FCC RADIO TEST REPORT

FCC ID	:	**2AVVJ-5273**
Equipment	:	**Digital Media Receiver**
Model Name	:	**L4S3RE**
Applicant	:	**Coral Creep LLC BROWNSBORO CROSSING 9850 VON ALLMEN COURT, SUITE 201, LOUISVILLE, KENTUCKY, 40241**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Apr. 24, 2020 and testing was started from May 08, 2020 and completed on Jun. 29, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, 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 INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR012305-01H	01	Initial issue of report	Jul. 07, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)
3.1	15.403 (i)	6dB & 26dB Bandwidth	Pass
3.1	2.1049	99% Occupied Bandwidth	Reporting only
3.2	15.407 (a)	Maximum Conducted Output Power	Pass
3.3	15.407 (a)	Power Spectral Density	Pass
3.4	15.407(b)	Unwanted Emissions	Pass
3.5	15.207	AC Conducted Emission	Pass
3.6	15.407 (c)	Automatically Discontinue Transmission	Pass
3.7	15.203 & 15.407 (a)	Antenna Requirement	Pass

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.

Reviewed by: Wii Chang

Report Producer: Vivian Hsu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Digital Media Receiver
Model Name	L4S3RE
FCC ID	2AVVJ-5273
EUT supports Radios application	WLAN b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE Zigbee/FSK/LoRa

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	**MIMO <Ant. 1+2>** 802.11a : 19.24 dBm / 0.0839 W 802.11n HT20 : 19.18 dBm / 0.0828 W 802.11n HT40 : 19.08 dBm / 0.0809 W 802.11ac VHT20: 19.08 dBm / 0.0809 W 802.11ac VHT40: 18.98 dBm / 0.0791 W 802.11ac VHT80: 18.67 dBm / 0.0736 W
99% Occupied Bandwidth	**MIMO <Ant. 1>** 802.11a : 16.70 MHz 802.11n HT20 : 17.75 MHz 802.11n HT40 : 36.40 MHz 802.11ac VHT80 : 76.44 MHz **MIMO <Ant. 2>** 802.11a : 16.75 MHz 802.11n HT20 : 17.85 MHz 802.11n HT40 : 36.40 MHz 802.11ac VHT80 : 76.56 MHz
Antenna Gain / Gain	**<Ant. 1>:** PCB PIFA Antenna with gain 4.08 dBi **<Ant. 2>:** PCB PIFA Antenna with gain 3.26 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

1.3 Modification of EUT

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

1.4 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory		
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		
	TH05-HY	CO05-HY	DFS02-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH11-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW0007

1.5 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- 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. The TAF code is not including all the FCC KDB listed without accreditation.

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).

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)
5725-5850 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**
802.11n HT20	**MCS0**
802.11n HT40	**MCS0**
802.11ac VHT20 (Covered by HT20)	**MCS0**
802.11ac VHT40 (Covered by HT40)	**MCS0**
802.11ac VHT80	**MCS0**

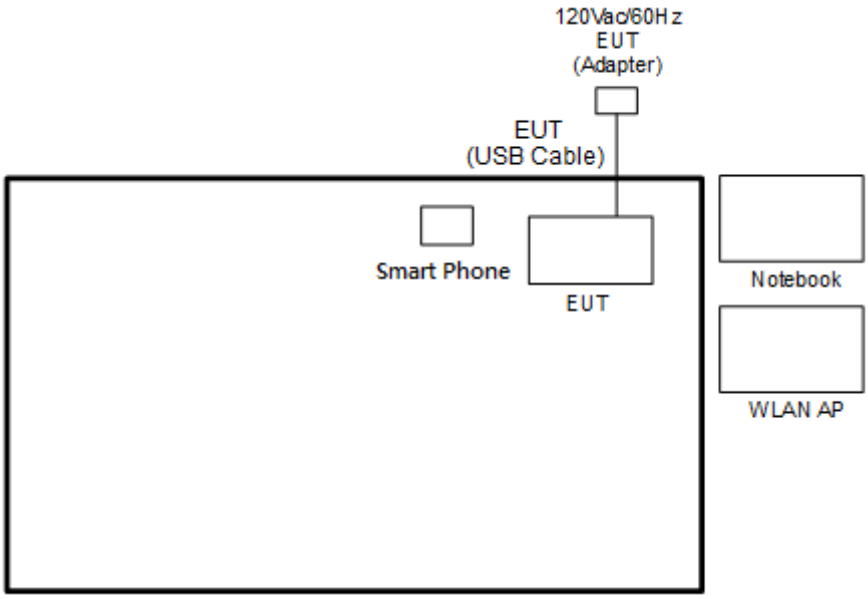
Test Cases	
AC Conducted Emission	Mode 1 : WLAN (5GHz) Link + Bluetooth Link + Internal Speaker play Bangarang + Adapter

Ch. #		Band IV：5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

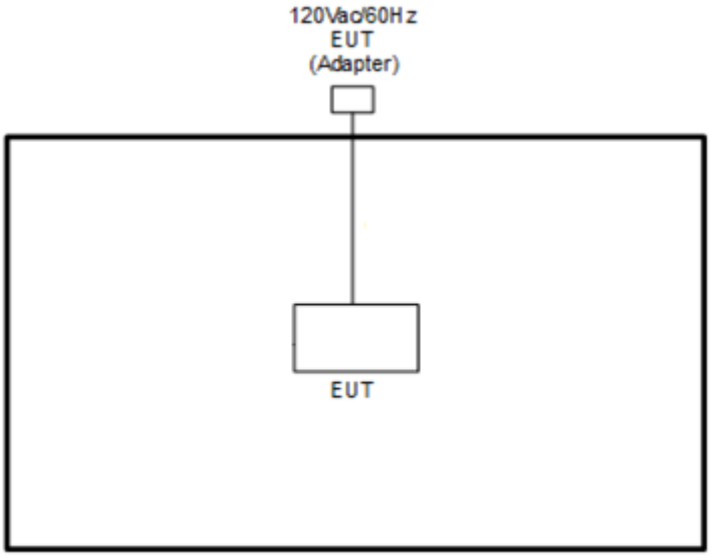
Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Notebook	Dell	Latitude 3400	FCC DOC	N/A	AC I/P： Unshielded, 1.2m DC O/P： Shielded, 1.8m
3.	Smart Phone	Samsuang	SM-A730F/DS	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “Compliance V1.0.0.79” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

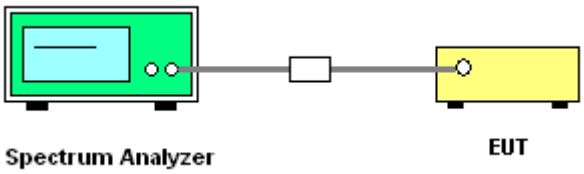
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

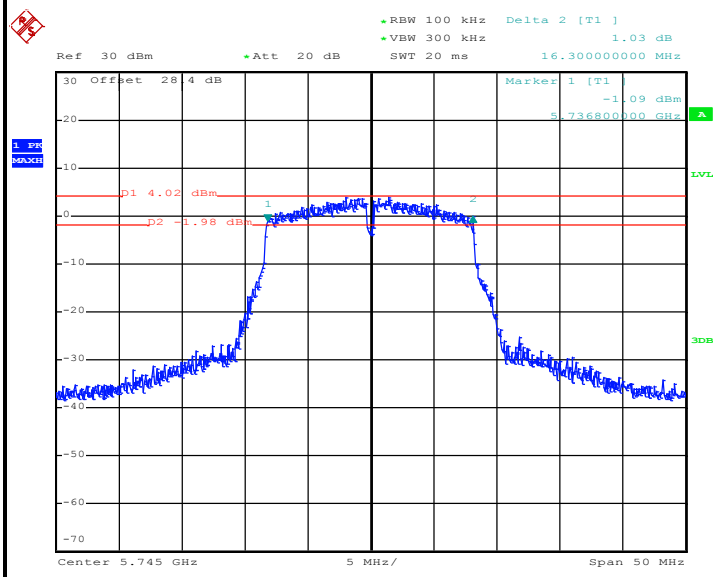
3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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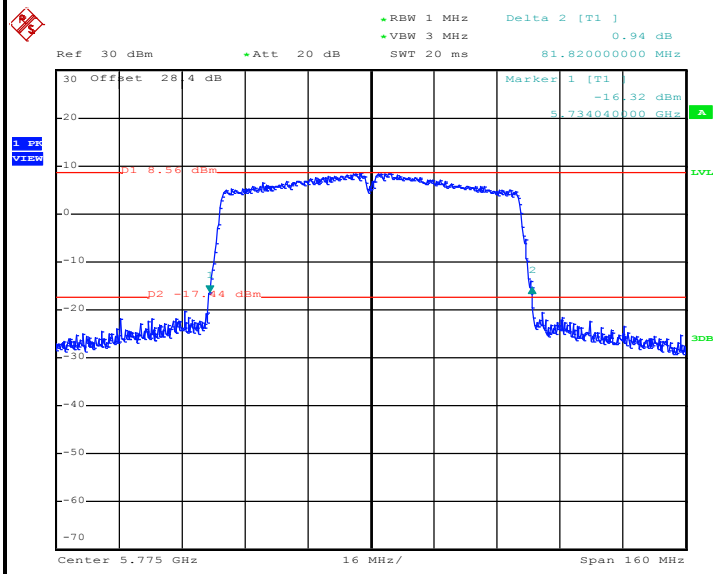
Maximum 26dB Bandwidth



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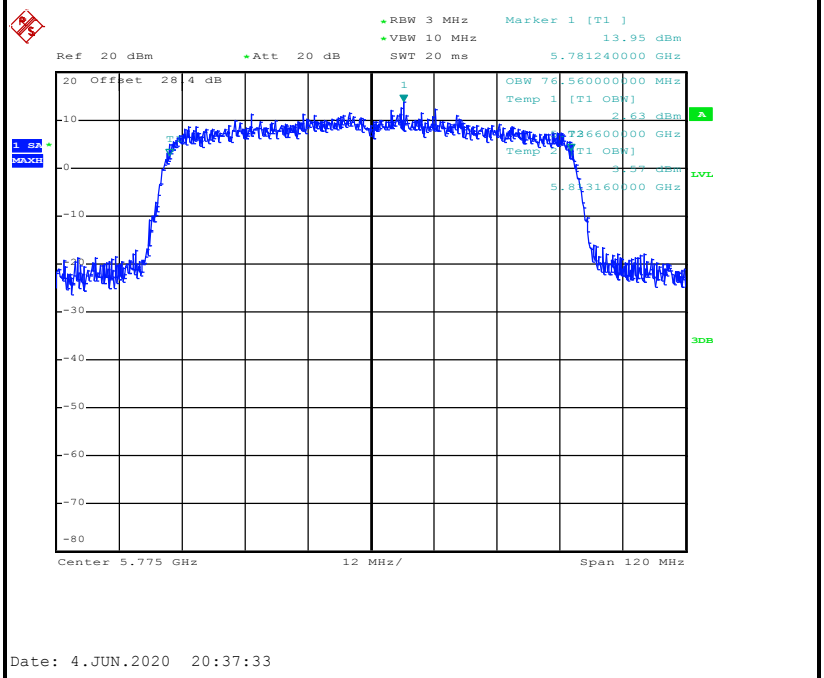
Maximum 99% Occupied Bandwidth



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 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.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

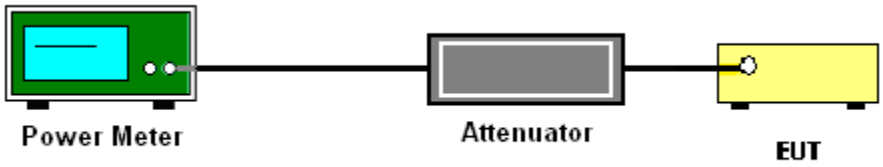
3.2.3 Test Procedures

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

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

 # Method SA-3 #

(power averaging (rms) detection with max hold):

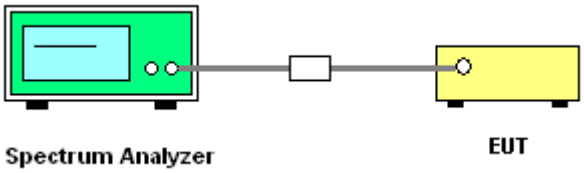
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (c): Measure and add 10 log(N_{ANT}) dB.

   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

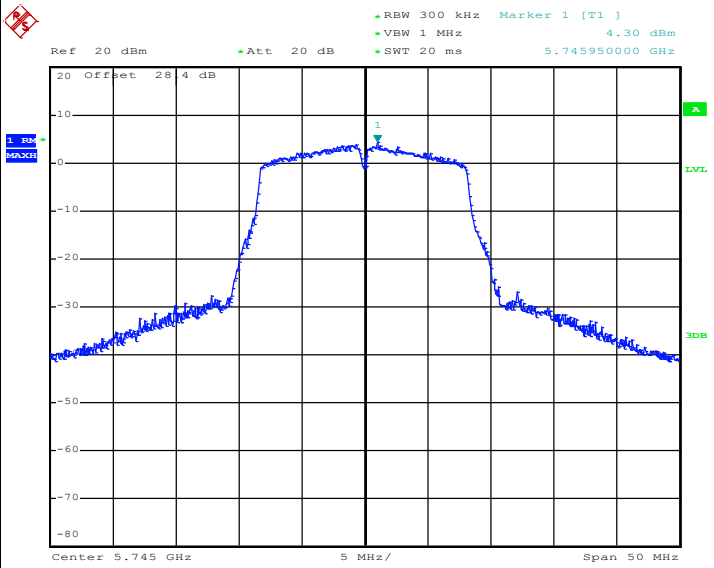
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/MHz) for MIMO Ant. 1



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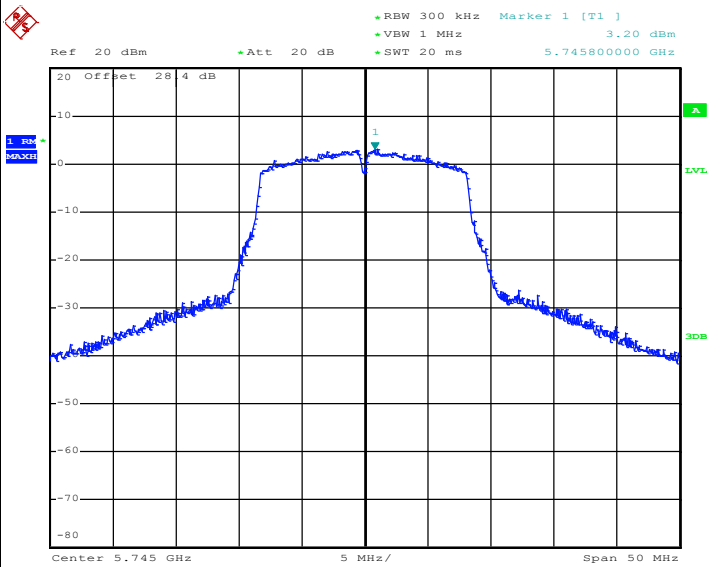
Worst Case Power Density (dBm/MHz) for MIMO Ant. 2



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3.4 Unwanted Emissions Measurement

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

3.4.1 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

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

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

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

(3) KDB789033 D02 v02r01 G)2)c)

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 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 ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

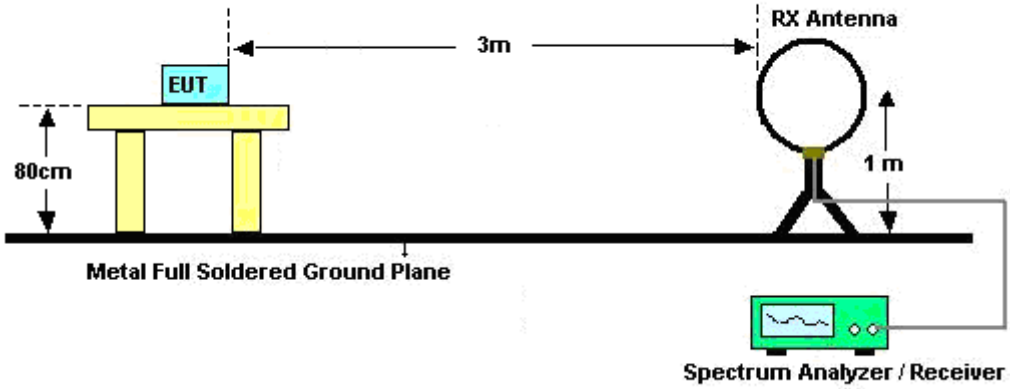
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 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.

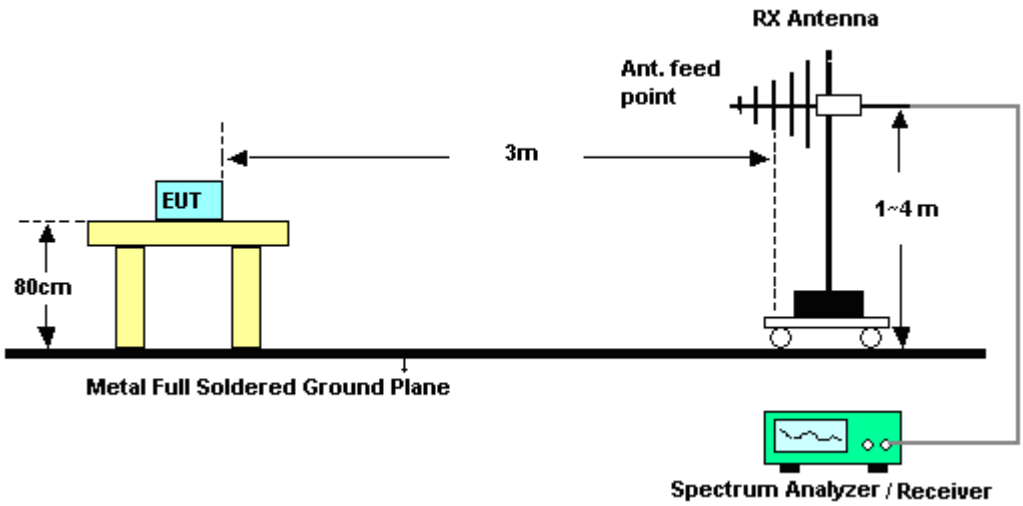
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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.

3.4.4 Test Setup

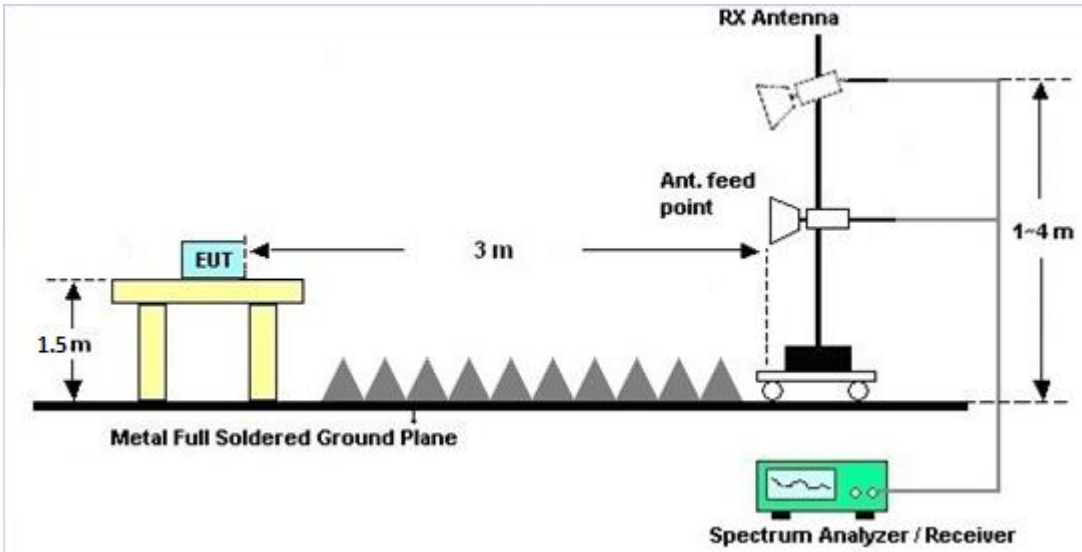
For radiated emissions below 30MHz



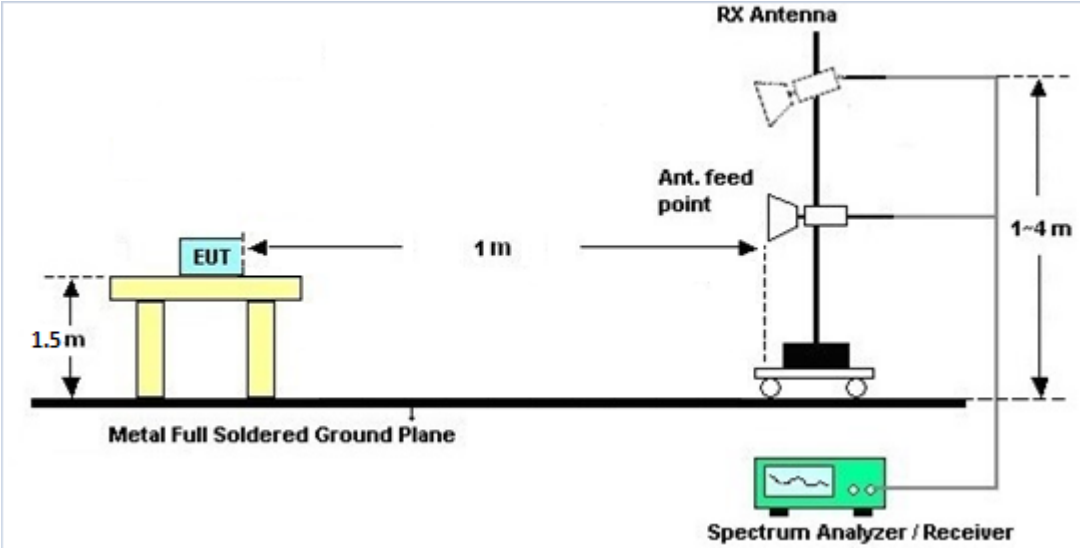
For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



For radiated emissions above 18GHz



3.4.5 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 alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 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 (dBμV)	
	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.

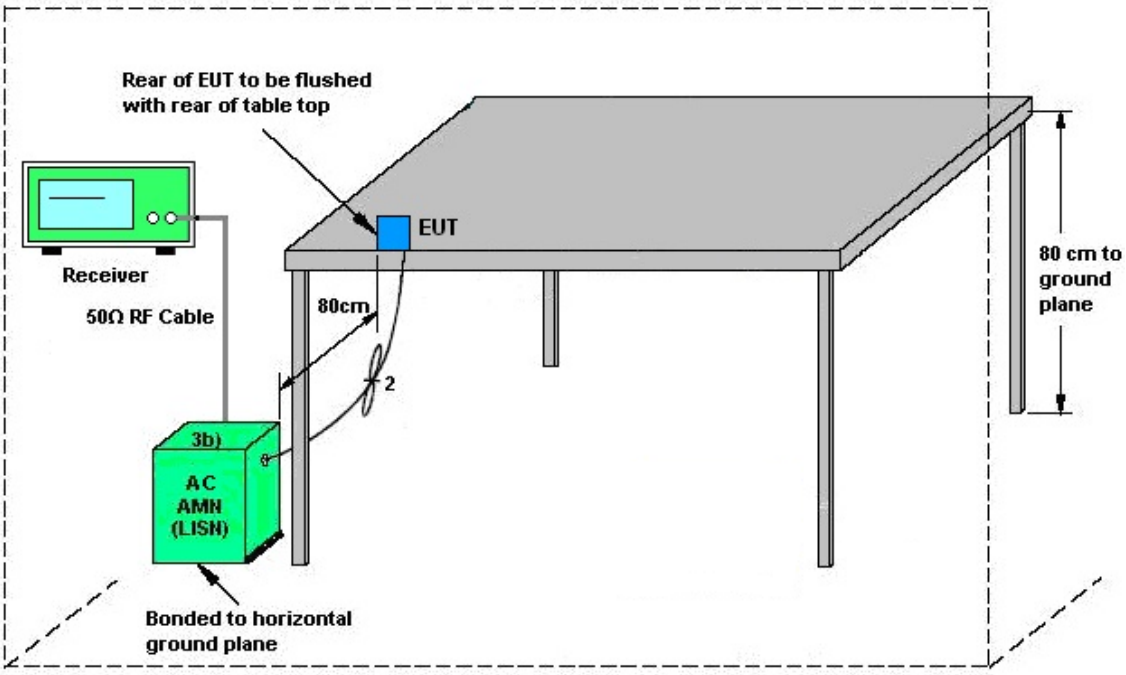
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 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.

3.5.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

EUT is verified this characteristic during the function check of normal sample associated with an access point:

A. Information start: make EUT supply information to the access point.

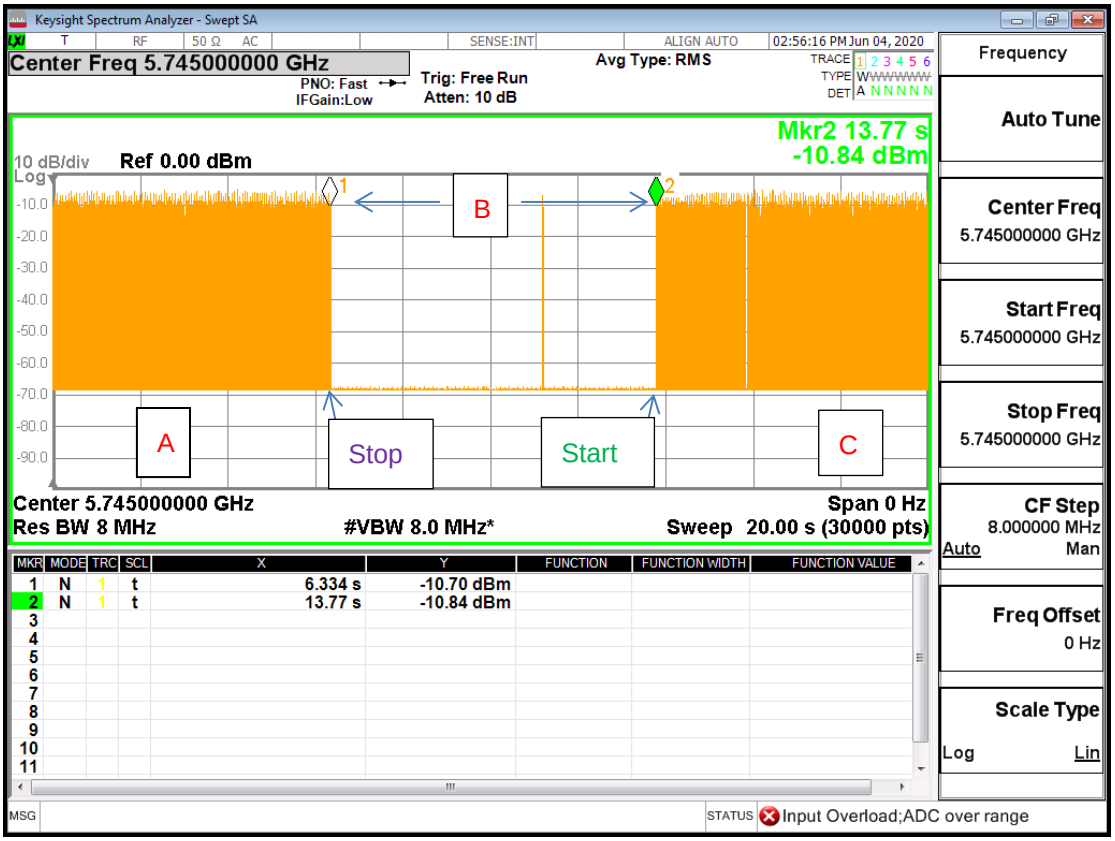
B. Information stop: stop supplying information to the access point.

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving.

C. Information start: make EUT supply information to the access point again.

The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

5745MHz



Note : The control / signalling information during the period B is precluded.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

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

Array Gain = 10 log(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT 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).3.

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>

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	4.08	3.26	4.08	6.69	0.00	0.69

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
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 26, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Jun. 26, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 07, 2019	Jun. 26, 2020	Nov. 06, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Jun. 26, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 26, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Jun. 26, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Jun. 26, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Hygrometer	Testo	608-H2	41410069	N/A	Jun. 17, 2019	May 16, 2020~ Jun. 04, 2020	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO10	10MHz~6GHz	Dec. 23, 2019	May 16, 2020~ Jun. 04, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Aug. 14, 2019	May 16, 2020~ Jun. 04, 2020	Aug. 13, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Aug. 22, 2019	May 16, 2020~ Jun. 04, 2020	Aug. 21, 2020	Conducted (TH05-HY)
Preamplifier	EMCE	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Jun. 29, 2020	Dec. 12, 2020	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 03, 2019	May 08, 2020~ Jun. 29, 2020	Dec. 02, 2020	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 12, 2019	May 08, 2020~ Jun. 29, 2020	Oct. 11, 2020	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Nov. 04, 2019	May 08, 2020~ Jun. 29, 2020	Nov. 03, 2020	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Dec. 26, 2019	May 08, 2020~ Jun. 29, 2020	Dec. 25, 2020	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 13, 2019	May 08, 2020~ Jun. 29, 2020	Nov. 12, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 28, 2019	May 08, 2020~ Jun. 29, 2020	Oct. 27, 2020	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	May 08, 2020~ Jun. 29, 2020	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 08, 2020~ Jun. 29, 2020	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	May 08, 2020~ Jun. 29, 2020	N/A	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303K	1710001800054002	1GHz~18GHz	Aug. 06, 2019	May 08, 2020~ Jun. 29, 2020	Aug. 05, 2020	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz- 40GHz	May 22, 2020	Jun. 29, 2020	May 21, 2021	Radiation (03CH11-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 28, 2019	May 08, 2020~ Jun. 29, 2020	Oct. 27, 2020	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	May 08, 2020~ Jun. 29, 2020	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 12, 2020	May 08, 2020~ Jun. 29, 2020	Mar. 11, 2021	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 12, 2020	May 08, 2020~ Jun. 29, 2020	Mar. 11, 2021	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 12, 2020	May 08, 2020~ Jun. 29, 2020	Mar. 11, 2021	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 12, 2020	May 08, 2020~ Jun. 29, 2020	Mar. 11, 2021	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN11	1.53G Low Pass	Sep. 15, 2019	May 08, 2020~ Jun. 29, 2020	Sep. 14, 2020	Radiation (03CH11-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40SS	SN3	6.75GHz High Pass Filter	Sep. 16, 2019	May 08, 2020~ Jun. 29, 2020	Sep. 15, 2020	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP140325	N/A	Nov. 07, 2019	May 08, 2020~ Jun. 29, 2020	Nov. 06, 2020	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP161237	N/A	Oct. 25, 2019	May 08, 2020~ Jun. 29, 2020	Oct. 24, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY56070412	10Hz~7GHz	Aug. 27, 2019	Jun. 04, 2020	Aug. 26, 2020	DFS (DFS02-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.3

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.2

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.2

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.3

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao and Shiming Liu	Temperature:	21.3~23.7	°C
Test Date:	2020/5/16~2020/6/4	Relative Humidity:	47.2~57.8	%

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	16.65	16.70	21.40	21.65	16.30	16.35	0.5	Pass
11a	6Mbps	2	157	5785	16.70	16.65	21.65	27.00	16.30	16.33	0.5	Pass
11a	6Mbps	2	165	5825	16.70	16.75	21.45	25.75	16.30	16.30	0.5	Pass
HT20	MCS0	2	149	5745	17.75	17.75	22.15	27.25	17.55	17.50	0.5	Pass
HT20	MCS0	2	157	5785	17.75	17.85	21.95	26.90	17.60	17.50	0.5	Pass
HT20	MCS0	2	165	5825	17.70	17.75	21.75	29.05	17.50	17.55	0.5	Pass
HT40	MCS0	2	151	5755	36.40	36.40	41.76	42.17	36.25	36.36	0.5	Pass
HT40	MCS0	2	159	5795	36.30	36.40	41.89	42.51	36.00	36.25	0.5	Pass
VHT80	MCS0	2	155	5775	76.44	76.56	81.82	80.96	76.38	76.16	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	16.60	15.60	19.14	30.00		4.08		Pass
11a	6Mbps	2	157	5785	16.70	15.70	19.24	30.00		4.08		Pass
11a	6Mbps	2	165	5825	16.20	15.70	18.97	30.00		4.08		Pass
HT20	MCS0	2	149	5745	16.60	15.70	19.18	30.00		4.08		Pass
HT20	MCS0	2	157	5785	16.60	15.60	19.14	30.00		4.08		Pass
HT20	MCS0	2	165	5825	16.10	15.50	18.82	30.00		4.08		Pass
HT40	MCS0	2	151	5755	16.50	15.60	19.08	30.00		4.08		Pass
HT40	MCS0	2	159	5795	16.50	15.60	19.08	30.00		4.08		Pass
VHT20	MCS0	2	149	5745	16.50	15.60	19.08	30.00		4.08		Pass
VHT20	MCS0	2	157	5785	16.50	15.50	19.04	30.00		4.08		Pass
VHT20	MCS0	2	165	5825	16.00	15.40	18.72	30.00		4.08		Pass
VHT40	MCS0	2	151	5755	16.40	15.50	18.98	30.00		4.08		Pass
VHT40	MCS0	2	159	5795	16.40	15.50	18.98	30.00		4.08		Pass
VHT80	MCS0	2	155	5775	16.00	15.30	18.67	30.00		4.08		Pass

Report Number : FR012305-01H

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		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	2.22		6.52	5.42	9.53	29.31		6.69		Pass
11a	6Mbps	2	157	5785	2.22		6.37	5.33	9.38	29.31		6.69		Pass
11a	6Mbps	2	165	5825	2.22		5.78	5.15	8.79	29.31		6.69		Pass
HT20	MCS0	2	149	5745	2.22		6.47	5.33	9.48	29.31		6.69		Pass
HT20	MCS0	2	157	5785	2.22		6.34	5.28	9.35	29.31		6.69		Pass
HT20	MCS0	2	165	5825	2.22		5.51	4.97	8.52	29.31		6.69		Pass
HT40	MCS0	2	151	5755	2.22		3.40	2.39	6.41	29.31		6.69		Pass
HT40	MCS0	2	159	5795	2.22		3.09	2.44	6.10	29.31		6.69		Pass
VHT80	MCS0	2	155	5775	2.22		-0.53	-1.15	2.48	29.31		6.69		Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

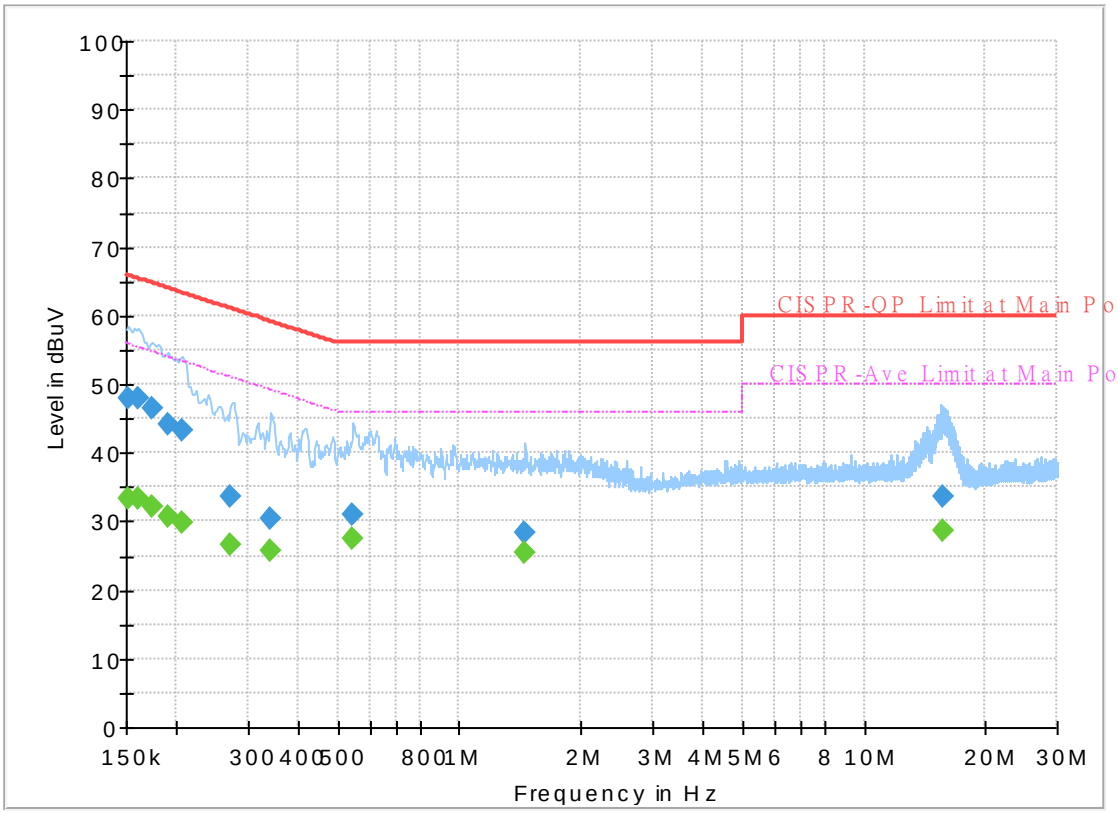
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	**Temperature :**	23~25℃
		Relative Humidity :	42~50%

EUT Information

Report NO :	012305-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



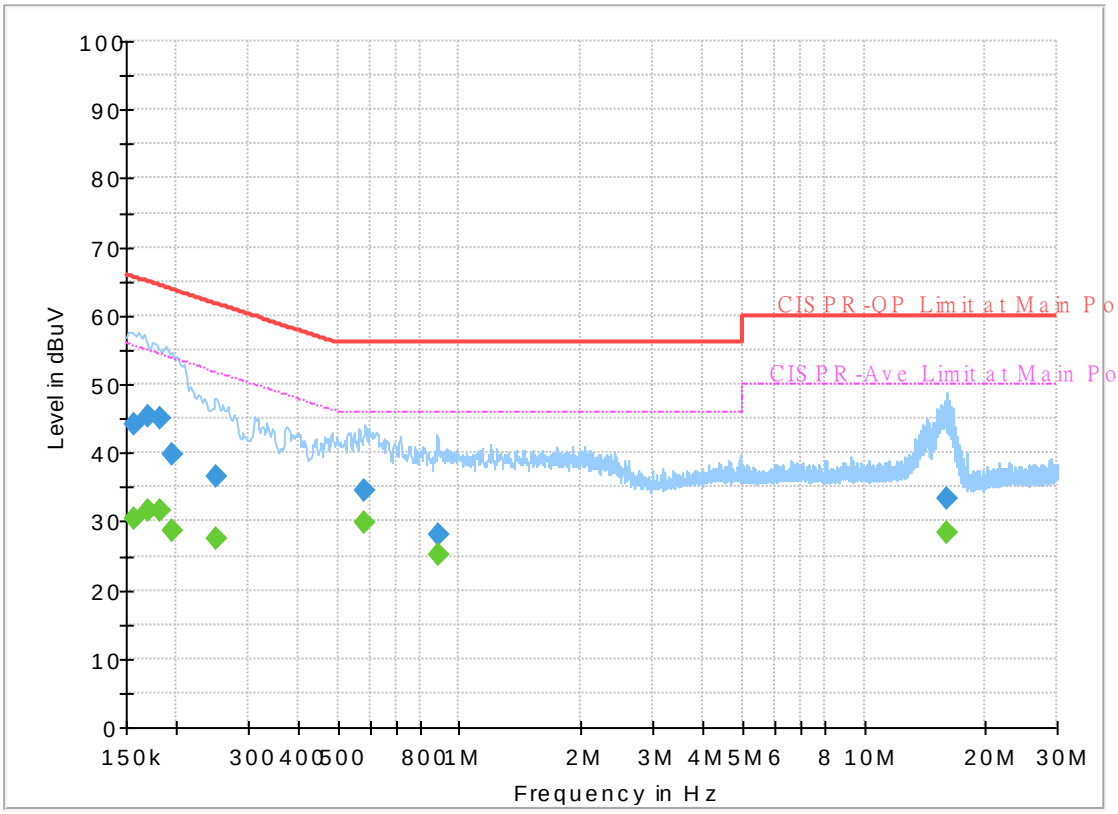
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	33.22	55.88	22.66	L1	OFF	19.6
0.152250	47.97	---	65.88	17.91	L1	OFF	19.6
0.161250	---	33.38	55.40	22.02	L1	OFF	19.6
0.161250	47.93	---	65.40	17.47	L1	OFF	19.6
0.173760	---	32.16	54.78	22.62	L1	OFF	19.6
0.173760	46.57	---	64.78	18.21	L1	OFF	19.6
0.191400	---	30.84	53.98	23.14	L1	OFF	19.6
0.191400	44.10	---	63.98	19.88	L1	OFF	19.6
0.206250	---	29.84	53.36	23.52	L1	OFF	19.6
0.206250	43.37	---	63.36	19.99	L1	OFF	19.6
0.271680	---	26.49	51.07	24.58	L1	OFF	19.6
0.271680	33.75	---	61.07	27.32	L1	OFF	19.6
0.341250	---	25.81	49.17	23.36	L1	OFF	19.6
0.341250	30.33	---	59.17	28.84	L1	OFF	19.6
0.546540	---	27.35	46.00	18.65	L1	OFF	19.6
0.546540	30.88	---	56.00	25.12	L1	OFF	19.6
1.453830	---	25.52	46.00	20.48	L1	OFF	19.6
1.453830	28.27	---	56.00	27.73	L1	OFF	19.6
15.754650	---	28.78	50.00	21.22	L1	OFF	20.2
15.754650	33.69	---	60.00	26.31	L1	OFF	20.2

EUT Information

Report NO :	012305-01
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750	---	30.28	55.63	25.35	N	OFF	19.5
0.156750	44.20	---	65.63	21.43	N	OFF	19.5
0.170250	---	31.54	54.95	23.41	N	OFF	19.5
0.170250	45.31	---	64.95	19.64	N	OFF	19.5
0.181500	---	31.65	54.42	22.77	N	OFF	19.5
0.181500	45.18	---	64.42	19.24	N	OFF	19.5
0.195000	---	28.52	53.82	25.30	N	OFF	19.5
0.195000	39.73	---	63.82	24.09	N	OFF	19.5
0.251430	---	27.36	51.71	24.35	N	OFF	19.5
0.251430	36.66	---	61.71	25.05	N	OFF	19.5
0.582630	---	29.70	46.00	16.30	N	OFF	19.5
0.582630	34.49	---	56.00	21.51	N	OFF	19.5
0.885750	---	25.10	46.00	20.90	N	OFF	19.6
0.885750	28.09	---	56.00	27.91	N	OFF	19.6
16.026990	---	28.47	50.00	21.53	N	OFF	19.9
16.026990	33.26	---	60.00	26.74	N	OFF	19.9

Appendix C. Radiated Spurious Emission

Test Engineer :	Cookie Ku, Fu Chen and Troye Hsieh	Temperature :	19.1~26.3°C
		Relative Humidity :	50.2~69.1%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp 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		5642.975	52.21	-15.99	68.2	42.56	31.81	10.39	32.55	100	157	P	H
		5698.325	59.78	-44.19	103.97	49.77	32.09	10.45	32.53	100	157	P	H
		5719.475	68.78	-41.87	110.65	58.7	32.14	10.47	32.53	100	157	P	H
		5723.075	75.69	-42.12	117.81	65.59	32.15	10.48	32.53	100	157	P	H
	*	5745	113.49	-	-	103.32	32.19	10.5	32.52	100	157	P	H
	*	5745	105.18	-	-	95.01	32.19	10.5	32.52	100	157	A	H
		5642.8	52.54	-15.66	68.2	42.89	31.81	10.39	32.55	100	137	P	V
		5697.4	57.11	-46.17	103.28	47.11	32.08	10.45	32.53	100	137	P	V
		5719.8	68.69	-42.05	110.74	58.61	32.14	10.47	32.53	100	137	P	V
		5725	81.52	-40.68	122.2	71.42	32.15	10.48	32.53	100	137	P	V
	*	5745	113.26	-	-	103.09	32.19	10.5	32.52	100	137	P	V
	*	5745	105.77	-	-	95.6	32.19	10.5	32.52	100	137	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5646.25	51.27	-16.93	68.2	41.62	31.81	10.39	32.55	100	164	P	H
		5687	53.09	-42.52	95.61	43.17	32.02	10.44	32.54	100	164	P	H
		5718	53	-57.24	110.24	42.92	32.14	10.47	32.53	100	164	P	H
		5720	52.95	-57.85	110.8	42.87	32.14	10.47	32.53	100	164	P	H
	*	5785	113.63	-	-	103.33	32.27	10.54	32.51	100	164	P	H
	*	5785	106.12	-	-	95.82	32.27	10.54	32.51	100	164	A	H
		5850.25	53.86	-67.77	121.63	43.32	32.4	10.63	32.49	100	164	P	H
		5862.75	54.8	-53.83	108.63	44.21	32.43	10.65	32.49	100	164	P	H
		5896	54.37	-35.25	89.62	43.67	32.49	10.69	32.48	100	164	P	H
		5926.5	52.74	-15.46	68.2	41.86	32.61	10.74	32.47	100	164	P	H
		5633	52.35	-15.85	68.2	42.69	31.83	10.38	32.55	100	136	P	V
		5678.25	53.28	-35.87	89.15	43.42	31.97	10.43	32.54	100	136	P	V
		5707.25	52.92	-54.31	107.23	42.88	32.11	10.46	32.53	100	136	P	V
		5725	52.72	-69.48	122.2	42.62	32.15	10.48	32.53	100	136	P	V
	*	5785	112.09	-	-	101.79	32.27	10.54	32.51	100	136	P	V
	*	5785	104.48	-	-	94.18	32.27	10.54	32.51	100	136	A	V
		5850.5	52.51	-68.55	121.06	41.97	32.4	10.63	32.49	100	136	P	V
		5860.25	54.34	-54.99	109.33	43.77	32.42	10.64	32.49	100	136	P	V
		5896.25	52.45	-36.99	89.44	41.75	32.49	10.69	32.48	100	136	P	V
		5938.25	52.11	-16.09	68.2	41.18	32.65	10.75	32.47	100	136	P	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	107.8	-	-	97.35	32.35	10.6	32.5	100	138	P	H
	*	5825	100.34	-	-	89.89	32.35	10.6	32.5	100	138	A	H
		5851.19	66.28	-53.21	119.49	55.74	32.4	10.63	32.49	100	138	P	H
		5855.085	62.23	-48.55	110.78	51.67	32.41	10.64	32.49	100	138	P	H
		5879.685	53.02	-48.7	101.72	42.37	32.46	10.67	32.48	100	138	P	H
		5941.8	52.38	-15.82	68.2	41.42	32.67	10.76	32.47	100	138	P	H
	*	5825	111.29	-	-	100.84	32.35	10.6	32.5	100	170	P	V
	*	5825	103.69	-	-	93.24	32.35	10.6	32.5	100	170	A	V
		5852.4	67.33	-49.4	116.73	56.79	32.4	10.63	32.49	100	170	P	V
		5858	64.6	-45.36	109.96	54.03	32.42	10.64	32.49	100	170	P	V
		5876	54.78	-49.68	104.46	44.14	32.45	10.67	32.48	100	170	P	V
		5936.6	54.35	-13.85	68.2	43.42	32.65	10.75	32.47	100	170	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11a (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	49.52	-24.48	74	54.19	39.61	18.03	62.31	100	0	P	H
		17235	48.34	-19.86	68.2	43.77	40.17	22.88	58.48	100	0	P	H
		11490	49.99	-24.01	74	54.66	39.61	18.03	62.31	100	0	P	V
		17235	49.71	-18.49	68.2	45.14	40.17	22.88	58.48	100	0	P	V
802.11a CH 157 5785MHz		11570	47.65	-26.35	74	52.37	39.46	18.13	62.31	100	0	P	H
		17355	49.28	-18.92	68.2	43.97	40.49	23.08	58.26	100	0	P	H
		11570	48.21	-25.79	74	52.93	39.46	18.13	62.31	100	0	P	V
		17355	48.39	-19.81	68.2	43.08	40.49	23.08	58.26	100	0	P	V
802.11a CH 165 5825MHz		11650	49.47	-24.53	74	54.43	39.15	18.22	62.33	100	0	P	H
		17475	49.93	-18.27	68.2	43.54	41.17	23.26	58.04	100	0	P	H
		11650	48.89	-25.11	74	53.85	39.15	18.22	62.33	100	0	P	V
		17475	49.98	-18.22	68.2	43.59	41.17	23.26	58.04	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT20 (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5640.6	51.97	-16.23	68.2	42.32	31.82	10.38	32.55	101	141	P	H
		5698	59.31	-44.42	103.73	49.3	32.09	10.45	32.53	101	141	P	H
		5718.4	67.44	-42.91	110.35	57.36	32.14	10.47	32.53	101	141	P	H
		5724.6	74.87	-46.42	121.29	64.77	32.15	10.48	32.53	101	141	P	H
	*	5745	108.8	-	-	98.63	32.19	10.5	32.52	101	141	P	H
	*	5745	101.36	-	-	91.19	32.19	10.5	32.52	101	141	A	H
		5641.6	51.95	-16.25	68.2	42.29	31.82	10.39	32.55	103	169	P	V
		5699.8	54.65	-50.4	105.05	44.63	32.1	10.45	32.53	103	169	P	V
		5719.8	67.06	-43.68	110.74	56.98	32.14	10.47	32.53	103	169	P	V
		5725	75.63	-46.57	122.2	65.53	32.15	10.48	32.53	103	169	P	V
	*	5745	111.45	-	-	101.28	32.19	10.5	32.52	103	169	P	V
	*	5745	103.15	-	-	92.98	32.19	10.5	32.52	103	169	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 157 5785MHz		5638.25	52.1	-16.1	68.2	42.45	31.82	10.38	32.55	100	164	P	H
		5685	52.92	-41.21	94.13	43.02	32.01	10.43	32.54	100	164	P	H
		5717	53.06	-56.9	109.96	42.99	32.13	10.47	32.53	100	164	P	H
		5721.75	54.25	-60.54	114.79	44.17	32.14	10.47	32.53	100	164	P	H
	*	5785	113.59	-	-	103.29	32.27	10.54	32.51	100	164	P	H
	*	5785	105.92	-	-	95.62	32.27	10.54	32.51	100	164	A	H
		5852	54.53	-63.11	117.64	43.99	32.4	10.63	32.49	100	164	P	H
		5867.25	54.16	-53.21	107.37	43.57	32.43	10.65	32.49	100	164	P	H
		5878.5	54.12	-48.48	102.6	43.47	32.46	10.67	32.48	100	164	P	H
		5932.75	53.13	-15.07	68.2	42.22	32.63	10.75	32.47	100	164	P	H
		5626.75	52.29	-15.91	68.2	42.62	31.85	10.37	32.55	112	142	P	V
		5697.25	52.94	-50.23	103.17	42.94	32.08	10.45	32.53	112	142	P	V
		5705.5	53.2	-53.54	106.74	43.16	32.11	10.46	32.53	112	142	P	V
		5724.5	52.61	-68.45	121.06	42.51	32.15	10.48	32.53	112	142	P	V
	*	5785	112.3	-	-	102	32.27	10.54	32.51	112	142	P	V
	*	5785	104.5	-	-	94.2	32.27	10.54	32.51	112	142	A	V
		5855	53.06	-57.74	110.8	42.5	32.41	10.64	32.49	112	142	P	V
		5859.25	53.7	-55.91	109.61	43.13	32.42	10.64	32.49	112	142	P	V
		5883.75	54.75	-43.95	98.7	44.08	32.47	10.68	32.48	112	142	P	V
		5945.25	52.17	-16.03	68.2	41.2	32.68	10.76	32.47	112	142	P	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 165 5825MHz	*	5825	113.7	-	-	103.25	32.35	10.6	32.5	100	163	P	H
	*	5825	106.18	-	-	95.73	32.35	10.6	32.5	100	163	A	H
		5850.8	73.67	-46.71	120.38	63.13	32.4	10.63	32.49	100	163	P	H
		5855.6	68.38	-42.25	110.63	57.82	32.41	10.64	32.49	100	163	P	H
		5876.4	57.64	-46.52	104.16	47	32.45	10.67	32.48	100	163	P	H
		5927.2	53.21	-14.99	68.2	42.33	32.61	10.74	32.47	100	163	P	H
	*	5825	110.62	-	-	100.17	32.35	10.6	32.5	100	140	P	V
	*	5825	102.78	-	-	92.33	32.35	10.6	32.5	100	140	A	V
		5850	70.92	-51.28	122.2	60.38	32.4	10.63	32.49	100	140	P	V
		5855.2	65.68	-45.06	110.74	55.12	32.41	10.64	32.49	100	140	P	V
		5877.6	55.58	-47.69	103.27	44.93	32.46	10.67	32.48	100	140	P	V
		5948.2	52.32	-15.88	68.2	41.32	32.69	10.77	32.46	100	140	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n 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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11490	48.98	-25.02	74	53.65	39.61	18.03	62.31	100	0	P	H
HT20		17235	48.71	-19.49	68.2	44.14	40.17	22.88	58.48	100	0	P	H
CH 149		11490	47.84	-26.16	74	52.51	39.61	18.03	62.31	100	0	P	V
5745MHz		17235	48.48	-19.72	68.2	43.91	40.17	22.88	58.48	100	0	P	V
802.11n		11570	48.41	-25.59	74	53.13	39.46	18.13	62.31	100	0	P	H
HT20		17355	48.74	-19.46	68.2	43.43	40.49	23.08	58.26	100	0	P	H
CH 157		11570	48.14	-25.86	74	52.86	39.46	18.13	62.31	100	0	P	V
5785MHz		17355	48.33	-19.87	68.2	43.02	40.49	23.08	58.26	100	0	P	V
802.11n		11650	48.25	-25.75	74	53.21	39.15	18.22	62.33	100	0	P	H
HT20		17475	49.02	-19.18	68.2	42.63	41.17	23.26	58.04	100	0	P	H
CH 165		11650	48.22	-25.78	74	53.18	39.15	18.22	62.33	100	0	P	V
5825MHz		17475	48.77	-19.43	68.2	42.38	41.17	23.26	58.04	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT40 (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5638	51.89	-16.31	68.2	42.24	31.82	10.38	32.55	270	190	P	H
		5699.5	64.65	-40.18	104.83	54.63	32.1	10.45	32.53	270	190	P	H
		5714.25	80	-29.19	109.19	69.93	32.13	10.47	32.53	270	190	P	H
		5722	80.64	-34.72	115.36	70.56	32.14	10.47	32.53	270	190	P	H
	*	5755	111.7	-	-	101.5	32.21	10.51	32.52	270	190	P	H
	*	5755	103.07	-	-	92.87	32.21	10.51	32.52	270	190	A	H
		5853.25	55.35	-59.44	114.79	44.8	32.41	10.63	32.49	270	190	P	H
		5869.75	53.63	-53.04	106.67	43.02	32.44	10.66	32.49	270	190	P	H
		5881.5	53.48	-46.89	100.37	42.83	32.46	10.67	32.48	270	190	P	H
		5935.25	52.03	-16.17	68.2	41.11	32.64	10.75	32.47	270	190	P	H
		5641.5	52.82	-15.38	68.2	43.16	31.82	10.39	32.55	100	141	P	V
		5700	64.84	-40.36	105.2	54.82	32.1	10.45	32.53	100	141	P	V
		5717.25	76.27	-33.76	110.03	66.2	32.13	10.47	32.53	100	141	P	V
		5725	78.36	-43.84	122.2	68.26	32.15	10.48	32.53	100	141	P	V
	*	5755	109.54	-	-	99.34	32.21	10.51	32.52	100	141	P	V
	*	5755	101.75	-	-	91.55	32.21	10.51	32.52	100	141	A	V
		5851.75	55.53	-62.68	118.21	44.99	32.4	10.63	32.49	100	141	P	V
		5860.5	52.85	-56.41	109.26	42.28	32.42	10.64	32.49	100	141	P	V
		5881	53.25	-47.49	100.74	42.6	32.46	10.67	32.48	100	141	P	V
		5927	52.26	-15.94	68.2	41.38	32.61	10.74	32.47	100	141	P	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5646.25	53.06	-15.14	68.2	43.41	31.81	10.39	32.55	260	211	P	H
		5697	52.88	-50.11	102.99	42.88	32.08	10.45	32.53	260	211	P	H
		5718.75	57.88	-52.57	110.45	47.8	32.14	10.47	32.53	260	211	P	H
		5723.25	60.03	-58.18	118.21	49.93	32.15	10.48	32.53	260	211	P	H
	*	5795	111.46	-	-	101.13	32.29	10.55	32.51	260	211	P	H
	*	5795	103.51	-	-	93.18	32.29	10.55	32.51	260	211	A	H
		5851.5	66.28	-52.5	118.78	55.74	32.4	10.63	32.49	260	211	P	H
		5858	64.54	-45.42	109.96	53.97	32.42	10.64	32.49	260	211	P	H
		5876.75	58.42	-45.48	103.9	47.78	32.45	10.67	32.48	260	211	P	H
		5947.5	52.94	-15.26	68.2	41.94	32.69	10.77	32.46	260	211	P	H
		5622	51.52	-16.68	68.2	41.86	31.86	10.36	32.56	100	171	P	V
		5695.75	52.04	-50.03	102.07	42.06	32.07	10.45	32.54	100	171	P	V
		5720	55.56	-55.24	110.8	45.48	32.14	10.47	32.53	100	171	P	V
		5721.75	57.53	-57.26	114.79	47.45	32.14	10.47	32.53	100	171	P	V
	*	5795	109.04	-	-	98.71	32.29	10.55	32.51	100	171	P	V
	*	5795	100.66	-	-	90.33	32.29	10.55	32.51	100	171	A	V
		5851.5	64.83	-53.95	118.78	54.29	32.4	10.63	32.49	100	171	P	V
		5855.5	63.72	-46.94	110.66	53.16	32.41	10.64	32.49	100	171	P	V
		5877.75	56.98	-46.18	103.16	46.33	32.46	10.67	32.48	100	171	P	V
		5926	51.82	-16.38	68.2	40.95	32.6	10.74	32.47	100	171	P	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

WIFI 802.11n HT40 (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11550	47.87	-26.13	74	52.57	39.5	18.11	62.31	100	0	P	H
HT40		17325	48.95	-19.25	68.2	43.97	40.27	23.03	58.32	100	0	P	H
CH 151		11550	48.91	-25.09	74	53.61	39.5	18.11	62.31	100	0	P	V
5755MHz		17325	48.63	-19.57	68.2	43.65	40.27	23.03	58.32	100	0	P	V
802.11n		11590	48.44	-25.56	74	53.18	39.42	18.16	62.32	100	0	P	H
HT40		17385	49.1	-19.1	68.2	43.5	40.69	23.12	58.21	100	0	P	H
CH 159		11590	47.66	-26.34	74	52.4	39.42	18.16	62.32	100	0	P	V
5795MHz		17385	48.87	-19.33	68.2	43.27	40.69	23.12	58.21	100	0	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5648.75	58.36	-9.84	68.2	48.72	31.8	10.39	32.55	100	282	P	H
		5699	71.54	-32.92	104.46	61.53	32.09	10.45	32.53	100	282	P	H
		5717.75	76.58	-33.59	110.17	66.5	32.14	10.47	32.53	100	282	P	H
		5722	79.95	-35.41	115.36	69.87	32.14	10.47	32.53	100	282	P	H
	*	5775	107.94	-	-	97.67	32.25	10.53	32.51	100	282	P	H
	*	5775	99.82	-	-	89.55	32.25	10.53	32.51	100	282	A	H
		5851.25	75.8	-43.55	119.35	65.26	32.4	10.63	32.49	100	282	P	H
		5855.25	75.58	-35.15	110.73	65.02	32.41	10.64	32.49	100	282	P	H
		5879.75	67.41	-34.26	101.67	56.76	32.46	10.67	32.48	100	282	P	H
		5934.5	56.28	-11.92	68.2	45.36	32.64	10.75	32.47	100	282	P	H
		5644.75	58.38	-9.82	68.2	48.73	31.81	10.39	32.55	100	169	P	V
		5696	71.02	-31.23	102.25	61.03	32.08	10.45	32.54	100	169	P	V
		5713.5	74.69	-34.29	108.98	64.63	32.13	10.46	32.53	100	169	P	V
		5723.5	76.37	-42.41	118.78	66.27	32.15	10.48	32.53	100	169	P	V
	*	5775	105.29	-	-	95.02	32.25	10.53	32.51	100	169	P	V
	*	5775	97.07	-	-	86.8	32.25	10.53	32.51	100	169	A	V
		5854.5	73.9	-38.04	111.94	63.34	32.41	10.64	32.49	100	169	P	V
		5855	72.74	-38.06	110.8	62.18	32.41	10.64	32.49	100	169	P	V
		5878	67.11	-35.86	102.97	56.46	32.46	10.67	32.48	100	169	P	V
		5938	55.11	-13.09	68.2	44.18	32.65	10.75	32.47	100	169	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 (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11550	47.37	-26.63	74	52.07	39.5	18.11	62.31	100	0	P	H
VHT80		17325	48.45	-19.75	68.2	43.47	40.27	23.03	58.32	100	0	P	H
CH 155		11550	48.41	-25.59	74	53.11	39.5	18.11	62.31	100	0	P	V
5775MHz		17325	48.13	-20.07	68.2	43.15	40.27	23.03	58.32	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

5GHz WIFI 802.11ac VHT80 (SHF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
5GHz 802.11ac VHT80 SHF		39736	49.76	-24.24	74	68.87	45.15	-9.54	54.72	100	0	P	H
		39780	49.77	-24.23	74	44.1	45.14	15.18	54.65	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
5GHz 802.11ac VHT80 LF		82.38	28.81	-11.19	40	46.34	13.59	1.32	32.44	100	0	P	H
		105.66	27.99	-15.51	43.5	42.58	16.33	1.47	32.39	-	-	P	H
		134.76	28.58	-14.92	43.5	42.17	17.2	1.66	32.45	-	-	P	H
		761.38	28.22	-17.78	46	28.51	27.78	3.98	32.05	-	-	P	H
		860.32	29.88	-16.12	46	28.56	29	4.22	31.9	-	-	P	H
		955.38	31.36	-14.64	46	27.53	30.38	4.45	31	-	-	P	H
		42.61	30.71	-9.29	40	44.35	17.91	0.94	32.49	100	0	P	V
		78.5	30.24	-9.76	40	48.5	12.9	1.29	32.45	-	-	P	V
		127.97	28.67	-14.83	43.5	42.09	17.4	1.62	32.44	-	-	P	V
		862.26	30.48	-15.52	46	29.13	29.01	4.23	31.89	-	-	P	V
		910.76	30.54	-15.46	46	28.94	28.86	4.33	31.59	-	-	P	V
		948.59	30.81	-15.19	46	27.47	29.99	4.44	31.09	-	-	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	Path	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 CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path 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) + Path 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 D. Radiated Spurious Emission Plots

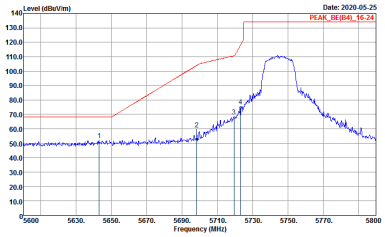
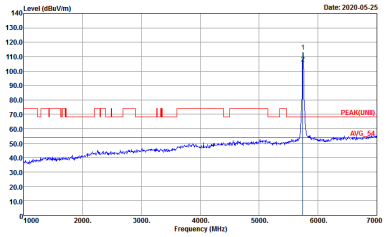
Test Engineer :	Cookie Ku, Fu Chen and Troye Hsieh	**Temperature :**	19.1~26.3°C
		Relative Humidity :	50.2~69.1%

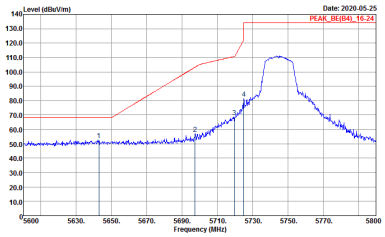
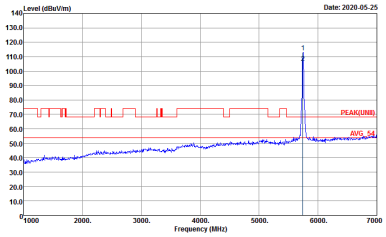
Note symbol

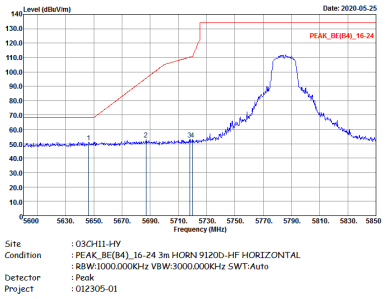
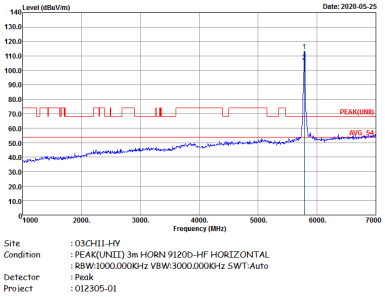
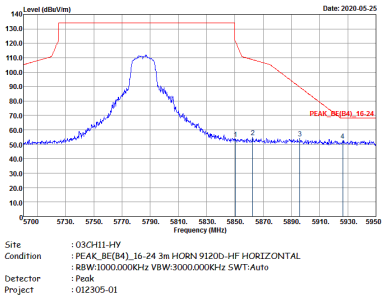
-L	**Low channel location**
-R	**High channel location**

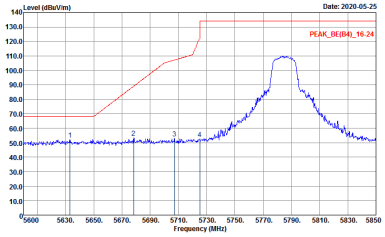
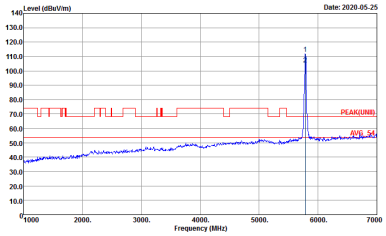
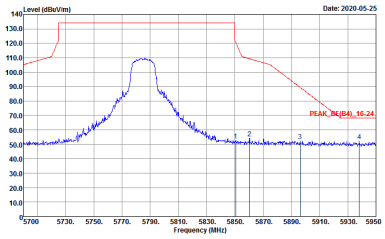
Band 4 - 5725~5850MHz

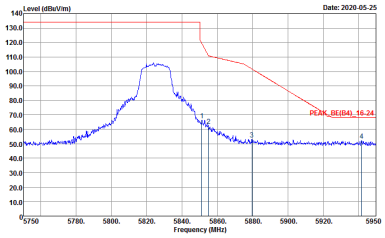
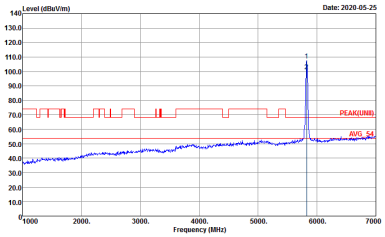
WIFI 802.11a (Band Edge @ 3m)

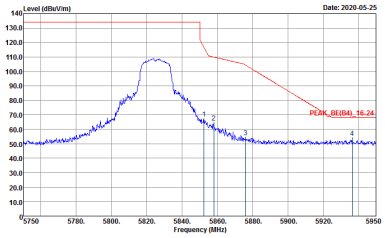
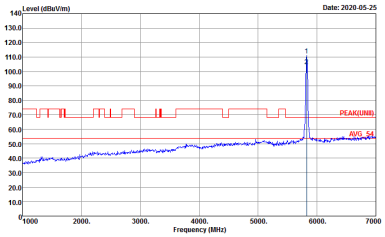
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

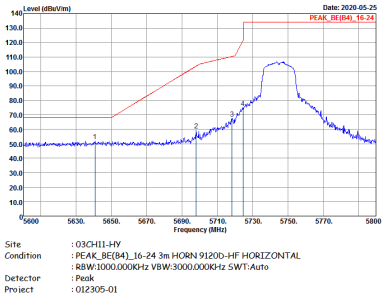
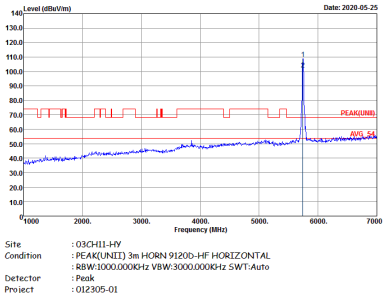
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

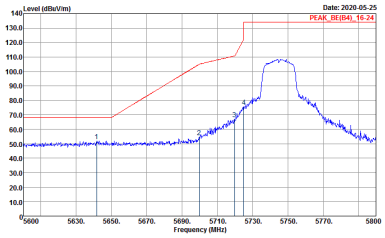
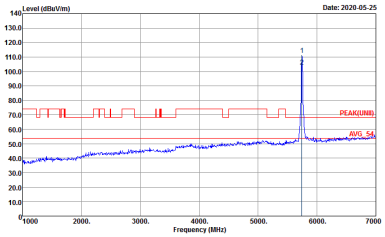
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

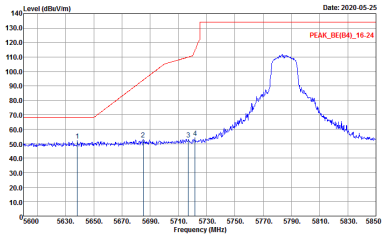
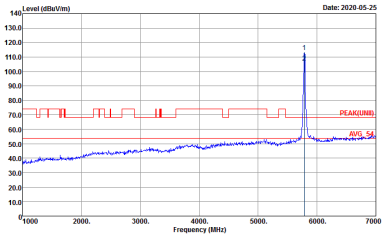
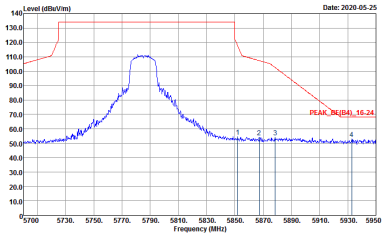
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

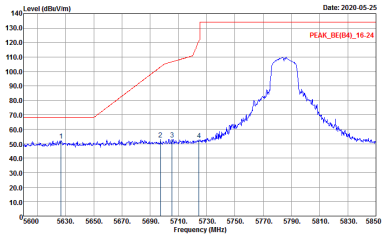
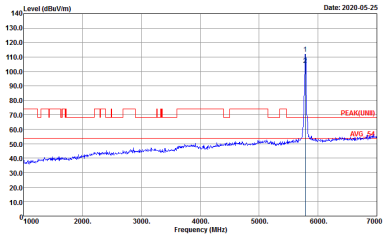
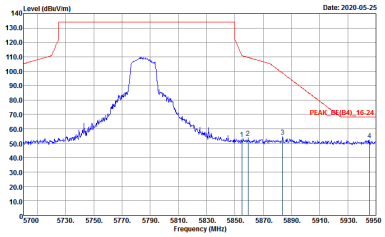
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

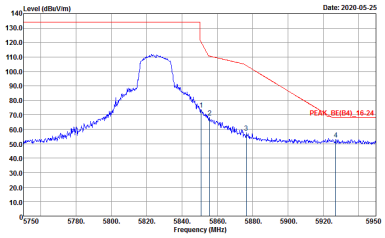
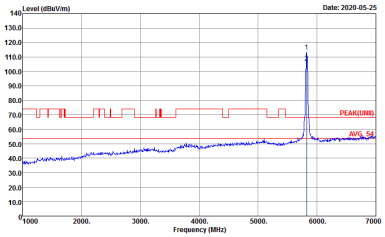
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

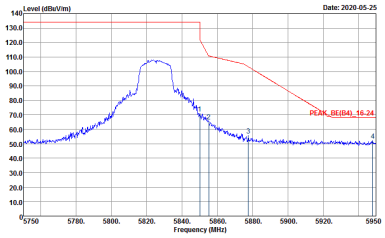
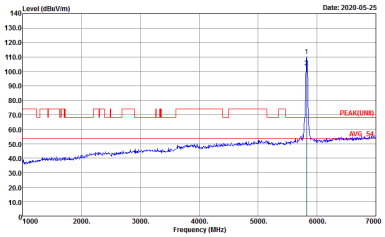
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

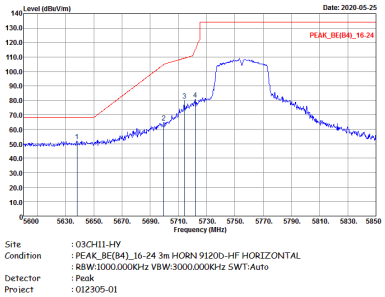
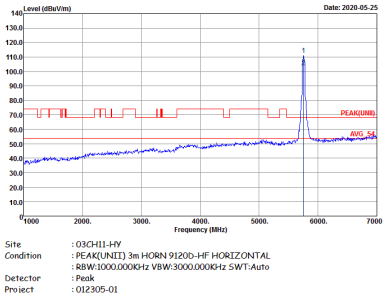
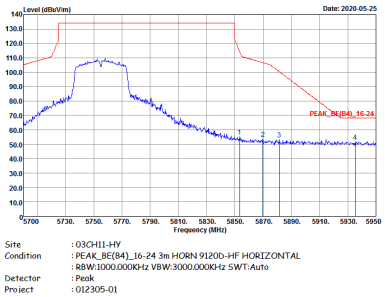
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

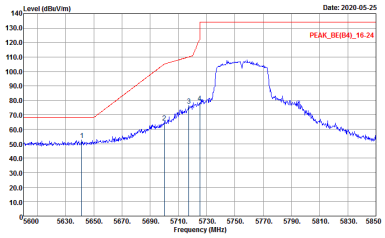
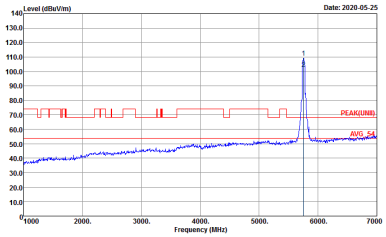
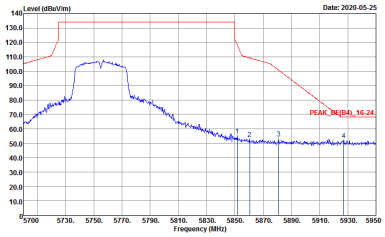
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

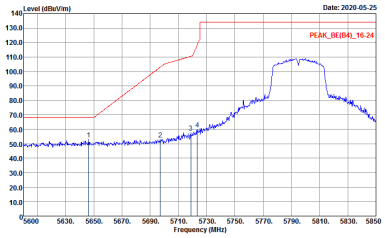
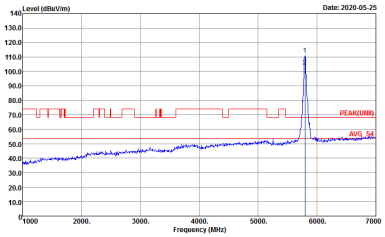
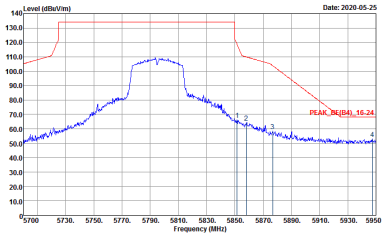
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

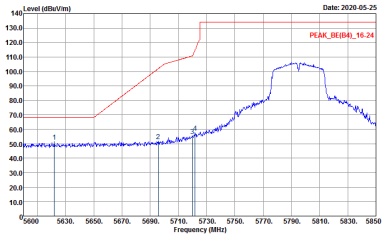
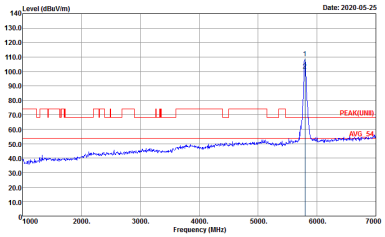
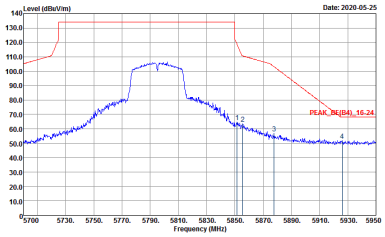
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

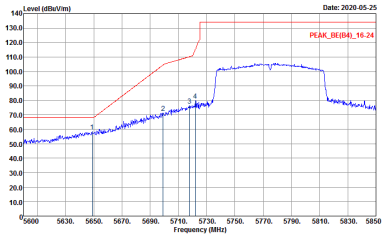
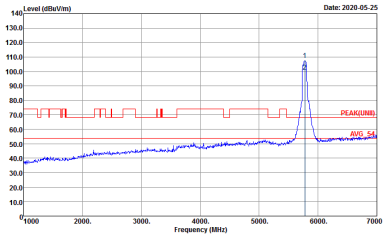
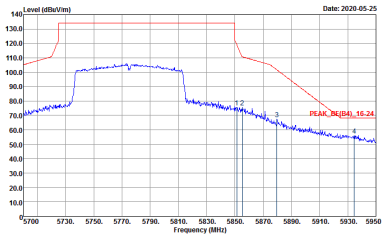
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

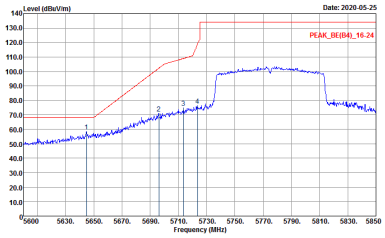
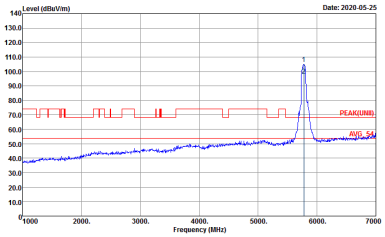
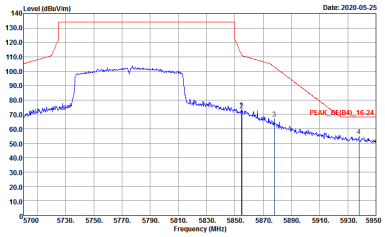
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

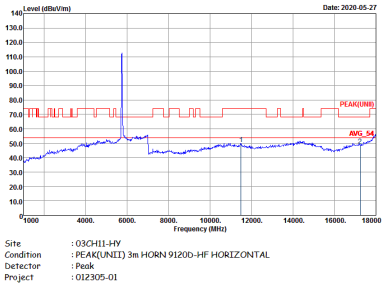
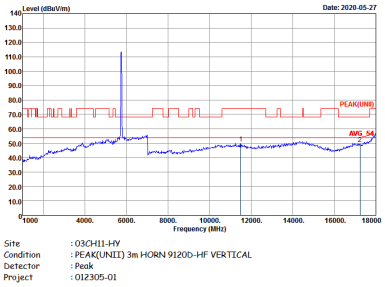
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

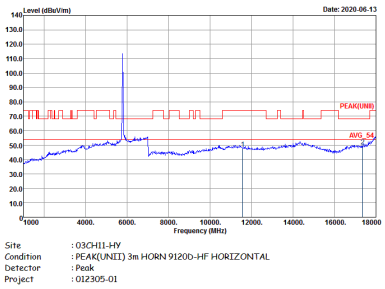
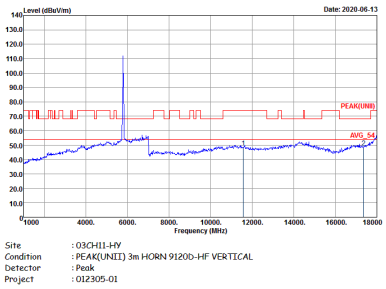
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

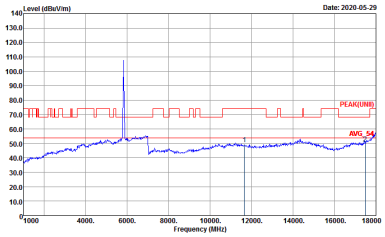
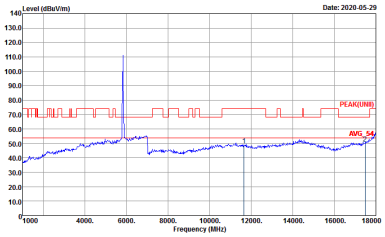
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 012305-01	Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

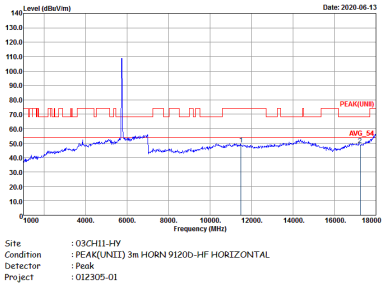
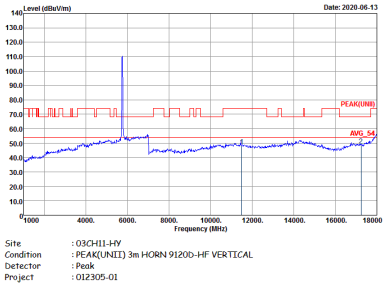
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

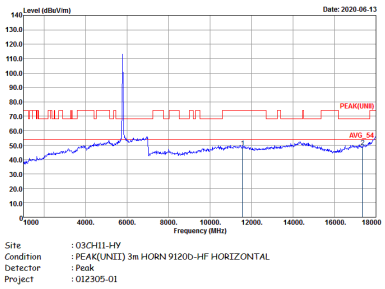
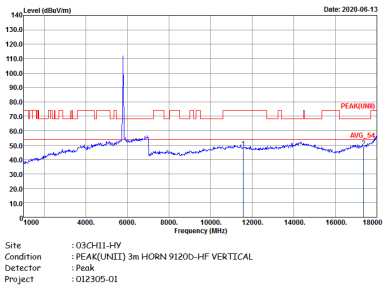
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

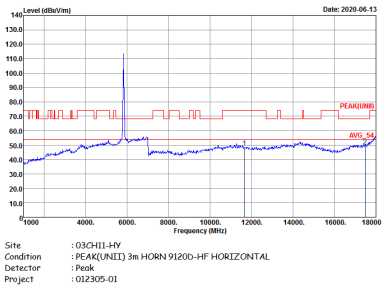
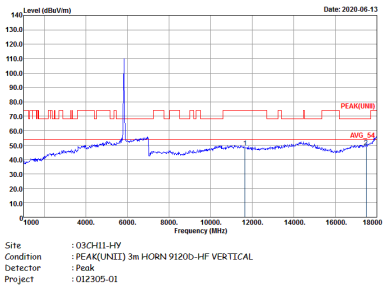
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 012305-01

Band 4 5725~5850MHz

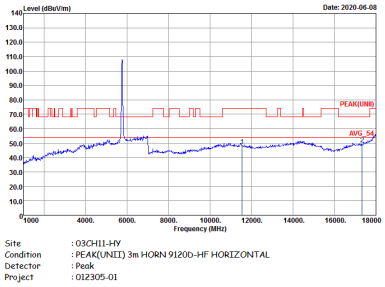
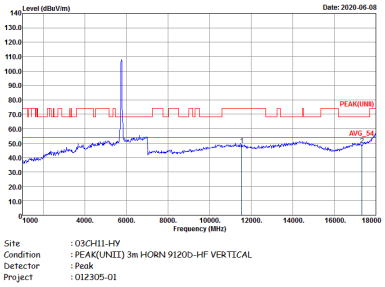
WIFI 802.11n HT20 (Harmonic @ 3m)

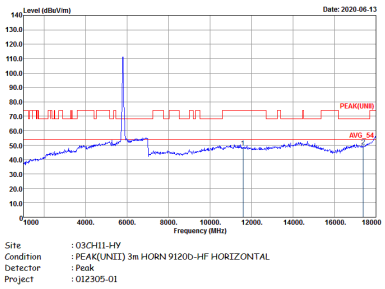
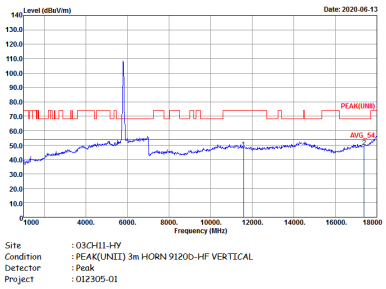
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

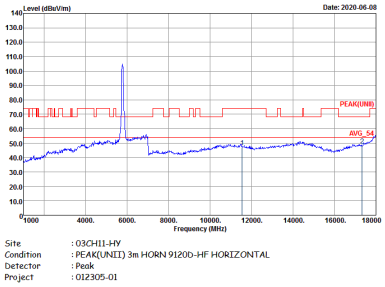
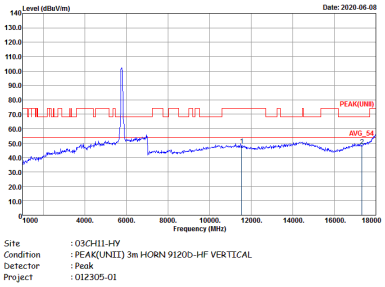
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.		

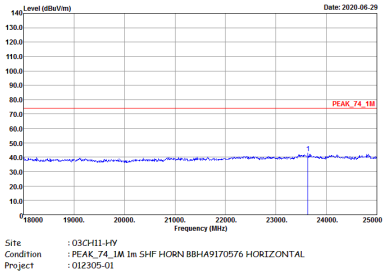
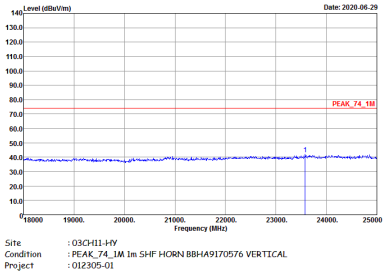
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

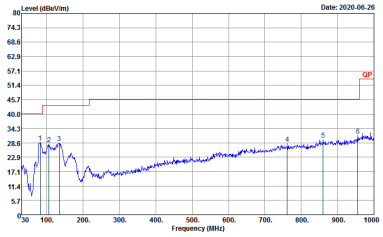
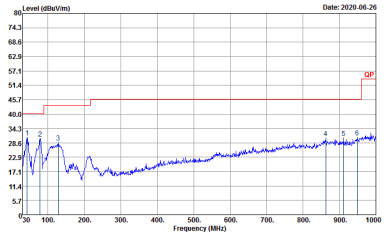
Emission above 18GHz

5GHz WIFI 802.11ac VHT80 (SHF)

WIFI	5GHz WIFI	
ANT	802.11ac VHT80 SHF	
1+2	Horizontal	Vertical
QP / Peak		

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

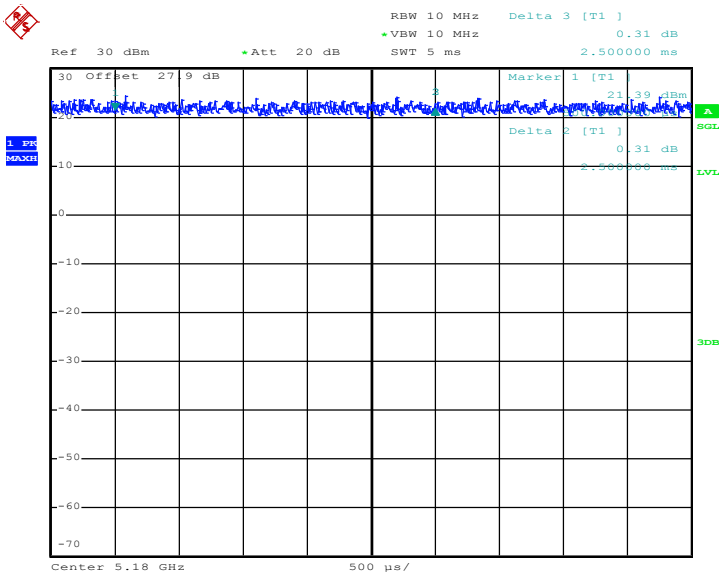
WIFI	5GHz WIFI	
ANT	802.11ac VHT80 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BI-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 012305-01	 Site : 03CH11-HY Condition : QP 3m BI-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 012305-01

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	802.11a for Ant 1	100.00	-	-	10Hz	0.00
1+2	802.11a for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT20 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT20 for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT40 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11n HT40 for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ac VHT80 for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ac VHT80 for Ant 2	100.00	-	-	10Hz	0.00

MIMO <Ant. 1>

802.11a



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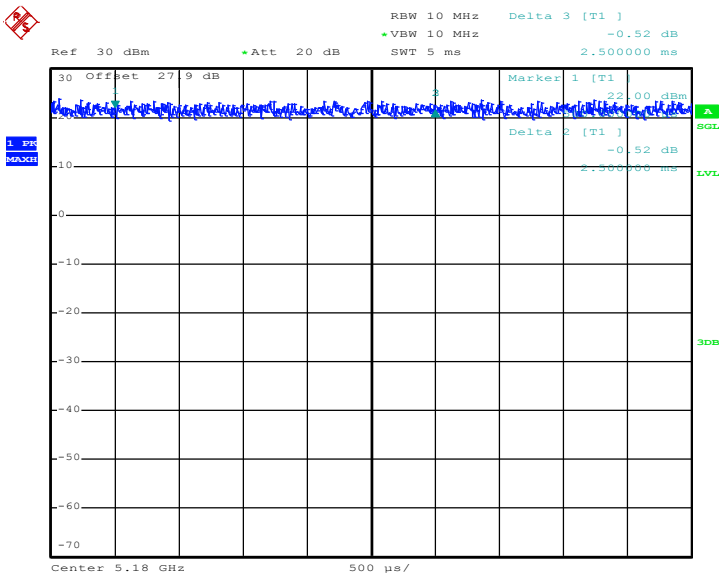

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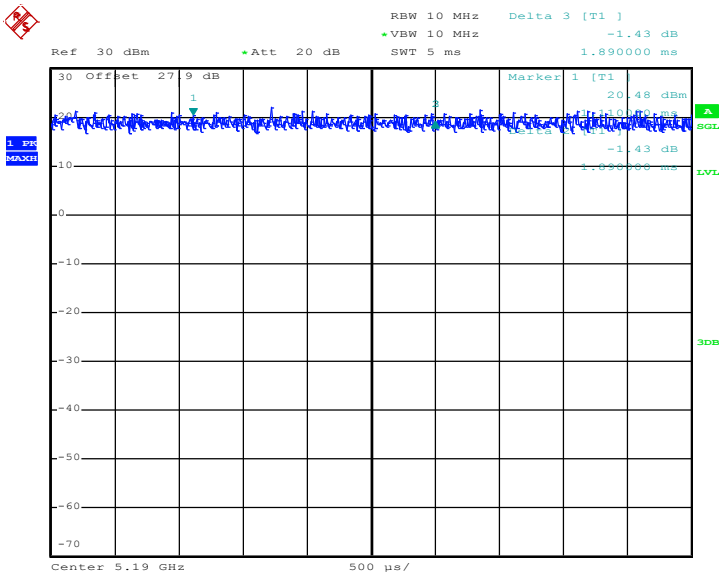

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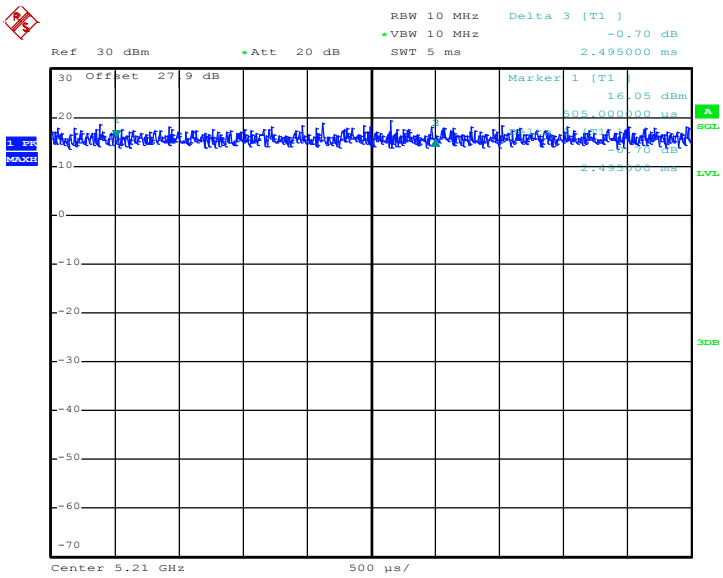

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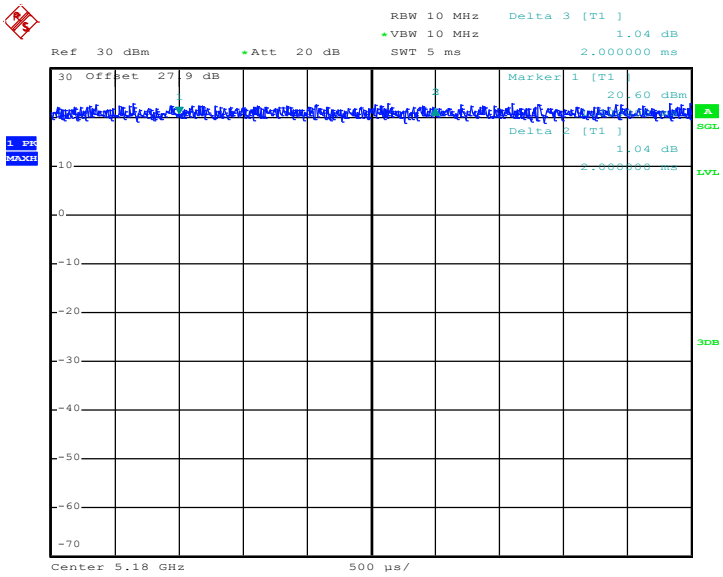

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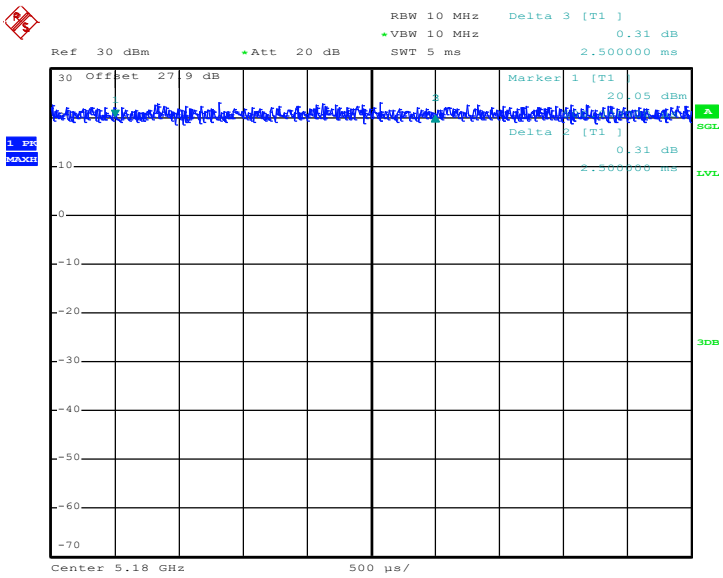

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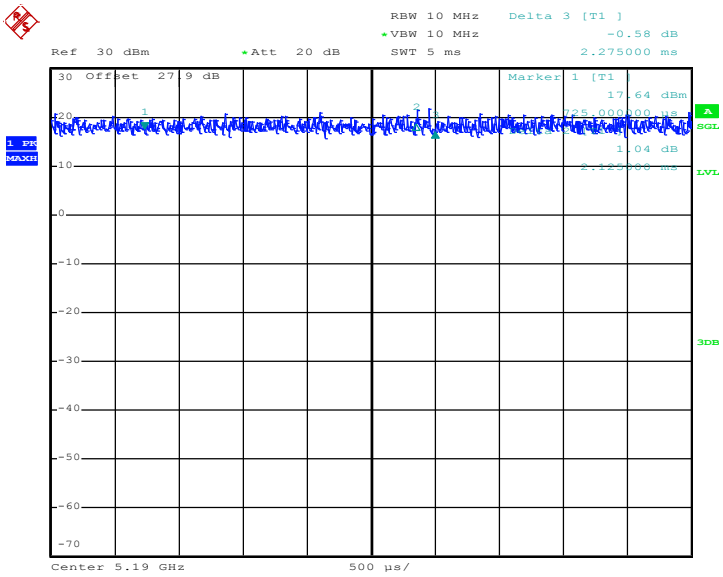

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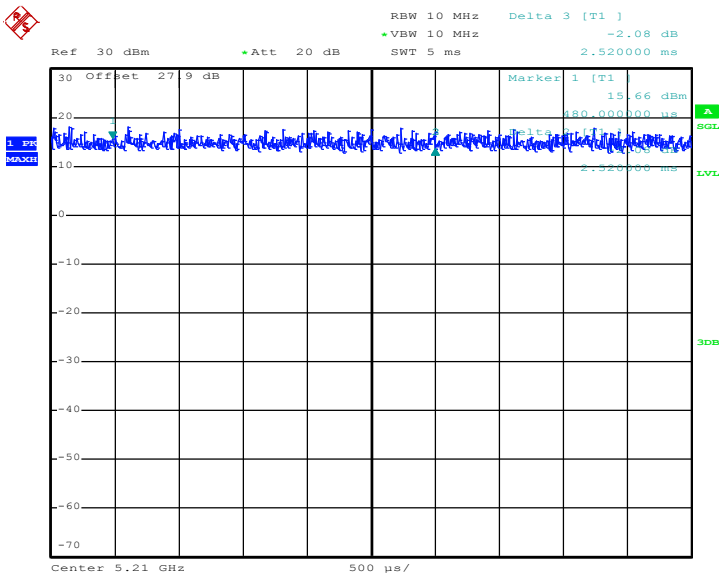

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———THE END———