	116.84	-58.45	180	323	peak
5871.600	54.80	4.03	58.83	106.15	-47.32	180	252	peak
5892.600	55.85	4.11	59.96	92.18	-32.22	180	196	peak
5926.200	54.82	4.18	59.00	68.20	-9.20	180	127	peak
11570.000	36.94	14.33	51.27	74.00	-22.73	100	283	peak
11570.000	25.58	14.33	39.91	54.00	-14.09	100	283	AVG
ac20 Mode, High channel								
5638.500	53.62	3.59	57.21	68.20	-10.99	180	234	peak
5698.000	53.42	3.69	57.11	103.72	-46.61	180	166	peak
5706.750	53.47	3.70	57.17	107.09	-49.92	180	353	peak
5724.600	53.76	3.73	57.49	121.29	-63.80	180	278	peak
5825.000	94.65	3.96	98.61	N/A	N/A	180	302	peak
5825.000	81.92	3.96	85.88	N/A	N/A	180	302	AVG
5852.700	54.40	3.97	58.37	116.04	-57.67	180	270	peak
5864.250	54.55	4.00	58.55	108.21	-49.66	180	275	peak
5922.700	54.54	4.18	58.72	69.90	-11.18	180	348	peak
5925.850	54.24	4.18	58.42	68.20	-9.78	180	244	peak
11650.000	36.76	14.43	51.19	74.00	-22.81	100	139	peak
11650.000	27.00	14.43	41.43	54.00	-12.57	100	139	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac20 Mode, Low channel								
5641.650	54.91	3.59	58.50	68.20	-9.70	300	203	peak
5699.050	54.61	3.69	58.30	104.50	-46.20	300	359	peak
5717.600	54.59	3.73	58.32	110.13	-51.81	300	180	peak
5724.600	57.88	3.73	61.61	121.29	-59.68	300	146	peak
5745.000	103.03	3.77	106.80	N/A	N/A	300	193	peak
5745.000	91.49	3.77	95.26	N/A	N/A	300	193	AVG
5850.950	54.21	3.95	58.16	120.03	-61.87	300	206	peak
5870.900	54.90	4.03	58.93	106.35	-47.42	300	318	peak
5881.400	55.14	4.06	59.20	100.46	-41.26	300	193	peak
5930.400	54.50	4.19	58.69	68.20	-9.51	300	57	peak
11490.000	41.39	14.36	55.75	74.00	-18.25	100	14	peak
11490.000	31.80	14.36	46.16	54.00	-7.84	100	14	AVG
ac20 Mode, Middle channel								
5636.050	55.06	3.59	58.65	68.20	-9.55	300	162	peak
5686.800	54.99	3.67	58.66	95.43	-36.77	300	214	peak
5714.800	55.50	3.72	59.22	109.34	-50.12	300	181	peak
5722.500	54.50	3.73	58.23	116.50	-58.27	300	170	peak
5785.000	103.04	3.91	106.95	N/A	N/A	300	179	peak
5785.000	91.70	3.91	95.61	N/A	N/A	300	179	AVG
5851.650	54.28	3.96	58.24	118.44	-60.20	300	193	peak
5855.500	54.42	3.97	58.39	110.66	-52.27	300	193	peak
5905.550	55.13	4.15	59.28	82.59	-23.31	300	18	peak
5925.500	54.05	4.18	58.23	68.20	-9.97	300	331	peak
11570.000	39.21	14.33	53.54	74.00	-20.46	100	10	peak
11570.000	31.60	14.33	45.93	54.00	-8.07	100	10	AVG
ac20 Mode, High channel								
5631.500	53.90	3.57	57.47	68.20	-10.73	300	194	peak
5679.800	55.50	3.66	59.16	90.25	-31.09	300	214	peak
5718.300	55.98	3.73	59.71	110.32	-50.61	300	180	peak
5724.600	54.72	3.73	58.45	121.29	-62.84	300	197	peak
5825.000	101.85	3.96	105.81	N/A	N/A	300	174	peak
5825.000	90.04	3.96	94.00	N/A	N/A	300	174	AVG
5850.600	54.55	3.95	58.50	120.83	-62.33	300	51	peak
5871.600	55.22	4.03	59.25	106.15	-46.90	300	71	peak
5880.700	54.99	4.06	59.05	100.98	-41.93	300	103	peak
5926.900	55.20	4.18	59.38	68.20	-8.82	300	185	peak
11650.000	39.11	14.43	53.54	74.00	-20.46	100	140	peak
11650.000	29.87	14.43	44.30	54.00	-9.70	100	140	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5647.950	53.43	3.60	57.03	68.20	-11.17	180	359	peak
5664.750	53.60	3.64	57.24	79.12	-21.88	180	330	peak
5719.000	53.91	3.73	57.64	110.52	-52.88	180	311	peak
5722.500	53.49	3.73	57.22	116.50	-59.28	180	0	peak
5755.000	89.76	3.80	93.56	N/A	N/A	180	302	peak
5755.000	77.89	3.80	81.69	N/A	N/A	180	302	AVG
5854.450	54.13	3.97	58.10	112.05	-53.95	180	219	peak
5874.750	54.51	4.04	58.55	105.27	-46.72	180	189	peak
5880.350	55.04	4.06	59.10	101.24	-42.14	180	338	peak
5928.650	54.48	4.18	58.66	68.20	-9.54	180	122	peak
11510.000	37.22	14.36	51.58	74.00	-22.42	100	123	peak
11510.000	26.94	14.36	41.30	54.00	-12.70	100	123	AVG
ac40 Mode, High channel								
5640.600	53.16	3.59	56.75	68.20	-11.45	180	149	peak
5677.000	53.69	3.65	57.34	88.18	-30.84	180	351	peak
5700.100	54.07	3.70	57.77	105.23	-47.46	180	311	peak
5722.150	53.24	3.73	56.97	115.70	-58.73	180	49	peak
5795.000	91.99	3.95	95.94	N/A	N/A	180	302	peak
5795.000	79.65	3.95	83.60	N/A	N/A	180	302	AVG
5851.650	54.43	3.96	58.39	118.44	-60.05	180	12	peak
5873.000	54.74	4.04	58.78	105.76	-46.98	180	224	peak
5901.350	55.26	4.14	59.40	85.70	-26.30	180	83	peak
5945.450	54.37	4.22	58.59	68.20	-9.61	180	136	peak
11590.000	35.02	14.32	49.34	74.00	-24.66	100	140	peak
11590.000	26.95	14.32	41.27	54.00	-12.73	100	140	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac40 Mode, Low channel								
5644.450	54.82	3.60	58.42	68.20	-9.78	300	50	peak
5680.150	54.29	3.66	57.95	90.51	-32.56	300	179	peak
5719.000	58.20	3.73	61.93	110.52	-48.59	300	213	peak
5721.450	58.18	3.73	61.91	114.11	-52.20	300	154	peak
5755.000	99.77	3.80	103.57	N/A	N/A	300	191	peak
5755.000	87.56	3.80	91.36	N/A	N/A	300	191	AVG
5852.350	54.43	3.96	58.39	116.84	-58.45	300	211	peak
5868.800	54.80	4.03	58.83	106.94	-48.11	300	211	peak
5900.300	54.87	4.14	59.01	86.48	-27.47	300	122	peak
5936.700	54.20	4.20	58.40	68.20	-9.80	300	325	peak
11510.000	37.64	14.36	52.00	74.00	-22.00	100	224	peak
11510.000	29.50	14.36	43.86	54.00	-10.14	100	224	AVG
ac40 Mode, High channel								
5633.600	54.46	3.58	58.04	68.20	-10.16	300	188	peak
5667.200	55.68	3.64	59.32	80.93	-21.61	300	301	peak
5707.100	54.38	3.70	58.08	107.19	-49.11	300	162	peak
5722.850	54.35	3.73	58.08	117.30	-59.22	300	188	peak
5795.000	99.40	3.95	103.35	N/A	N/A	300	195	peak
5795.000	87.89	3.95	91.84	N/A	N/A	300	195	AVG
5853.400	54.31	3.97	58.28	114.45	-56.17	300	66	peak
5862.850	54.80	4.00	58.80	108.60	-49.80	300	131	peak
5888.050	55.12	4.10	59.22	95.54	-36.32	300	54	peak
5935.650	54.38	4.20	58.58	68.20	-9.62	300	252	peak
11590.000	37.10	14.32	51.42	74.00	-22.58	100	330	peak
11590.000	27.89	14.32	42.21	54.00	-11.79	100	330	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

Horizontal

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5632.550	53.33	3.57	56.90	68.20	-11.30	180	170	peak
5661.950	53.82	3.62	57.44	77.04	-19.60	180	304	peak
5717.950	54.62	3.73	58.35	110.23	-51.88	180	312	peak
5723.550	54.73	3.73	58.46	118.89	-60.43	180	289	peak
5775.000	88.10	3.88	91.98	N/A	N/A	180	304	peak
5775.000	78.73	3.88	82.61	N/A	N/A	180	304	AVG
5853.750	54.89	3.97	58.86	113.65	-54.79	180	125	peak
5873.350	54.85	4.04	58.89	105.66	-46.77	180	226	peak
5892.250	54.56	4.10	58.66	92.44	-33.78	180	245	peak
5945.450	54.18	4.22	58.40	68.20	-9.80	180	233	peak
11550.000	33.95	14.34	48.29	74.00	-25.71	100	138	peak
11550.000	24.29	14.34	38.63	54.00	-15.37	100	138	AVG

Vertical

Frequency (MHz)	Reading (dBµV)	Correct Factor(dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
ac80 Mode, Low channel								
5632.550	61.05	3.57	64.62	68.20	-3.58	300	214	peak
5696.600	63.76	3.69	67.45	102.68	-35.23	300	178	peak
5718.300	63.92	3.73	67.65	110.32	-42.67	300	171	peak
5721.450	62.97	3.73	66.70	114.11	-47.41	300	214	peak
5775.000	98.29	3.88	102.17	N/A	N/A	300	196	peak
5775.000	88.23	3.88	92.11	N/A	N/A	300	196	AVG
5854.800	57.62	3.97	61.59	111.26	-49.67	300	199	peak
5856.200	56.94	3.97	60.91	110.46	-49.55	300	173	peak
5880.350	59.03	4.06	63.09	101.24	-38.15	300	67	peak
5927.600	56.22	4.18	60.40	68.20	-7.80	300	165	peak
11550.000	37.47	14.34	51.81	74.00	-22.19	100	11	peak
11550.000	28.39	14.34	42.73	54.00	-11.27	100	11	AVG

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported.

9 FCC §15.407(a)(e) – Emission Bandwidth And Occupied Bandwidth

9.1 Applicable Standard

As per FCC §15.407(a): The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

As per FCC §15.407(e): for equipment operating in the band 5725 – 5850 MHz, the minimum 6 dB bandwidth of U-NII devices shall be 500 kHz.

9.2 Test Procedure

As per 789033 D02 General U-NII Test Procedures New Rules v02r01

Emission Bandwidth (EBW)

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Occupied Bandwidth

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99% occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in II.G.3.d). Measurements of 99% occupied bandwidth may also optionally be used in lieu of the EBW to define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW

5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

9.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	1010 hPa

The testing was performed by Tom Hsu from 2019-02-21 to 2019-03-04.

9.4 Test Results

Test mode: Transmitting

<UNII-1>

Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)				99% Emission Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
802.11a	36	5180	20.32	20.19	20.19	20.32	17.56	17.56	17.56	17.56
	40	5200	20.26	20.13	20.13	20.26	17.56	17.56	17.56	17.63
	48	5240	20.19	20.06	20.13	20.32	17.63	17.56	17.56	17.63
802.11ac20	36	5180	20.39	20.39	20.45	20.39	17.56	17.56	17.69	17.69
	40	5200	20.26	20.39	20.39	20.32	17.56	17.63	17.69	17.69
	48	5240	20.19	20.32	20.32	20.39	17.56	17.63	17.69	17.69
802.11ac 40	38	5190	41.28	40.77	40.39	40	36.15	36.15	36.03	36.15
	46	5230	41.28	40.39	40.64	40.13	36.28	36.15	36.03	36.03
802.11ac 80	42	5210	81.28	80.77	81.28	80.77	75.13	75.39	75.13	75.13

< UNII-2A Band II >

Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)				99% Emission Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
802.11a	52	5260	20.26	20.13	20.19	20.32	17.56	17.56	17.56	17.63
	60	5300	20.32	20.06	20.13	20.26	17.63	17.56	17.56	17.69
	64	5320	20.26	20	20.19	20.32	17.56	17.56	17.56	17.56
802.11ac20	52	5260	20.39	20.32	20.39	20.32	17.63	17.63	17.69	17.69
	60	5300	20.26	20.26	20.32	20.32	17.63	17.69	17.69	17.69
	64	5320	20.32	20.32	20.45	20.39	17.56	17.63	17.69	17.63
802.11ac 40	54	5270	40.9	40.64	40.26	40.13	36.28	36.15	35.9	36.03
	62	5310	41.41	40.64	40.9	40.13	36.28	36.15	35.9	36.03
802.11ac 80	58	5290	81.28	80.77	80.51	80.77	75.13	75.13	74.87	75.13

< UNII-2C Band III >

Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)				99% Emission Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
802.11a	100	5500	20.32	20.06	20.06	20.64	17.56	17.56	17.56	17.69
	116	5580	20.39	20	20.06	20.51	17.63	17.56	17.56	17.63
	140	5700	20.06	20.13	20.19	21.67	17.56	17.56	18.27	18.08
802.11ac20	100	5500	20.32	20.32	20.39	20.39	17.56	17.63	17.69	17.69
	116	5580	20.26	20.39	20.39	20.45	17.56	17.63	17.63	17.63
	140	5700	20.32	20.32	20.39	20.26	17.69	17.63	17.69	17.69
802.11ac 40	102	5510	41.28	40.64	40.51	40.26	36.28	36.15	36.03	36.03
	118	5590	41.41	40.64	40.39	40.13	36.28	36.15	36.03	35.9
	134	5670	41.03	40.51	40.26	40.13	36.28	36.15	35.9	36.03
802.11ac 80	106	5530	81.28	80.51	81.03	81.03	75.13	75.13	75.13	75.13
	122	5610	81.54	80.51	80.51	81.03	75.13	75.39	75.13	75.13

< UNII-3 Band IV >

Mode	Channel	Frequency (MHz)	6dB Emission Bandwidth (MHz)				99% Emission Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
802.11a	149	5745	15.13	16.28	16.28	15.96	17.69	17.56	17.5	17.63
	157	5785	15.13	16.6	15.71	15.13	17.69	17.56	17.56	17.63
	165	5825	15.13	15.96	15.64	15.71	17.69	17.56	17.5	17.56
802.11ac20	149	5745	15.13	15.71	15.71	15.96	17.63	17.63	17.69	17.69
	157	5785	15.13	15.71	15.71	15.13	17.63	17.63	17.69	17.63
	165	5825	15.13	16.09	15.71	15.45	17.63	17.63	17.63	17.63
802.11ac 40	151	5755	35.13	35.13	35.13	35.13	36.28	36.03	36.03	36.03
	159	5795	35.13	35.13	35.13	35.13	36.28	36.28	36.15	36.15
802.11ac 80	155	5775	75.39	75.13	75.13	75.39	75.39	75.13	75.13	75.13

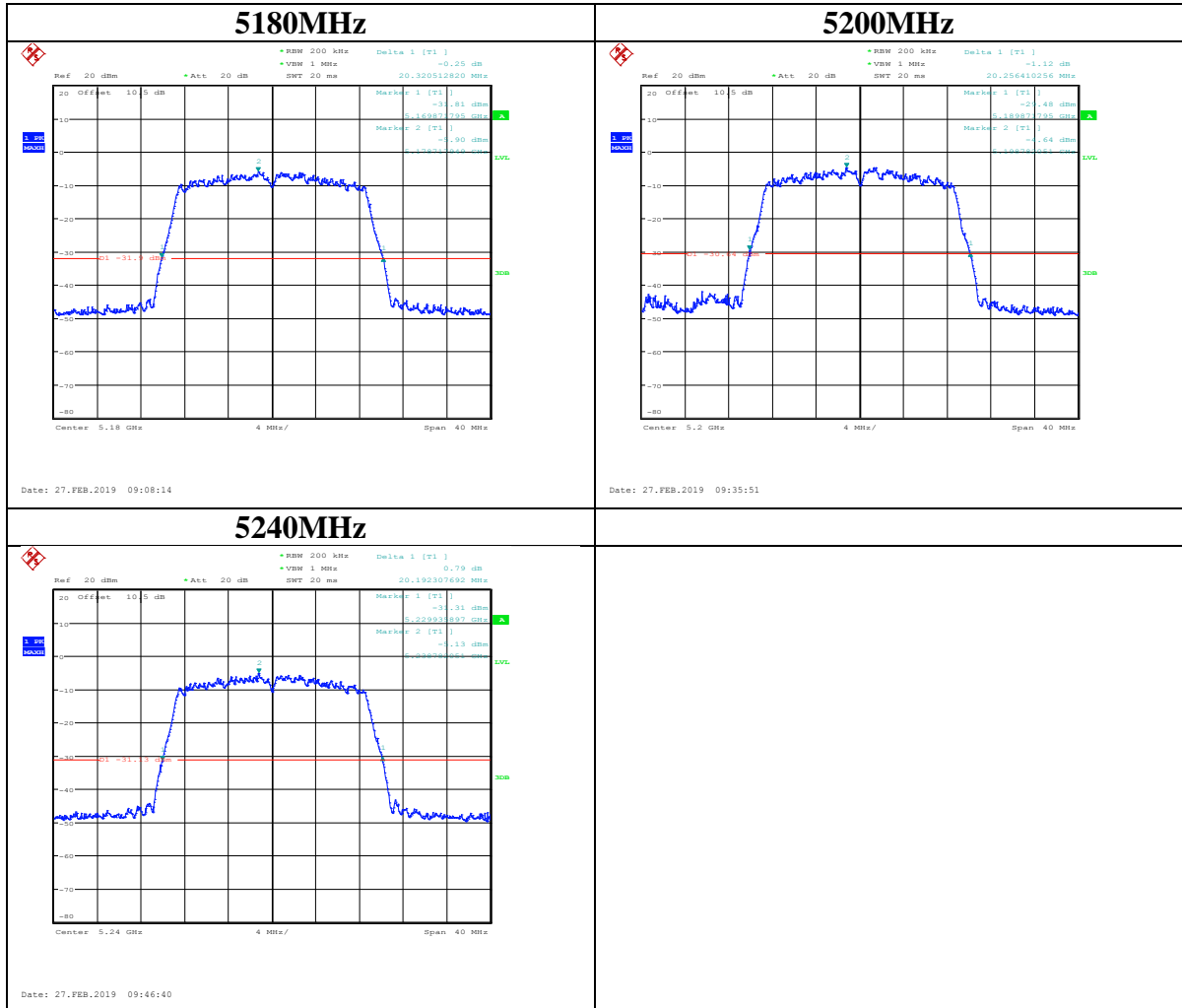
Please refer to the following plots

Transmitting Mode:

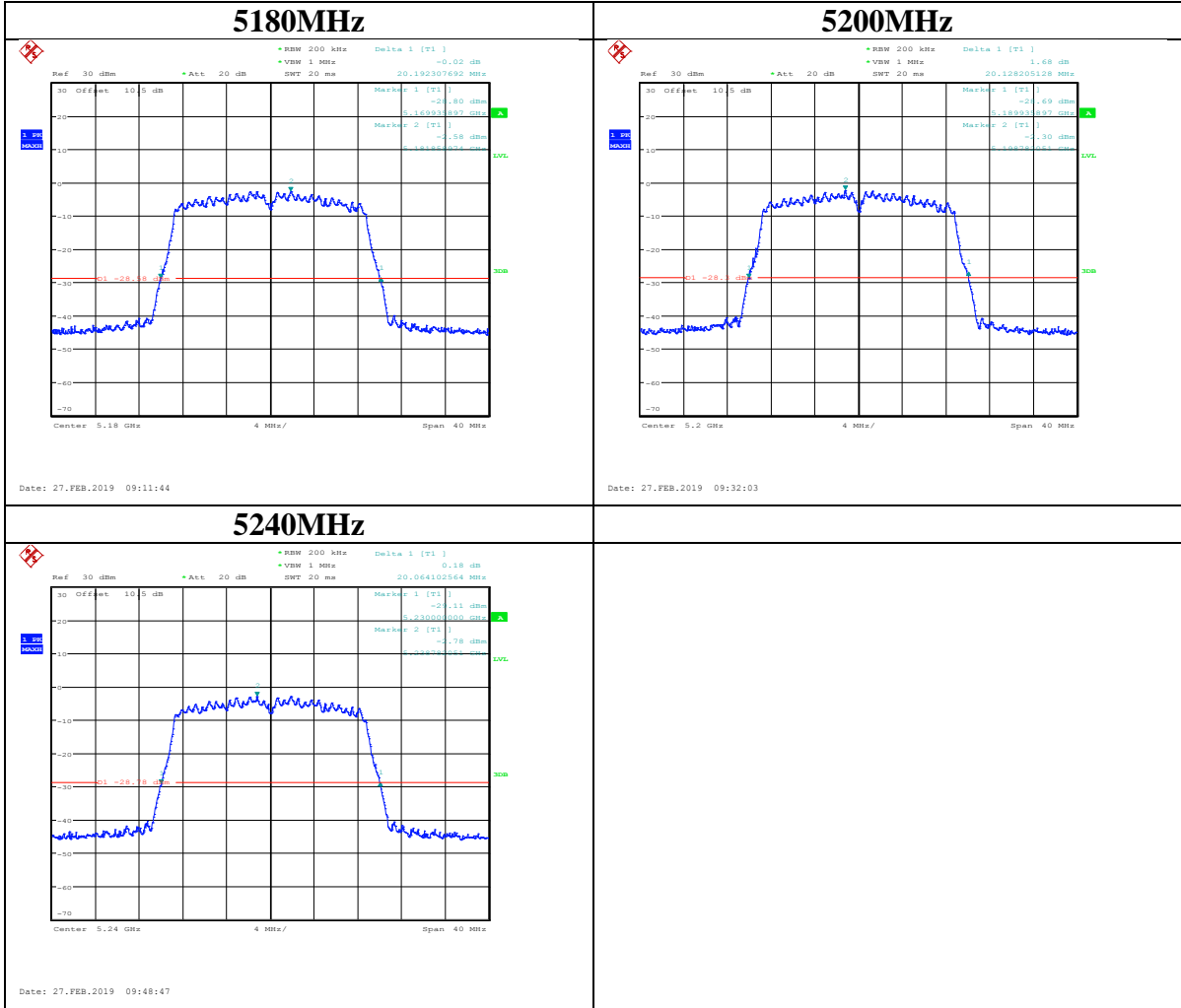
UNII-1 Band I / BW 26dBc

IEEE 802.11a Mode / 5150 ~ 5250MHz

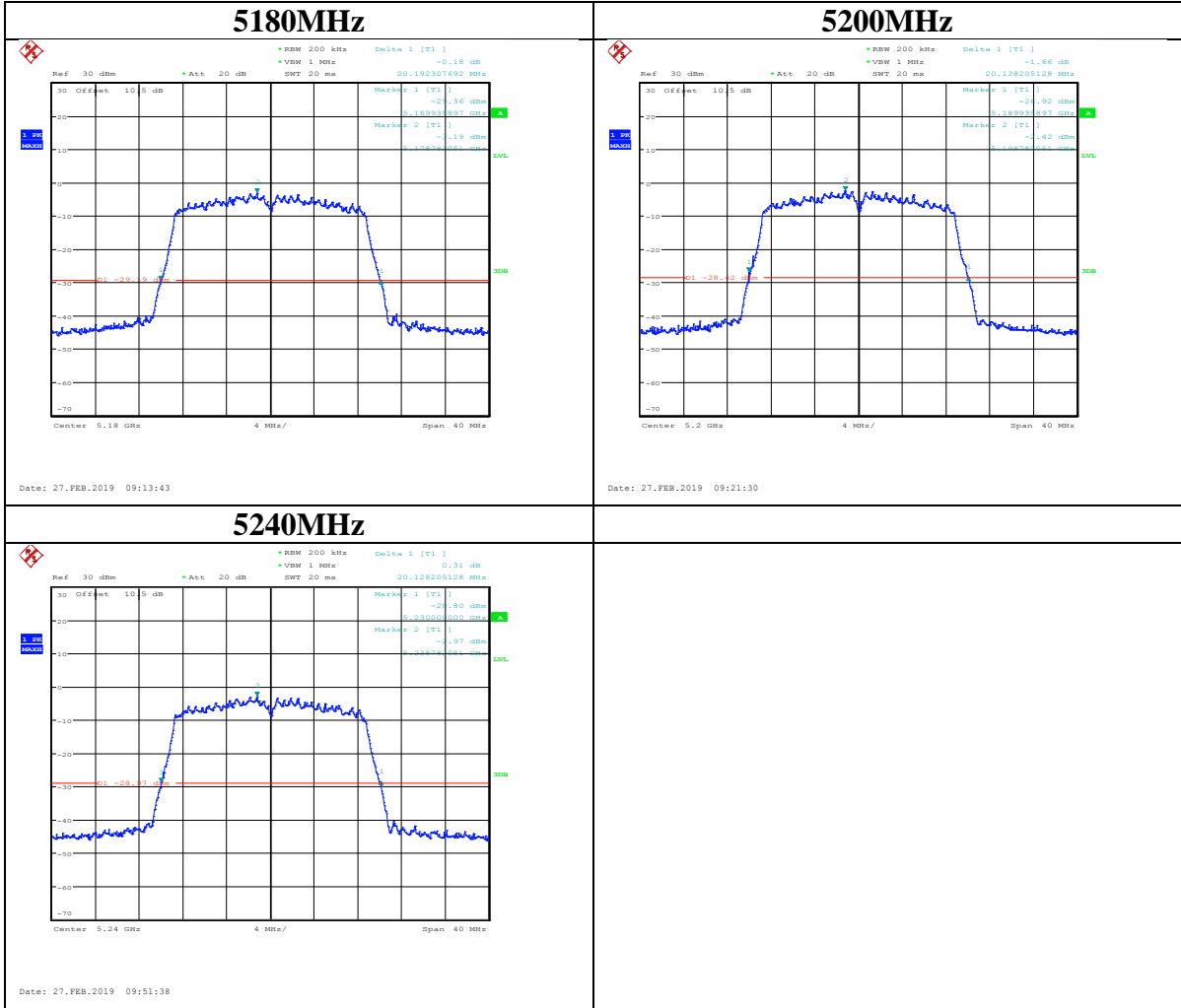
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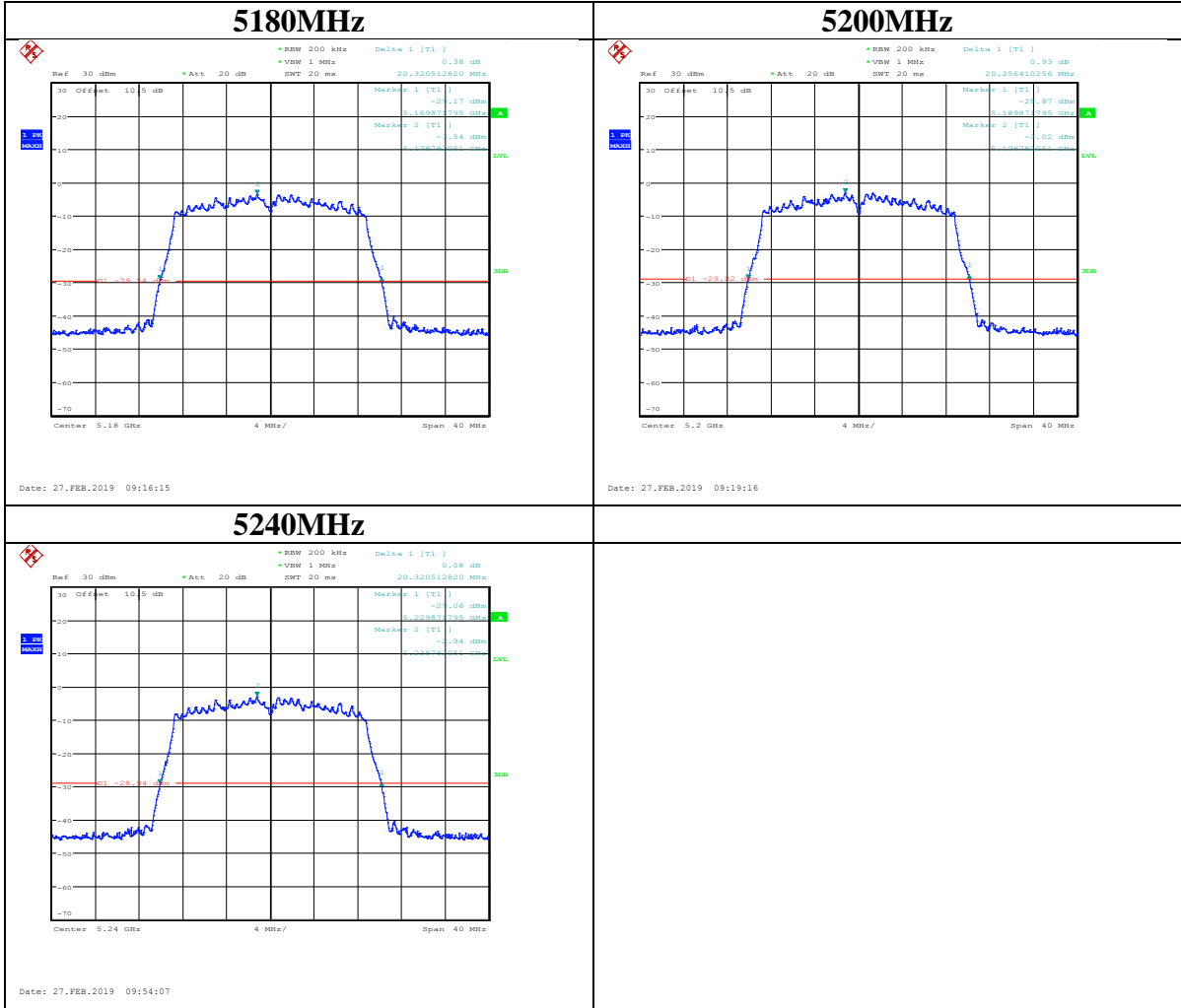
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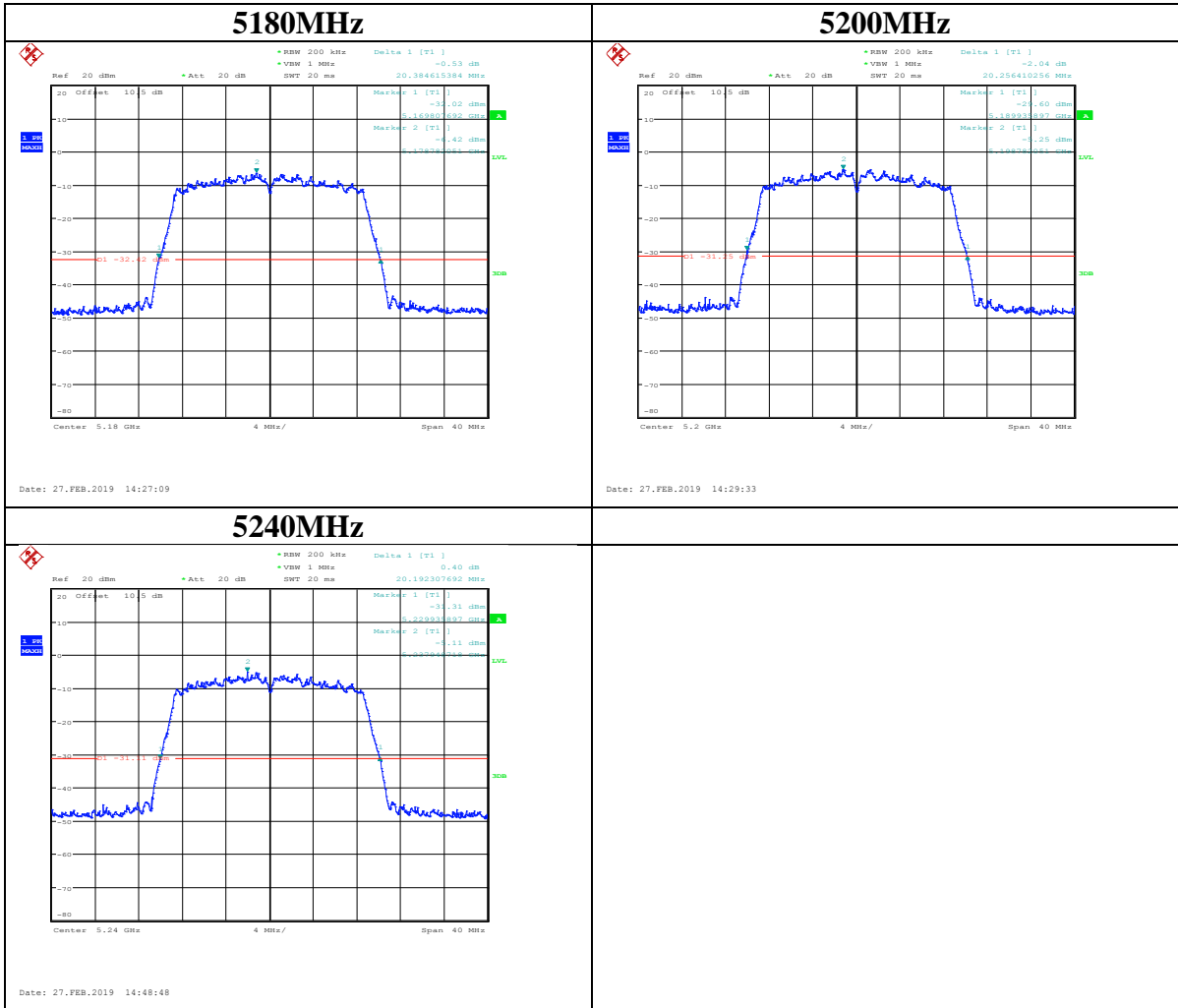
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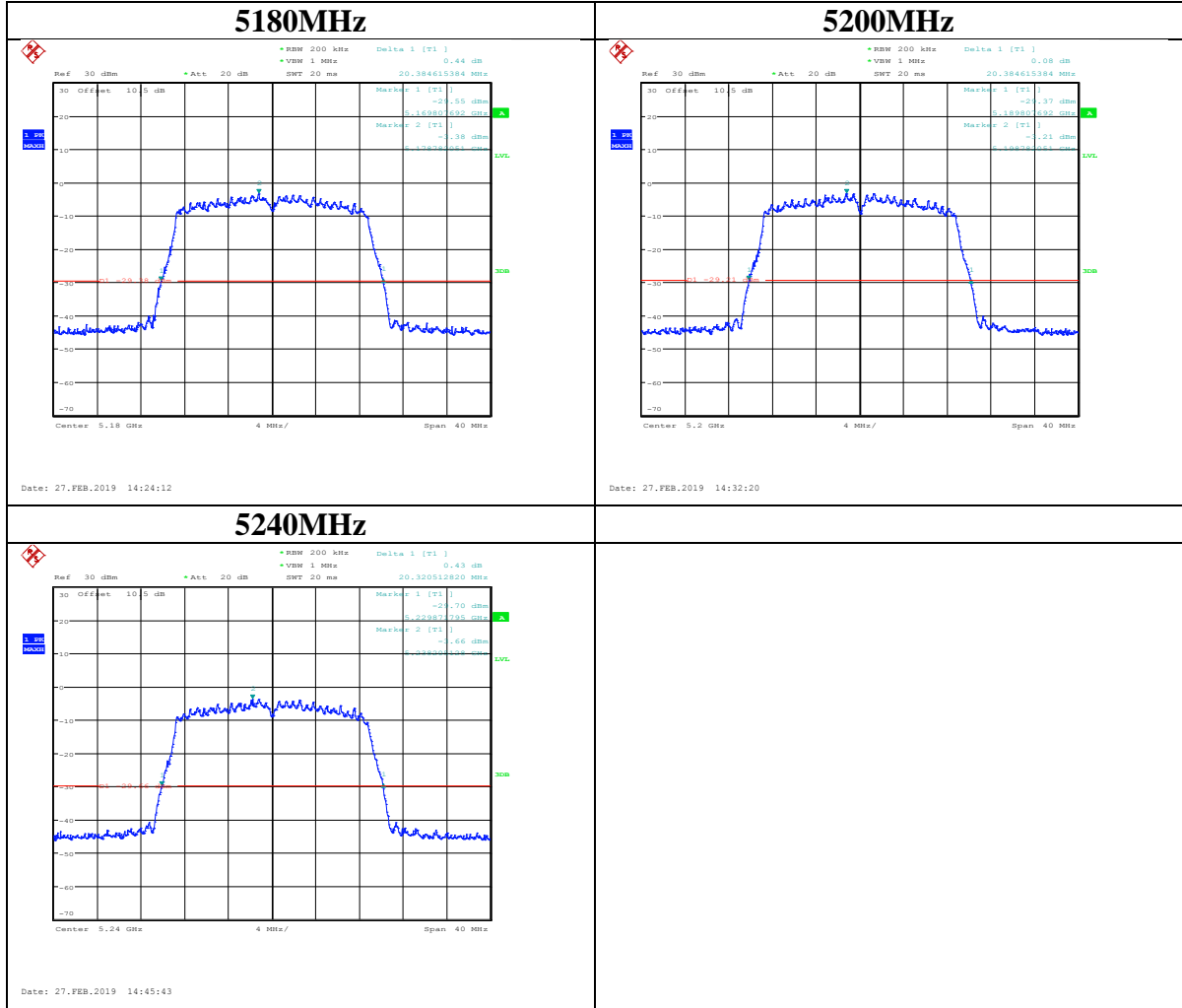
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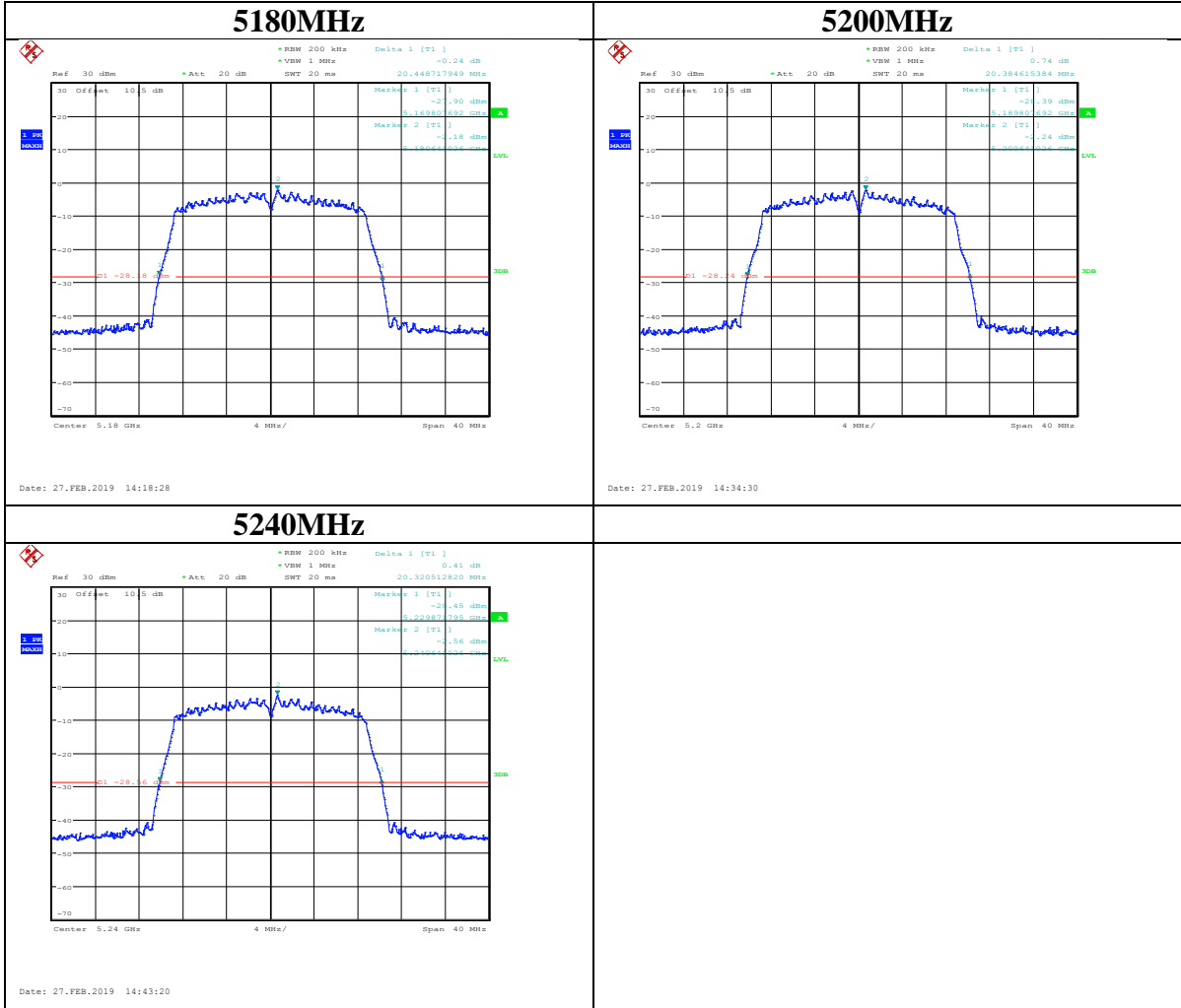
IEEE 802.11ac VHT20 Mode / 5150 ~ 5250MHz
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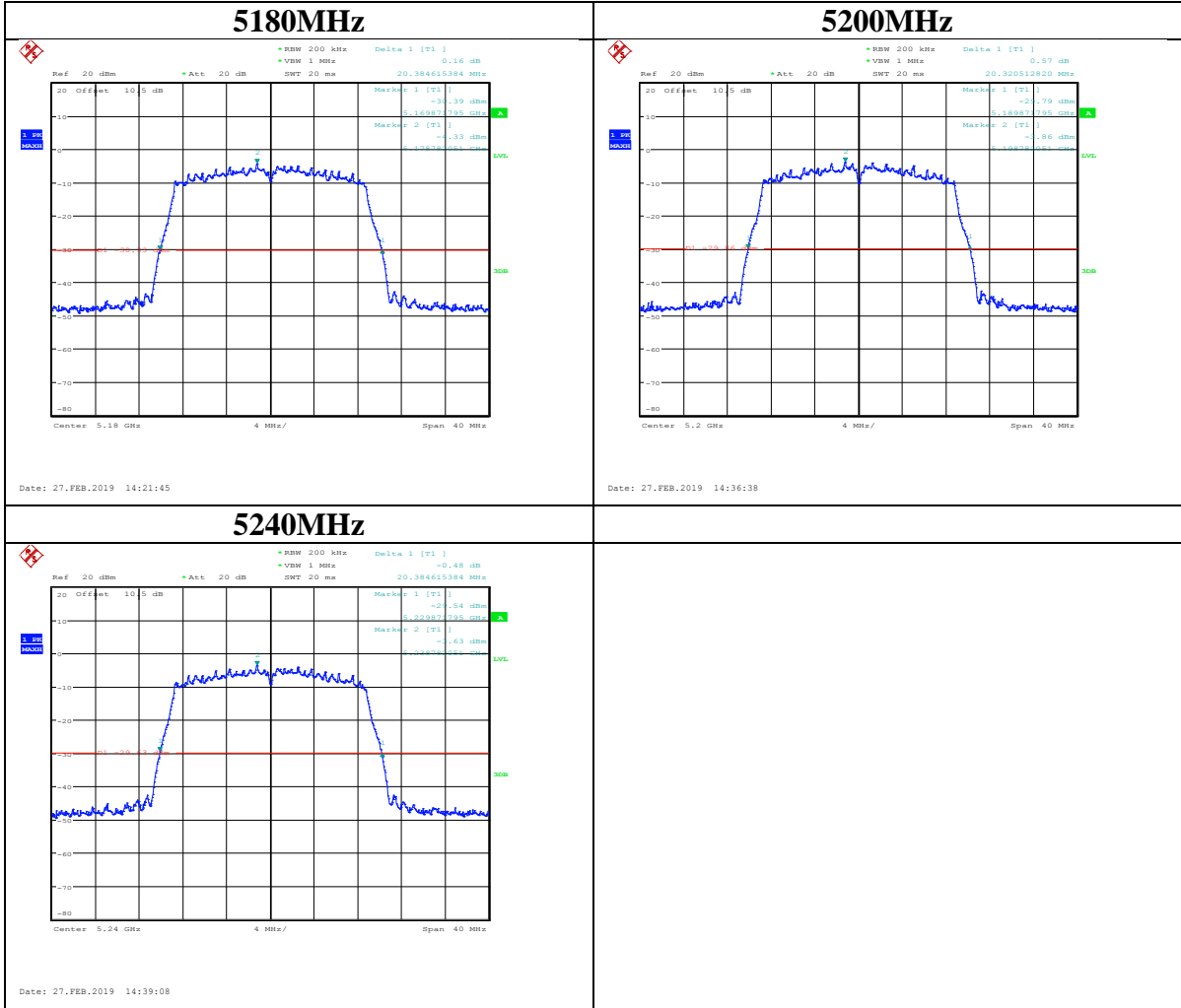
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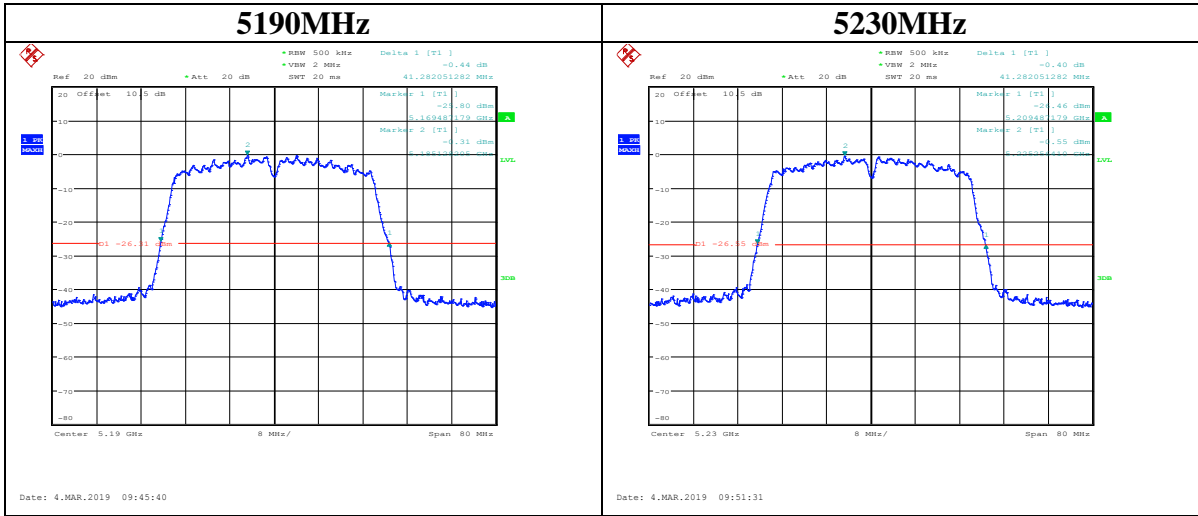
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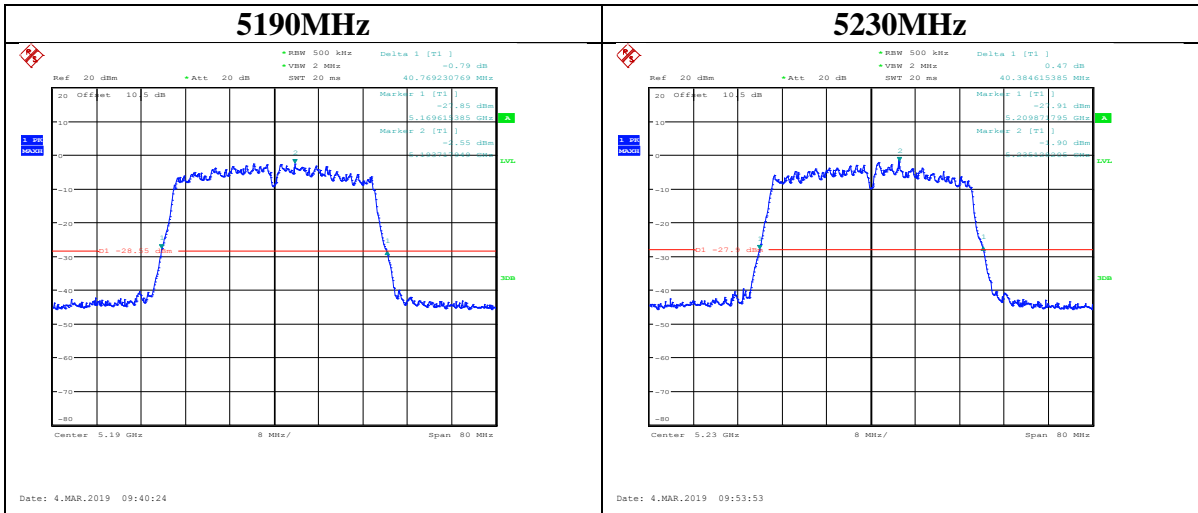
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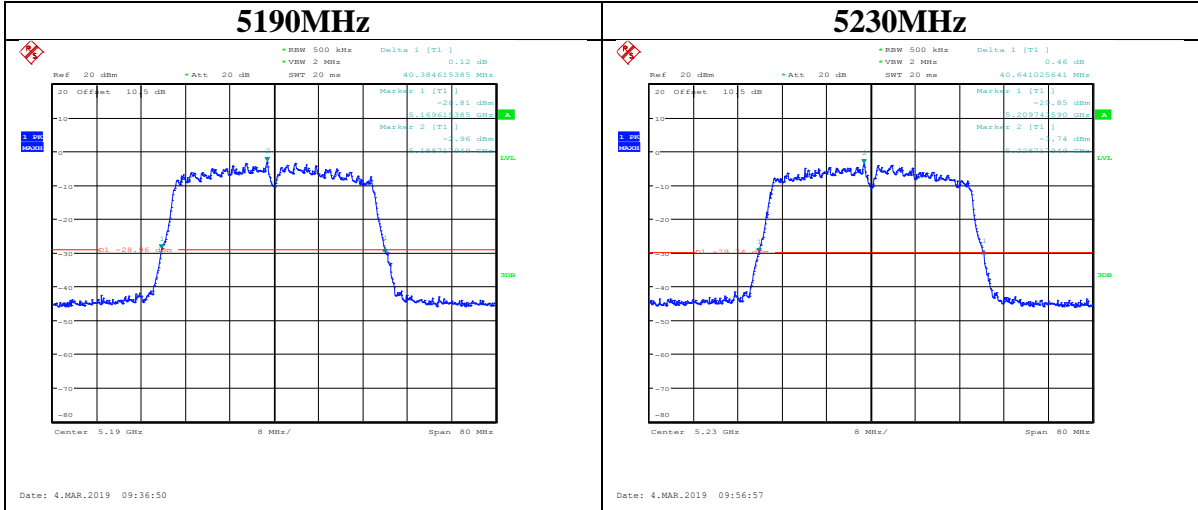
IEEE 802.11ac VHT40 Mode / 5150 ~ 5250MHz
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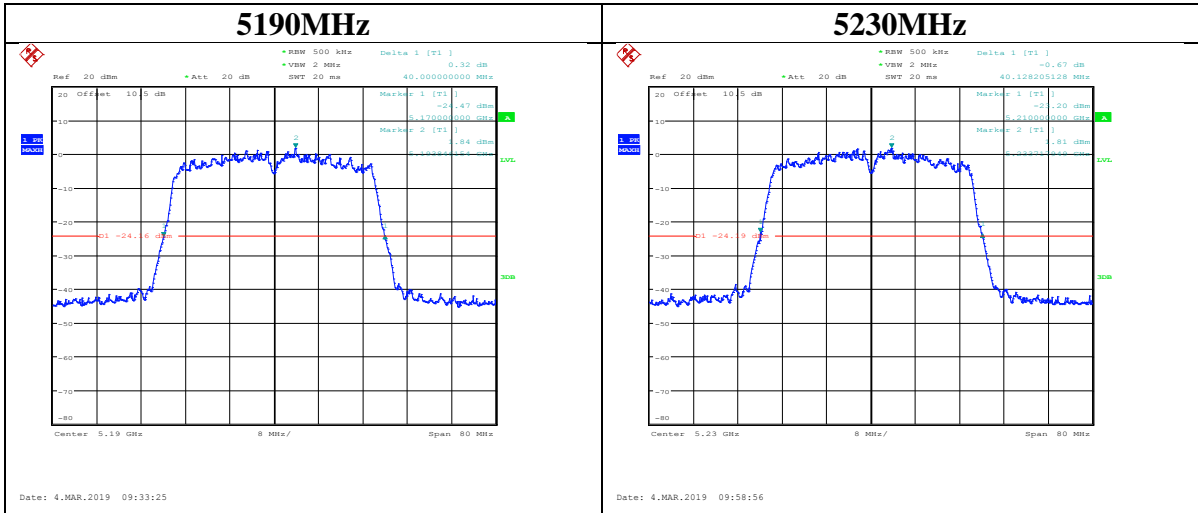
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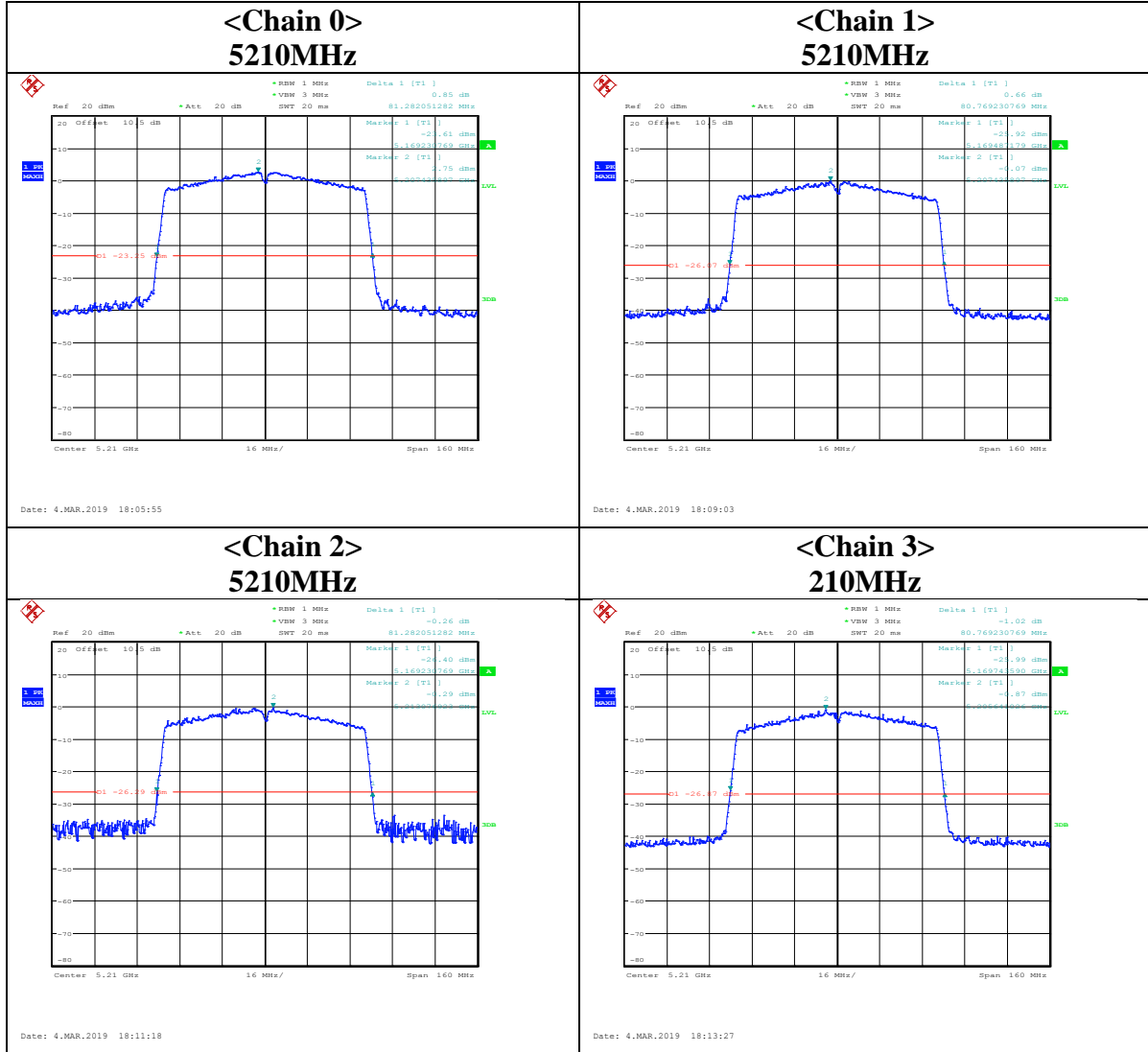
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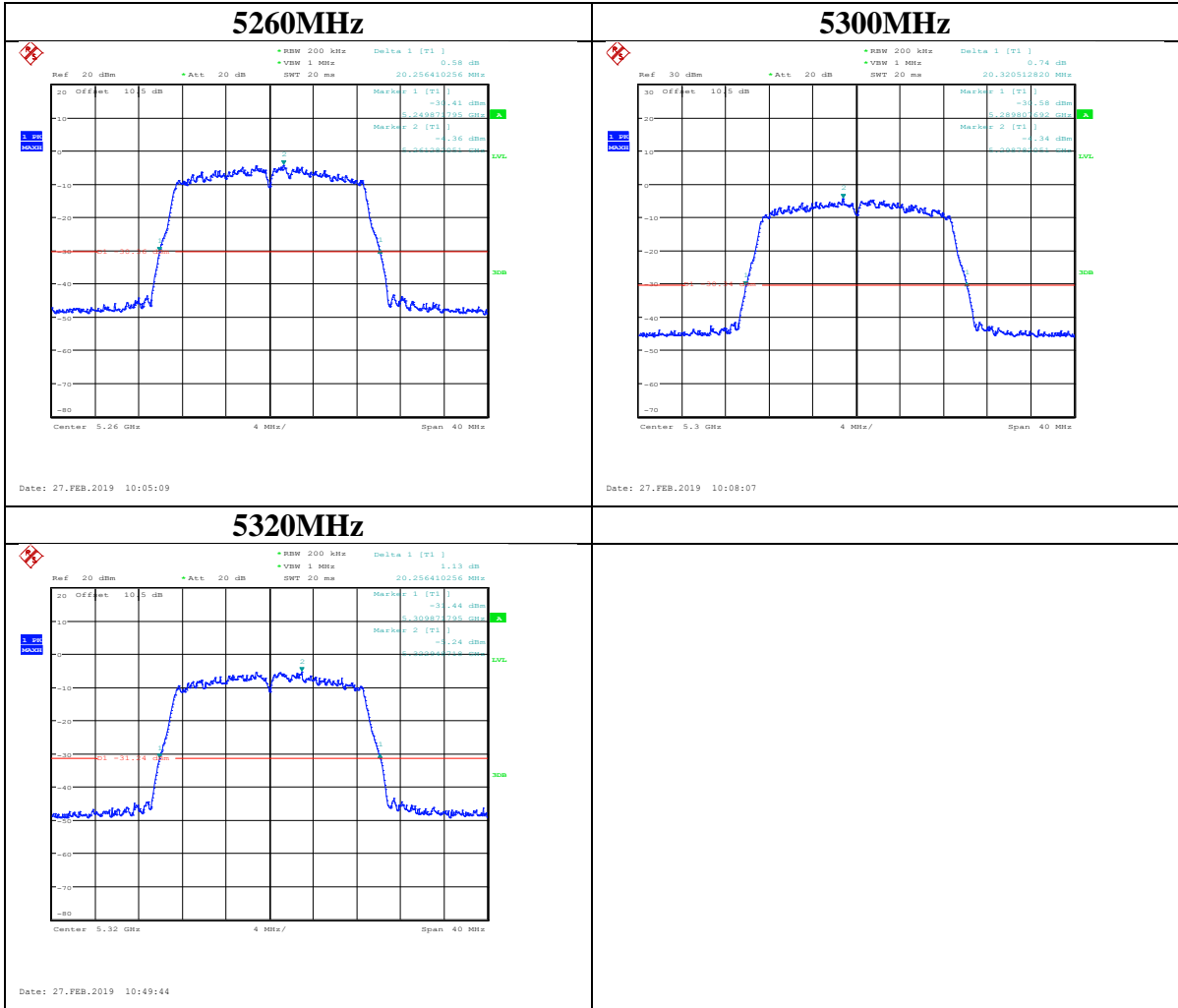


IEEE 802.11ac VHT80 Mode / 5150 ~ 5250MHz

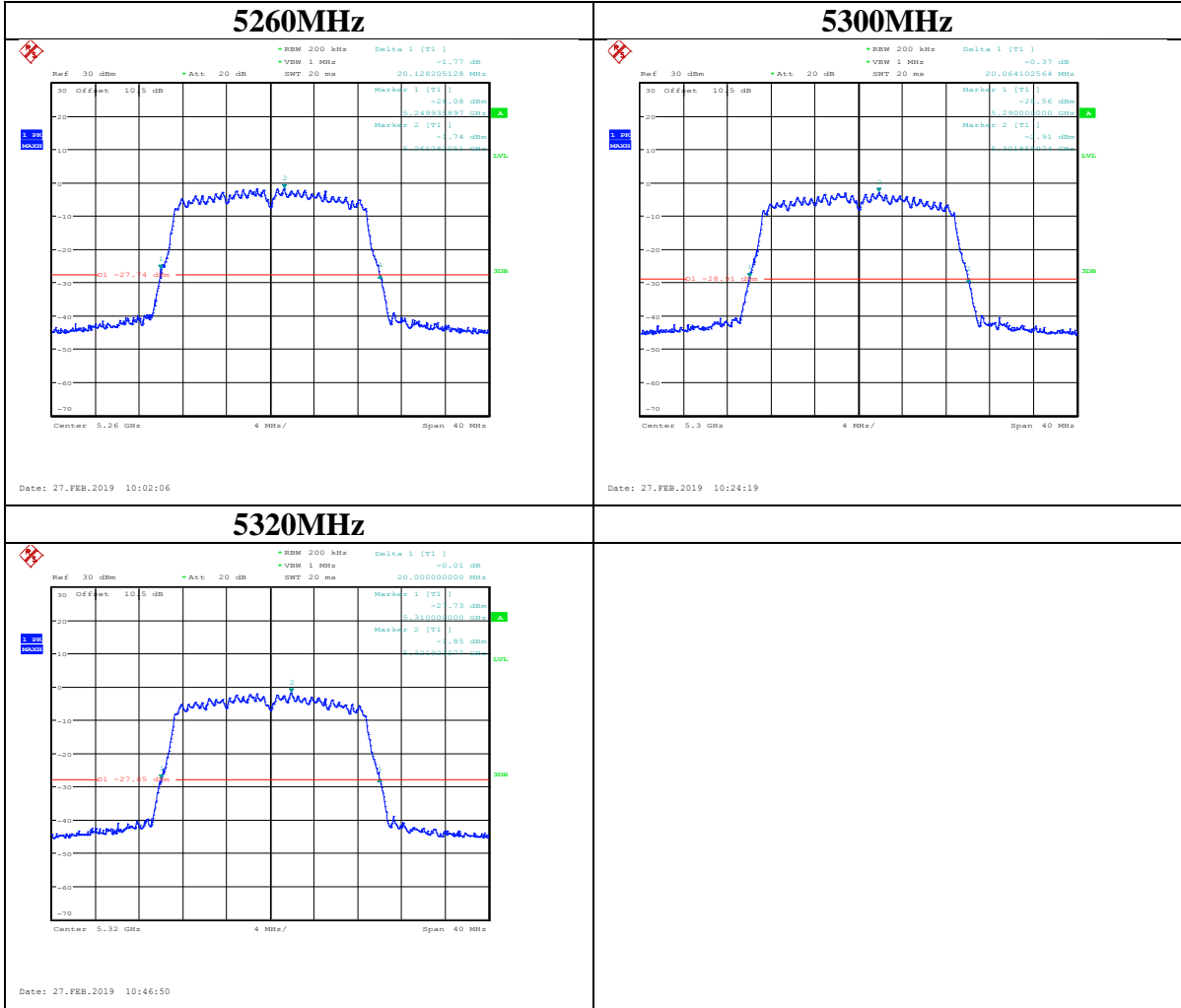


UNII-2A Band II / BW 26dBc
IEEE 802.11a Mode / 5250 ~ 5350MHz

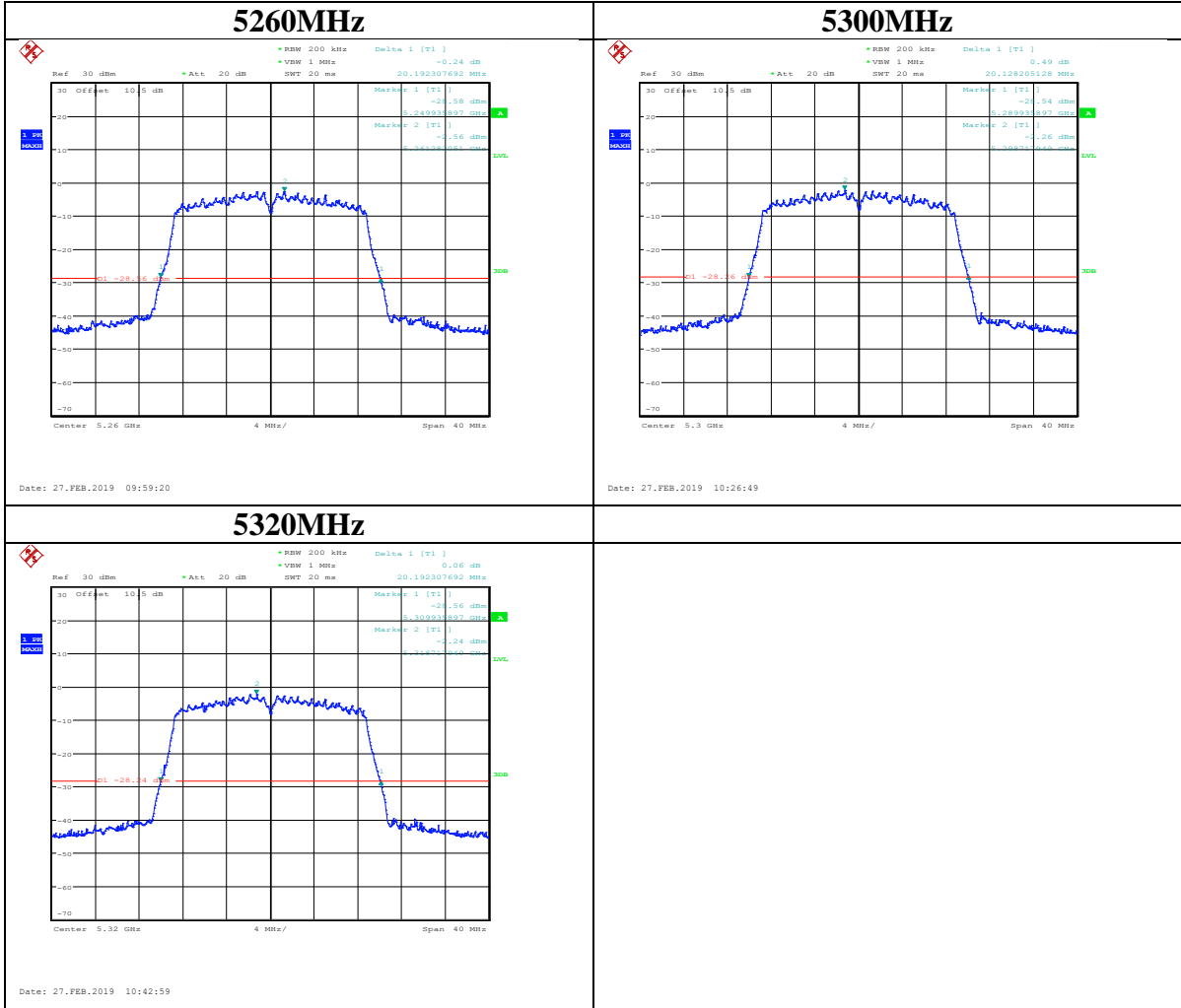
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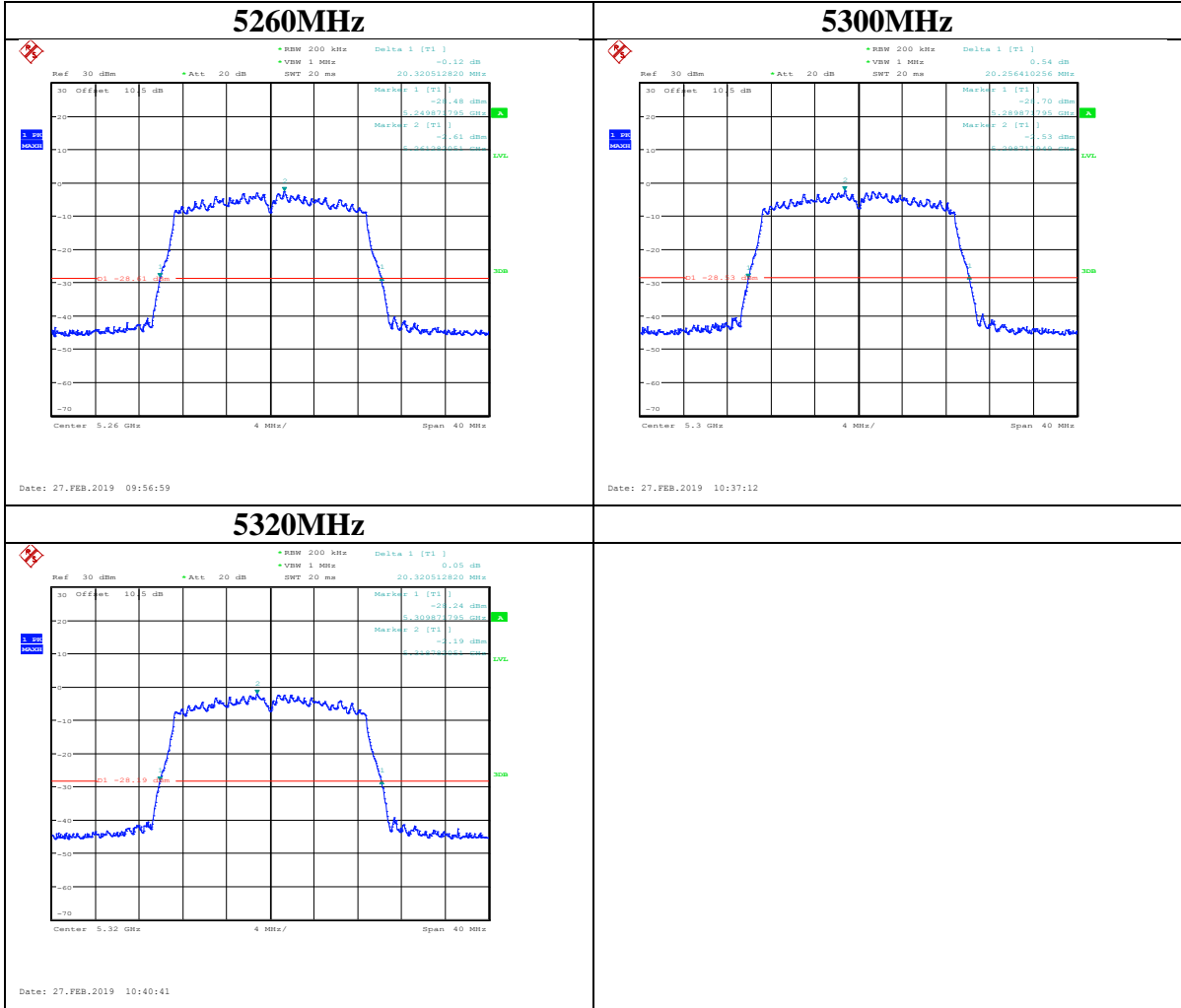
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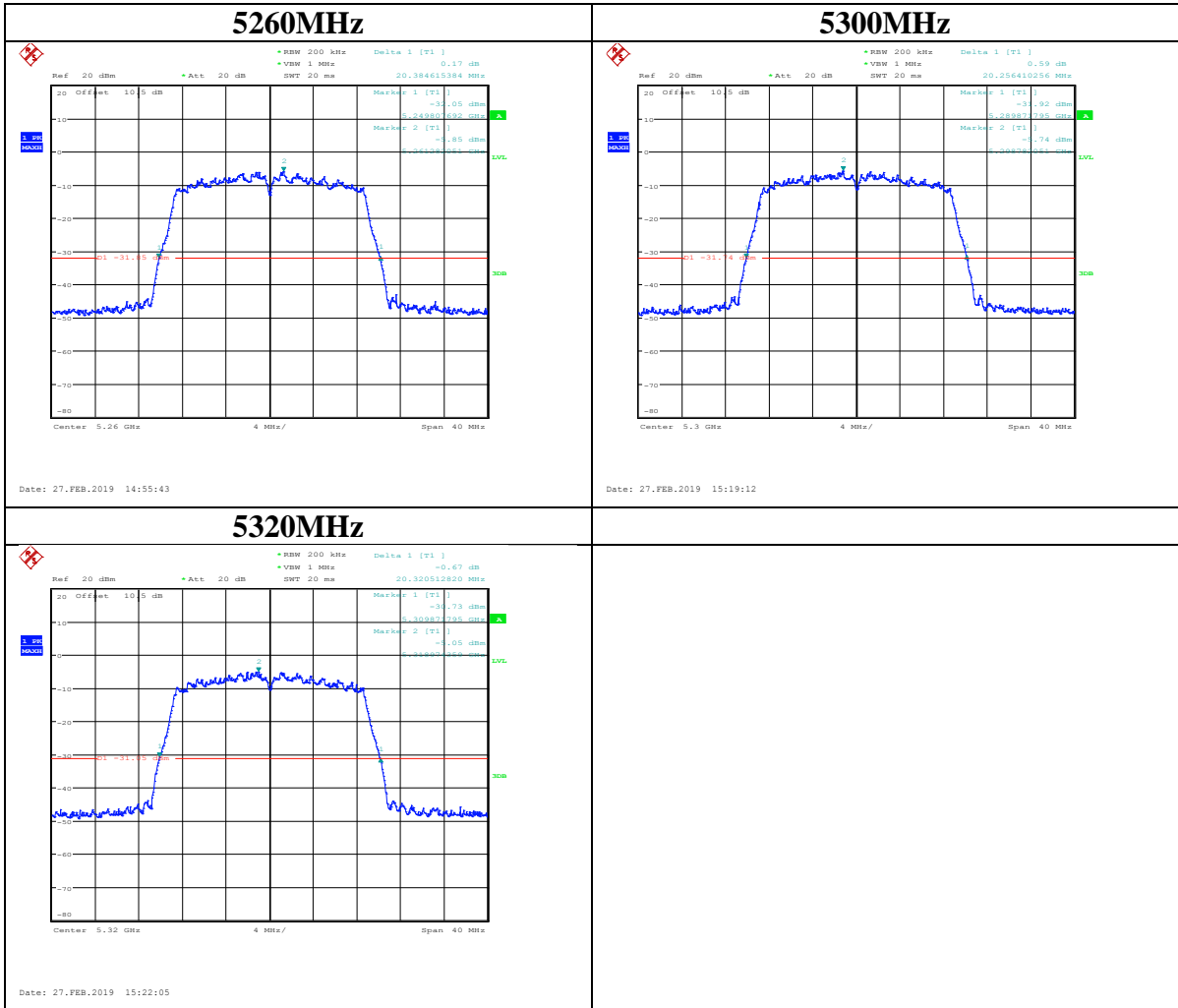
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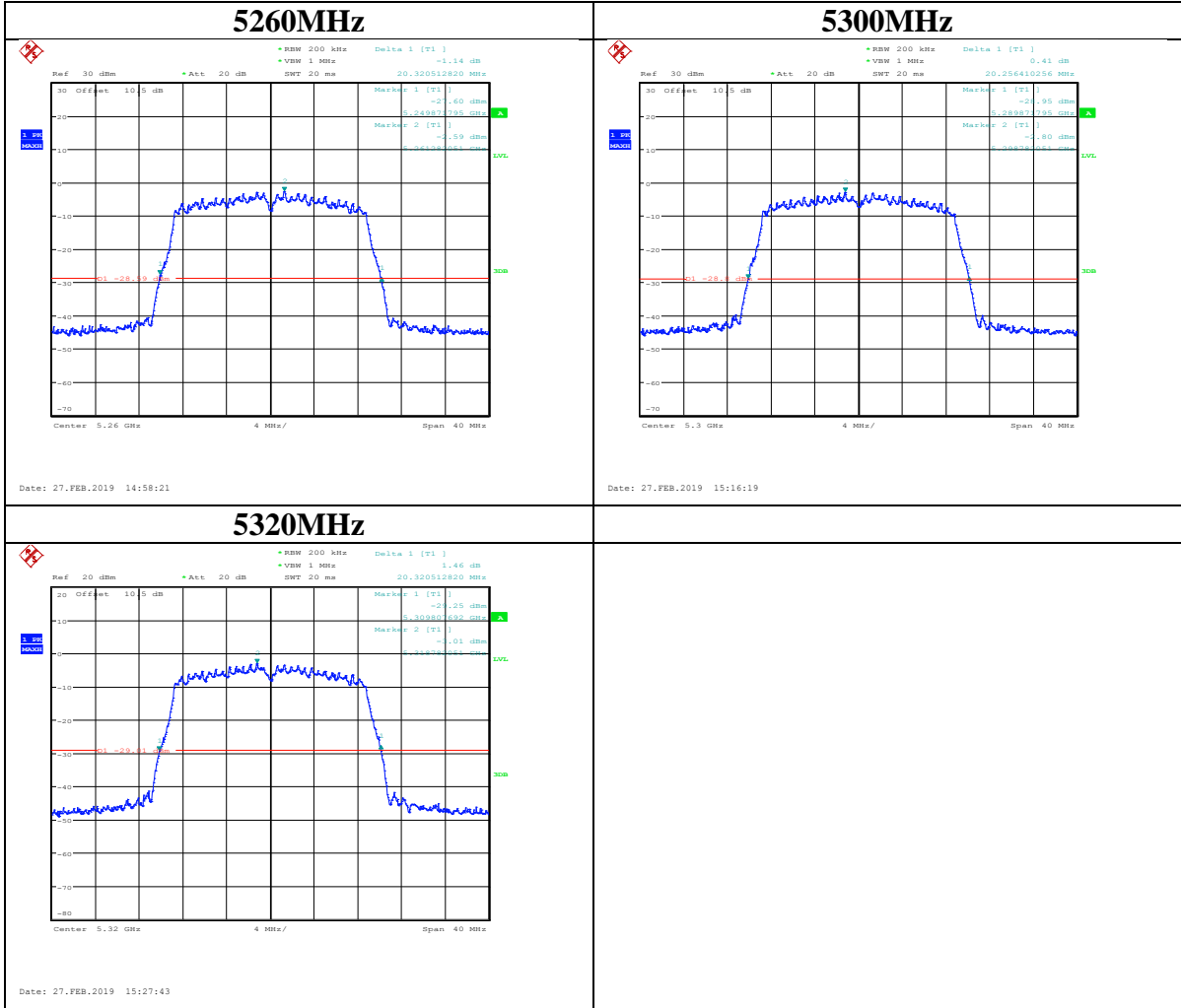
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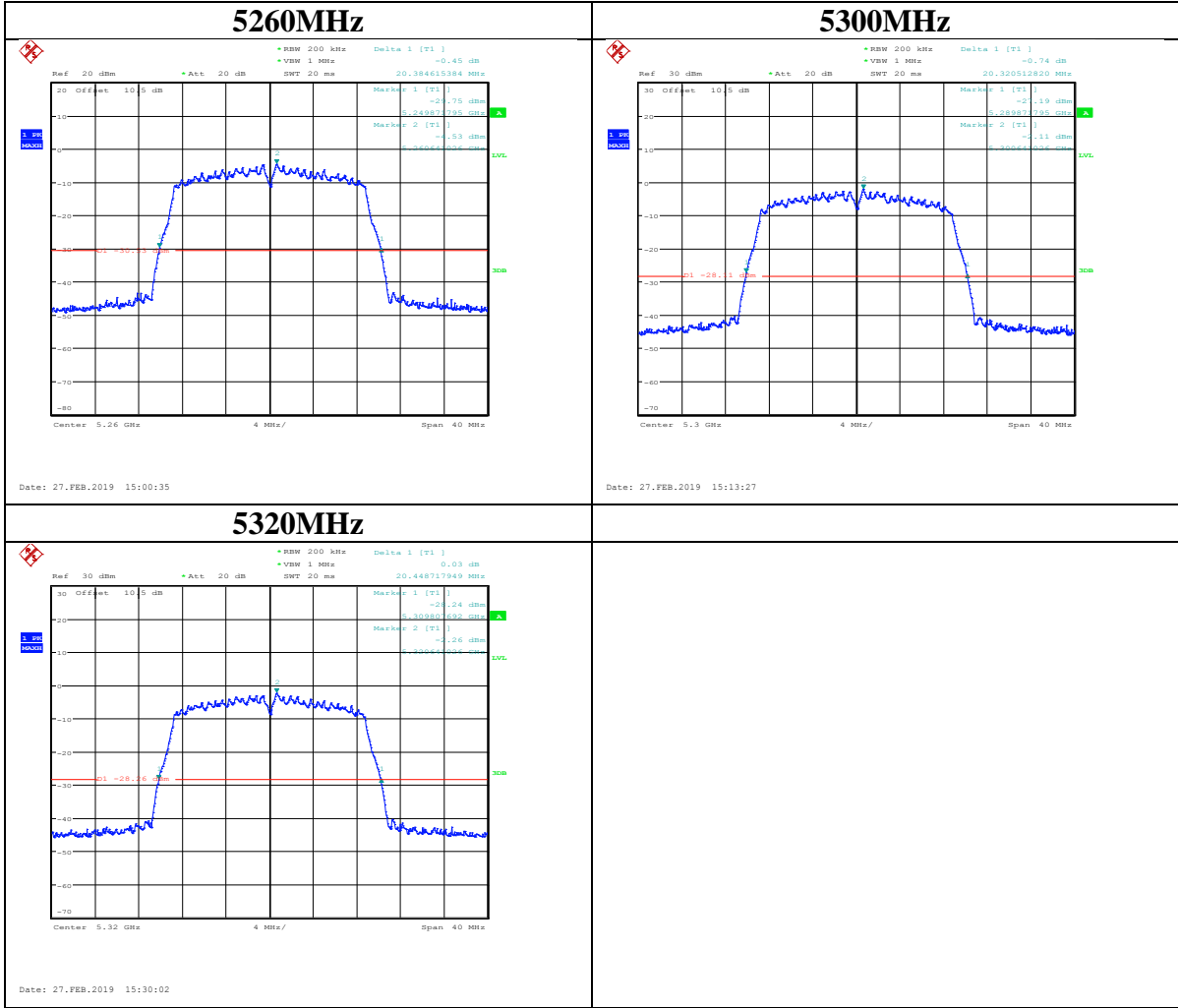
IEEE 802.11ac VHT20 Mode / 5250 ~ 5350MHz
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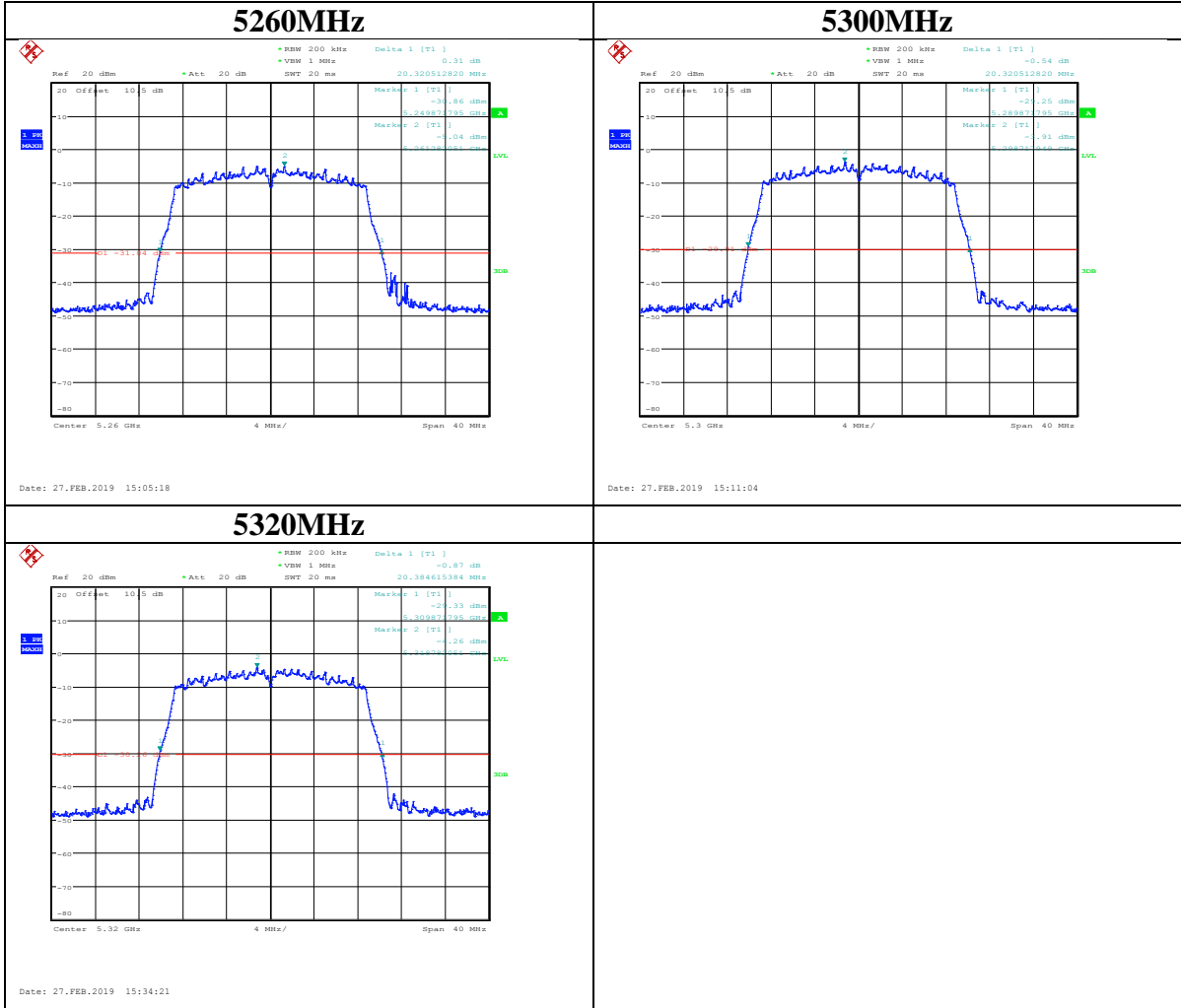
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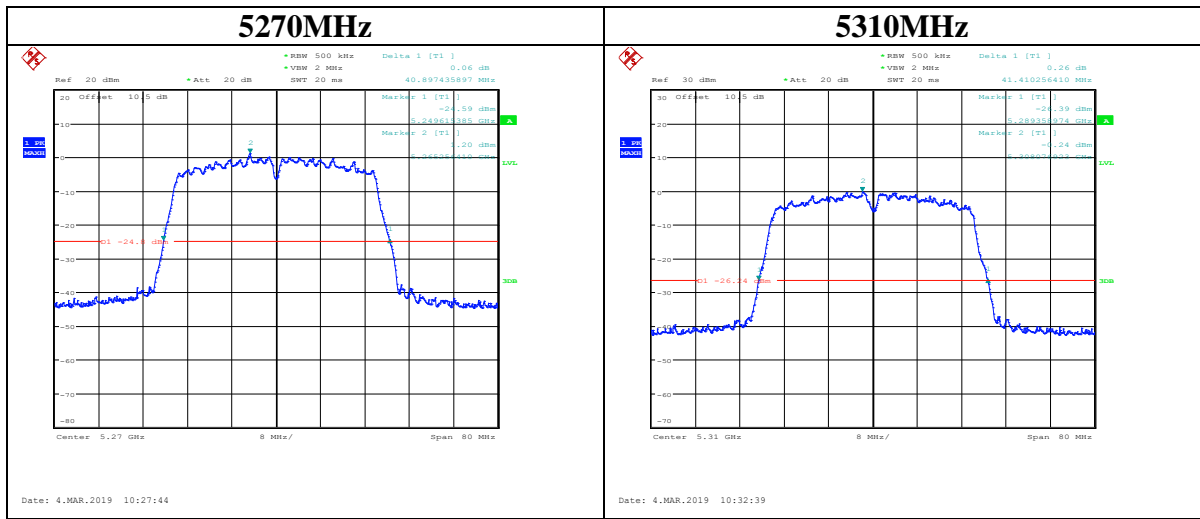
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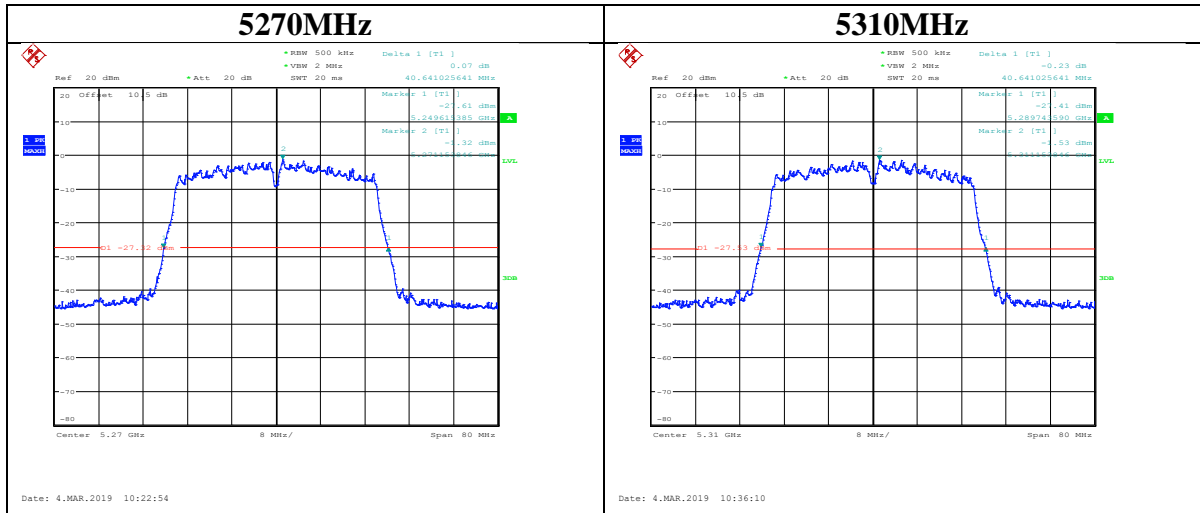
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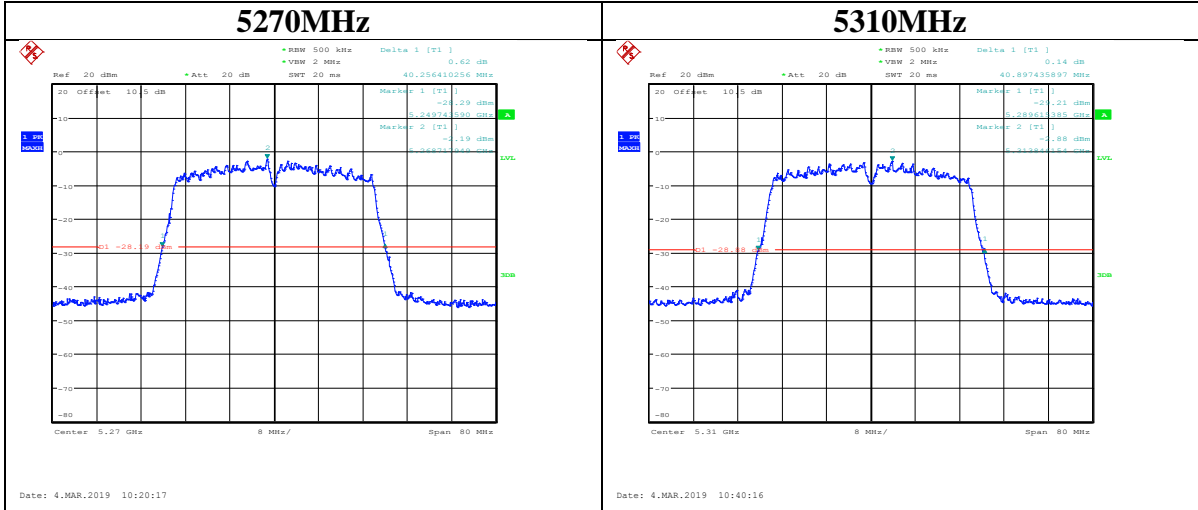
IEEE 802.11ac VHT40 Mode / 5250 ~ 5350MHz
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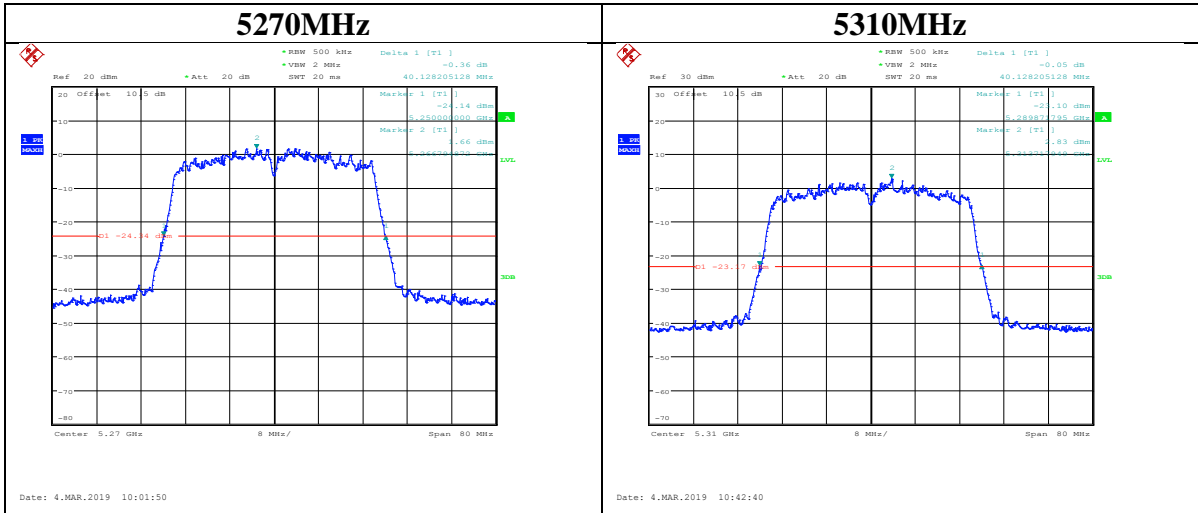
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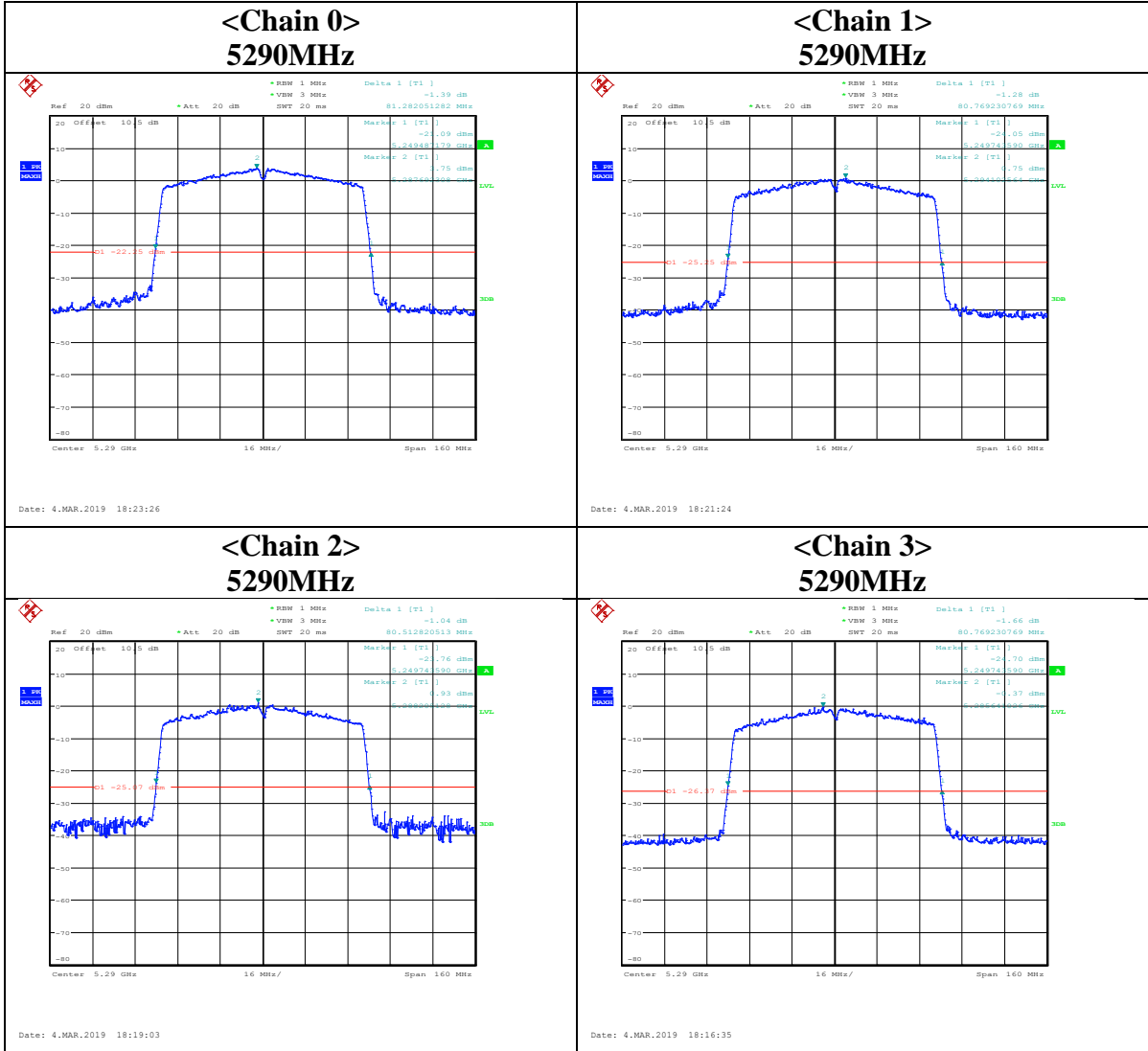
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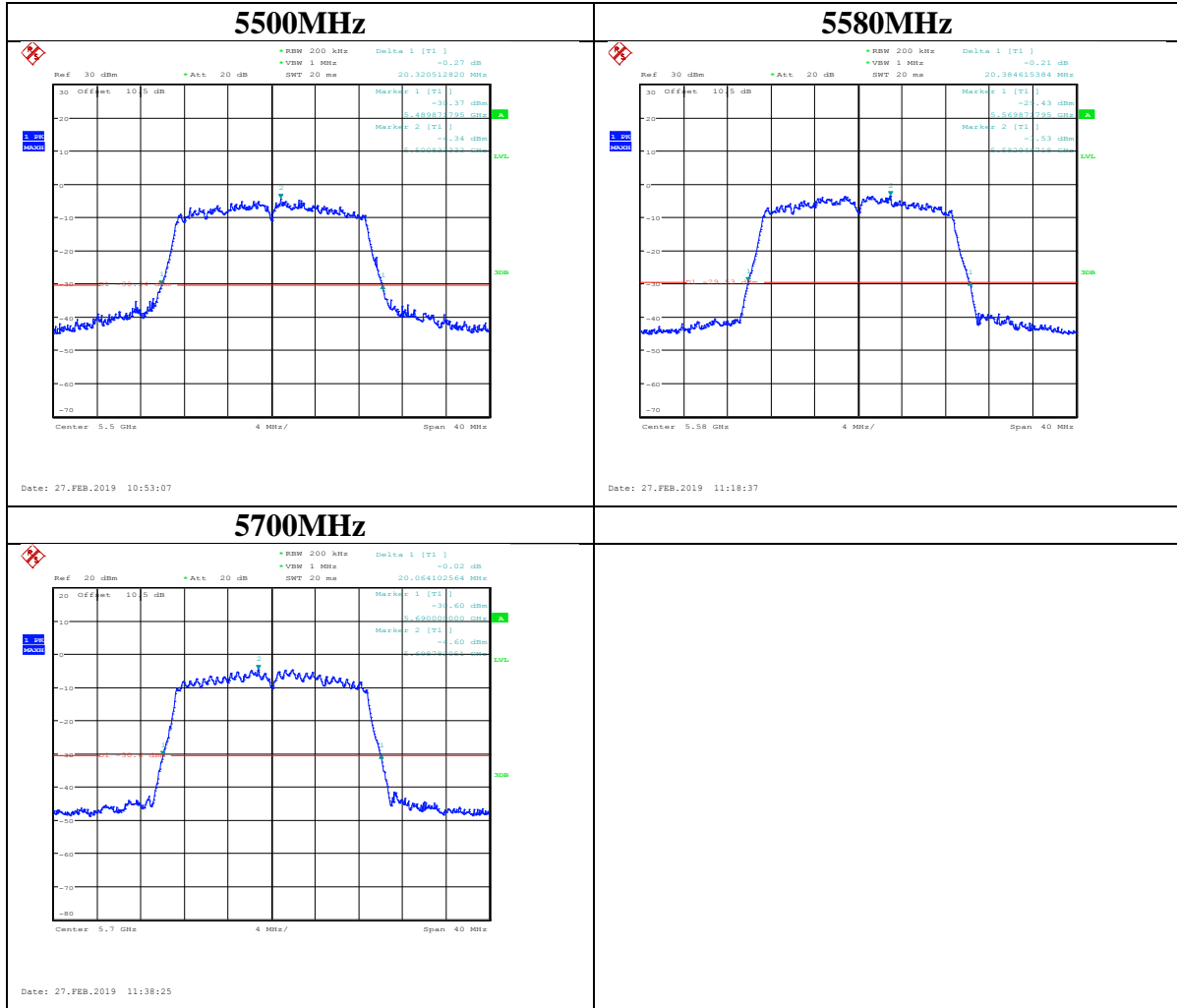


IEEE 802.11ac VHT80 Mode / 5250 ~ 5350MHz

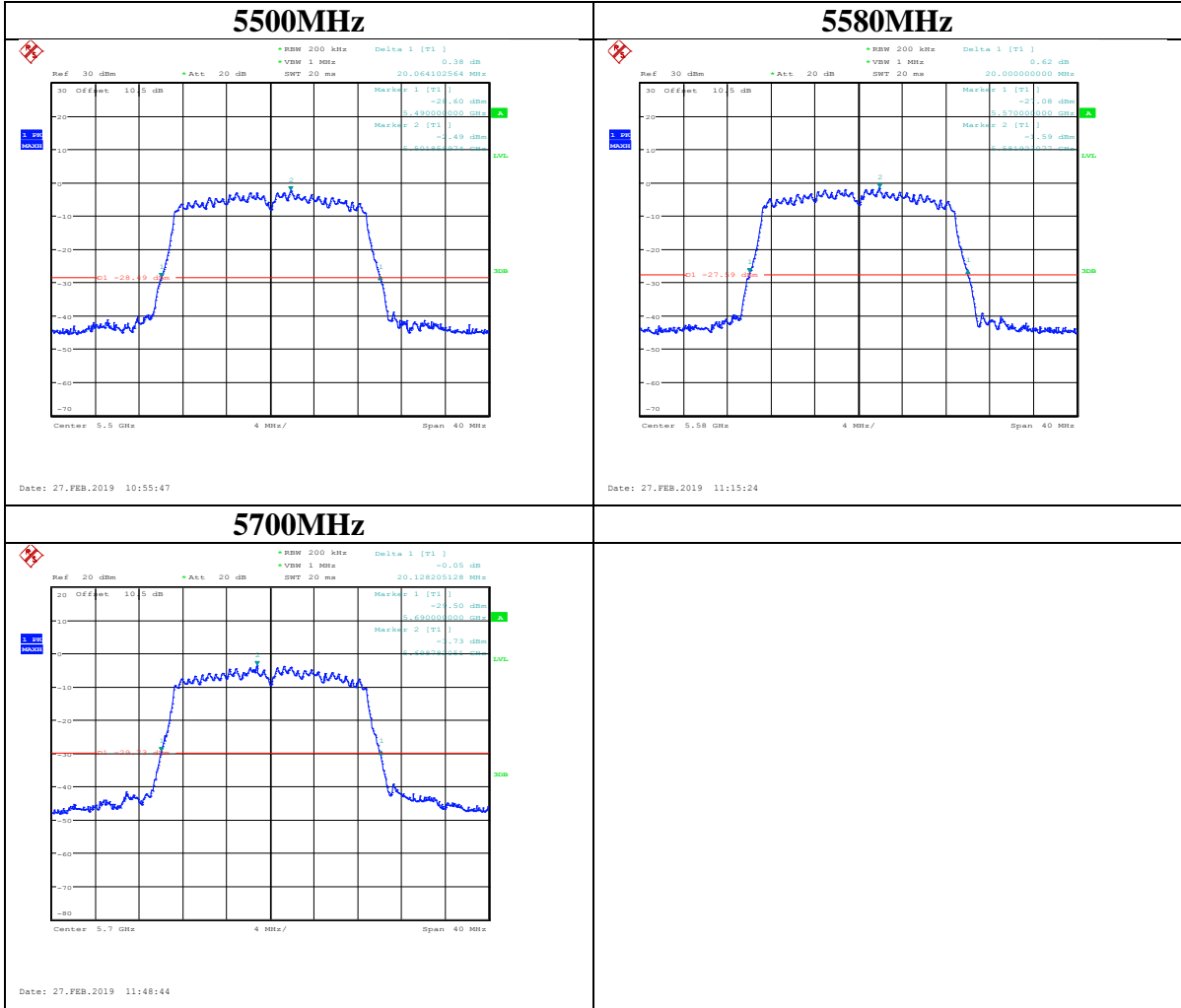


UNII-2C Band III / BW 26dBc
IEEE 802.11a Mode / 5470 ~ 5725MHz

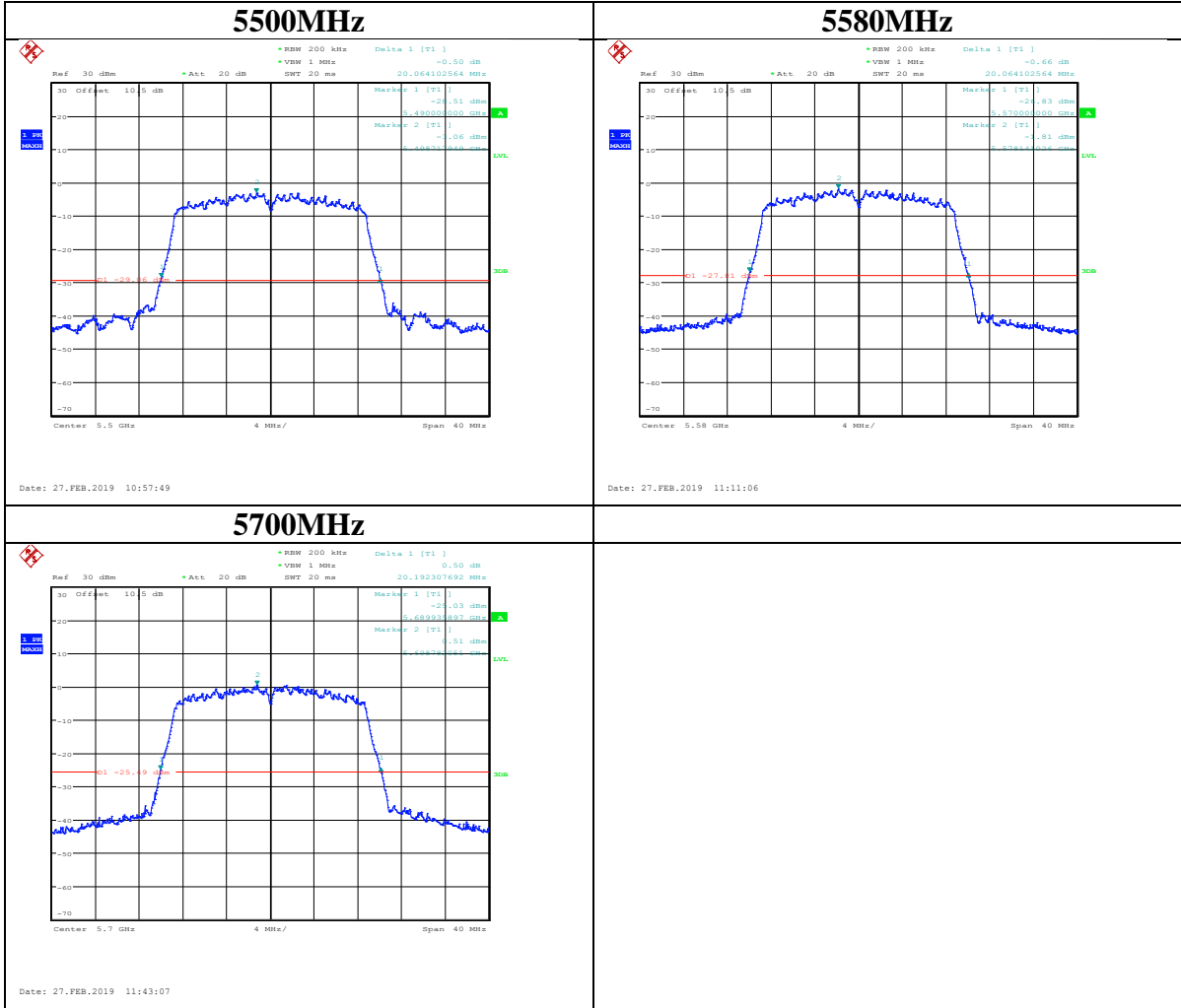
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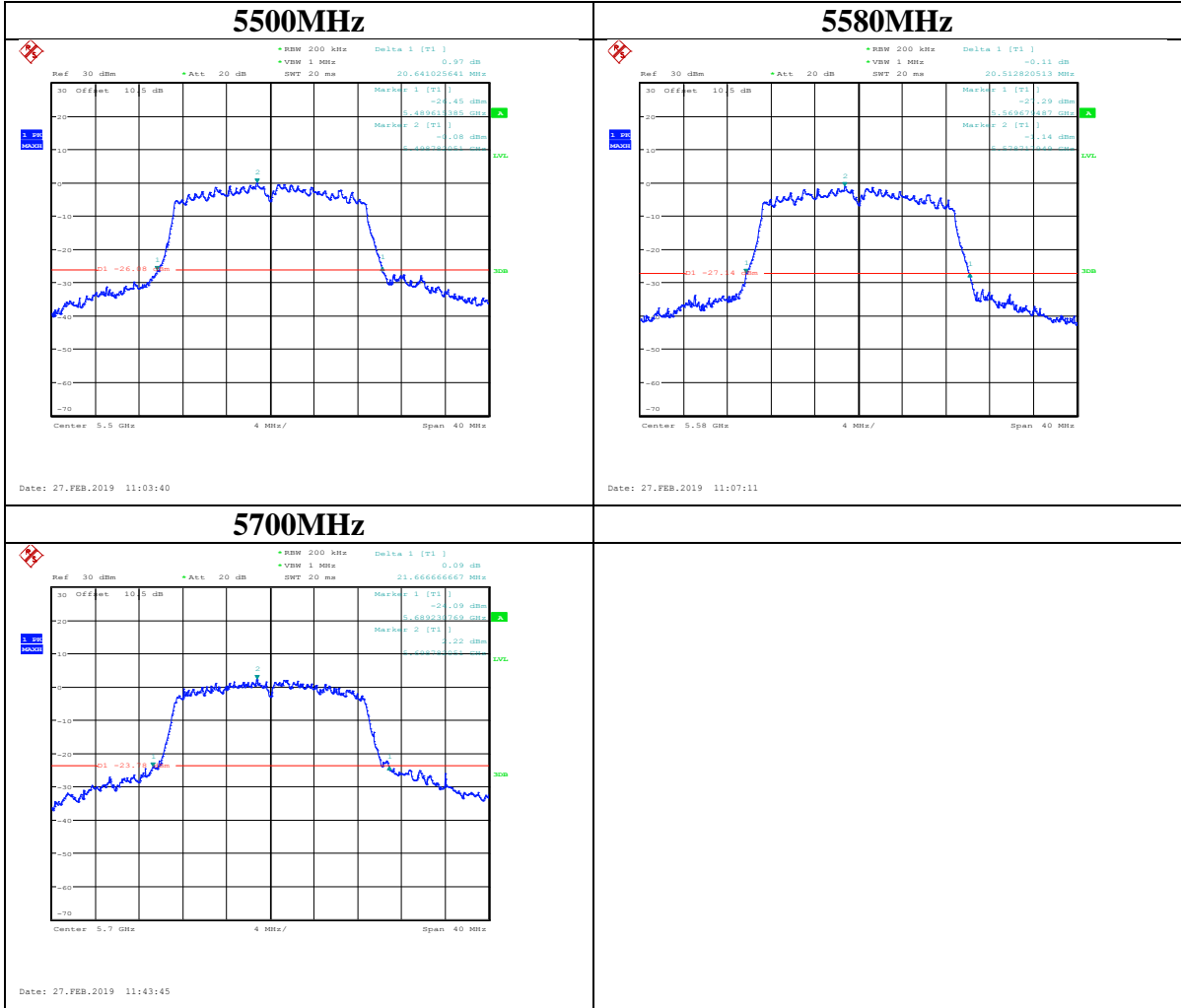
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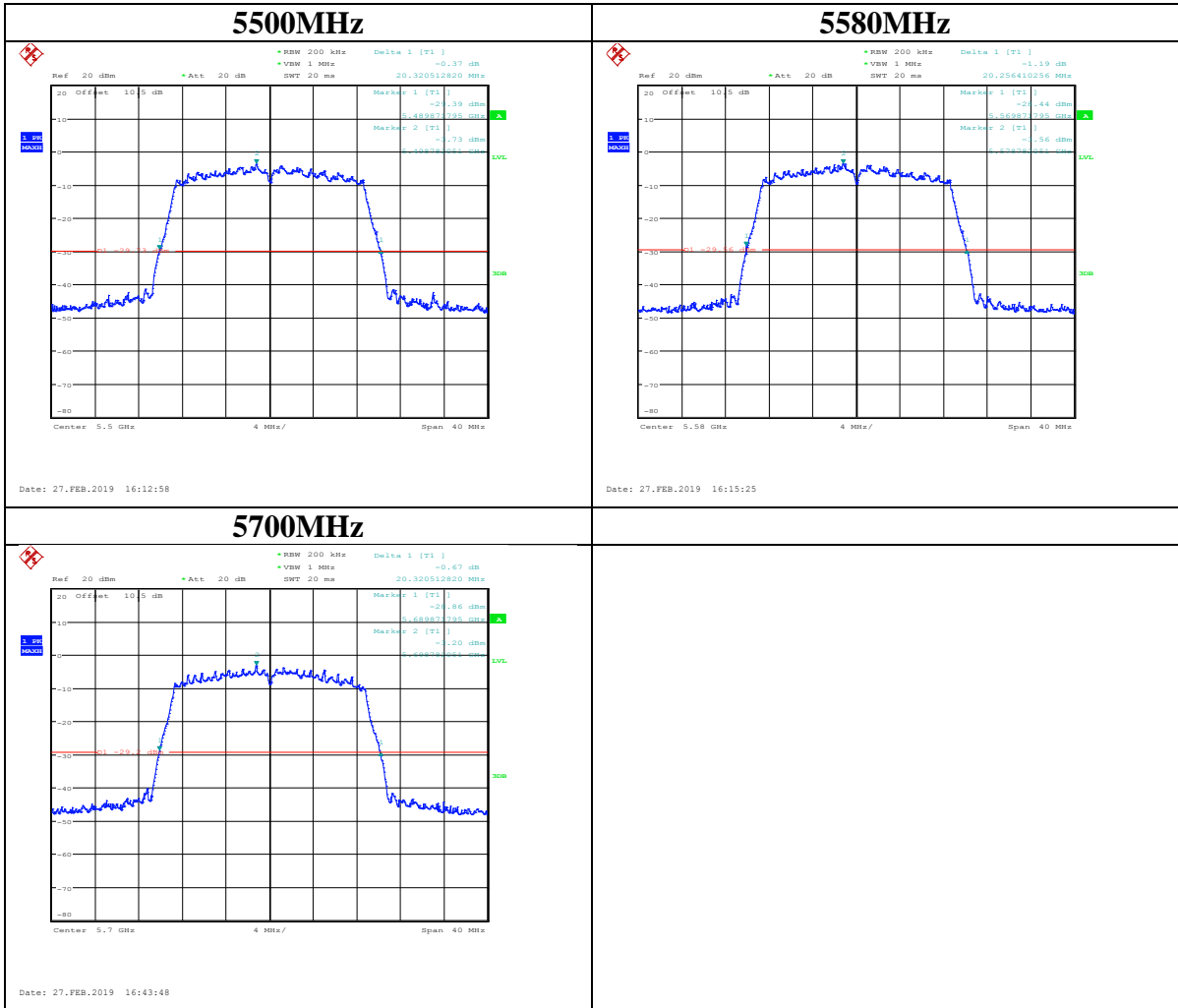
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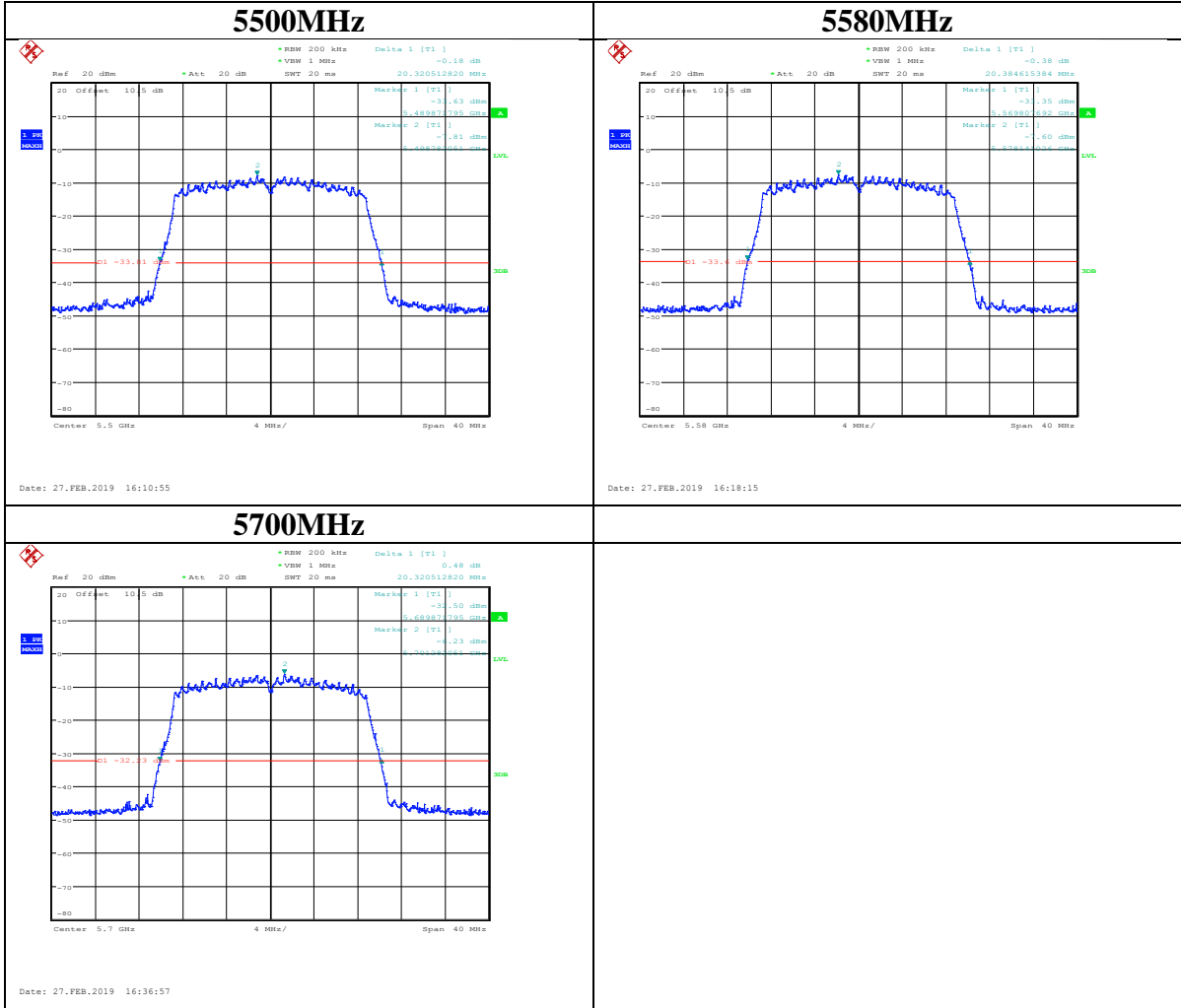
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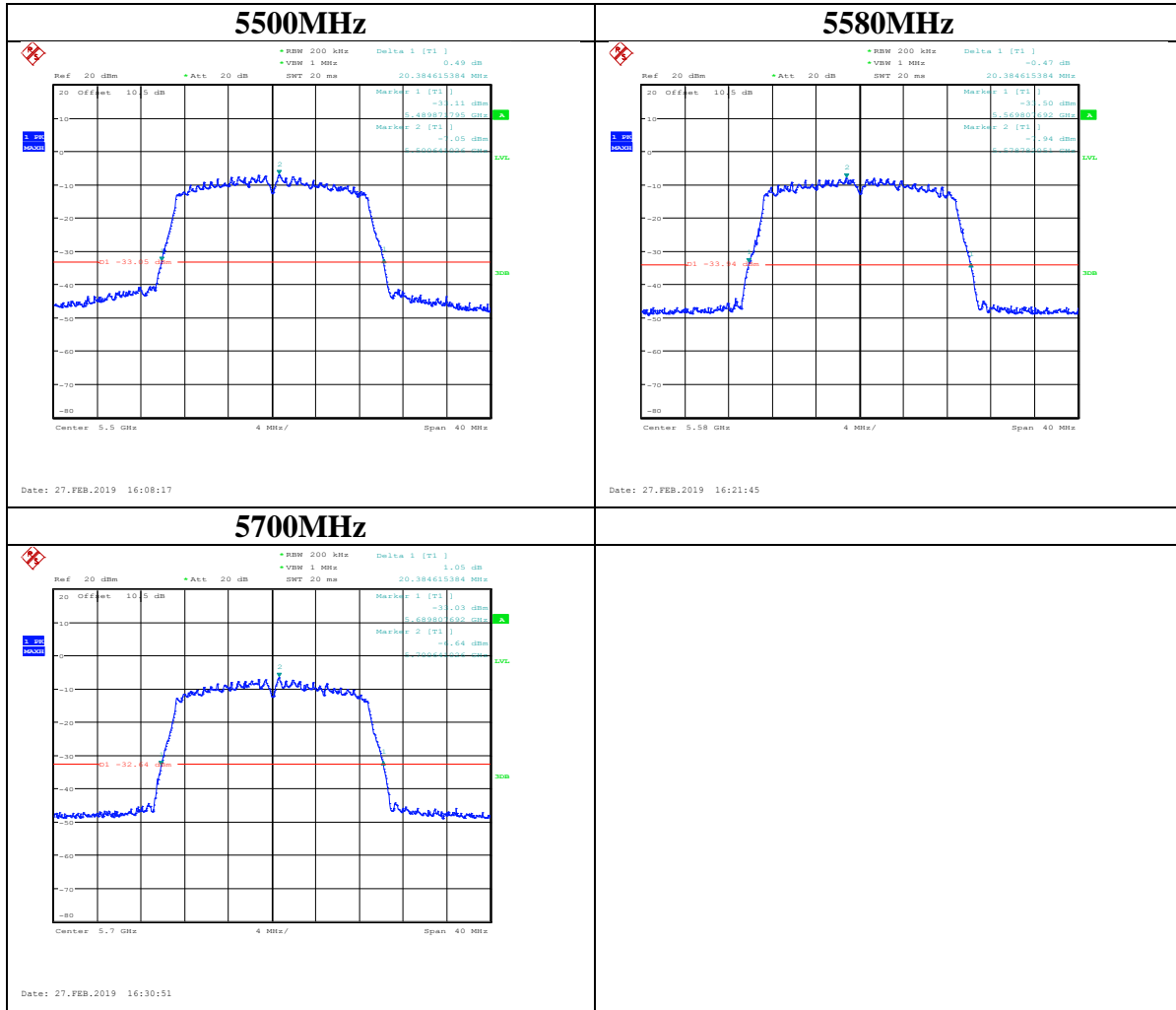
IEEE 802.11ac VHT20 Mode / 5470 ~ 5725MHz
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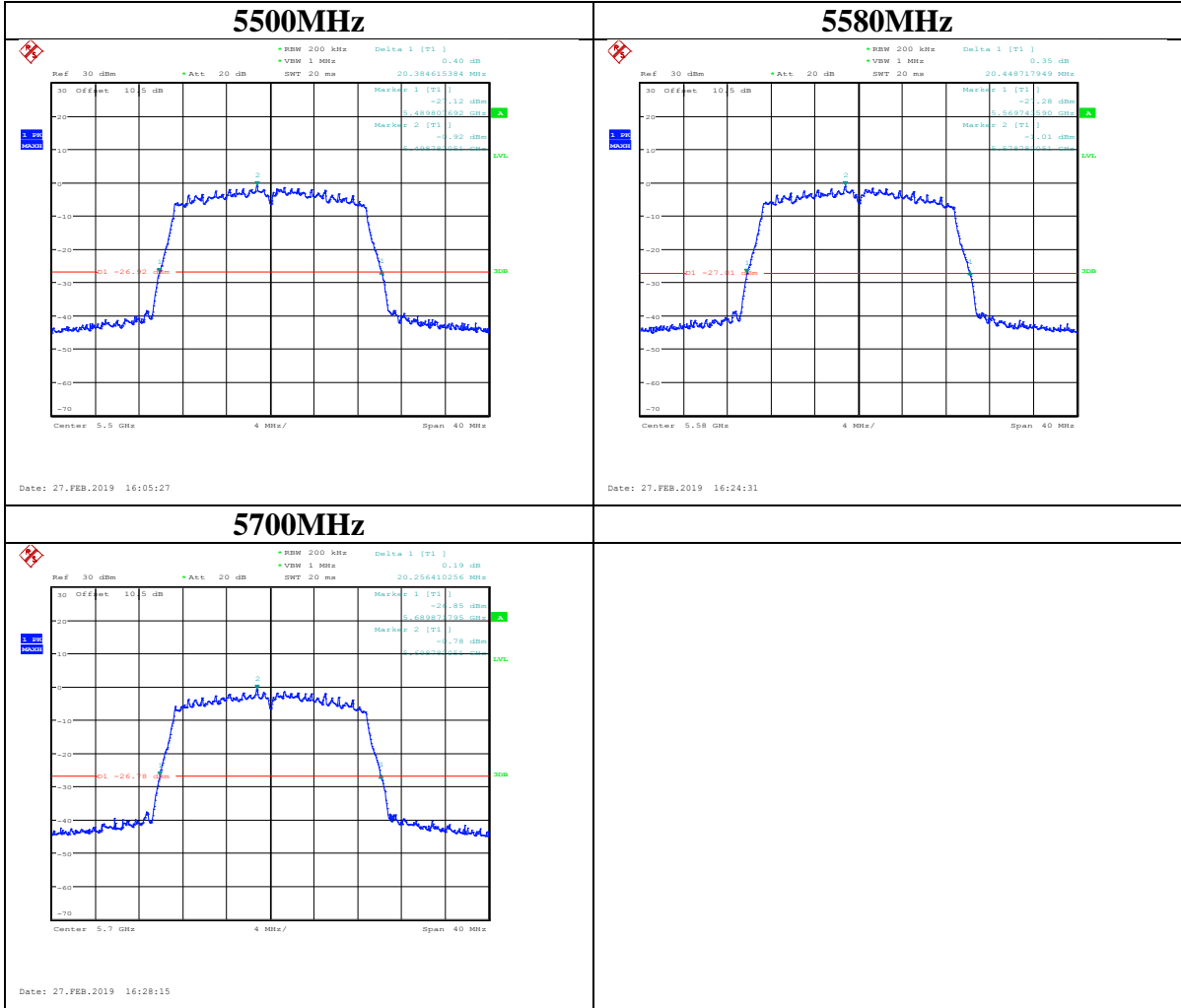
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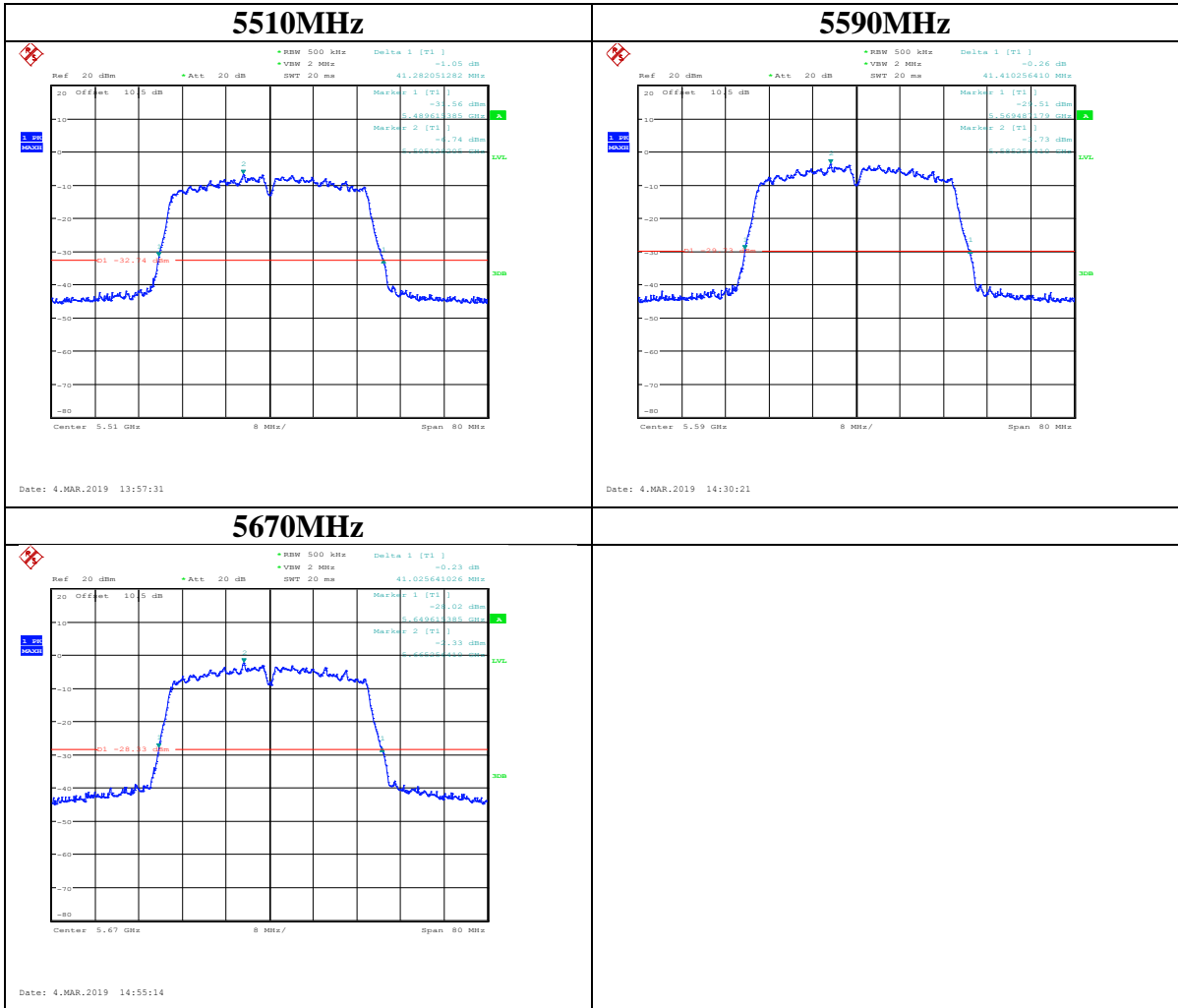
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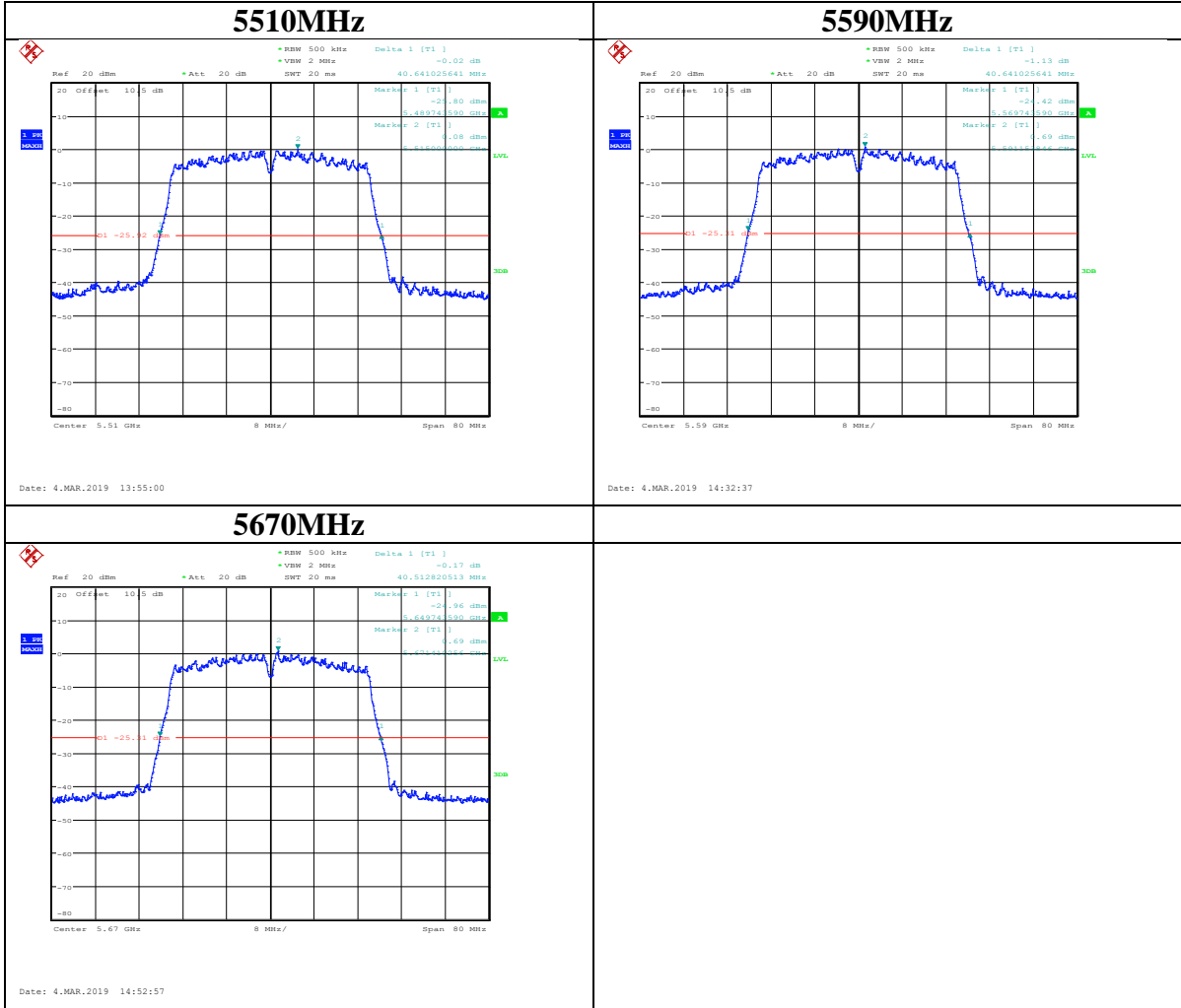
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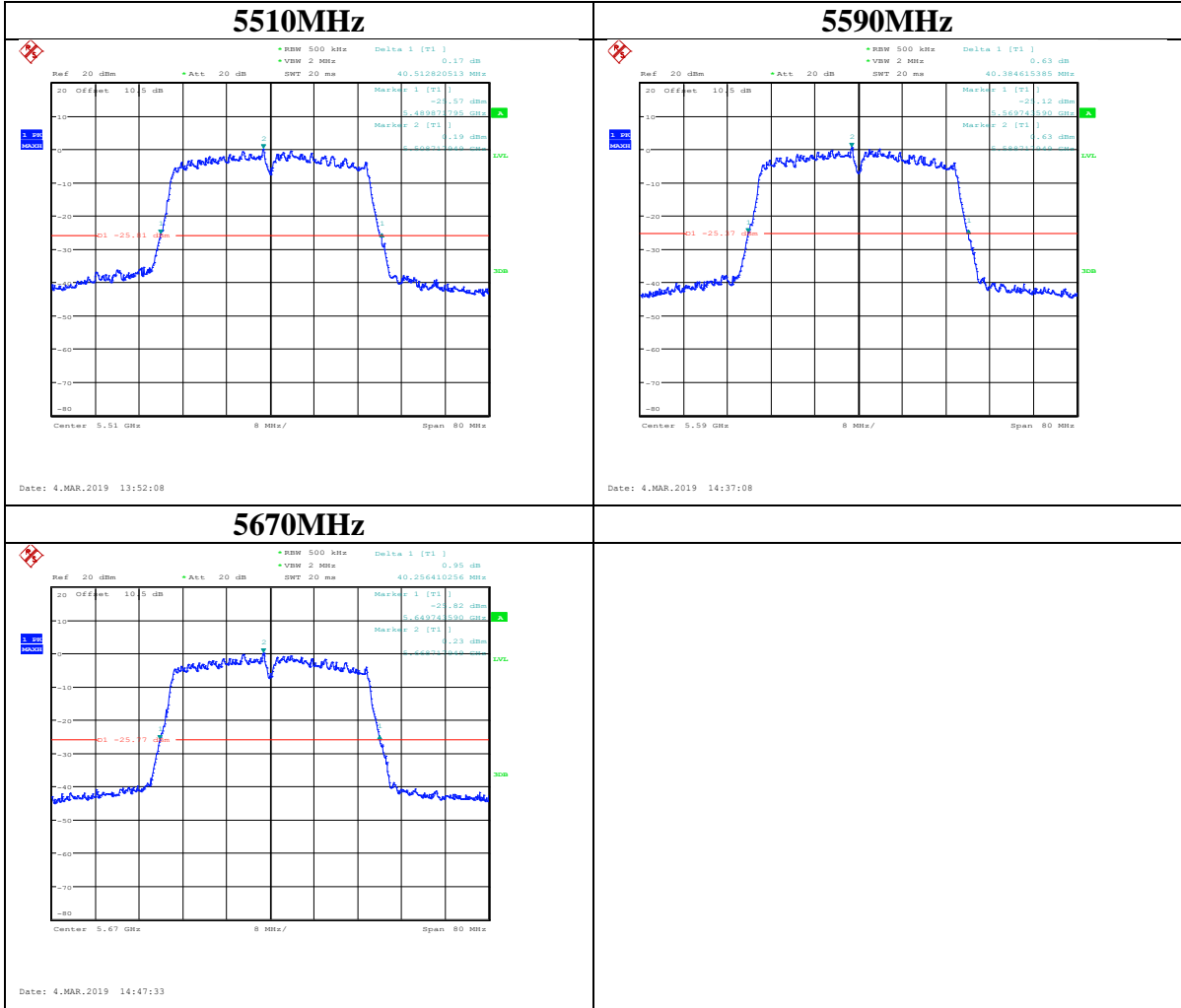
IEEE 802.11ac VHT40 Mode / 5470 ~ 5725MHz
<Chain 0>



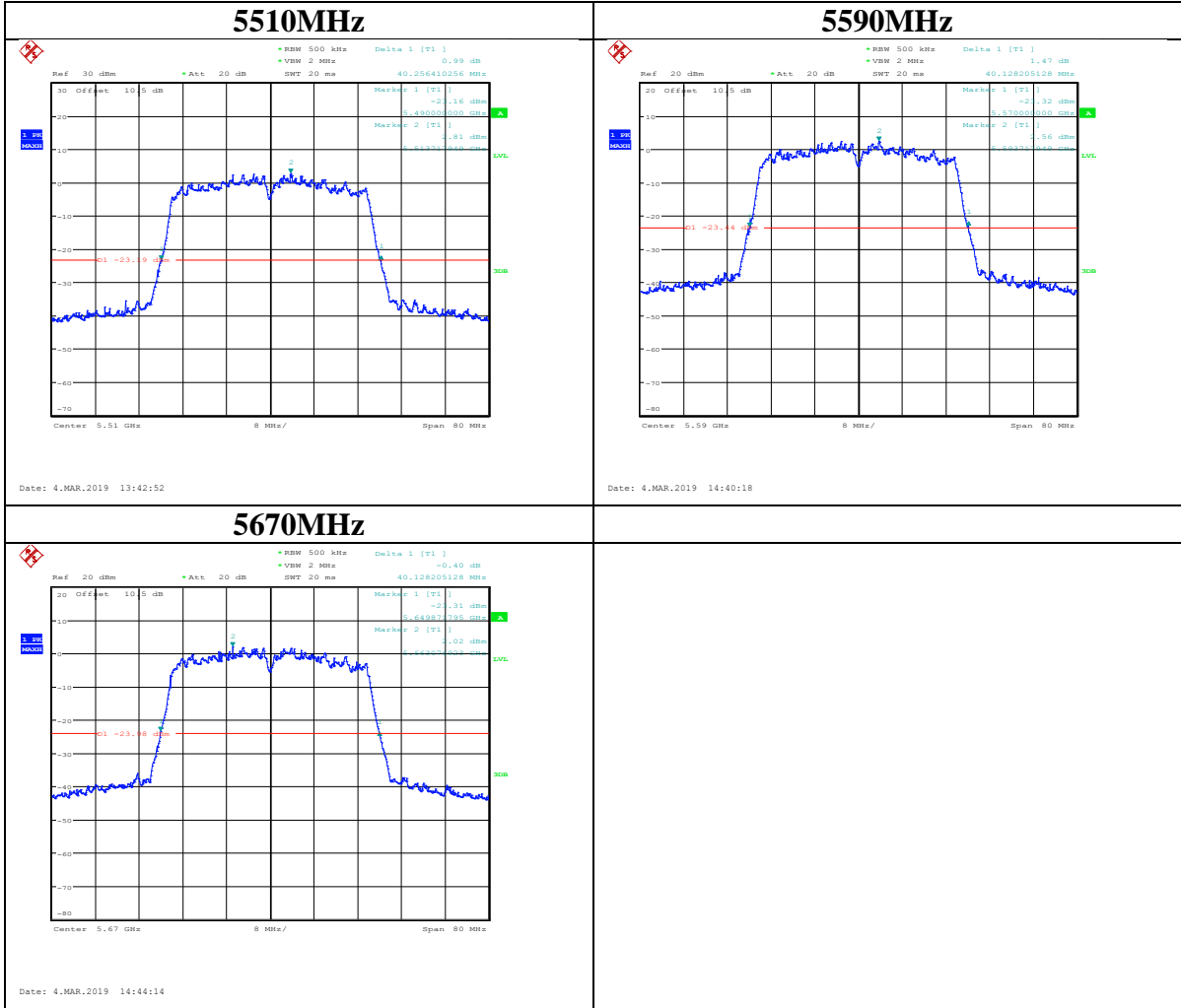
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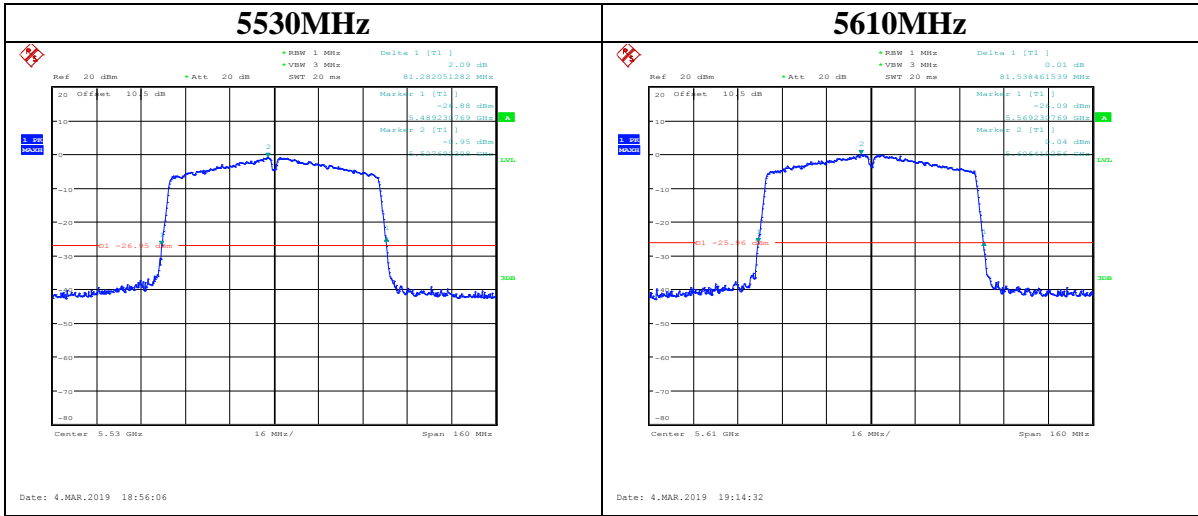
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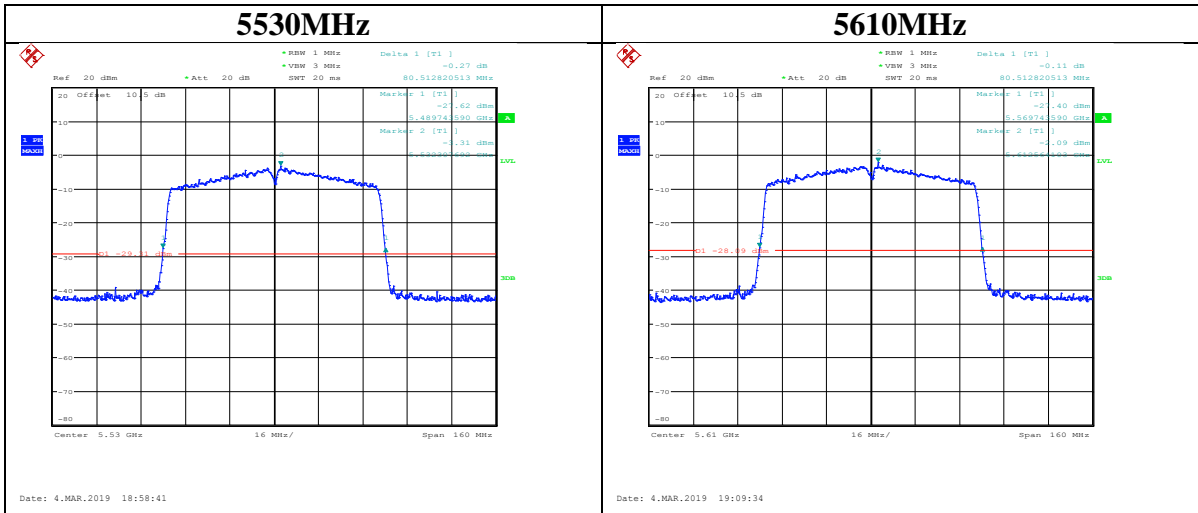
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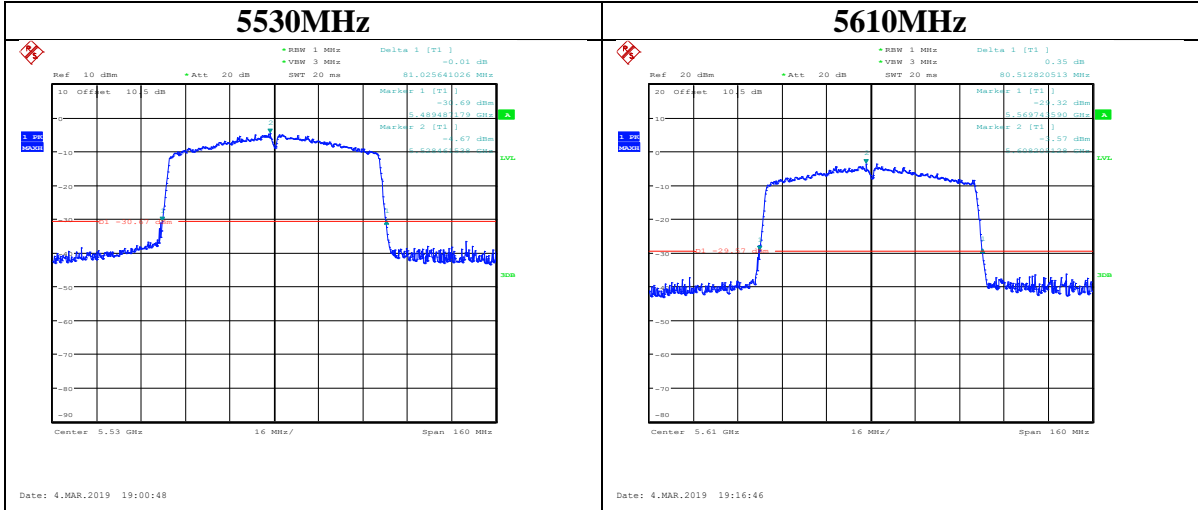
IEEE 802.11ac VHT80 Mode / 5470 ~ 5725MHz
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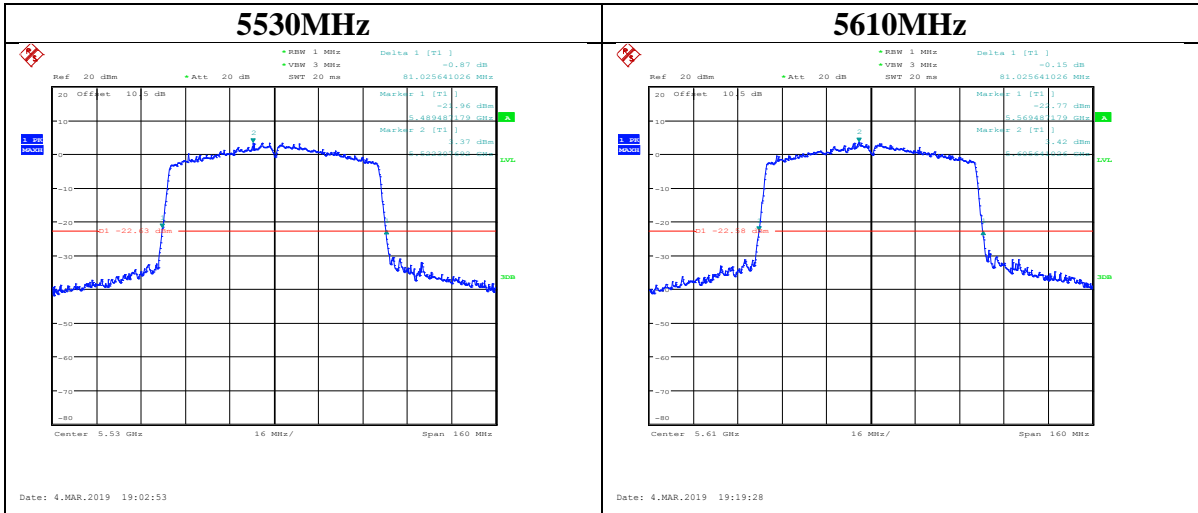
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<Chain 2>

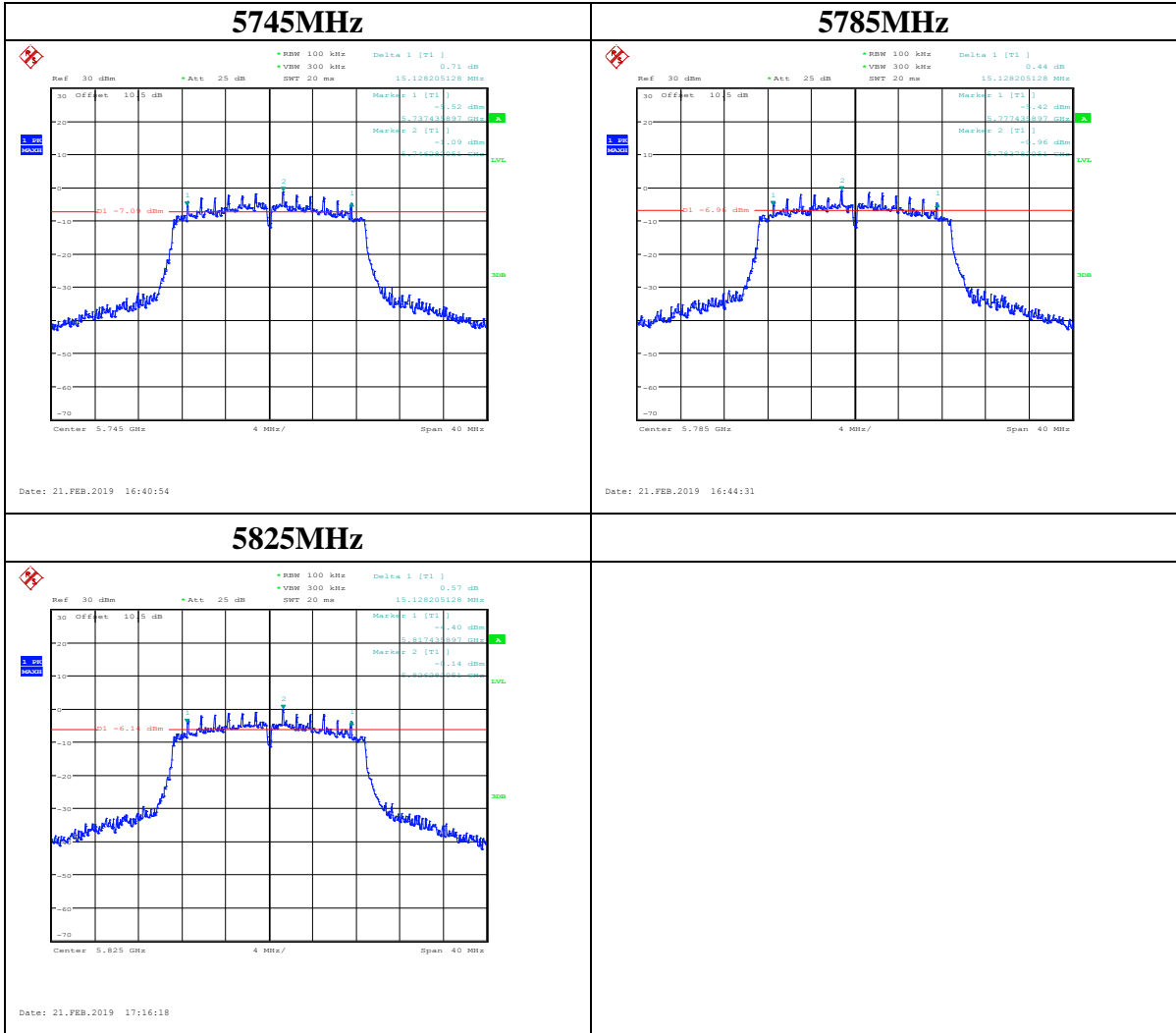


<Chain 3>

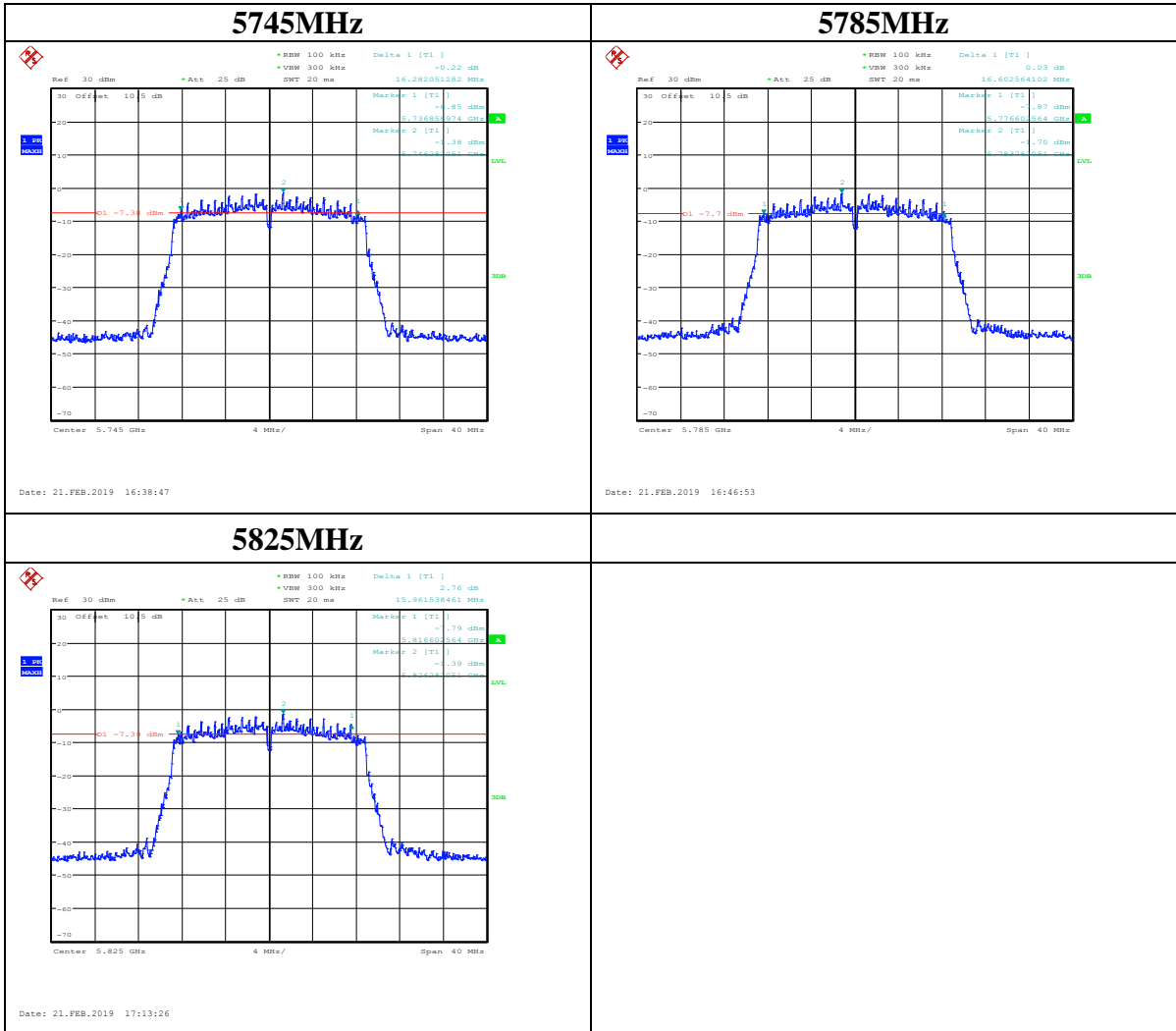


UNII-3 Band IV / BW 6dBc
IEEE 802.11a Mode / 5725 ~ 5850MHz

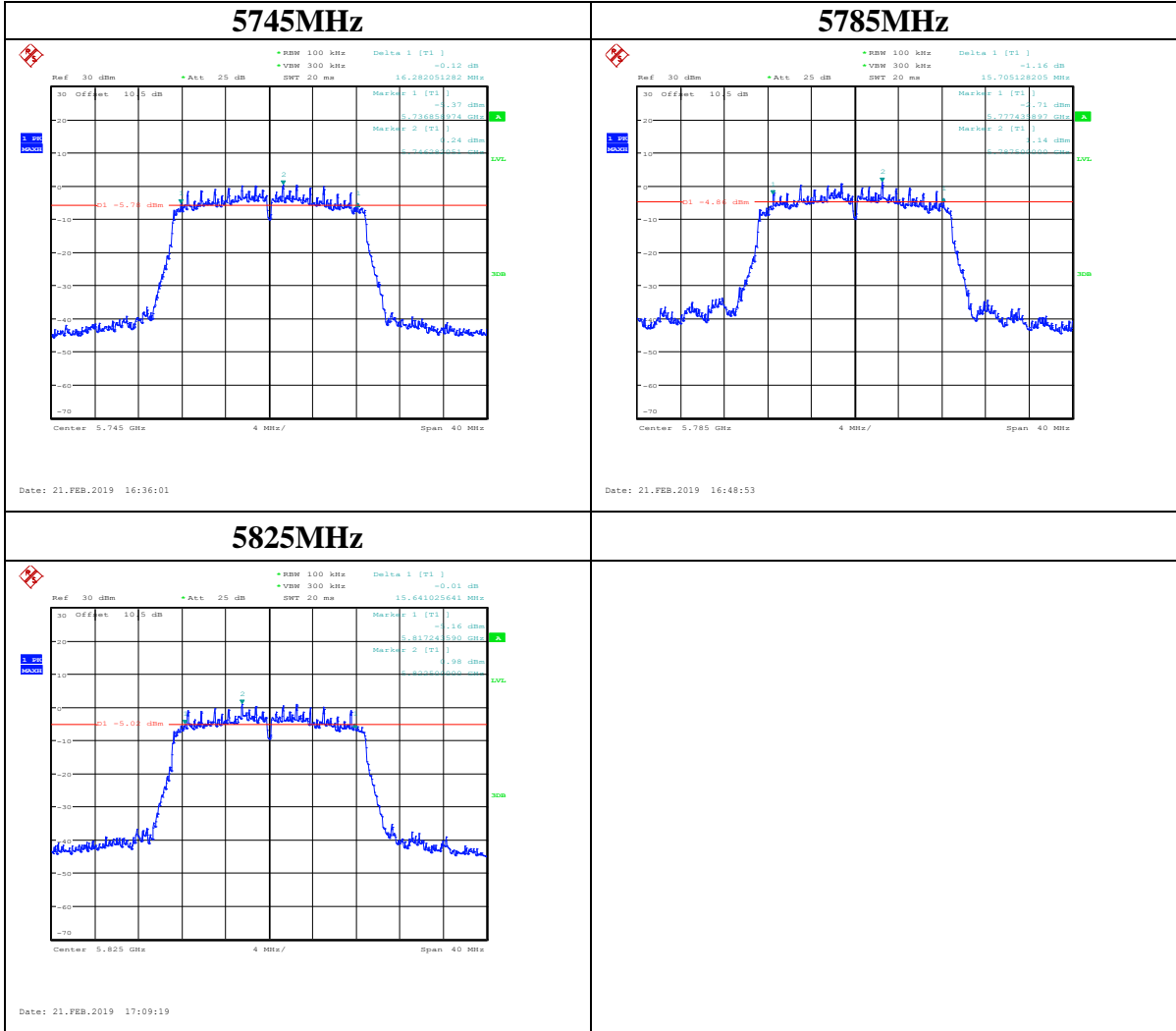
<Chain 0>



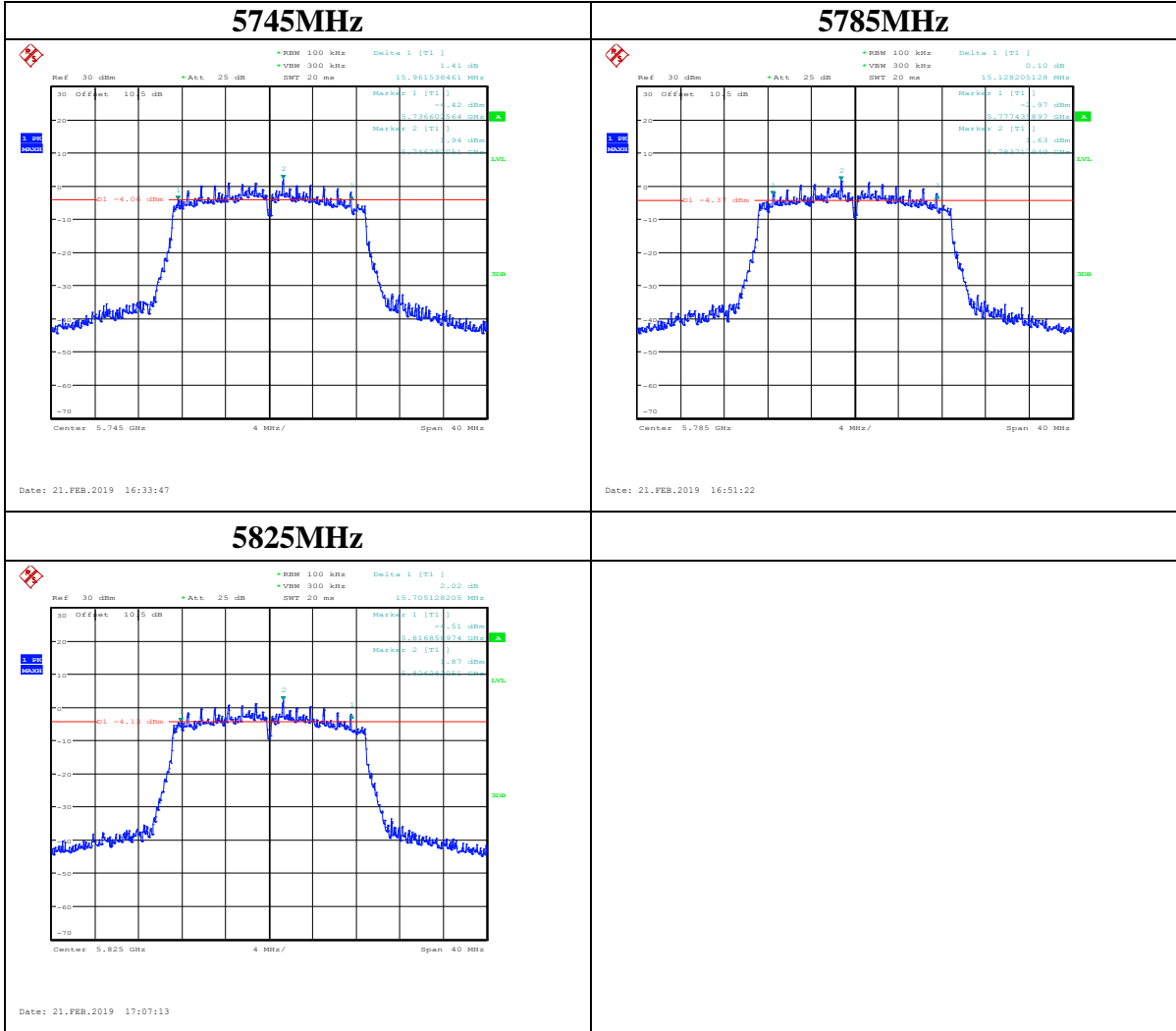
<Chain 1>



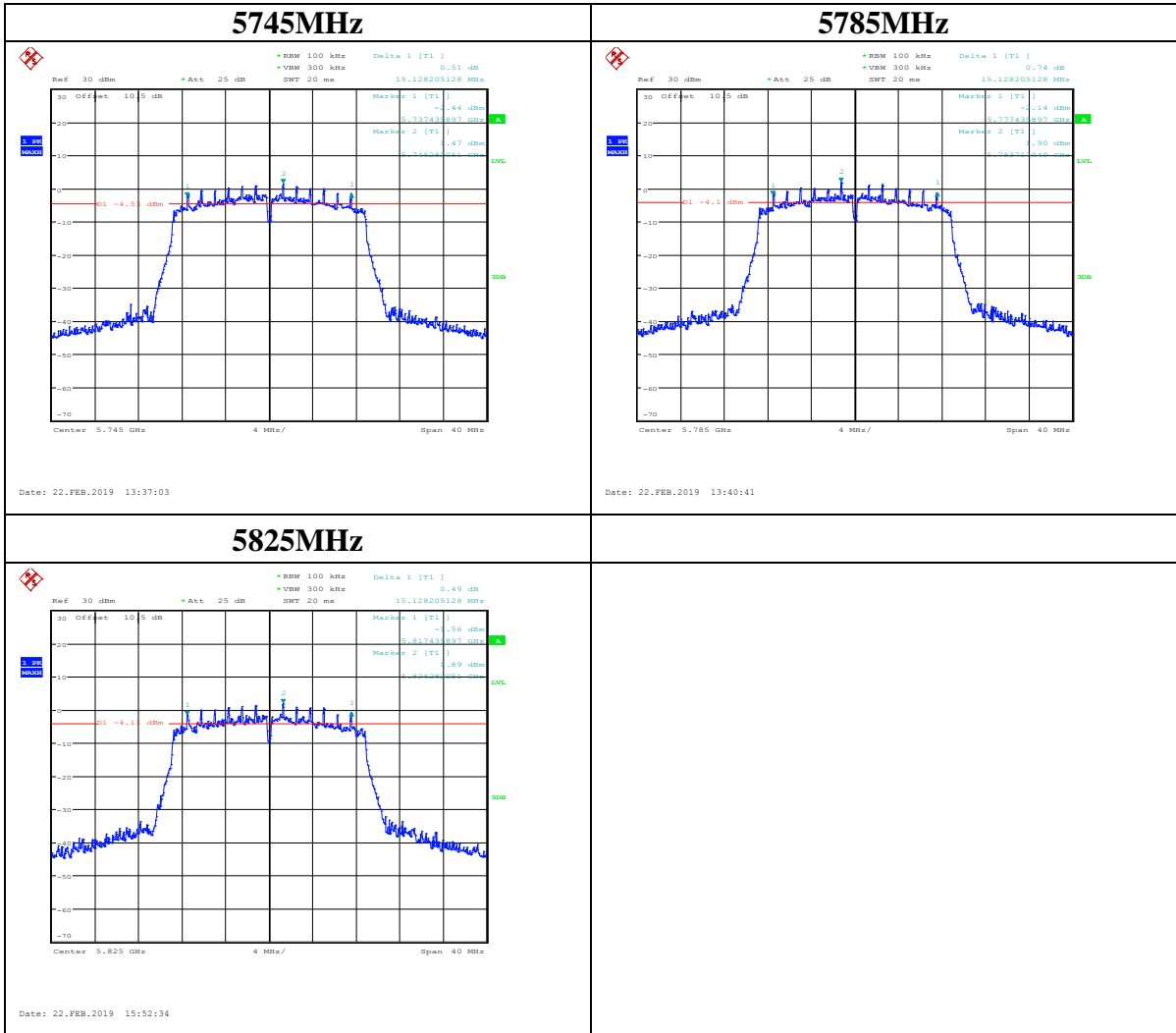
<Chain 2>



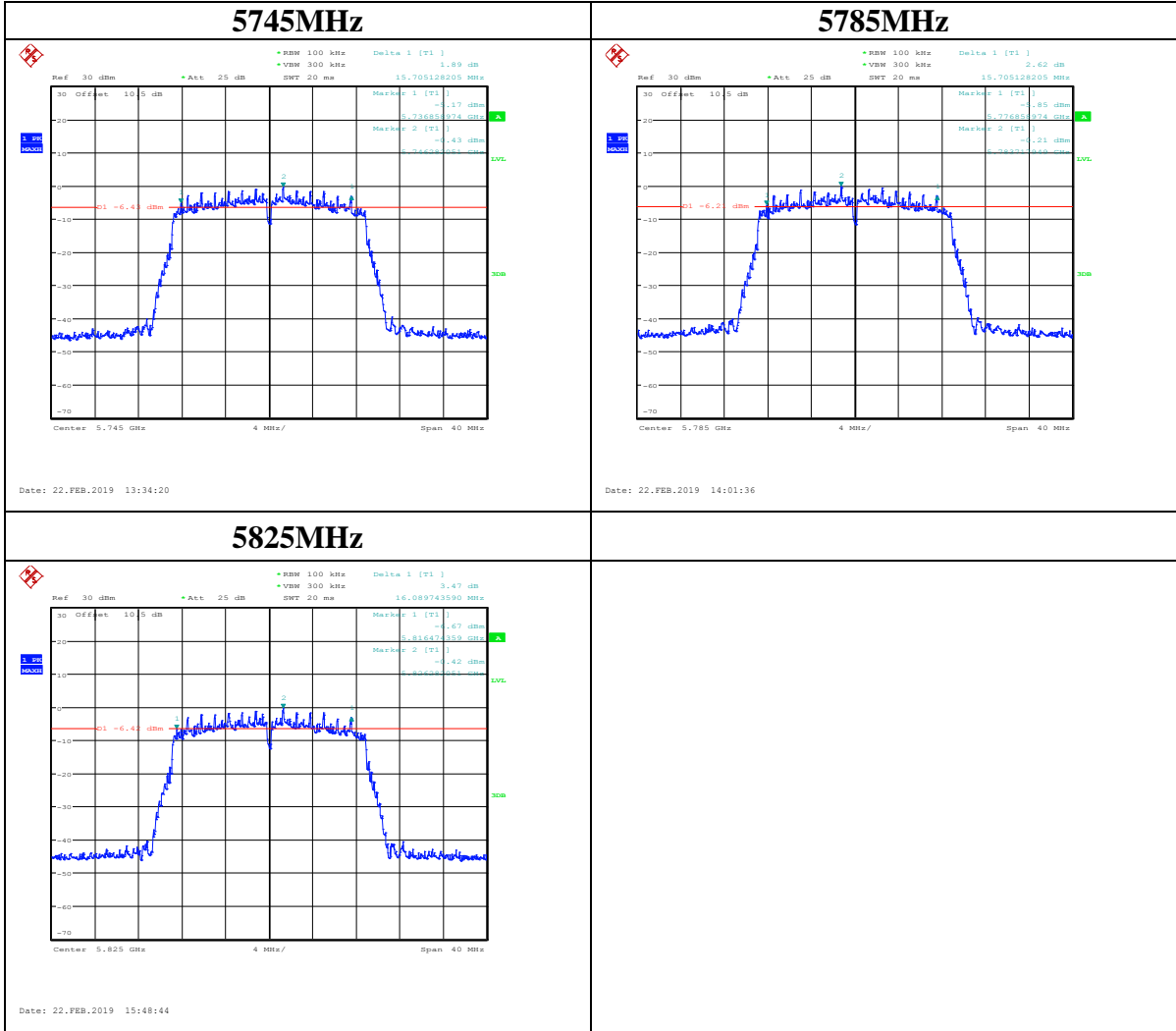
<Chain 3>



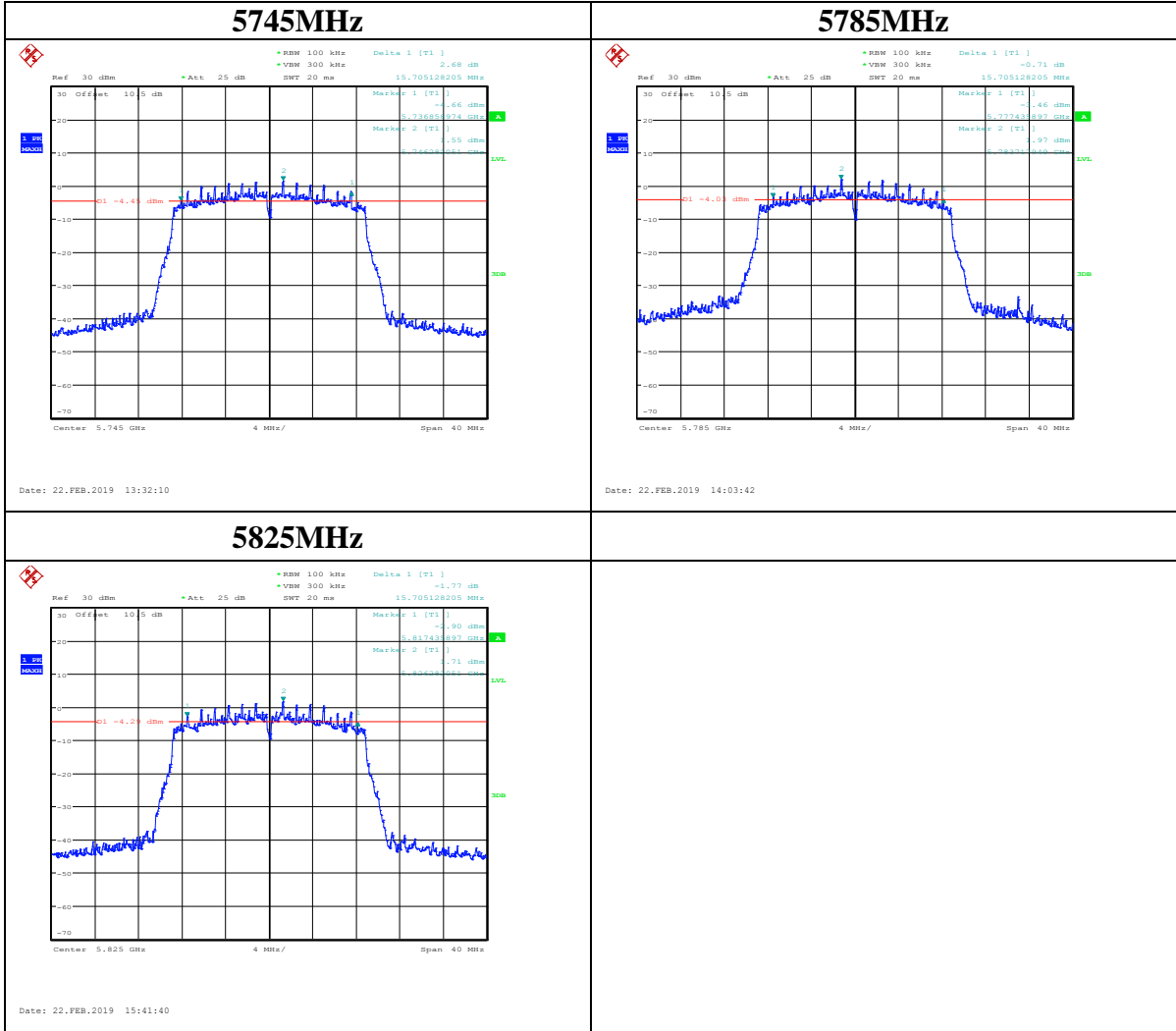
IEEE 802.11ac VHT20 Mode / 5725 ~ 5850MHz
<Chain 0>



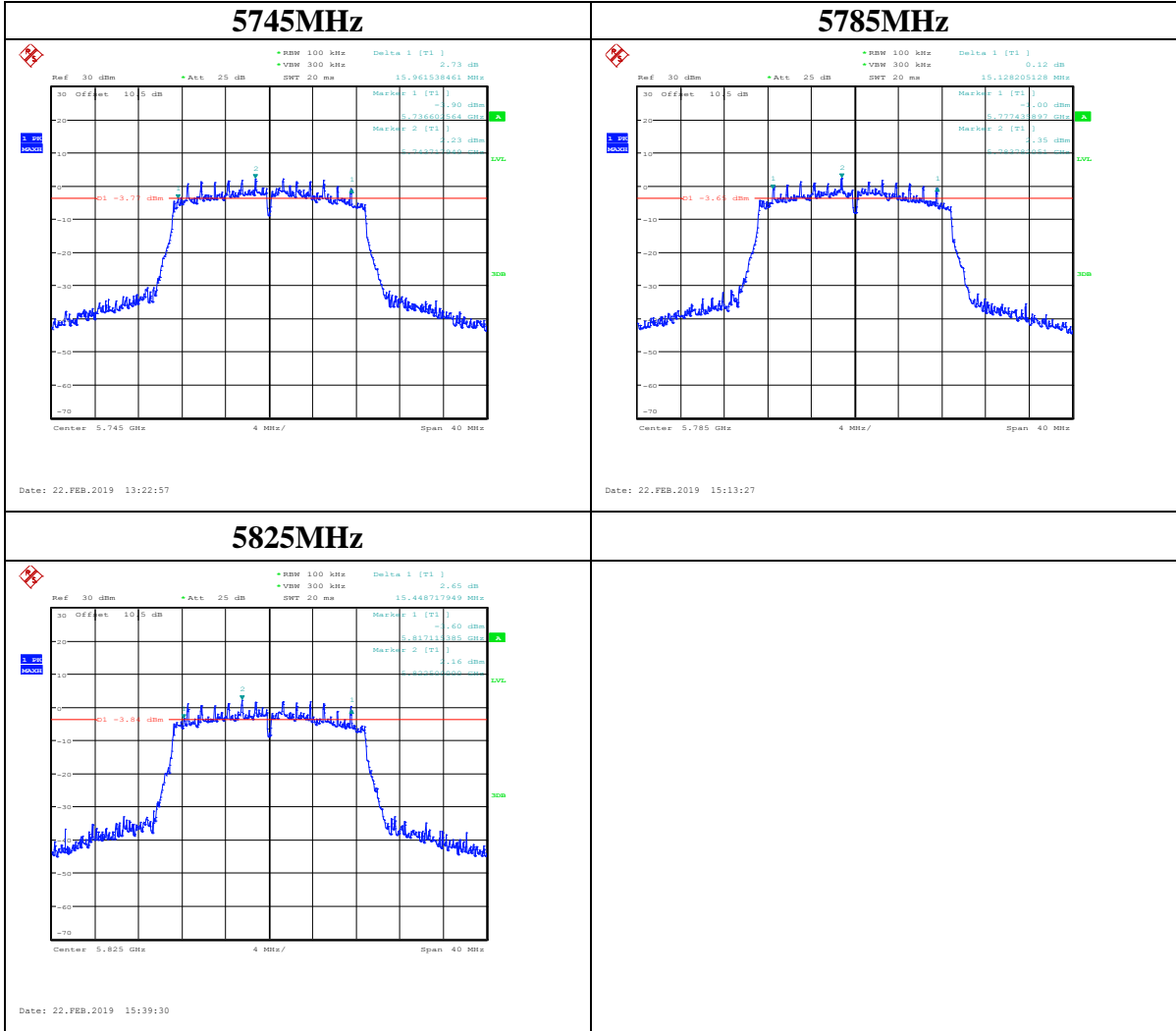
<Chain 1>



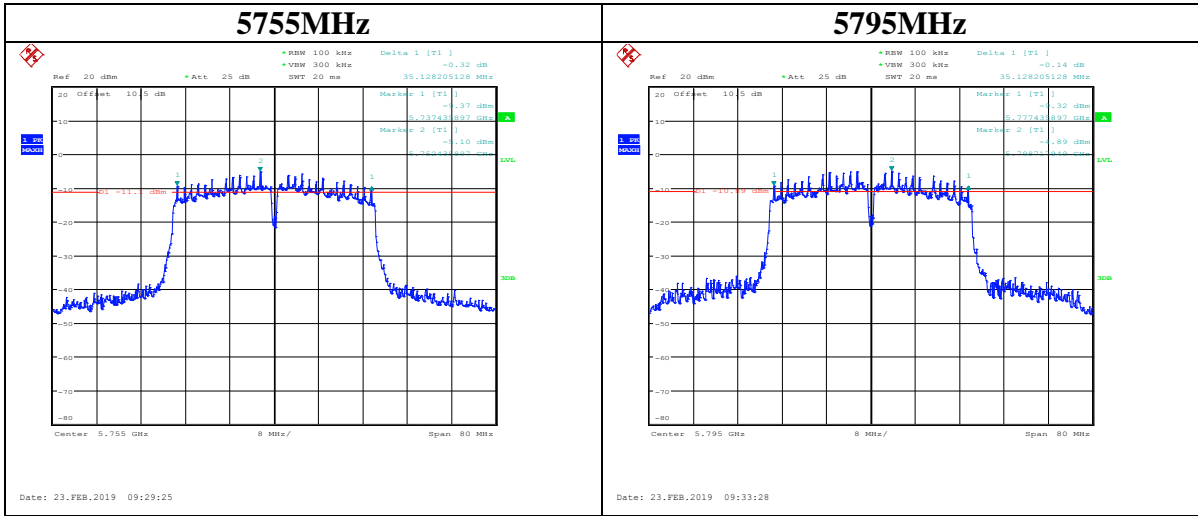
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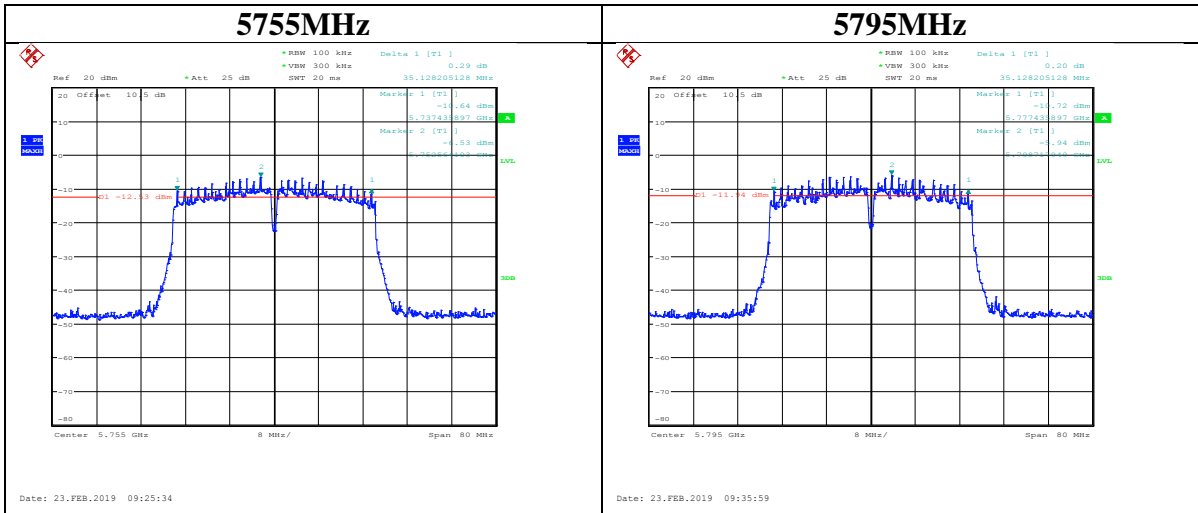
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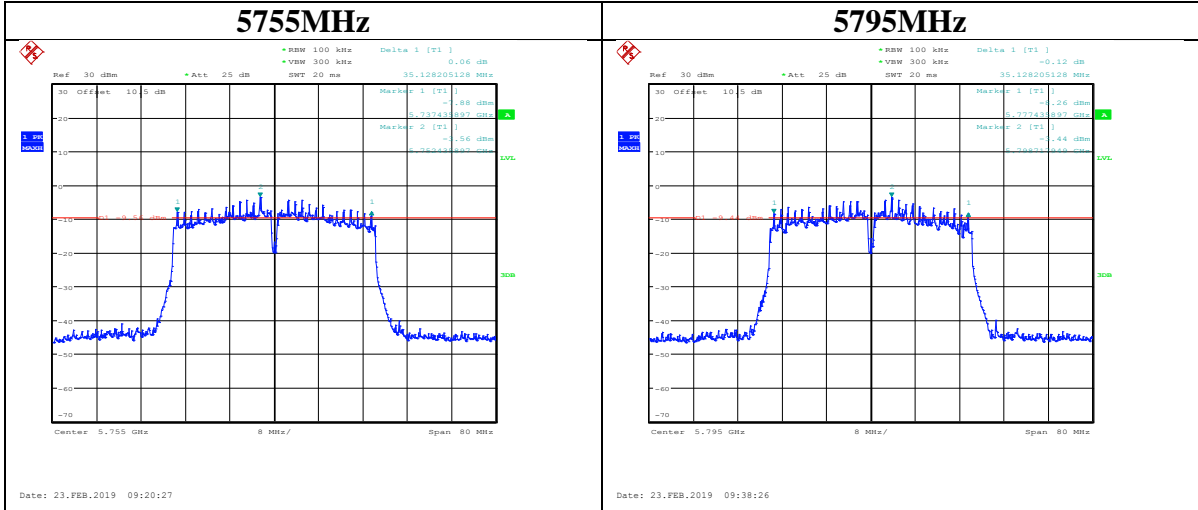
IEEE 802.11ac VHT40 Mode / 5725 ~ 5850MHz
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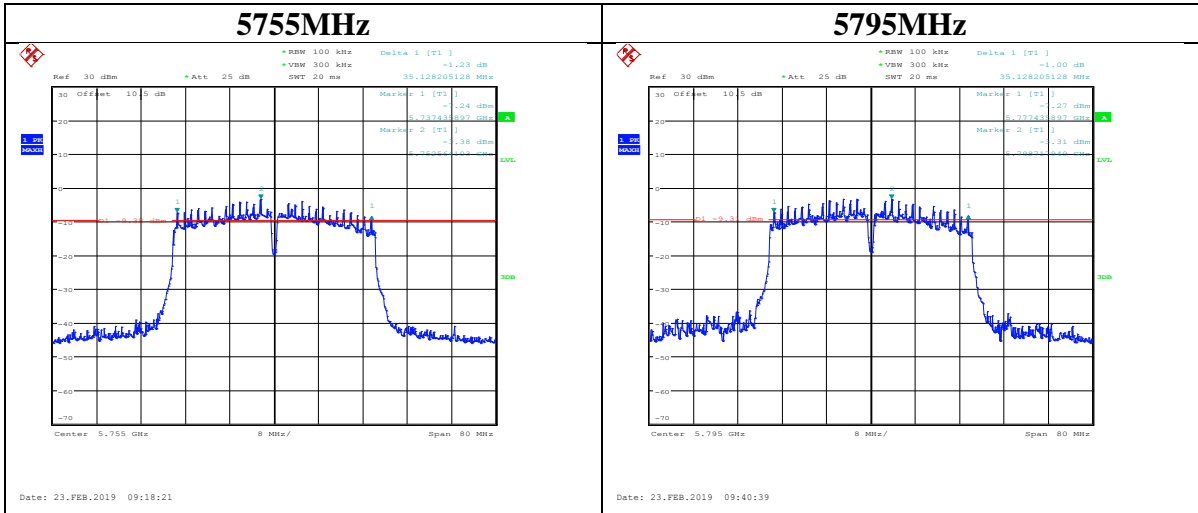
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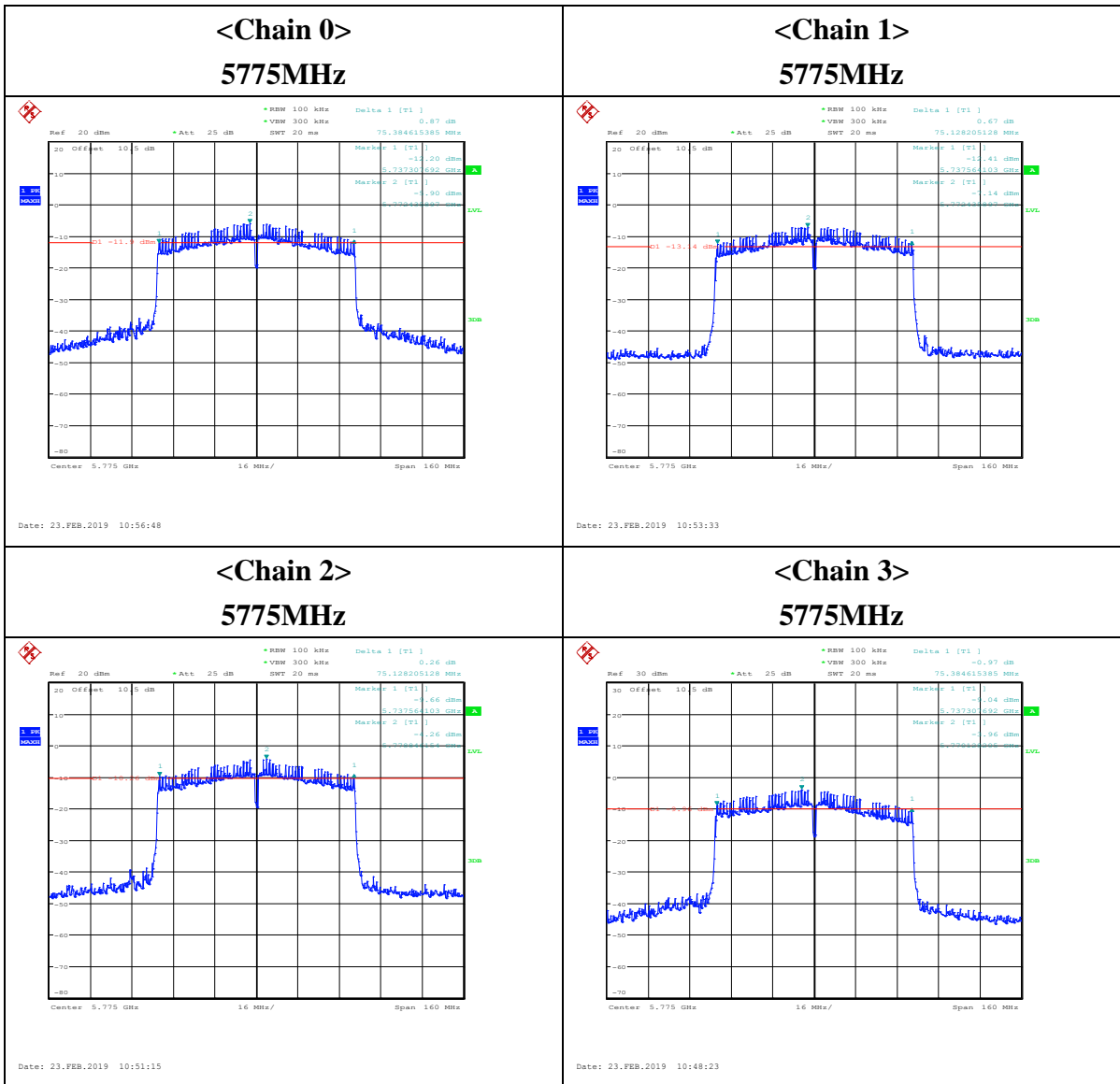
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<Chain 3>

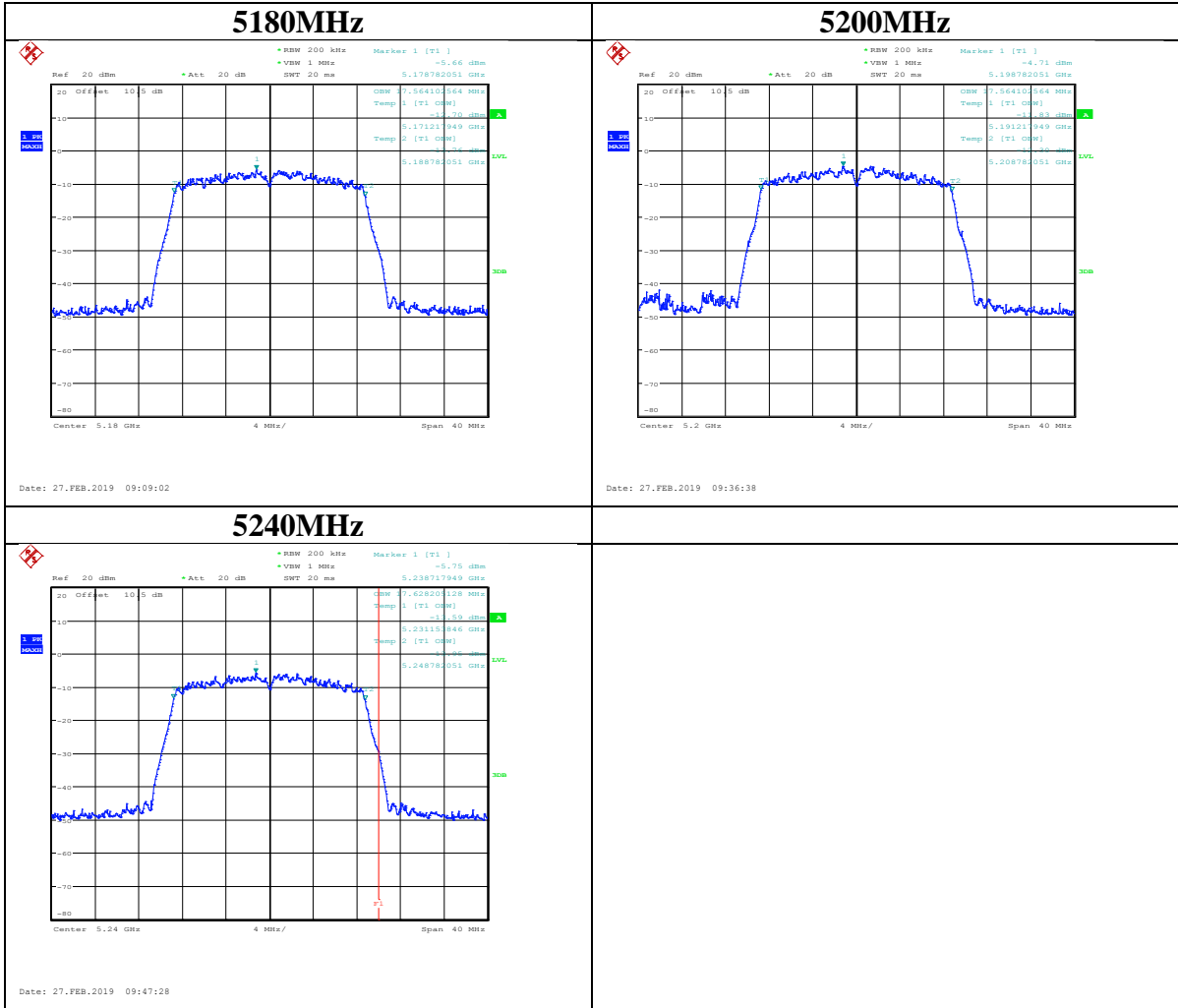


IEEE 802.11ac VHT80 Mode / 5725 ~ 5850MHz

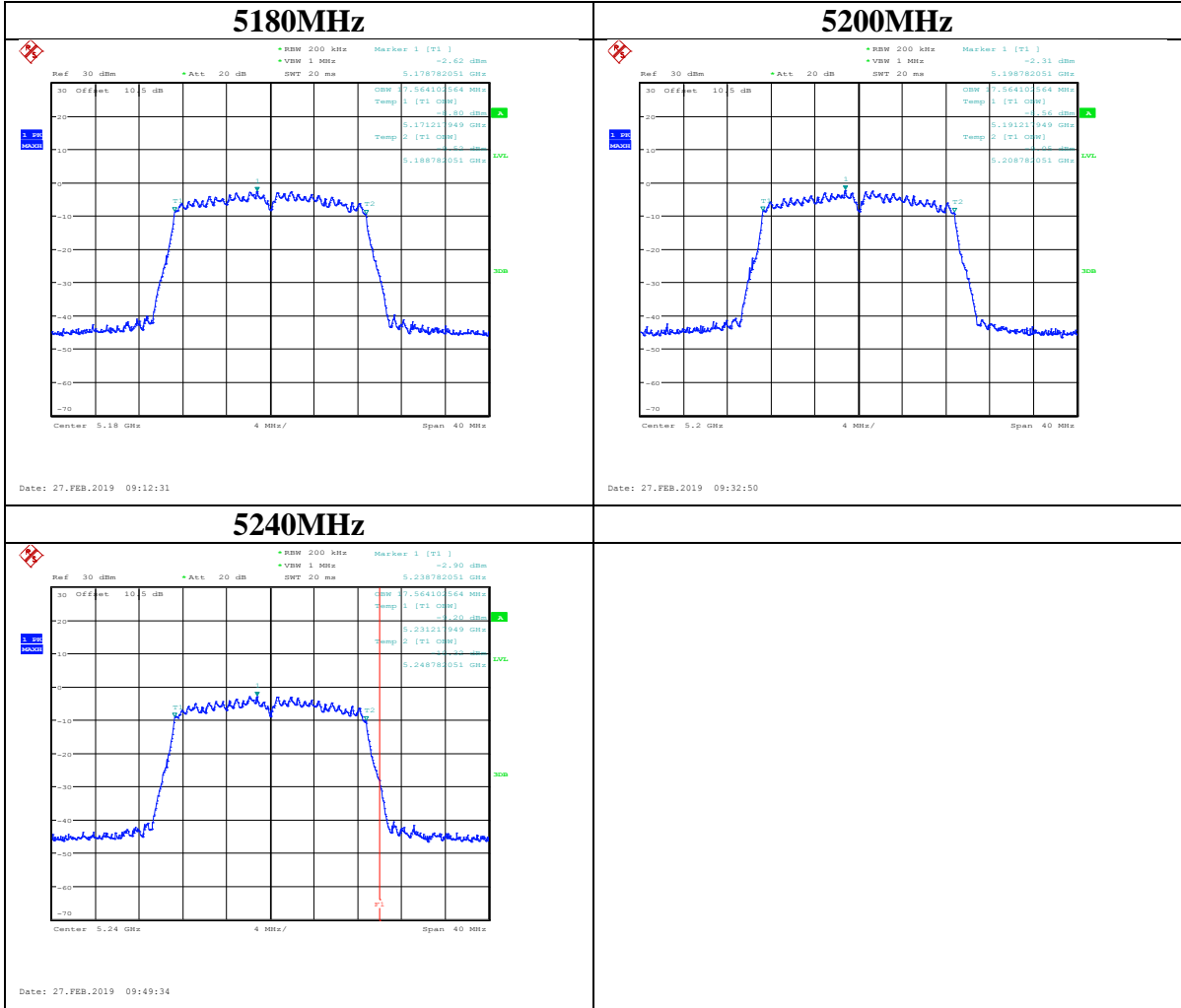


**UNII-1 Band I / OBW 99%
IEEE 802.11a Mode / 5150 ~ 5250MHz**

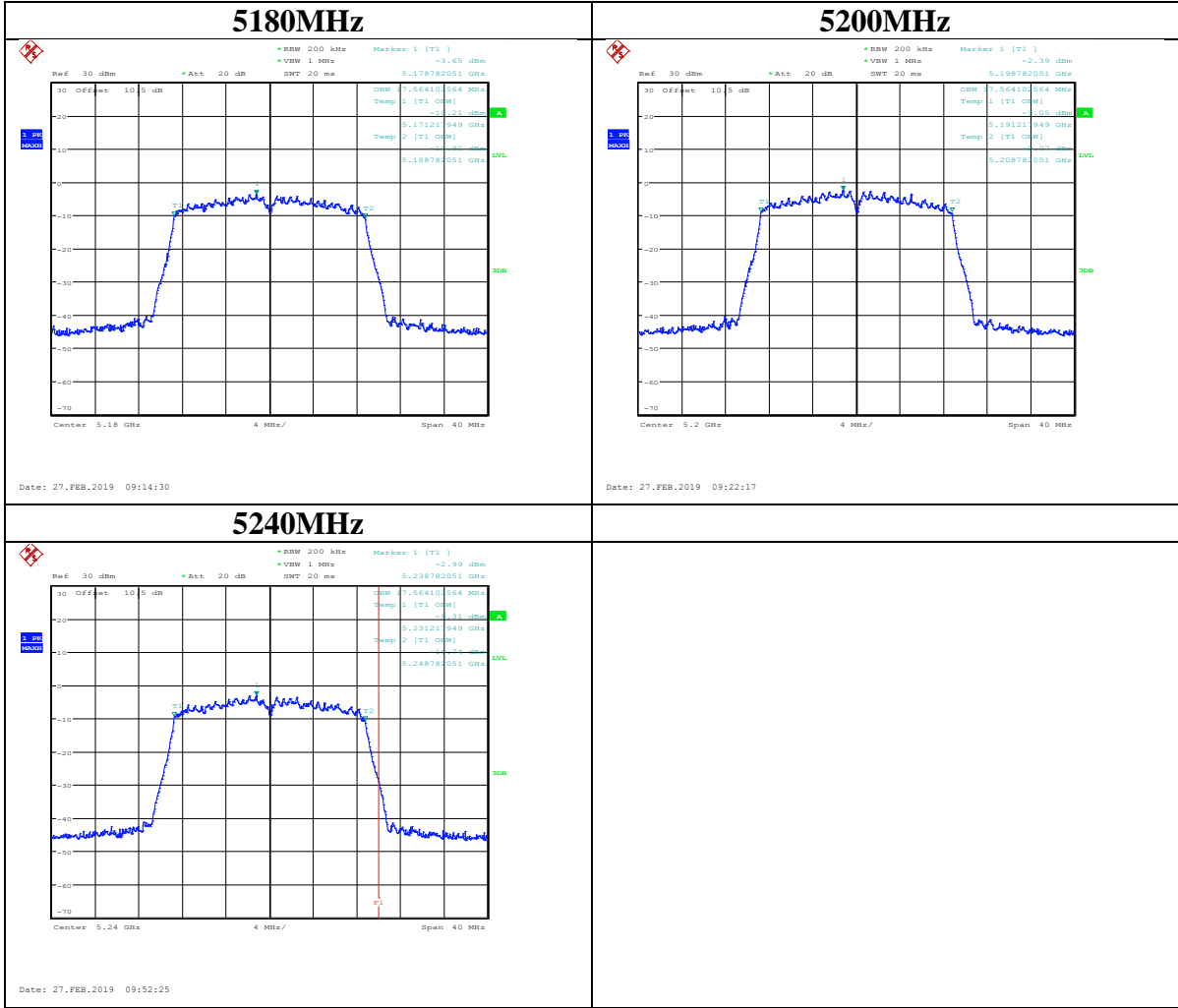
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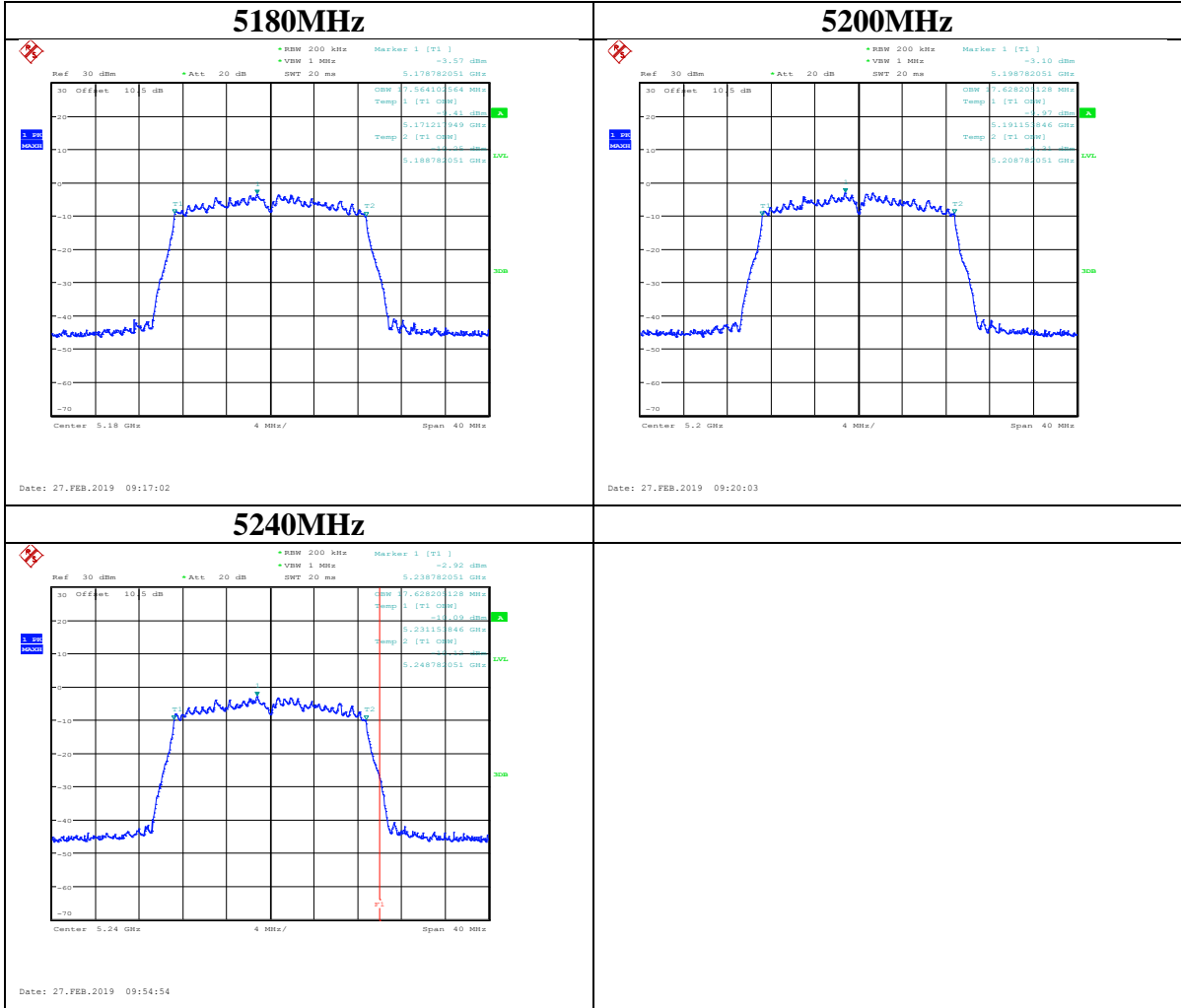
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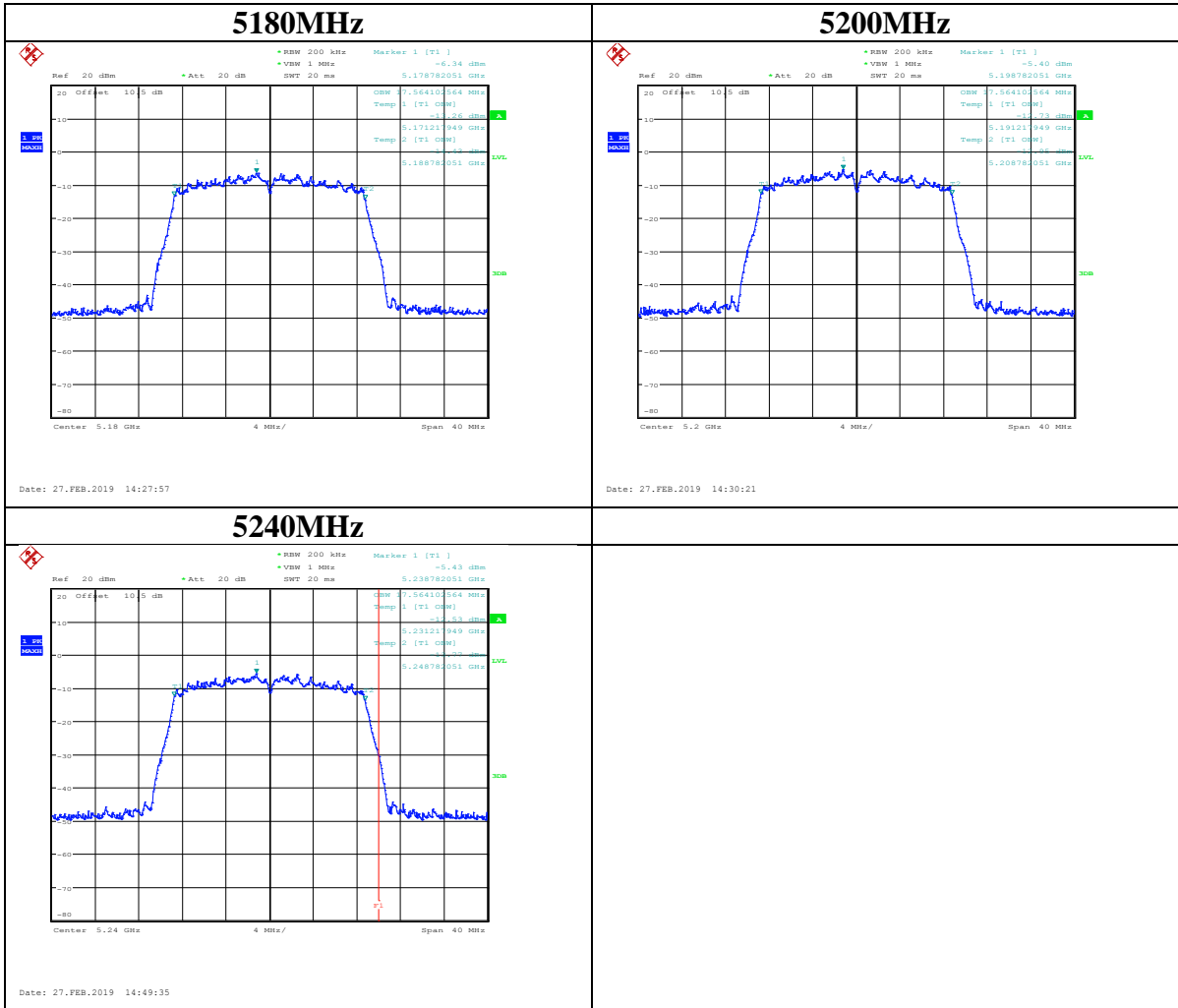
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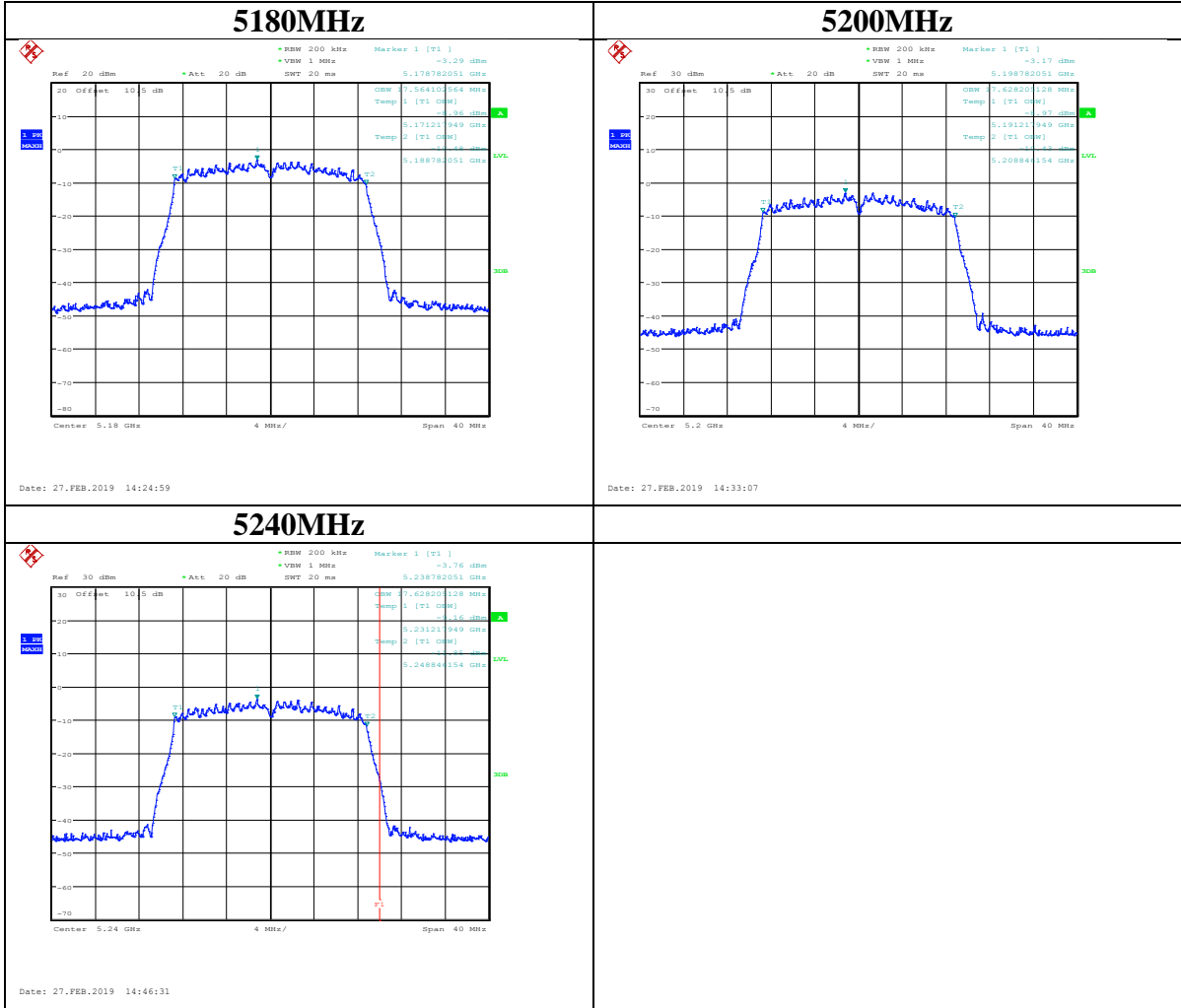
<Chain 3>



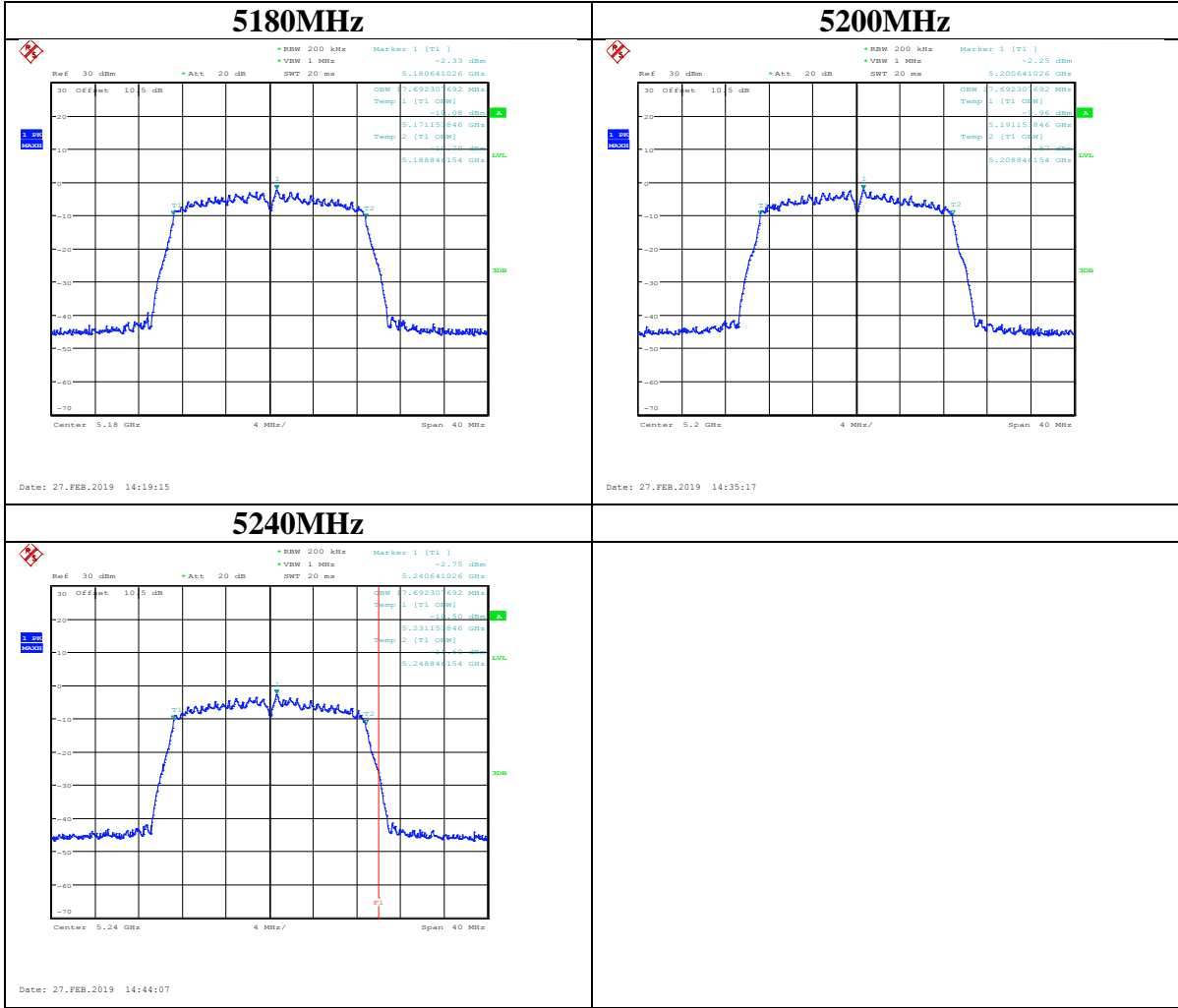
IEEE 802.11ac VHT20 Mode / 5150 ~ 5250MHz
<Chain 0>



<Chain 1>



<Chain 2>



<Chain 3>

