

FCC RF Test Report

APPLICANT : Honeywell International Inc.
Honeywell Safety and Productivity Solutions

EQUIPMENT : RT10A

BRAND NAME : Honeywell

MODEL NAME : RT10AL0N

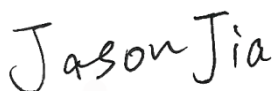
FCC ID : HD5-RT10AL0N

STANDARD : FCC Part 15 Subpart E §15.407

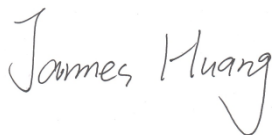
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on May 23, 2020 and testing was completed on Aug. 25, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Jason Jia / Supervisor



Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

***No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR052309F	Rev. 01	Initial issue of report	Aug. 27, 2020



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	-	1
3.1	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
-	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	-	1
3.2	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 4.11 dB at 185.200 MHz
3.3	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.52 dB at 0.440 MHz
3.4	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.5	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-
Remark: 1. All conducted test items were leveraged from module RF report which can refer to Report No. "RF171130C26-6".					

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Honeywell International Inc.
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.2 Manufacturer

Honeywell International Inc.
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	RT10A
Brand Name	Honeywell
Model Name	RT10AL0N
FCC ID	HD5-RT10AL0N
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC
HW Version	V1.0
SW Version	WLAN.HL.1.0.1.c2.3
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This product installed a RF module (Brand Name: Honeywell, Model Name: SOM660W, FCC ID: HD5-660W) during the test, only Conducted Power, Conduction and RSE test items are tested in this report, all the other test results are referred to module RF report "RF171130C26-6".

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification				
Tx/Rx Channel Frequency Range		5745 MHz ~ 5825 MHz		
Maximum Output Power		<MIMO Ant.1+2> <5745 MHz ~ 5825 MHz> 802.11a : 15.38 dBm / 0.0345 W 802.11n HT20 : 15.28 dBm / 0.0337 W 802.11n HT40 : 15.22 dBm / 0.0333 W 802.11ac VHT20: 15.36 dBm / 0.0344 W 802.11ac VHT40: 15.33 dBm / 0.0341 W 802.11ac VHT80: 14.03 dBm / 0.0253 W		
Type of Modulation		802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
Antenna Type / Gain		<Ant. 1> : PIFA Antenna with gain 1.60 dBi <Ant. 2> : PIFA Antenna with gain 0.80 dBi		
Antenna Function Description			Ant. 1	Ant. 2
		802.11 a/n/ac SISO	V	V
		802.11 n/ac MIMO	V	V

Note:

- For SISO & MIMO mode, the whole testing has assessed only MIMO mode by referring to their higher conducted power.
- For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11ac VHT20/ VHT40 by referring to their maximum conducted power.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH06-KS	AUDIX	E3	6.2009-8-24al
2.	CO01-KS	AUDIX	E3	6.2009-8-24

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5745-5825 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "[#]" were 802.11ac VHT80.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

MIMO Mode

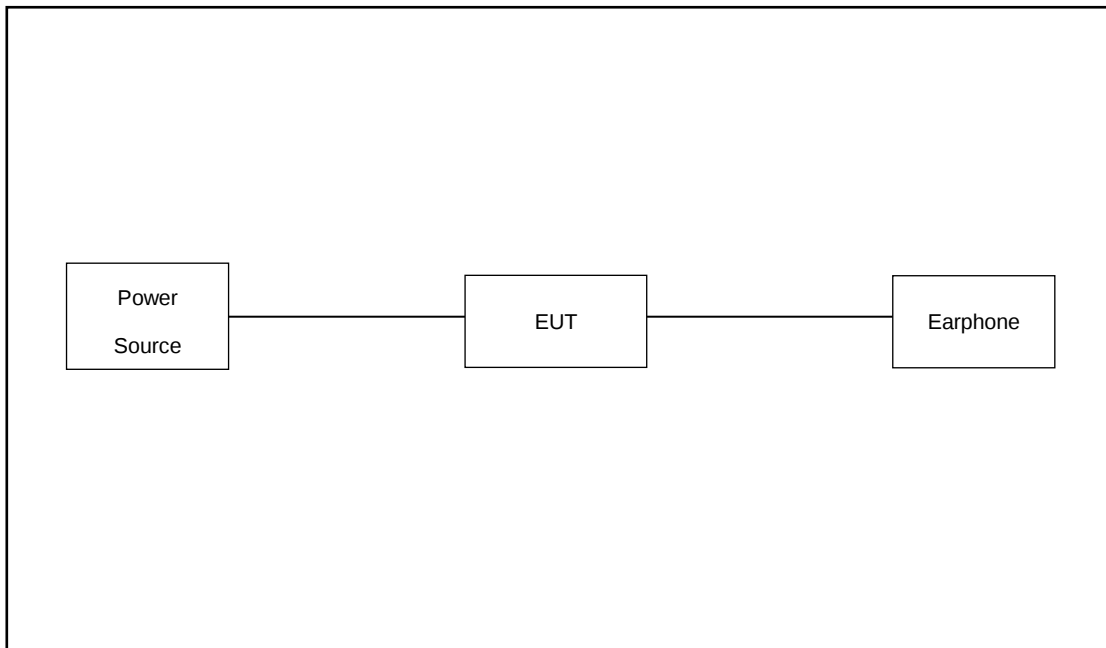
Modulation	Data Rate
802.11a	6 Mbps
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link(5G) + Battery 1 + Earphone + Smart Reader With Read Card + USB Link With Notebook (Type-c Port) + USB Link With U Disk + Adapter
Remark: For Radiated Test Cases, The tests were performance with Adapter, Battery 1 and Earphone	

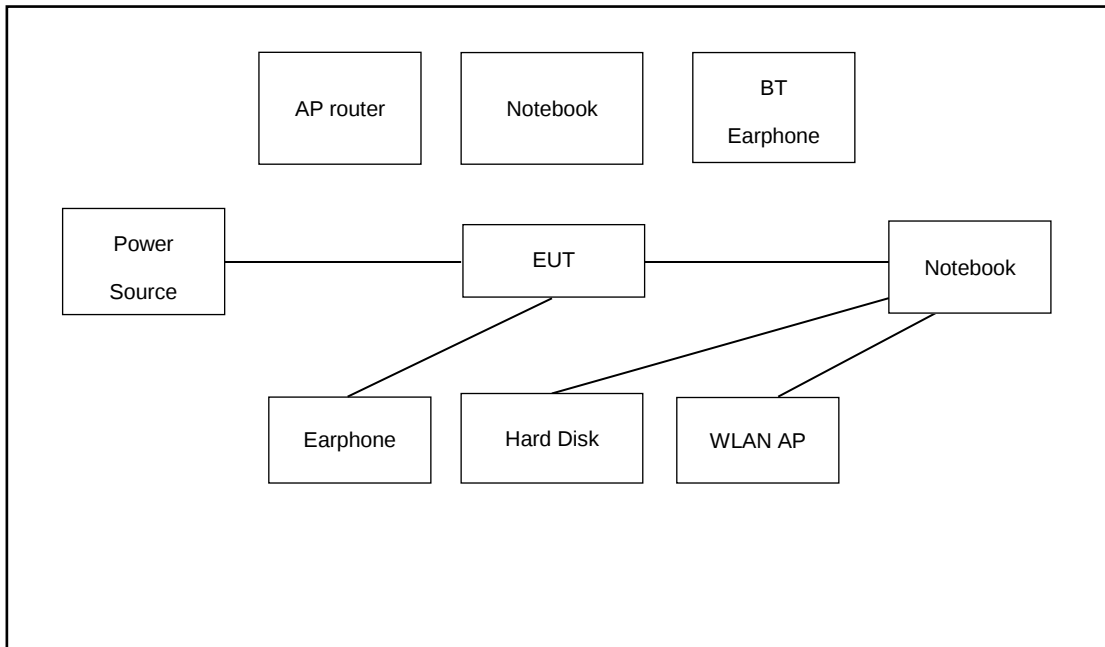
Ch. #		Band IV : 5745-5825 MHz			
		802.11a	802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System

For Radiation



For Conduction



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	BT Earphone	Lenovo	LBH308	N/A	N/A	N/A
2.	Notebook	Lenovo	V130-15IKB005	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
3.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
4.	Router	D-Link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
5.	SD Card	Kingston	8GB	N/A	N/A	N/A
6.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
7.	U Disk	Kingston	N/A	N/A	N/A	N/A
8.	Earphone	Lenovo	P121	N/A	Unshielded,1.2m	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

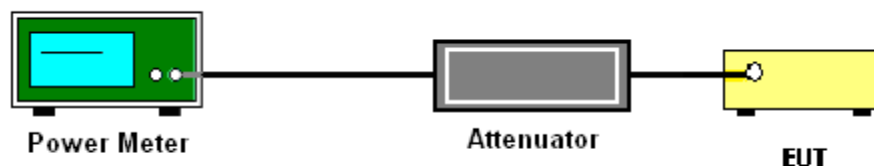
3.1.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.1.4 Test Setup





3.1.5 Test Result of Maximum Conducted Output Power

Band IV														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.15	0.18	11.93	12.63	15.30	30.00		1.60		Pass
11a	6Mbps	2	157	5785	0.15	0.18	12.14	12.59	15.38	30.00		1.60		Pass
11a	6Mbps	2	165	5825	0.15	0.18	11.74	12.66	15.23	30.00		1.60		Pass
HT20	MCS0	2	149	5745	0.19	0.22	11.87	12.56	15.24	30.00		1.60		Pass
HT20	MCS0	2	157	5785	0.19	0.22	11.98	12.54	15.28	30.00		1.60		Pass
HT20	MCS0	2	165	5825	0.19	0.22	11.63	12.32	15.00	30.00		1.60		Pass
HT40	MCS0	2	151	5755	0.32	0.38	11.67	12.54	15.14	30.00		1.60		Pass
HT40	MCS0	2	159	5795	0.32	0.38	11.82	12.56	15.22	30.00		1.60		Pass
VHT20	MCS0	2	149	5745	0.21	0.21	11.93	12.64	15.31	30.00		1.60		Pass
VHT20	MCS0	2	157	5785	0.21	0.21	12.10	12.59	15.36	30.00		1.60		Pass
VHT20	MCS0	2	165	5825	0.21	0.21	11.74	12.33	15.05	30.00		1.60		Pass
VHT40	MCS0	2	151	5755	0.35	0.38	12.13	12.36	15.26	30.00		1.60		Pass
VHT40	MCS0	2	159	5795	0.35	0.38	12.17	12.46	15.33	30.00		1.60		Pass
VHT80	MCS0	2	155	5775	0.67	0.64	11.20	10.84	14.03	30.00		1.60		Pass

3.2 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.2.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) 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.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/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

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

Note: The following formula is used to convert the EIRP to field strength.

$$\text{EIRP} = E_{\text{Meas}} + 20\log(d_{\text{Meas}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

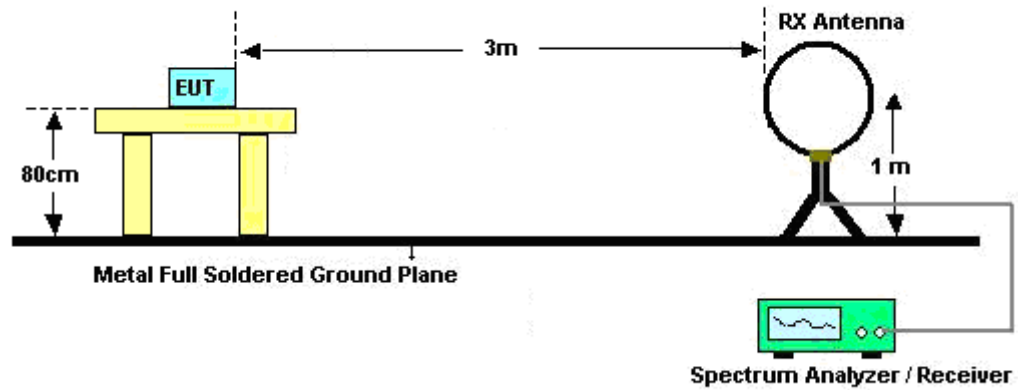


3.2.3 Test Procedures

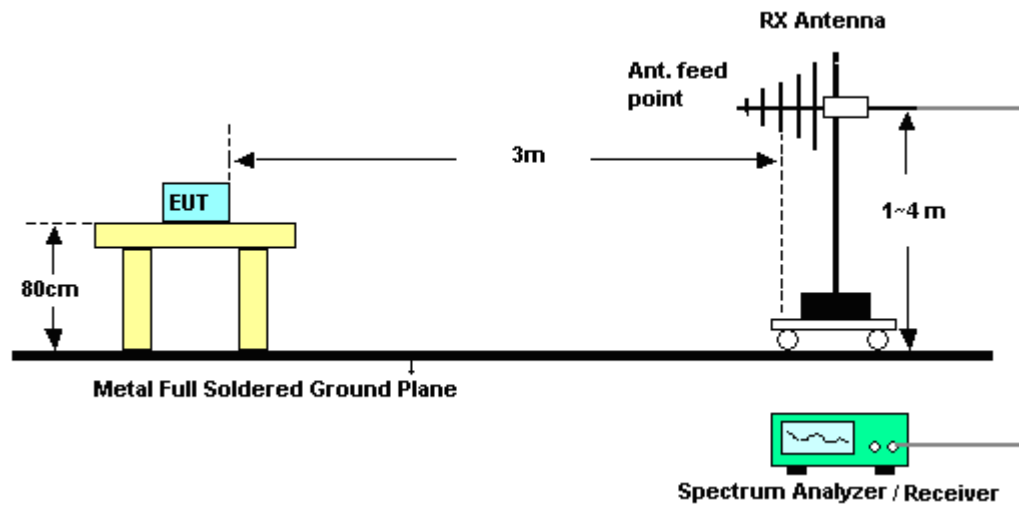
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.4 Test Setup

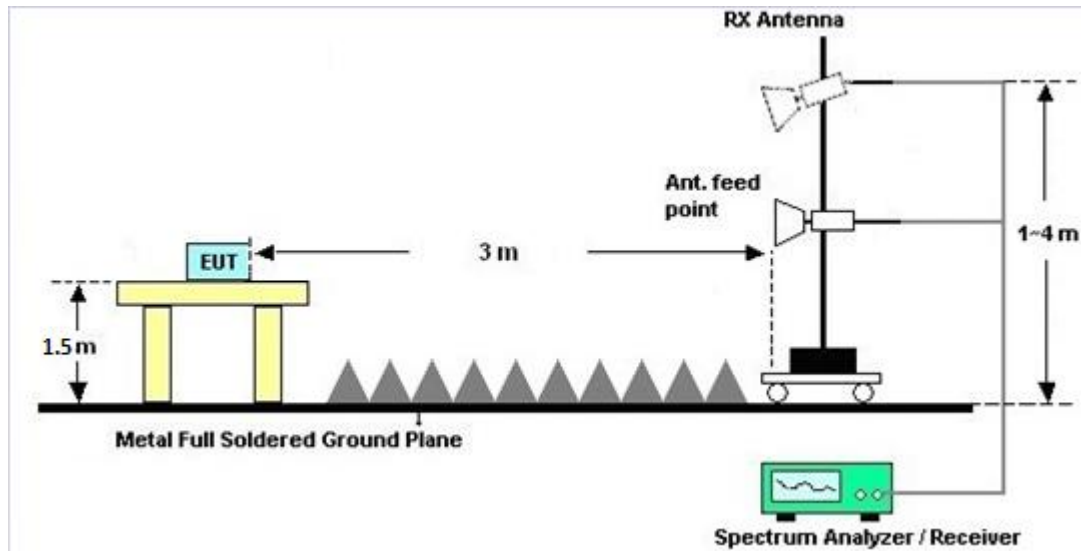
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.2.6 Test Result of Radiated Band Edges

Please refer to Appendix B.

3.2.7 Duty Cycle

Please refer to Appendix C.

3.2.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment 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.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

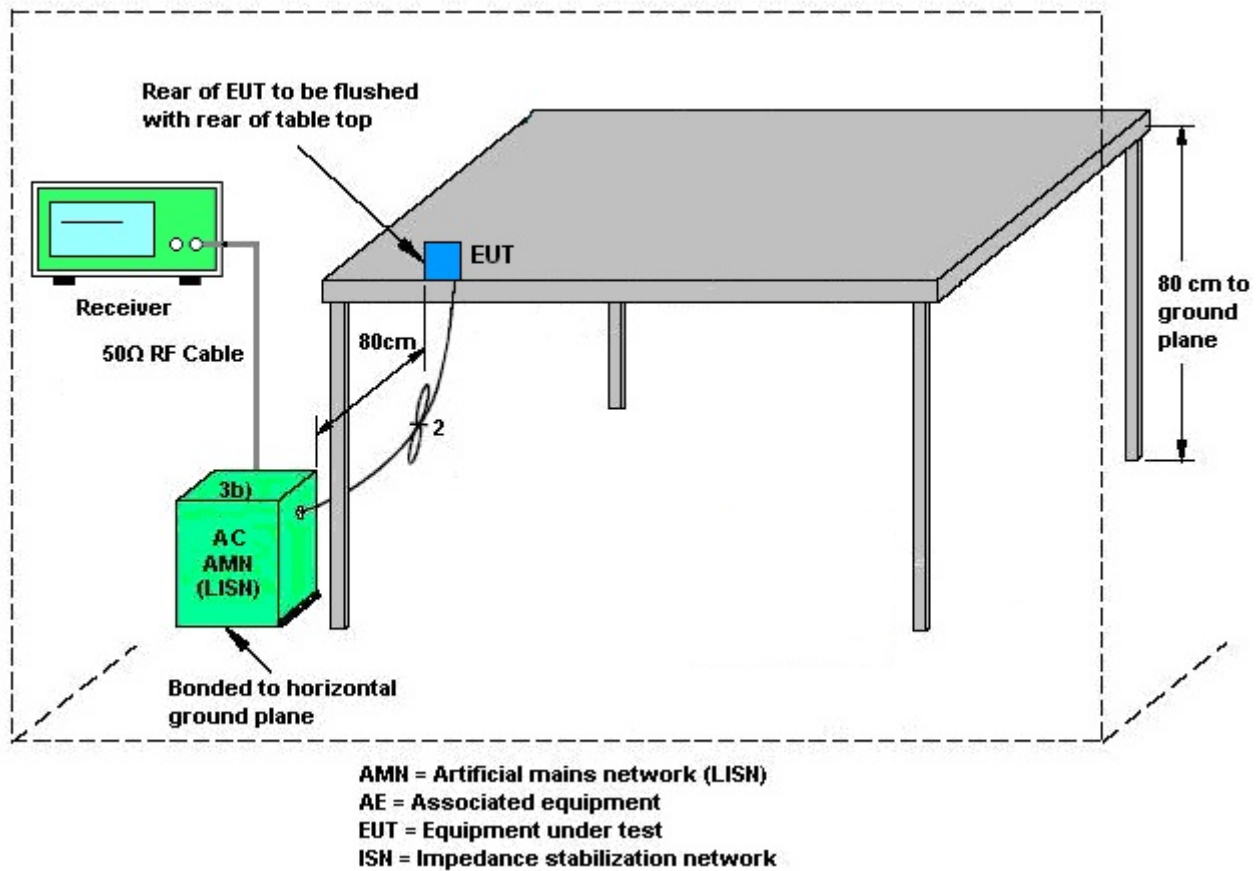
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

3.4 Automatically Discontinue Transmission

3.4.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.5 Antenna Requirements

3.5.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.5.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.5.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG for Power	DG for PSD	Power Limit Reduction	PSD Limit Reduction
	Ant. 1 (dBi)	Ant. 2 (dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	1.60	0.80	1.60	4.22	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 02, 2019	Aug. 25, 2020	Nov. 01, 2020	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 15, 2020	Aug. 25, 2020	Jan. 14, 2021	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 08, 2020	Aug. 25, 2020	Jan. 07, 2021	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz; Max 30dBm	Oct. 18, 2019	Jul. 18, 2020	Oct. 17, 2020	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz	Apr. 15, 2020	Jul. 18, 2020	Apr. 14, 2021	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 10, 2019	Jul. 18, 2020	Nov. 09, 2020	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz~1GHz	May 29, 2020	Jul. 18, 2020	May 28, 2021	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 27, 2020	Jul. 18, 2020	Apr. 26, 2021	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	Jul. 18, 2020	Nov. 09, 2020	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	187289	9KHz ~1GHZ	Apr. 14, 2020	Jul. 18, 2020	Apr. 13, 2021	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 08, 2020	Jul. 18, 2020	Jan. 07, 2021	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1Ghz-18Ghz	Jan. 02, 2020	Jul. 18, 2020	Jan. 01, 2021	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5GHz	Apr. 15, 2020	Jul. 18, 2020	Apr. 14, 2021	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jul. 18, 2020	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jul. 18, 2020	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jul. 18, 2020	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 14, 2020	Jul. 03, 2020	Apr. 13, 2021	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 18, 2019	Jul. 03, 2020	Oct. 17, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Oct. 28, 2019	Jul. 03, 2020	Oct. 27, 2020	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 18, 2019	Jul. 03, 2020	Oct. 17, 2020	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.9dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

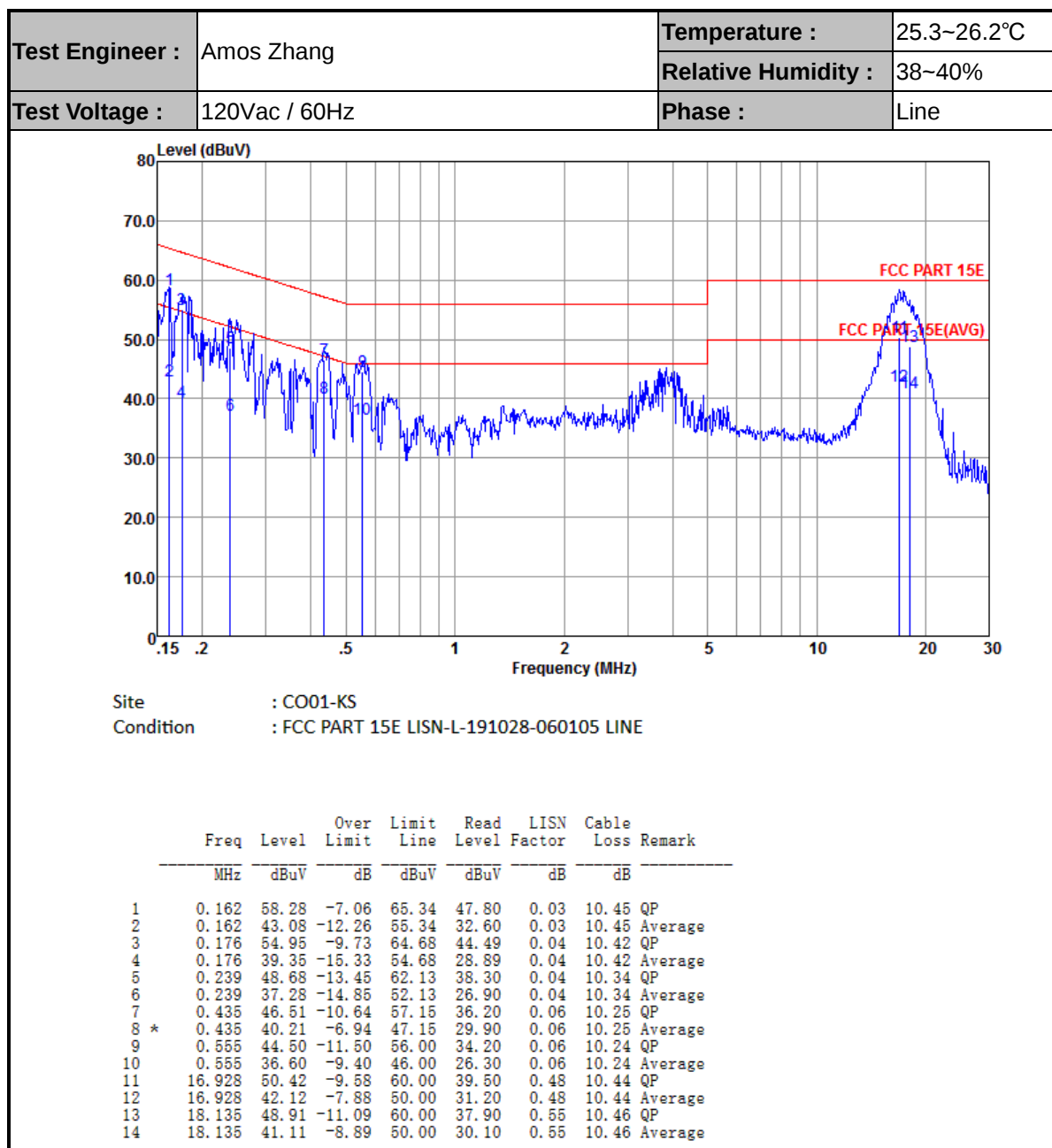
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
---	-------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
---	-------

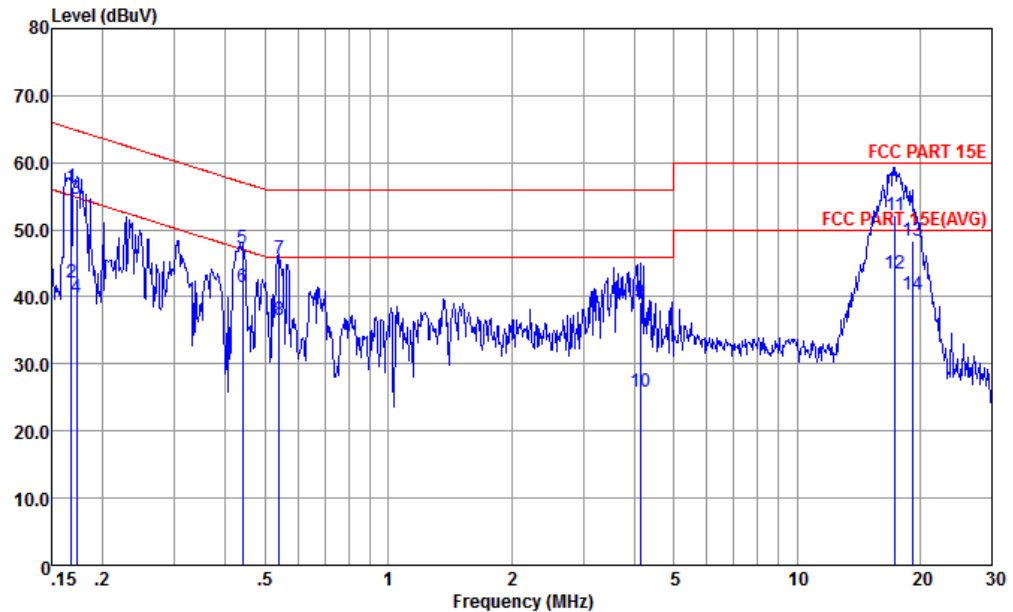


Appendix A. AC Conducted Emission Test Results





Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Site : CO01-KS
Condition : FCC PART 15E LISN-N-191028-060105 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.168	56.31	-8.77	65.08	45.80	0.08	10.43	QP
2	0.168	42.11	-12.97	55.08	31.60	0.08	10.43	Average
3	0.173	54.70	-10.11	64.81	44.20	0.08	10.42	QP
4	0.173	39.80	-15.01	54.81	29.30	0.08	10.42	Average
5	0.440	47.25	-9.82	57.07	36.90	0.10	10.25	QP
6 *	0.440	41.55	-5.52	47.07	31.20	0.10	10.25	Average
7	0.541	45.64	-10.36	56.00	35.30	0.10	10.24	QP
8	0.541	36.64	-9.36	46.00	26.30	0.10	10.24	Average
9	4.136	39.31	-16.69	56.00	28.91	0.15	10.25	QP
10	4.136	25.91	-20.09	46.00	15.51	0.15	10.25	Average
11	17.383	52.05	-7.95	60.00	41.09	0.51	10.45	QP
12	17.383	43.55	-6.45	50.00	32.59	0.51	10.45	Average
13	19.122	48.26	-11.74	60.00	37.19	0.59	10.48	QP
14	19.122	40.36	-9.64	50.00	29.29	0.59	10.48	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



Appendix B. Radiated Spurious Emission

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5621.6	56.16	-12.14	68.3	41.8	35.78	11.93	33.35	106	341	P	H
		5694	59.07	-41.81	100.88	44.67	35.82	11.95	33.37	106	341	P	H
		5718	65.93	-44.41	110.34	51.52	35.84	11.95	33.38	106	341	P	H
		5721.6	72.19	-42.36	114.55	57.78	35.84	11.95	33.38	106	341	P	H
		5752	109.87	-	-	95.45	35.85	11.96	33.39	106	341	P	H
		5752	103.16	-	-	88.74	35.85	11.96	33.39	106	341	A	H
		5645.2	55.67	-12.63	68.3	41.29	35.8	11.94	33.36	172	360	P	V
		5692.4	55.87	-43.83	99.7	41.47	35.82	11.95	33.37	172	360	P	V
		5720	61.11	-49.79	110.9	46.7	35.84	11.95	33.38	172	360	P	V
		5724.4	71.14	-49.79	120.93	56.73	35.84	11.95	33.38	172	360	P	V
		5740	106.7	-	-	92.27	35.85	11.96	33.38	172	360	P	V
		5740	100.69	-	-	86.26	35.85	11.96	33.38	172	360	A	V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		5852.4	62.97	-53.86	116.83	48.46	35.89	12.04	33.42	102	9	P	H
		5856.8	61.17	-49.23	110.4	46.63	35.9	12.06	33.42	102	9	P	H
		5882	57.34	-42.76	100.1	42.78	35.92	12.08	33.44	102	9	P	H
		5941.2	55.89	-12.41	68.3	41.08	36	12.26	33.45	102	9	P	H
		5824	109.36	-	-	94.88	35.88	12.01	33.41	102	9	P	H
		5824	102.35	-	-	87.87	35.88	12.01	33.41	102	9	A	H
		5850.8	61.9	-58.58	120.48	47.39	35.89	12.04	33.42	100	338	P	V
		5855.6	60.31	-50.42	110.73	45.77	35.9	12.06	33.42	100	338	P	V
		5923.6	55.32	-14.01	69.33	40.58	35.98	12.21	33.45	100	338	P	V
		5997.2	55.62	-12.68	68.3	40.62	36.06	12.41	33.47	100	338	P	V
		5818	106.73	-	-	92.27	35.88	11.99	33.41	100	338	P	V
		5818	100.02	-	-	85.56	35.88	11.99	33.41	100	338	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	45.21	-28.79	74	49.72	40.19	17.24	61.94	100	360	P	H
		11490	46.64	-27.36	74	51.15	40.19	17.24	61.94	100	360	P	V
802.11a CH 157 5785MHz		11570	47.52	-26.48	74	51.83	40.27	17.38	61.96	100	360	P	H
		11570	46.22	-27.78	74	50.53	40.27	17.38	61.96	100	360	P	V
802.11a CH 165 5825MHz		11650	46.88	-27.12	74	51.03	40.34	17.49	61.98	100	360	P	H
		11650	46.98	-27.02	74	51.13	40.34	17.49	61.98	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT 20 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT 20 CH 149 5745MHz		5632.4	54.41	-13.89	68.3	40.05	35.78	11.93	33.35	100	339	P	H
		5697.6	55.56	-47.97	103.53	41.16	35.82	11.95	33.37	100	339	P	H
		5719.6	65.63	-45.16	110.79	51.22	35.84	11.95	33.38	100	339	P	H
		5724.4	71.07	-49.86	120.93	56.66	35.84	11.95	33.38	100	339	P	H
		5746	108.45	-	-	94.03	35.85	11.96	33.39	100	339	P	H
		5746	101.17	-	-	86.75	35.85	11.96	33.39	100	339	A	H
		5640.8	55.12	-13.18	68.3	40.74	35.8	11.94	33.36	114	207	P	V
		5696.4	55.29	-47.36	102.65	40.89	35.82	11.95	33.37	114	207	P	V
		5719.6	62.64	-48.15	110.79	48.23	35.84	11.95	33.38	114	207	P	V
		5722.8	69.19	-48.09	117.28	54.78	35.84	11.95	33.38	114	207	P	V
		5740	104.88	-	-	90.45	35.85	11.96	33.38	114	207	P	V
		5740	99.32	-	-	84.89	35.85	11.96	33.38	114	207	A	V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT 20 CH 165 5825MHz		5850	64.18	-58.12	122.3	49.67	35.89	12.04	33.42	104	317	P	H
		5857.2	62.33	-47.95	110.28	47.79	35.9	12.06	33.42	104	317	P	H
		5894	56.12	-35.08	91.2	41.52	35.94	12.1	33.44	104	317	P	H
		5962.8	54.98	-13.32	68.3	40.11	36.02	12.31	33.46	104	317	P	H
		5830	107.53	-	-	93.06	35.88	12.01	33.42	104	317	P	H
		5830	100.61	-	-	86.14	35.88	12.01	33.42	104	317	A	H
		5850.8	62.56	-57.92	120.48	48.05	35.89	12.04	33.42	114	208	P	V
		5855.2	56.6	-54.24	110.84	42.06	35.9	12.06	33.42	114	208	P	V
		5886.4	54.82	-42.02	96.84	40.26	35.92	12.08	33.44	114	208	P	V
		5940.8	55.99	-12.31	68.3	41.18	36	12.26	33.45	114	208	P	V
		5830	106.49	-	-	92.02	35.88	12.01	33.42	114	208	P	V
		5830	98.93	-	-	84.46	35.88	12.01	33.42	114	208	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT 20 CH 149 5745MHz		11490	46.08	-27.92	74	50.59	40.19	17.24	61.94	100	360	P	H
		11490	46.64	-27.36	74	51.15	40.19	17.24	61.94	100	360	P	V
802.11ac VHT 20 CH 157 5785MHz		11570	46.26	-27.74	74	50.57	40.27	17.38	61.96	100	360	P	H
		11570	45.78	-28.22	74	50.09	40.27	17.38	61.96	100	360	P	V
802.11ac VHT 20 CH 165 5825MHz		11650	47.66	-26.34	74	51.81	40.34	17.49	61.98	100	360	P	H
		11650	47.06	-26.94	74	51.21	40.34	17.49	61.98	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 151 5755MHz		5637.2	54.29	-14.01	68.3	39.91	35.8	11.94	33.36	100	340	P	H
		5694.8	57.54	-43.93	101.47	43.14	35.82	11.95	33.37	100	340	P	H
		5716.8	67.2	-42.81	110.01	52.8	35.83	11.95	33.38	100	340	P	H
		5723.6	77.58	-41.53	119.11	63.17	35.84	11.95	33.38	100	340	P	H
		5854	53.44	-59.74	113.18	38.9	35.9	12.06	33.42	100	340	P	H
		5864.4	54.83	-53.44	108.27	40.3	35.9	12.06	33.43	100	340	P	H
		5902.4	55.26	-29.73	84.99	40.66	35.94	12.1	33.44	100	340	P	H
		5954.8	54.86	-13.44	68.3	40.06	36	12.26	33.46	100	340	P	H
		5764	105.13	-	-	90.72	35.85	11.96	33.4	100	340	P	H
		5764	98.08	-	-	83.67	35.85	11.96	33.4	100	340	A	H
		5626.4	54.3	-14	68.3	39.94	35.78	11.93	33.35	113	208	P	V
		5698.8	57.71	-46.71	104.42	43.31	35.82	11.95	33.37	113	208	P	V
		5717.6	68.13	-42.1	110.23	53.72	35.84	11.95	33.38	113	208	P	V
		5721.6	67.47	-47.08	114.55	53.06	35.84	11.95	33.38	113	208	P	V
		5851.6	53.57	-65.08	118.65	39.06	35.89	12.04	33.42	113	208	P	V
		5861.6	54.05	-55	109.05	39.51	35.9	12.06	33.42	113	208	P	V
		5914	54.36	-22.05	76.41	39.68	35.96	12.16	33.44	113	208	P	V
		5979.2	55.87	-12.43	68.3	40.93	36.04	12.36	33.46	113	208	P	V
		5758	103.4	-	-	88.98	35.85	11.96	33.39	113	208	P	V
		5758	96.29	-	-	81.87	35.85	11.96	33.39	113	208	A	V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 159 5795MHz		5645.2	54.57	-13.73	68.3	40.19	35.8	11.94	33.36	100	9	P	H
		5684.4	54.03	-39.76	93.79	39.63	35.82	11.95	33.37	100	9	P	H
		5714.8	54.17	-55.28	109.45	39.77	35.83	11.95	33.38	100	9	P	H
		5723.6	54.51	-64.6	119.11	40.1	35.84	11.95	33.38	100	9	P	H
		5850	60.67	-61.63	122.3	46.16	35.89	12.04	33.42	100	9	P	H
		5859.2	59.87	-49.85	109.72	45.33	35.9	12.06	33.42	100	9	P	H
		5877.6	57.48	-45.89	103.37	42.91	35.92	12.08	33.43	100	9	P	H
		5994.4	57.36	-10.94	68.3	42.36	36.06	12.41	33.47	100	9	P	H
		5800	104.47	-	-	90.04	35.87	11.97	33.41	100	9	P	H
		5800	97.17	-	-	82.74	35.87	11.97	33.41	100	9	A	H
		5609.6	57.67	-10.63	68.3	43.31	35.77	11.93	33.34	115	207	P	V
		5672	54.28	-30.34	84.62	39.89	35.82	11.94	33.37	115	207	P	V
		5719.2	55.87	-54.81	110.68	41.46	35.84	11.95	33.38	115	207	P	V
		5724.8	54.38	-67.46	121.84	39.97	35.84	11.95	33.38	115	207	P	V
		5850.4	57.04	-64.35	121.39	42.53	35.89	12.04	33.42	115	207	P	V
		5859.2	58.11	-51.61	109.72	43.57	35.9	12.06	33.42	115	207	P	V
		5877.6	55.02	-48.35	103.37	40.45	35.92	12.08	33.43	115	207	P	V
		5951.2	55.24	-13.06	68.3	40.43	36	12.26	33.45	115	207	P	V
		5800	103.34	-	-	88.91	35.87	11.97	33.41	115	207	P	V
		5800	96.16	-	-	81.73	35.87	11.97	33.41	115	207	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40		11510	46.07	-27.93	74	50.54	40.2	17.27	61.94	100	360	P	H
CH 151 5755MHz		11510	45.67	-28.33	74	50.14	40.2	17.27	61.94	100	360	P	V
802.11ac VHT40		11590	46.59	-27.41	74	50.86	40.29	17.41	61.97	100	360	P	H
CH 159 5795MHz		11590	45.79	-28.21	74	50.06	40.29	17.41	61.97	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5612.4	56.93	-11.37	68.3	42.57	35.77	11.93	33.34	100	7	P	H
		5688	66.16	-30.29	96.45	51.76	35.82	11.95	33.37	100	7	P	H
		5706.4	68.57	-38.52	107.09	54.17	35.83	11.95	33.38	100	7	P	H
		5724.8	69.14	-52.7	121.84	54.73	35.84	11.95	33.38	100	7	P	H
		5852.4	71.86	-44.97	116.83	57.35	35.89	12.04	33.42	100	7	P	H
		5869.2	69.96	-36.96	106.92	55.43	35.9	12.06	33.43	100	7	P	H
		5877.2	60.74	-42.93	103.67	46.17	35.92	12.08	33.43	100	7	P	H
		5978.4	55.04	-13.26	68.3	40.1	36.04	12.36	33.46	100	7	P	H
		5806	101.84	-	-	87.38	35.88	11.99	33.41	100	7	P	H
		5806	95.11	-	-	80.65	35.88	11.99	33.41	100	7	A	H
		5631.6	55.55	-12.75	68.3	41.19	35.78	11.93	33.35	100	209	P	V
		5690.8	64.52	-34	98.52	50.12	35.82	11.95	33.37	100	209	P	V
		5715.6	69.1	-40.57	109.67	54.7	35.83	11.95	33.38	100	209	P	V
		5720	64.62	-46.28	110.9	50.21	35.84	11.95	33.38	100	209	P	V
		5852.8	68.23	-47.69	115.92	53.72	35.89	12.04	33.42	100	209	P	V
		5855.2	67.6	-43.24	110.84	53.06	35.9	12.06	33.42	100	209	P	V
		5875.2	59.87	-45.28	105.15	45.3	35.92	12.08	33.43	100	209	P	V
		5940.8	55.74	-12.56	68.3	40.93	36	12.26	33.45	100	209	P	V
		5794	100.11	-	-	85.68	35.87	11.97	33.41	100	209	P	V
		5794	93.46	-	-	79.03	35.87	11.97	33.41	100	209	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11ac VHT80 (Harmonic @ 3m)**

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80		11550	45.73	-28.27	74	50.09	40.25	17.35	61.96	100	360	P	H
CH 155 5775MHz		11550	45.18	-28.82	74	49.54	40.25	17.35	61.96	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11ac VHT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 LF		77.53	25.85	-14.15	40	43.65	13.78	1.47	33.05	-	-	P	H
		102.75	27.48	-16.02	43.5	40.85	18.07	1.65	33.09	-	-	P	H
		185.2	39.39	-4.11	43.5	53.52	16.65	2.15	32.93	100	0	P	H
		242.43	35.82	-10.18	46	47.27	18.92	2.45	32.82	-	-	P	H
		256.01	33.13	-12.87	46	43.91	19.49	2.52	32.79	-	-	P	H
		429.64	27.1	-18.9	46	32.88	23.24	3.22	32.24	-	-	P	H
		77.53	30.98	-9.02	40	48.78	13.78	1.47	33.05	-	-	P	V
		97.9	31.81	-11.69	43.5	45.51	17.68	1.64	33.02	-	-	P	V
		123.12	32.4	-11.1	43.5	45.84	17.82	1.79	33.05	-	-	P	V
		185.2	37.66	-5.84	43.5	51.79	16.65	2.15	32.93	100	360	P	V
		372.41	31.23	-14.77	46	38.81	21.99	3	32.57	-	-	P	V
		434.49	34.8	-11.2	46	40.47	23.32	3.24	32.23	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

**Note symbol**

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

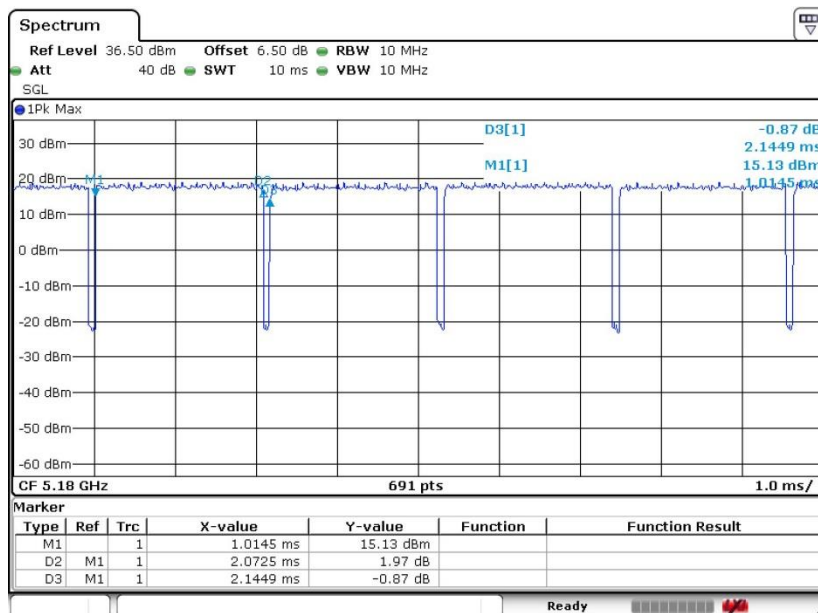


Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11a	96.62	2.073	0.483	0.51KHz
1+2	802.11ac VHT20	95.36	1.935	0.517	0.56KHz
1+2	802.11ac VHT40	92.31	0.957	1.045	1.1KHz
1+2	802.11ac VHT80	86.25	0.464	2.156	2.2KHz

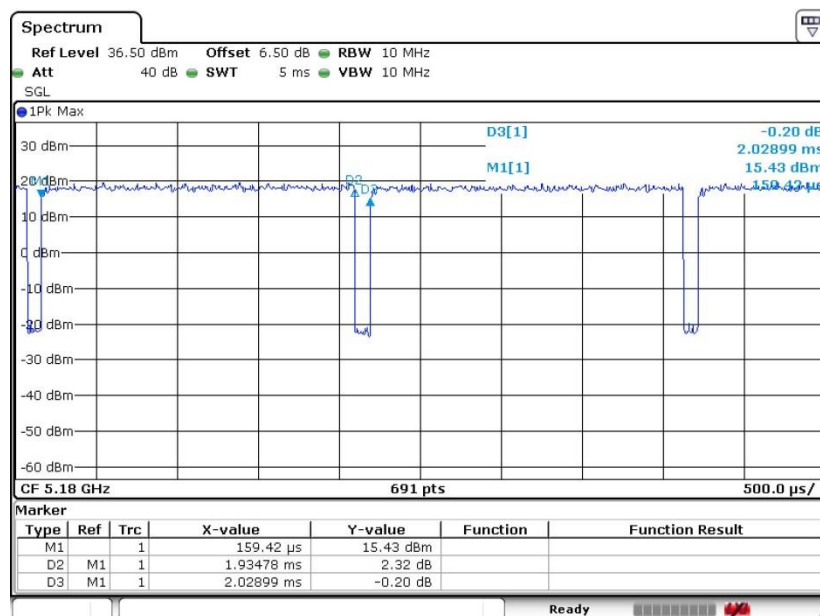
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802.11a

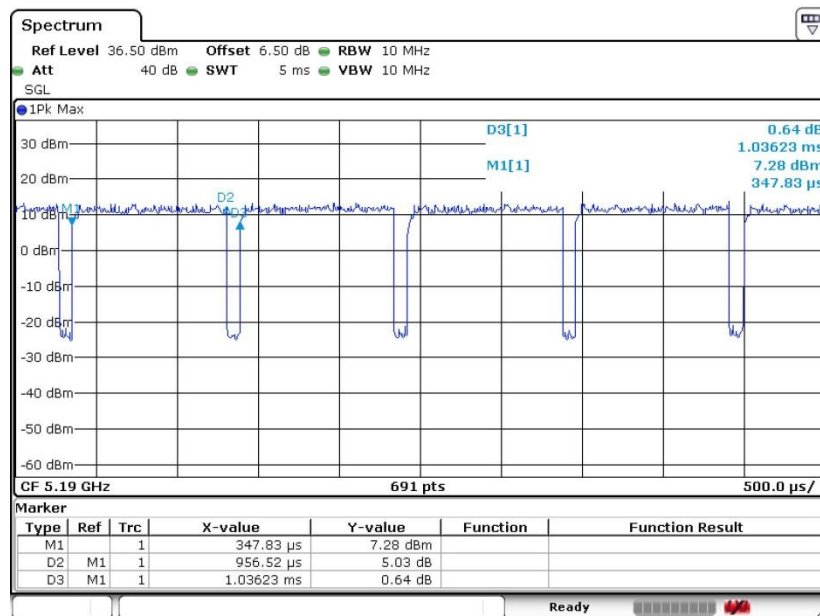




802.11ac VHT20



802.11ac VHT40



802.11ac VHT80

