



# FCC CO-LOCATION RADIO TEST REPORT

FCC ID : A4RG020H  
Equipment : Smartphone  
Model Name : G020H  
Applicant : Google LLC  
1600 Amphitheatre Parkway,  
Mountain View, CA 94043, USA  
Standard : FCC Part 15 Subpart E §15.407

The product was completed on Dec. 20, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The 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.

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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### Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(b)	Unwanted Emissions	Pass	Under limit 1.61 dB at 5350.800 MHz
3.2	15.203 15.407(a)	Antenna Requirement	Pass	-

**Reviewed by: Wii Chang**

**Report Producer: Natasha Hsieh**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smartphone
Model Name	G020H
Sample 1	The device with 1st battery
Sample 2	The device with 2nd battery
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC/GNSS WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
EUT Stage	Identical Prototype

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

## 1.2 Modification of EUT

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



### 1.3 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

<b>Test Site</b>	SPORTON INTERNATIONAL INC.
<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>
	03CH07-HY

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

### 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 662911 D01 Multiple Transmitter Output v02r01.
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05
- ♦ 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: 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 WLAN 2.4GHz Ant. 2 and WLAN 2.4GHz Ant. 1 + WLAN 5GHz Ant. 2 and Y Plane for WLAN 5GHz Ant. 1, WLAN 5GHz Ant. 2, and WLAN 5GHz MIMO Ant. 1+2) were recorded in this report.

### 2.1 Carrier Frequency and Channel

2400-2483.5 MHz 802.11g		2400-2483.5 MHz Bluetooth – LE	
Channel	Freq. (MHz)	Channel	Freq. (MHz)
13	2472	19	2440

5150-5250 MHz Band 1 (U-NII-1)	
Channel	Freq. (MHz)
38	5190

### 2.2 Test Mode

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

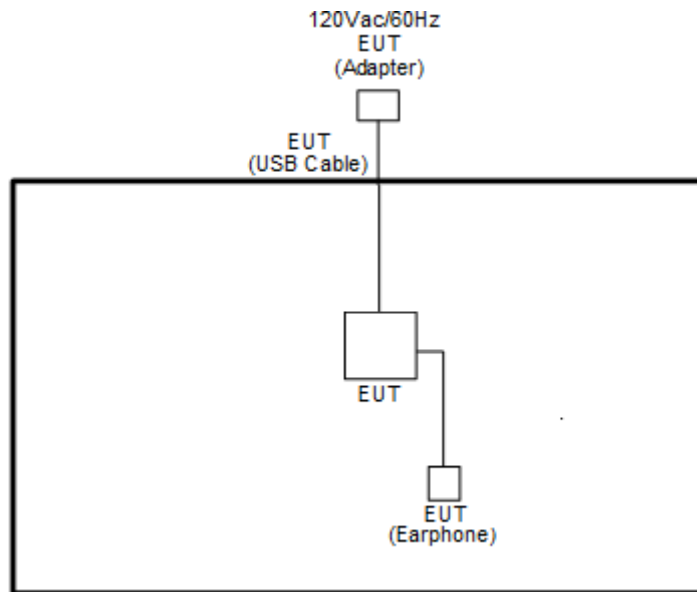
<Co-Location>

Modulation	Data Rate
802.11g for Ant. 2 + Bluetooth LE	6 Mbps + 2 Mbps
802.11g for Ant. 1 + 802.11n HT40 for Ant. 2	6 Mbps + MCS0
802.11n HT40 for MIMO Ant. 1+2 + Bluetooth LE	MCS0 + 2 Mbps
802.11n HT40 for Ant. 1 + Bluetooth LE	MCS0 + 2 Mbps
802.11n HT40 for Ant. 2 + Bluetooth LE	MCS0 + 2 Mbps

**Remark:** For Radiated Test Cases, the tests were performed with USB Type C Cable 1.

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



## 2.4 EUT Operation Test Setup

The RF test items, utility “QRCT” 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 Unwanted Emissions Measurement

##### 3.1.1 Limit of Unwanted Emissions

(1) 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.

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

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

(2) 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.<sup>3</sup>
- (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.<sup>4</sup>

**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).



### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

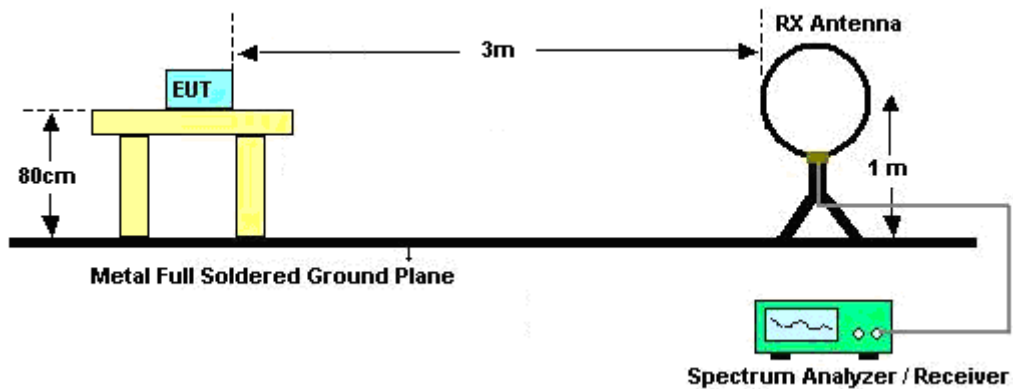
### 3.1.3 Test Procedures

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

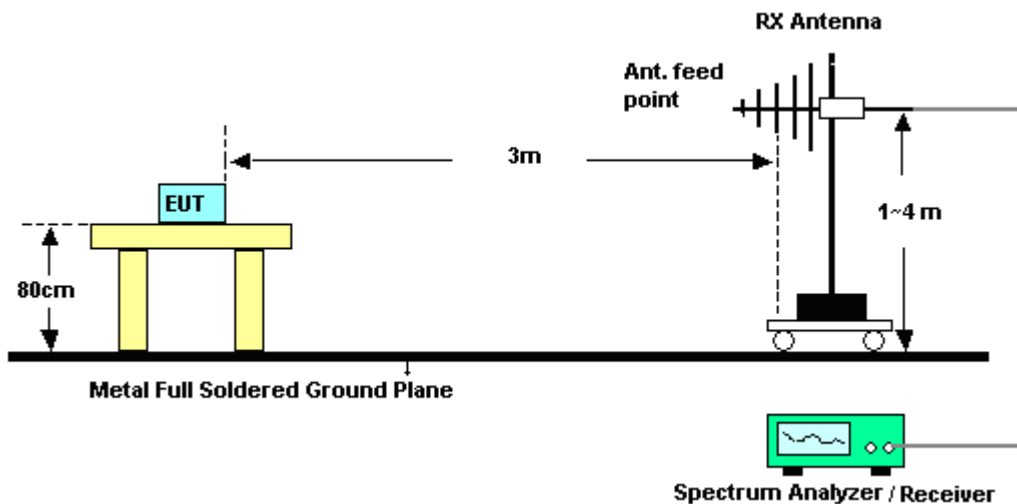
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.1.4 Test Setup

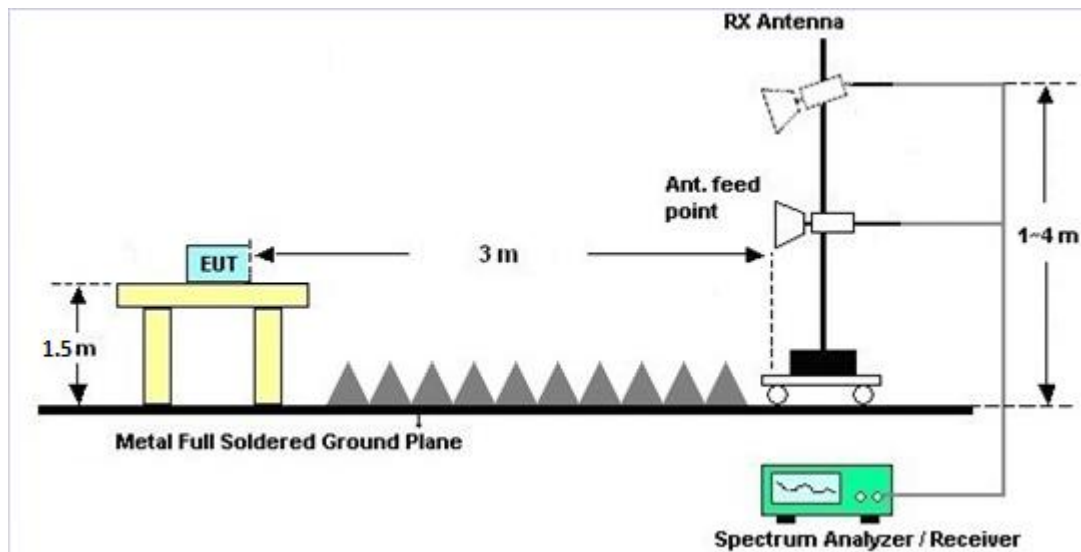
**For radiated emissions below 30MHz**



**For radiated emissions from 30MHz to 1GHz**



For radiated emissions above 1GHz



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

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

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

### 3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A and B.

### 3.1.7 Duty Cycle

Please refer to Appendix C.

### 3.1.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix A and B.



## **3.2 Antenna Requirements**

### **3.2.1 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.

### **3.2.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.2.3 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	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	May 29, 2018	Dec. 05, 2018~ Dec. 20, 2018	May 28, 2019	Radiation (03CH07-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-0 6	35414&AT-N0 602	30MHz to 1GHz	Oct. 13, 2018	Dec. 05, 2018~ Dec. 20, 2018	Oct. 12, 2019	Radiation (03CH07-HY)
Horn Antenna	ESCO	3117	00211469	1GHz~18GHz	Apr. 06, 2018	Dec. 05, 2018~ Dec. 20, 2018	Apr. 05, 2019	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917057 6	18GHz ~ 40GHz	May 08, 2018	Dec. 05, 2018~ Dec. 20, 2018	May 07, 2019	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz to 26.5GHz	Jan. 16, 2018	Dec. 05, 2018~ Dec. 20, 2018	Jan. 15, 2019	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	Apr. 25, 2018	Dec. 05, 2018~ Dec. 20, 2018	Apr. 24, 2019	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz ~ 18GHz	Apr. 25, 2018	Dec. 05, 2018~ Dec. 20, 2018	Apr. 24, 2019	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1GHz	May 21, 2018	Dec. 05, 2018~ Dec. 20, 2018	May 20, 2019	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Nov. 02, 2018	Dec. 05, 2018~ Dec. 20, 2018	Nov. 01, 2019	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Apr. 23, 2018	Dec. 05, 2018~ Dec. 20, 2018	Apr. 22, 2019	Radiation (03CH07-HY)
Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 16, 2018	Dec. 05, 2018~ Dec. 20, 2018	Jul. 15, 2019	Radiation (03CH07-HY)
Hygrometer	TECPEL	HTC-2	1	N/A	May 12, 2018	Dec. 05, 2018~ Dec. 20, 2018	May 11, 2019	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4,M Y28655/4	9KHz~30MHz	Jan. 02, 2018	Dec. 05, 2018~ Dec. 20, 2018	Jan. 01, 2019	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 27, 2018	Dec. 05, 2018~ Dec. 20, 2018	Feb. 26, 2019	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 27, 2018	Dec. 05, 2018~ Dec. 20, 2018	Feb. 26, 2019	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SF102/2*11S K252	MY4278/2	9kHz~40GHz	May 17, 2018	Dec. 05, 2018~ Dec. 20, 2018	May 16, 2019	Radiation (03CH07-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WLKS1200-1 2SS	SN2	1.2GHz Low Pass	Mar. 21, 2018	Dec. 05, 2018~ Dec. 20, 2018	Mar. 20, 2019	Radiation (03CH07-HY)
Filter	Wainwright	WHKX12-270 0-3000-18000 -60ST	SN2	3GHz High Pass	Mar. 21, 2018	Dec. 05, 2018~ Dec. 20, 2018	Mar. 20, 2019	Radiation (03CH07-HY)
Filter	Woken	WHKX8-5272. 5-6750-18000 -40ST	SN2	6.75G Highpas s	Mar. 21, 2018	Dec. 05, 2018~ Dec. 20, 2018	Mar. 20, 2019	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Dec. 05, 2018~ Dec. 20, 2018	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF78020836 8	Control Ant Mast	N/A	Dec. 05, 2018~ Dec. 20, 2018	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Dec. 05, 2018~ Dec. 20, 2018	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Dec. 05, 2018~ Dec. 20, 2018	N/A	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Dec. 05, 2018~ Dec. 20, 2018	N/A	Radiation (03CH07-HY)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.70
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.50
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.20
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## Appendix A. Radiated Spurious Emission

Test Engineer :	Jack Cheng, Lance Chiang, and Peter Liao	Temperature :	22~24°C
		Relative Humidity :	52~60%

### WIFI 802.11g (Band Edge @ 3m)

WIFI Ant.	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 13 2472MHz	*	2472	83.31	-	-	68.45	32.27	7.56	34.97	366	279	P	H
	*	2472	76.06	-	-	61.2	32.27	7.56	34.97	366	279	A	H
		2483.76	58.54	-15.46	74	43.68	32.27	7.56	34.97	366	279	P	H
		2483.55	48.92	-5.08	54	34.06	32.27	7.56	34.97	366	279	A	H
													H
													H
	*	2472	81.79	-	-	66.93	32.27	7.56	34.97	385	39	P	V
	*	2472	74.2	-	-	59.34	32.27	7.56	34.97	385	39	A	V
		2487.26	54.49	-19.51	74	39.63	32.27	7.56	34.97	385	39	P	V
		2483.69	45.41	-8.59	54	30.55	32.27	7.56	34.97	385	39	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



BLE 2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 19 2440MHz		2339.16	54.69	-19.31	74	40.42	31.9	7.32	34.94	346	109	P	H
		2388.732	46.75	-7.25	54	32.25	32	7.44	34.94	346	109	A	H
	*	2440	105.47	-	-	90.73	32.2	7.5	34.96	346	109	P	H
	*	2440	104.03	-	-	89.29	32.2	7.5	34.96	346	109	A	H
		2483.62	57.82	-16.18	74	42.96	32.27	7.56	34.97	346	109	P	H
		2483.5	50.3	-3.7	54	35.44	32.27	7.56	34.97	346	109	A	H
		2334.462	54.04	-19.96	74	39.86	31.8	7.32	34.93	387	60	P	V
		2385.168	46.78	-7.22	54	32.31	31.97	7.44	34.94	387	60	A	V
	*	2440	102.33	-	-	87.59	32.2	7.5	34.96	387	60	P	V
	*	2440	101.04	-	-	86.3	32.2	7.5	34.96	387	60	A	V
		2489.64	54.23	-19.77	74	39.34	32.3	7.56	34.97	387	60	P	V
		2497.13	47.23	-6.77	54	32.35	32.3	7.56	34.98	387	60	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Co-location Mode

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

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preampl	Ant	Table	Peak	Pol.
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11g CH 13 2472MHz Ant. 2 + BLE CH 19 2440MHz		4880	47.8	-26.2	74	37.82	34	10.6	35.05	100	0	P	H
		4944	48.72	-25.28	74	38.52	34.1	10.71	35.04	100	0	P	H
		7320	43.35	-30.65	74	51.91	35.7	13.19	58.16	100	0	P	H
		7416	44	-30	74	52.51	35.77	13.29	58.28	100	0	P	H
													H
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													H
													H
		4880	47.75	-26.25	74	37.77	34	10.6	35.05	100	0	P	V
		4944	48.98	-25.02	74	38.78	34.1	10.71	35.04	100	0	P	V
		7320	45.02	-28.98	74	53.58	35.7	13.19	58.16	100	0	P	V
		7416	43.68	-30.32	74	52.19	35.77	13.29	58.28	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.												



Emission below 1GHz

2.4GHz 2400~2483.5MHz (LF @ 3m)

Ant. Simultaneously	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 13 2472MHz Ant. 2 + BLE CH 19 2440MHz		30	29.21	-10.79	40	33.46	24.6	1.2	30.18	100	0	P	H	
		48.63	25.24	-14.76	40	38.98	15.07	1.2	30.15	-	-	P	H	
		162.03	30.98	-12.52	43.5	42.38	16.36	2.06	30.01	-	-	P	H	
		774.6	30.81	-15.19	46	27.83	27.94	4.18	29.42	-	-	P	H	
		830.6	32.16	-13.84	46	28.46	28.16	4.45	29.2	-	-	P	H	
		958	34.11	-11.89	46	26.76	30.8	4.71	28.5	-	-	P	H	
														H
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<b>Remark</b>	<p>1. No other spurious found.</p> <p>2. All results are PASS against limit line.</p>													



WIFI 802.11g (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		( MHz )	( dBµV/m )	( dB )	( dBµV/m )	( dBµV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11g CH 13 2472MHz	*	2472	85.55	-	-	70.69	32.27	7.56	34.97	300	106	P	H
	*	2472	78.22	-	-	63.36	32.27	7.56	34.97	300	106	A	H
		2483.5	57.5	-16.5	74	42.64	32.27	7.56	34.97	300	106	P	H
		2483.76	48.66	-5.34	54	33.8	32.27	7.56	34.97	300	106	A	H
													H
													H
	*	2472	83.13	-	-	68.27	32.27	7.56	34.97	389	60	P	V
	*	2472	75.73	-	-	60.87	32.27	7.56	34.97	389	60	A	V
		2484.46	57.22	-16.78	74	42.36	32.27	7.56	34.97	389	60	P	V
		2483.5	46.33	-7.67	54	31.47	32.27	7.56	34.97	389	60	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



WIFI 802.11n HT40 (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.		
2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz		5149.76	58.33	-15.67	74	48.15	34.2	11.03	35.05	100	240	P	H	
		5150	51.38	-2.62	54	41.2	34.2	11.03	35.05	100	240	A	H	
	*	5190	103.41	-	-	93.23	34.13	11.1	35.05	100	240	P	H	
	*	5190	95.4	-	-	85.22	34.13	11.1	35.05	100	240	A	H	
		5380.48	48.71	-25.29	74	38.22	34.4	11.15	35.06	100	240	P	H	
		5443.76	40.94	-13.06	54	30.4	34.4	11.2	35.06	100	240	A	H	
														H
														H
		5147.16	55.77	-18.23	74	45.59	34.2	11.03	35.05	100	300	P	V	
		5150	49.05	-4.95	54	38.87	34.2	11.03	35.05	100	300	A	V	
	*	5190	100.58	-	-	90.4	34.13	11.1	35.05	100	300	P	V	
	*	5190	92.92	-	-	82.74	34.13	11.1	35.05	100	300	A	V	
		5455.52	48.3	-25.7	74	37.76	34.4	11.2	35.06	100	300	P	V	
		5439.28	40.55	-13.45	54	30.01	34.4	11.2	35.06	100	300	A	V	
														V
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11g CH 13 2472MHz Ant. 1 + 802.11n HT40 CH 38 5190MHz Ant. 2		4944	48.88	-25.12	74	38.68	34.1	10.71	35.04	100	0	P	H
		7416	43.91	-30.09	74	52.42	35.77	13.29	58.28	100	0	P	H
		10380	46.89	-21.31	68.2	51.94	37.27	16.21	59.32	100	0	P	H
		15570	49.03	-24.97	74	45.21	39.87	19.64	56.59	100	0	P	H
													H
													H
													H
													H
													V
													V
												V	
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11g CH 13 2472MHz Ant. 1 + 802.11n HT40 CH 38 5190MHz Ant. 2		30.54	28.5	-11.5	40	33.26	24.09	1.2	30.18	-	-	P	H	
		47.01	28.84	-11.16	40	42.18	15.48	1.2	30.16	100	0	P	H	
		160.68	31.33	-12.17	43.5	42.62	16.47	2.06	30.01	-	-	P	H	
		750.8	31.04	-14.96	46	28.31	27.76	4.18	29.49	-	-	P	H	
		841.8	32.57	-13.43	46	28.43	28.56	4.45	29.16	-	-	P	H	
		957.3	33.6	-12.4	46	26.31	30.75	4.71	28.51	-	-	P	H	
														H
														H
														H
														H
														H
														H
														H
														H
														H
														H
			30	32.56	-7.44	40	36.81	24.6	1.2	30.18	100	0	P	V
			38.91	28.84	-11.16	40	37.79	19.88	1.2	30.17	-	-	P	V
		113.7	30.56	-12.94	43.5	41.47	17.13	1.83	30.06	-	-	P	V	
		777.4	30.4	-15.6	46	27.38	27.97	4.18	29.41	-	-	P	V	
		884.5	32.16	-13.84	46	27.38	28.86	4.58	28.97	-	-	P	V	
		950.3	34.51	-11.49	46	27.63	30.39	4.71	28.56	-	-	P	V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													





WIFI 802.11n HT40 (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 )	
802.11n HT40 CH 38 5190MHz		5146.12	53.25	-20.75	74	43.07	34.2	11.03	35.05	127	198	P	H	
		5144.82	45.6	-8.4	54	35.42	34.2	11.03	35.05	127	198	A	H	
	*	5190	103.15	-	-	92.97	34.13	11.1	35.05	127	198	P	H	
	*	5190	95.5	-	-	85.32	34.13	11.1	35.05	127	198	A	H	
		5407.64	48.36	-25.64	74	37.87	34.4	11.15	35.06	127	198	P	H	
		5459.44	40.45	-13.55	54	29.91	34.4	11.2	35.06	127	198	A	H	
														H
		5150	58.7	-15.3	74	48.52	34.2	11.03	35.05	314	355	P	V	
		5150	52.17	-1.83	54	41.99	34.2	11.03	35.05	314	355	A	V	
	*	5190	107.33	-	-	97.15	34.13	11.1	35.05	314	355	P	V	
	*	5190	99.39	-	-	89.21	34.13	11.1	35.05	314	355	A	V	
		5433.68	48.71	-25.29	74	38.17	34.4	11.2	35.06	314	355	P	V	
		5436.48	40.71	-13.29	54	30.17	34.4	11.2	35.06	314	355	A	V	
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



BLE 2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 19 2440MHz		2381.68	54.33	-19.67	74	39.86	31.97	7.44	34.94	183	26	P	H
		2370.76	46.6	-7.4	54	32.19	31.97	7.38	34.94	183	26	A	H
	*	2440	104.68	-	-	89.94	32.2	7.5	34.96	183	26	P	H
	*	2440	103.25	-	-	88.51	32.2	7.5	34.96	183	26	A	H
		2493.63	54.85	-19.15	74	39.97	32.3	7.56	34.98	183	26	P	H
		2489.08	46.8	-7.2	54	31.91	32.3	7.56	34.97	183	26	A	H
		2385.32	54.07	-19.93	74	39.6	31.97	7.44	34.94	130	11	P	V
		2378.88	46.71	-7.29	54	32.3	31.97	7.38	34.94	130	11	A	V
	*	2440	100.43	-	-	85.69	32.2	7.5	34.96	130	11	P	V
	*	2440	98.93	-	-	84.19	32.2	7.5	34.96	130	11	A	V
		2494.68	54.42	-19.58	74	39.54	32.3	7.56	34.98	130	11	P	V
		2486.91	47.61	-6.39	54	32.75	32.27	7.56	34.97	130	11	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
802.11n HT40 CH 38 5190MHz MIMO Ant. 1+2 + BLE CH 19 2440MHz		4880	49.84	-24.16	74	39.86	34	10.6	35.05	100	0	P	H
		7320	44.26	-29.74	74	52.82	35.7	13.19	58.16	100	0	P	H
		10380	47.93	-20.27	68.2	52.98	37.27	16.21	59.32	100	0	P	H
		15570	49.3	-24.7	74	45.48	39.87	19.64	56.59	100	0	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
														Limit
Simultaneously		( MHz )	( dBµV/m )	( dB )	( dBµV/m )	( dBµV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz MIMO Ant. 1+2 + BLE CH 19 2440MHz		30	29.99	-10.01	40	34.24	24.6	1.2	30.18	100	0	P	H	
		47.82	25.43	-14.57	40	38.76	15.48	1.2	30.15	-	-	P	H	
		115.05	27.91	-15.59	43.5	38.68	17.27	1.83	30.06	-	-	P	H	
		777.4	30.69	-15.31	46	27.67	27.97	4.18	29.41	-	-	P	H	
		879.6	32.13	-13.87	46	27.33	28.9	4.58	28.99	-	-	P	H	
		950.3	34.08	-11.92	46	27.2	30.39	4.71	28.56	-	-	P	H	
														H
														H
														H
														H
														H
														H
														H
														H
														H
			30	33.96	-6.04	40	38.21	24.6	1.2	30.18	100	0	P	V
			38.64	30.67	-9.33	40	39.62	19.88	1.2	30.17	-	-	P	V
		115.32	32.53	-10.97	43.5	43.3	17.27	1.83	30.06	-	-	P	V	
		745.9	29.92	-16.08	46	27.24	27.73	4.18	29.51	-	-	P	V	
		847.4	31.69	-14.31	46	27.37	28.71	4.45	29.13	-	-	P	V	
		949.6	33.35	-12.65	46	26.53	30.33	4.71	28.56	-	-	P	V	
													V	
													V	
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



WIFI 802.11n HT40 (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		( MHz )	( dBµV/m )	( dB )	( dBµV/m )	( dBµV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz		5147.68	56.57	-17.43	74	46.39	34.2	11.03	35.05	164	230	P	H	
		5149.76	49.56	-4.44	54	39.38	34.2	11.03	35.05	164	230	A	H	
	*	5190	101.54	-	-	91.36	34.13	11.1	35.05	164	230	P	H	
	*	5190	93.92	-	-	83.74	34.13	11.1	35.05	164	230	A	H	
		5402.32	49.29	-24.71	74	38.8	34.4	11.15	35.06	164	230	P	H	
		5424.72	40.5	-13.5	54	29.96	34.4	11.2	35.06	164	230	A	H	
														H
		5150	57.92	-16.08	74	47.74	34.2	11.03	35.05	340	277	P	V	
		5150	50.38	-3.62	54	40.2	34.2	11.03	35.05	340	277	A	V	
	*	5190	103.39	-	-	93.21	34.13	11.1	35.05	340	277	P	V	
	*	5190	95.91	-	-	85.73	34.13	11.1	35.05	340	277	A	V	
		5376	48.74	-25.26	74	38.26	34.4	11.14	35.06	340	277	P	V	
		5438.16	40.36	-13.64	54	29.82	34.4	11.2	35.06	340	277	A	V	
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



BLE 2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 19 2440MHz		2368.66	54.47	-19.53	74	40.06	31.97	7.38	34.94	181	28	P	H
		2383.5	46.75	-7.25	54	32.28	31.97	7.44	34.94	181	28	A	H
	*	2440	104.96	-	-	90.22	32.2	7.5	34.96	181	28	P	H
	*	2440	103.41	-	-	88.67	32.2	7.5	34.96	181	28	A	H
		2496.57	54.63	-19.37	74	39.75	32.3	7.56	34.98	181	28	P	H
		2497.48	46.93	-7.07	54	32.05	32.3	7.56	34.98	181	28	A	H
		2369.92	54.07	-19.93	74	39.66	31.97	7.38	34.94	130	5	P	V
		2320.36	46.68	-7.32	54	32.5	31.8	7.32	34.93	130	5	A	V
	*	2440	100.59	-	-	85.85	32.2	7.5	34.96	130	5	P	V
	*	2440	99.09	-	-	84.35	32.2	7.5	34.96	130	5	A	V
		2483.55	54.63	-19.37	74	39.77	32.27	7.56	34.97	130	5	P	V
		2487.33	46.86	-7.14	54	32	32.27	7.56	34.97	130	5	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Simultaneously		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz Ant.1 + BLE CH 19 2440MHz		4880	50.15	-23.85	74	40.17	34	10.6	35.05	100	0	P	H	
		7320	43.47	-30.53	74	52.03	35.7	13.19	58.16	100	0	P	H	
		10380	46.63	-21.57	68.2	51.68	37.27	16.21	59.32	100	0	P	H	
		15570	48.77	-25.23	74	44.95	39.87	19.64	56.59	100	0	P	H	
													H	
													H	
													H	
														H
														H
														H
														H
														H
														H
														H
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11n HT40 CH 38 5190MHz Ant.1 + BLE CH 19 2440MHz		30	29.12	-10.88	40	33.37	24.6	1.2	30.18	100	0	P	H
		47.82	25.49	-14.51	40	38.82	15.48	1.2	30.15	-	-	P	H
		114.51	26.55	-16.95	43.5	37.39	17.2	1.83	30.06	-	-	P	H
		738.9	29.93	-16.07	46	27.45	27.64	4.09	29.53	-	-	P	H
		834.1	31.76	-14.24	46	27.91	28.3	4.45	29.19	-	-	P	H
		934.9	33.49	-12.51	46	27.52	29.66	4.64	28.66	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			30.54	33.16	-6.84	40	37.92	24.09	1.2	30.18	100	0	P
		38.91	29.88	-10.12	40	38.83	19.88	1.2	30.17	-	-	P	V
		115.05	31.78	-11.72	43.5	42.55	17.27	1.83	30.06	-	-	P	V
		781.6	30.42	-15.58	46	27.24	27.98	4.32	29.4	-	-	P	V
		870.5	32.35	-13.65	46	27.53	28.97	4.58	29.03	-	-	P	V
		952.4	33.82	-12.18	46	26.82	30.49	4.71	28.54	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line.												





WIFI 802.11n HT40 (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.		
2		( MHz )	( dBµV/m )	( dB )	( dBµV/m )	( dBµV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz		5149.5	51.15	-22.85	74	40.97	34.2	11.03	35.05	386	50	P	H	
		5149.24	44.12	-9.88	54	33.94	34.2	11.03	35.05	386	50	A	H	
	*	5190	97.19	-	-	87.01	34.13	11.1	35.05	386	50	P	H	
	*	5190	89.57	-	-	79.39	34.13	11.1	35.05	386	50	A	H	
		5437.88	49.78	-24.22	74	39.24	34.4	11.2	35.06	386	50	P	H	
		5422.2	40.41	-13.59	54	29.87	34.4	11.2	35.06	386	50	A	H	
														H
		5150	57.21	-16.79	74	47.03	34.2	11.03	35.05	364	0	P	V	
		5150	50.36	-3.64	54	40.18	34.2	11.03	35.05	364	0	A	V	
	*	5190	105.82	-	-	95.64	34.13	11.1	35.05	364	0	P	V	
	*	5190	97.69	-	-	87.51	34.13	11.1	35.05	364	0	A	V	
		5424.44	48.65	-25.35	74	38.11	34.4	11.2	35.06	364	0	P	V	
		5446.56	40.65	-13.35	54	30.11	34.4	11.2	35.06	364	0	A	V	
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



BLE 2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		( MHz )	( dBμV/m )	( dB )	Limit	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 19 2440MHz		2370.48	54.24	-19.76	74	39.83	31.97	7.38	34.94	348	38	P	H
		2319.94	46.55	-7.45	54	32.37	31.8	7.32	34.93	348	38	A	H
	*	2440	103.86	-	-	89.12	32.2	7.5	34.96	348	38	P	H
	*	2440	102.48	-	-	87.74	32.2	7.5	34.96	348	38	A	H
		2488.66	54.5	-19.5	74	39.61	32.3	7.56	34.97	348	38	P	H
		2497.55	46.73	-7.27	54	31.85	32.3	7.56	34.98	348	38	A	H
		2350.04	54.26	-19.74	74	39.93	31.9	7.38	34.94	132	3	P	V
		2329.88	46.56	-7.44	54	32.38	31.8	7.32	34.93	132	3	A	V
	*	2440	101.18	-	-	86.44	32.2	7.5	34.96	132	3	P	V
	*	2440	99.8	-	-	85.06	32.2	7.5	34.96	132	3	A	V
		2486.7	54.19	-19.81	74	39.33	32.27	7.56	34.97	132	3	P	V
		2499.65	46.84	-7.16	54	31.96	32.3	7.56	34.98	132	3	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz Ant. 2 + BLE CH 19 2440MHz		4880	48.13	-25.87	74	38.15	34	10.6	35.05	100	0	P	H	
		7320	43.46	-30.54	74	52.02	35.7	13.19	58.16	100	0	P	H	
		10380	47.15	-21.05	68.2	52.2	37.27	16.21	59.32	100	0	P	H	
		15570	48.63	-25.37	74	44.81	39.87	19.64	56.59	100	0	P	H	
													H	
													H	
													H	
														H
		4880	49.33	-24.67	74	39.35	34	10.6	35.05	100	0	P	V	
		7320	43.62	-30.38	74	52.18	35.7	13.19	58.16	100	0	P	V	
		10380	47.52	-20.68	68.2	52.57	37.27	16.21	59.32	100	0	P	V	
		15570	48.21	-25.79	74	44.39	39.87	19.64	56.59	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

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF @ 3m)

Ant.	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
														Limit
Simultaneously		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
802.11n HT40 CH 38 5190MHz Ant. 2 + BLE CH 19 2440MHz		30.54	28.46	-11.54	40	33.22	24.09	1.2	30.18	100	0	P	H	
		45.93	25.19	-14.81	40	37.71	16.3	1.2	30.16	-	-	P	H	
		115.05	28.42	-15.08	43.5	39.19	17.27	1.83	30.06	-	-	P	H	
		764.1	30.7	-15.3	46	27.82	27.87	4.18	29.45	-	-	P	H	
		869.1	32.03	-13.97	46	27.22	28.97	4.58	29.04	-	-	P	H	
		955.2	34.08	-11.92	46	26.91	30.64	4.71	28.52	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			30	31.76	-8.24	40	36.01	24.6	1.2	30.18	100	0	P	V
			35.67	25.46	-14.54	40	32.79	21.51	1.2	30.17	-	-	P	V
			115.86	32.03	-11.47	43.5	42.77	17.3	1.83	30.06	-	-	P	V
			748.7	30.74	-15.26	46	28.03	27.75	4.18	29.5	-	-	P	V
			854.4	31.92	-14.08	46	27.4	28.88	4.45	29.1	-	-	P	V
			958	33.77	-12.23	46	26.42	30.8	4.71	28.5	-	-	P	V
													V	
													V	
												V		
												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

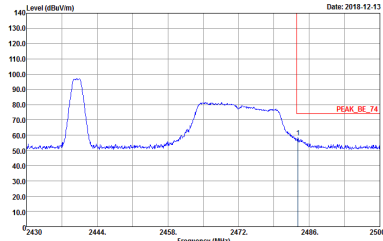
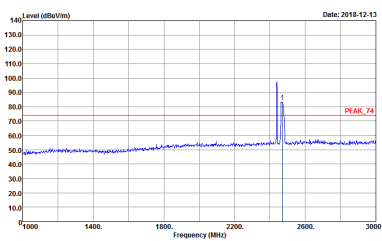
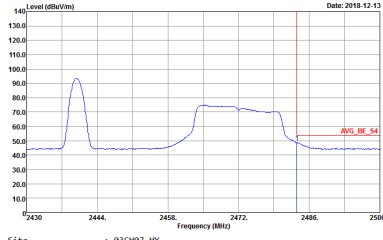
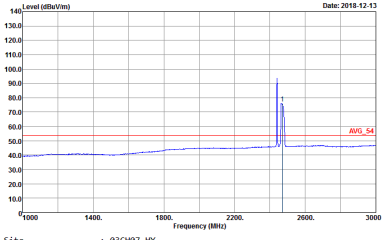
Test Engineer :	Jack Cheng, Lance Chiang, and Peter Liao	Temperature :	22~24°C
		Relative Humidity :	52~60%

### Note symbol

-L	Low channel location
-R	High channel location



WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>





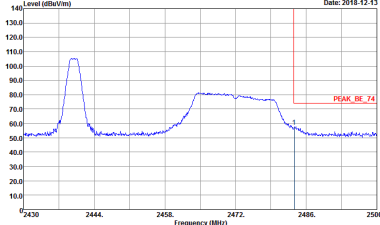
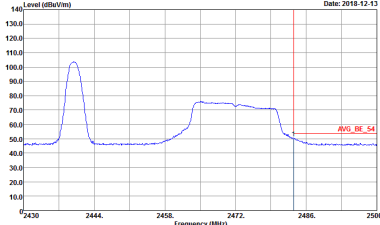
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
2	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>



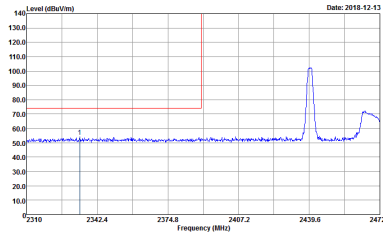
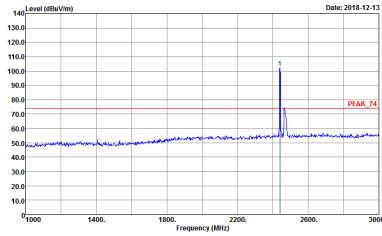
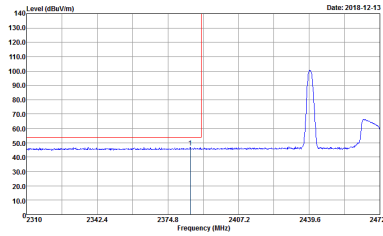
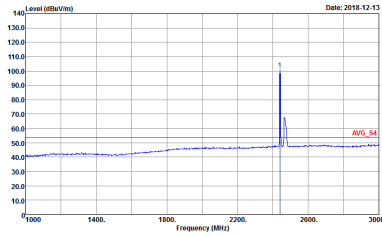
BLE 2Mbps (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>

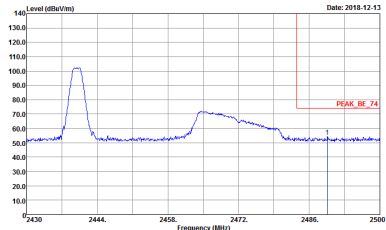
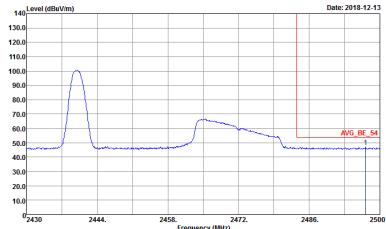


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
Vertical		Fundamental
Peak	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Peak. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2472 MHz. A prominent peak is visible at approximately 2440 MHz. A red horizontal line indicates the peak level at approximately 130 dBuV/m.</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Peak. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A peak is visible at approximately 2440 MHz. A red horizontal line indicates the peak level at approximately 75 dBuV/m, labeled 'PEAK_74'.</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Vertical Average. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 2310 to 2472 MHz. A peak is visible at approximately 2440 MHz. A red horizontal line indicates the average level at approximately 50 dBuV/m.</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	 <p>Level (dBuV/m) vs Frequency (MHz) plot for Fundamental Average. The y-axis ranges from 10.0 to 140.0 dBuV/m, and the x-axis ranges from 1000 to 3000 MHz. A peak is visible at approximately 2440 MHz. A red horizontal line indicates the average level at approximately 50 dBuV/m, labeled 'AVG_54'.</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>

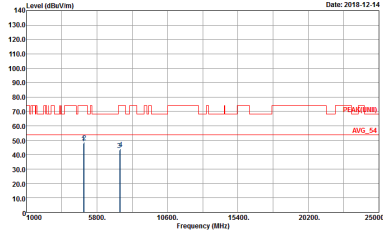
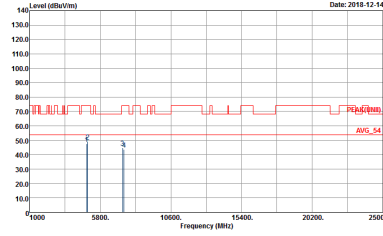


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank



Co-location Mode

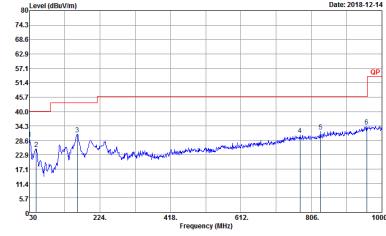
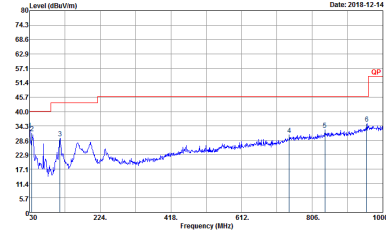
2.4GHz 2400~2483.5MHz (Harmonic @ 3m)

ANT	802.11g CH 13 2472MHz Ant. 2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
Peak	 <p>Site : 03CH07-HY Condition : PEAK(UNII) 3m SHF-EHF_131029 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNII) 3m SHF-EHF_131029 VERTICAL</p>



Emission below 1GHz

2.4GHz 2400~2483.5MHz (LF)

ANT	802.11g CH 13 2472MHz Ant. 2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p>QP / Peak</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) VERTICAL</p>

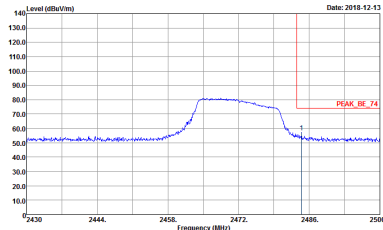
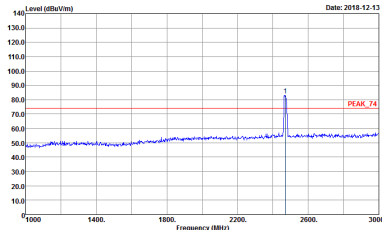
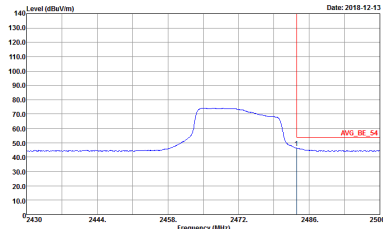
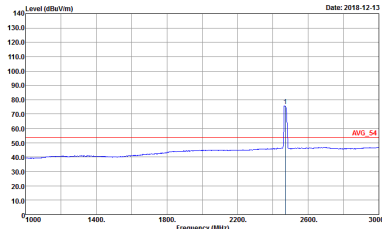


WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>

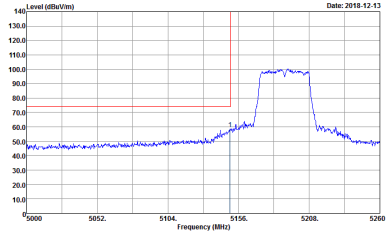
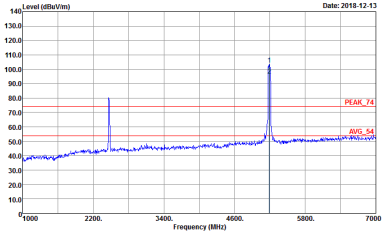
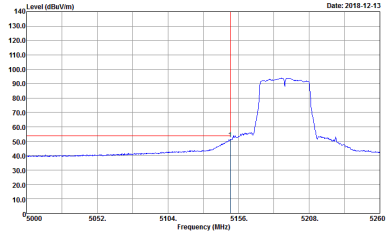




WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>



WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
2	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank

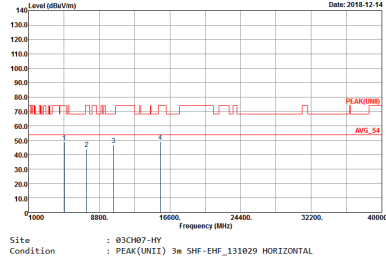
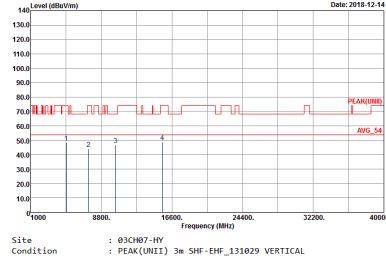


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank



Co-location Mode

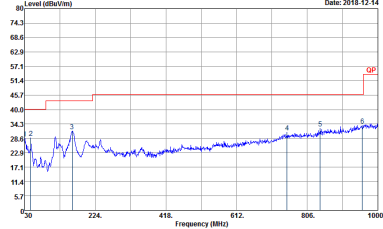
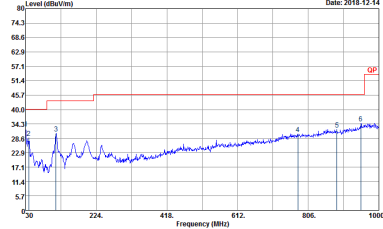
2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

ANT	802.11g CH 13 2472MHz Ant. 1 + 802.11n HT40 CH 38 5190MHz Ant. 2	
Simultaneously	Horizontal	Vertical
<p>Peak</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 VERTICAL</p>



Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF)

ANT	802.11g CH 13 2472MHz Ant. 1 + 802.11n HT40 CH 38 53190MHz Ant. 2	
Simultaneously	Horizontal	Vertical
<p style="text-align: center;"><b>QP / Peak</b></p>	 <p style="font-size: small;">Date: 2018-12-14 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) HORIZONTAL</p>	 <p style="font-size: small;">Date: 2018-12-14 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) VERTICAL</p>



WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



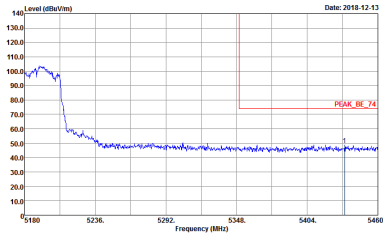
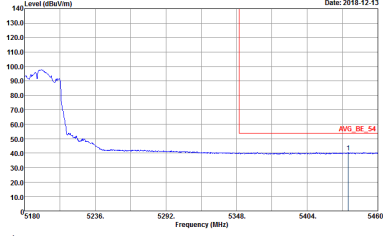


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1+2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SMT:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SMT:Auto</p>	Left blank



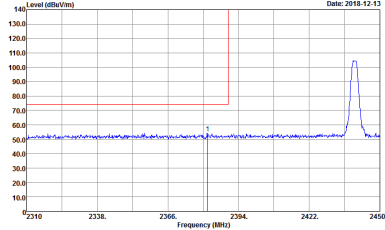
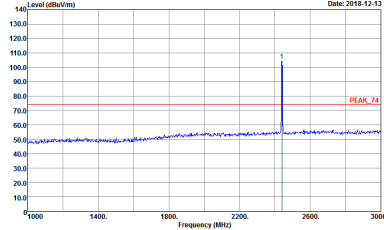
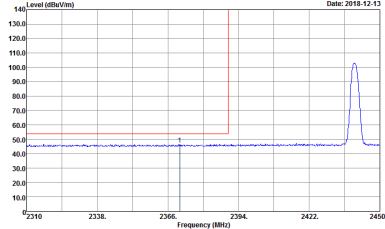
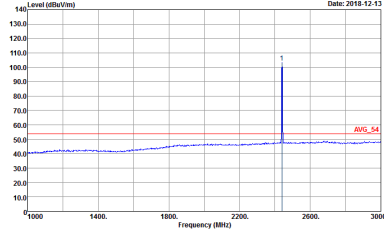
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank



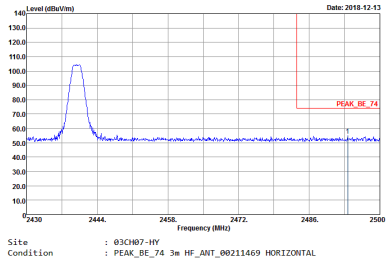
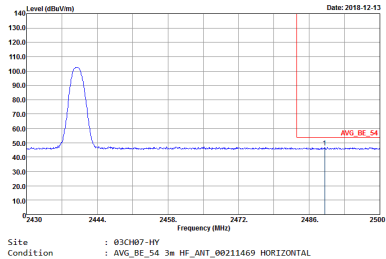
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1+2	Vertical	Fundamental
<p><b>Peak</b></p>	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SMT:Auto</p>	<p>Left blank</p>
<p><b>Avg.</b></p>	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL RBW:1000.000kHz VBW:3.000kHz SMT:Auto</p>	<p>Left blank</p>



BLE 2Mbps (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz- L	
	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>

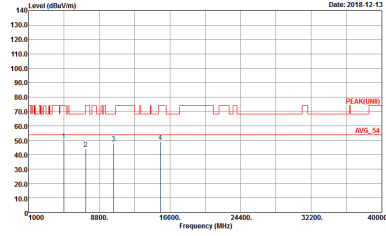
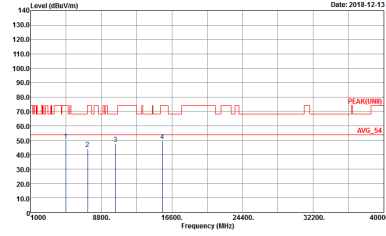


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz- R	
	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank



Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

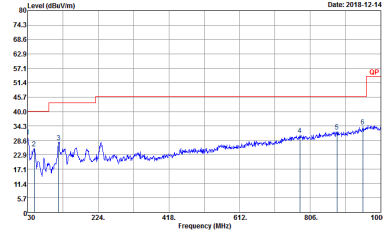
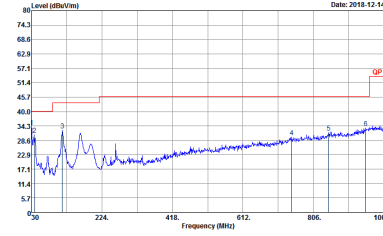
ANT	802.11n HT40 CH 38 5190MHz MIMO Ant. 1+2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p>Peak Avg.</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 VERTICAL</p>





Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF)

ANT	802.11n HT40 CH 38 5190MHz MIMO Ant. 1+2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p>QP / Peak</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) VERTICAL</p>



WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank

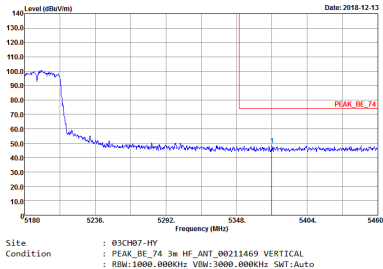
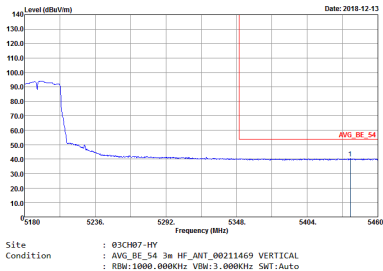


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>	Left blank



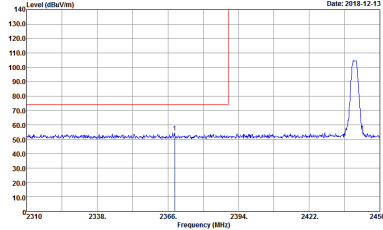
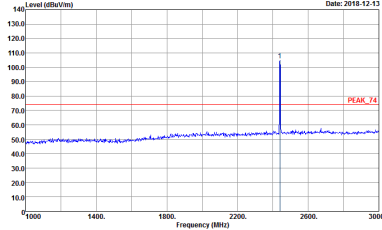
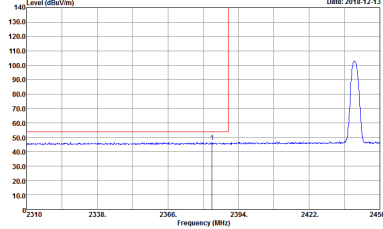
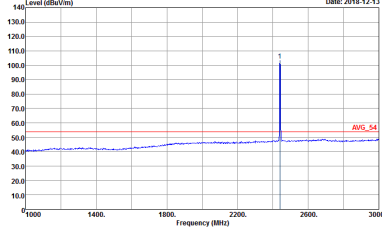
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank



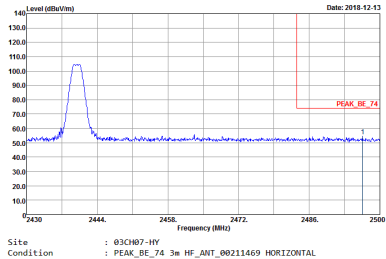
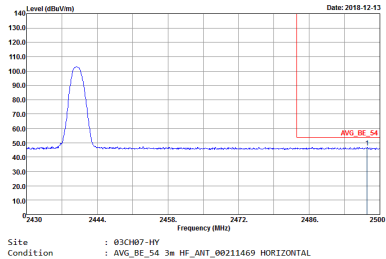
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank



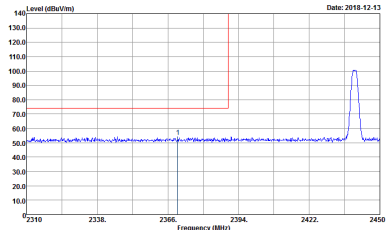
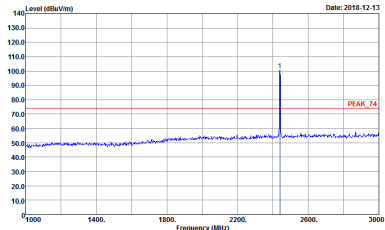
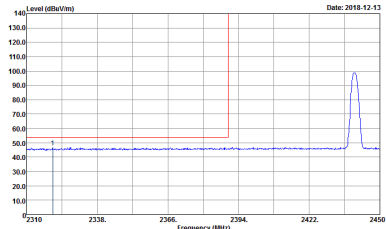
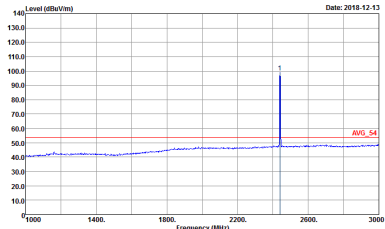
BLE 2Mbps (Band Edge @ 3m)

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Horizontal	Fundamental
Peak	 <p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	 <p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	 <p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>





BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	Left blank
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank



Co-location Mode

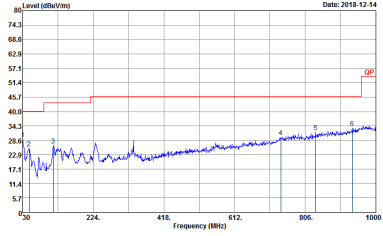
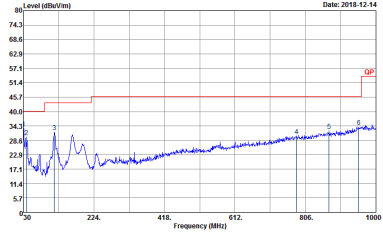
2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

ANT	802.11n HT40 CH 38 5190MHz Ant. 1 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
Peak	<p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 HORIZONTAL</p>	<p>Date: 2018-12-13</p> <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 VERTICAL</p>



Emission below 1GHz

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF)

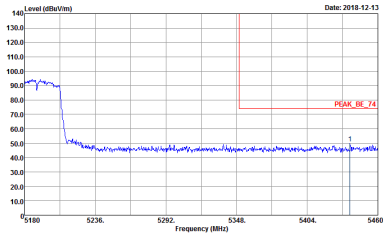
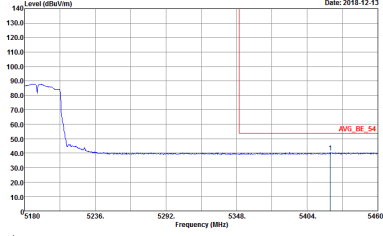
ANT	802.11n HT40 CH 38 5190MHz Ant. 1 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p>QP / Peak</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(6) VERTICAL</p>



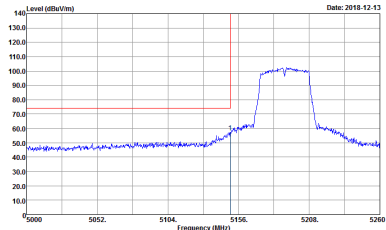
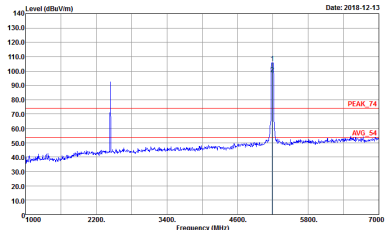
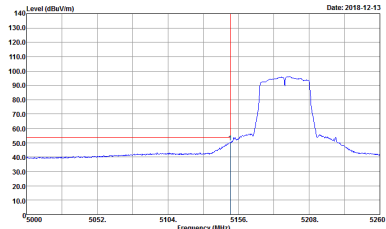
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank

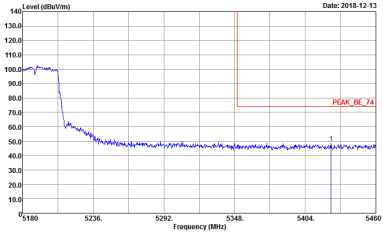
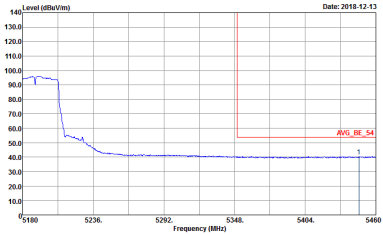


WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
2	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	Left blank



WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SMT:Auto</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL RBW:1000.000kHz VBW:3.000kHz SMT:Auto</p>	Left blank

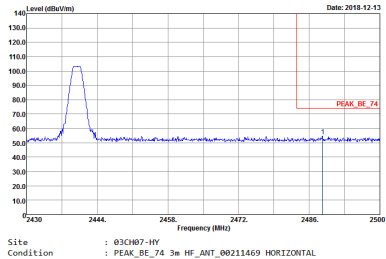
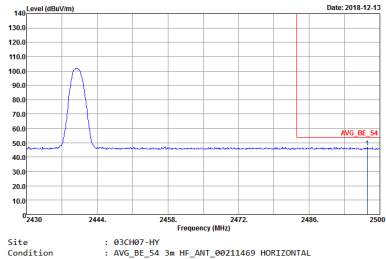


BLE 2Mbps (Band Edge @ 3m)

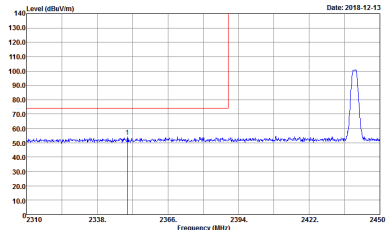
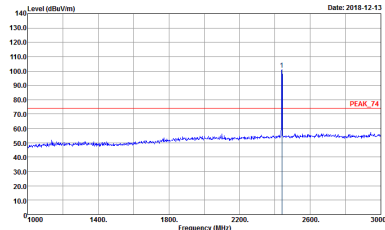
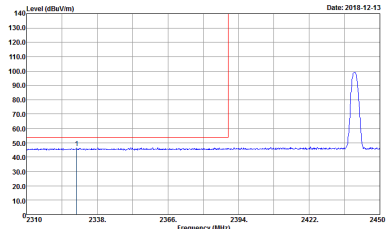
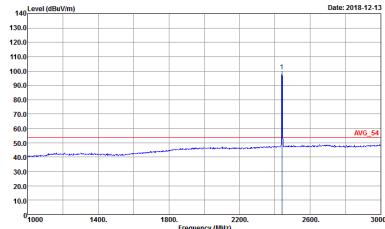
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	<p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 HORIZONTAL</p>
Avg.	<p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	<p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 HORIZONTAL</p>





BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Horizontal	Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 HORIZONTAL</p>	Left blank



BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - L		
Vertical		Fundamental
Peak	 <p>Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00211469 VERTICAL</p>
Avg.	 <p>Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00211469 VERTICAL</p>	 <p>Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00211469 VERTICAL</p>

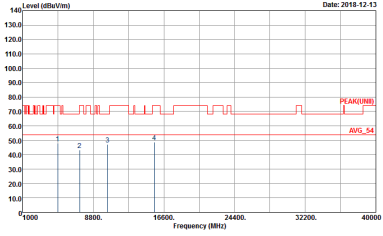
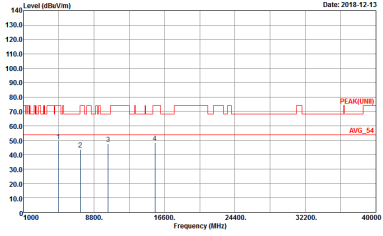


BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
BLE CH19 2440MHz - R		
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank



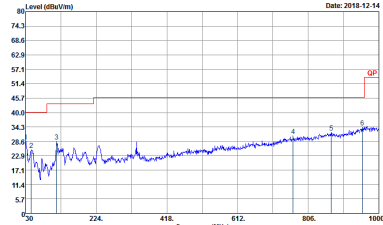
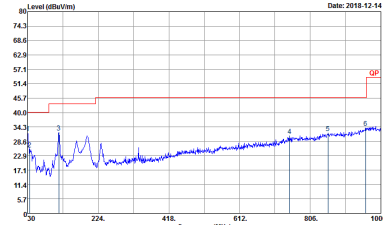
Co-location Mode

2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (Harmonic @ 3m)

ANT	802.11n HT40 CH 38 5190MHz Ant. 2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p>Peak</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 HORIZONTAL</p>	 <p>Site : 03CH07-HY Condition : PEAK(UNIT) 3m SHF-EHF_131029 VERTICAL</p>



2.4GHz 2400~2483.5MHz and Band 1 5150~5250MHz (LF)

ANT	802.11n HT40 CH 38 5190MHz Ant. 2 + BLE CH 19 2440MHz	
Simultaneously	Horizontal	Vertical
<p style="text-align: center;">QP / Peak</p>	 <p>Site : 03CM07-HY Condition : QP 3m LF-ANT-35419(6) HORIZONTAL</p>	 <p>Site : 03CM07-HY Condition : QP 3m LF-ANT-35419(6) VERTICAL</p>

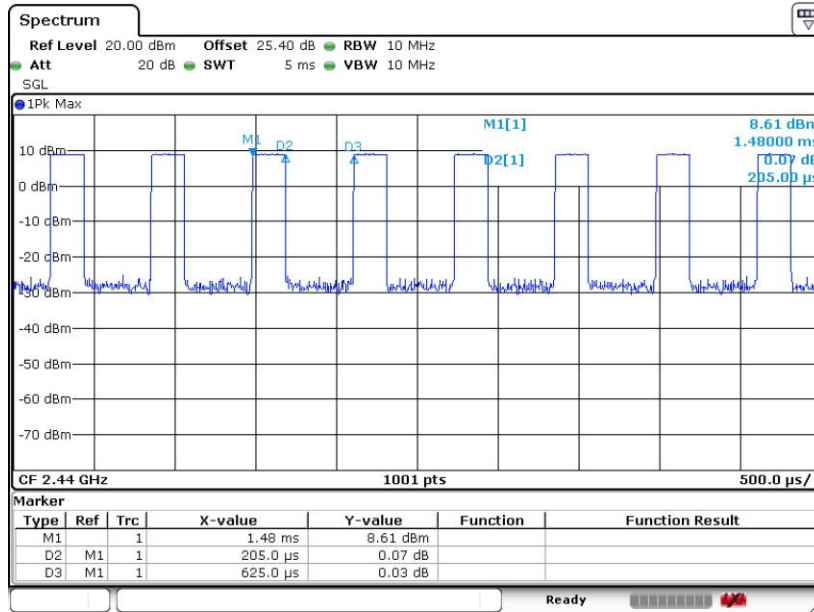


### Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
-	Bluetooth - LE for 2 Mbps	32.8	205	4.88	10kHz	4.84
1	802.11g	98.30	-	-	10Hz	0.07
2	802.11g	97.83	2024	0.49	1kHz	0.10
1	5GHz 802.11n HT40	96.48	932	1.07	3kHz	0.16
2	5GHz 802.11n HT40	95.95	924	1.08	3kHz	0.18
1+2	5GHz 802.11n HT40 for ant.1	95.95	924	1.08	3kHz	0.18
1+2	5GHz 802.11n HT40 for ant.2	95.85	924	1.08	3kHz	0.18



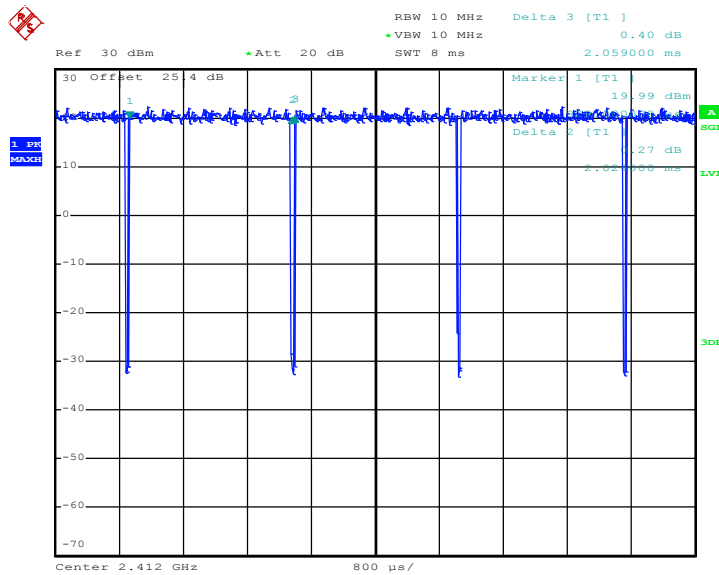
Bluetooth – LE for 2Mbps



Date: 10.OCT.2018 00:38:12

<Ant. 1>

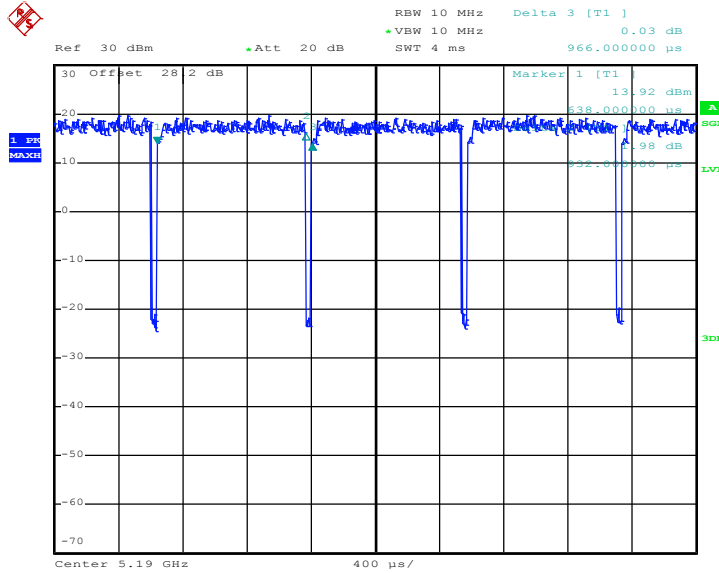
802.11g



Date: 5.OCT.2018 00:55:20



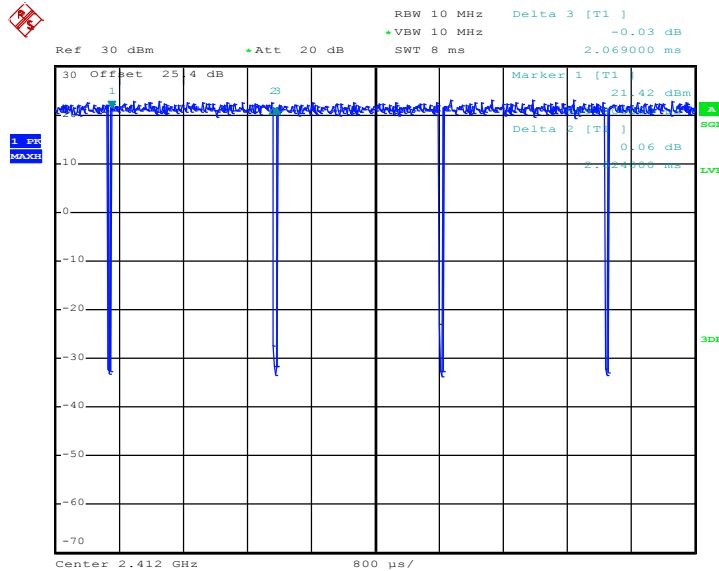
802.11n HT40



Date: 6.OCT.2018 00:31:06

<Ant. 2>

802.11g

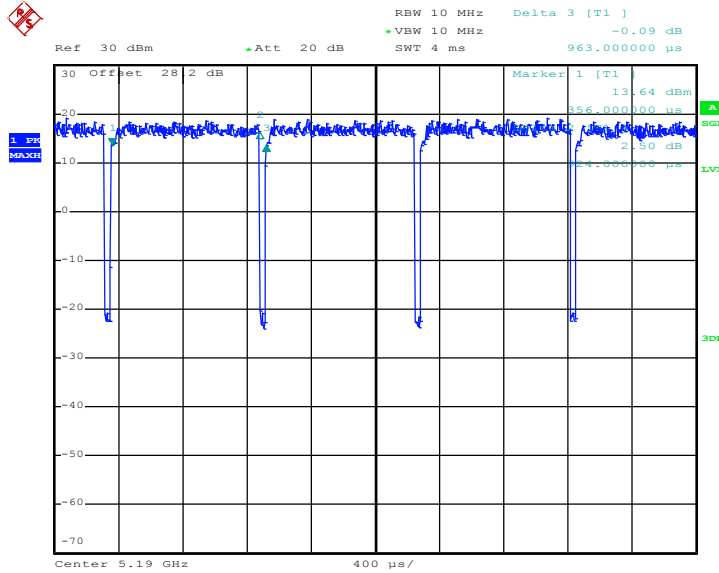


Date: 5.OCT.2018 00:58:29





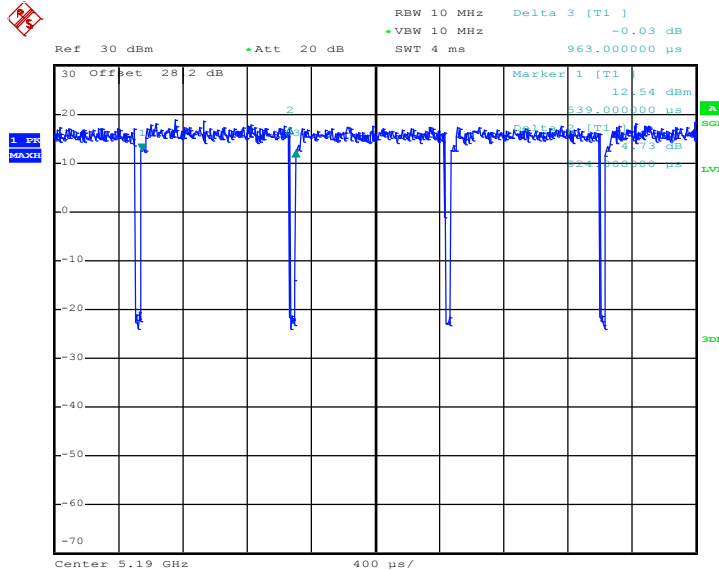
802.11n HT40



Date: 6.OCT.2018 00:45:25

MIMO <Ant. 1>

802.11n HT40

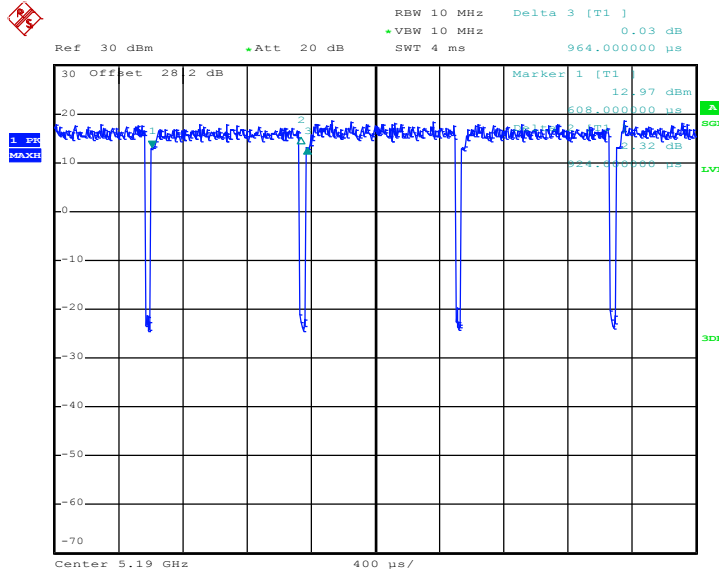


Date: 6.OCT.2018 00:50:47



MIMO <Ant. 2>

802.11n HT40



Date: 6.OCT.2018 00:51:38

————THE END————