



Variant FCC RF Test Report

APPLICANT : Verifone, Inc.
EQUIPMENT : Point of Sale Terminal
BRAND NAME : Verifone
MODEL NAME : VX690 3G-BT-WiFi
FCC ID : B32VX6903GBTWIFI
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a variant report which is only valid together with the original test report. The product was received on May 04, 2016 and testing was completed on May 25, 2016. 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



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FCC ID : B32VX6903GBTWIFI

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4N1340-04	Rev. 01	This is a variant report by upgrading standard. AC conducted emission measurement is performed on original report which can be referred to Sporton Report Number FR441115C. Other test items please refer to data of this report.	Jun. 15, 2016



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 4.75 dB at 30.970 MHz
3.5	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Verifone, Inc.

1400 West Stanford Ranch Road Suite 200 Rocklin CA 95765 USA

1.2 Manufacturer

Inventec Appliances (Pudong) Co., Ltd.

No. 789 Pu Xing Road, Shanghai, PRC

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Point of Sale Terminal
Brand Name	Verifone
Model Name	VX690 3G-BT-WiFi
FCC ID	B32VX6903GBTWIFI
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/RFID WLAN 11a/b/g/n (HT20) Bluetooth v4.0 EDR/LE
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power	802.11a : 7.48 dBm / 0.0056 W 802.11n HT20 : 7.91 dBm / 0.0062 W
99% Occupied Bandwidth	802.11a : 17.15 MHz 802.11n HT20 : 18.00 MHz
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type	PIFA Antenna
Antenna Gain	2.70 dBi

Specification of Accessory		
AC Adapter 1	Brand Name	VeriFone
	Model Name	SC0702VF
	Power Rating	Input:100-240~50/60Hz 0.4A ; Output: 5V/2.2A
	Power Cord	1.8 meter, non-shielded cable, without ferrite core
AC Adapter 2	Brand Name	VeriFone
	Model Name	AU111050FU
	Power Rating	Input:100-240~50/60Hz 0.5A ; Output: 5V/2.2A
	Power Cord	1.8 meter, non-shielded cable, without ferrite core
Battery 1	Brand Name	VeriFone
	Model Name	BPK260-001
Battery 2	Brand Name	VeriFone
	Model Name	BPK260-001
Bluetooth Base	Brand Name	Verifone
	Model Name	VX690-BBT
Charging Base	Brand Name	VeriFone
	Model Name	VX690 Base

1.5 Modification of EUT

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

1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No.
	TH05-HY

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

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589
Test Site No.	Sporton Site No.
	03CH01-SZ

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

1.7 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 v01r02
- ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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: radiated 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 (Y plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151	5755	159	5795
	153	5765	161	5805
	155	5775	165	5825

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables.

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Average Power (dBm)	7.48	7.44	7.42	7.47	7.45	7.45	7.46	7.47

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Average Power (dBm)	7.91	7.90	7.90	7.89	7.90	7.90	7.88	7.90

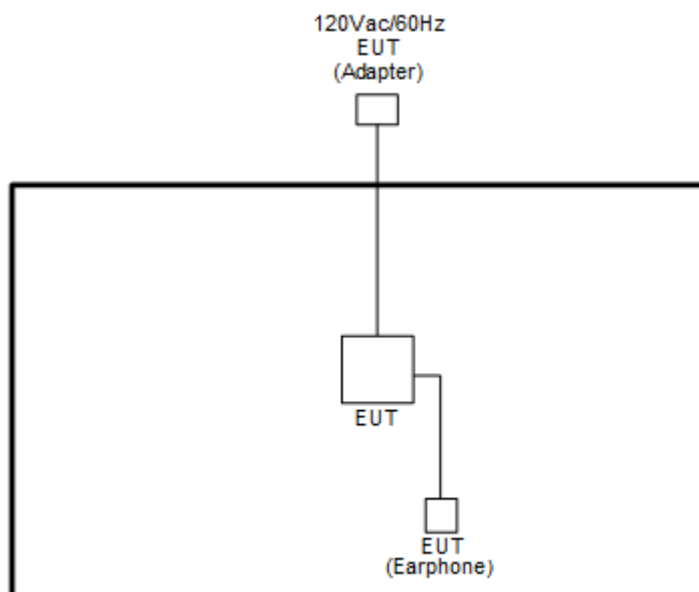
2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0

Ch. #		Band IV : 5725-5850 MHz	
		802.11a	802.11n HT20
L	Low	149	149
M	Middle	157	157
H	High	165	165

2.4 Connection Diagram of Test System



2.5 EUT Operation Test Setup

The programmed RF utility is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.



2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

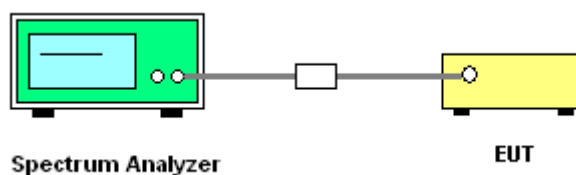
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

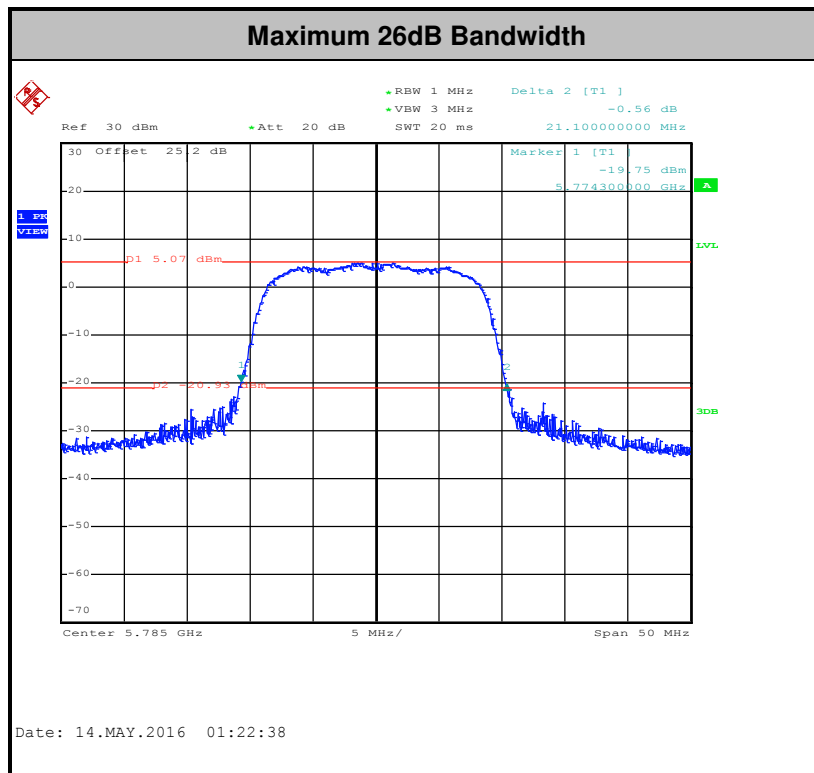
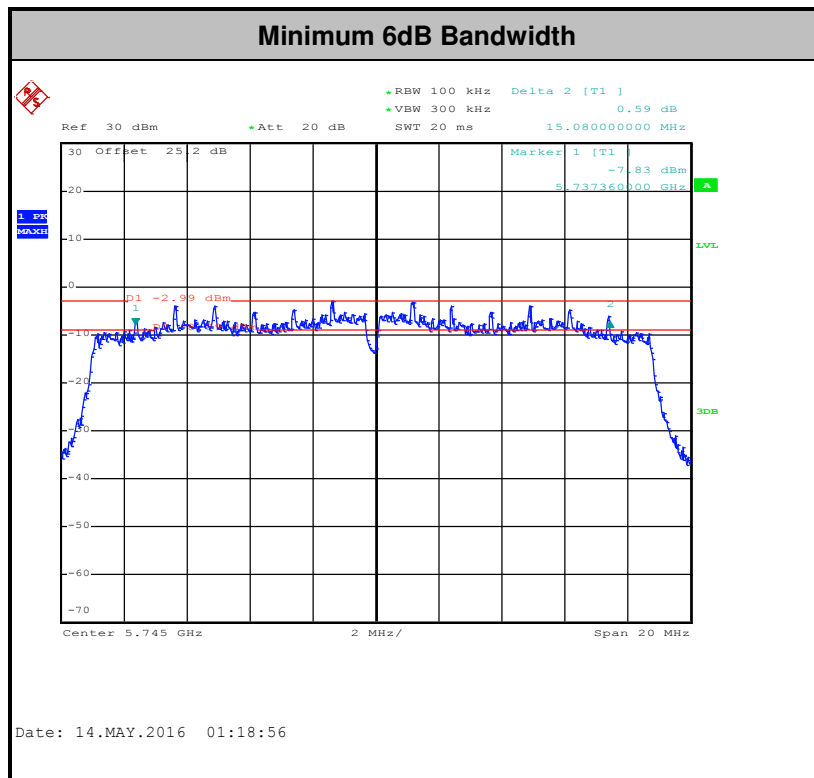
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

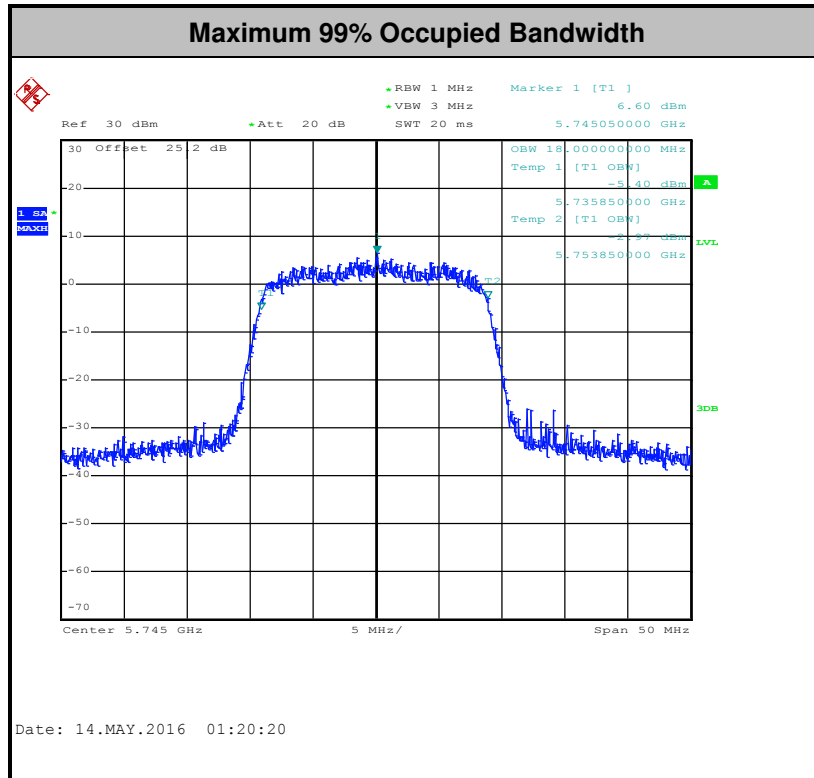
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.





Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

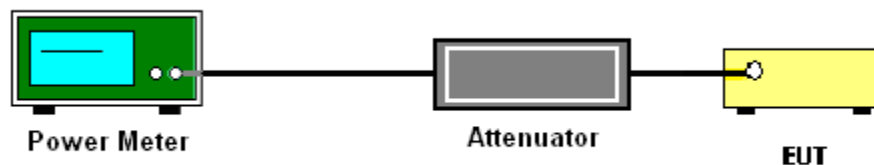
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

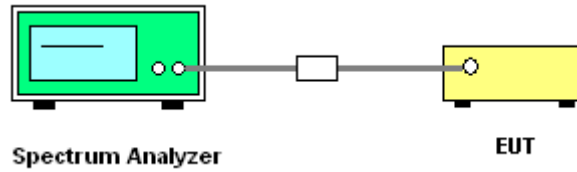
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
Section F) Maximum power spectral density.

Method SA-2

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

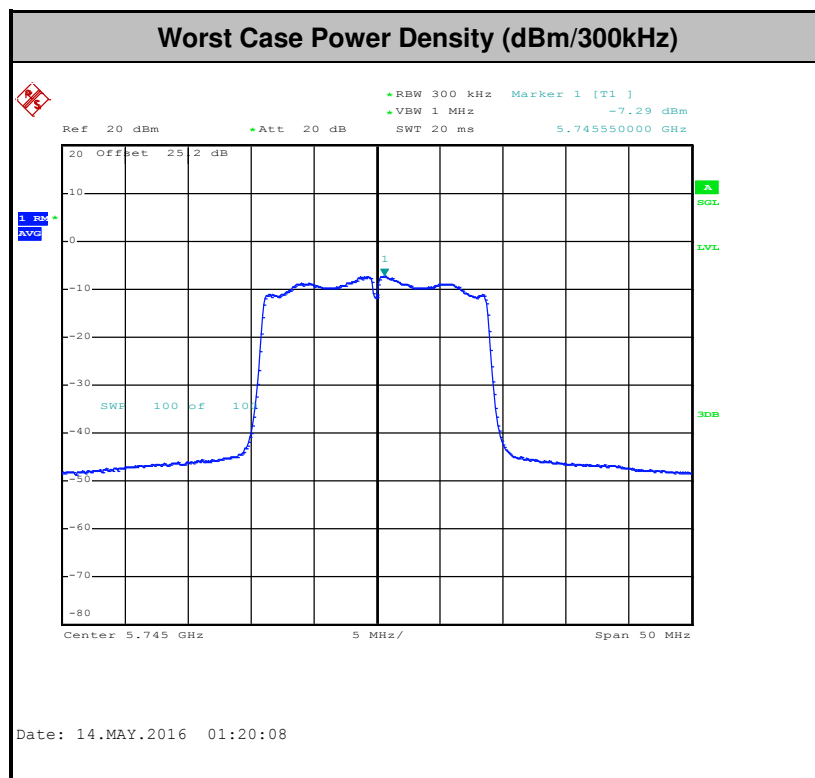
1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW $\geq$ 1 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 shall comply with the general field strength limits set forth in § 15.209 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)
-17	78.3
- 27	68.3

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r02 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

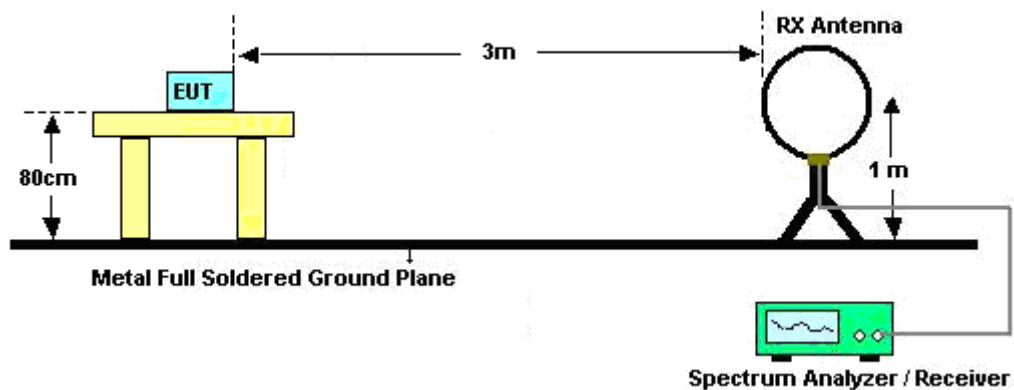
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02. Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak 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.

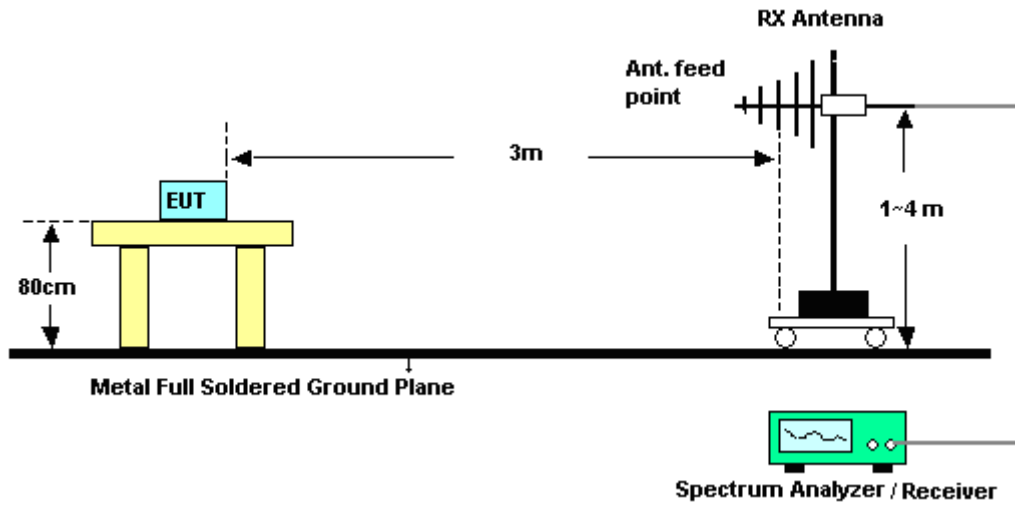
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

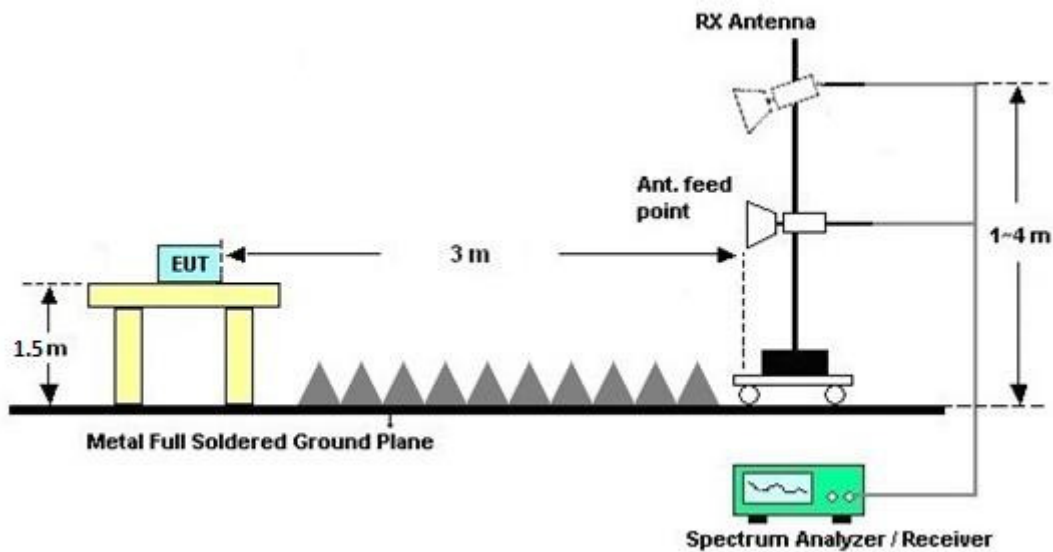
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.5 Frequency Stability Measurement

3.5.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

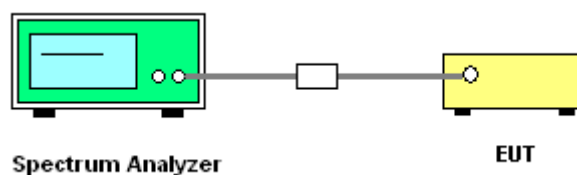
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.5.4 Test Setup



3.5.5 Test Result of Frequency Stability

Please refer to Appendix A.



3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



3.7 Antenna Requirements

3.7.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2), if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna gain 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	1132003	300MHz~40GHz	Aug. 12, 2015	May 10 2016 ~ May 14, 2016	Aug. 11, 2016	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 12, 2015	May 10 2016 ~ May 14, 2016	Aug. 11, 2016	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 23, 2015	May 10 2016 ~ May 14, 2016	Nov. 22, 2016	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 08, 2015	May 10 2016 ~ May 14, 2016	Sep. 07, 2016	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	GEO821763	N/A	Nov. 13, 2015	May 10 2016 ~ May 14, 2016	Nov. 12, 2016	Conducted (TH05-HY)
EMI Test Receiver&SA	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 07, 2016	May 25, 2016	May 06, 2017	Radiation (03CH01-SZ)
Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz;Max 30dBm	May 07, 2016	May 25, 2016	May 06, 2017	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 07, 2016	May 25, 2016	May 06, 2017	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	23188	30MHz-2GHz	Mar. 12, 2016	May 25, 2016	Mar. 11, 2017	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 17, 2015	May 25, 2016	Oct. 16, 2016	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 18, 2015	May 25, 2016	Jul. 17, 2016	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Aug.19, 2015	May 25, 2016	Aug. 18, 2016	Radiation (03CH01-SZ)
Amplifier	HP	8447F	3113A04622	9kHz ~1300MHz / 30 dB	Aug. 07, 2015	May 25, 2016	Aug. 06, 2016	Radiation (03CH01-SZ)
Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1889561	1GHz~18GHz	Oct. 20, 2015	May 25, 2016	Oct. 19, 2016	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 07, 2016	May 25, 2016	May 06, 2017	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	May 25, 2016	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	May 25, 2016	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	May 25, 2016	NCR	Radiation (03CH01-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 12, 2016	May 25, 2016	Jan. 11, 2017	Radiation (03CH01-SZ)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.82
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Appendix A. Conducted Test Results

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2016/5/10~2016/5/14	Relative Humidity:	51~54	%

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

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6dB Bandwidth min. Limit (MHz)	Pass/Fail
11a	6Mbps	1	149	5745	17	20.7	15.12	0.5	Pass
11a	6Mbps	1	157	5785	17.05	20.4	15.42	0.5	Pass
11a	6Mbps	1	165	5825	17.15	20.4	15.3	0.5	Pass
HT20	MCS 0	1	149	5745	18	20.9	15.08	0.5	Pass
HT20	MCS 0	1	157	5785	18	21.1	15.1	0.5	Pass
HT20	MCS 0	1	165	5825	18	20.9	16.88	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	149	5745	0.09	7.48	30.00	2.70		Pass
11a	6Mbps	1	157	5785	0.09	6.94	30.00	2.70		Pass
11a	6Mbps	1	165	5825	0.09	7.43	30.00	2.70		Pass
HT20	MCS 0	1	149	5745	0.10	7.91	30.00	2.70		Pass
HT20	MCS 0	1	157	5785	0.10	7.32	30.00	2.70		Pass
HT20	MCS 0	1	165	5825	0.10	7.81	30.00	2.70		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	0.09	2.22	-5.53	30.00	2.70	Pass
11a	6Mbps	1	157	5785	0.09	2.22	-5.96	30.00	2.70	Pass
11a	6Mbps	1	165	5825	0.09	2.22	-5.25	30.00	2.70	Pass
HT20	MCS 0	1	149	5745	0.10	2.22	-4.97	30.00	2.70	Pass
HT20	MCS 0	1	157	5785	0.10	2.22	-5.68	30.00	2.70	Pass
HT20	MCS 0	1	165	5825	0.10	2.22	-5.02	30.00	2.70	Pass

TEST RESULTS DATA
Frequency Stability

Band IV										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	20	3.3	
11a	6Mbps	1	149	5745	5744.900	-0.100	-17.41	20	4.2	
11a	6Mbps	1	149	5745	5744.900	-0.100	-17.41	20	3.7	
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	0	3.7	
11a	6Mbps	1	149	5745	5744.900	-0.100	-17.41	50	3.7	



Appendix B. Radiated Spurious Emission

Test Engineer :	Jeff Yao	Temperature :	21~22°C
		Relative Humidity :	41~43%

15E Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5635.4	52.27	-16.03	68.3	37.1	35.29	8.12	28.24	154	278	P	H
		5653.8	52.87	-18.25	71.12	37.63	35.32	8.15	28.23	154	278	P	H
		5712.8	53.28	-55.61	108.89	37.91	35.39	8.19	28.21	154	278	P	H
		5724.8	55.02	-66.82	121.84	39.63	35.41	8.19	28.21	154	278	P	H
	*	5745	97.76	-	-	82.3	35.44	8.22	28.2	154	278	P	H
		5745	90.86	-	-	75.4	35.44	8.22	28.2	154	278	A	H
													H
													H
													H
													H
		5605.8	52.56	-15.74	68.3	37.48	35.24	8.09	28.25	184	345	P	V
		5654.2	54.16	-17.26	71.42	38.92	35.32	8.15	28.23	184	345	P	V
		5712.2	53.74	-54.98	108.72	38.37	35.39	8.19	28.21	184	345	P	V
		5724.8	56.23	-65.61	121.84	40.84	35.41	8.19	28.21	184	345	P	V
	*	5745	97.55	-	-	82.09	35.44	8.22	28.2	184	345	P	V
		5745	90.77	-	-	75.31	35.44	8.22	28.2	184	345	A	V
													V
													V
													V
													V



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 157 5785MHz		5625	55.15	-13.15	68.3	40.01	35.27	8.12	28.25	150	270	P	H
		5673.2	52.29	-33.22	85.51	37.03	35.34	8.15	28.23	150	270	P	H
		5715.2	52.36	-57.2	109.56	36.99	35.39	8.19	28.21	150	270	P	H
		5722.4	52.2	-64.17	116.37	36.81	35.41	8.19	28.21	150	270	P	H
	*	5785	96.78	-	-	81.23	35.49	8.25	28.19	150	270	P	H
		5785	90.17	-	-	74.62	35.49	8.25	28.19	150	270	A	H
		5850.2	51.24	-70.6	121.84	35.51	35.58	8.32	28.17	150	270	P	H
		5863.8	52.21	-56.22	108.43	36.44	35.61	8.32	28.16	150	270	P	H
		5915	52.99	-22.68	75.67	37.1	35.68	8.35	28.14	150	270	P	H
		5945.2	55.42	-12.88	68.3	39.43	35.73	8.39	28.13	150	270	P	H
		5625	54.33	-13.97	68.3	39.19	35.27	8.12	28.25	150	343	P	V
		5673.6	53.04	-32.76	85.8	37.78	35.34	8.15	28.23	150	343	P	V
		5717.2	52.04	-58.08	110.12	36.67	35.39	8.19	28.21	150	343	P	V
		5721	51.99	-61.19	113.18	36.6	35.41	8.19	28.21	150	343	P	V
	*	5785	97.01	-	-	81.46	35.49	8.25	28.19	150	343	P	V
		5785	90.4	-	-	74.85	35.49	8.25	28.19	150	343	A	V
		5850.8	51.7	-68.78	120.48	35.97	35.58	8.32	28.17	150	343	P	V
		5862.8	51.73	-56.98	108.71	35.96	35.61	8.32	28.16	150	343	P	V
		5877.8	52.6	-50.62	103.22	36.81	35.63	8.32	28.16	150	343	P	V
		5934.8	53.07	-15.23	68.3	37.11	35.7	8.39	28.13	150	343	P	V



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 165 5825MHz	*	5825	97.82	-	-	82.15	35.56	8.29	28.18	150	271	P	H
		5825	91.32	-	-	75.65	35.56	8.29	28.18	150	271	A	H
		5854.4	53.27	-59	112.27	37.51	35.61	8.32	28.17	150	271	P	H
		5856	52.63	-57.99	110.62	36.87	35.61	8.32	28.17	150	271	P	H
		5882.6	52.96	-46.7	99.66	37.17	35.63	8.32	28.16	150	271	P	H
		5928.2	53.03	-15.27	68.3	37.08	35.7	8.39	28.14	150	271	P	H
													H
													H
													H
													H
	*	5825	96.56	-	-	80.89	35.56	8.29	28.18	212	347	P	V
		5825	90.53	-	-	74.86	35.56	8.29	28.18	212	347	A	V
		5851.4	52.52	-66.59	119.11	36.79	35.58	8.32	28.17	212	347	P	V
		5859.2	52.21	-57.51	109.72	36.44	35.61	8.32	28.16	212	347	P	V
		5884.2	52.17	-46.3	98.47	36.37	35.63	8.32	28.15	212	347	P	V
		5944.4	53.32	-14.98	68.3	37.33	35.73	8.39	28.13	212	347	P	V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 4 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		11490	50.87	-23.13	74	23.65	39.19	12.6	24.57	150	265	P	H
		17235	48.08	-20.22	68.3	13.8	41.67	15.46	22.85	174	321	P	H
													H
													H
		11490	49.15	-24.85	74	21.93	39.19	12.6	24.57	150	265	P	V
		17235	45.66	-22.64	68.3	11.38	41.67	15.46	22.85	174	321	P	V
													V
													V
802.11a CH 157 5785MHz		11570	48.79	-25.21	74	21.49	39.24	12.6	24.54	150	198	P	H
		17355	47.07	-21.23	68.3	12.4	41.86	15.6	22.79	189	185	P	H
													H
													H
		11570	49.95	-24.05	74	22.65	39.24	12.6	24.54	150	198	P	V
		17355	45.81	-22.49	68.3	11.14	41.86	15.6	22.79	189	185	P	V
													V
													V
802.11a CH 165 5825MHz		11650	47.27	-26.73	74	19.91	39.28	12.6	24.52	150	347	P	H
		17475	48.11	-20.19	68.3	13.06	42.05	15.73	22.73	150	360	P	H
													H
													H
		11650	48.44	-25.56	74	21.08	39.28	12.6	24.52	150	347	P	V
		17475	49.15	-19.15	68.3	14.1	42.05	15.73	22.73	150	360	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 149 5745MHz		5616	53.16	-15.14	68.3	38.02	35.27	8.12	28.25	150	82	P	H
		5651.2	53	-16.19	69.19	37.77	35.32	8.15	28.24	150	82	P	H
		5708	53.59	-53.95	107.54	38.22	35.39	8.19	28.21	150	82	P	H
		5724.4	57.23	-63.7	120.93	41.84	35.41	8.19	28.21	150	82	P	H
	*	5745	97.32	-	-	81.86	35.44	8.22	28.2	150	82	P	H
		5745	90.19	-	-	74.73	35.44	8.22	28.2	150	82	A	H
													H
													H
													H
													H
		5624.8	53	-15.3	68.3	37.86	35.27	8.12	28.25	154	356	P	V
		5657.6	54.32	-19.63	73.95	39.08	35.32	8.15	28.23	154	356	P	V
		5712.4	54.21	-54.56	108.77	38.84	35.39	8.19	28.21	154	356	P	V
		5724.8	57.71	-64.13	121.84	42.32	35.41	8.19	28.21	154	356	P	V
	*	5745	98.51	-	-	83.05	35.44	8.22	28.2	154	356	P	V
		5745	91.31	-	-	75.85	35.44	8.22	28.2	154	356	A	V
													V
													V
													V
													V



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 157 5785MHz		5625.4	54.64	-13.66	68.3	39.5	35.27	8.12	28.25	150	274	P	H
		5670.8	52.42	-31.31	83.73	37.16	35.34	8.15	28.23	150	274	P	H
		5705.8	51.74	-55.19	106.93	36.37	35.39	8.19	28.21	150	274	P	H
		5722.6	51.57	-65.26	116.83	36.18	35.41	8.19	28.21	150	274	P	H
	*	5785	96.64	-	-	81.09	35.49	8.25	28.19	150	274	P	H
		5785	90.23	-	-	74.68	35.49	8.25	28.19	150	274	A	H
		5852.6	51.65	-64.72	116.37	35.92	35.58	8.32	28.17	150	274	P	H
		5864	52.62	-55.76	108.38	36.85	35.61	8.32	28.16	150	274	P	H
		5888.2	52.6	-42.9	95.5	36.74	35.66	8.35	28.15	150	274	P	H
		5944.6	54.4	-13.9	68.3	38.41	35.73	8.39	28.13	150	274	P	H
		5625.2	53.06	-15.24	68.3	37.92	35.27	8.12	28.25	184	354	P	V
		5690.2	52.65	-45.42	98.07	37.31	35.37	8.19	28.22	184	354	P	V
		5717	52.61	-57.45	110.06	37.24	35.39	8.19	28.21	184	354	P	V
		5722.4	51.3	-65.07	116.37	35.91	35.41	8.19	28.21	184	354	P	V
	*	5785	97.25	-	-	81.7	35.49	8.25	28.19	184	354	P	V
		5785	90.99	-	-	75.44	35.49	8.25	28.19	184	354	A	V
		5852.4	51.68	-65.15	116.83	35.95	35.58	8.32	28.17	184	354	P	V
		5871.2	52.57	-53.79	106.36	36.78	35.63	8.32	28.16	184	354	P	V
		5921	52.7	-18.55	71.25	36.81	35.68	8.35	28.14	184	354	P	V
		5935.2	52.8	-15.5	68.3	36.84	35.7	8.39	28.13	184	354	P	V



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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 165 5825MHz	*	5825	97.6	-	-	81.93	35.56	8.29	28.18	150	291	P	H
		5825	90.09	-	-	74.42	35.56	8.29	28.18	150	291	A	H
		5852	52.54	-65.2	117.74	36.81	35.58	8.32	28.17	150	291	P	H
		5868	53.13	-54.13	107.26	37.36	35.61	8.32	28.16	150	291	P	H
		5903	52.61	-31.93	84.54	36.75	35.66	8.35	28.15	150	291	P	H
		5946.2	52.35	-15.95	68.3	36.36	35.73	8.39	28.13	150	291	P	H
													H
													H
													H
													H
	*	5825	97.7	-	-	82.03	35.56	8.29	28.18	150	355	P	V
		5825	91.38	-	-	75.71	35.56	8.29	28.18	150	355	A	V
		5854	52.16	-61.02	113.18	36.4	35.61	8.32	28.17	150	355	P	V
		5869.8	51.6	-55.15	106.75	35.83	35.61	8.32	28.16	150	355	P	V
		5901.6	52.76	-32.82	85.58	36.9	35.66	8.35	28.15	150	355	P	V
		5945.4	53.24	-15.06	68.3	37.25	35.73	8.39	28.13	150	355	P	V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 149 5745MHz		11490	49.74	-24.26	74	22.52	39.19	12.60	24.57	150	265	P	H
		17235	46.83	-21.47	68.30	12.55	41.67	15.46	22.85	174	321	P	H
													H
													H
		11490	47.84	-26.16	74	20.62	39.19	12.60	24.57	150	265	P	V
		17235	49.27	-19.03	68.30	14.99	41.67	15.46	22.85	174	321	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	49.32	-24.68	74	22.02	39.24	12.6	24.54	150	198	P	H
		17355	46.96	-21.34	68.3	12.29	41.86	15.6	22.79	189	185	P	H
													H
													H
		11570	49.43	-24.57	74	22.13	39.24	12.6	24.54	150	198	P	V
		17355	47.12	-21.18	68.3	12.45	41.86	15.6	22.79	189	185	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	49.02	-24.98	74	21.66	39.28	12.6	24.52	150	347	P	H
		17475	48.79	-19.51	68.3	13.74	42.05	15.73	22.73	150	360	P	H
													H
													H
		11650	50.43	-23.57	74	23.07	39.28	12.6	24.52	150	347	P	V
		17475	49.68	-18.62	68.3	14.63	42.05	15.73	22.73	150	360	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Emission below 1GHz

5GHz WIFI 802.11a

(LF @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a LF		30	30.21	-9.79	40	28.93	26.6	0.75	26.07	100	0	P	H
		100.81	24.21	-19.29	43.5	30.26	18.58	1.14	25.77	-	-	P	H
		191.99	24.64	-18.86	43.5	32.77	15.66	1.5	25.29	-	-	P	H
		443.22	29.71	-16.29	46	29.36	24.31	2.08	26.04	-	-	P	H
		829.28	35.5	-10.5	46	30.82	27.81	2.95	26.08	-	-	P	H
		903.97	35.76	-10.24	46	30.08	28.44	3.08	25.84	-	-	P	H
													H
													H
													H
													H
													H
													H
		30.97	35.25	-4.75	40	34.34	26.22	0.75	26.06	100	0	P	V
		79.47	26.54	-13.46	40	36.22	15.2	0.98	25.86	-	-	P	V
		401.51	29.84	-16.16	46	30.48	23.15	2.03	25.82	-	-	P	V
		543.13	30.11	-15.89	46	30.25	23.89	2.35	26.38	-	-	P	V
		615.88	32.28	-13.72	46	31.4	24.75	2.56	26.43	-	-	P	V
		868.08	35.27	-10.73	46	30.01	28.21	3.02	25.97	-	-	P	V
													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 per 15.209(c).
!	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	Cable	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. Level(dBμV/m) =

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

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/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(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) + Cable 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 :	Jeff Yao	Temperature :	21~22°C
		Relative Humidity :	41~43%

Note symbol

-L	Low channel location
-R	High channel location

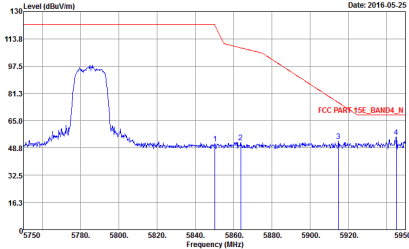
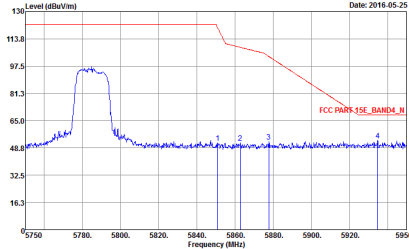
Band 4 - 5725~5850MHz WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak	Site : 03CH01-SZ Condition : FCC PART 15E BAND4 N 3m HF ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) HP162076 Mode : Mode 1 MEI : #1 Plane : Y GM powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV/m dB dB cm deg 1 5635.48 52.27 -16.83 68.38 37.18 35.29 8.12 28.24 154 278 Peak 2 5653.88 52.37 -18.25 71.12 37.63 35.30 8.15 28.23 154 278 Peak 3 5712.88 53.28 -55.61 186.89 37.93 35.39 6.19 28.21 154 278 Peak 4 5724.88 55.82 -66.82 121.84 39.63 35.41 8.19 28.21 154 278 Peak	Site : 03CH01-SZ Condition : FCC PART 15E BAND4 N 3m HF ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) HP162076 Mode : Mode 1 MEI : #1 Plane : Y GM powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV/m dB dB cm deg 1 5685.88 52.56 -15.74 68.38 37.48 35.24 8.89 28.25 184 345 Peak 2 5694.28 54.16 -17.36 71.42 38.92 35.23 8.15 28.23 194 345 Peak 3 5712.28 53.74 -54.98 186.72 38.37 35.39 6.19 28.21 184 345 Peak 4 5724.88 56.23 -65.63 121.84 48.84 35.41 8.19 28.21 184 345 Peak

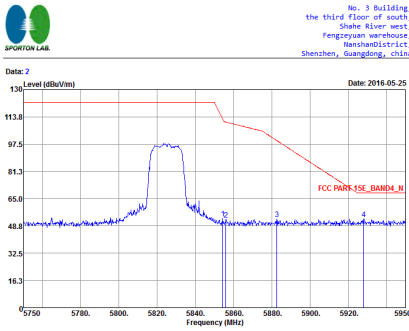
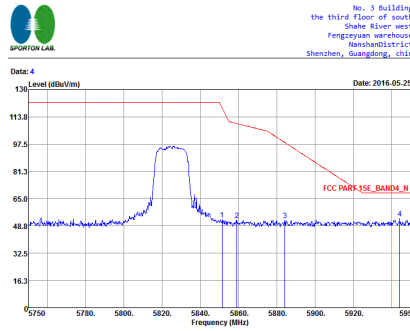


WIFI	Band 4 5725~5850MHz Band Edge @ 3m																																																																																																																																																												
ANT	802.11a CH157 5785MHz - L																																																																																																																																																												
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Peak	No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 MEI : #1 Plane : Y GM powersetting (default) <table><thead><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Level</th><th>Factor</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr></thead><tbody><tr><td>1</td><td>5625.00</td><td>55.15</td><td>-13.15</td><td>68.30</td><td>40.01</td><td>35.27</td><td>8.12</td><td>26.25</td><td>150</td><td></td><td></td><td>270 Peak</td></tr><tr><td>2</td><td>5673.28</td><td>52.29</td><td>-13.22</td><td>65.51</td><td>37.03</td><td>35.34</td><td>8.15</td><td>26.23</td><td>150</td><td></td><td></td><td>270 Peak</td></tr><tr><td>3</td><td>5715.28</td><td>52.36</td><td>-17.28</td><td>189.56</td><td>36.99</td><td>35.39</td><td>8.19</td><td>26.21</td><td>150</td><td></td><td></td><td>270 Peak</td></tr><tr><td>4</td><td>5722.48</td><td>52.28</td><td>-16.17</td><td>116.37</td><td>36.83</td><td>35.41</td><td>8.19</td><td>26.21</td><td>150</td><td></td><td></td><td>270 Peak</td></tr></tbody></table> No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 MEI : #1 Plane : Y GM powersetting (default) <table><thead><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Level</th><th>Factor</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr></thead><tbody><tr><td>1</td><td>5625.00</td><td>54.33</td><td>-13.97</td><td>68.30</td><td>39.19</td><td>35.27</td><td>8.12</td><td>26.25</td><td>150</td><td></td><td></td><td>343 Peak</td></tr><tr><td>2</td><td>5673.28</td><td>53.04</td><td>-12.76</td><td>65.50</td><td>37.78</td><td>35.34</td><td>8.15</td><td>26.23</td><td>150</td><td></td><td></td><td>343 Peak</td></tr><tr><td>3</td><td>5717.28</td><td>52.04</td><td>-18.08</td><td>118.12</td><td>36.67</td><td>35.39</td><td>8.19</td><td>26.21</td><td>150</td><td></td><td></td><td>343 Peak</td></tr><tr><td>4</td><td>5721.00</td><td>51.99</td><td>-11.19</td><td>113.18</td><td>36.08</td><td>35.41</td><td>8.19</td><td>26.21</td><td>150</td><td></td><td></td><td>343 Peak</td></tr></tbody></table>	Peak	Freq	Level	Limit	Line	Level	Factor	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	dB	dB	dB	cm	deg		1	5625.00	55.15	-13.15	68.30	40.01	35.27	8.12	26.25	150			270 Peak	2	5673.28	52.29	-13.22	65.51	37.03	35.34	8.15	26.23	150			270 Peak	3	5715.28	52.36	-17.28	189.56	36.99	35.39	8.19	26.21	150			270 Peak	4	5722.48	52.28	-16.17	116.37	36.83	35.41	8.19	26.21	150			270 Peak	Peak	Freq	Level	Limit	Line	Level	Factor	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	dB	dB	dB	cm	deg		1	5625.00	54.33	-13.97	68.30	39.19	35.27	8.12	26.25	150			343 Peak	2	5673.28	53.04	-12.76	65.50	37.78	35.34	8.15	26.23	150			343 Peak	3	5717.28	52.04	-18.08	118.12	36.67	35.39	8.19	26.21	150			343 Peak	4	5721.00	51.99	-11.19	113.18	36.08	35.41	8.19	26.21	150			343 Peak
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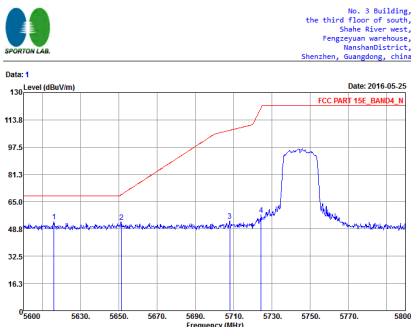
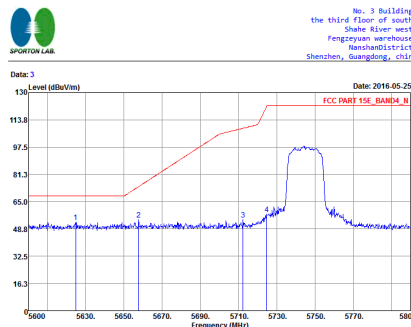
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Peak	 No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2 Level (dBuV/m) Date: 2016-05-25 FCC PART 15E BAND N Site : 03CH01-SZ Condition : FCC PART 15E BAND N 3m HF ANT(3117)_151017 HORIZONTAL Detector : Peak Project : FR4N162076 Mode : Mode 3 MEI : #1 Plane : Y GM powersetting (default) <table><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>5854.48</td><td>53.27</td><td>-59.88</td><td>112.27</td><td>37.53</td><td>35.61</td><td>8.32</td><td>28.17</td><td>150</td><td>271 Peak</td></tr><tr><td>2</td><td>5856.08</td><td>52.63</td><td>-57.29</td><td>110.62</td><td>36.87</td><td>35.03</td><td>8.32</td><td>28.17</td><td>150</td><td>271 Peak</td></tr><tr><td>3</td><td>5882.68</td><td>52.96</td><td>-46.79</td><td>99.66</td><td>37.17</td><td>35.63</td><td>8.32</td><td>28.16</td><td>150</td><td>271 Peak</td></tr><tr><td>4</td><td>5928.28</td><td>53.83</td><td>-15.27</td><td>68.38</td><td>37.88</td><td>35.79</td><td>8.39</td><td>28.14</td><td>150</td><td>271 Peak</td></tr></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	5854.48	53.27	-59.88	112.27	37.53	35.61	8.32	28.17	150	271 Peak	2	5856.08	52.63	-57.29	110.62	36.87	35.03	8.32	28.17	150	271 Peak	3	5882.68	52.96	-46.79	99.66	37.17	35.63	8.32	28.16	150	271 Peak	4	5928.28	53.83	-15.27	68.38	37.88	35.79	8.39	28.14	150	271 Peak	 No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 4 Level (dBuV/m) Date: 2016-05-25 FCC PART 15E BAND N Site : 03CH01-SZ Condition : FCC PART 15E BAND N 3m HF ANT(3117)_151017 VERTICAL Detector : Peak Project : FR4N162076 Mode : Mode 3 MEI : #1 Plane : Y GM powersetting (default) <table><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>5851.48</td><td>52.52</td><td>-66.59</td><td>119.11</td><td>36.79</td><td>35.58</td><td>8.32</td><td>28.17</td><td>212</td><td>347 Peak</td></tr><tr><td>2</td><td>5855.28</td><td>52.21</td><td>-57.51</td><td>109.72</td><td>36.44</td><td>35.61</td><td>8.32</td><td>28.16</td><td>212</td><td>347 Peak</td></tr><tr><td>3</td><td>5884.28</td><td>52.17</td><td>-46.38</td><td>98.47</td><td>36.37</td><td>35.63</td><td>8.32</td><td>28.15</td><td>212</td><td>347 Peak</td></tr><tr><td>4</td><td>5944.48</td><td>53.32</td><td>-14.88</td><td>68.38</td><td>37.33</td><td>35.73</td><td>8.39</td><td>28.13</td><td>212</td><td>347 Peak</td></tr></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	5851.48	52.52	-66.59	119.11	36.79	35.58	8.32	28.17	212	347 Peak	2	5855.28	52.21	-57.51	109.72	36.44	35.61	8.32	28.16	212	347 Peak	3	5884.28	52.17	-46.38	98.47	36.37	35.63	8.32	28.15	212	347 Peak	4	5944.48	53.32	-14.88	68.38	37.33	35.73	8.39	28.13	212	347 Peak
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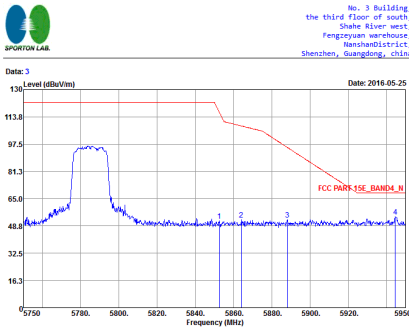
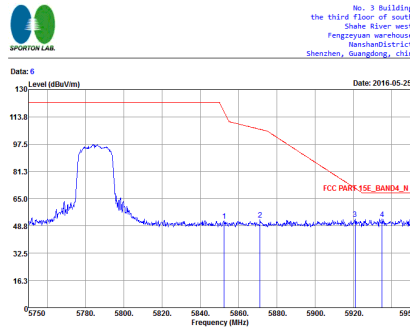
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m																																																																																																																																																
ANT	802.11n HT20 CH149 5745MHz																																																																																																																																																
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Peak	 No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) HP162076 Mode : Mode 4 MEI : #1 Plane : Y MCS0 powersetting (default) <table><thead><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Line</th><th>ReadAntenna</th><th>Cable</th><th>Preamplifier</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>5616.00</td><td>53.16</td><td>-15.14</td><td>68.30</td><td>38.82</td><td>35.27</td><td>8.12</td><td>28.25</td><td>150</td><td>82</td><td>Peak</td></tr><tr><td>2</td><td>5651.20</td><td>53.00</td><td>-16.19</td><td>69.19</td><td>37.77</td><td>35.32</td><td>8.15</td><td>28.24</td><td>150</td><td>82</td><td>Peak</td></tr><tr><td>3</td><td>5708.00</td><td>53.59</td><td>-33.95</td><td>187.54</td><td>36.22</td><td>35.39</td><td>8.19</td><td>28.21</td><td>150</td><td>82</td><td>Peak</td></tr><tr><td>4</td><td>5724.40</td><td>57.23</td><td>-63.70</td><td>120.93</td><td>41.84</td><td>35.41</td><td>8.19</td><td>28.21</td><td>150</td><td>82</td><td>Peak</td></tr></tbody></table>  No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) HP162076 Mode : Mode 4 MEI : #1 Plane : Y MCS0 powersetting (default) <table><thead><tr><th>Peak</th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Line</th><th>ReadAntenna</th><th>Cable</th><th>Preamplifier</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>5624.00</td><td>53.00</td><td>-15.30</td><td>68.30</td><td>37.86</td><td>35.27</td><td>8.12</td><td>28.25</td><td>154</td><td>356</td><td>Peak</td></tr><tr><td>2</td><td>5657.00</td><td>54.32</td><td>-19.63</td><td>73.95</td><td>39.00</td><td>35.32</td><td>8.15</td><td>28.23</td><td>154</td><td>356</td><td>Peak</td></tr><tr><td>3</td><td>5712.40</td><td>54.21</td><td>-54.56</td><td>180.77</td><td>38.84</td><td>35.39</td><td>8.19</td><td>28.21</td><td>154</td><td>356</td><td>Peak</td></tr><tr><td>4</td><td>5724.00</td><td>57.71</td><td>-64.13</td><td>121.84</td><td>42.32</td><td>35.41</td><td>8.19</td><td>28.21</td><td>154</td><td>356</td><td>Peak</td></tr></tbody></table>	Peak	Freq	Level	Limit	Over	Line	ReadAntenna	Cable	Preamplifier	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dB	dB	dB	dB	dB	cm	deg	1	5616.00	53.16	-15.14	68.30	38.82	35.27	8.12	28.25	150	82	Peak	2	5651.20	53.00	-16.19	69.19	37.77	35.32	8.15	28.24	150	82	Peak	3	5708.00	53.59	-33.95	187.54	36.22	35.39	8.19	28.21	150	82	Peak	4	5724.40	57.23	-63.70	120.93	41.84	35.41	8.19	28.21	150	82	Peak	Peak	Freq	Level	Limit	Over	Line	ReadAntenna	Cable	Preamplifier	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dB	dB	dB	dB	dB	cm	deg	1	5624.00	53.00	-15.30	68.30	37.86	35.27	8.12	28.25	154	356	Peak	2	5657.00	54.32	-19.63	73.95	39.00	35.32	8.15	28.23	154	356	Peak	3	5712.40	54.21	-54.56	180.77	38.84	35.39	8.19	28.21	154	356	Peak	4	5724.00	57.71	-64.13	121.84	42.32	35.41	8.19	28.21	154	356	Peak
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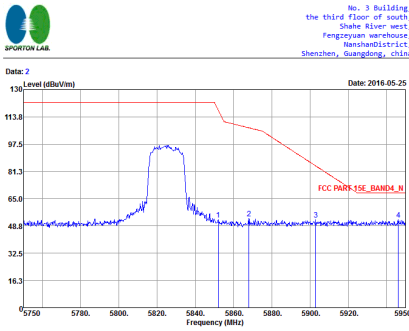
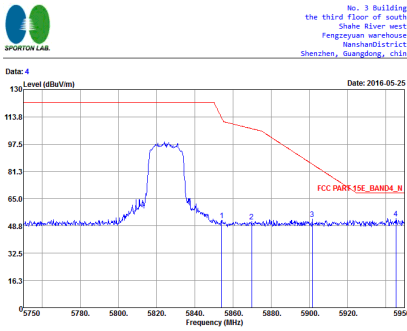


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz - L	
1	Horizontal	Vertical
Peak	No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(0117)_151017 HORIZONTAL Detector : Peak Project : (FR) RP162076 Mode : Mode 5 MEI : #1 Plane : Y MCS0 powersetting (default) Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Freq Level Limit Line Level Factor Loss Factor dB dB cm deg 1 5625.40 54.64 -13.66 68.30 39.50 35.27 8.12 26.25 150 274 Peak 2 5670.00 52.42 -13.10 63.73 37.10 35.34 8.10 28.23 150 274 Peak 3 5785.00 51.74 -55.19 186.93 36.37 35.39 8.19 26.21 150 274 Peak 4 5722.00 51.57 -65.26 116.83 36.10 35.41 8.19 26.21 150 274 Peak	No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E, BAND4, N 3m HF, ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) RP162076 Mode : Mode 5 MEI : #1 Plane : Y MCS0 powersetting (default) Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Freq Level Limit Line Level Factor Loss Factor dB dB cm deg 1 5625.20 53.06 -15.24 68.30 37.92 35.27 8.12 26.25 184 354 Peak 2 5690.20 52.65 -45.42 68.87 37.31 35.37 8.10 25.23 184 354 Peak 3 5717.00 52.61 -57.45 118.86 37.24 35.39 8.19 26.21 184 354 Peak 4 5722.40 51.30 -65.07 116.37 35.92 35.41 8.19 26.21 184 354 Peak



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3	5888.28	52.68	-42.00	95.58	36.74	35.66	8.35	26.15	150	274 Peak																																																																																																																											
4	5944.68	54.49	-13.90	68.38	38.41	35.73	8.39	26.13	150	274 Peak																																																																																																																											
Freq	Level	Limit	Over	Line	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark																																																																																																																											
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg																																																																																																																												
1	5852.48	51.68	-65.15	116.83	35.95	35.58	8.32	26.17	184	354 Peak																																																																																																																											
2	5871.28	52.57	-53.79	106.36	36.78	35.63	8.32	26.16	184	354 Peak																																																																																																																											
3	5921.00	52.78	-18.55	71.25	36.81	35.68	8.35	26.14	184	354 Peak																																																																																																																											
4	5935.28	52.00	-13.50	68.38	36.84	35.78	8.39	26.13	184	354 Peak																																																																																																																											



WIFI		Band 4 5725~5850MHz Band Edge @ 3m																																																																																																																																			
ANT		802.11n HT20 CH165 5825MHz																																																																																																																																			
1	Horizontal	Vertical																																																																																																																																			
Peak	 No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Level (dBuV/m) Frequency (MHz) FCC PART 15E BAND N Site : 03CH01-SZ Condition : FCC PART 15E BAND N 3m HF ANT(0117)_151017 HORIZONTAL Detector : Peak Project : (FR) HP162076 Mode : Mode 6 MEI : #1 Plane : Y MCS0 powersetting (default) <table><tr><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>5852.00</td><td>52.54</td><td>-65.20</td><td>117.74</td><td>36.81</td><td>35.58</td><td>8.32</td><td>28.17</td><td>150</td><td>291 Peak</td></tr><tr><td>2</td><td>5860.00</td><td>53.13</td><td>-64.13</td><td>107.26</td><td>37.30</td><td>35.63</td><td>8.32</td><td>28.16</td><td>150</td><td>291 Peak</td></tr><tr><td>3</td><td>5983.00</td><td>52.63</td><td>-31.93</td><td>84.54</td><td>36.79</td><td>35.66</td><td>8.35</td><td>28.15</td><td>150</td><td>291 Peak</td></tr><tr><td>4</td><td>5946.10</td><td>52.35</td><td>-15.95</td><td>68.30</td><td>36.30</td><td>35.73</td><td>8.39</td><td>28.13</td><td>150</td><td>291 Peak</td></tr></table>  No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2016-05-25 Level (dBuV/m) Frequency (MHz) FCC PART 15E BAND N Site : 03CH01-SZ Condition : FCC PART 15E BAND N 3m HF ANT(0117)_151017 VERTICAL Detector : Peak Project : (FR) HP162076 Mode : Mode 6 MEI : #1 Plane : Y MCS0 powersetting (default) <table><tr><th>Freq</th><th>Level</th><th>Limit</th><th>Line</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>5854.00</td><td>52.16</td><td>-61.62</td><td>113.18</td><td>36.40</td><td>35.61</td><td>8.32</td><td>28.17</td><td>150</td><td>355 Peak</td></tr><tr><td>2</td><td>5860.00</td><td>53.60</td><td>-55.15</td><td>100.75</td><td>35.83</td><td>35.61</td><td>8.32</td><td>28.16</td><td>150</td><td>355 Peak</td></tr><tr><td>3</td><td>5981.00</td><td>52.76</td><td>-32.82</td><td>85.58</td><td>36.90</td><td>35.66</td><td>8.35</td><td>28.15</td><td>150</td><td>355 Peak</td></tr><tr><td>4</td><td>5943.40</td><td>53.24</td><td>-15.00</td><td>68.30</td><td>37.25</td><td>35.73</td><td>8.39</td><td>28.13</td><td>150</td><td>355 Peak</td></tr></table>	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		1	5852.00	52.54	-65.20	117.74	36.81	35.58	8.32	28.17	150	291 Peak	2	5860.00	53.13	-64.13	107.26	37.30	35.63	8.32	28.16	150	291 Peak	3	5983.00	52.63	-31.93	84.54	36.79	35.66	8.35	28.15	150	291 Peak	4	5946.10	52.35	-15.95	68.30	36.30	35.73	8.39	28.13	150	291 Peak	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		1	5854.00	52.16	-61.62	113.18	36.40	35.61	8.32	28.17	150	355 Peak	2	5860.00	53.60	-55.15	100.75	35.83	35.61	8.32	28.16	150	355 Peak	3	5981.00	52.76	-32.82	85.58	36.90	35.66	8.35	28.15	150	355 Peak	4	5943.40	53.24	-15.00	68.30	37.25	35.73	8.39	28.13	150	355 Peak
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	A/Pos	T/Pos	Remark																																																																																																																										
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg																																																																																																																												
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2	5860.00	53.13	-64.13	107.26	37.30	35.63	8.32	28.16	150	291 Peak																																																																																																																											
3	5983.00	52.63	-31.93	84.54	36.79	35.66	8.35	28.15	150	291 Peak																																																																																																																											
4	5946.10	52.35	-15.95	68.30	36.30	35.73	8.39	28.13	150	291 Peak																																																																																																																											
Freq	Level	Limit	Line	Level	Factor	Loss	Factor	A/Pos	T/Pos	Remark																																																																																																																											
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg																																																																																																																												
1	5854.00	52.16	-61.62	113.18	36.40	35.61	8.32	28.17	150	355 Peak																																																																																																																											
2	5860.00	53.60	-55.15	100.75	35.83	35.61	8.32	28.16	150	355 Peak																																																																																																																											
3	5981.00	52.76	-32.82	85.58	36.90	35.66	8.35	28.15	150	355 Peak																																																																																																																											
4	5943.40	53.24	-15.00	68.30	37.25	35.73	8.39	28.13	150	355 Peak																																																																																																																											

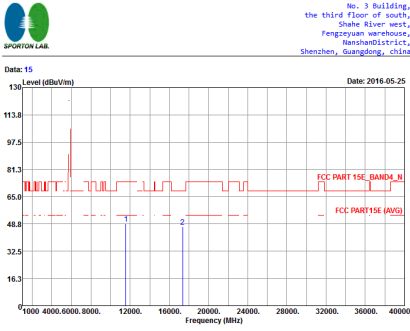
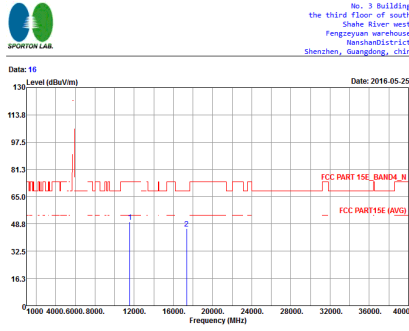


Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, China Date: 13 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) WP162076 Mode : Mode 1 IMEI : #1 Plane : Y EM powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV dB dB dB cm deg 1 11498.00 50.87 -23.13 74.00 23.65 39.19 12.60 24.57 145 265 Peak 2 17235.00 48.08 -20.22 68.30 13.80 41.67 15.46 22.85 174 321 Peak	No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, China Date: 14 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) WP162076 Mode : Mode 1 IMEI : #1 Plane : Y EM powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV dB dB dB cm deg 1 11498.00 49.15 -24.85 74.00 21.93 39.19 12.60 24.57 145 265 Peak 2 17235.00 45.66 -22.64 68.30 11.38 41.67 15.46 22.85 174 321 Peak



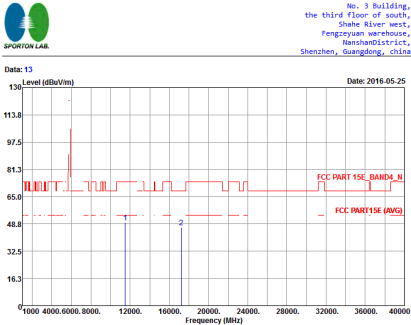
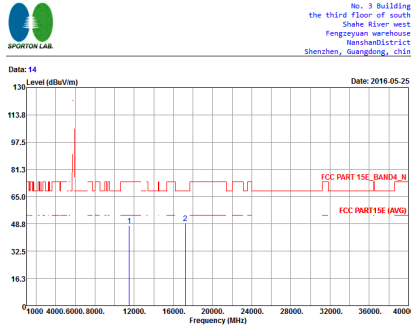
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH01-SZ Condition : FCC PART 15E, BAND 4, N 3m HF_ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 IMEI : #1 Plane : Y GM powersetting (default) Over Limit Freq Level Limit Line Level Factor 1 11570.00 48.79 -25.21 74.00 21.49 39.24 12.60 24.54 150 198 Peak 2 17355.00 47.07 -21.23 68.30 12.40 41.86 15.60 22.79 189 185 Peak	 Site : 03CH01-SZ Condition : FCC PART 15E, BAND 4, N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 IMEI : #1 Plane : Y GM powersetting (default) Over Limit Freq Level Limit Line Level Factor 1 11570.00 49.95 -24.05 74.00 22.65 39.24 12.60 24.54 150 198 Peak 2 17355.00 45.81 -22.49 68.30 11.14 41.86 15.60 22.79 189 185 Peak



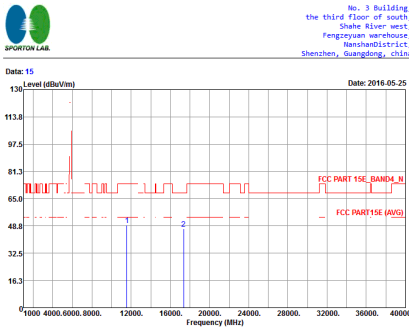
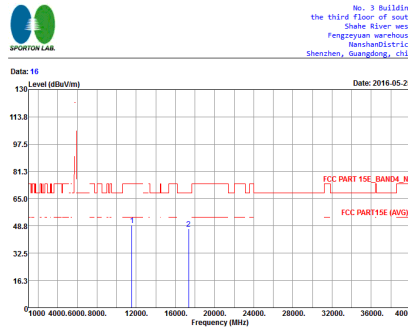
WIFI	Band 4 5725~5850MHz Harmonic @ 3m																																																																																									
ANT	802.11a CH165 5825MHz																																																																																									
1	Horizontal					Vertical																																																																																				
Peak Avg.	No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, china Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 3 IMEI : #1 Plane : Y EM powersetting (default) <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th></tr></thead><tbody><tr><td>1 11659.00</td><td>47.27</td><td>-26.73</td><td>74.00</td><td>19.91</td><td>39.28</td><td>12.60</td><td>24.52</td><td>150</td><td>347 Peak</td></tr><tr><td>2 17475.00</td><td>48.11</td><td>-20.19</td><td>68.30</td><td>13.06</td><td>42.05</td><td>15.73</td><td>22.73</td><td>150</td><td>368 Peak</td></tr></tbody></table>					Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	dB	1 11659.00	47.27	-26.73	74.00	19.91	39.28	12.60	24.52	150	347 Peak	2 17475.00	48.11	-20.19	68.30	13.06	42.05	15.73	22.73	150	368 Peak	No. 3 Building, the third floor of south, Shahe River west, Fengqiyuan warehouse, NanshanDistrict, Shenzhen, Guangdong, china Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 3 IMEI : #1 Plane : Y EM powersetting (default) <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th><th>dB</th></tr></thead><tbody><tr><td>1 11659.00</td><td>48.44</td><td>-25.56</td><td>74.00</td><td>21.00</td><td>39.28</td><td>12.60</td><td>24.52</td><td>150</td><td>347 Peak</td></tr><tr><td>2 17475.00</td><td>49.15</td><td>-19.15</td><td>68.30</td><td>14.10</td><td>42.05</td><td>15.73</td><td>22.73</td><td>150</td><td>368 Peak</td></tr></tbody></table>					Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	dB	1 11659.00	48.44	-25.56	74.00	21.00	39.28	12.60	24.52	150	347 Peak	2 17475.00	49.15	-19.15	68.30	14.10	42.05	15.73	22.73	150	368 Peak
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark																																																																																
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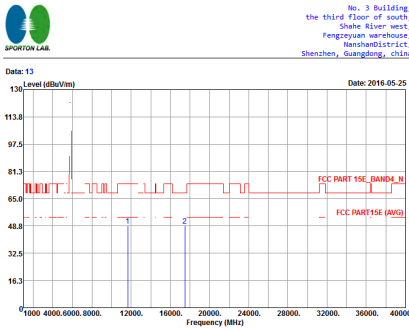
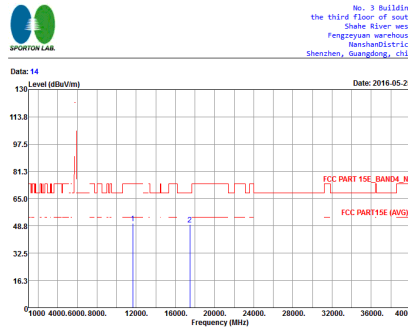
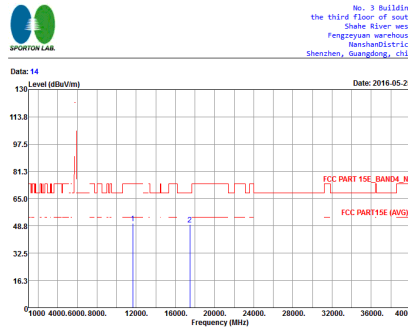
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH01-SZ Condition : FCC PART 15E BAND 4 3m HF ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 4 IMEI : #1 Plane : Y MCS0 powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB dB dB cm deg 1 11490.00 49.74 -24.26 74.00 22.52 39.19 12.60 24.57 150 265 Peak 2 17235.00 46.83 -21.47 68.30 12.55 41.67 15.46 22.85 174 321 Peak	 Site : 03CH01-SZ Condition : FCC PART 15E BAND 4 3m HF ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 4 IMEI : #1 Plane : Y MCS0 powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB dB dB cm deg 1 11490.00 47.84 -26.16 74.00 20.62 39.19 12.60 24.57 150 265 Peak 2 17235.00 49.27 -19.83 68.30 14.99 41.67 15.46 22.85 174 321 Peak



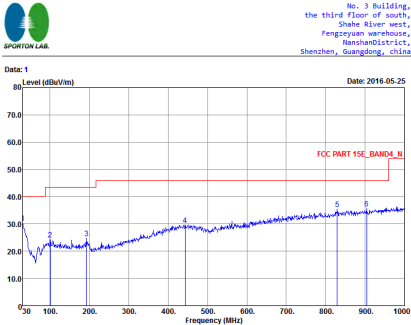
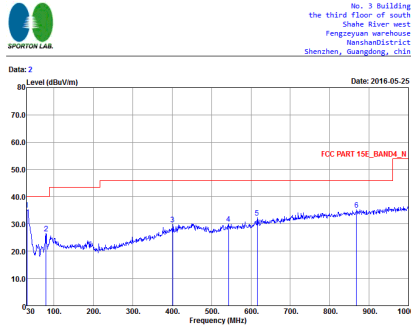
WIFI	Band 4 5725~5850MHz Harmonic @ 3m																																																
ANT	802.11n HT20 CH157 5785MHz																																																
1	Horizontal	Vertical																																															
Peak Avg.	 No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 15 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 5 IMEI : #1 Plane : Y MCS0 powersetting (default) Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Freq Level Limit Line Level Factor Loss Factor cm deg <table><tr><td>1</td><td>11570.00</td><td>49.32</td><td>-24.68</td><td>74.00</td><td>22.82</td><td>39.24</td><td>12.60</td><td>24.54</td><td>150</td><td>198</td><td>Peak</td></tr><tr><td>2</td><td>17355.00</td><td>46.96</td><td>-21.34</td><td>68.30</td><td>12.29</td><td>41.86</td><td>15.60</td><td>22.79</td><td>189</td><td>185</td><td>Peak</td></tr></table>  No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 16 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 5 IMEI : #1 Plane : Y MCS0 powersetting (default) Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Freq Level Limit Line Level Factor Loss Factor cm deg <table><tr><td>1</td><td>11570.00</td><td>49.43</td><td>-24.57</td><td>74.00</td><td>22.13</td><td>39.24</td><td>12.60</td><td>24.54</td><td>150</td><td>198</td><td>Peak</td></tr><tr><td>2</td><td>17355.00</td><td>47.12</td><td>-21.18</td><td>68.30</td><td>12.45</td><td>41.86</td><td>15.60</td><td>22.79</td><td>189</td><td>185</td><td>Peak</td></tr></table>	1	11570.00	49.32	-24.68	74.00	22.82	39.24	12.60	24.54	150	198	Peak	2	17355.00	46.96	-21.34	68.30	12.29	41.86	15.60	22.79	189	185	Peak	1	11570.00	49.43	-24.57	74.00	22.13	39.24	12.60	24.54	150	198	Peak	2	17355.00	47.12	-21.18	68.30	12.45	41.86	15.60	22.79	189	185	Peak
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WIFI	Band 4 5725~5850MHz Harmonic @ 3m																																																		
ANT	802.11n HT20 CH165 5825MHZ																																																		
1	Horizontal	Vertical																																																	
Peak	 No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 13 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 6 IMEI : #1 Plane : Y MCS0 powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV/m dB dB cm deg <table><tr><td>1</td><td>11650.00</td><td>49.02</td><td>-24.98</td><td>74.00</td><td>21.66</td><td>39.28</td><td>12.60</td><td>24.52</td><td>150</td><td>347</td><td>Peak</td></tr><tr><td>2</td><td>17475.00</td><td>48.79</td><td>-19.51</td><td>68.30</td><td>13.74</td><td>42.05</td><td>15.73</td><td>22.73</td><td>150</td><td>368</td><td>Peak</td></tr></table> <td>  No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 14 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 6 IMEI : #1 Plane : Y MCS0 powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV/m dB dB cm deg <table><tr><td>1</td><td>11650.00</td><td>50.43</td><td>-23.57</td><td>74.00</td><td>23.87</td><td>39.28</td><td>12.60</td><td>24.52</td><td>150</td><td>347</td><td>Peak</td></tr><tr><td>2</td><td>17475.00</td><td>49.68</td><td>-18.62</td><td>68.30</td><td>14.63</td><td>42.05</td><td>15.73</td><td>22.73</td><td>150</td><td>368</td><td>Peak</td></tr></table> <td>Avg.</td></td>	1	11650.00	49.02	-24.98	74.00	21.66	39.28	12.60	24.52	150	347	Peak	2	17475.00	48.79	-19.51	68.30	13.74	42.05	15.73	22.73	150	368	Peak	 No. 3 Building, the third floor of south, Shahe River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 14 Level (dBuV/m) Date: 2016-05-25 Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m HF_ANT(3117)_151017 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 6 IMEI : #1 Plane : Y MCS0 powersetting (default) Freq Level Over Limit ReadAntenna Cable Preamp A/Pos T/Pos MHz dBuV/m dB dBuV/m dBuV/m dB dB cm deg <table><tr><td>1</td><td>11650.00</td><td>50.43</td><td>-23.57</td><td>74.00</td><td>23.87</td><td>39.28</td><td>12.60</td><td>24.52</td><td>150</td><td>347</td><td>Peak</td></tr><tr><td>2</td><td>17475.00</td><td>49.68</td><td>-18.62</td><td>68.30</td><td>14.63</td><td>42.05</td><td>15.73</td><td>22.73</td><td>150</td><td>368</td><td>Peak</td></tr></table> <td>Avg.</td>	1	11650.00	50.43	-23.57	74.00	23.87	39.28	12.60	24.52	150	347	Peak	2	17475.00	49.68	-18.62	68.30	14.63	42.05	15.73	22.73	150	368	Peak	Avg.
1	11650.00	49.02	-24.98	74.00	21.66	39.28	12.60	24.52	150	347	Peak																																								
2	17475.00	48.79	-19.51	68.30	13.74	42.05	15.73	22.73	150	368	Peak																																								
1	11650.00	50.43	-23.57	74.00	23.87	39.28	12.60	24.52	150	347	Peak																																								
2	17475.00	49.68	-18.62	68.30	14.63	42.05	15.73	22.73	150	368	Peak																																								



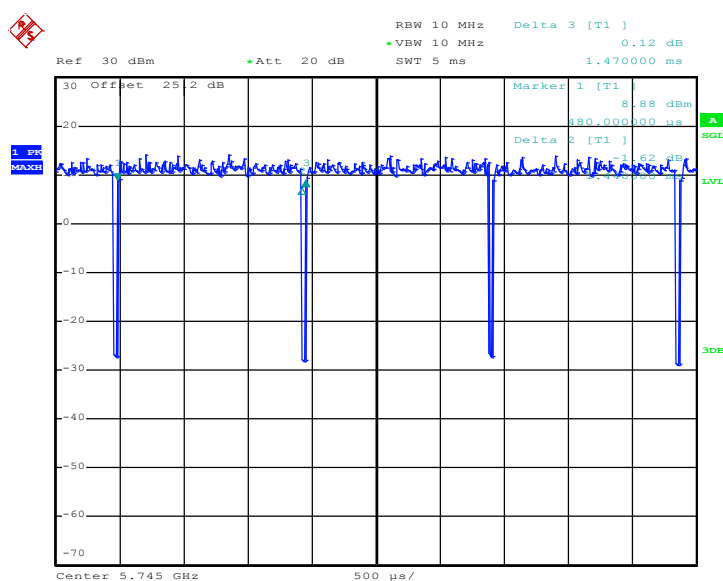
Emission below 1GHz
5GHz WIFI 802.11a
(LF @ 3m)

WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	 No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 1 Date: 2016-05-25 Level (dBuV/m) Frequency (MHz) FCC PART 15E_BAND4_N Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m LF_ANT(23188)6_15101 HORIZONTAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 IMEI : #1 Plane : Y 6M powersetting (default) Over Limit Freq Level Line ReadAntenna Cable Preamp A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV/m dB dB dB cm deg 1 30.88 38.21 -9.79 48.88 28.93 26.68 0.75 26.07 188 0 Peak 2 180.81 24.21 -19.29 43.58 38.26 18.58 1.14 25.77 --- --- Peak 3 181.59 24.64 -18.66 43.58 32.77 15.66 1.58 25.19 --- --- Peak 4 443.22 29.71 -16.29 46.88 29.38 24.31 2.88 26.84 --- --- Peak 5 629.28 35.58 -18.58 46.88 38.82 27.82 2.95 26.88 --- --- Peak 6 983.97 35.76 -18.24 46.88 38.88 28.44 3.88 25.84 --- --- Peak	 No. 3 Building, the third floor of south, Shake River west, Fengze Yuan warehouse, Nanshan District, Shenzhen, Guangdong, China Date: 2 Date: 2016-05-25 Level (dBuV/m) Frequency (MHz) FCC PART 15E_BAND4_N Site : 03CH01-SZ Condition : FCC PART 15E_BAND4_N 3m LF_ANT(23188)6_15101 VERTICAL Detector : Peak Project : (FR) #P162076 Mode : Mode 2 IMEI : #1 Plane : Y 6M powersetting (default) Over Limit Freq Level Line ReadAntenna Cable Preamp A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV/m dB dB dB cm deg 1 38.97 35.25 -4.75 48.88 34.34 26.22 0.75 26.86 188 0 Peak 2 79.47 26.54 -13.46 48.88 36.22 15.28 0.98 25.86 --- --- Peak 3 481.51 29.64 -16.16 46.88 38.68 23.15 2.85 25.82 --- --- Peak 4 543.13 38.11 -15.89 46.88 38.25 23.89 2.35 26.38 --- --- Peak 5 615.68 32.28 -13.72 46.88 31.68 24.75 2.56 25.43 --- --- Peak 6 868.88 35.27 -18.73 46.88 38.81 28.21 3.02 25.97 --- --- Peak

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11a	97.96	1440.00	0.69	1kHz
1	5GHz 802.11n HT20	97.66	1336.00	0.75	1kHz

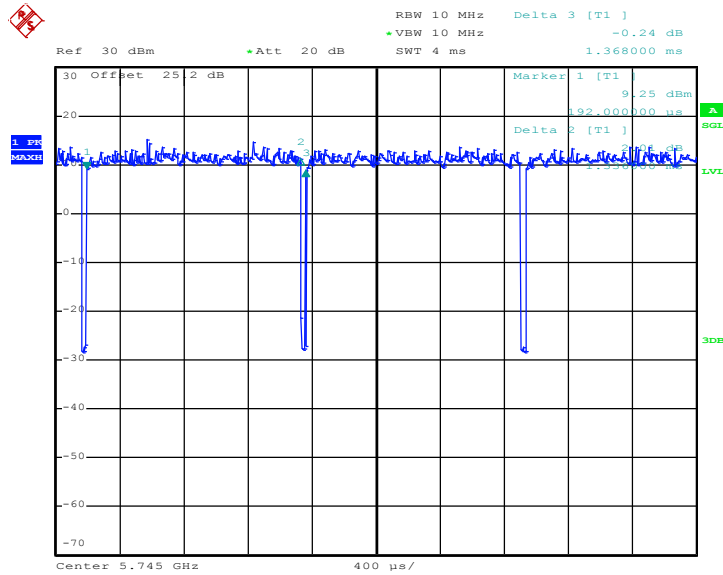
802.11a



Date: 10.MAY.2016 23:08:39



802.11n HT20



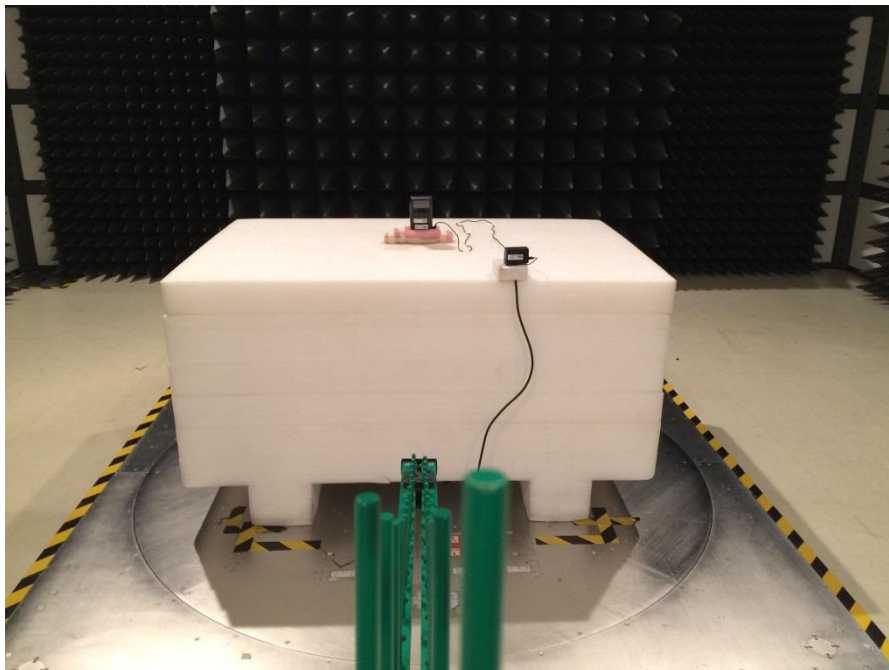
Date: 10.MAY.2016 23:15:09

Appendix E. Setup Photographs

<Radiated Emission>

Y Plane

LF



HF

