FCC RADIO TEST REPORT

FCC ID	:	**PY7-80422E**
Equipment	:	**GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC**
Brand Name	:	**Sony**
Applicant	:	**Sony Mobile Communications Inc. 4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan**
Manufacturer	:	**Sony Mobile Communications Inc. 4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Nov. 02, 2018 and testing was started from Feb. 19, 2019 and completed on Mar. 08, 2019. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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.

Jones Tsai

Approved by: Jones Tsai

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
FR8O2423-02F	01	Initial issue of report	Mar. 25, 2019
FR8O2423-02F	02	Revising the test description.	Apr. 01, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
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	Under limit 6.16 dB at 40.670 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 10.34 dB at 1.052 MHz
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: Natasha Hsieh

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac, NFC, and GNSS.

Standards-related Product Specification	
Antenna Type / Gain	**<Ant. 1>:** Loop Antenna with gain -5.9 dBi **<Ant. 2>:** Monopole Antenna with gain 1.2 dBi

EUT Information List			
HW Version	SW Version	S/N	Performed Test Item
A	4.10	BH9300B1FT	RF conducted measurement
		BH970052FT	Radiated Spurious Emission
		BH97006GFR	AC Conducted Emission

Accessory List	
AC Adapter	Model Name : UCH32
	S/N: 6218W30200106 (for radiated emission) 6218W30200197 (for conducted emission)
Earphone	Model Name.: MH750
	S/N : N/A
USB Cable	Model Name.: UCB24
	S/N : N/A
2 in 1 USB Audio Cable	Model Name: EC270
	S/N : N/A

Note:

1. Above EUT list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report. .
3. For other wireless features of this EUT, test report will be issued separately.
4. The antenna 1 and antenna 2 in this test report are equivalent to WLAN chain 0 and chain 1 in Antenna Specification by manufacturer.

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC.	
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

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

Test Site	SPORTON INTERNATIONAL INC.
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

1.4 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. 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 with Accessory (Earphone or Adapter). The worst cases (Z plane with Adapter) 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)
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.

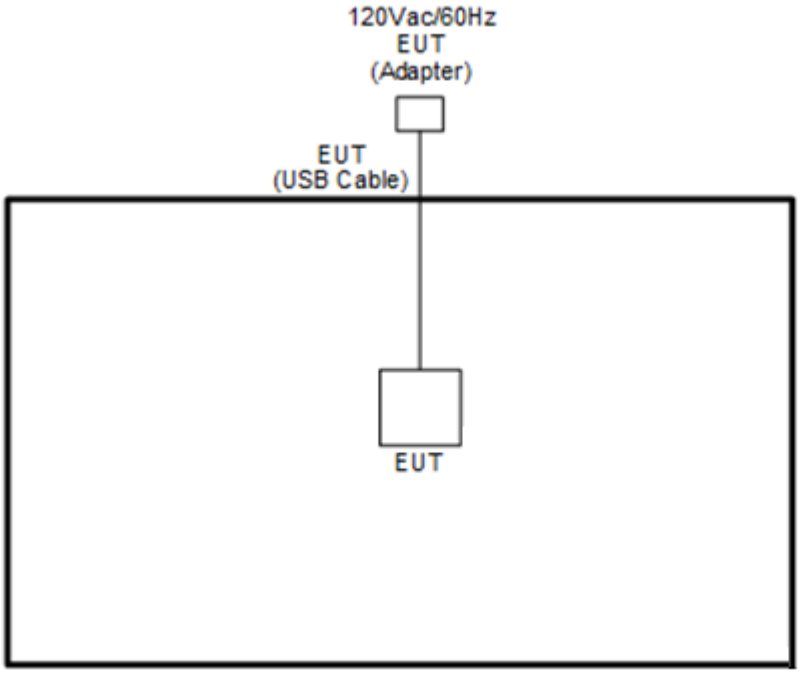
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : GSM850 (Middle Channel) Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG 4 + Battery + USB Cable (Charging from Adapter)
Remark: The single mode covered by MIMO mode base on the MIMO mode power higher than the single mode.	

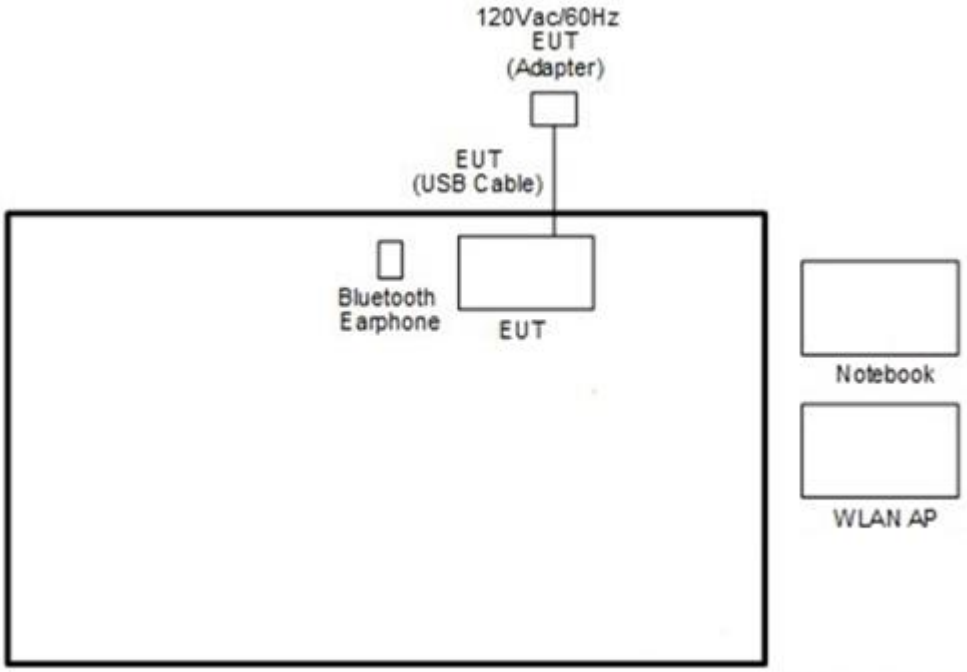
Ch. #		Band IV：5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	N/A	N/A
4.	Notebook	DELL	Latitude EE5480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “Tera Term” 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.

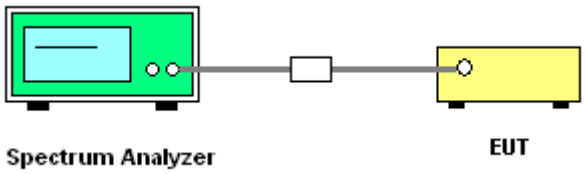
3.1.2 Measuring Instruments

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.

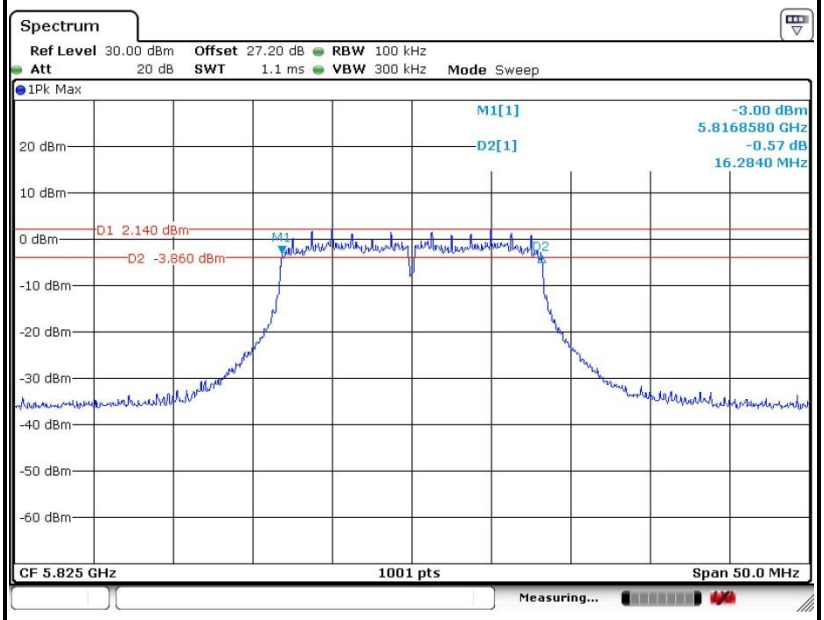
3.1.4 Test Setup



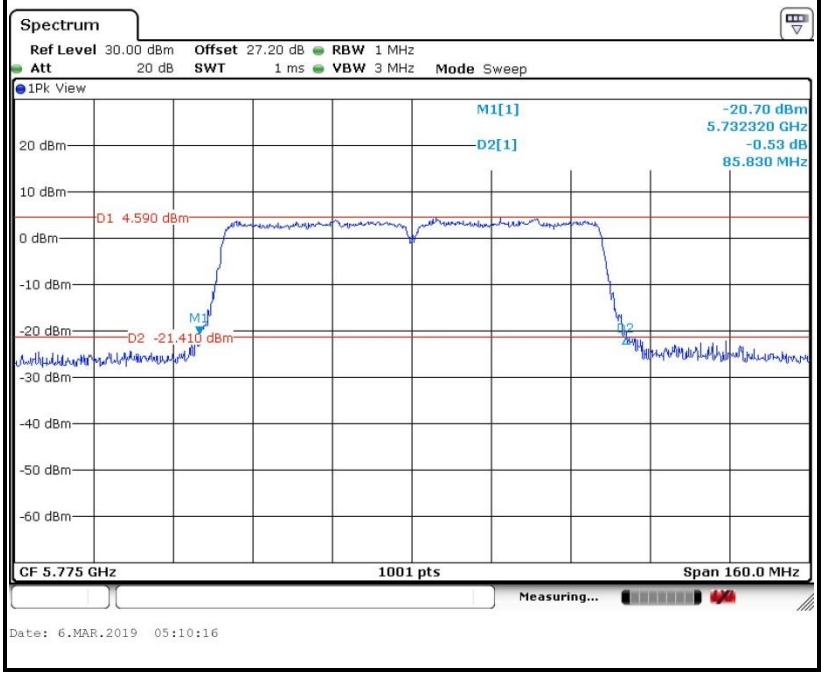
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

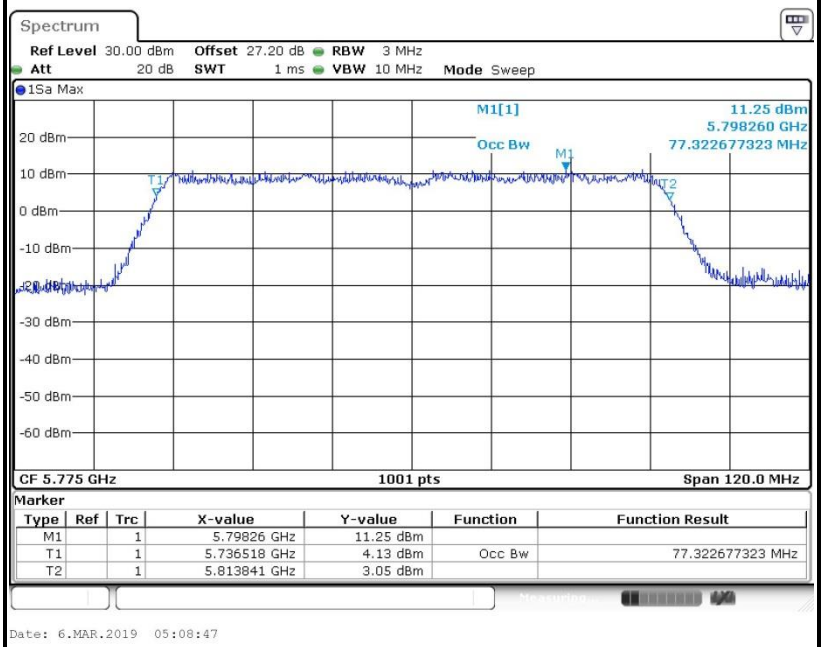
Minimum 6dB Bandwidth



Maximum 26dB Bandwidth



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.

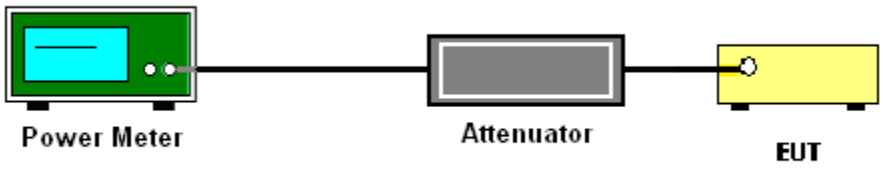
3.2.3 Test Procedures

The testing follows Method PM 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 continuously at its maximum power control level.
3. Measure the average power of the transmitter.

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-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

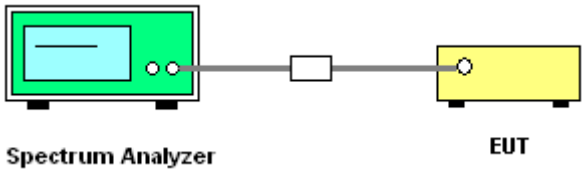
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

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

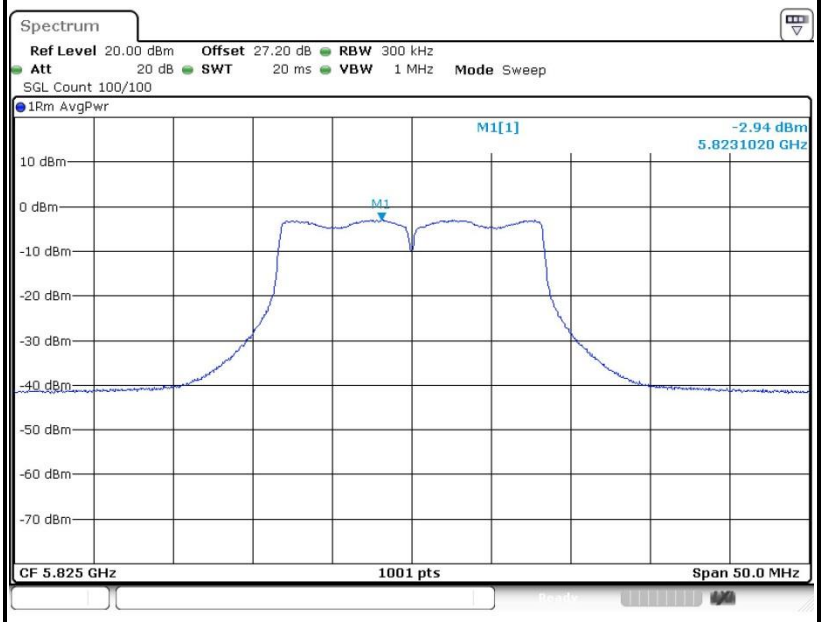


3.3.5 Test Result of Power Spectral Density

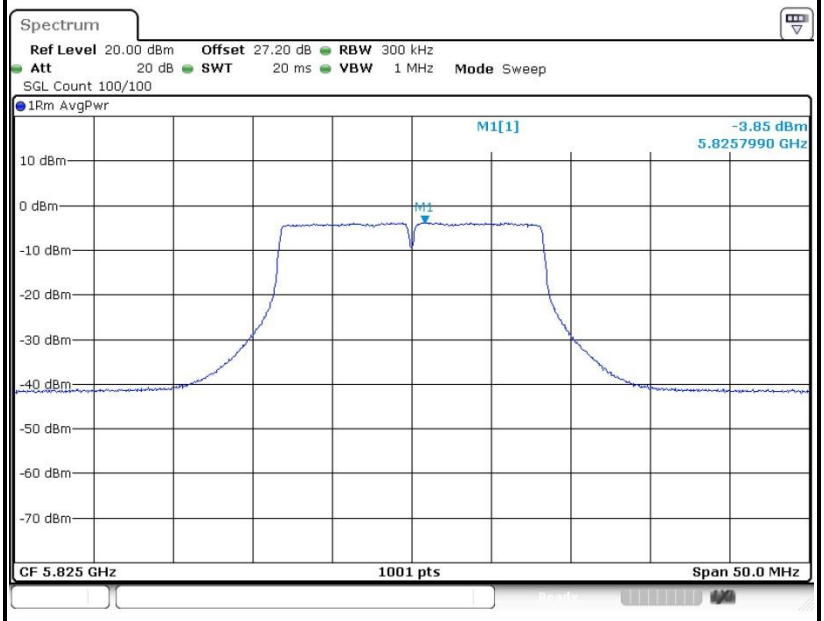
Please refer to Appendix A.

<CDD Modes>

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



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



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) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits 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.[3]

(ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.[4]

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

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

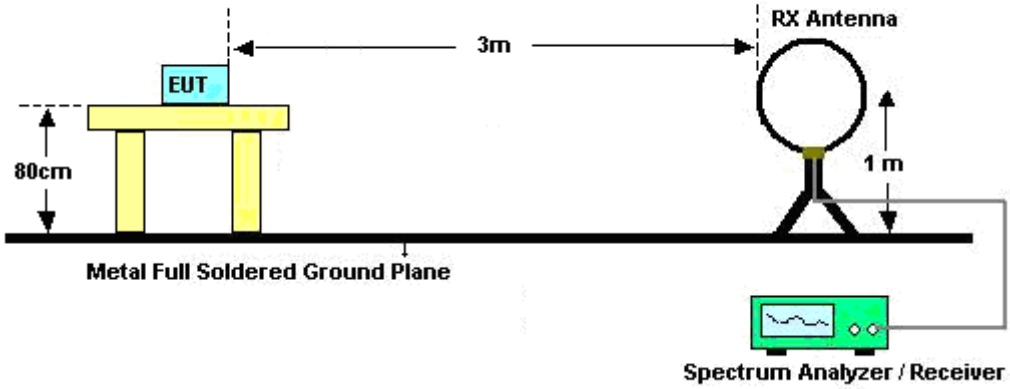
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- 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.

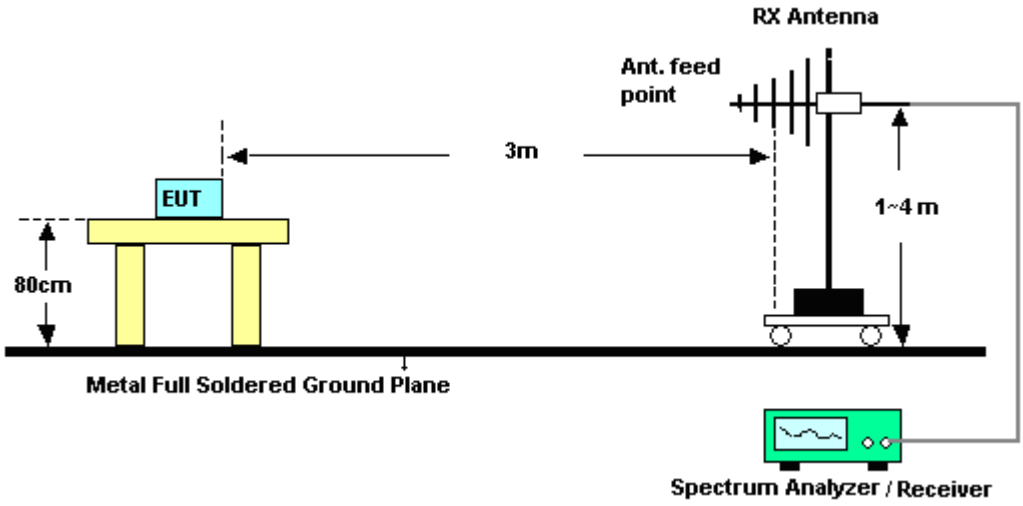
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

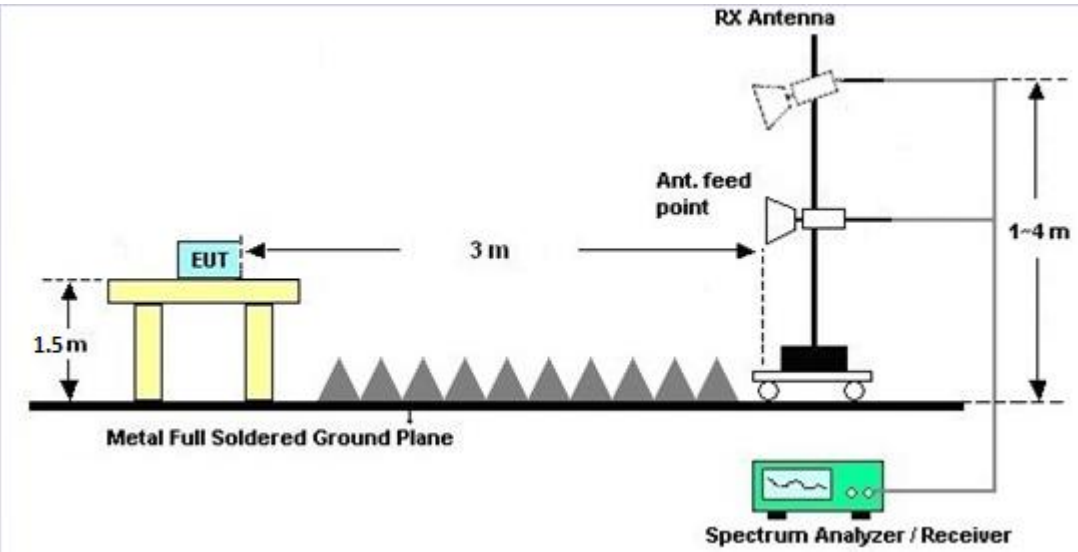
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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.

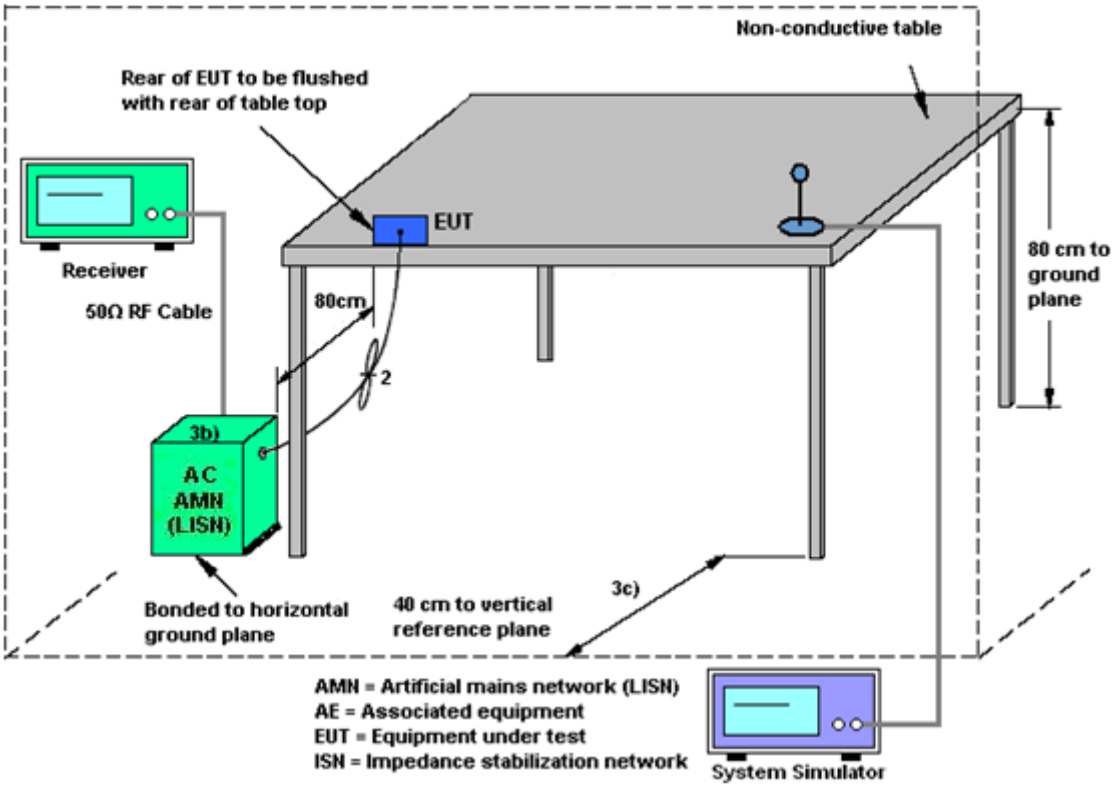
3.5.2 Measuring Instruments

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



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.

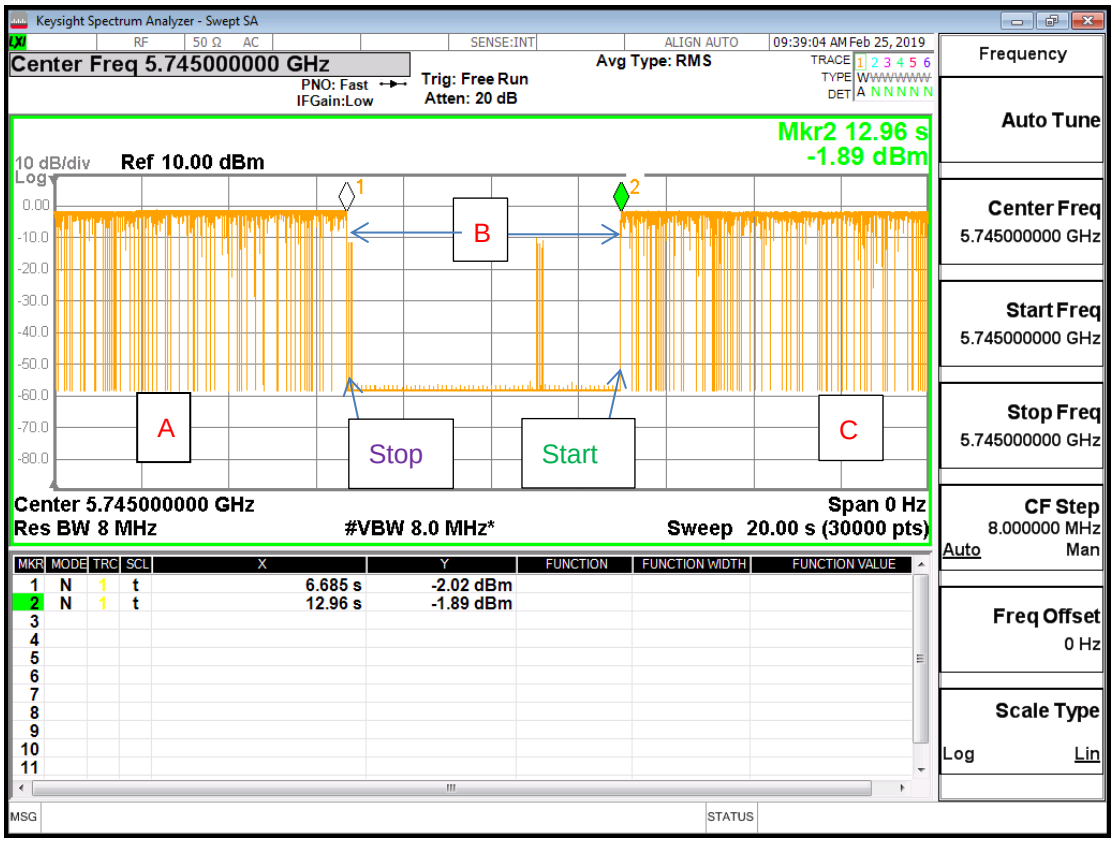
B. Information stop: stop supplying information to the access point.

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).

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 (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
Band IV	-5.90	1.20	1.20	1.37	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
Hygrometer	Testo	HTC-1	4	N/A	May 12, 2018	Feb. 19, 2019~ Mar. 08, 2019	May 11, 2019	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO10	10MHz~6GHz	May 07, 2018	Feb. 19, 2019~ Mar. 08, 2019	May 06, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV 30	100895	9kHz~30GHz	Apr. 20, 2018	Feb. 19, 2019~ Mar. 08, 2019	Apr. 19, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Mar. 01, 2018	Feb. 19, 2019~ Feb. 27, 2019	Feb. 28, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Feb. 28, 2019	Feb. 28, 2019~ Mar. 08, 2019	Feb. 27, 2020	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 02, 2018	Feb. 19, 2019~ Mar. 08, 2019	Oct. 01, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Feb. 23, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Nov. 12, 2018	Feb. 23, 2019	Nov. 11, 2019	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 06, 2018	Feb. 23, 2019	Mar. 05, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Feb. 23, 2019	Nov. 13, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 09, 2018	Feb. 23, 2019	Nov. 08, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Feb. 23, 2019	N/A	Conduction (CO05-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Sep. 14, 2018	Feb. 23, 2019	Sep. 13, 2019	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 08, 2018	Feb. 23, 2019	Nov. 07, 2019	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Feb. 22, 2019~ Mar. 04, 2019	Jan. 06, 2020	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0602	30MHz~1GHz	Oct. 13, 2018	Feb. 22, 2019~ Mar. 04, 2019	Oct. 12, 2019	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 30, 2018	Feb. 22, 2019~ Mar. 04, 2019	Oct. 29, 2019	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 05, 2018	Feb. 22, 2019~ Mar. 04, 2019	Dec. 04, 2019	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 04, 2018	Feb. 22, 2019~ Mar. 04, 2019	Dec. 03, 2019	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800054001	1GHz~18GHz	Apr. 16, 2018	Feb. 22, 2019~ Mar. 04, 2019	Apr. 15, 2019	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 14, 2018	Feb. 22, 2019~ Mar. 04, 2019	Nov. 13, 2020	Radiation (03CH11-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 16, 2018	Feb. 22, 2019~ Mar. 04, 2019	Jul. 15, 2019	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2018	Feb. 22, 2019~ Mar. 04, 2019	Oct. 18, 2019	Radiation (03CH11-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	N/A	Mar. 06, 2018	Feb. 22, 2019~ Mar. 04, 2019	Mar. 05, 2019	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTN-303B	TP140325	N/A	Nov. 05, 2018	Feb. 22, 2019~ Mar. 04, 2019	Nov. 04, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN3	6.75GHz High Pass	Sep. 17, 2018	Feb. 22, 2019~ Mar. 04, 2019	Sep. 16, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN11	1G Low Pass	Sep. 16, 2018	Feb. 22, 2019~ Mar. 04, 2019	Sep. 17, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	2.7G High Pass	Sep. 16, 2018	Feb. 22, 2019~ Mar. 04, 2019	Sep. 17, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 14, 2018	Feb. 22, 2019~ Mar. 04, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 14, 2018	Feb. 22, 2019~ Mar. 04, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 14, 2018	Feb. 22, 2019~ Mar. 04, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 14, 2018	Feb. 22, 2019~ Mar. 04, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Feb. 22, 2019~ Mar. 04, 2019	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Feb. 22, 2019~ Mar. 04, 2019	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Feb. 22, 2019~ Mar. 04, 2019	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Feb. 22, 2019~ Mar. 04, 2019	N/A	Radiation (03CH11-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.20**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.20**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.50**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.20**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kai Liao	Temperature:	21~25	°C
Test Date:	2019/2/19~209/3/8	Relative Humidity:	51~54	%

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

Band IV												
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	17.08	16.73	25.28	23.63	16.33	16.33	0.5	Pass
11a	6Mbps	2	157	5785	17.03	16.78	25.03	25.23	16.33	16.33	0.5	Pass
11a	6Mbps	2	165	5825	16.98	16.73	24.88	23.73	16.28	16.33	0.5	Pass
HT20	MCS0	2	149	5745	18.08	17.83	26.07	25.23	17.58	17.63	0.5	Pass
HT20	MCS0	2	157	5785	18.18	17.93	26.02	25.33	17.53	17.53	0.5	Pass
HT20	MCS0	2	165	5825	18.13	17.83	26.12	25.23	17.58	17.63	0.5	Pass
HT40	MCS0	2	151	5755	37.36	37.06	43.34	43.34	36.32	36.32	0.5	Pass
HT40	MCS0	2	159	5795	37.36	36.96	43.79	43.43	36.32	36.32	0.5	Pass
VHT80	MCS0	2	155	5775	77.32	77.20	85.83	85.35	75.92	76.24	0.5	Pass

Report Number : FR8O2423-02F

TEST RESULTS DATA
Average Power Table

Band IV												
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	1	149	5745	13.80	11.90		30.00	30.00	-5.90	1.20	Pass
11a	6Mbps	1	157	5785	13.60	11.90		30.00	30.00	-5.90	1.20	Pass
11a	6Mbps	1	165	5825	13.80	11.90		30.00	30.00	-5.90	1.20	Pass
HT20	MCS0	1	149	5745	13.70	11.90		30.00	30.00	-5.90	1.20	Pass
HT20	MCS0	1	157	5785	13.80	11.90		30.00	30.00	-5.90	1.20	Pass
HT20	MCS0	1	165	5825	13.80	11.90		30.00	30.00	-5.90	1.20	Pass
HT40	MCS0	1	151	5755	13.70	11.50		30.00	30.00	-5.90	1.20	Pass
HT40	MCS0	1	159	5795	13.80	11.50		30.00	30.00	-5.90	1.20	Pass
VHT20	MCS0	1	149	5745	13.60	11.80		30.00	30.00	-5.90	1.20	Pass
VHT20	MCS0	1	157	5785	13.60	11.80		30.00	30.00	-5.90	1.20	Pass
VHT20	MCS0	1	165	5825	13.70	11.80		30.00	30.00	-5.90	1.20	Pass
VHT40	MCS0	1	151	5755	13.60	11.40		30.00	30.00	-5.90	1.20	Pass
VHT40	MCS0	1	159	5795	13.70	11.40		30.00	30.00	-5.90	1.20	Pass
VHT80	MCS0	1	155	5775	13.60	11.90		30.00	30.00	-5.90	1.20	Pass
11a	6Mbps	2	149	5745	13.80	11.70	15.89	30.00		1.20		Pass
11a	6Mbps	2	157	5785	13.70	12.00	15.94	30.00		1.20		Pass
11a	6Mbps	2	165	5825	13.80	12.00	16.00	30.00		1.20		Pass
HT20	MCS0	2	149	5745	13.70	11.70	15.82	30.00		1.20		Pass
HT20	MCS0	2	157	5785	13.80	11.60	15.85	30.00		1.20		Pass
HT20	MCS0	2	165	5825	13.70	12.00	15.94	30.00		1.20		Pass
HT40	MCS0	2	151	5755	13.70	11.70	15.82	30.00		1.20		Pass
HT40	MCS0	2	159	5795	13.80	11.70	15.89	30.00		1.20		Pass
VHT20	MCS0	2	149	5745	13.70	11.60	15.79	30.00		1.20		Pass
VHT20	MCS0	2	157	5785	13.50	11.50	15.62	30.00		1.20		Pass
VHT20	MCS0	2	165	5825	13.60	11.90	15.84	30.00		1.20		Pass
VHT40	MCS0	2	151	5755	13.60	11.60	15.72	30.00		1.20		Pass
VHT40	MCS0	2	159	5795	13.60	11.60	15.72	30.00		1.20		Pass
VHT80	MCS0	2	155	5775	14.00	12.00	16.12	30.00		1.20		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		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	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.10	0.14	2.22		-0.69	-1.12	2.32	30.00		1.37		Pass
11a	6Mbps	2	157	5785	0.10	0.14	2.22		-0.68	-1.16	2.33	30.00		1.37		Pass
11a	6Mbps	2	165	5825	0.10	0.14	2.22		-0.62	-1.49	2.39	30.00		1.37		Pass
HT20	MCS0	2	149	5745	0.05	0.08	2.22		-1.60	-1.47	1.54	30.00		1.37		Pass
HT20	MCS0	2	157	5785	0.05	0.08	2.22		-1.52	-1.84	1.49	30.00		1.37		Pass
HT20	MCS0	2	165	5825	0.05	0.08	2.22		-1.69	-1.10	1.91	30.00		1.37		Pass
HT40	MCS0	2	151	5755	0.14	0.14	2.22		-4.42	-4.31	-1.30	30.00		1.37		Pass
HT40	MCS0	2	159	5795	0.14	0.14	2.22		-4.36	-4.58	-1.35	30.00		1.37		Pass
VHT80	MCS0	2	155	5775	0.30	0.33	2.22		-7.30	-7.38	-4.29	30.00		1.37		Pass

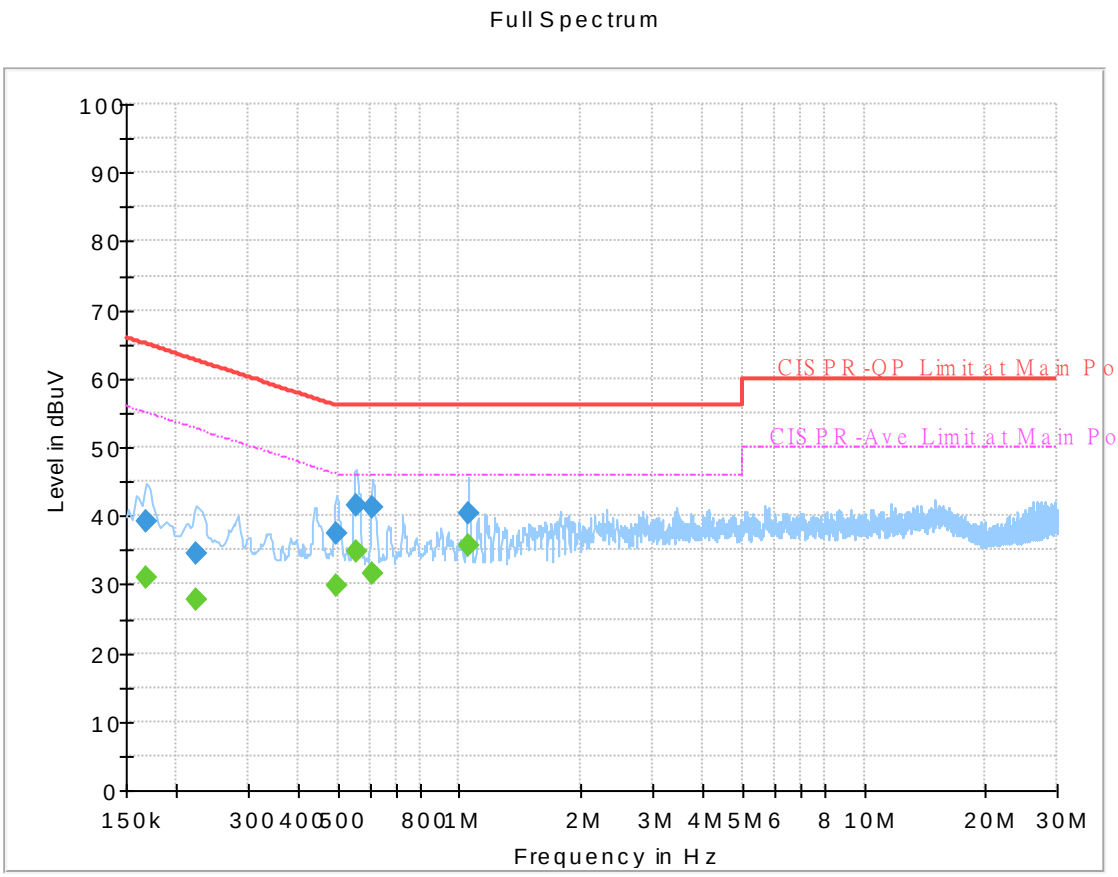
Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Rick Lin	**Temperature :**	22~23℃
		Relative Humidity :	53~55%

EUT Information

Report NO :	8O2423-02
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line



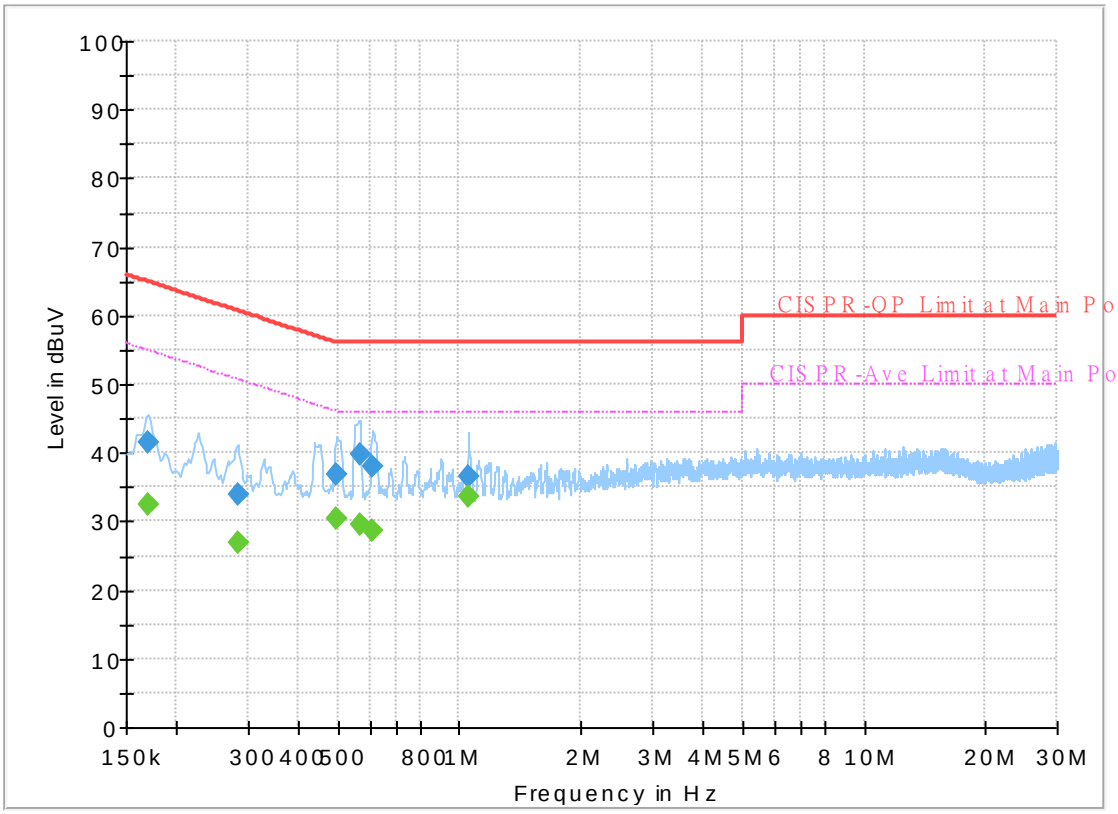
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.168000	---	30.88	55.06	24.18	L1	OFF	19.5
0.168000	39.12	---	65.06	25.94	L1	OFF	19.5
0.224250	---	27.88	52.66	24.78	L1	OFF	19.5
0.224250	34.63	---	62.66	28.03	L1	OFF	19.5
0.498750	---	29.72	46.02	16.30	L1	OFF	19.5
0.498750	37.48	---	56.02	18.54	L1	OFF	19.5
0.557250	---	34.89	46.00	11.11	L1	OFF	19.5
0.557250	41.63	---	56.00	14.37	L1	OFF	19.5
0.611250	---	31.45	46.00	14.55	L1	OFF	19.6
0.611250	41.11	---	56.00	14.89	L1	OFF	19.6
1.052250	---	35.66	46.00	10.34	L1	OFF	19.6
1.052250	40.39	---	56.00	15.61	L1	OFF	19.6

EUT Information

Report NO :	8O2423-02
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)
0.170250	---	32.49	54.95	22.46	N	OFF	19.5
0.170250	41.44	---	64.95	23.51	N	OFF	19.5
0.282750	---	26.85	50.74	23.89	N	OFF	19.5
0.282750	33.86	---	60.74	26.88	N	OFF	19.5
0.498750	---	30.48	46.02	15.54	N	OFF	19.5
0.498750	36.88	---	56.02	19.14	N	OFF	19.5
0.566250	---	29.66	46.00	16.34	N	OFF	19.5
0.566250	39.68	---	56.00	16.32	N	OFF	19.5
0.609000	---	28.76	46.00	17.24	N	OFF	19.6
0.609000	38.16	---	56.00	17.84	N	OFF	19.6
1.054500	---	33.56	46.00	12.44	N	OFF	19.6
1.054500	36.49	---	56.00	19.51	N	OFF	19.6

Appendix C. Radiated Spurious Emission

Test Engineer :	HAO Shu, JC Liang, and KenWu	Temperature :	20~25°C
		Relative Humidity :	50~55%

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		5648	50.54	-17.66	68.2	41.91	31.7	10.09	33.16	228	8	P	H
		5693.6	51.99	-48.49	100.48	43.05	31.96	10.15	33.17	228	8	P	H
		5716.8	54.45	-55.46	109.91	45.42	32.03	10.18	33.18	228	8	P	H
		5722.6	61.2	-55.53	116.73	52.14	32.05	10.19	33.18	228	8	P	H
	*	5745	102.2	-	-	93.08	32.09	10.22	33.19	228	8	P	H
	*	5745	93.9	-	-	84.78	32.09	10.22	33.19	228	8	A	H
													H
													H
		5624.4	50.84	-17.36	68.2	42.19	31.75	10.05	33.15	213	23	P	V
		5696.2	61.97	-40.43	102.4	53.01	31.98	10.15	33.17	213	23	P	V
		5714.4	65.28	-43.95	109.23	56.25	32.03	10.18	33.18	213	23	P	V
		5721.4	69.16	-44.83	113.99	60.11	32.04	10.19	33.18	213	23	P	V
	*	5745	108.42	-	-	99.3	32.09	10.22	33.19	213	23	P	V
	*	5745	99.72	-	-	90.6	32.09	10.22	33.19	213	23	A	V
													V
													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)
		5601.5	49.39	-18.81	68.2	40.71	31.8	10.02	33.14	214	9	P	H
		5683.5	49.05	-43.98	93.03	40.18	31.9	10.14	33.17	214	9	P	H
		5718.5	50.79	-59.59	110.38	41.74	32.04	10.19	33.18	214	9	P	H
		5724.5	49.72	-71.34	121.06	40.66	32.05	10.19	33.18	214	9	P	H
	*	5785	102.23	-	-	92.98	32.17	10.28	33.2	214	9	P	H
	*	5785	94.05	-	-	84.8	32.17	10.28	33.2	214	9	A	H
		5851	50.26	-69.66	119.92	40.82	32.3	10.36	33.22	214	9	P	H
		5857.75	51.55	-58.48	110.03	42.08	32.33	10.36	33.22	214	9	P	H
		5903.5	50.47	-33.6	84.07	40.79	32.51	10.41	33.24	214	9	P	H
		5941.25	50.08	-18.12	68.2	40.29	32.58	10.46	33.25	214	9	P	H
													H
802.11a													H
CH 157		5643.75	51.17	-17.03	68.2	42.54	31.71	10.08	33.16	219	23	P	V
5785MHz		5692	53.57	-45.73	99.3	44.64	31.95	10.15	33.17	219	23	P	V
		5709.75	56.25	-51.68	107.93	47.24	32.02	10.17	33.18	219	23	P	V
		5725	59.52	-62.68	122.2	50.45	32.05	10.2	33.18	219	23	P	V
	*	5785	107.95	-	-	98.7	32.17	10.28	33.2	219	23	P	V
	*	5785	99.45	-	-	90.2	32.17	10.28	33.2	219	23	A	V
		5851	58.59	-61.33	119.92	49.15	32.3	10.36	33.22	219	23	P	V
		5867.25	54.37	-53	107.37	44.86	32.37	10.37	33.23	219	23	P	V
		5892.75	52.99	-39.04	92.03	43.36	32.47	10.4	33.24	219	23	P	V
		5934.5	50.63	-17.57	68.2	40.86	32.57	10.45	33.25	219	23	P	V
													V
													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)
	*	5825	101.32	-	-	91.95	32.25	10.33	33.21	201	9	P	H
	*	5825	93.06	-	-	83.69	32.25	10.33	33.21	201	9	A	H
		5852.8	55.18	-60.64	115.82	45.73	32.31	10.36	33.22	201	9	P	H
		5865.2	55.44	-52.5	107.94	45.94	32.36	10.37	33.23	201	9	P	H
		5877	50.95	-52.76	103.71	41.39	32.41	10.38	33.23	201	9	P	H
		5944	50.7	-17.5	68.2	40.9	32.59	10.46	33.25	201	9	P	H
													H
802.11a													H
CH 165	*	5825	107.78	-	-	98.41	32.25	10.33	33.21	205	24	P	V
5825MHz	*	5825	98.81	-	-	89.44	32.25	10.33	33.21	205	24	A	V
		5851.2	67.33	-52.13	119.46	57.89	32.3	10.36	33.22	205	24	P	V
		5855.8	64.86	-45.72	110.58	55.4	32.32	10.36	33.22	205	24	P	V
		5877.6	62.58	-40.69	103.27	53.01	32.41	10.39	33.23	205	24	P	V
		5939.6	51.14	-17.06	68.2	41.36	32.58	10.45	33.25	205	24	P	V
													V
													V
													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.	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		11490	42.57	-31.43	74	48.56	39.7	15.91	61.6	100	0	P	H
		17235	42.65	-25.55	68.2	37.71	40.51	20.22	55.79	100	0	P	H
													H
													H
		11490	42.14	-31.86	74	48.13	39.7	15.91	61.6	100	0	P	V
		17235	43.67	-24.53	68.2	38.73	40.51	20.22	55.79	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	42.52	-31.48	74	48.82	39.49	15.96	61.75	100	0	P	H
		17355	42.08	-26.12	68.2	36.3	40.98	20.33	55.53	100	0	P	H
													H
													H
		11570	42.77	-31.23	74	49.07	39.49	15.96	61.75	100	0	P	V
		17355	43.01	-25.19	68.2	37.23	40.98	20.33	55.53	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	42.39	-31.61	74	49.08	39.2	16.01	61.9	100	0	P	H
		17475	43.92	-24.28	68.2	37.17	41.58	20.44	55.27	100	0	P	H
													H
													H
		11650	41.73	-32.27	74	48.42	39.2	16.01	61.9	100	0	P	V
		17475	44.46	-23.74	68.2	37.71	41.58	20.44	55.27	100	0	P	V
													V
													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.	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)
		5631.4	49.3	-18.9	68.2	40.65	31.74	10.06	33.15	228	8	P	H
		5691.8	53.74	-45.41	99.15	44.81	31.95	10.15	33.17	228	8	P	H
		5717.4	55.56	-54.51	110.07	46.53	32.03	10.18	33.18	228	8	P	H
		5724.6	60.91	-60.38	121.29	51.85	32.05	10.19	33.18	228	8	P	H
	*	5745	100.91	-	-	91.79	32.09	10.22	33.19	228	8	P	H
	*	5745	91.73	-	-	82.61	32.09	10.22	33.19	228	8	A	H
802.11n													H
HT20													H
CH 149		5623.2	49.84	-18.36	68.2	41.19	31.75	10.05	33.15	213	23	P	V
5745MHz		5697.8	59.37	-44.21	103.58	50.39	31.99	10.16	33.17	213	23	P	V
		5717.4	63.06	-47.01	110.07	54.03	32.03	10.18	33.18	213	23	P	V
		5723	63.6	-54.04	117.64	54.54	32.05	10.19	33.18	213	23	P	V
	*	5745	107.62	-	-	98.5	32.09	10.22	33.19	213	23	P	V
	*	5745	98.72	-	-	89.6	32.09	10.22	33.19	213	23	A	V
													V
													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)
		5639.25	49.36	-18.84	68.2	40.72	31.72	10.07	33.15	214	9	P	H
		5673.5	49.94	-35.69	85.63	41.15	31.84	10.12	33.17	214	9	P	H
		5711.5	49.95	-58.47	108.42	40.93	32.02	10.18	33.18	214	9	P	H
		5723.5	49.65	-69.13	118.78	40.59	32.05	10.19	33.18	214	9	P	H
	*	5785	101.86	-	-	92.61	32.17	10.28	33.2	214	9	P	H
	*	5785	91.45	-	-	82.2	32.17	10.28	33.2	214	9	A	H
		5852	50.91	-66.73	117.64	41.46	32.31	10.36	33.22	214	9	P	H
		5855.75	50.54	-60.05	110.59	41.08	32.32	10.36	33.22	214	9	P	H
		5889.5	50.4	-44.04	94.44	40.77	32.46	10.4	33.23	214	9	P	H
		5949.5	50.53	-17.67	68.2	40.72	32.6	10.46	33.25	214	9	P	H
802.11n													H
HT20													H
CH 157		5620.5	50.74	-17.46	68.2	42.08	31.76	10.05	33.15	219	23	P	V
5785MHz		5698.75	54.01	-50.27	104.28	45.03	31.99	10.16	33.17	219	23	P	V
		5718	56.84	-53.4	110.24	47.79	32.04	10.19	33.18	219	23	P	V
		5721.75	57.5	-57.29	114.79	48.45	32.04	10.19	33.18	219	23	P	V
	*	5785	107.04	-	-	97.79	32.17	10.28	33.2	219	23	P	V
	*	5785	97.75	-	-	88.5	32.17	10.28	33.2	219	23	A	V
		5850.5	59.21	-61.85	121.06	49.77	32.3	10.36	33.22	219	23	P	V
		5855	57.15	-53.65	110.8	47.69	32.32	10.36	33.22	219	23	P	V
		5877	53.38	-50.33	103.71	43.82	32.41	10.38	33.23	219	23	P	V
		5925	50.96	-17.24	68.2	41.22	32.55	10.44	33.25	219	23	P	V
													V
													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)
	*	5825	100.66	-	-	91.29	32.25	10.33	33.21	201	9	P	H
	*	5825	90.95	-	-	81.58	32.25	10.33	33.21	201	9	A	H
		5853.6	53.75	-60.24	113.99	44.3	32.31	10.36	33.22	201	9	P	H
		5859.6	54.07	-55.44	109.51	44.59	32.34	10.37	33.23	201	9	P	H
		5910	51.64	-27.63	79.27	41.94	32.52	10.42	33.24	201	9	P	H
		5932.6	51.7	-16.5	68.2	41.93	32.57	10.45	33.25	201	9	P	H
802.11n													H
HT20													H
CH 165	*	5825	107.24	-	-	97.87	32.25	10.33	33.21	205	24	P	V
5825MHz	*	5825	97.56	-	-	88.19	32.25	10.33	33.21	205	24	A	V
		5852.6	66.51	-49.76	116.27	57.06	32.31	10.36	33.22	205	24	P	V
		5859.2	64.86	-44.76	109.62	55.37	32.34	10.37	33.22	205	24	P	V
		5876	62.64	-41.82	104.46	53.09	32.4	10.38	33.23	205	24	P	V
		5937.4	51.32	-16.88	68.2	41.55	32.57	10.45	33.25	205	24	P	V
													V
													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.	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)
		11490	42.15	-31.85	74	48.14	39.7	15.91	61.6	100	0	P	H
		17235	42.49	-25.71	68.2	37.55	40.51	20.22	55.79	100	0	P	H
802.11n													H
HT20													H
CH 149		11490	43.49	-30.51	74	49.48	39.7	15.91	61.6	100	0	P	V
5745MHz		17235	43.55	-24.65	68.2	38.61	40.51	20.22	55.79	100	0	P	V
													V
													V
		11570	43.31	-30.69	74	49.61	39.49	15.96	61.75	100	0	P	H
		17355	42.96	-25.24	68.2	37.18	40.98	20.33	55.53	100	0	P	H
802.11n													H
HT20													H
CH 157		11570	44.01	-29.99	74	50.31	39.49	15.96	61.75	100	0	P	V
5785MHz		17355	44.08	-24.12	68.2	38.3	40.98	20.33	55.53	100	0	P	V
													V
													V
		11650	42.86	-31.14	74	49.55	39.2	16.01	61.9	100	0	P	H
		17475	44.43	-23.77	68.2	37.68	41.58	20.44	55.27	100	0	P	H
802.11n													H
HT20													H
CH 165		11650	41.72	-32.28	74	48.41	39.2	16.01	61.9	100	0	P	V
5825MHz		17475	44.16	-24.04	68.2	37.41	41.58	20.44	55.27	100	0	P	V
													V
													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.	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)
		5648.75	51.43	-16.77	68.2	42.8	31.7	10.09	33.16	226	8	P	H
		5695.75	52.87	-49.2	102.07	43.92	31.97	10.15	33.17	226	8	P	H
		5711.5	56.48	-51.94	108.42	47.46	32.02	10.18	33.18	226	8	P	H
		5723.25	56.49	-61.72	118.21	47.43	32.05	10.19	33.18	226	8	P	H
	*	5755	98.06	-	-	88.9	32.11	10.24	33.19	226	8	P	H
	*	5755	88.46	-	-	79.3	32.11	10.24	33.19	226	8	A	H
		5852	49.93	-67.71	117.64	40.48	32.31	10.36	33.22	226	8	P	H
		5858.75	51.79	-57.96	109.75	42.32	32.33	10.36	33.22	226	8	P	H
		5881.25	50.47	-50.09	100.56	40.89	32.42	10.39	33.23	226	8	P	H
		5926.25	50.27	-17.93	68.2	40.53	32.55	10.44	33.25	226	8	P	H
802.11n													H
HT40													H
CH 151		5649.25	55.69	-12.51	68.2	47.06	31.7	10.09	33.16	210	24	P	V
5755MHz		5699.5	63.24	-41.59	104.83	54.25	32	10.16	33.17	210	24	P	V
		5719.75	65.3	-45.43	110.73	56.25	32.04	10.19	33.18	210	24	P	V
		5720.75	64.73	-47.78	112.51	55.68	32.04	10.19	33.18	210	24	P	V
	*	5755	104.8	-	-	95.64	32.11	10.24	33.19	210	24	P	V
	*	5755	96.76	-	-	87.6	32.11	10.24	33.19	210	24	A	V
		5853	51.63	-63.73	115.36	42.18	32.31	10.36	33.22	210	24	P	V
		5857.25	56.48	-53.69	110.17	47.01	32.33	10.36	33.22	210	24	P	V
		5882	52.05	-47.95	100	42.46	32.43	10.39	33.23	210	24	P	V
		5933	50.57	-17.63	68.2	40.8	32.57	10.45	33.25	210	24	P	V
													V
													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)
		5645	50.21	-17.99	68.2	41.58	31.71	10.08	33.16	230	10	P	H
		5692.25	51	-48.49	99.49	42.07	31.95	10.15	33.17	230	10	P	H
		5719	49.71	-60.81	110.52	40.66	32.04	10.19	33.18	230	10	P	H
		5723.5	51.88	-66.9	118.78	42.82	32.05	10.19	33.18	230	10	P	H
	*	5795	97	-	-	87.72	32.19	10.29	33.2	230	10	P	H
	*	5795	88.18	-	-	78.9	32.19	10.29	33.2	230	10	A	H
		5851.5	51.45	-67.33	118.78	42	32.31	10.36	33.22	230	10	P	H
		5856.5	52.76	-57.62	110.38	43.29	32.33	10.36	33.22	230	10	P	H
		5899.75	52.99	-33.86	86.85	43.32	32.5	10.41	33.24	230	10	P	H
		5934.5	51.15	-17.05	68.2	41.38	32.57	10.45	33.25	230	10	P	H
802.11n													H
HT40													H
CH 159		5642.5	50.4	-17.8	68.2	41.76	31.72	10.08	33.16	234	25	P	V
5795MHz		5691.75	57	-42.12	99.12	48.07	31.95	10.15	33.17	234	25	P	V
		5717.25	57.17	-52.86	110.03	48.14	32.03	10.18	33.18	234	25	P	V
		5722.5	59.06	-57.44	116.5	50.01	32.04	10.19	33.18	234	25	P	V
	*	5795	103.64	-	-	94.36	32.19	10.29	33.2	234	25	P	V
	*	5795	95.08	-	-	85.8	32.19	10.29	33.2	234	25	A	V
		5850.25	62.34	-59.29	121.63	52.9	32.3	10.36	33.22	234	25	P	V
		5860	60.99	-48.41	109.4	51.51	32.34	10.37	33.23	234	25	P	V
		5882.25	57.88	-41.94	99.82	48.29	32.43	10.39	33.23	234	25	P	V
		5929.5	52.54	-15.66	68.2	42.79	32.56	10.44	33.25	234	25	P	V
													V
													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.	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)
		11510	43.2	-30.8	74	49.21	39.67	15.92	61.6	100	0	P	H
		17265	42.98	-25.22	68.2	37.85	40.6	20.24	55.71	100	0	P	H
802.11n													H
HT40													H
CH 151		11510	42.77	-31.23	74	48.78	39.67	15.92	61.6	100	0	P	V
5755MHz		17265	43.11	-25.09	68.2	37.98	40.6	20.24	55.71	100	0	P	V
													V
													V
		11590	42.24	-31.76	74	48.63	39.43	15.97	61.79	100	0	P	H
		17385	42.26	-25.94	68.2	36.25	41.12	20.35	55.46	100	0	P	H
802.11n													H
HT40													H
CH 159		11590	42.03	-31.97	74	48.42	39.43	15.97	61.79	100	0	P	V
5795MHz		17385	42.04	-26.16	68.2	36.03	41.12	20.35	55.46	100	0	P	V
													V
													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.	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)
		5638.5	49.66	-18.54	68.2	41.02	31.72	10.07	33.15	205	10	P	H
		5698.25	57.08	-46.83	103.91	48.1	31.99	10.16	33.17	205	10	P	H
		5707.25	58.69	-48.54	107.23	49.69	32.01	10.17	33.18	205	10	P	H
		5723.25	55.18	-63.03	118.21	46.12	32.05	10.19	33.18	205	10	P	H
	*	5775	94.62	-	-	85.4	32.15	10.27	33.2	205	10	P	H
	*	5775	85.32	-	-	76.1	32.15	10.27	33.2	205	10	A	H
		5851.75	53.48	-64.73	118.21	44.03	32.31	10.36	33.22	205	10	P	H
		5867.25	59.16	-48.21	107.37	49.65	32.37	10.37	33.23	205	10	P	H
		5881.25	51.39	-49.17	100.56	41.81	32.42	10.39	33.23	205	10	P	H
		5925.75	50.29	-17.91	68.2	40.55	32.55	10.44	33.25	205	10	P	H
802.11ac													H
VHT80													H
CH 155		5631	54.28	-13.92	68.2	45.63	31.74	10.06	33.15	213	24	P	V
5775MHz		5698.5	64.34	-39.75	104.09	55.36	31.99	10.16	33.17	213	24	P	V
		5707	65.38	-41.78	107.16	56.38	32.01	10.17	33.18	213	24	P	V
		5720	62.62	-48.18	110.8	53.57	32.04	10.19	33.18	213	24	P	V
	*	5775	101.7	-	-	92.48	32.15	10.27	33.2	213	24	P	V
	*	5775	92.37	-	-	83.15	32.15	10.27	33.2	213	24	A	V
		5851	62.84	-57.08	119.92	53.4	32.3	10.36	33.22	213	24	P	V
		5867.25	65.98	-41.39	107.37	56.47	32.37	10.37	33.23	213	24	P	V
		5875.25	59.71	-45.3	105.01	50.16	32.4	10.38	33.23	213	24	P	V
		5945.5	50.55	-17.65	68.2	40.75	32.59	10.46	33.25	213	24	P	V
													V
													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.	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)
		11550	42.62	-31.38	74	48.83	39.55	15.95	61.71	100	0	P	H
		17325	42.33	-25.87	68.2	36.8	40.83	20.3	55.6	100	0	P	H
802.11ac													H
VHT80													H
CH 155		11550	42.07	-31.93	74	48.28	39.55	15.95	61.71	100	0	P	V
5775MHz		17325	41.18	-27.02	68.2	35.65	40.83	20.3	55.6	100	0	P	V
													V
													V

Remark

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

Emission below 1GHz

5GHz WIFI 802.11n HT40 (LF @ 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)
		40.67	21.24	-18.76	40	34.04	18.7	0.87	32.37	-	-	P	H
		94.02	20.03	-23.47	43.5	35.98	15.04	1.34	32.33	-	-	P	H
		157.07	21.73	-21.77	43.5	35.78	16.5	1.72	32.27	-	-	P	H
		562.53	26.95	-19.05	46	29.98	26.02	3.14	32.19	-	-	P	H
		882.63	32.89	-13.11	46	31.22	29.11	4	31.44	-	-	P	H
		957.32	33.04	-12.96	46	28.79	30.89	4.18	30.82	100	0	P	H
													H
													H
													H
													H
5GHz													H
802.11n													H
HT40		37.76	30.8	-9.2	40	42.06	20.28	0.83	32.37	-	-	P	V
LF		40.67	33.84	-6.16	40	46.64	18.7	0.87	32.37	100	0	P	V
		187.14	22.37	-21.13	43.5	38.1	14.61	1.91	32.25	-	-	P	V
		498.51	25.37	-20.63	46	30.92	23.72	2.89	32.16	-	-	P	V
		753.62	29.5	-16.5	46	29.99	27.85	3.66	32	-	-	P	V
		947.62	33.26	-12.74	46	29.59	30.43	4.15	30.91	-	-	P	V
													V
													V
													V
													V
													V
													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

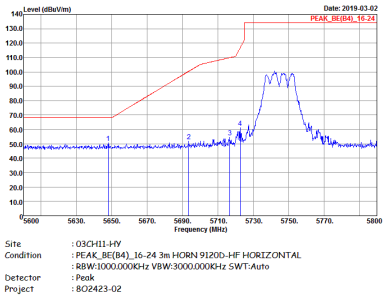
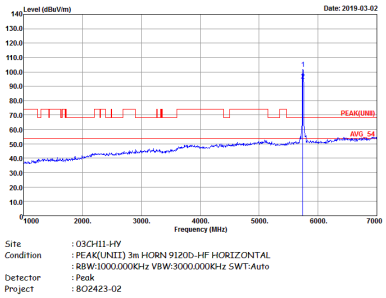
Test Engineer :	HAO Shu, JC Liang, and KenWu	**Temperature :**	20~25°C
		Relative Humidity :	50~55%

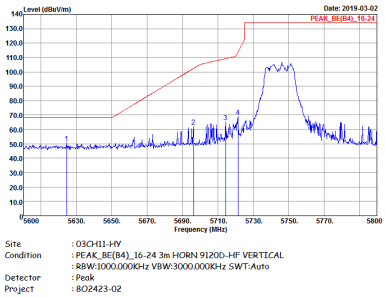
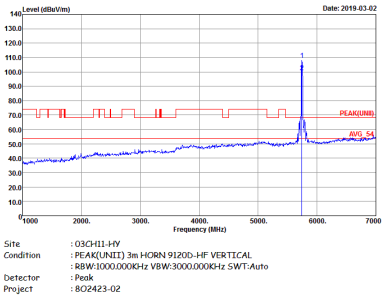
Note symbol

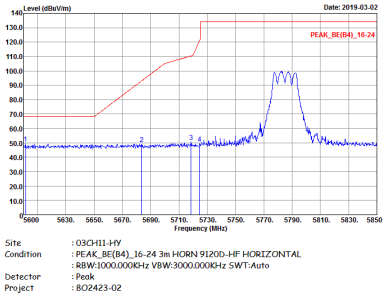
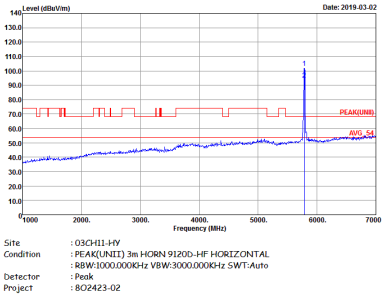
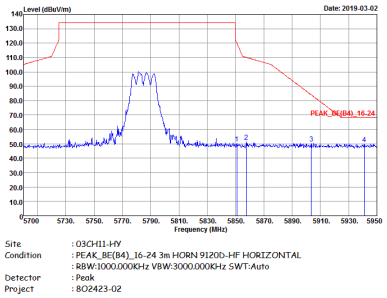
-L	**Low channel location**
-R	**High channel location**

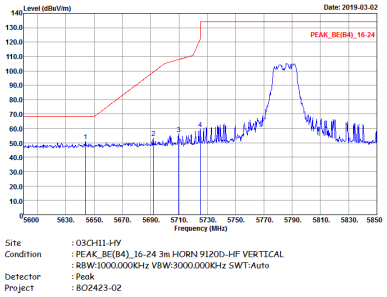
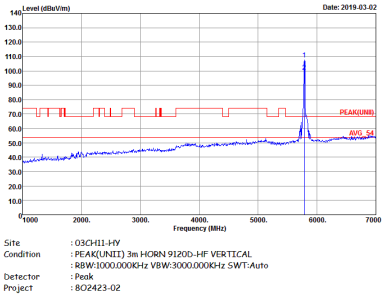
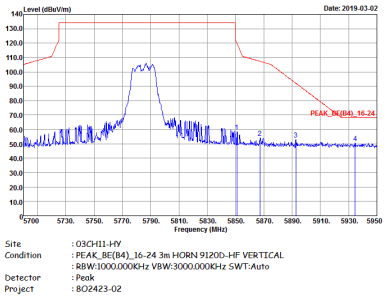
Band 4 - 5725~5850MHz

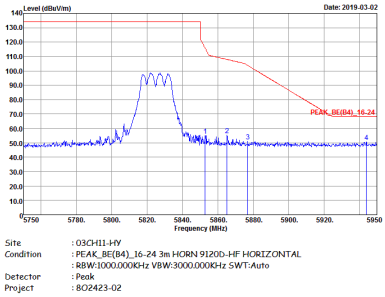
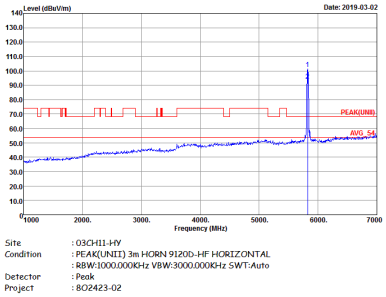
WIFI 802.11a (Band Edge @ 3m)

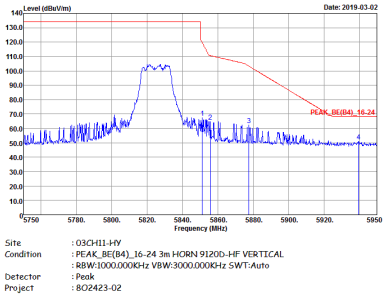
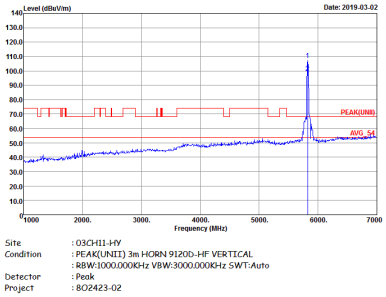
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

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

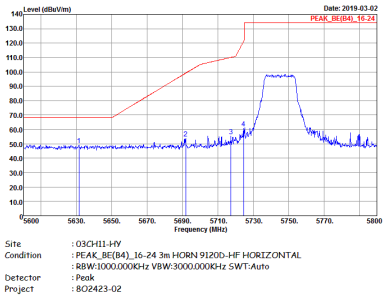
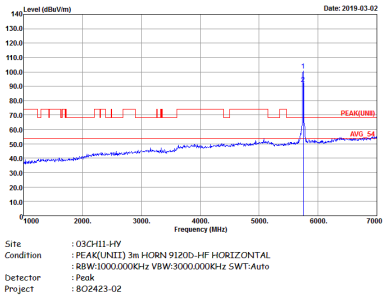
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

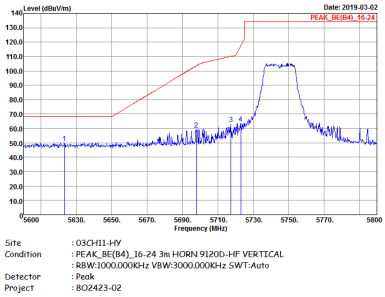
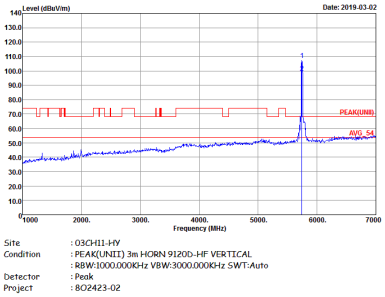
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	Left blank

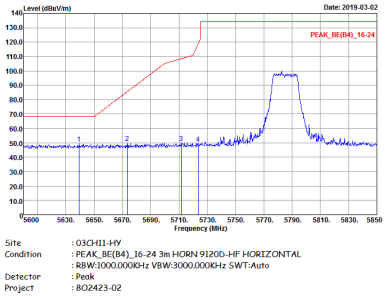
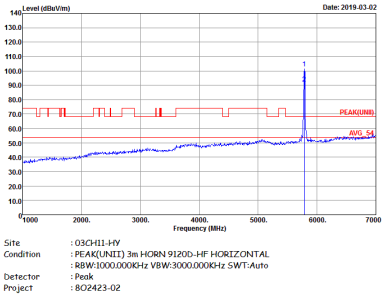
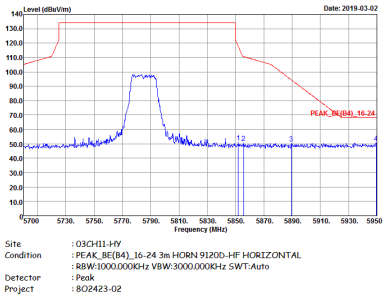
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

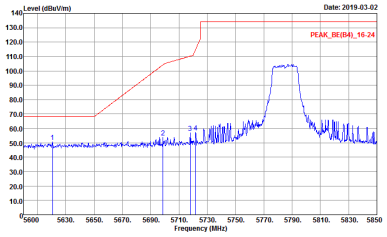
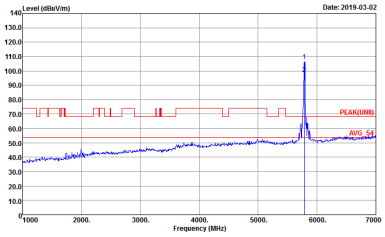
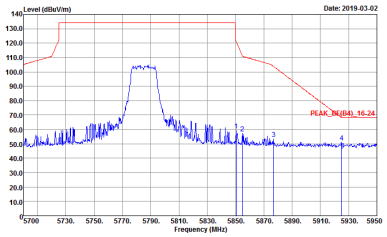
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

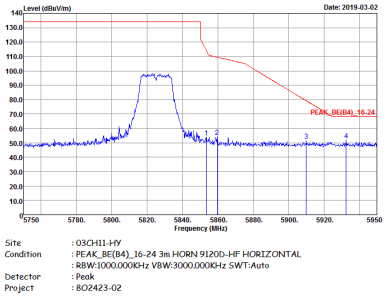
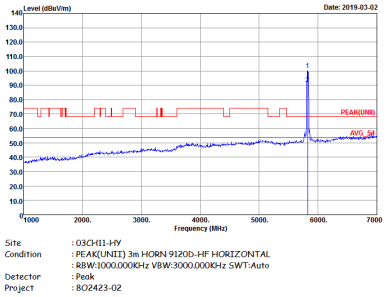
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

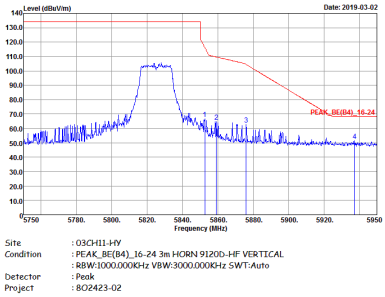
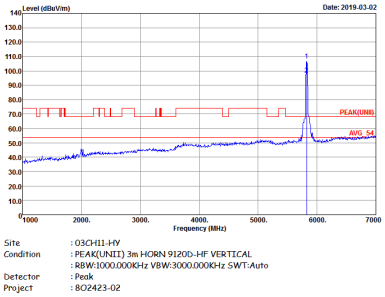
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak		

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

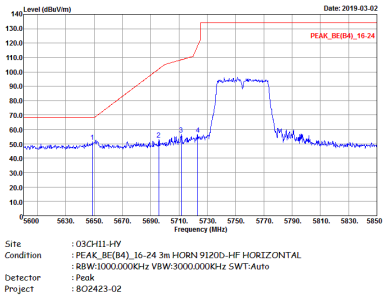
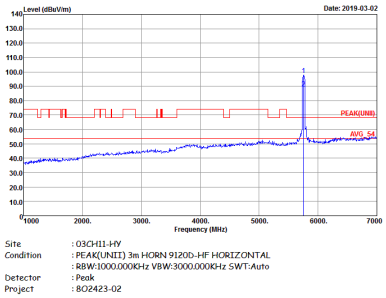
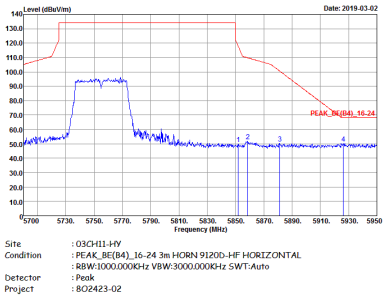
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	Left blank

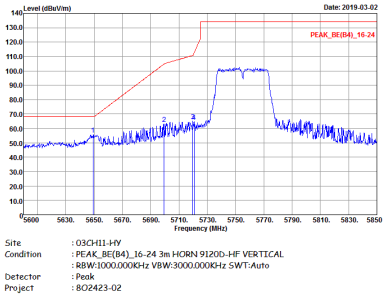
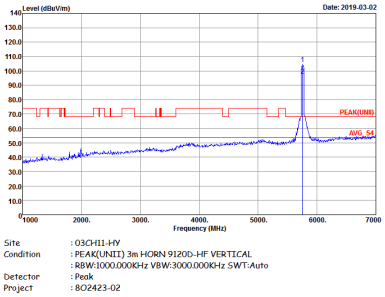
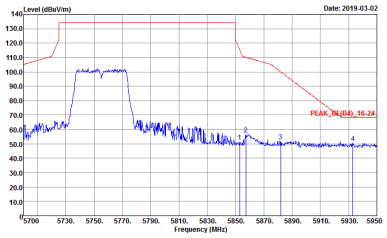
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	Left blank

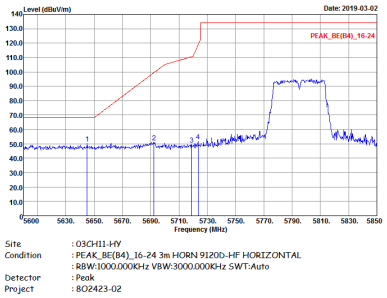
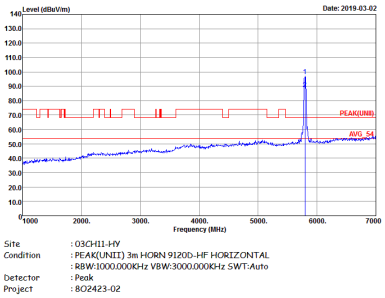
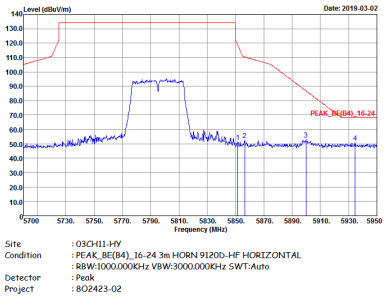
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

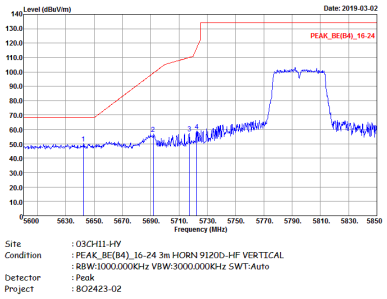
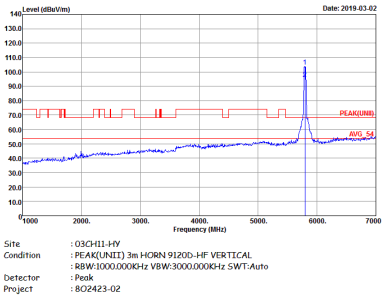
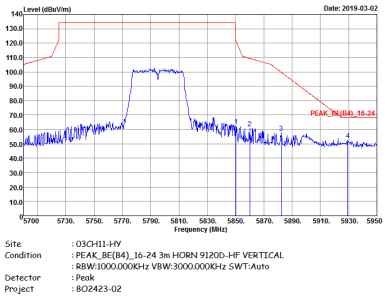
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak		

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

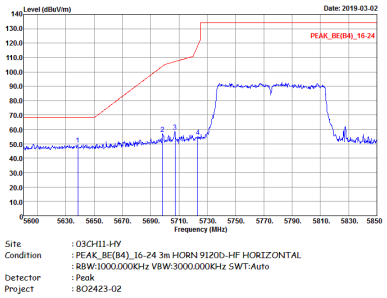
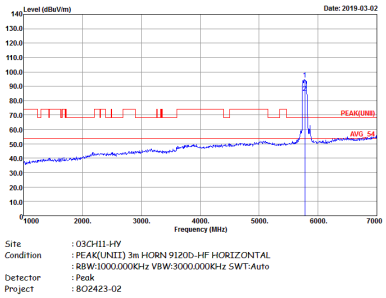
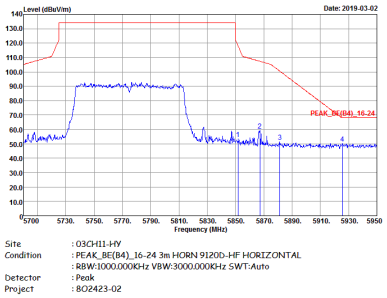
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

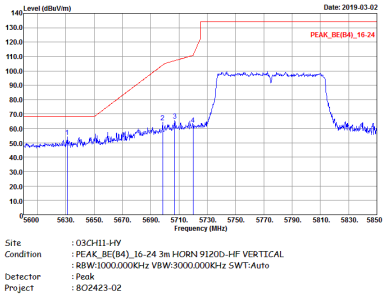
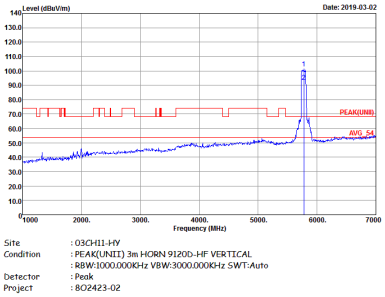
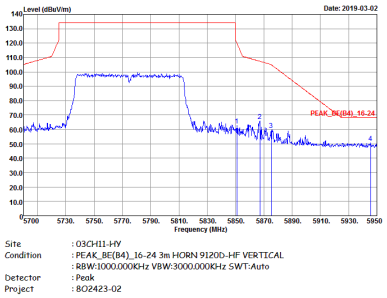
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	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 : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

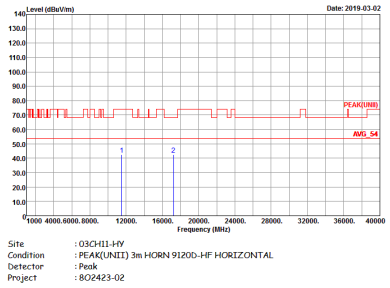
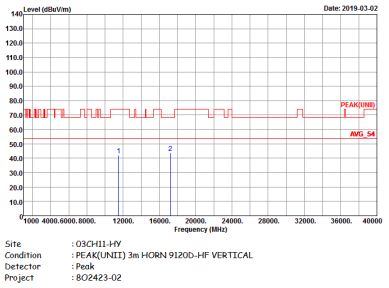
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

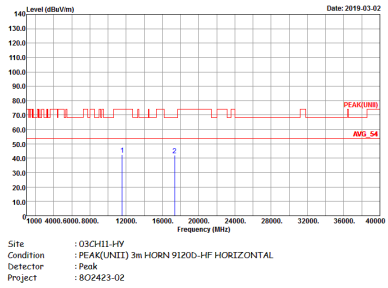
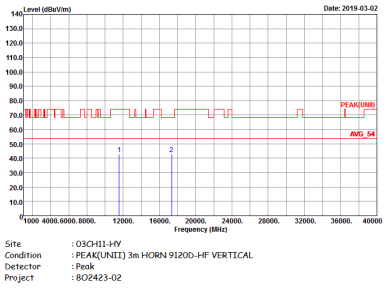
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

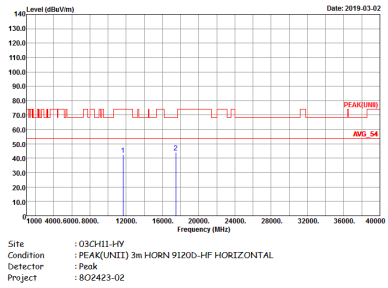
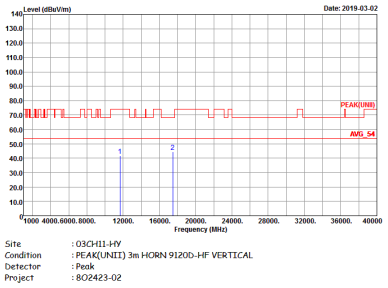
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O2423-02
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 : 8O2423-02	Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

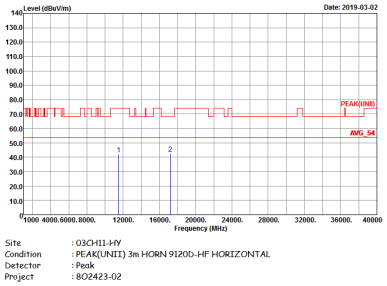
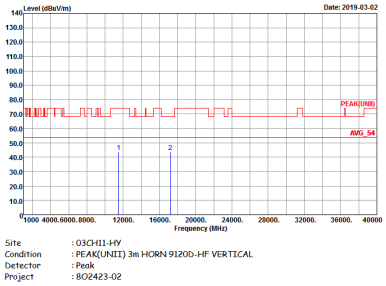
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

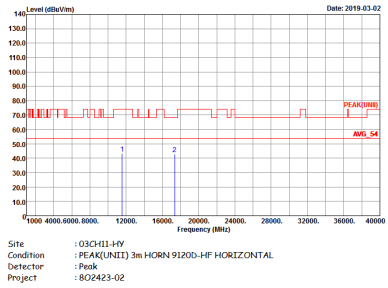
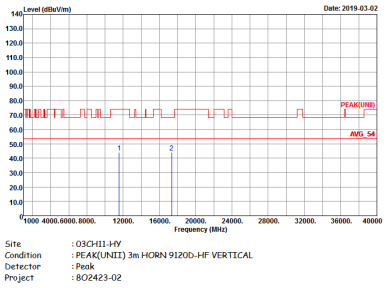
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

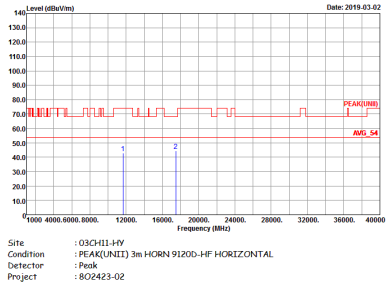
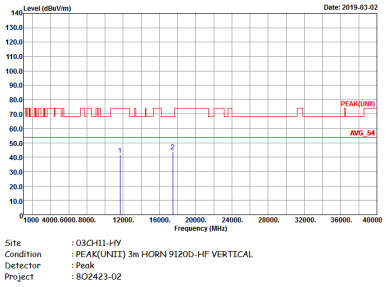
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz

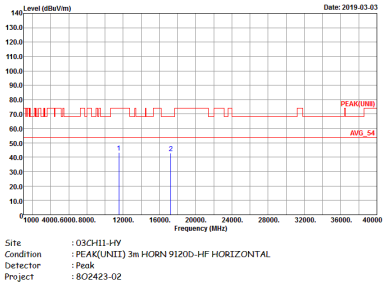
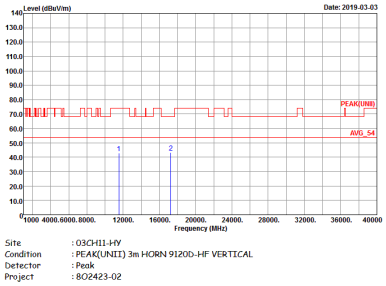
WIFI 802.11n HT20 (Harmonic @ 3m)

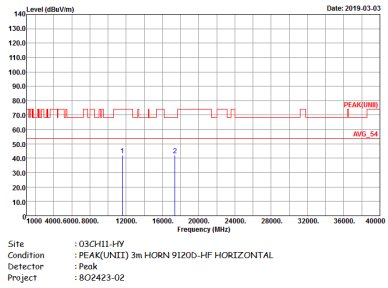
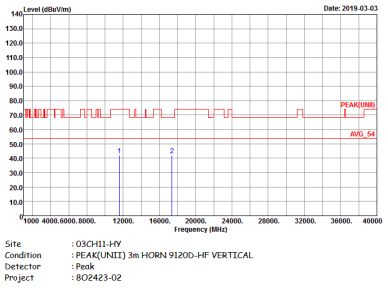
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.		

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.		

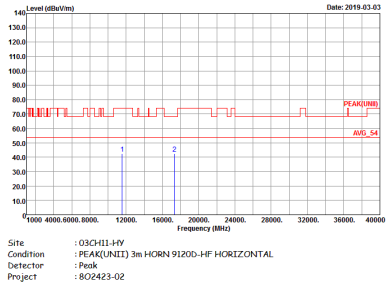
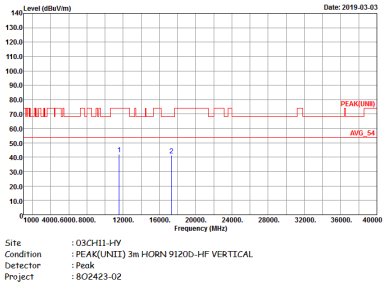
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

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.		

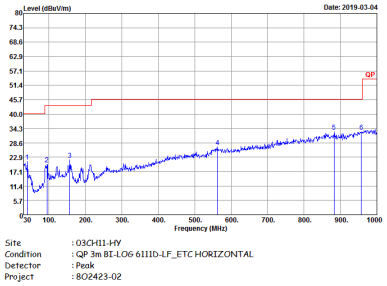
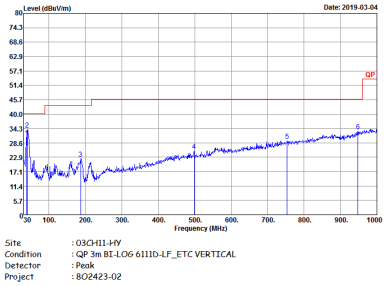
Band 4 5725~5850MHz

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 below 1GHz

5GHz WIFI 802.11n HT40 (LF)

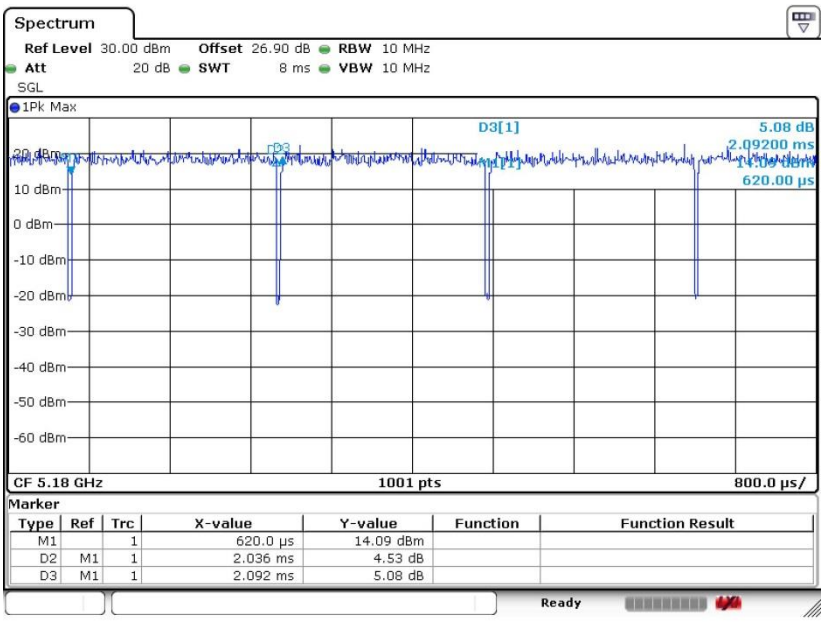
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT40 LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	802.11a	97.32	2036	0.49	1kHz	0.12
2	802.11a	96.93	2022	0.49	1kHz	0.14
1+2	802.11a for Ant. 1	97.68	2024	0.49	1kHz	0.10
1+2	802.11a for Ant. 2	96.92	2014	0.50	1kHz	0.14
1	5GHz 802.11n HT20	98.80	-	-	10Hz	0.05
2	5GHz 802.11n HT20	98.80	-	-	10Hz	0.05
1+2	5GHz 802.11n HT20 for Ant. 1	98.75	-	-	10Hz	0.05
1+2	5GHz 802.11n HT20 for Ant. 2	98.12	-	-	10Hz	0.08
1	5GHz 802.11n HT40	97.53	2370	0.42	1kHz	0.11
2	5GHz 802.11n HT40	97.54	2380	0.42	1kHz	0.11
1+2	5GHz 802.11n HT40 for Ant. 1	96.86	1235	0.81	1kHz	0.14
1+2	5GHz 802.11n HT40 for Ant. 2	96.85	1230	0.81	1kHz	0.14
1	5GHz 802.11ac VHT20	98.80	-	-	10Hz	0.05
2	5GHz 802.11ac VHT20	98.80	-	-	10Hz	0.05
1+2	5GHz 802.11ac VHT20 for Ant. 1	97.52	2518	0.40	1kHz	0.11
1+2	5GHz 802.11ac VHT20 for Ant. 2	97.52	2519	0.40	1kHz	0.11
1	5GHz 802.11ac VHT40	97.95	2390	0.42	1kHz	0.09
2	5GHz 802.11ac VHT40	97.55	2390	0.42	1kHz	0.11
1+2	5GHz 802.11ac VHT40 for Ant. 1	96.88	1240	0.81	1kHz	0.14
1+2	5GHz 802.11ac VHT40 for Ant. 2	96.86	1235	0.81	1kHz	0.14
1	5GHz 802.11ac VHT80	95.73	1120	0.89	1kHz	0.19
2	5GHz 802.11ac VHT80	95.73	1120	0.89	1kHz	0.19
1+2	5GHz 802.11ac VHT80 for Ant. 1	93.33	588	1.70	3kHz	0.30
1+2	5GHz 802.11ac VHT80 for Ant. 2	92.70	584	1.71	3kHz	0.33

<Ant. 1>

802.11a



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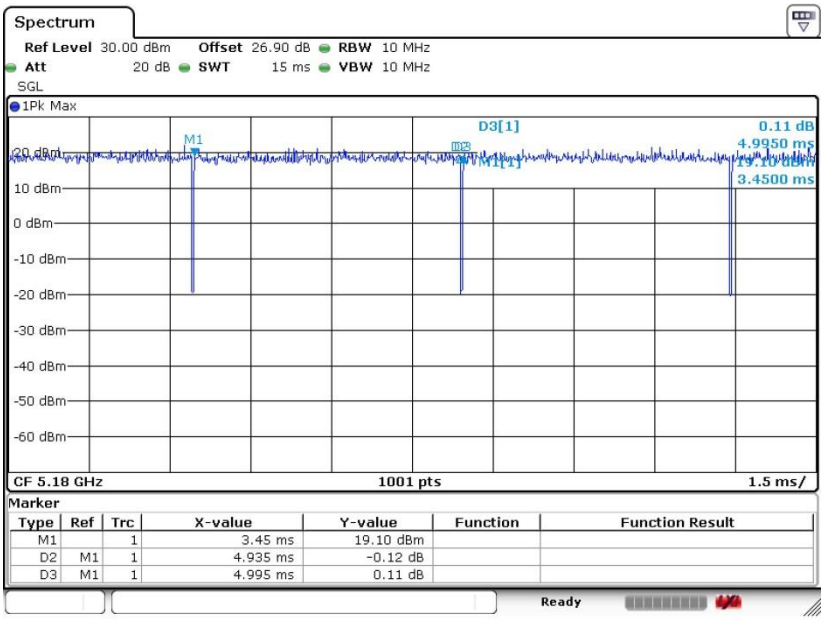
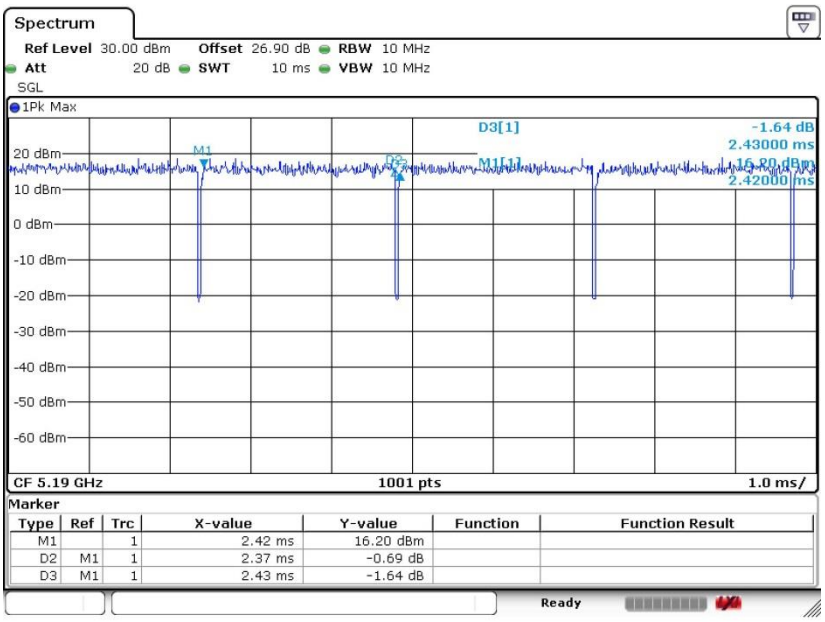
802.11n HT20



Date: 17.FEB.2019 16:34:32

802.11n HT40



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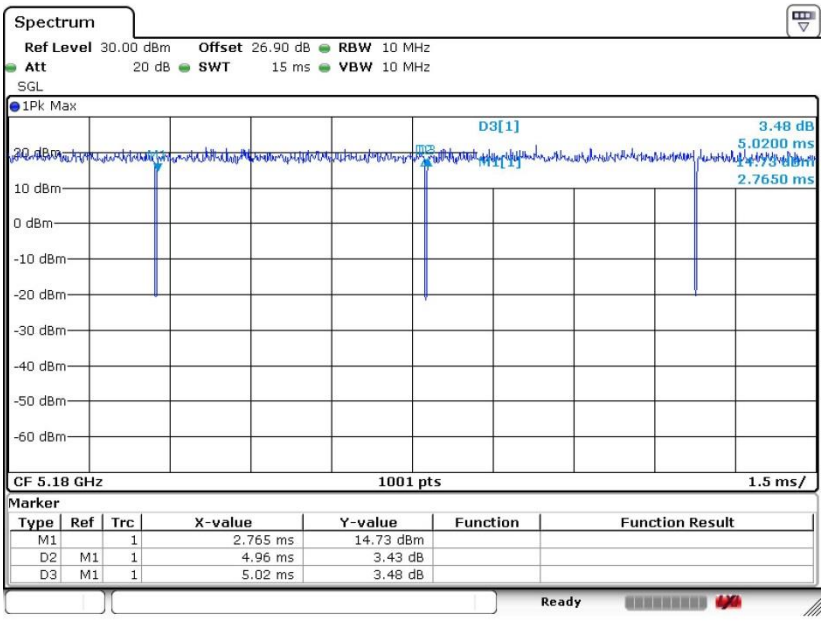
802.11ac VHT20



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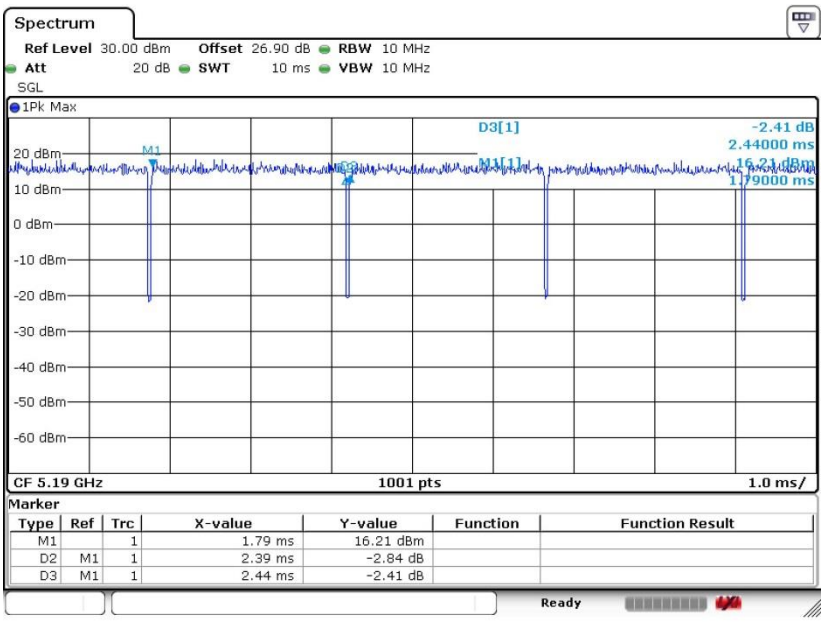

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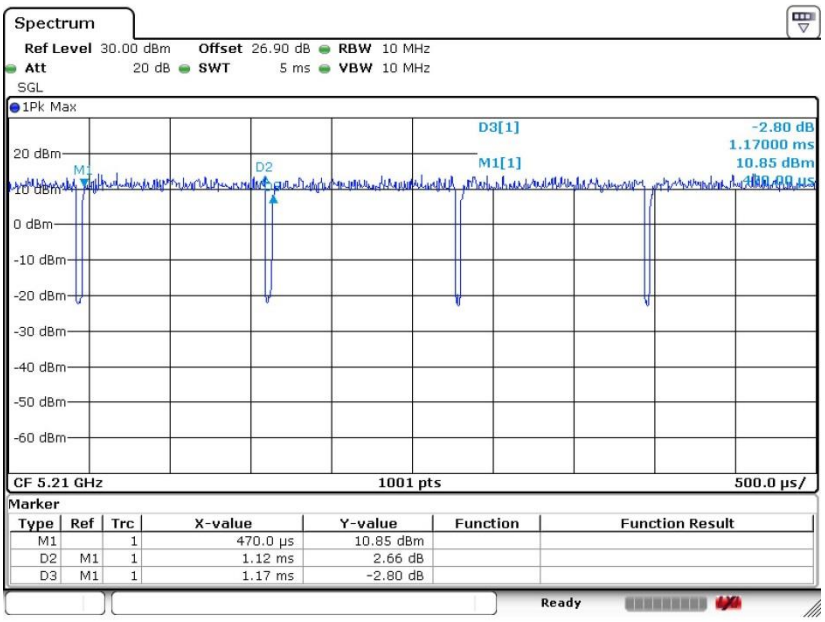

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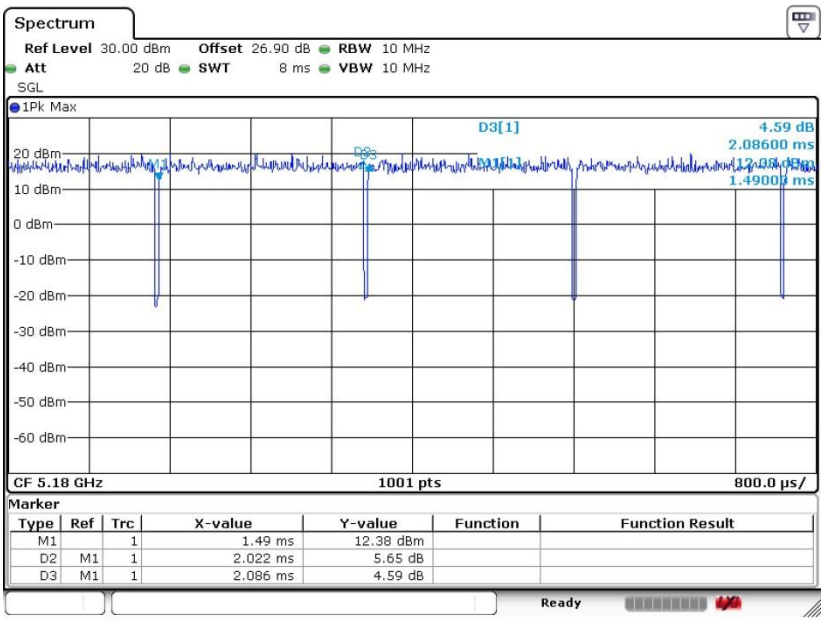

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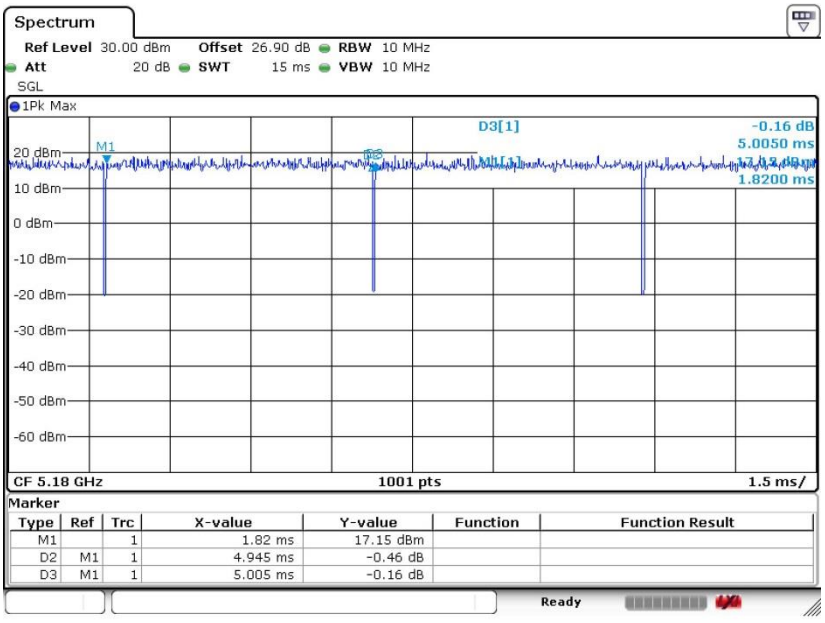

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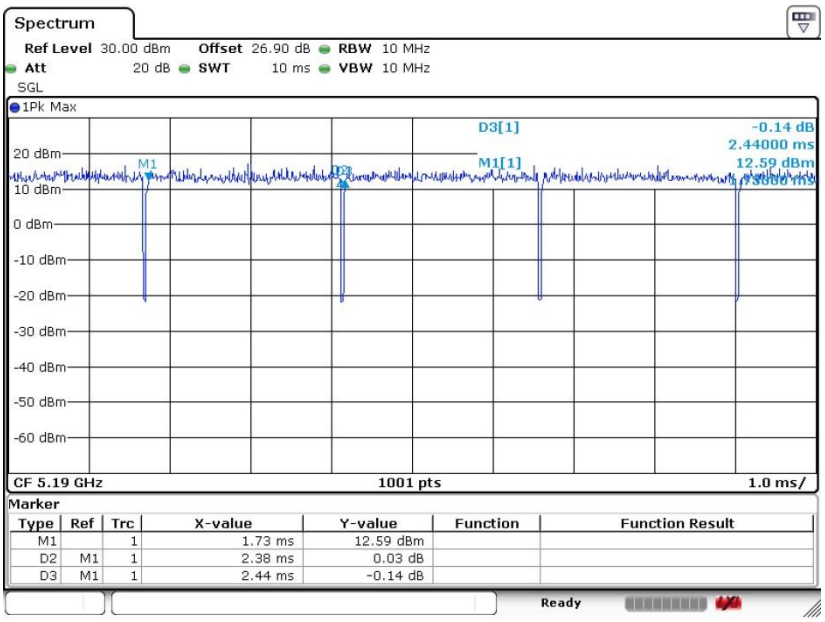

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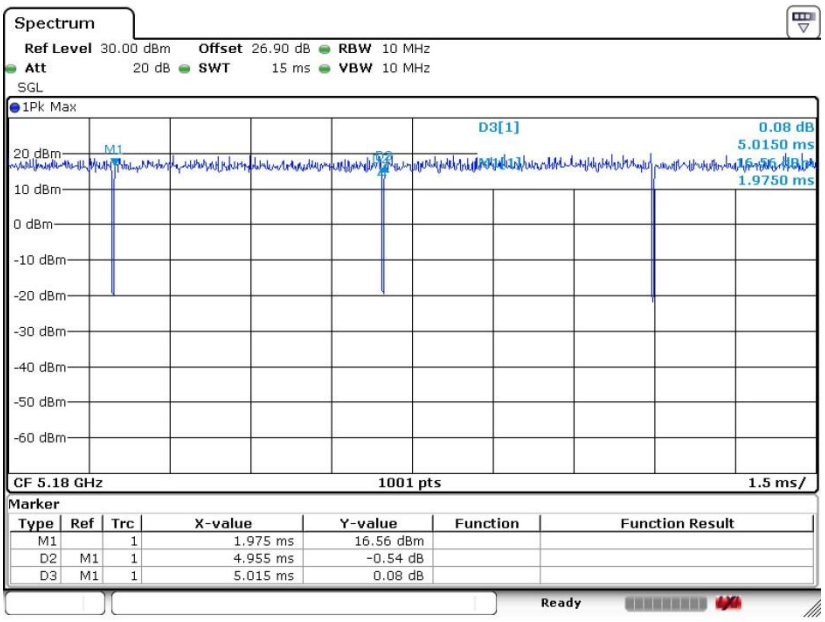

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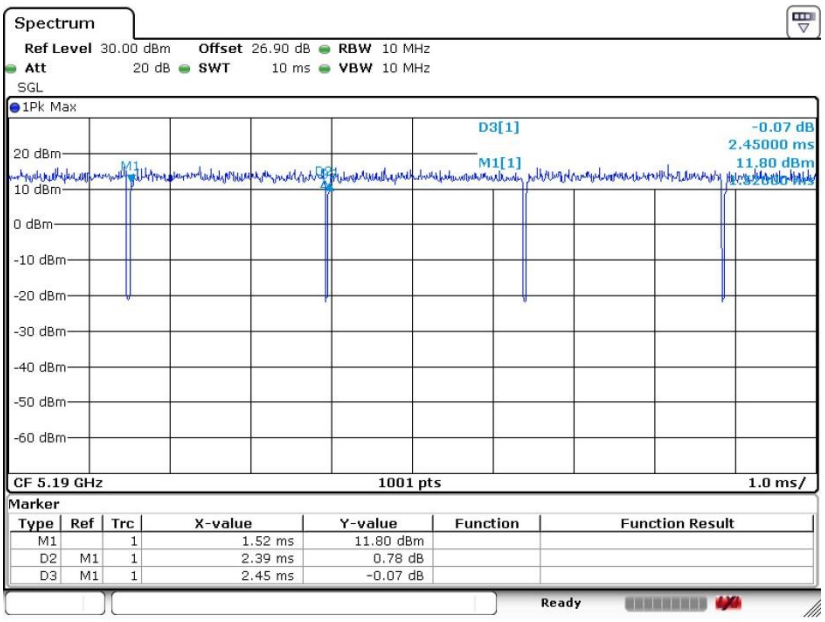

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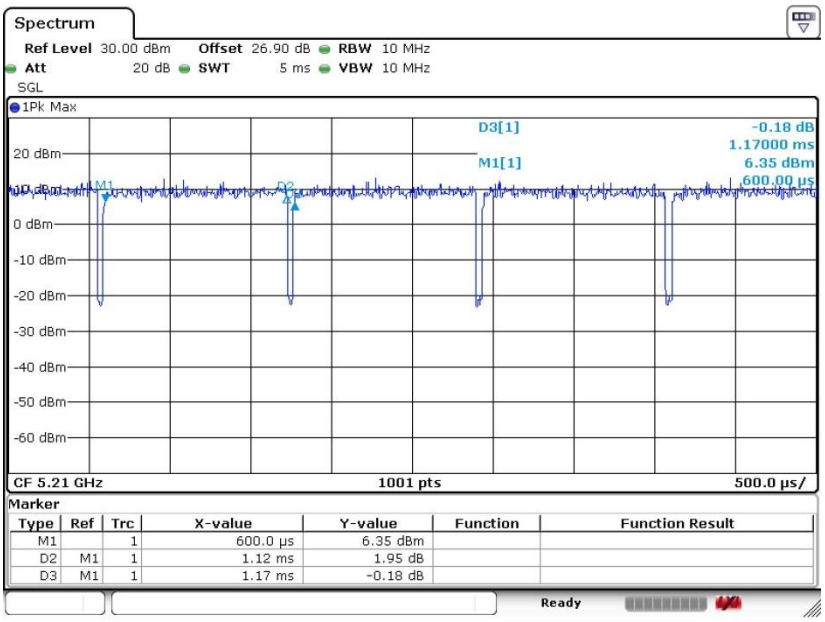

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MIMO <Ant. 1>

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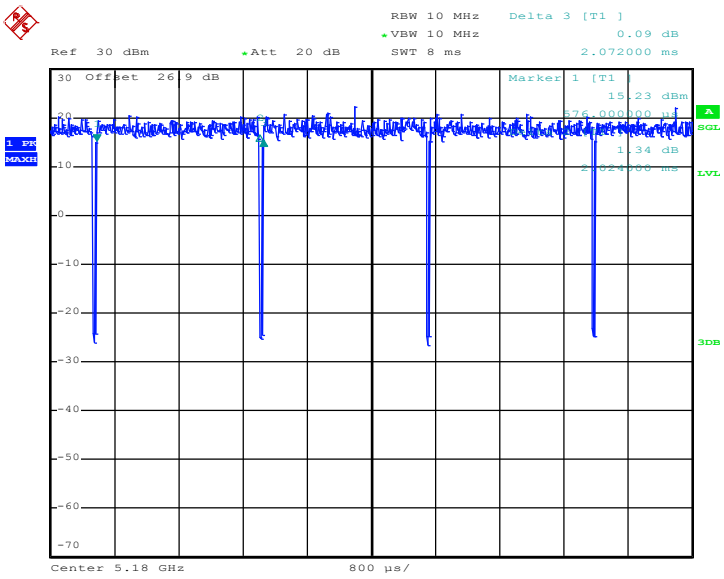

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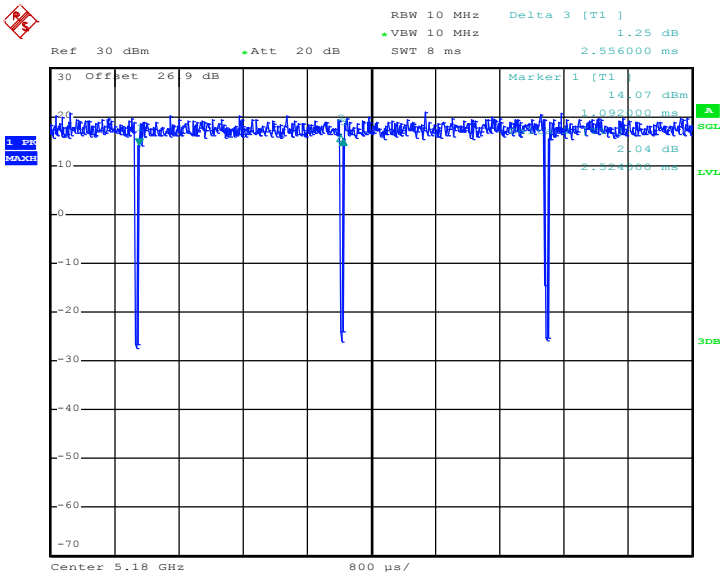

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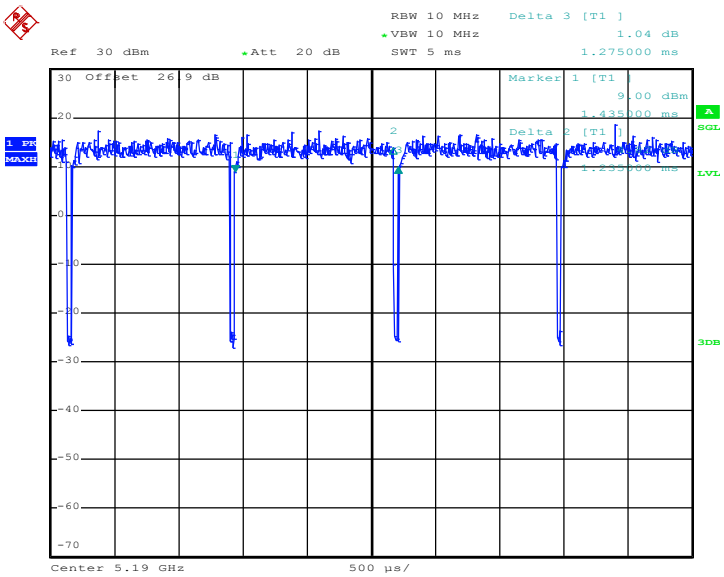

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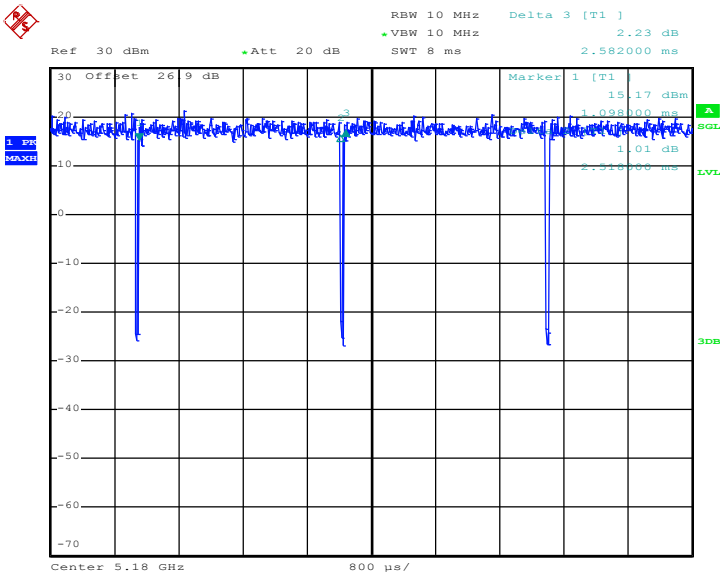

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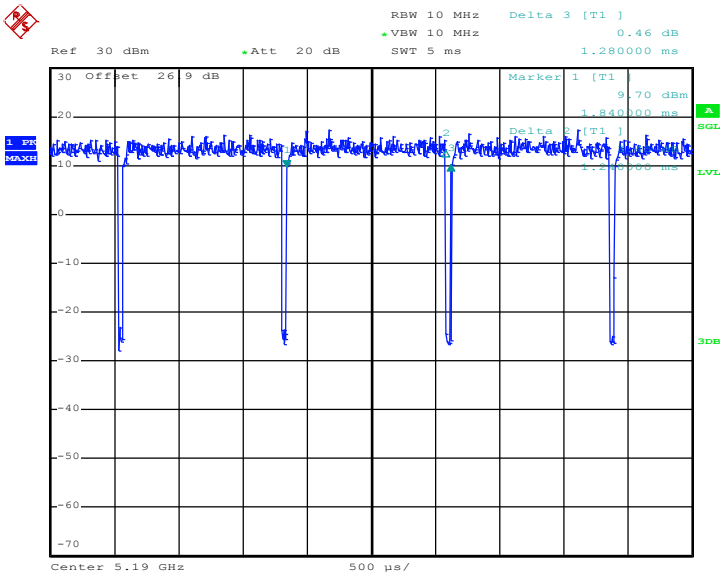

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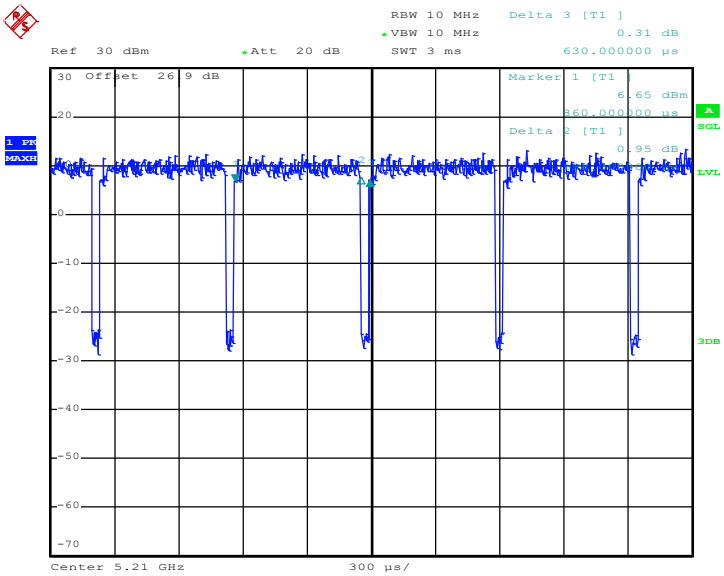

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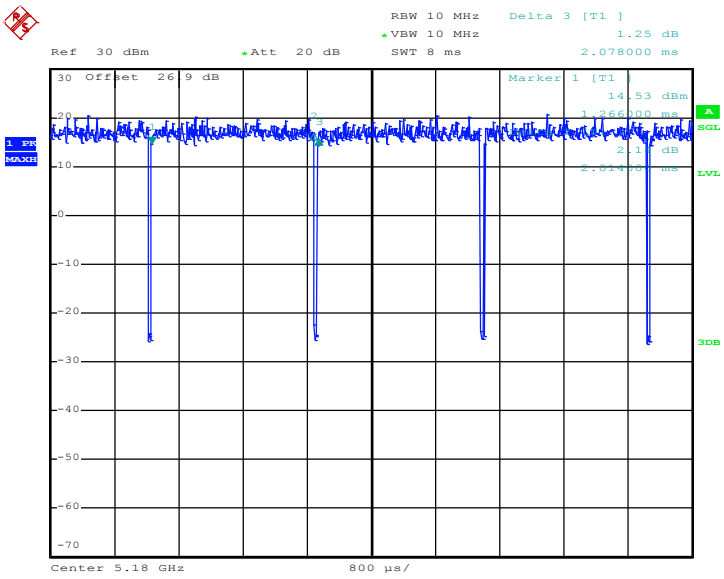

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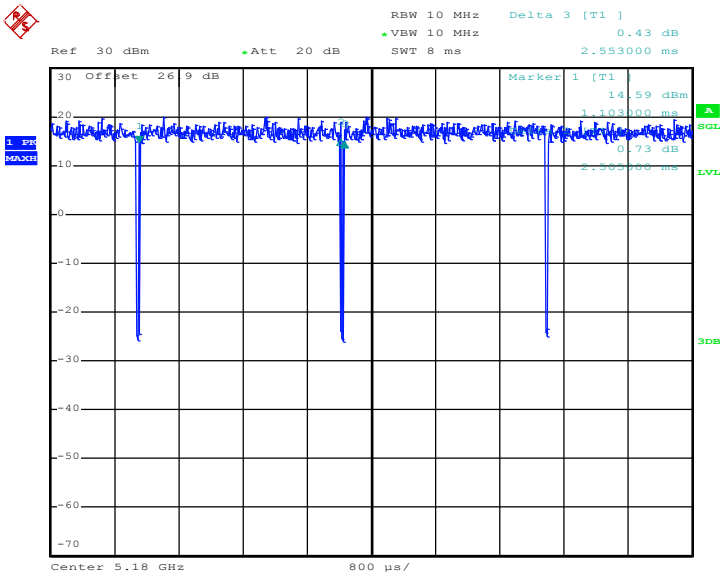

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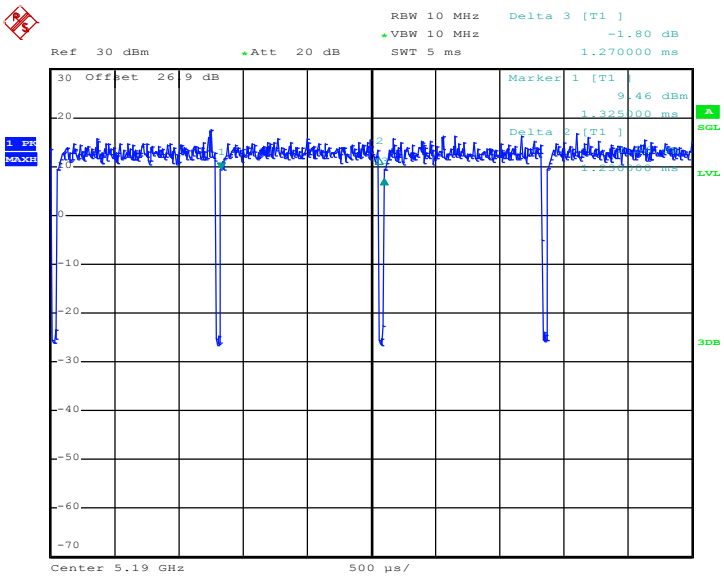

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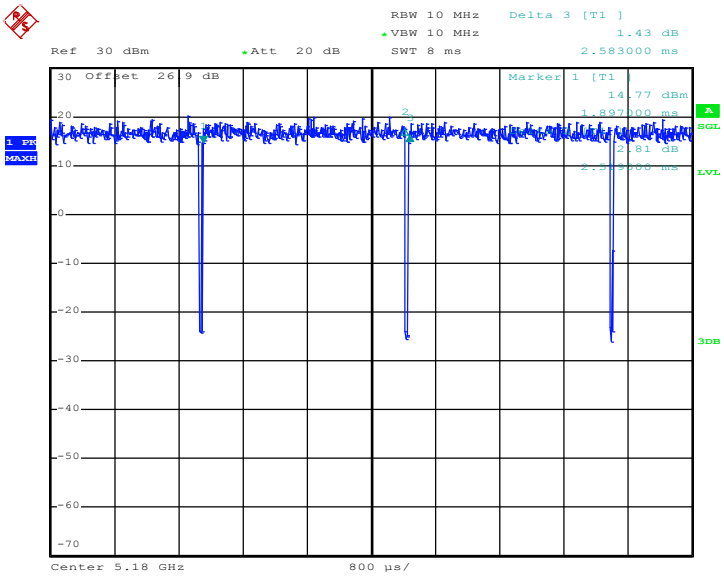

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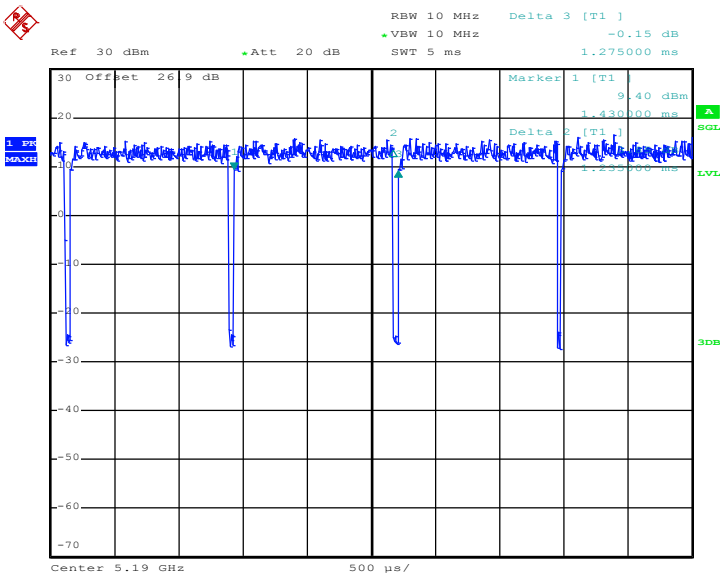

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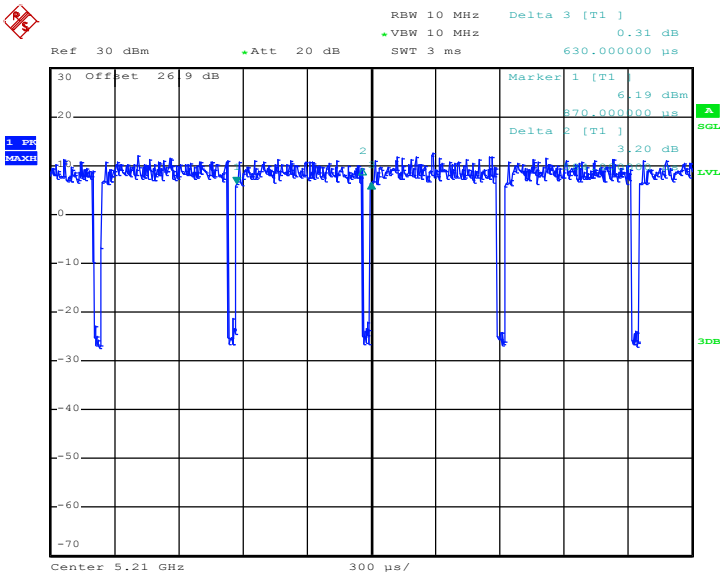

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