FCC RF Test Report

APPLICANT : Getac Technology Corporation.

EQUIPMENT : WLAN module

BRAND NAME : Getac

MODEL NAME : 8265NGW

FCC ID : QYL8265NG

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

This is a partial report. The product was received on Dec. 13, 2017 and testing was completed on Jan. 02, 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR391803-34B	Rev. 01	Initial issue of report	Feb. 06, 2018

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.99 dB at 311.900 MHz
3.2	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

Remark: Except Radiated Band Edges and Spurious Emission is carrying out, FR391803-34B report reuses test data from the FR391803-21B report.

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1 General Description

1.1 Applicant

Getac Technology Corporation.

5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, NFC, GNSS and Digitizer.

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Product Specification subjective to this standard				
	WWAN: PIFA Antenna			
	WLAN: PIFA Antenna			
Antonno Tymo	Bluetooth: PIFA Antenna			
Antenna Type	GPS: PATCH Antenna			
	NFC: Loop Antenna			
	Digitizer: Loop Antenna			

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The product was installed into Tablet (Brand Name: Getac, Model Name: RC11) during test, and all tests were performed with Sample 1.

Sample 1	Tablet with SKU A
Sample 2	Tablet with SKU B

	SKU Table				
	RC11 SKU				
	SKU A	SKU B			
CPU	i3-7100U	i3-7100U			
DDR	8G	8G			
SSD	64GB	256GB			
Panel	AUO HD B116XAN05.0	AUO HD B116XAN05.0			
Digitizer	Getac	Not Support			
Option Bay	BCR	NA(MSR)			
Expansion Bay	RFID	NA			
WLAN/BT	Support	Support			
WWAN	Support	Support			
GPS	Support	Support			
Webcam FHD	Support	Support			
IR Webcam	Support	Support			
RFID	Support	Not Support			

1.3 Modification of EUT

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

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1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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Test Site	SPORTON INTERNATIONAL INC.		
	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,		
Test Site Location	Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.		
rest Site Location	TEL: +886-3-327-3456		
	FAX: +886-3-328-4978		
Took Site No	Sporton Site No.		
Test Site No.	TH02-HY		

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

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

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

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 v04
- ANSI C63.10-2013

Remark:

- 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.

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2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
2400-2483.5 MHz	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

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2.2 Test Mode

Preliminary tests were performed in different data rates and recorded the RF output power in the following table:

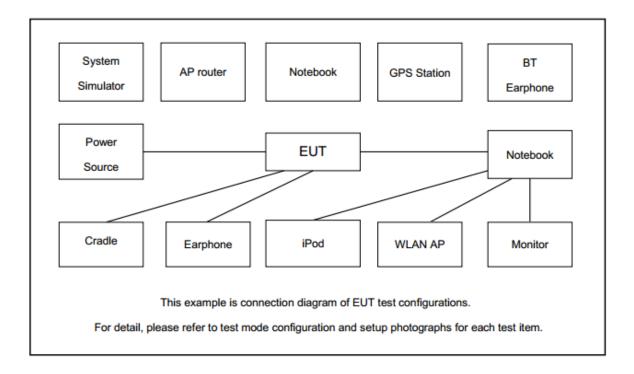
	nel Frequency	Bluetooth RF Output Power
Channal		Data Rate / Modulation
Chamilei		GFSK
		LE
Ch00	2402MHz	4.26 dBm
Ch19	2440MHz	4.50 dBm
Ch39	2480MHz	4.63 dBm

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, X, Y, Z in three orthogonal panels to determine the final configuration (Y plane as worst plane) from all possible combinations.

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2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	Verification	N/A	Unshielded, 1.2 m

2.5 EUT Operation Test Setup

The RF test items, utility "DRTU" was installed in EUT 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.

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3 Test Result

3.1 Radiated Band Edges and Spurious Emission Measurement

3.1.1 Limit of Radiated Band Edges and Spurious Emission

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	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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

3.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

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3.1.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
- 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.

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- 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
- 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \ge 1$ GHz for peak measurement. For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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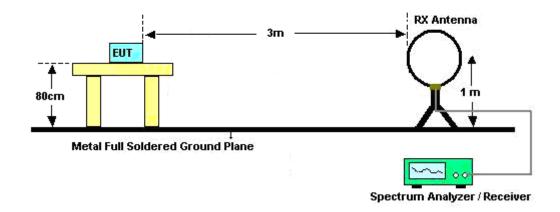
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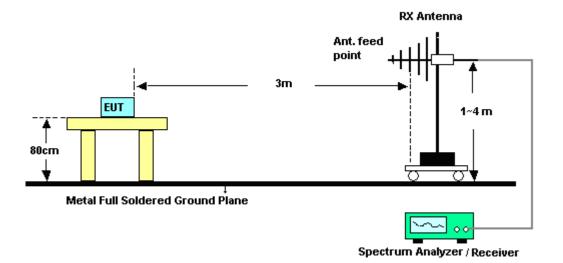
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3.1.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz

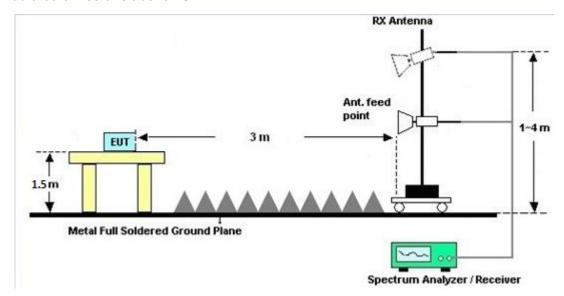


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For radiated emissions above 1GHz



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 Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix A and B.

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3.2 Antenna Requirements

3.2.1 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.

3.2.2 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.

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List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Agilent	E4416A	GB412923 44	N/A	Dec. 26, 2016	Jun. 12, 2017 ~ Jun. 13, 2017	Dec. 25, 2017	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US404415 48	50MHz~18GHz	Dec. 26, 2016	Jun. 12, 2017 ~ Jun. 13, 2017	Dec. 25, 2017	Conducted (TH02-HY)
AC Power Source	AC POWER	AFC-500W	F10407001 1	50Hz~60Hz	Dec. 01, 2016	Jun. 12, 2017 ~ Jun. 13, 2017	Nov. 30, 2018	Conducted (TH02-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Dec. 28, 2017~ Jan. 02, 2018	Nov. 22, 2019	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-0 6	35414&AT- N0602	30MHz~1GHz	Oct. 14, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 13, 2018	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-132 6	1GHz ~ 18GHz	Oct. 16, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 15, 2018	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz- 40GHz	Nov. 27, 2017	Dec. 28, 2017~ Jan. 02, 2018	Nov. 26, 2018	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Dec. 28, 2017~ Jan. 02, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0054001	1GHz~18GHz	Dec. 07, 2017	Dec. 28, 2017~ Jan. 02, 2018	Dec. 06, 2018	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY532700 80	1GHz~26.5GHz	Nov. 10, 2016	Dec. 28, 2017~ Jan. 02, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	Dec. 28, 2017~ Jan. 02, 2018	Jul. 17, 2018	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz ~ 44GHz	Oct. 19, 2017	Dec. 28, 2017~ Jan. 02, 2018	Oct. 18, 2018	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1~4m	N/A	Dec. 28, 2017~ Jan. 02, 2018	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Dec. 28, 2017~ Jan. 02, 2018	N/A	Radiation (03CH11-HY)

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Uncertainty of Evaluation 5

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

Measuring Uncertainty for a Level of Confidence	5.20
of 95% (U = 2Uc(y))	3.20

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

Measuring Uncertainty for a Level of Confidence	5.50
of 95% (U = 2Uc(y))	3.30

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

Measuring Uncertainty for a Level of Confidence	5.20
of 95% (U = 2Uc(y))	3.20

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Appendix A. Radiated Spurious Emission

Toot Engineer	Hao Hsu, Jacky Hung, and Ken Wu	Temperature :	25~27°C
Test Engineer :	riao risu, Jacky riurig, and Kerr Wu	Relative Humidity :	53~58%

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		2360.4	53.4	-20.6	74	43.74	27.04	6.29	33.6	149	120	Р	Н
		2360.1	46.83	-7.17	54	37.17	27.04	6.29	33.6	149	120	Α	Н
	*	2440	103.99	-	-	94	27.27	6.38	33.59	149	120	Р	Н
	*	2440	103.41	-	-	93.42	27.27	6.38	33.59	149	120	Α	Н
D. F.		2488.64	52.37	-21.63	74	42.23	27.4	6.39	33.58	149	120	Р	Н
BLE		2498.24	42.88	-11.12	54	32.73	27.4	6.39	33.57	149	120	Α	Н
CH 19 2440MHz		2375.1	51.93	-22.07	74	42.22	27.09	6.29	33.6	100	96	Р	V
2440101112		2359.95	45.76	-8.24	54	36.1	27.04	6.29	33.6	100	96	Α	٧
	*	2440	103.18	-	-	93.19	27.27	6.38	33.59	100	96	Р	٧
	*	2440	102.7	-	-	92.71	27.27	6.38	33.59	100	96	Α	V
		2483.52	51.52	-22.48	74	41.43	27.36	6.38	33.58	100	96	Р	V
		2487.76	42.84	-11.16	54	32.7	27.4	6.39	33.58	100	96	Α	V

Remark

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^{1.} No other spurious found.

^{2.} All results are PASS against Peak and Average limit line.

2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	
		4880	38.86	-35.14	74	56.01	31.38	9.56	58.52	100	0	Р	Н
		7320	47.57	-26.43	74	58.42	36.32	11.31	58.94	100	0	Р	Н
													П
BLE													П
CH 19 2440MHz		4880	39.8	-34.2	74	56.95	31.38	9.56	58.52	100	0	Р	V
24401011112		7320	46	-28	74	56.85	36.32	11.31	58.94	100	0	Р	V
													٧
													٧
D	1. No	o other spurious	s found.										
Remark	2. Al	I results are PA	SS against F	Peak and	Average lim	it line.							

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Emission below 1GHz 2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		146.37	30.48	-13.02	43.5	44.45	16.89	1.51	32.44	-	-	Р	Н
		216.03	30.37	-15.63	46	45.93	15.05	1.72	32.39	-	-	Р	Н
		264.09	27.43	-18.57	46	38.07	19.57	2.09	32.38	-	-	Р	Н
		311.9	40.01	-5.99	46	50.81	19.17	2.31	32.37	100	0	Р	Н
		360.2	35.21	-10.79	46	44.52	20.52	2.48	32.35	-	-	Р	Н
		935.6	33.2	-12.8	46	30.63	29.91	3.82	31.33	-	-	Р	Н
													Н
													Н
													Н
													Н
													Н
2.4GHz													Н
BLE LF		40.8	31.25	-8.75	40	44.23	18.68	0.82	32.49	100	0	Р	V
LF		98.31	23.91	-19.59	43.5	39.43	15.55	1.39	32.48	-	-	Р	V
		126.93	25.45	-18.05	43.5	39.08	17.27	1.51	32.46	-	-	Р	V
		503.7	29.71	-16.29	46	35.49	23.71	2.84	32.38	-	-	Р	V
		738.9	31.91	-14.09	46	33.06	27.68	3.4	32.36	-	-	Р	V
		957.3	33.82	-12.18	46	29.92	30.97	3.9	31.14	-	-	Р	V
													V
													V
													V
													V
													V
													V

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Note symbol

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

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

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

1. Level($dB\mu V/m$) =

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

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

For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- $= 55.45 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBµV/m)
- = Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- $= 43.54 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level($dB\mu V/m$) Limit Line($dB\mu V/m$)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

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

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Appendix B. Radiated Spurious Emission Plots

Test Engineer :		Temperature :	25~27°C
	Hao Hsu, Jacky Hung, and Ken Wu	Relative Humidity :	53~58%

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Note symbol

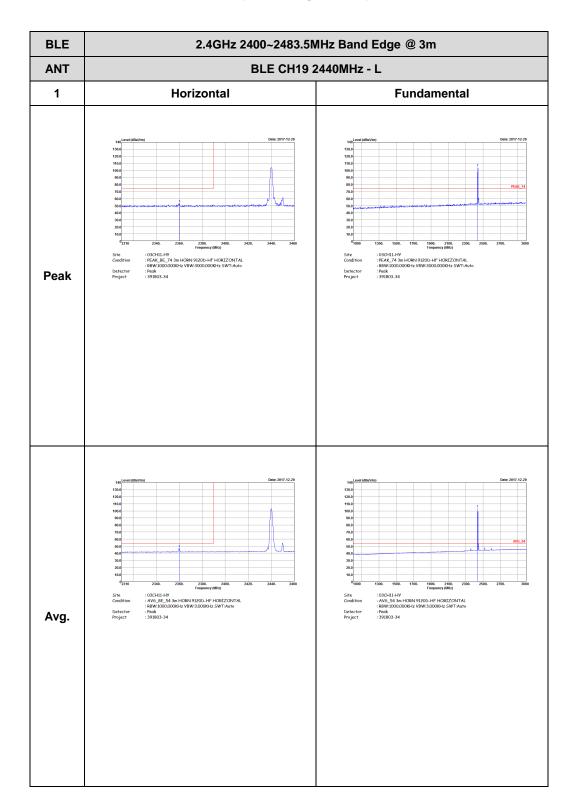
-L	Low channel location
-R	High channel location

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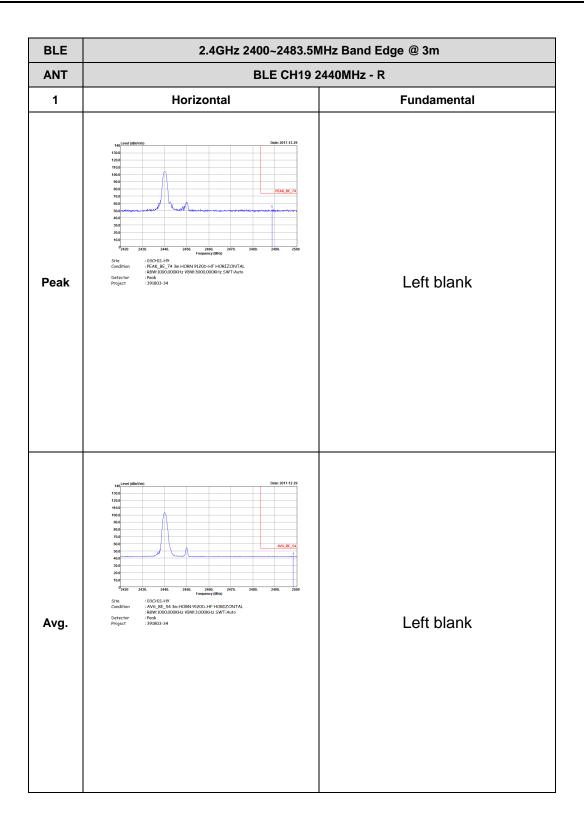
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2.4GHz 2400~2483.5MHz

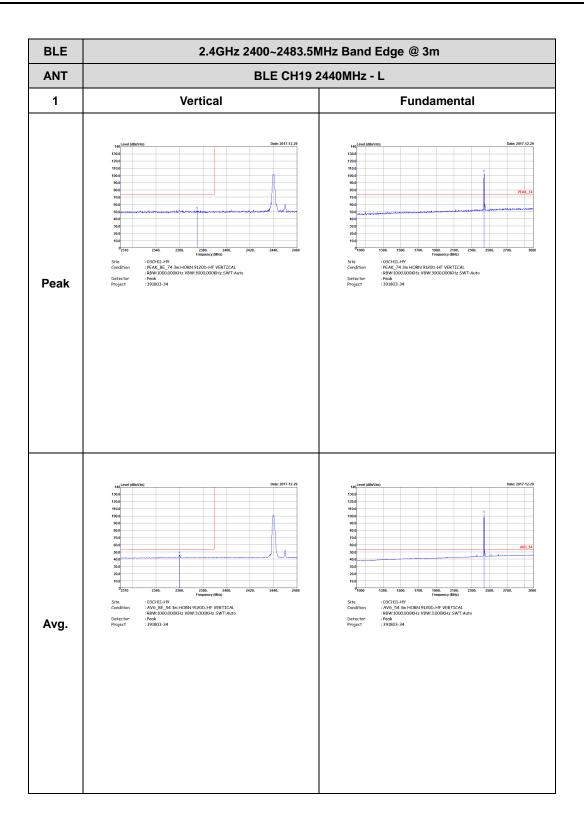
BLE (Band Edge @ 3m)



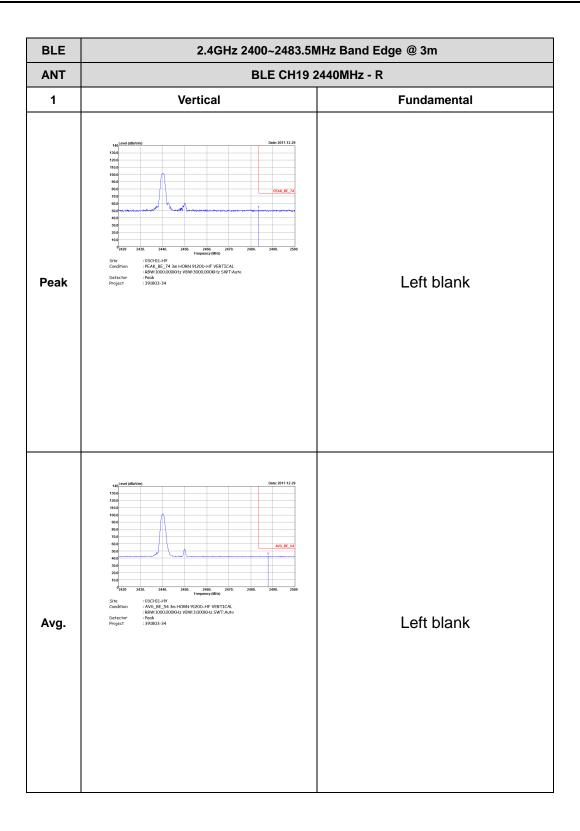
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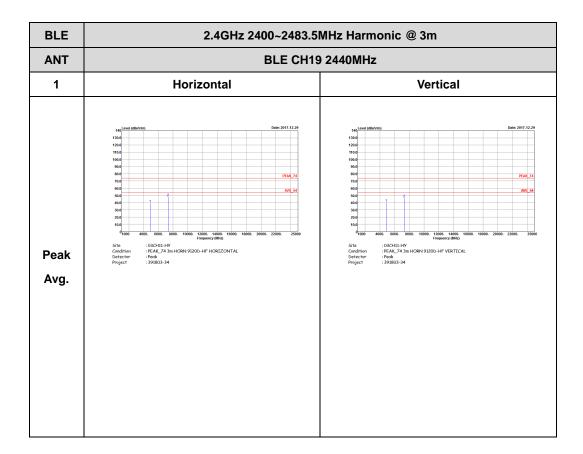
TEL: 886-3-327-3456 FAX: 886-3-328-4978



TEL: 886-3-327-3456 FAX: 886-3-328-4978

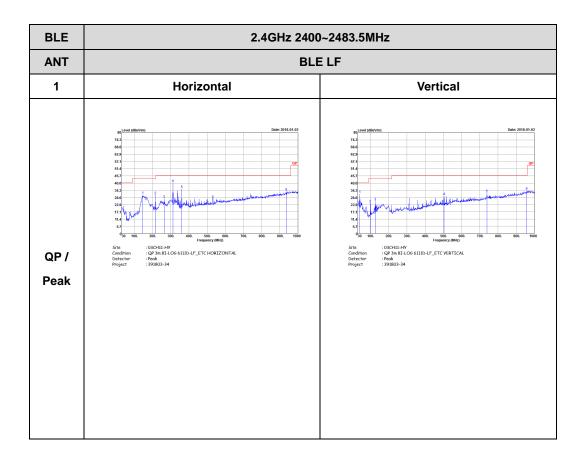
2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)



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Emission below 1GHz 2.4GHz BLE (LF)



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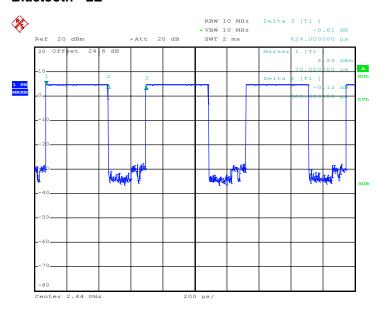


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Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth - LE	62.18	388.00	2.58	3kHz

Bluetooth - LE



Date: 13.JUN.2017 17:08:25