



# FCC RADIO TEST REPORT

**FCC ID** : UZ7ET56ET  
**Equipment** : Tablet  
**Brand Name** : Zebra  
**Model Name** : ET56ET  
**Applicant** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Manufacturer** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on Jul. 31, 2020 and testing was started from Aug. 14, 2020 and completed on Sep. 12, 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 variant 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
FR072904-01C	01	Initial issue of report	Sep. 17, 2020



### Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	Not Required	-
-	2.1049	99% Occupied Bandwidth	Not Required	-
3.1	15.247(b)	Power Output Measurement	Pass	-
-	15.247(e)	Power Spectral Density	Not Required	-
-	15.247(d)	Conducted Band Edges	Not Required	-
		Conducted Spurious Emission	Not Required	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 1.14 dB at 2390.000 MHz
-	15.207	AC Conducted Emission	Not Required	-
3.3	15.203 & 15.247(b)	Antenna Requirement	Pass	-

**Note:**

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report which can be referred Product Equality Declaration. All the test cases were performed on original report which can be referred to Sporton Report Number FR072903-01C as appendix E. Based on the original report, the test cases were verified.

**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: Celery Wei**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet
Brand Name	Zebra
Model Name	ET56ET
FCC ID	UZ7ET56ET
EUT supports Radios application	WCDMA/HSPA/LTE/NFC/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	DV1
SW Version	Android 10
FW Version	10-13-05.00-QG-U00-PRD-HEL-04
MFD	15JUL20
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer.

Specification of Accessories				
Spare Standard Battery 36.75Wh	Brand Name	Zebra	Part Number	BT-000394

Supported Unit Used in Test Configuration and System				
Cradle (Dock) for EMC	Brand Name	Zebra	Part Number	CRD-ET5X-1SCG1
Cradle (Dock) for RSE	Brand Name	Zebra	Part Number	CHG-ET5X-CBL1-01
Adapter for Cradle	Brand Name	Zebra	Part Number	PWRBGA12V50W0WW
DC Cable for Cradle	Brand Name	Zebra	Part Number	CBL-DC-388A1-01
USB Cable	Brand Name	Zebra	Part Number	CBL-TC2X-USBC-01
Adapter	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US

## 1.2 Product Specification of Equipment Under Test

Product Specification subjective to this standard										
<b>Tx/Rx Channel Frequency Range</b>	2412 MHz ~ 2462 MHz									
<b>Maximum Average Output Power to antenna</b>	<p><b>&lt;Ant. 1&gt;:</b>            802.11b : 21.30 dBm (0.1349 W)            802.11g : 19.70 dBm (0.0933 W)            802.11n HT20 : 18.90 dBm (0.0776 W)            802.11n HT40 : 17.80 dBm (0.0603 W)</p> <p><b>&lt;Ant. 2&gt;:</b>            802.11b : 21.90 dBm (0.1549 W)            802.11g : 19.90 dBm (0.0977 W)            802.11n HT20 : 19.20 dBm (0.0832 W)            802.11n HT40 : 18.20 dBm (0.0661 W)</p> <p><b>MIMO &lt;Ant. 1 + 2&gt;:</b>            802.11b : 24.36 dBm (0.2729 W)            802.11g : 22.26 dBm (0.1683 W)            802.11n HT20 : 21.76 dBm (0.1500 W)            802.11n HT40 : 21.26 dBm (0.1337 W)</p>									
<b>Antenna Type / Gain</b>	<p><b>&lt;Ant. 1&gt;:</b> Chip Antenna with gain 0.85 dBi  <b>&lt;Ant. 2&gt;:</b> Chip Antenna with gain 2.05 dBi</p>									
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)									
<b>Antenna Function Description</b>	<table border="1"> <thead> <tr> <th></th> <th>Ant. 1</th> <th>Ant. 2</th> </tr> </thead> <tbody> <tr> <td>802.11 b/g/n</td> <td>V</td> <td>V</td> </tr> <tr> <td>802.11 b/g/n MIMO</td> <td>V</td> <td>V</td> </tr> </tbody> </table>		Ant. 1	Ant. 2	802.11 b/g/n	V	V	802.11 b/g/n MIMO	V	V
	Ant. 1	Ant. 2								
802.11 b/g/n	V	V								
802.11 b/g/n MIMO	V	V								

**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

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

<b>Test Site</b>	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	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
<b>Test Site No.</b>	<b>Sporton Site No.</b>
	03CH13-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 C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ 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.
3. 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

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: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane for Ant. 2; Y Plane for MIMO Ant. 1+2 and Z Plane for Ant. 1) were recorded in this report.

### 2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		





## 2.2 Test Mode

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

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11n HT20	802.11n HT40
Low	-	01	01	03
Middle	-	-	-	-
High	11	-	-	09

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

<Ant. 1>

802.11b RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		1M
CH 01	2412	21.30
CH 06	2437	21.10
CH 11	2462	20.10

802.11g RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		6M
CH 01	2412	19.70
CH 06	2437	19.30
CH 11	2462	17.80



802.11n HT20 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 01	2412	18.90
CH 06	2437	18.80
CH 11	2462	16.90

802.11n HT40 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 03	2422	18.80
CH 06	2437	18.70
CH 09	2452	16.80

<Ant. 2>

802.11b RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		1M
CH 01	2412	21.90
CH 06	2437	21.50
CH 11	2462	21.40

802.11g RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		6M
CH 01	2412	19.90
CH 06	2437	19.70
CH 11	2462	19.20



802.11n HT20 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 01	2412	18.20
CH 06	2437	<b>19.20</b>
CH 11	2462	19.10

802.11n HT40 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 03	2422	15.30
CH 06	2437	<b>18.20</b>
CH 09	2452	16.40

MIMO <Ant. 1+2>

802.11b RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		1M
CH 01	2412	<b>24.36</b>
CH 06	2437	24.21
CH 11	2462	24.26

802.11g RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	Data Rate (bps)
		6M
CH 01	2412	20.36
CH 06	2437	<b>22.26</b>
CH 11	2462	21.26

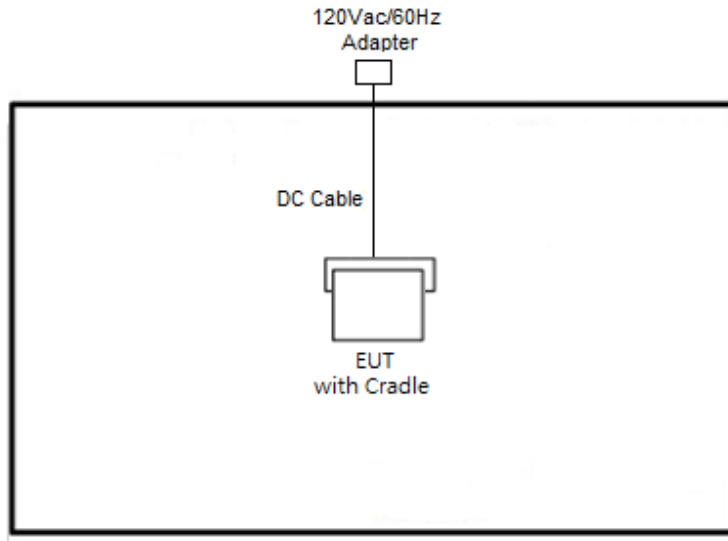


802.11n HT20 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 01	2412	19.86
CH 06	2437	<b>21.76</b>
CH 11	2462	19.91

802.11n HT40 RF Avg Output Power (dBm)		
Power vs. Channel		
Channel	Frequency (MHz)	MCS Index
		MCS 0
CH 03	2422	17.41
CH 06	2437	<b>21.26</b>
CH 09	2452	18.46

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



## 2.4 EUT Operation Test Setup

The RF test items, utility “QRCT V3.0.303.0” 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.

### 3 Test Result

#### 3.1 Output Power Measurement

##### 3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

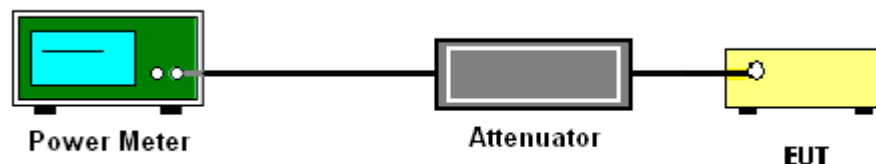
##### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

##### 3.1.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

##### 3.1.4 Test Setup





3.1.5 Test Result of Average Output Power

Test Engineer :	Jacob Yu	Temperature :	23.5~24.5°C
		Relative Humidity :	53~54.5%

2.4GHz Band Single Antenna																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	21.30	21.90		30.00	30.00	0.85	2.05	22.15	23.95	36.00	36.00	Pass
11b	1Mbps	1	6	2437	21.10	21.50		30.00	30.00	0.85	2.05	21.95	23.55	36.00	36.00	Pass
11b	1Mbps	1	11	2462	20.10	21.40		30.00	30.00	0.85	2.05	20.95	23.45	36.00	36.00	Pass
11g	6Mbps	1	1	2412	19.70	19.90		30.00	30.00	0.85	2.05	20.55	21.95	36.00	36.00	Pass
11g	6Mbps	1	6	2437	19.30	19.70		30.00	30.00	0.85	2.05	20.15	21.75	36.00	36.00	Pass
11g	6Mbps	1	11	2462	17.80	19.20		30.00	30.00	0.85	2.05	18.65	21.25	36.00	36.00	Pass
HT20	MCS0	1	1	2412	18.90	18.20		30.00	30.00	0.85	2.05	19.75	20.25	36.00	36.00	Pass
HT20	MCS0	1	6	2437	18.80	19.20		30.00	30.00	0.85	2.05	19.65	21.25	36.00	36.00	Pass
HT20	MCS0	1	11	2462	16.90	19.10		30.00	30.00	0.85	2.05	17.75	21.15	36.00	36.00	Pass
HT40	MCS0	1	3	2422	17.80	15.30		30.00	30.00	0.85	2.05	18.65	17.35	36.00	36.00	Pass
HT40	MCS0	1	6	2437	17.70	18.20		30.00	30.00	0.85	2.05	18.55	20.25	36.00	36.00	Pass
HT40	MCS0	1	9	2452	15.90	16.40		30.00	30.00	0.85	2.05	16.75	18.45	36.00	36.00	Pass



2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	21.50	21.20	24.36	30.00		2.05		26.41		36.00	Pass	
11b	1Mbps	2	6	2437	21.30	21.10	24.21	30.00		2.05		26.26		36.00	Pass	
11b	1Mbps	2	11	2462	21.10	21.40	24.26	30.00		2.05		26.31		36.00	Pass	
11g	6Mbps	2	1	2412	17.40	17.30	20.36	30.00		2.05		22.41		36.00	Pass	
11g	6Mbps	2	6	2437	19.30	19.20	22.26	30.00		2.05		24.31		36.00	Pass	
11g	6Mbps	2	11	2462	18.30	18.20	21.26	30.00		2.05		23.31		36.00	Pass	
HT20	MCS0	2	1	2412	16.80	16.90	19.86	30.00		2.05		21.91		36.00	Pass	
HT20	MCS0	2	6	2437	18.80	18.70	21.76	30.00		2.05		23.81		36.00	Pass	
HT20	MCS0	2	11	2462	16.80	17.00	19.91	30.00		2.05		21.96		36.00	Pass	
HT40	MCS0	2	3	2422	14.50	14.30	17.41	30.00		2.05		19.46		36.00	Pass	
HT40	MCS0	2	6	2437	18.30	18.20	21.26	30.00		2.05		23.31		36.00	Pass	
HT40	MCS0	2	9	2452	15.40	15.50	18.46	30.00		2.05		20.51		36.00	Pass	





### 3.2 Radiated Band Edges and Spurious Emission Measurement

#### 3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

#### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

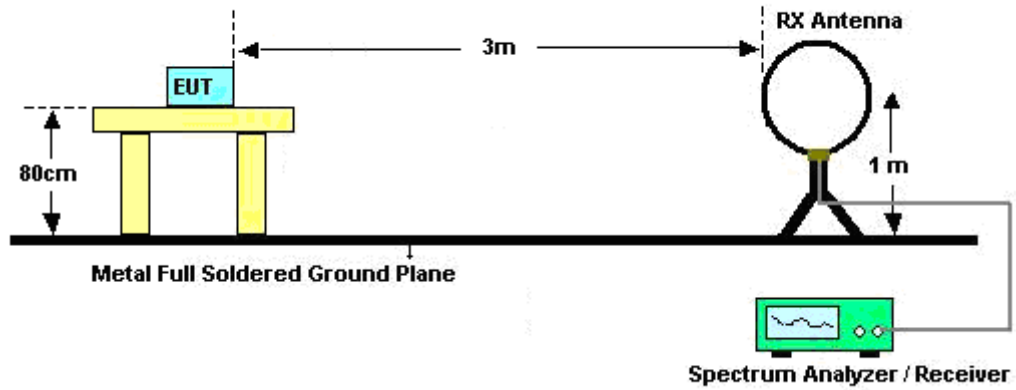


### 3.2.3 Test Procedures

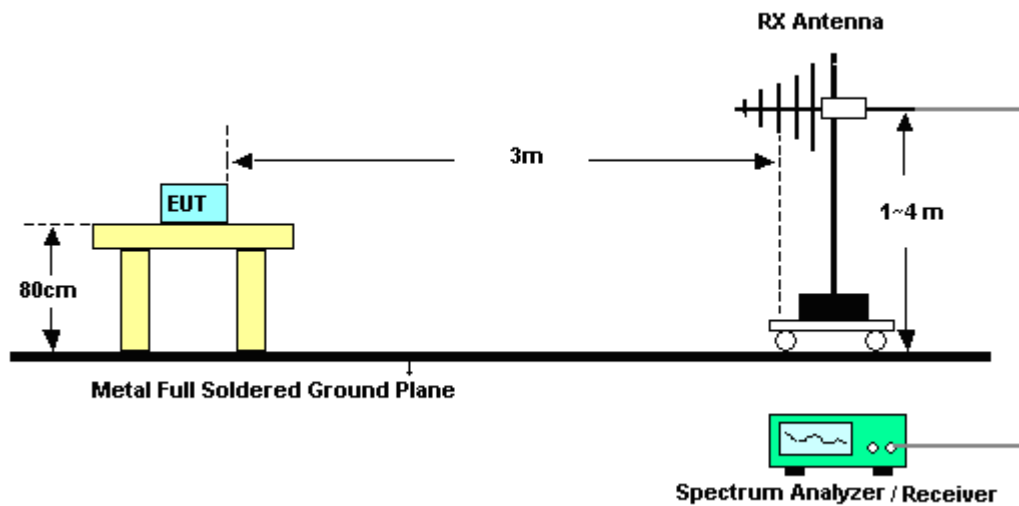
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. 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.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
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.
8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.  
For average measurement:
    - $VBW = 10$  Hz, when duty cycle is no less than 98 percent.
    - $VBW \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.2.4 Test Setup

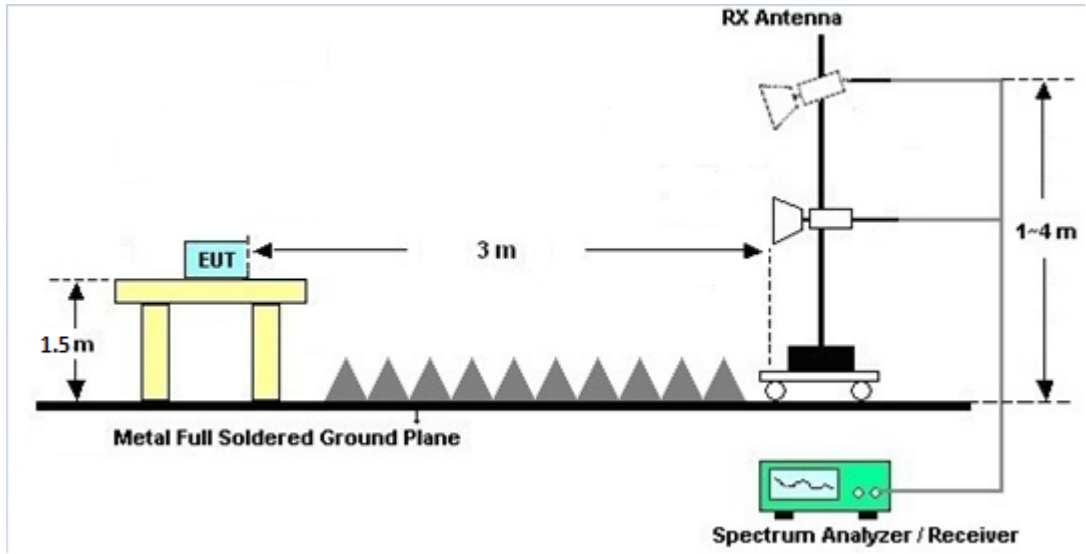
For radiated emissions below 30MHz



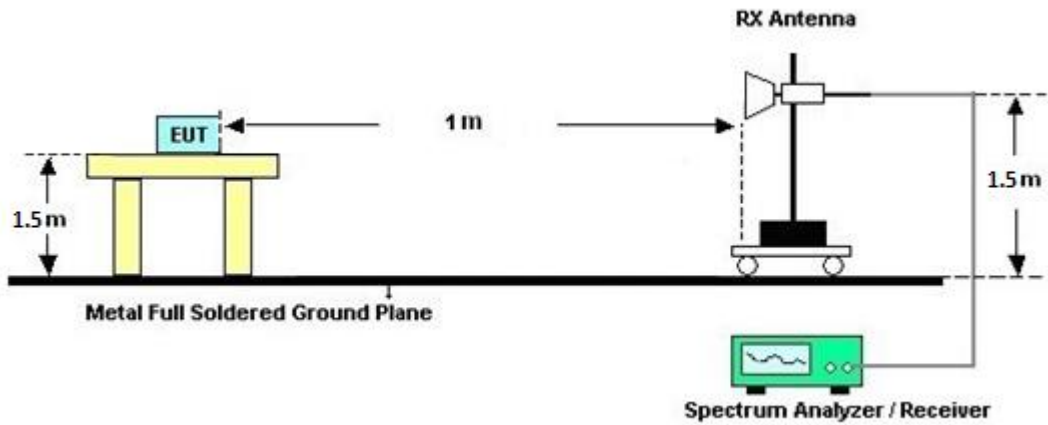
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz





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

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.

### **3.2.6 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix A and B.

### **3.2.7 Duty Cycle**

Please refer to Appendix C.

### **3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)**

Please refer to Appendix A and B.



### **3.3 Antenna Requirements**

#### **3.3.1 Standard Applicable**

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

#### **3.3.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

#### **3.3.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 09, 2020	Aug. 30, 2020~ Sep. 04, 2020	Jan. 08, 2021	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-124 1	1GHz ~ 18GHz	Jul. 15, 2020	Aug. 30, 2020~ Sep. 04, 2020	Jul. 14, 2021	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	40103&07	30MHz to 1GHz	Apr. 29, 2020	Aug. 30, 2020~ Sep. 04, 2020	Apr. 28, 2021	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz- 40GHz	Dec. 10, 2019	Aug. 30, 2020~ Sep. 04, 2020	Dec. 09, 2020	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY532701 47	1GHz~26.5GHz	Oct. 28, 2019	Aug. 30, 2020~ Sep. 04, 2020	Oct. 27, 2020	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 19, 2020	Aug. 30, 2020~ Sep. 04, 2020	May 18, 2021	Radiation (03CH13-HY)
Amplifier	Sonoma-Instru ment	310 N	187282	9KHz~1GHz	Dec. 17, 2019	Aug. 30, 2020~ Sep. 04, 2020	Dec. 16, 2020	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Aug. 30, 2020~ Sep. 04, 2020	Dec. 12, 2020	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303B	TP150115	N/A	Nov. 08, 2019	Aug. 30, 2020~ Sep. 04, 2020	Nov. 07, 2020	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	9kHz~30MHz	Mar. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Mar. 11, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30M-18G	Feb. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Feb. 11, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30M-18G	Feb. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Feb. 11, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/ 4	30M-18G	Feb. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Feb. 11, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30M~40GHz	Mar. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Mar. 11, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30M~40GHz	Mar. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Mar. 11, 2021	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 85	10Hz~44GHz	Feb. 10, 2020	Aug. 30, 2020~ Sep. 04, 2020	Feb. 09, 2021	Radiation (03CH13-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 30, 2020~ Sep. 04, 2020	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	Aug. 30, 2020~ Sep. 04, 2020	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 30, 2020~ Sep. 04, 2020	N/A	Radiation (03CH13-HY)
Software	AUDIX	E3 6.2009-8-24c	RK-001124	N/A	N/A	Aug. 30, 2020~ Sep. 04, 2020	N/A	Radiation (03CH13-HY)
EMI Test Receiver	Keysight	N9038A(MXE )	MY541300 85	20Hz ~ 8.4GHz	Nov. 01, 2019	Aug. 30, 2020~ Sep. 04, 2020	Oct. 31, 2020	Radiation (03CH13-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000 -40ST	SN6	6.75GHz High Pass Filter	Mar. 12, 2020	Aug. 30, 2020~ Sep. 04, 2020	Mar. 11, 2021	Radiation (03CH13-HY)
Filter	Wainwright	WLK4-1000-1 530-8000-40S S	SN12	1.53GHz Low Pass Filter	Sep. 16, 2019	Aug. 30, 2020~ Sep. 04, 2020	Sep. 15, 2020	Radiation (03CH13-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	HTC-1	2	N/A	Mar. 02, 2020	Aug. 14, 2020~ Sep. 12, 2020	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17100015S NO36	10MHz~6GHz	Jan. 22, 2020	Aug. 14, 2020~ Sep. 12, 2020	Jan. 21, 2021	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz-30GHz	Nov. 26, 2019	Aug. 14, 2020~ Sep. 12, 2020	Nov. 25, 2020	Conducted (TH05-HY)
Switch Control Manframe	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Aug. 14, 2020~ Sep. 12, 2020	Mar. 16, 2021	Conducted (TH05-HY)





## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.8
-------------------------------------------------------------------------	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.1
-------------------------------------------------------------------------	-----

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.8
-------------------------------------------------------------------------	-----



## Appendix A. Radiated Spurious Emission

Test Engineer :	Daniel Lee, Jacky Hong and Wilson Wu	Temperature :	22.8~24.2°C
		Relative Humidity :	51.2~58.5%

### 2.4GHz 2400~2483.5MHz

#### WIFI 802.11b (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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b CH 11 2462MHz	*	2462	110.23	-	-	95.95	27.5	14.06	27.28	215	126	P	H
	*	2462	107.28	-	-	93	27.5	14.06	27.28	215	126	A	H
		2484.88	57.42	-16.58	74	43.11	27.5	14.08	27.27	215	126	P	H
		2483.52	48.91	-5.09	54	34.6	27.5	14.08	27.27	215	126	A	H
													H
	*	2462	107.78	-	-	93.5	27.5	14.06	27.28	301	87	P	V
	*	2462	104.8	-	-	90.52	27.5	14.06	27.28	301	87	A	V
		2483.68	56.29	-17.71	74	41.98	27.5	14.08	27.27	301	87	P	V
		2483.52	47.75	-6.25	54	33.44	27.5	14.08	27.27	301	87	A	V
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11b (Harmonic @ 3m)**

WIFI Ant. 1	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 )	
802.11b CH 11 2462MHz		4924	38.36	-35.64	74	57.29	31.3	7	57.23	100	0	P	H	
		7386	43.41	-30.59	74	55.72	36.56	8.33	57.2	100	0	P	H	
													H	
													H	
			4924	38.64	-35.36	74	57.57	31.3	7	57.23	100	0	P	V
			7386	43.59	-30.41	74	55.9	36.56	8.33	57.2	100	0	P	V
														V
														V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1	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 01 2412MHz		2389.38	61.81	-12.19	74	47.49	27.62	13.99	27.29	133	330	P	H	
		2390	52.86	-1.14	54	38.54	27.62	13.99	27.29	133	330	A	H	
	*	2412	110.02	-	-	95.71	27.58	14.01	27.28	133	330	P	H	
	*	2412	101.99	-	-	87.68	27.58	14.01	27.28	133	330	A	H	
													H	
			2389.905	59.58	-14.42	74	45.26	27.62	13.99	27.29	345	247	P	V
			2390	48.97	-5.03	54	34.65	27.62	13.99	27.29	345	247	A	V
	*		2412	108.06	-	-	93.75	27.58	14.01	27.28	345	247	P	V
	*		2412	100.03	-	-	85.72	27.58	14.01	27.28	345	247	A	V
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	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		4824	39.27	-34.73	74	58.58	31.15	6.99	57.45	100	0	P	H
HT20													H
CH 01		4824	39.16	-34.84	74	58.47	31.15	6.99	57.45	100	0	P	V
2412MHz													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI Ant. 1	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 )
<b>802.11n HT40 CH 03 2422MHz</b>		2389.94	61.47	-12.53	74	47.15	27.62	13.99	27.29	129	323	P	H
		2389.94	52.38	-1.62	54	38.06	27.62	13.99	27.29	129	323	A	H
	*	2422	106.82	-	-	92.52	27.56	14.02	27.28	129	323	P	H
	*	2422	98.65	-	-	84.35	27.56	14.02	27.28	129	323	A	H
		2491.95	56.2	-17.8	74	41.89	27.5	14.08	27.27	129	323	P	H
		2483.55	46.6	-7.4	54	32.29	27.5	14.08	27.27	129	323	A	H
		2389.94	58.84	-15.16	74	44.52	27.62	13.99	27.29	375	262	P	V
		2389.8	49.87	-4.13	54	35.55	27.62	13.99	27.29	375	262	A	V
	*	2422	104	-	-	89.7	27.56	14.02	27.28	375	262	P	V
	*	2422	96.11	-	-	81.81	27.56	14.02	27.28	375	262	A	V
	2488.59	55.51	-18.49	74	41.2	27.5	14.08	27.27	375	262	P	V	
	2484.32	46.38	-7.62	54	32.07	27.5	14.08	27.27	375	262	A	V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI Ant. 1, 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). Rows include data for 802.11n HT40 CH 03 2422MHz and a Remark section.



**Emission below 1GHz**

**2.4GHz WIFI 802.11n HT20 (LF)**

WIFI Ant. 1	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)	
2.4GHz 802.11n HT20 LF		127	25.68	-17.82	43.5	39.09	17.76	0.99	32.16	-	-	P	H	
		296.75	25.17	-20.83	46	36.59	19.11	1.47	32	-	-	P	H	
		682.81	27.29	-18.71	46	30.39	26.39	2.25	31.74	-	-	P	H	
		729.37	29.81	-16.19	46	31.63	27.57	2.33	31.72	-	-	P	H	
		842.86	31.59	-14.41	46	32.08	28.84	2.48	31.81	-	-	P	H	
		945.68	32.38	-13.62	46	30.45	30.29	2.69	31.05	100	0	P	H	
														H
			30	24.9	-15.1	40	32.05	24.59	0.48	32.22	-	-	P	V
			122.15	26.78	-16.72	43.5	40.36	17.59	0.98	32.15	-	-	P	V
			682.81	28.17	-17.83	46	31.27	26.39	2.25	31.74	-	-	P	V
			773.99	29.03	-16.97	46	30.42	28.09	2.39	31.87	-	-	P	V
			870.99	30.47	-15.53	46	30.69	28.94	2.56	31.72	-	-	P	V
			930.16	31.13	-14.87	46	30.2	29.5	2.68	31.25	100	0	P	V
														V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line.													





2.4GHz 2400~2483.5MHz

WiFi 802.11b (Band Edge @ 3m)

WiFi Ant. 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)
802.11b CH 11 2462MHz	*	2462	113.28	-	-	99	27.5	14.06	27.28	242	273	P	H
	*	2462	110.03	-	-	95.75	27.5	14.06	27.28	242	273	A	H
		2483.72	57.43	-16.57	74	43.12	27.5	14.08	27.27	242	273	P	H
		2483.52	48.53	-5.47	54	34.22	27.5	14.08	27.27	242	273	A	H
													H
													H
	*	2462	109.51	-	-	95.23	27.5	14.06	27.28	334	159	P	V
	*	2462	106.32	-	-	92.04	27.5	14.06	27.28	334	159	A	V
		2483.72	56.28	-17.72	74	41.97	27.5	14.08	27.27	334	159	P	V
		2483.52	46.69	-7.31	54	32.38	27.5	14.08	27.27	334	159	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11b (Harmonic @ 3m)**

WIFI Ant. 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)	
802.11b CH 11 2462MHz		4924	38.78	-35.22	74	57.71	31.3	7	57.23	100	0	P	H	
		7386	44.34	-29.66	74	56.65	36.56	8.33	57.2	100	0	P	H	
													H	
													H	
			4924	39.13	-34.87	74	58.06	31.3	7	57.23	100	0	P	V
			7386	43.77	-30.23	74	56.08	36.56	8.33	57.2	100	0	P	V
														V
														V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



**2.4GHz 2400~2483.5MHz  
WIFI 802.11g (Band Edge @ 3m)**

WIFI Ant. 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 )	
802.11g CH 01 2412MHz		2389.695	62.01	-11.99	74	47.69	27.62	13.99	27.29	254	266	P	H	
		2390	52.35	-1.65	54	38.03	27.62	13.99	27.29	254	266	A	H	
	*	2412	110.62	-	-	96.31	27.58	14.01	27.28	254	266	P	H	
	*	2412	102.73	-	-	88.42	27.58	14.01	27.28	254	266	A	H	
													H	
													H	
			2389.905	59.56	-14.44	74	45.24	27.62	13.99	27.29	394	190	P	V
			2390	50.19	-3.81	54	35.87	27.62	13.99	27.29	394	190	A	V
	*		2412	109	-	-	94.69	27.58	14.01	27.28	-	-	P	V
	*		2412	100.98	-	-	86.67	27.58	14.01	27.28	394	190	A	V
														V
														V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 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 )
802.11g CH 01 2412MHz		4824	37.98	-36.02	74	57.29	31.15	6.99	57.45	100	0	P	H
													H
		4824	38.05	-35.95	74	57.36	31.15	6.99	57.45	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI Ant. 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 03 2422MHz		2389.94	59.87	-14.13	74	45.55	27.62	13.99	27.29	216	275	P	H
		2389.94	51.67	-2.33	54	37.35	27.62	13.99	27.29	216	275	A	H
	*	2422	106.29	-	-	91.99	27.56	14.02	27.28	216	275	P	H
	*	2422	97.84	-	-	83.54	27.56	14.02	27.28	216	275	A	H
		2485.16	56.1	-17.9	74	41.79	27.5	14.08	27.27	216	275	P	H
		2483.5	46.14	-7.86	54	31.83	27.5	14.08	27.27	216	275	A	H
		2389.8	58.39	-15.61	74	44.07	27.62	13.99	27.29	339	201	P	V
		2389.94	49.82	-4.18	54	35.5	27.62	13.99	27.29	339	201	A	V
	*	2422	102.31	-	-	88.01	27.56	14.02	27.28	339	201	P	V
	*	2422	94.51	-	-	80.21	27.56	14.02	27.28	339	201	A	V
		2485.02	55.38	-18.62	74	41.07	27.5	14.08	27.27	339	201	P	V
		2484.04	45.24	-8.76	54	30.93	27.5	14.08	27.27	339	201	A	V
802.11n HT40 CH 09 2452MHz		2361.38	54.8	-19.2	74	40.45	27.68	13.96	27.29	182	275	P	H
		2361.1	45.09	-8.91	54	30.74	27.68	13.96	27.29	182	275	A	H
	*	2452	105.4	-	-	91.13	27.5	14.05	27.28	182	275	P	H
	*	2452	97.31	-	-	83.04	27.5	14.05	27.28	182	275	A	H
		2483.83	59.39	-14.61	74	45.08	27.5	14.08	27.27	182	275	P	H
		2483.5	50	-4	54	35.69	27.5	14.08	27.27	182	275	A	H
		2317.98	54.81	-19.19	74	40.43	27.76	13.92	27.3	386	160	P	V
		2389.52	44.99	-9.01	54	30.67	27.62	13.99	27.29	386	160	A	V
	*	2452	105.9	-	-	91.63	27.5	14.05	27.28	386	160	P	V
	*	2452	97.4	-	-	83.13	27.5	14.05	27.28	386	160	A	V
	2484.32	58.71	-15.29	74	44.4	27.5	14.08	27.27	386	160	P	V	
	2483.5	49.57	-4.43	54	35.26	27.5	14.08	27.27	386	160	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 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 03 2422MHz		4844	37.99	-36.01	74	57.22	31.19	6.99	57.41	100	0	P	H
		7266	43.72	-30.28	74	55.62	36.8	8.32	57.02	100	0	P	H
													H
													H
		4844	37.93	-36.07	74	57.16	31.19	6.99	57.41	100	0	P	V
		7266	44.22	-29.78	74	56.12	36.8	8.32	57.02	100	0	P	V
													V
802.11n HT40 CH 09 2452MHz		4904	37.74	-36.26	74	56.8	31.22	7	57.28	100	0	P	H
		7356	43.74	-30.26	74	55.88	36.68	8.33	57.15	100	0	P	H
													H
													H
		4904	37.66	-36.34	74	56.72	31.22	7	57.28	100	0	P	V
		7356	43.38	-30.62	74	55.52	36.68	8.33	57.15	100	0	P	V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz
2.4GHz WIFI 802.11g (LF)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Path, Preamp, Ant, Table, Peak, Pol. It contains 14 rows of test data for 2.4GHz WIFI 802.11g LF and a Remark section at the bottom.



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

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 11 2462MHz	*	2462	112.14	-	-	97.86	27.5	14.06	27.28	162	169	P	H
	*	2462	109.01	-	-	94.73	27.5	14.06	27.28	162	169	A	H
		2483.96	55.95	-18.05	74	41.64	27.5	14.08	27.27	162	169	P	H
		2483.52	46.97	-7.03	54	32.66	27.5	14.08	27.27	162	169	A	H
													H
													H
	*	2462	112.15	-	-	97.87	27.5	14.06	27.28	101	275	P	V
	*	2462	109.16	-	-	94.88	27.5	14.06	27.28	101	275	A	V
		2483.64	57.61	-16.39	74	43.3	27.5	14.08	27.27	101	275	P	V
		2483.52	49.83	-4.17	54	35.52	27.5	14.08	27.27	101	275	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

Table with 14 columns: 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). Rows include data for 802.11b CH 11 at 2462MHz and a Remark section.



**2.4GHz 2400~2483.5MHz  
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 01 2412MHz		2389.905	60.05	-13.95	74	45.73	27.62	13.99	27.29	227	227	P	H	
		2390	50.56	-3.44	54	36.24	27.62	13.99	27.29	227	227	A	H	
	*	2412	109.62	-	-	95.31	27.58	14.01	27.28	227	227	P	H	
	*	2412	102.24	-	-	87.93	27.58	14.01	27.28	227	227	A	H	
													H	
														H
			2389.94	61.65	-12.35	74	47.33	27.62	13.99	27.29	114	289	P	V
			2389.94	52.7	-1.3	54	38.38	27.62	13.99	27.29	114	289	A	V
		*	2412	110.64	-	-	96.33	27.58	14.01	27.28	114	289	P	V
		*	2412	103.25	-	-	88.94	27.58	14.01	27.28	114	289	A	V
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



**2.4GHz 2400~2483.5MHz  
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 HT20 CH 01		4824	37.64	-36.36	74	56.95	31.15	6.99	57.45	100	0	P	H
													H
													H
													H
2412MHz		4824	38.42	-35.58	74	57.73	31.15	6.99	57.45	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

Table with 14 columns: 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). Rows include frequencies like 2333.38, 2380.42, 2452, 2484.25, 2483.5, 2375.52, 2388.54, 2452, 2452, 2484.04, 2483.5.

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



**2.4GHz 2400~2483.5MHz  
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 HT40 CH 09		4904	38.8	-35.2	74	57.86	31.22	7	57.28	100	0	P	H
		7356	43.92	-30.08	74	56.06	36.68	8.33	57.15	100	0	P	H
													H
													H
2452MHz		4904	37.2	-36.8	74	56.26	31.22	7	57.28	100	0	P	V
		7356	43.49	-30.51	74	55.63	36.68	8.33	57.15	100	0	P	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (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 )	
2.4GHz 802.11n HT20 LF		126.03	25.51	-17.99	43.5	39.01	17.67	0.99	32.16	-	-	P	H	
		295.78	24.89	-21.11	46	36.35	19.07	1.47	32	-	-	P	H	
		491.72	27.05	-18.95	46	33.75	23.84	1.91	32.45	-	-	P	H	
		757.5	29.96	-16.04	46	31.38	28.03	2.36	31.81	-	-	P	H	
		861.29	30.62	-15.38	46	30.85	29	2.52	31.75	-	-	P	H	
		943.74	31.81	-14.19	46	30.04	30.17	2.68	31.08	100	0	P	H	
														H
														H
			30	33.51	-6.49	40	40.66	24.59	0.48	32.22	100	0	P	V
			91.11	26.11	-17.39	43.5	42.43	15.04	0.79	32.15	-	-	P	V
			120.21	25.91	-17.59	43.5	39.53	17.56	0.97	32.15	-	-	P	V
			731.31	29.56	-16.44	46	31.31	27.65	2.33	31.73	-	-	P	V
			834.13	30.36	-15.64	46	31.16	28.57	2.47	31.84	-	-	P	V
			942.77	32.4	-13.6	46	30.71	30.1	2.68	31.09	-	-	P	V
														V
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. 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 B. Radiated Spurious Emission Plots

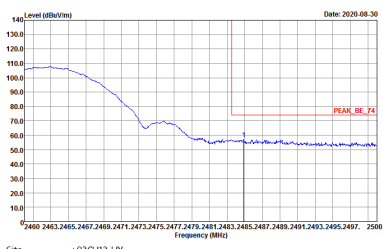
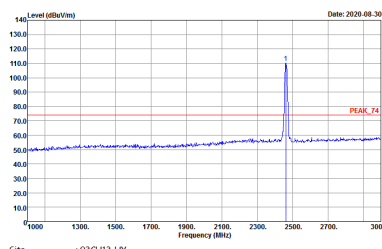
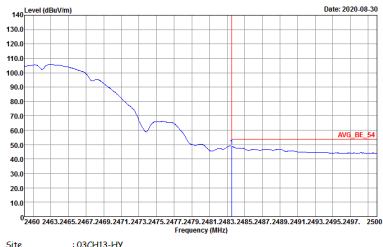
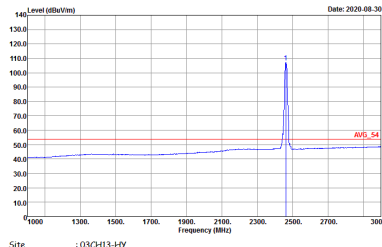
Test Engineer :	Daniel Lee, Jacky Hong and Wilson Wu	Temperature :	22.8~24.2°C
		Relative Humidity :	51.2~58.5%

### Note symbol

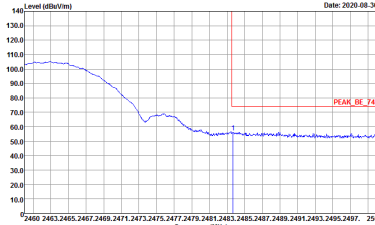
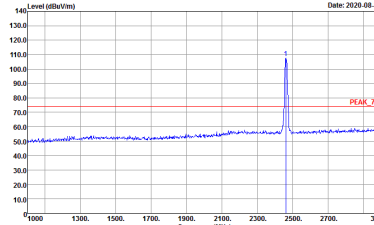
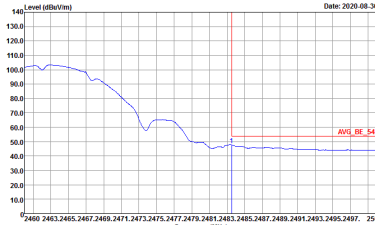
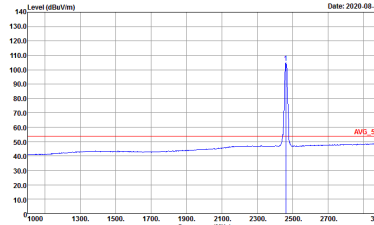
-L	Low channel location
-R	High channel location



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11b (Band Edge @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
<b>Peak</b>	 <p>Site : 03CH13-HY            Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY            Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Avg.</b>	 <p>Site : 03CH13-HY            Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH13-HY            Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

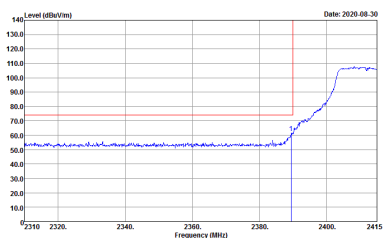
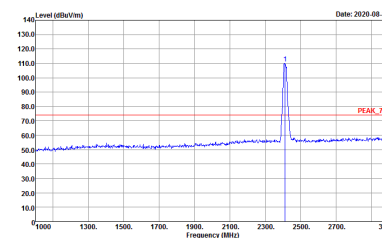
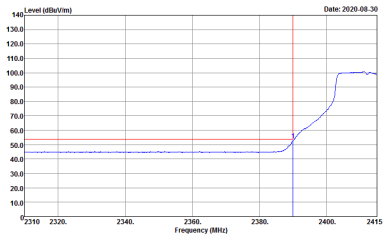
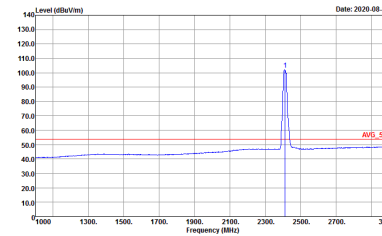


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>

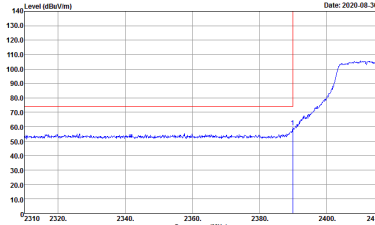
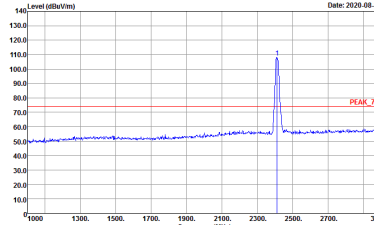
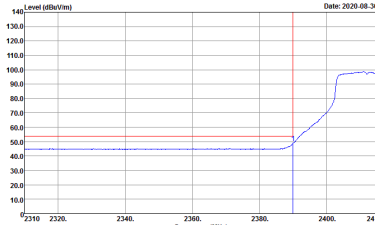
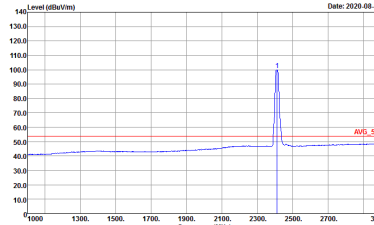


2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>

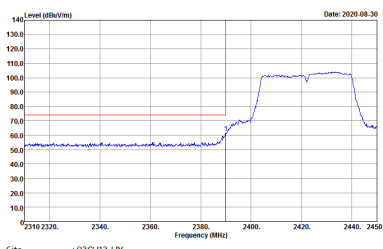
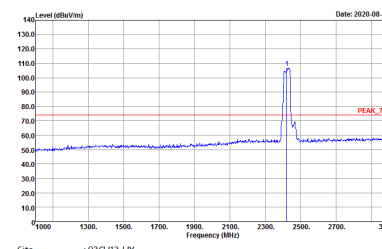
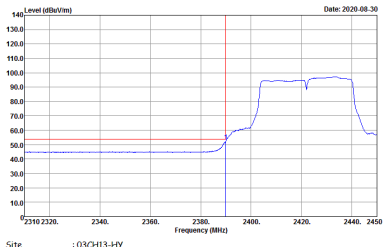
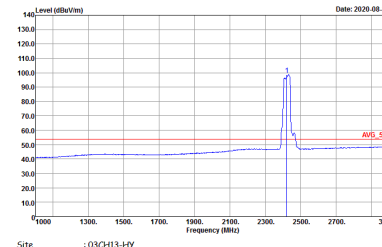


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



2.4GHz 2400~2483.5MHz

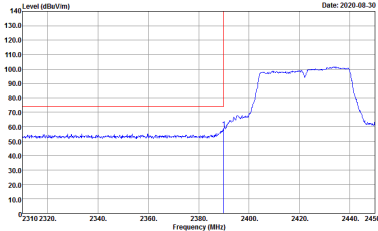
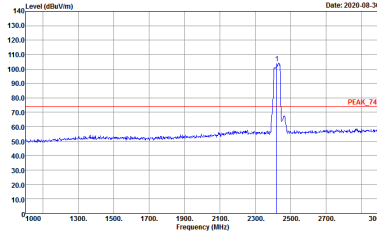
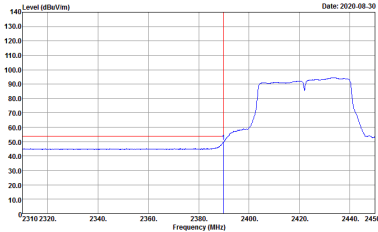
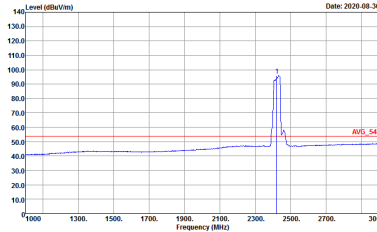
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Horizontal	Fundamental
Peak		Left Blank
Avg.		Left Blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



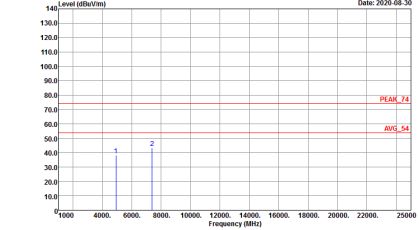
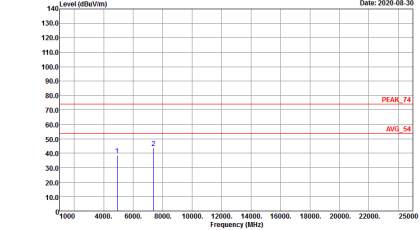


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank



2.4GHz 2400~2483.5MHz

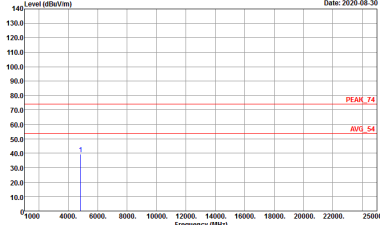
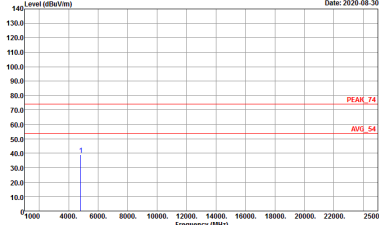
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz

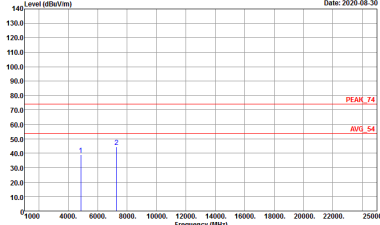
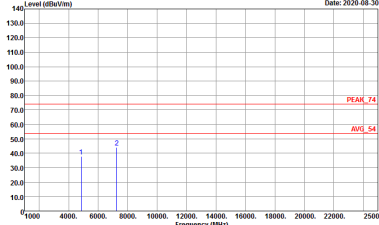
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
<p><b>Peak</b></p> <p><b>Avg.</b></p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH03 2422MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>

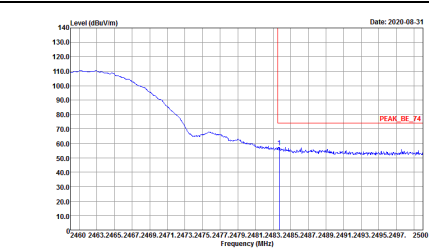
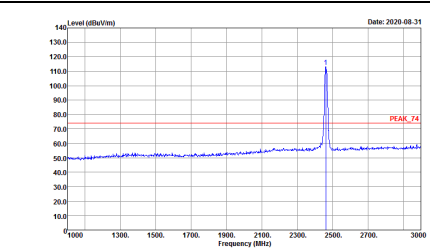
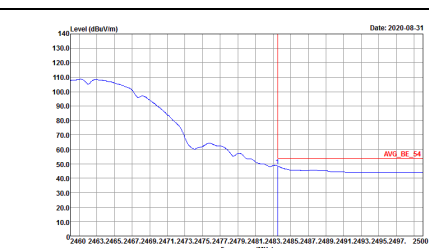
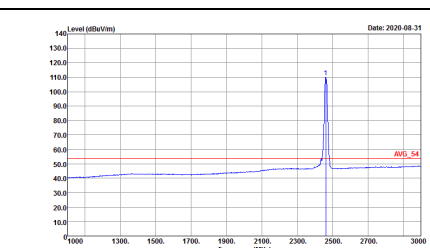


Emission below 1GHz  
2.4GHz WIFI 802.11n HT20 (LF)

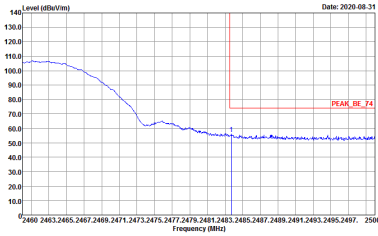
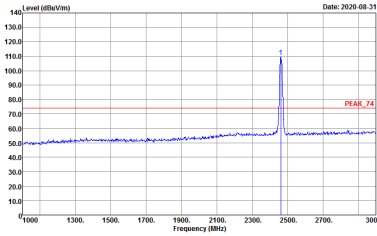
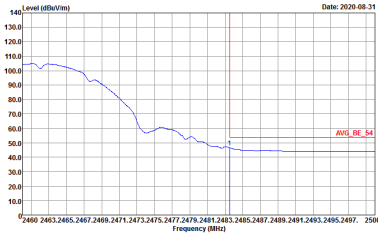
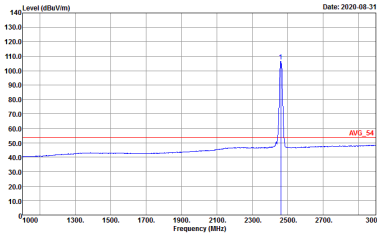
WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH13-HY Condition : QP 3m BIL0G_40103 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : QP 3m BIL0G_40103 VERTICAL Detector : Peak</p>



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11b (Band Edge @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
2	Horizontal	Fundamental
<b>Peak</b>	 <p>Site : 03CH13-4Y            Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-4Y            Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Avg.</b>	 <p>Site : 03CH13-4Y            Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH13-4Y            Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL            : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



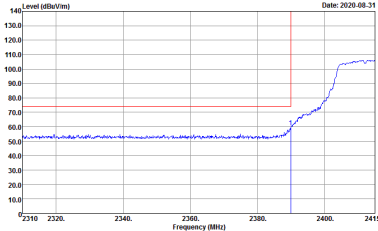
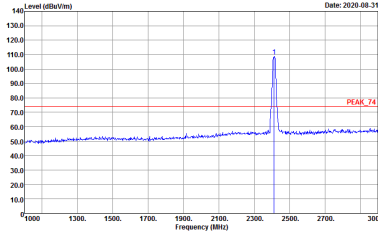
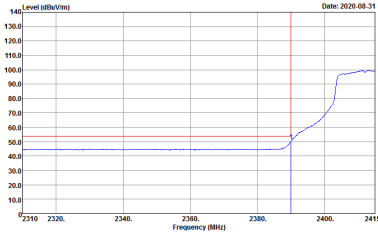
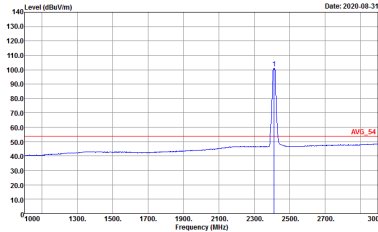
2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	<p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



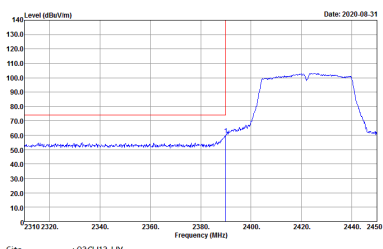
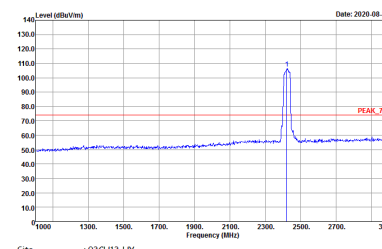
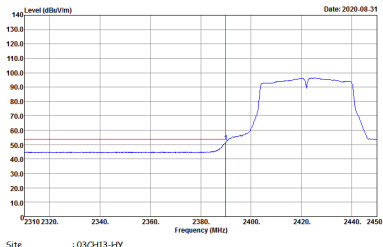
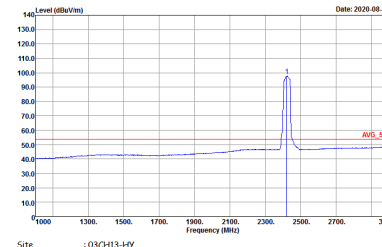


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



2.4GHz 2400~2483.5MHz

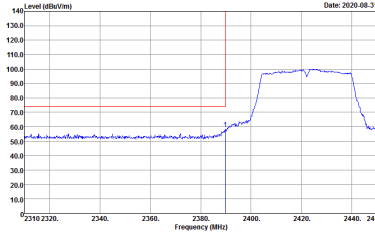
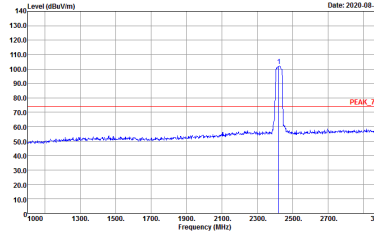
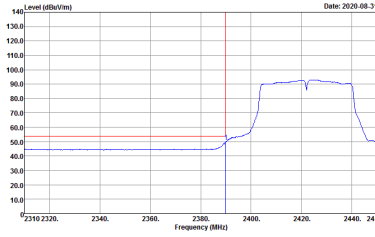
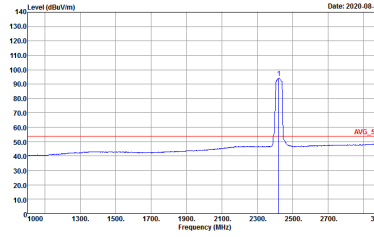
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
2	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
2	Horizontal	Fundamental
Peak		Left Blank
Avg.		Left Blank

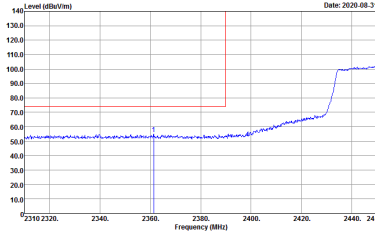
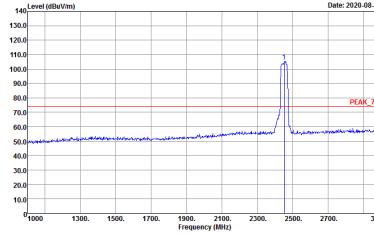
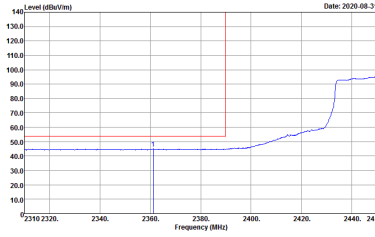
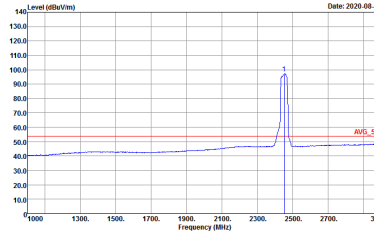


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
2	Vertical	Fundamental
<p><b>Peak</b></p>		<p>Left blank</p>
<p><b>Avg.</b></p>		<p>Left blank</p>

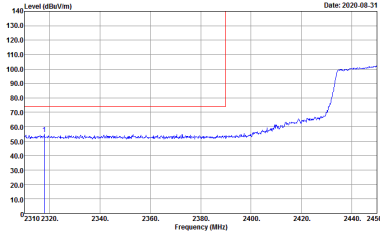
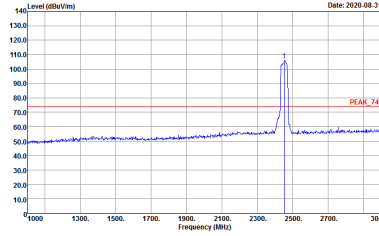
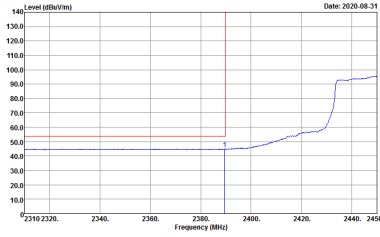
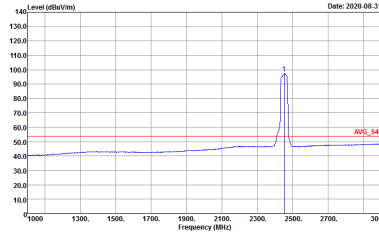


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
2	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



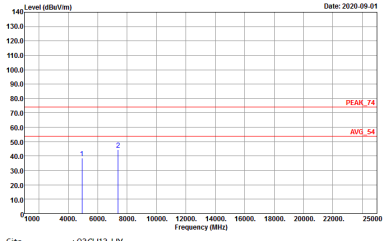
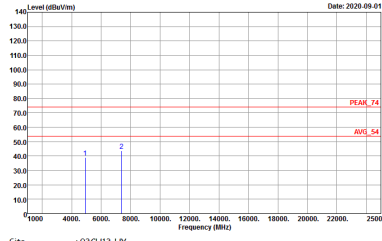


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz

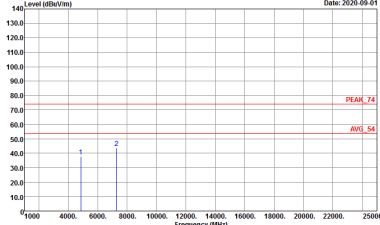
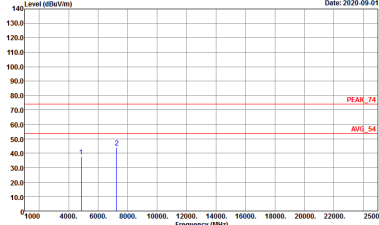
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>		

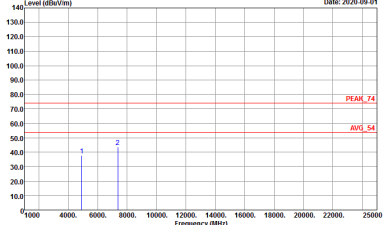
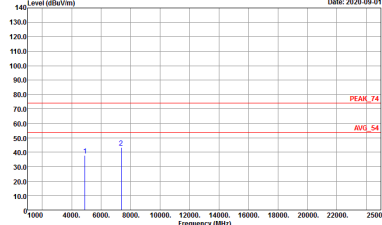


2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH03 2422MHz	
2	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
2	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



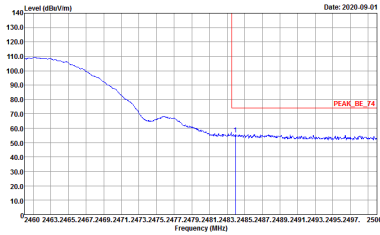
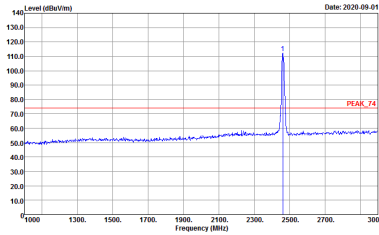
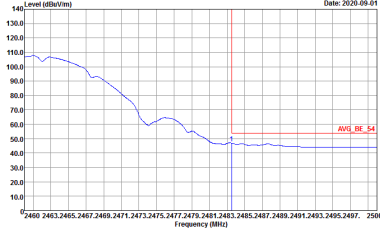
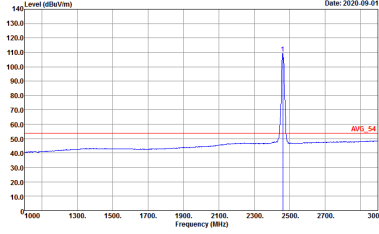
Emission below 1GHz  
2.4GHz WIFI 802.11g (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
2	Horizontal	Vertical
QP / Peak	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 VERTICAL Detector : Peak</p>

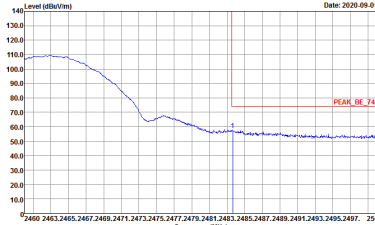
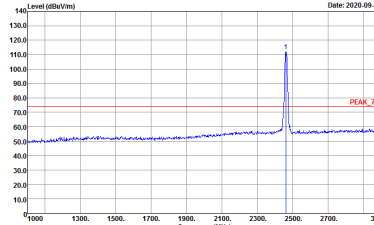
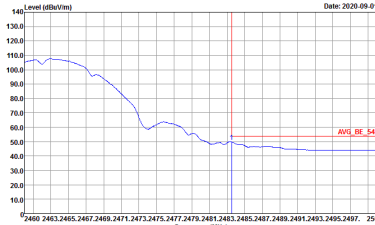
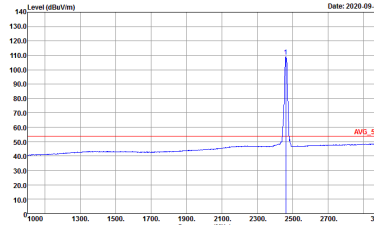


2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Horizontal	Fundamental
<b>Peak</b>	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
<b>Avg.</b>	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



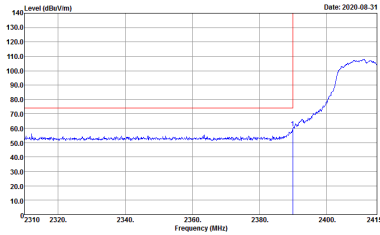
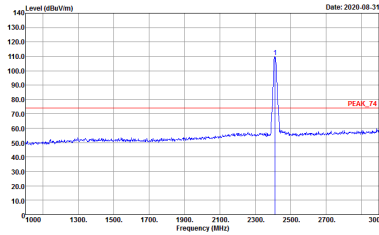
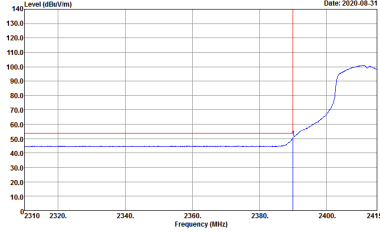
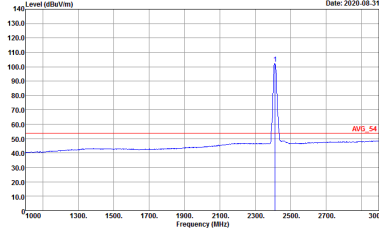
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2020-09-01</p> <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2020-09-01</p> <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Date: 2020-09-01</p> <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	 <p>Date: 2020-09-01</p> <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



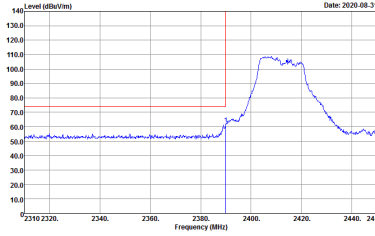
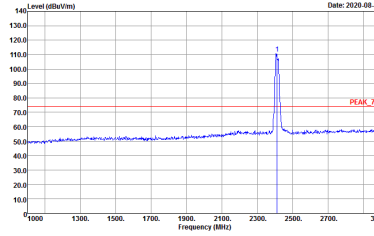
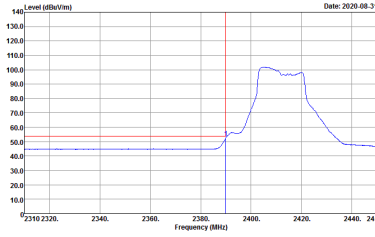
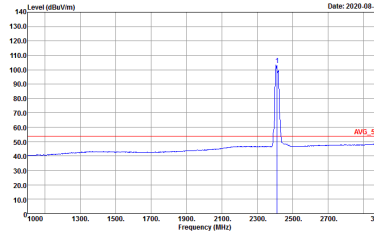


2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

cWIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>

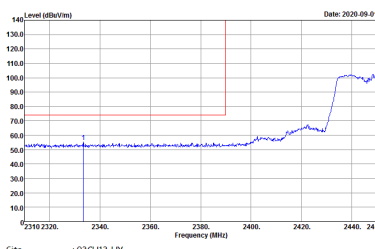
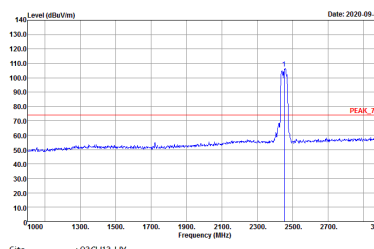
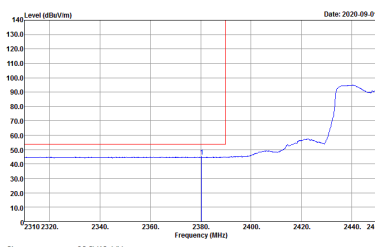
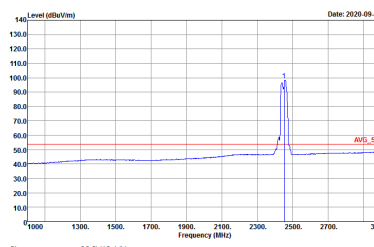


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 <p>Date: 2020-08-31</p> <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2020-08-31</p> <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Date: 2020-08-31</p> <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Date: 2020-08-31</p> <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



2.4GHz 2400~2483.5MHz

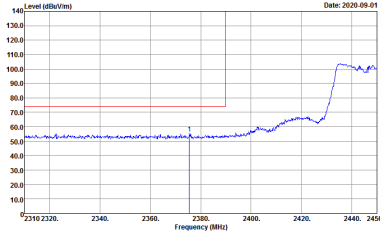
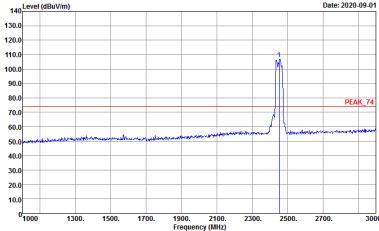
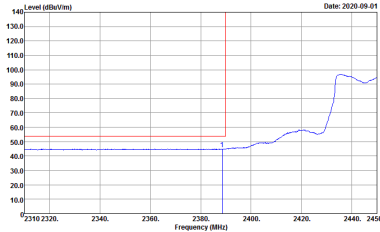
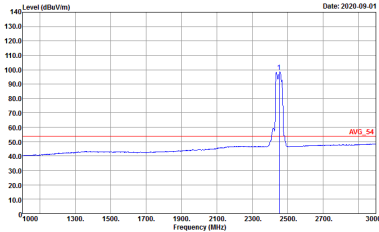
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>

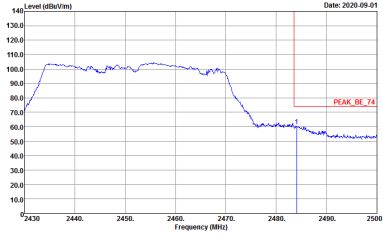
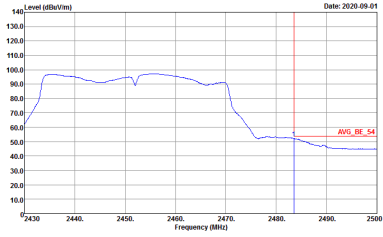


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg.	 <p>Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>	 <p>Site : 03CH13-HY Condition : AVG_54 3m HORN_91200_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto</p>



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1+2	Vertical	Fundamental
<p><b>Peak</b></p>		<p>Left blank</p>
<p><b>Avg.</b></p>		<p>Left blank</p>



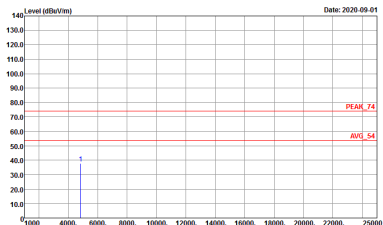
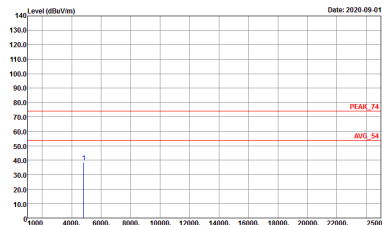
**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11b (Harmonic @ 3m)**

<b>WIFI</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>802.11b CH11 2462MHz</b>	
<b>1+2</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH13-HY          Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL          Detector : Peak</p>	<p>Site : 03CH13-HY          Condition : PEAK_74 3m HORN_91200_1241 VERTICAL          Detector : Peak</p>



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

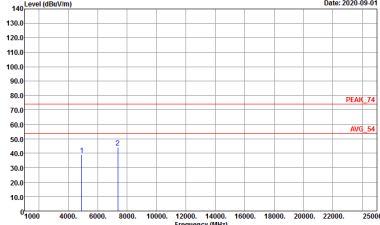
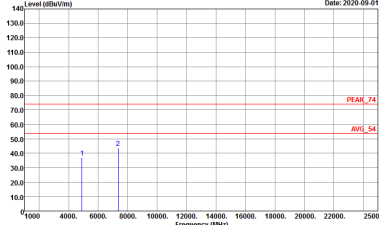
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>





2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT40 CH09 2452MHz	
1+2	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH13-HY Condition : PEAK_74 3m HORN_91200_1241 VERTICAL Detector : Peak</p>



Emission below 1GHz  
2.4GHz WIFI 802.11n HT20 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1+2	Horizontal	Vertical
QP / Peak	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH13-HY Condition : QP 3m BIL06_40103 VERTICAL Detector : Peak</p>



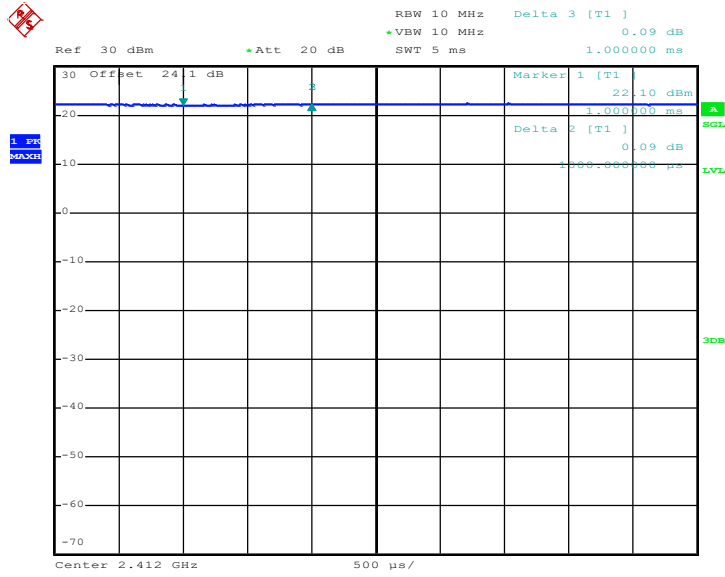
## Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	802.11b	100.00	-	-	10Hz	0.00
2	802.11b	100.00	-	-	10Hz	0.00
1+2	802.11b for Ant 1	100.00	-	-	10Hz	0.00
1+2	802.11b for Ant 2	100.00	-	-	10Hz	0.00
2	802.11g	98.11	-	-	10Hz	0.08
1	2.4GHz 802.11n HT20	97.97	1935	0.52	1kHz	0.09
1+2	2.4GHz 802.11n HT20 for Ant 1	97.97	1935	0.52	1kHz	0.09
1+2	2.4GHz 802.11n HT20 for Ant 2	97.97	1935	0.51	1kHz	0.09
1	2.4GHz 802.11n HT40	95.94	1535	0.65	1kHz	0.18
2	2.4GHz 802.11n HT40	96.56	1545	0.65	1kHz	0.15
1+2	2.4GHz 802.11n HT40 for Ant 1	96.25	1540	0.63	1kHz	0.17
1+2	2.4GHz 802.11n HT40 for Ant 2	95.96	1545	0.65	1kHz	0.18



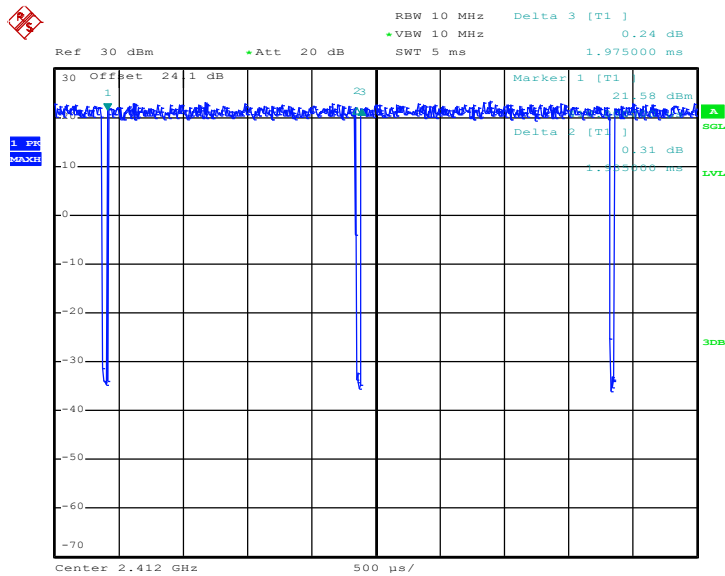
<Ant. 1>

802.11b



Date: 14.AUG.2020 17:48:13

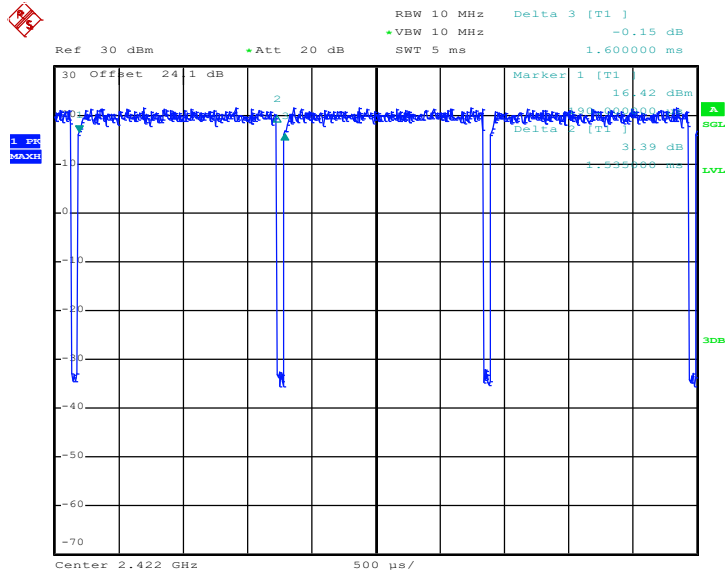
802.11n HT20



Date: 14.AUG.2020 18:14:17



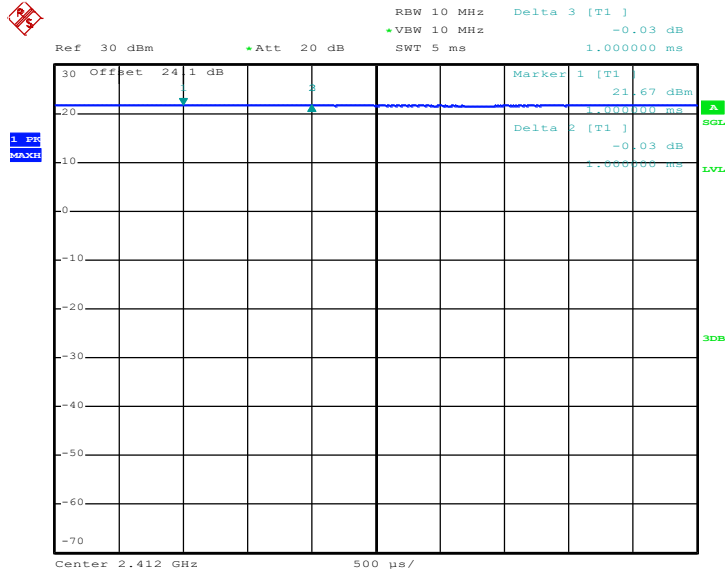
802.11n HT40



Date: 14.AUG.2020 18:22:36

<Ant. 2>

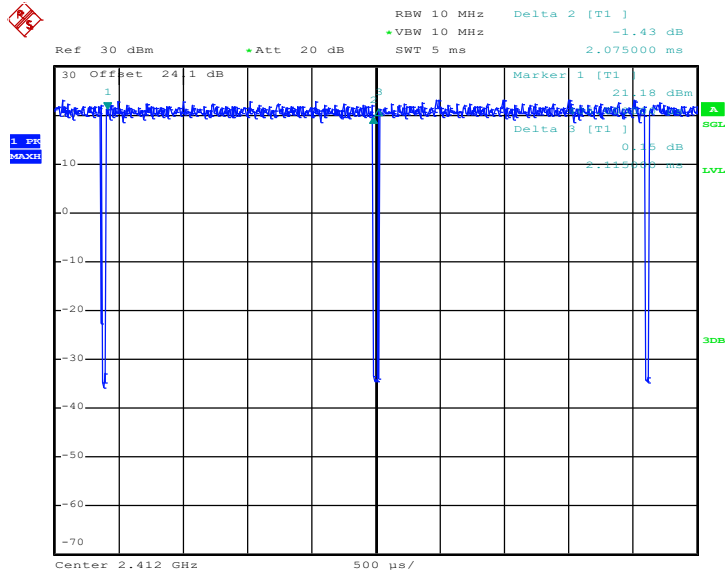
802.11b



Date: 14.AUG.2020 17:49:12

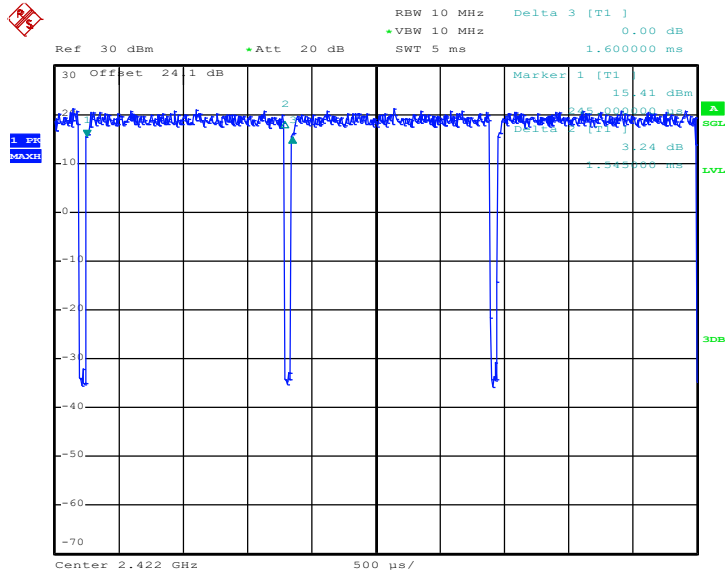


### 802.11g



Date: 14.AUG.2020 17:55:27

### 802.11n HT40

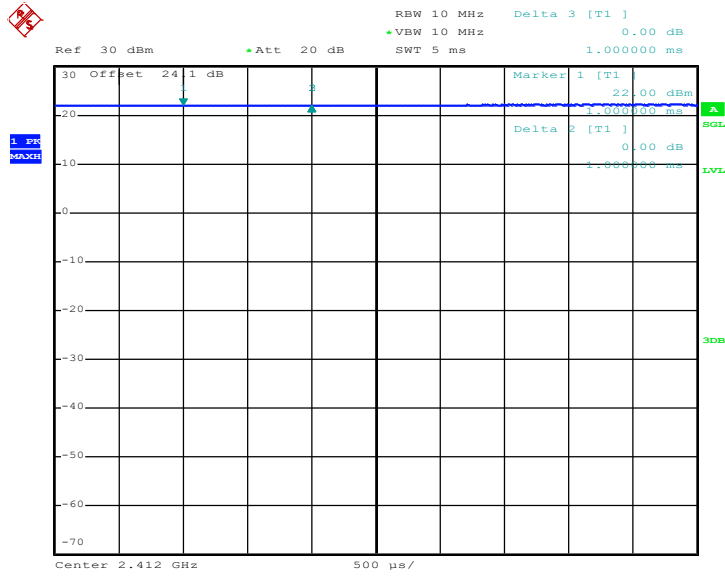


Date: 14.AUG.2020 18:23:32



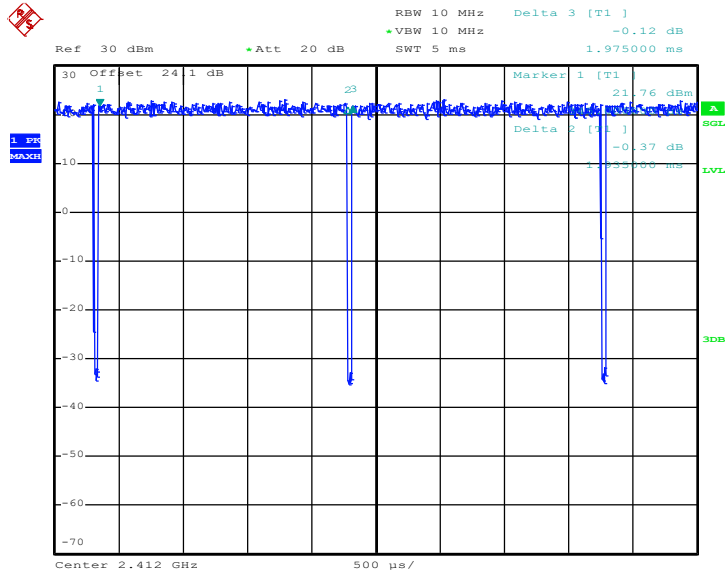
MIMO <Ant. 1>

802.11b



Date: 14.AUG.2020 17:50:13

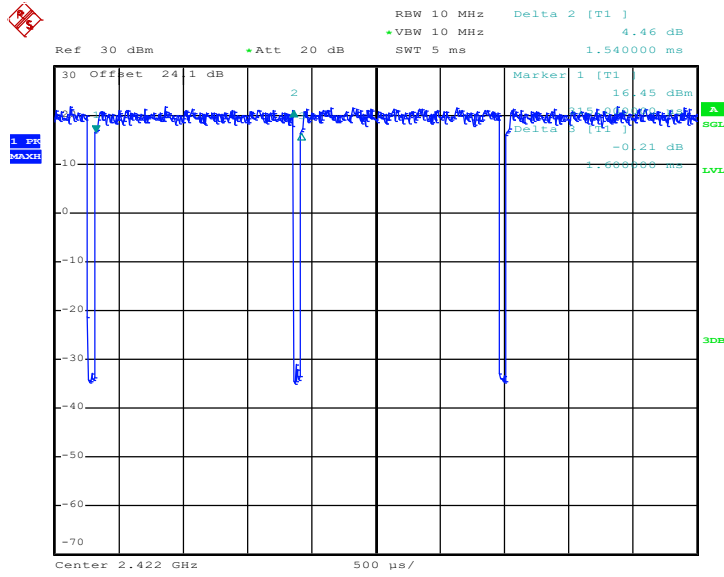
802.11n HT20



Date: 14.AUG.2020 18:17:43



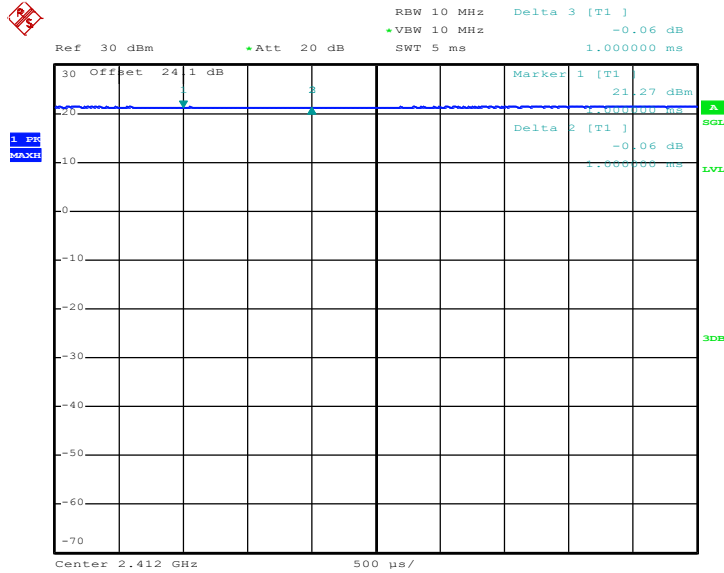
802.11n HT40



Date: 14.AUG.2020 18:24:29

MIMO <Ant. 2>

802.11b

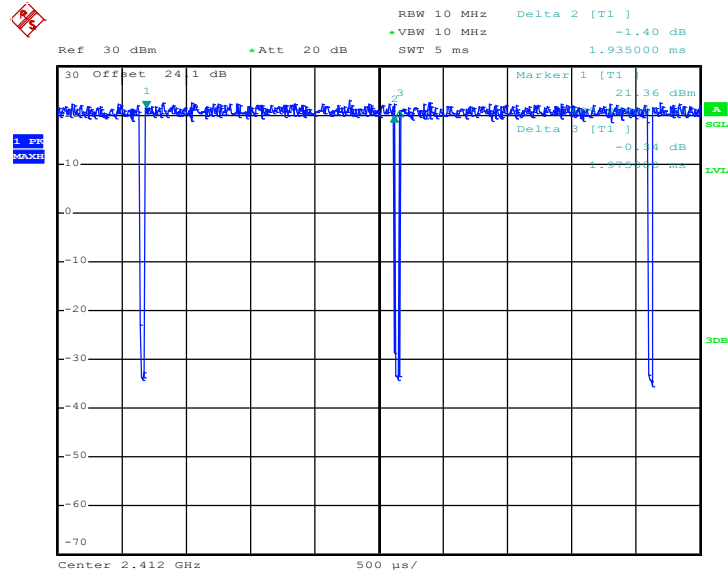


Date: 14.AUG.2020 17:51:06



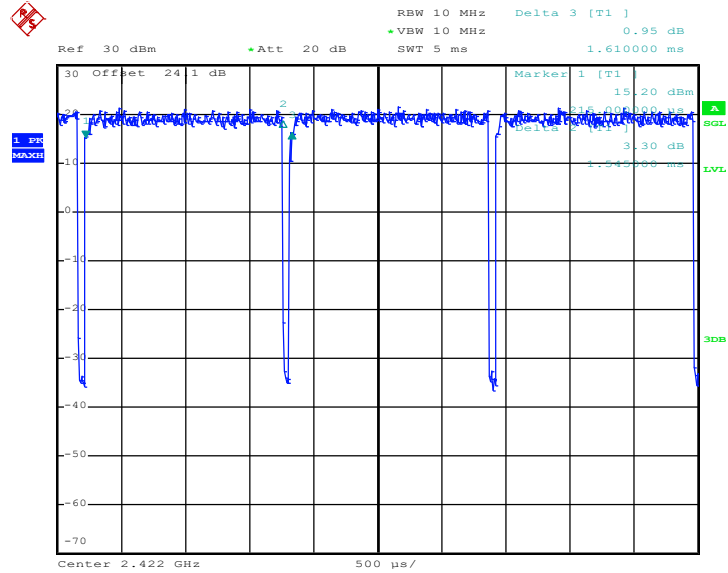


802.11n HT20



Date: 14.AUG.2020 18:18:29

802.11n HT40



Date: 14.AUG.2020 18:25:16