FCC RADIO TEST REPORT

FCC ID	:	**B32V240MPLUS**
Equipment	:	**Point of sale Terminal**
Brand Name	:	**Verifone**
Model Name	:	**V240m Plus 3GBWC**
Applicant	:	**Verifone, Inc.** **1400 West Stanford Ranch Road, Suite 200, Rocklin CA 95765 USA**
Manufacturer	:	**Inventec Applicanes (Pudong) Corp.** **789 Pu Xing Road Shanghai 201114 China P.R.C.**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on May 09, 2018 and testing was started from May 22, 2018 and completed on May 23, 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 variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Jones Tsai

Approved by: Jones Tsai

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR850913C	01	Initial issue of report	Jun. 28, 2018
FR850913C	02	Updating Appendix A	Jul. 20, 2018

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	Not Required	-
-	2.1049	99% Occupied Bandwidth	Reporting only	-
3.1	15.247(b)	Power Output Measurement	Pass	-
-	15.247(e)	Power Spectral Density	Not Required	-
-	15.247(d)	Conducted Band Edges	Not Required	-
		Conducted Spurious Emission	Not Required	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 4.65 dB at 57.000 MHz
-	15.207	AC Conducted Emission	Not Required	-
3.3	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Remark:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by adding camera module. All the test cases were performed on other report. Based on the original report (Report Number.: 11631998-E3V1), the Peak Output Power and Radiated Band Edges and Radiated Spurious Emission test cases were verified.

Reviewed by: Joseph Lin

Report Producer: Nancy Yang

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, and RFID

Product Specification subjective to this standard	
Antenna Type	WWAN: PIFA Antenna WLAN: FPC Antenna Bluetooth: FPC Antenna RFID: Loop Antenna

Specification of Accessory		
AC Adapter 1	**Brand Name**	Verifone
	Manufacturer	PHIHONG
	Model Name	AM11A-050A
	Power Rating	Input:100-240Vac, 0.5A Output: 5V/2.2A, 11W
	Power Cord	1.7meter, non-shielded cable, without ferrite core
AC Adapter 2	**Brand Name**	Verifone
	Manufacturer	Salcomp
	Model Name	VF0402
	Power Rating	Input:100-240Vac, 0.5A Output: 5V/2.2A, 11W
	Power Cord	1.7meter, non-shielded cable, without ferrite core
AC Adapter 3	**Brand Name**	Verifone
	Manufacturer	Salcomp
	Model Name	SC1402
	Power Rating	Input:100-240Vac, 0.15A Output: 5V/1A, 5W
	Power Cord	1.7meter, non-shielded cable, without ferrite core
AC Adapter 4	**Brand Name**	Verifone
	Manufacturer	Leader
	Model Name	MU06-E050100-A1
	Power Rating	Input:100-240Vac, 0.18A Output: 5V/1A, 5W
	Power Cord	1.7meter, non-shielded cable, without ferrite core
Battery	**Brand Name**	Verifone
	Model Name	BPK474-001

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.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH05-HY	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 C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- 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

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) were recorded in this report.

2.1 Carrier Frequency and Channel

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

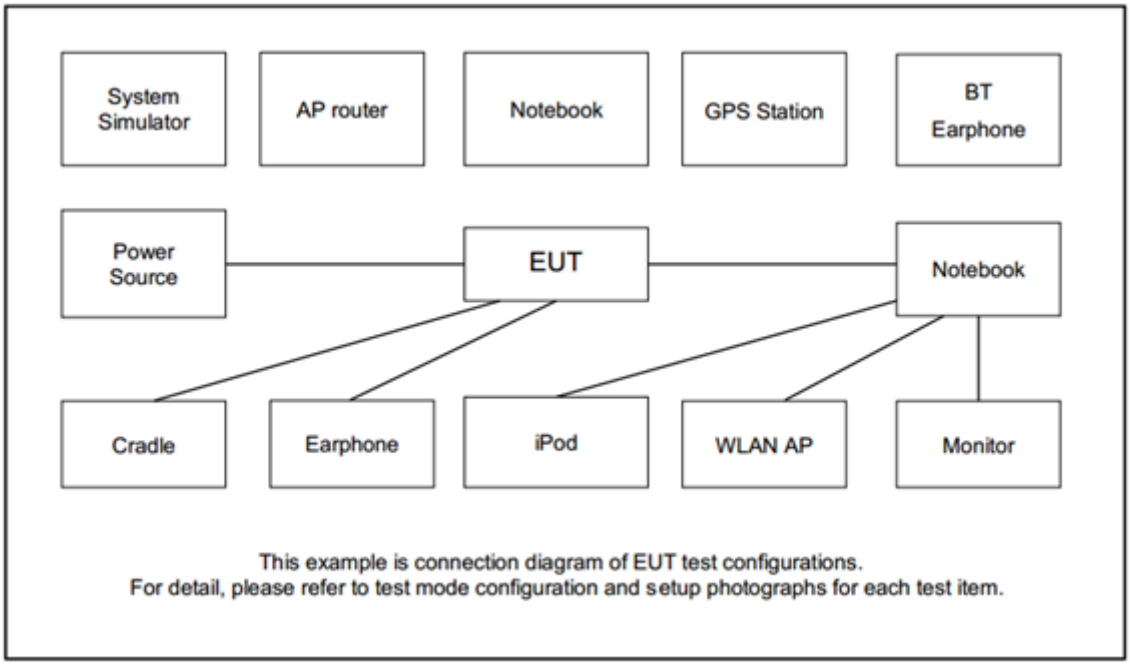
2.2 Test Mode

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

Modulation	Data Rate
802.11b	**1 Mbps**

Remark: For Radiated Test Cases, the tests were performed with Adapter 1.

2.3 Connection Diagram of Test System



2.4 EUT Operation Test Setup

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

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

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

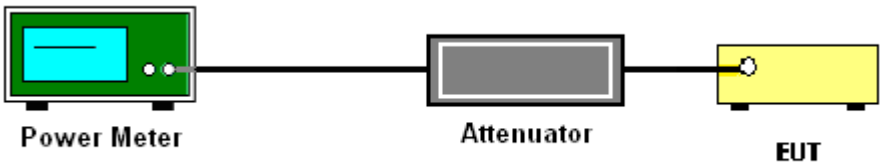
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. For Peak Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.1.3 PKPM1 Peak power meter method.
2. For Average Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.2.3.2 Method AVGPM-G.
3. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.1.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

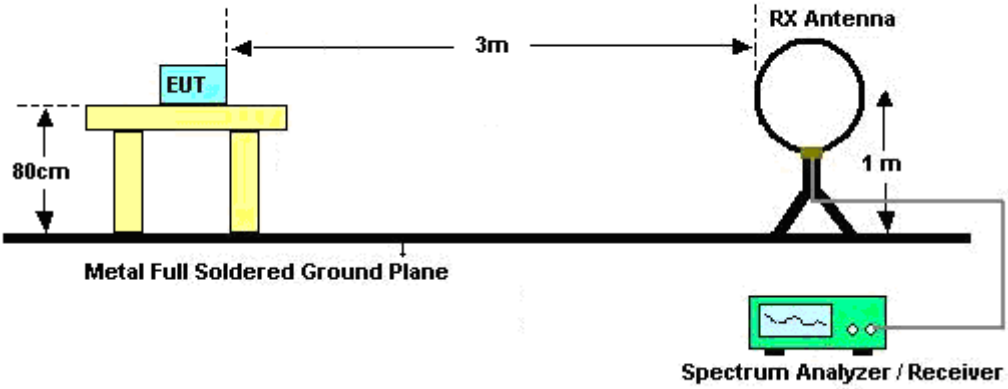
See list of measuring equipment of this test report.

3.2.3 Test Procedures

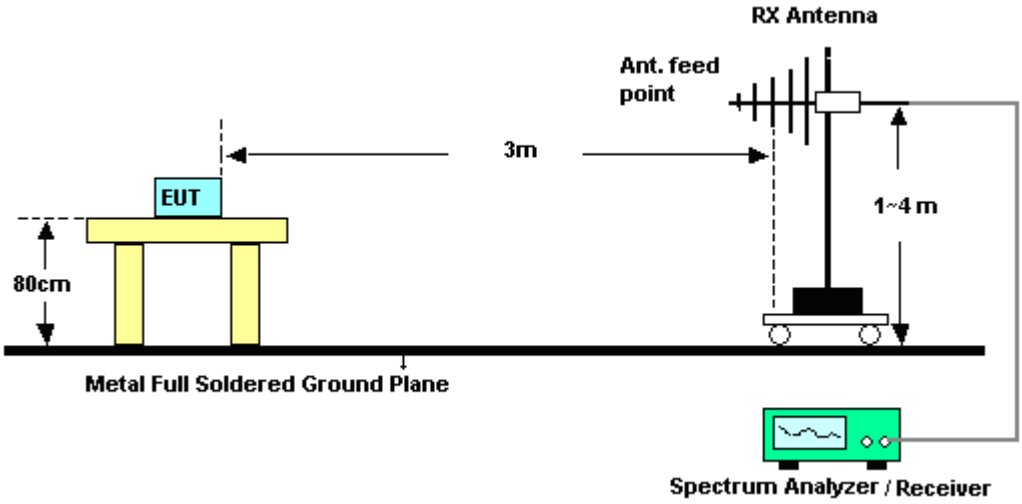
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 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.

3.2.4 Test Setup

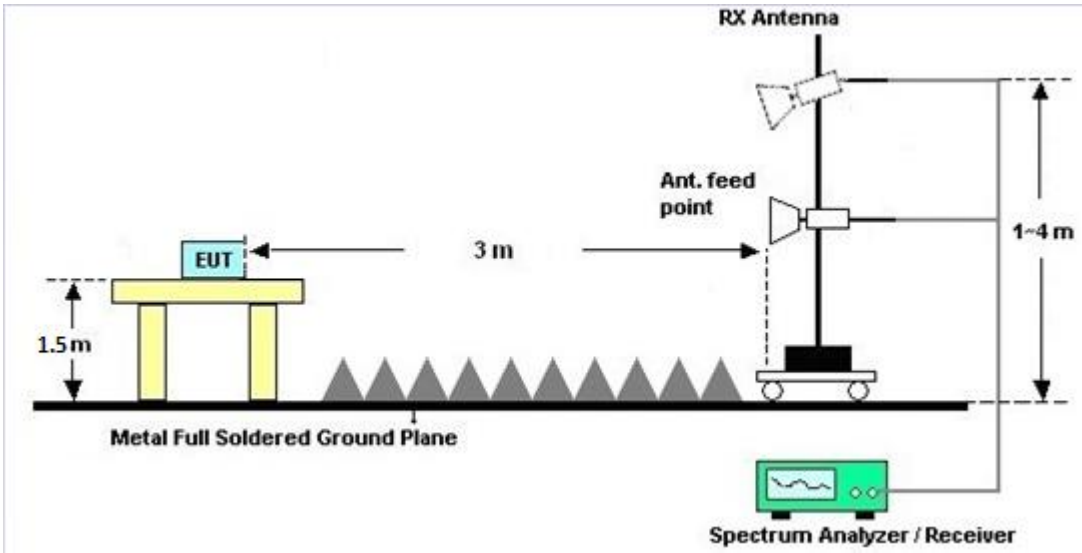
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

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

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 Standard Applicable

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

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1240001	N/A	Sep. 07, 2017	May 22, 2018	Sep. 06, 2018	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1207349	300MHz~40GHz	Sep. 07, 2017	May 22, 2018	Sep. 06, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 20, 2017	May 22, 2018	Jun. 19, 2018	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Mar. 01, 2018	May 22, 2018	Feb. 28, 2019	Conducted (TH05-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800N1D01N-06	35419&03	30MHz to 1GHz	Dec. 18, 2017	May 22, 2018~ May 23, 2018	Dec. 17, 2018	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 23, 2017	May 22, 2018~ May 23, 2018	Aug. 22, 2018	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Nov. 10, 2017	May 22, 2018~ May 23, 2018	Nov. 09, 2018	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz ~ 18GHz	Apr. 25, 2018	May 22, 2018~ May 23, 2018	Apr. 24, 2019	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 30, 2017	May 22, 2018~ May 23, 2018	Oct. 29, 2018	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Apr. 17, 2018	May 22, 2018~ May 23, 2018	Apr. 16, 2019	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	May 22, 2018~ May 23, 2018	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	May 22, 2018~ May 23, 2018	N/A	Radiation (03CH07-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	May 22, 2018~ May 23, 2018	Jul. 17, 2018	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz to 26.5GHz	Jan. 16, 2018	May 22, 2018~ May 23, 2018	Jan. 15, 2019	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	May 22, 2018~ May 23, 2018	N/A	Radiation (03CH07-HY)
Amplifier	SONOMA	310N	187231	9kHz~1GHz	Jan. 08, 2018	May 22, 2018~ May 23, 2018	Jan. 07, 2019	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 27, 2017	May 22, 2018~ May 23, 2018	Nov. 26, 2018	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))	5.7

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.5

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

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

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Allen Lin	Temperature:	21~25	°C
Test Date:	2018/5/22	Relative Humidity:	51~54	%

TEST RESULTS DATA
Peak Output Power

2.4GHz Band											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)	
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2
11b	1Mbps	1	1	2412	17.00	-	-	1.90	-	18.90	-
11b	1Mbps	1	6	2437	16.38	-		1.90	-	18.28	-
11b	1Mbps	1	11	2462	17.17	-		1.90	-	19.07	-
11g	6Mbps	1	1	2412	14.67	-		1.90	-	16.57	-
11g	6Mbps	1	6	2437	14.33	-		1.90	-	16.23	-
11g	6Mbps	1	11	2462	14.52	-		1.90	-	16.42	-
HT20	MCS0	1	1	2412	22.04	-		1.90	-	23.94	-
HT20	MCS0	1	6	2437	19.65	-		1.90	-	21.55	-
HT20	MCS0	1	11	2462	20.57	-		1.90	-	22.47	-

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power

2.4GHz Band																		
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	0.06	-	14.15	-	-	30.00	-	1.90	-	16.05	-	36.00	-	Pass
11b	1Mbps	1	6	2437	0.06	-	13.64	-		30.00	-	1.90	-	15.54	-	36.00	-	Pass
11b	1Mbps	1	11	2462	0.06	-	14.40	-		30.00	-	1.90	-	16.30	-	36.00	-	Pass
11g	6Mbps	1	1	2412	0.32	-	11.79	-		30.00	-	1.90	-	13.69	-	36.00	-	Pass
11g	6Mbps	1	6	2437	0.32	-	11.41	-		30.00	-	1.90	-	13.31	-	36.00	-	Pass
11g	6Mbps	1	11	2462	0.32	-	11.78	-		30.00	-	1.90	-	13.68	-	36.00	-	Pass
HT20	MCS0	1	1	2412	0.34	-	10.63	-		30.00	-	1.90	-	12.53	-	36.00	-	Pass
HT20	MCS0	1	6	2437	0.34	-	10.27	-		30.00	-	1.90	-	12.17	-	36.00	-	Pass
HT20	MCS0	1	11	2462	0.34	-	10.75	-		30.00	-	1.90	-	12.65	-	36.00	-	Pass

Note: Measured power (dBm) has offset with cable loss.

Appendix B. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh, and Lance Chiang	Temperature :	22~24°C
		Relative Humidity :	51~53%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 11 2462MHz	*	2462	101.5	-	-	86.89	32.12	17.55	35.06	151	297	P	H
	*	2462	98.48	-	-	83.87	32.12	17.55	35.06	151	297	A	H
		2488	54.8	-19.2	74	40.12	32.2	17.55	35.07	151	297	P	H
		2484.88	44.19	-9.81	54	29.55	32.16	17.55	35.07	151	297	A	H
													H
													H
	*	2462	103.52	-	-	88.91	32.12	17.55	35.06	100	261	P	V
	*	2462	100.55	-	-	85.94	32.12	17.55	35.06	100	261	A	V
		2490.04	55.12	-18.88	74	40.44	32.2	17.55	35.07	100	261	P	V
		2483.88	44.23	-9.77	54	29.59	32.16	17.55	35.07	100	261	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 11 2462MHz		4924	41.68	-32.32	74	55.39	34.21	11.22	59.14	100	0	P	H
		7386	43.41	-30.59	74	52.32	35.66	13.69	58.26	100	0	P	H
													H
													H
		4924	42.8	-31.2	74	56.51	34.21	11.22	59.14	100	0	P	V
		7386	43.77	-30.23	74	52.68	35.66	13.69	58.26	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 WIFI 802.11b (LF)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4GHz 802.11b LF		56.73	26.53	-13.47	40	44.92	12.12	1.28	31.79	100	0	P	H
		80.22	25.88	-14.12	40	42.7	13.28	1.67	31.77	-	-	P	H
		136.92	27.55	-15.95	43.5	39.89	17.41	1.97	31.72	-	-	P	H
		652.8	31.95	-14.05	46	33.53	26.19	4.06	31.83	-	-	P	H
		860	31.43	-14.57	46	29.24	29.03	4.69	31.53	-	-	P	H
		946.8	32.24	-13.76	46	27.97	30.18	5.03	30.94	-	-	P	H
													H
													H
													H
													H
													H
													H
		33.51	33.68	-6.32	40	41.73	22.57	1.21	31.83	-	-	P	V
		57	35.35	-4.65	40	53.74	12.12	1.28	31.79	100	0	P	V
		77.25	32.29	-7.71	40	49.37	13.01	1.68	31.77	-	-	P	V
		447.7	32.68	-13.32	46	37.96	22.95	3.43	31.66	-	-	P	V
		874.7	31.05	-14.95	46	28.75	28.93	4.83	31.46	-	-	P	V
		958	32.92	-13.08	46	27.94	30.8	5.03	30.85	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

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

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

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

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix C. Radiated Spurious Emission Plots

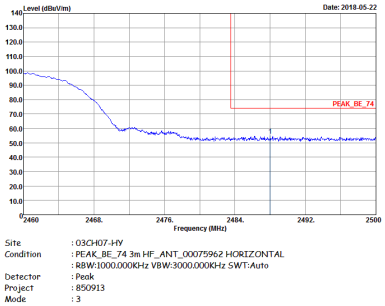
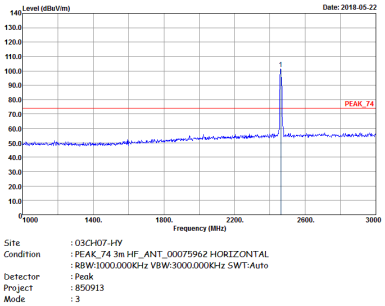
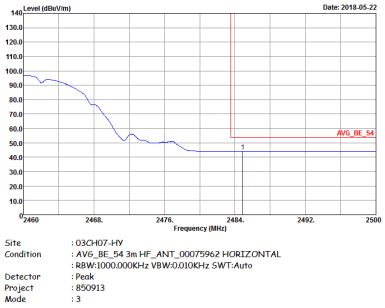
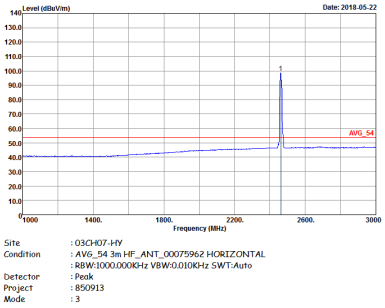
Test Engineer :	Jesse Wang, Stan Hsieh, and Lance Chiang	**Temperature :**	22~24°C
		Relative Humidity :	51~53%

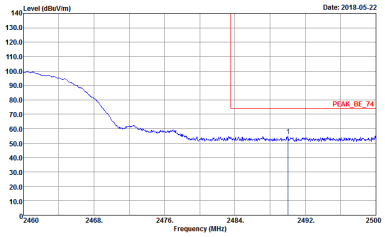
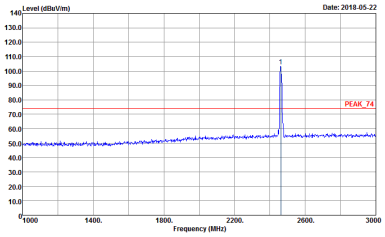
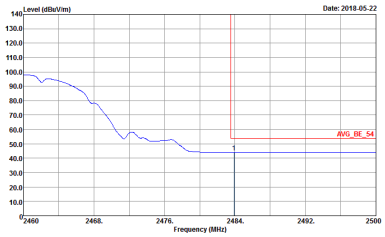
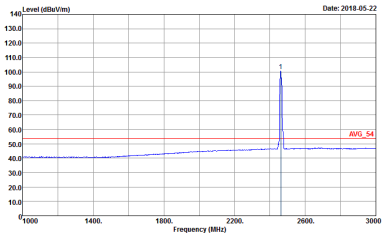
Note symbol

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

2.4GHz 2400~2483.5MHz

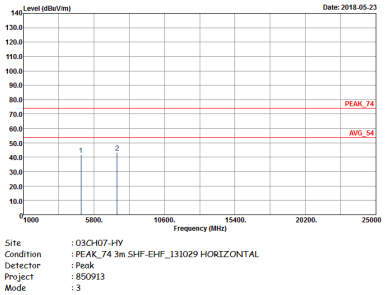
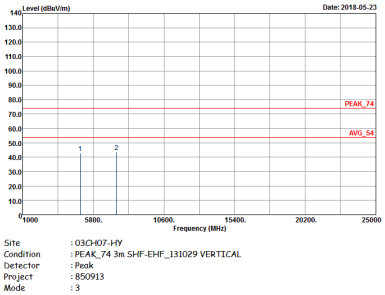
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 850913 Mode : 3	 Site : 03CH07-HY Condition : PEAK_74 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 850913 Mode : 3
Avg.	 Site : 03CH07-HY Condition : AVG_BE_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 850913 Mode : 3	 Site : 03CH07-HY Condition : AVG_54 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 850913 Mode : 3

2.4GHz 2400~2483.5MHz

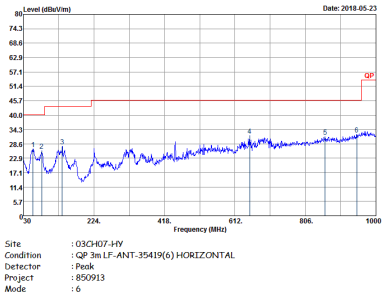
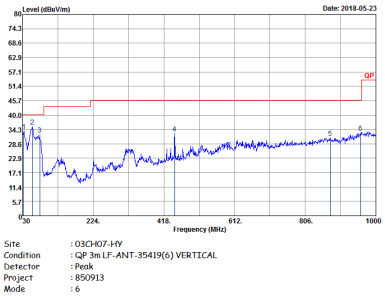
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

2.4GHz 2400~2483.5MHz

Emission below 1GHz

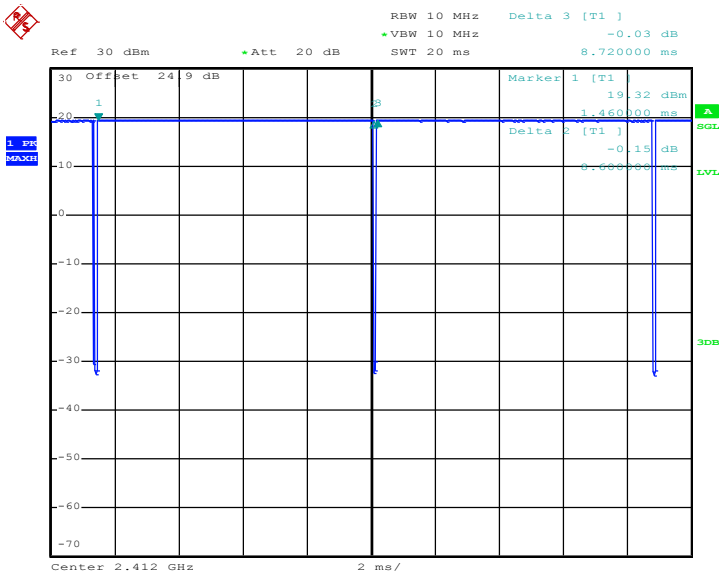
2.4GHz WIFI 802.11b (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b LF	
1	Horizontal	Vertical
QP / Peak		

Appendix D. Duty Cycle Plots

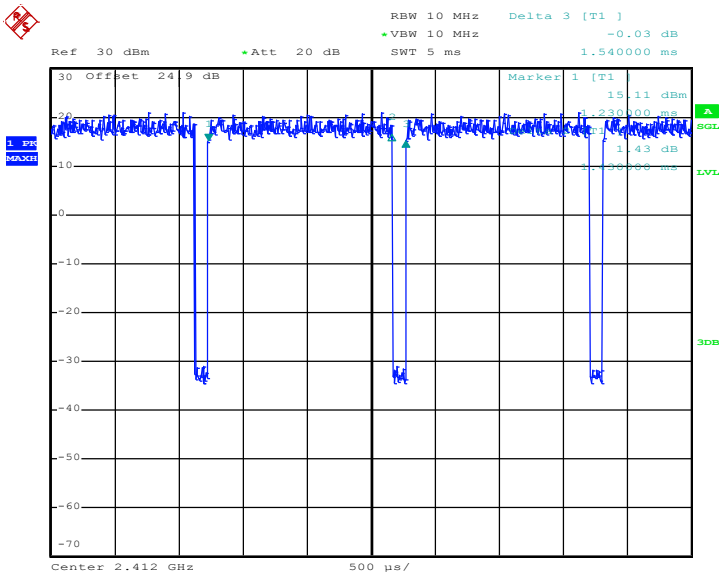
Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
802.11b	98.62	-	-	10Hz	0.06
802.11g	92.86	1430	0.70	1kHz	0.32
2.4GHz 802.11n HT20	92.41	1340	0.75	1kHz	0.34

802.11b



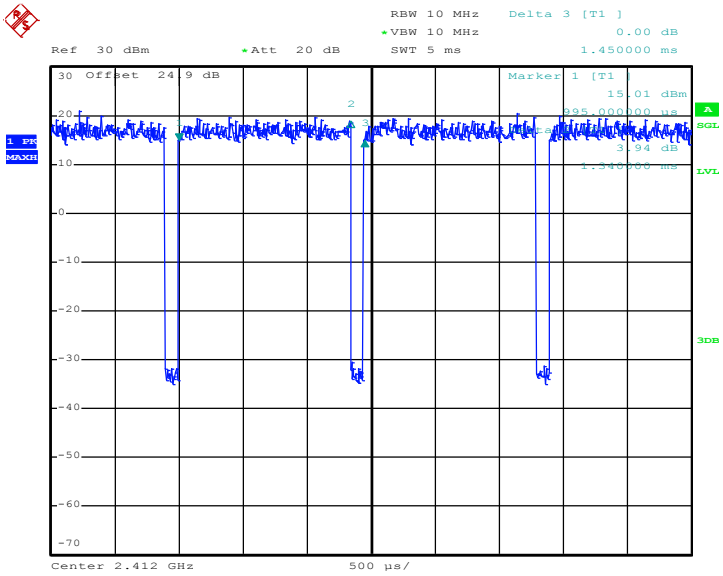
Date: 22.MAY.2018 14:37:44

802.11g



Date: 22.MAY.2018 14:49:25

802.11n HT20



Date: 22.MAY.2018 14:53:12