

FCC RF Test Report

APPLICANT : VERTU Corporation Limited
EQUIPMENT : GSM Quad-band / UMTS Quad-band /CDMA
Single-band/WIFI/BT mobile phone
BRAND NAME : VERTU
MODEL NAME : SIGNATURE S
TYPE : VM-06
FCC ID : P7QVM-06
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jun. 03, 2016 and testing was completed on Sep. 23, 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



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR660304C	Rev. 01	Initial issue of report	Dec. 01, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-247 5.2(1)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	RSS-Gen 6.6	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-247 A5.4(4)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	RSS-247 5.2(2)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	RSS-247 5.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-247 5.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.86 dB at 2390.000 MHz
3.6	15.207	RSS-GEN 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 21.70 dB at 0.150 MHz
3.7	15.203 & 15.247(b)	N/A	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom.

1.2 Manufacturer

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	GSM Quad-band / UMTS Quad-band /CDMA Single-band/WIFI/BT mobile phone
Brand Name	VERTU
Model Name	SIGNATURE S
Type	VM-06
FCC ID	P7QVM-06
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/DC-HSDPA/HSPA+ (16QAM uplink is not supported) WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth v3.0+EDR/Bluetooth v4.1 LE
IMEI Code	Conducted: 004402550074607 Conduction: 004402550074722 Radiation: Sample 1: 004402550074623 Sample 2: 004402550074714
HW Version	LOT0
SW Version	5.1.1_0.500.0.100
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT sample 1 and sample 2, the differences between two samples are only for Gain and shape of 2.4GHz Antenna and the material of shell parts, sample 1 with cortical shell and sample 2 with ceramic shell. After pre-scan two types of EUT, we only chose the sample 1 to perform all tests and sample 2 only verified the worse of Sample 1.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	802.11b : 21.05 dBm (0.1274 W) 802.11g : 21.82 dBm (0.1521 W) 802.11n HT20 : 22.15 dBm (0.1641 W)
99% Occupied Bandwidth	802.11b : 13.30MHz 802.11g : 18.30MHz 802.11n HT20 : 19.20MHz
Antenna Type / Gain	Sample 1 :PIFA Antenna with gain -3.9 dBi Sample 2 :PIFA Antenna with gain -6.0 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

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

1.6 Testing Location

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: +886-3-3273456 FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/ IC Registration No.
	TH05-HY	CO05-HY	03CH12-HY	380227/4086H-3

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 C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
- 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: conducted emission (150 kHz to 30 MHz) and 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 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

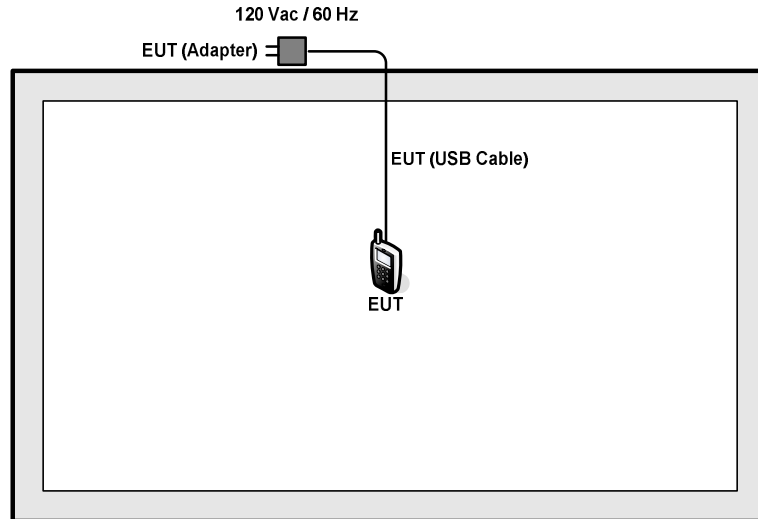
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

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

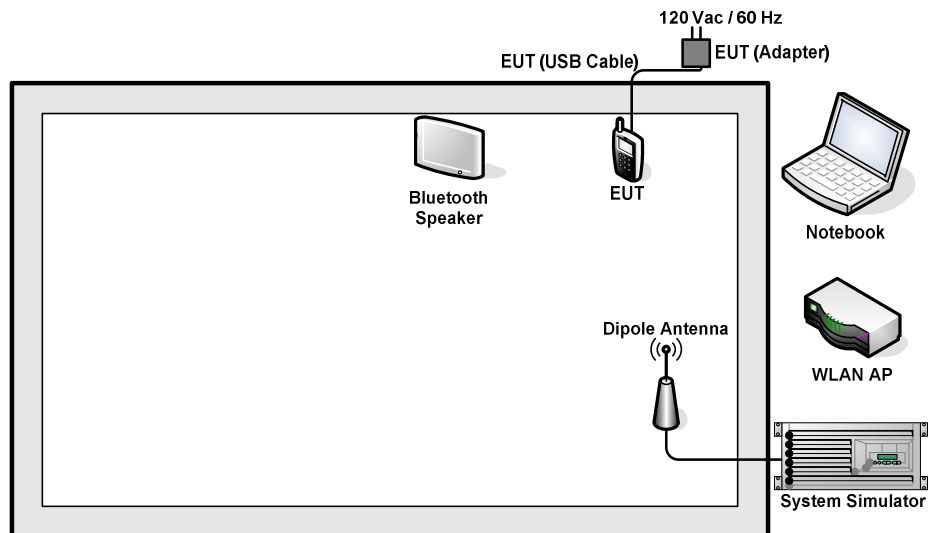
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)
Remark: For Radiated test cases, the tests were performance with Adapter, and USB Cable.	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	Dell	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Speaker	VERTU	SP-1V	P7Q-SP1V	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.

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 3.8 dB and 20dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 3.8 + 20 = 23.8 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

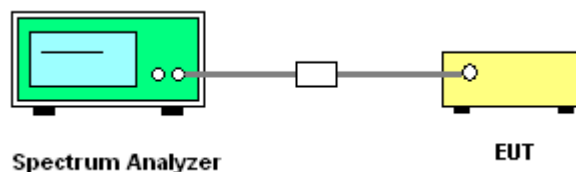
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

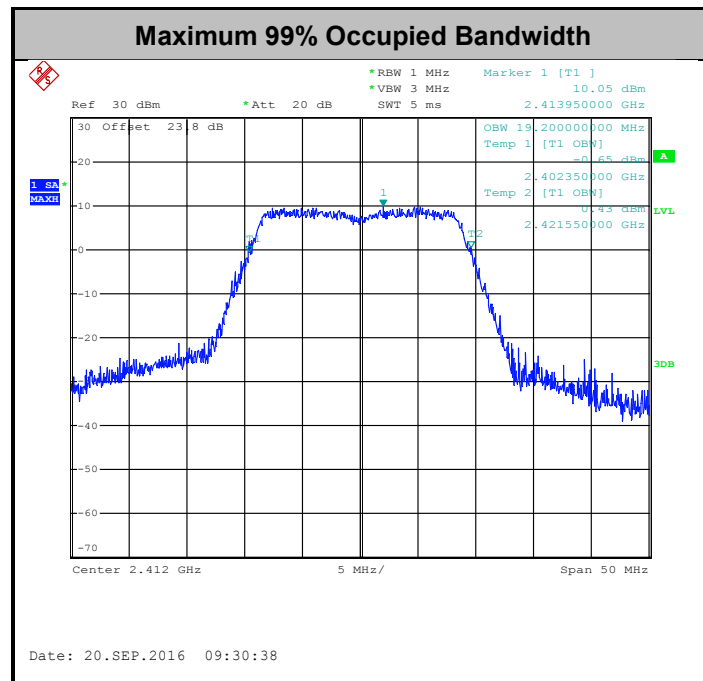
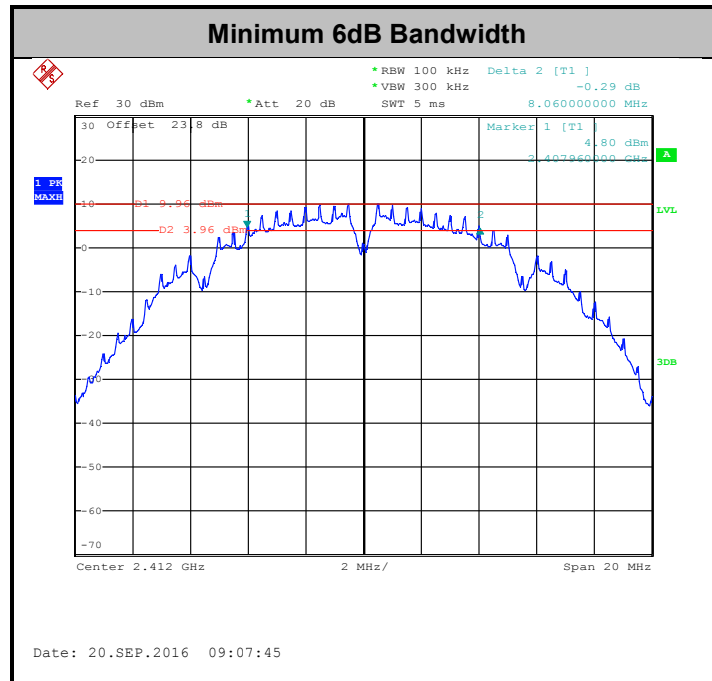
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied 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 Output Power Measurement

3.2.1 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 of directional gain greater than 6dBi are 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.

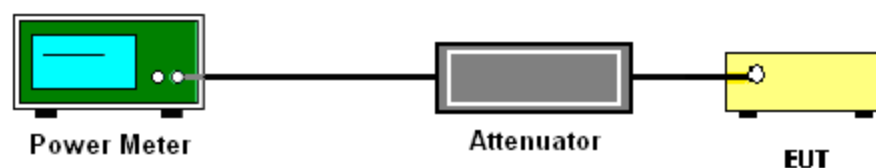
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r05 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

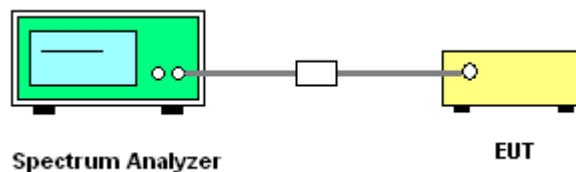
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

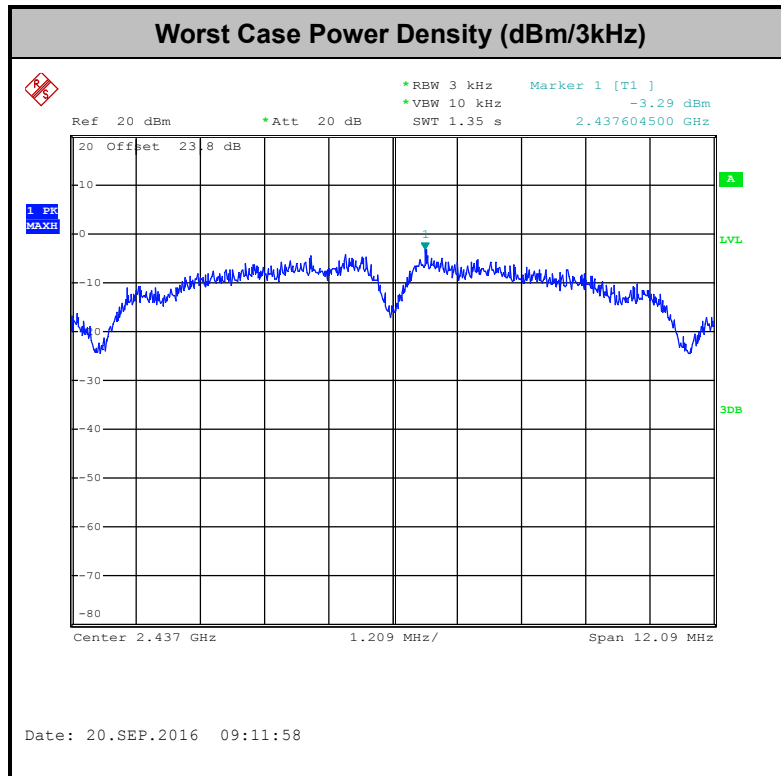
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

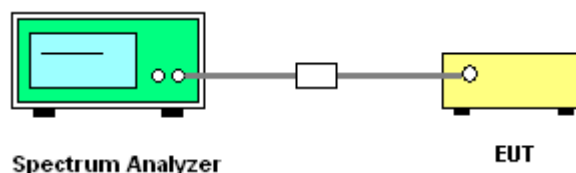
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



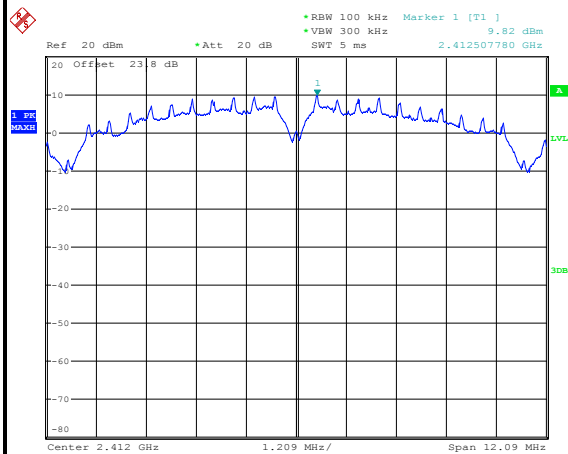


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	50~54%
Test Channel :	01	Test Engineer :	AC Chang

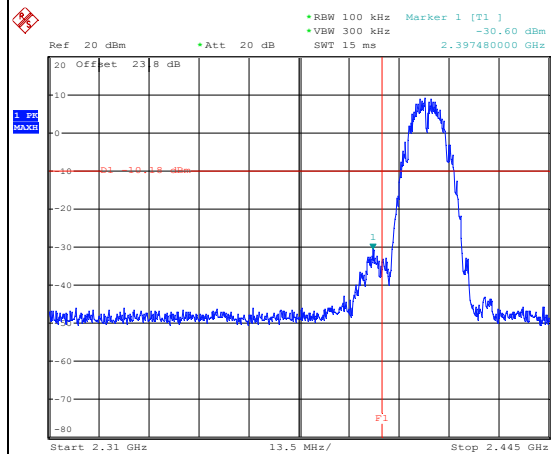
WLAN 802.11b Channel 01

100kHz PSD reference Level



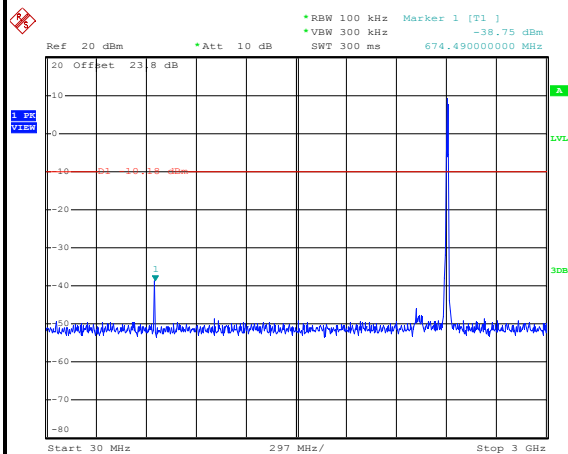
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Low Channel Plot



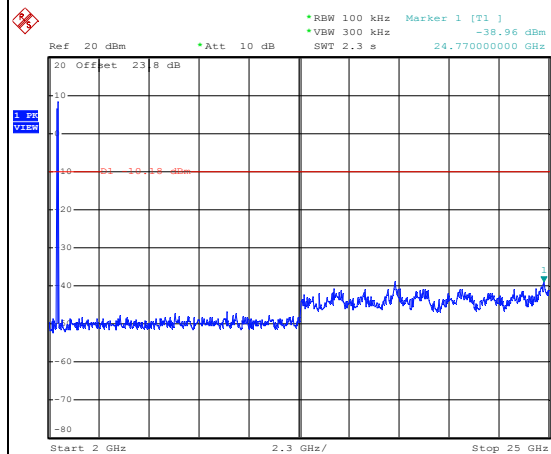
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Spurious Emission 30MHz~3GHz



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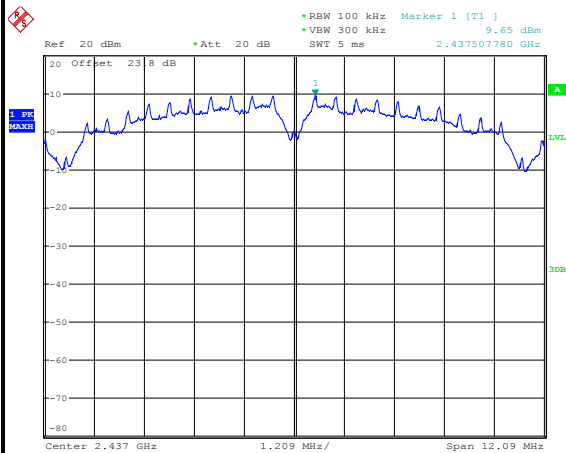
Spurious Emission 2GHz~25GHz



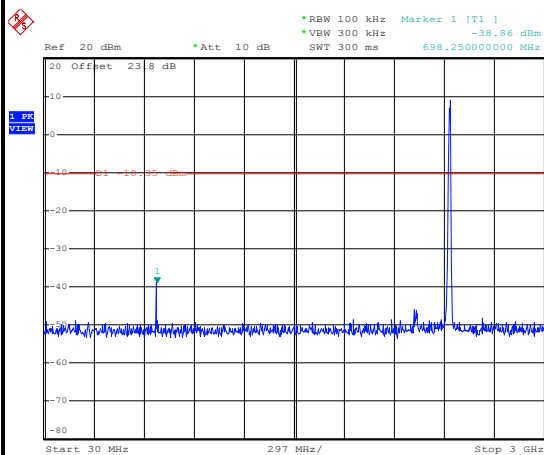
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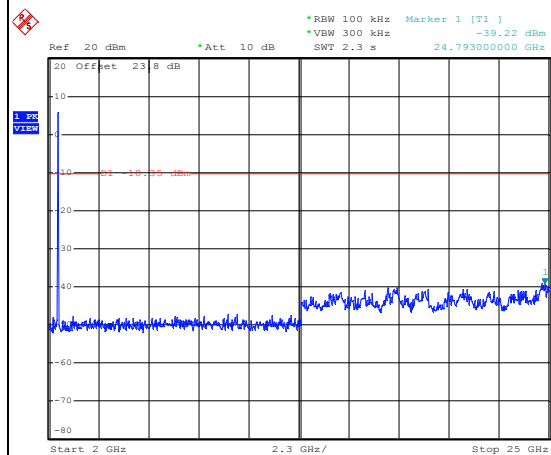
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Test Band :	2.4GHz Mid	Relative Humidity :	50~54%
Test Channel :	06	Test Engineer :	AC Chang

WLAN 802.11b Channel 06**100kHz PSD reference Level**

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Spurious Emission 30MHz~3GHz

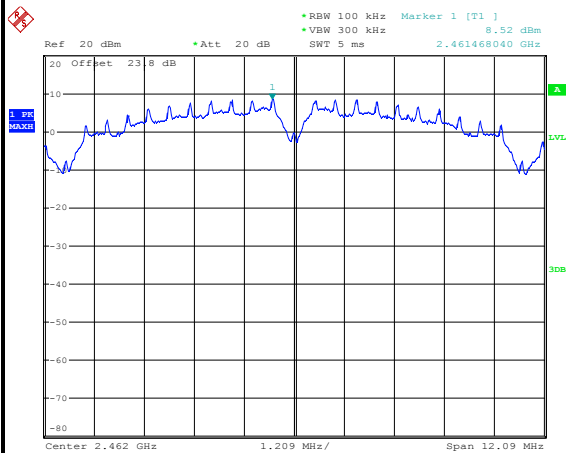
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Spurious Emission 2GHz~25GHz

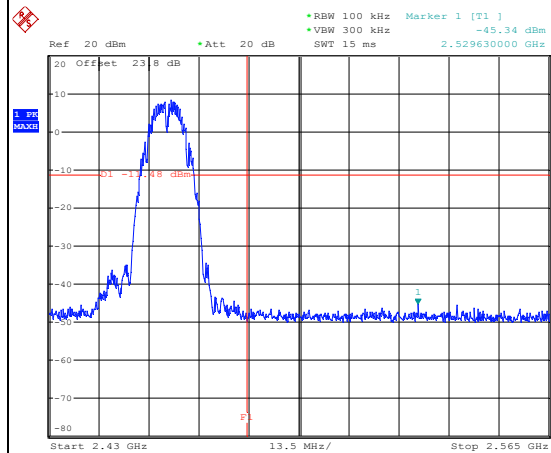
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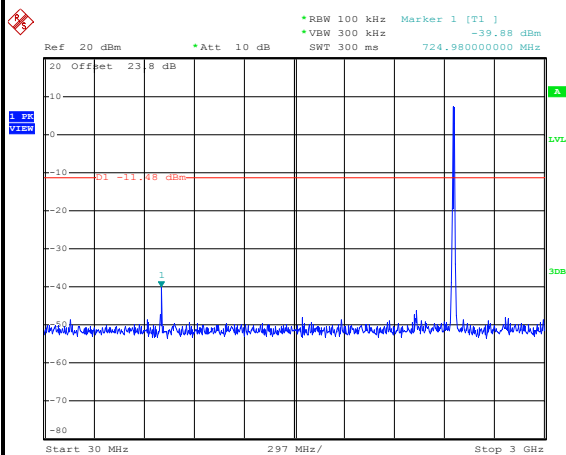
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	50~54%
Test Channel :	11	Test Engineer :	AC Chang

WLAN 802.11b Channel 11**100kHz PSD reference Level**

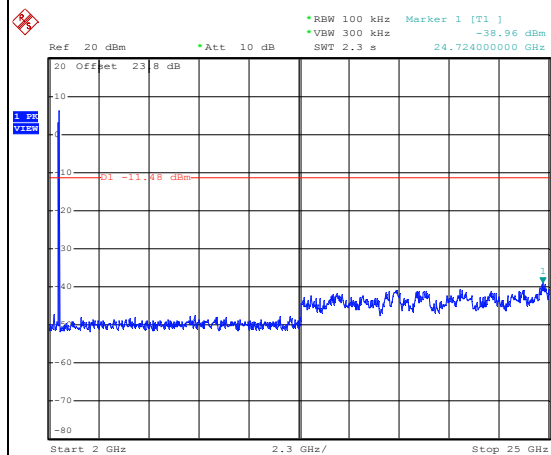
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High Channel Plot

Date: 20.SEP.2016 09:15:16

Spurious Emission 30MHz~3GHz

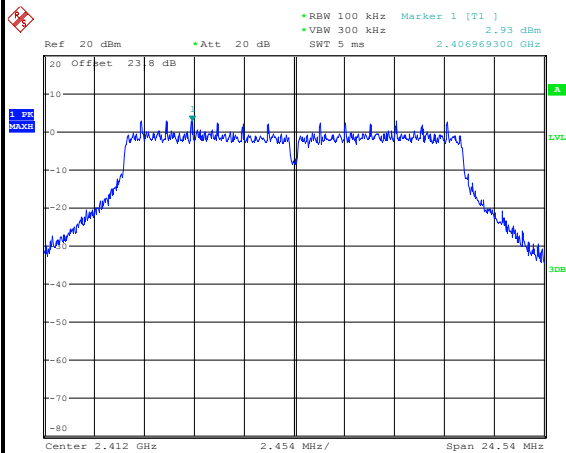
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Spurious Emission 2GHz~25GHz

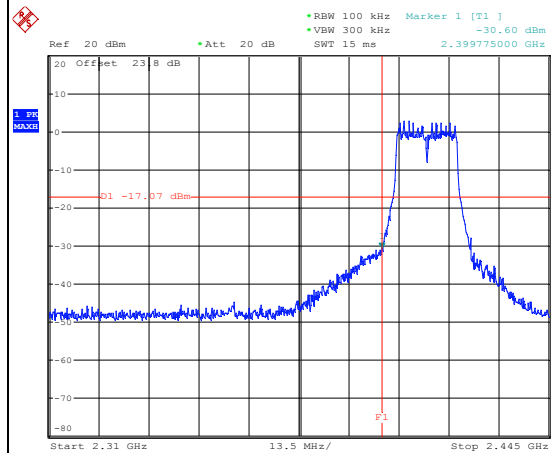
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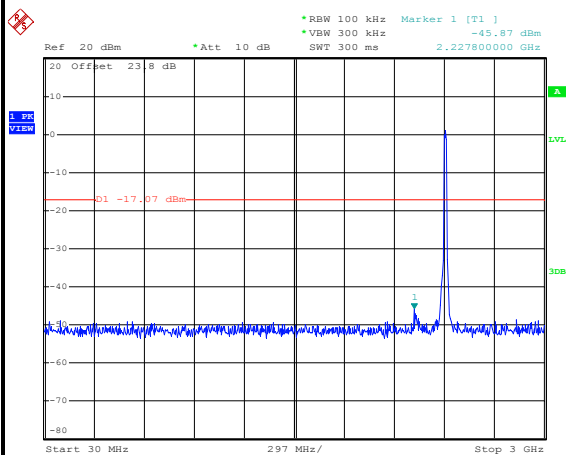
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	50~54%
Test Channel :	01	Test Engineer :	AC Chang

WLAN 802.11g Channel 01**100kHz PSD reference Level**

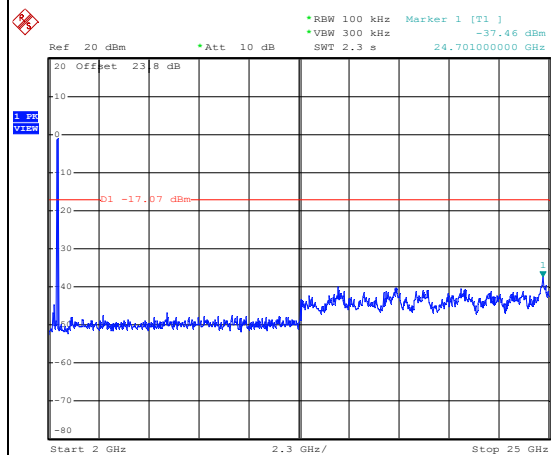
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Low Channel Plot

Date: 20.SEP.2016 09:19:58

Spurious Emission 30MHz~3GHz

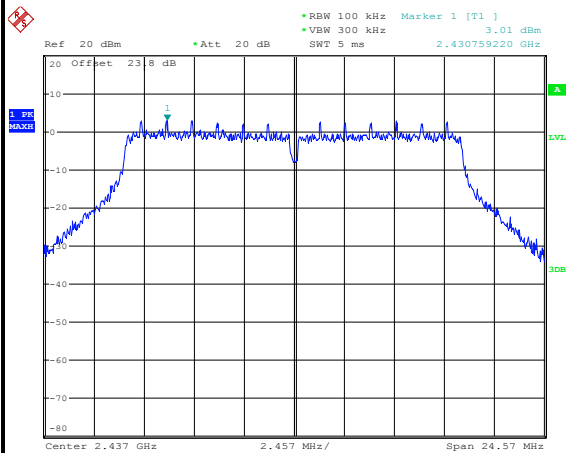
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Spurious Emission 2GHz~25GHz

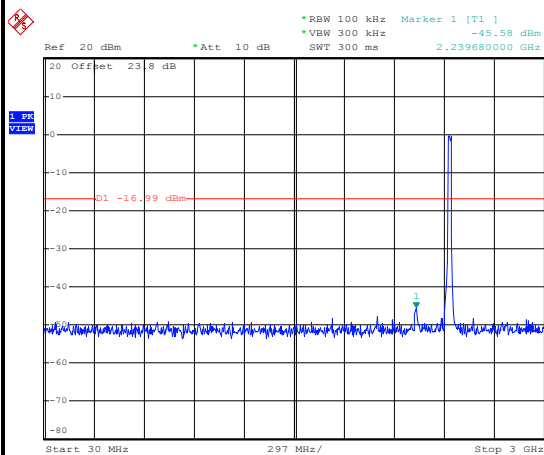
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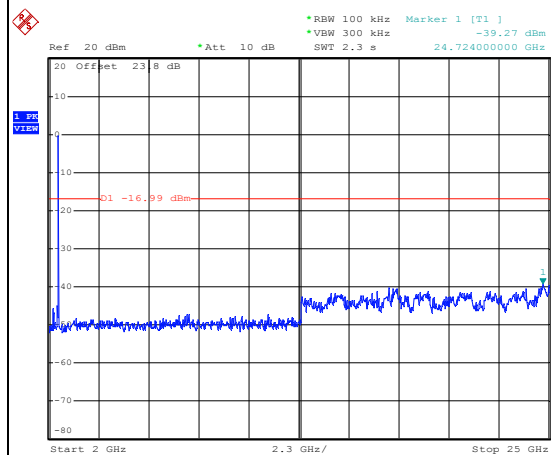
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~54%
Test Channel :	06	Test Engineer :	AC Chang

WLAN 802.11g Channel 06**100kHz PSD reference Level**

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Spurious Emission 30MHz~3GHz

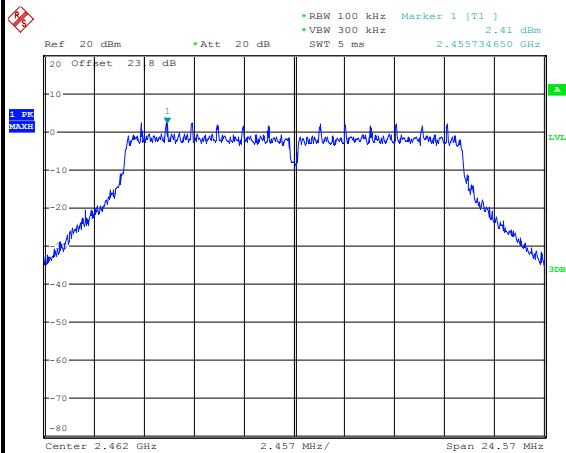
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Spurious Emission 2GHz~25GHz

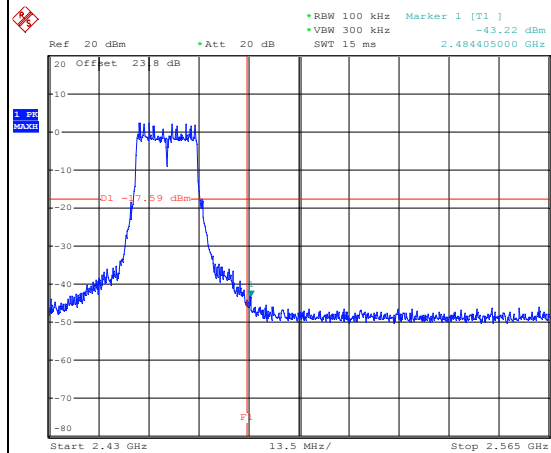
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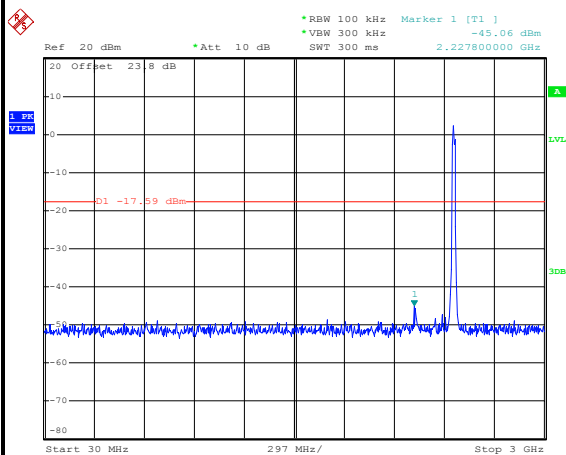
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	50~54%
Test Channel :	11	Test Engineer :	AC Chang

WLAN 802.11g Channel 11**100kHz PSD reference Level**

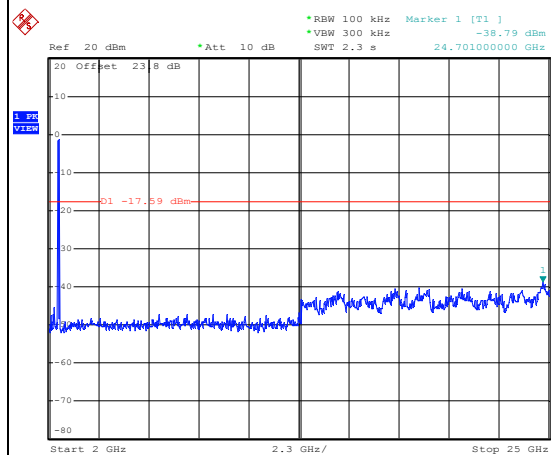
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High Channel Plot

Date: 20.SEP.2016 09:27:45

Spurious Emission 30MHz~3GHz

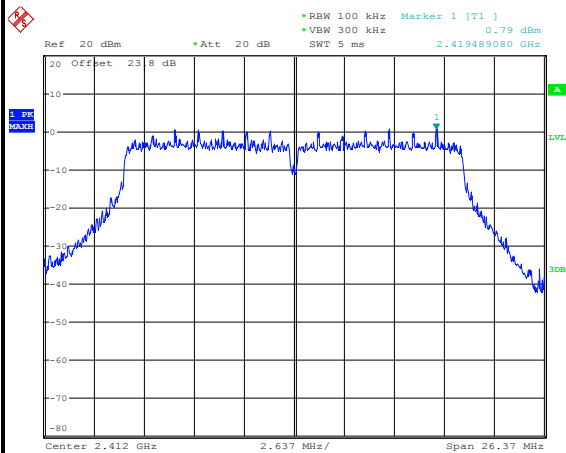
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Spurious Emission 2GHz~25GHz

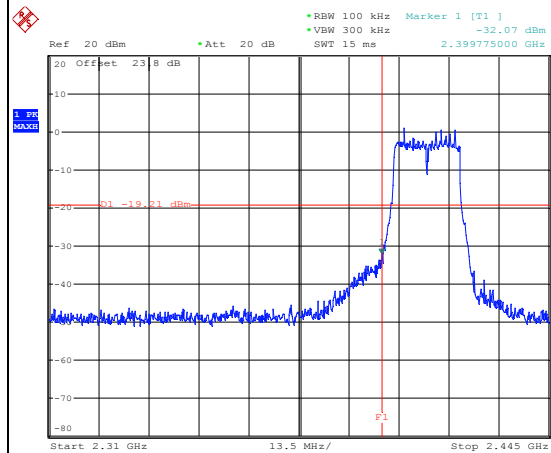
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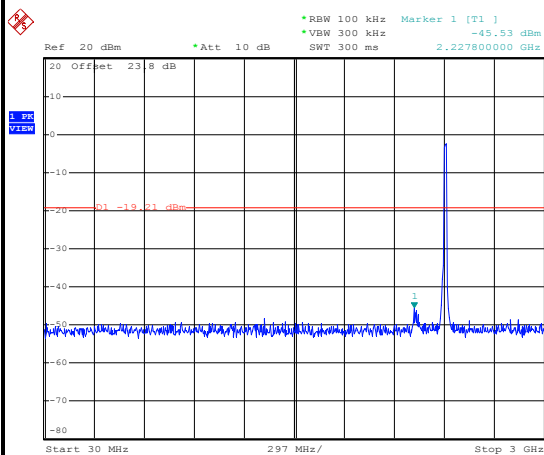
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	50~54%
Test Channel :	01	Test Engineer :	AC Chang

WLAN 802.11n HT20 Channel 01**100kHz PSD reference Level**

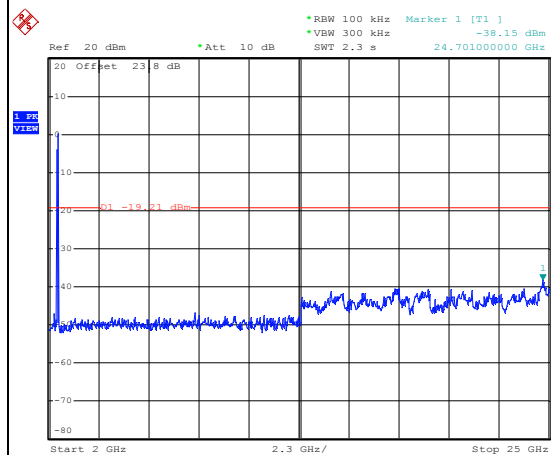
Date: 20.SEP.2016 09:31:35

Low Channel Plot

Date: 20.SEP.2016 09:31:54

Spurious Emission 30MHz~3GHz

Date: 20.SEP.2016 09:32:08

Spurious Emission 2GHz~25GHz

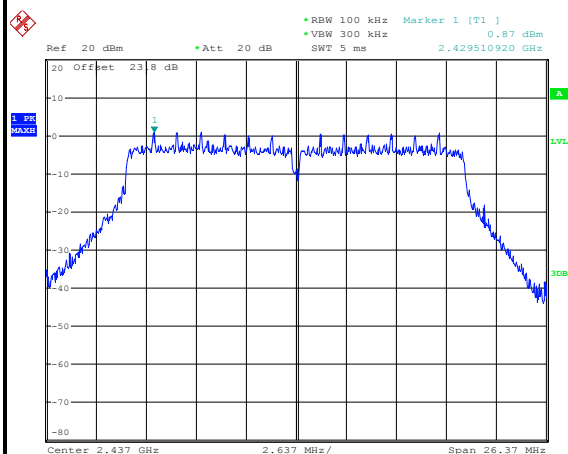
Date: 20.SEP.2016 09:32:16



Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~54%
Test Channel :	06	Test Engineer :	AC Chang

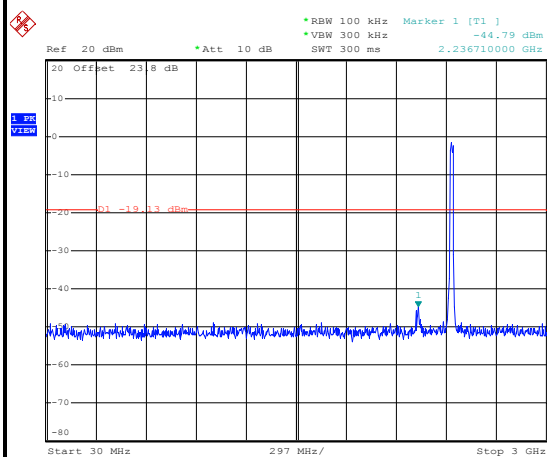
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



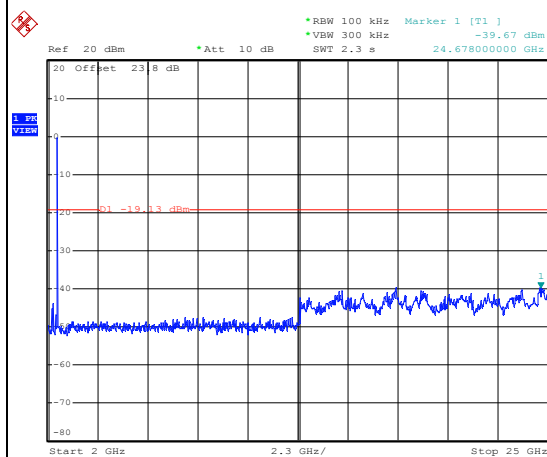
Date: 20.SEP.2016 09:34:31

Spurious Emission 30MHz~3GHz



Date: 20.SEP.2016 09:34:44

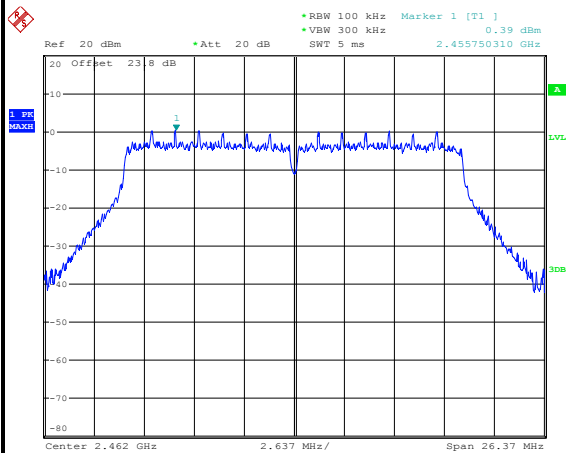
Spurious Emission 2GHz~25GHz



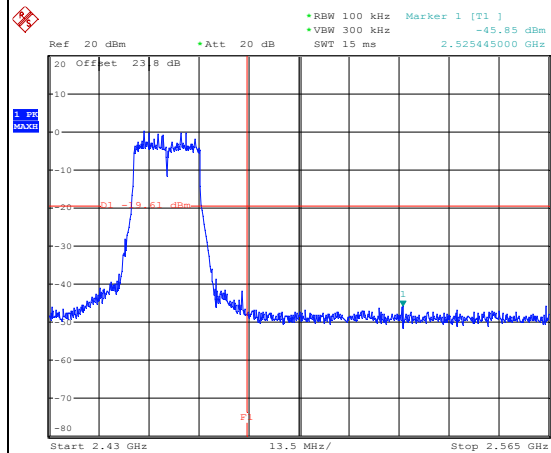
Date: 20.SEP.2016 09:34:52



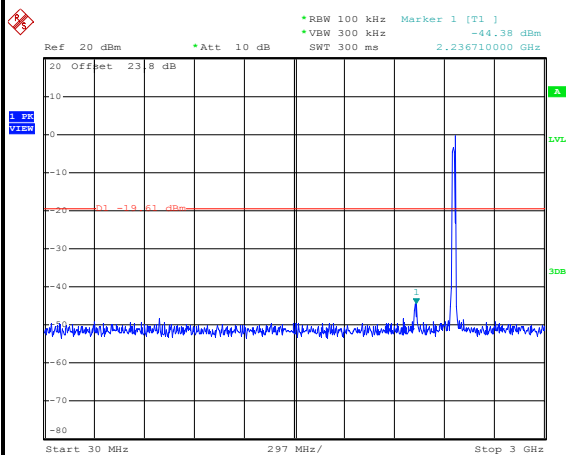
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	50~54%
Test Channel :	11	Test Engineer :	AC Chang

WLAN 802.11n HT20 Channel 11**100kHz PSD reference Level**

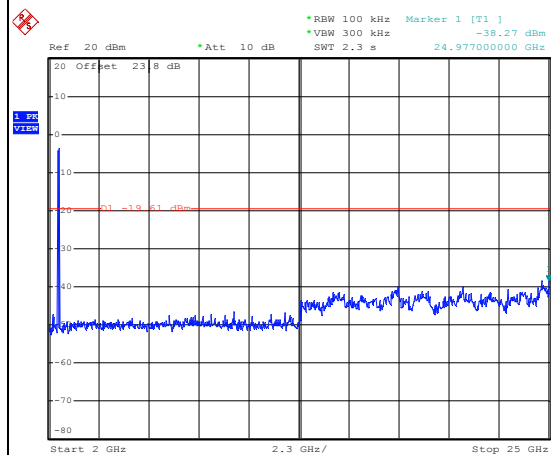
Date: 20.SEP.2016 09:37:29

High Channel Plot

Date: 20.SEP.2016 09:37:41

Spurious Emission 30MHz~3GHz

Date: 20.SEP.2016 09:37:53

Spurious Emission 2GHz~25GHz

Date: 20.SEP.2016 09:38:02

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 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 FCC section 15.209 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

3.5.2 Measuring Instruments

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



3.5.3 Test Procedures

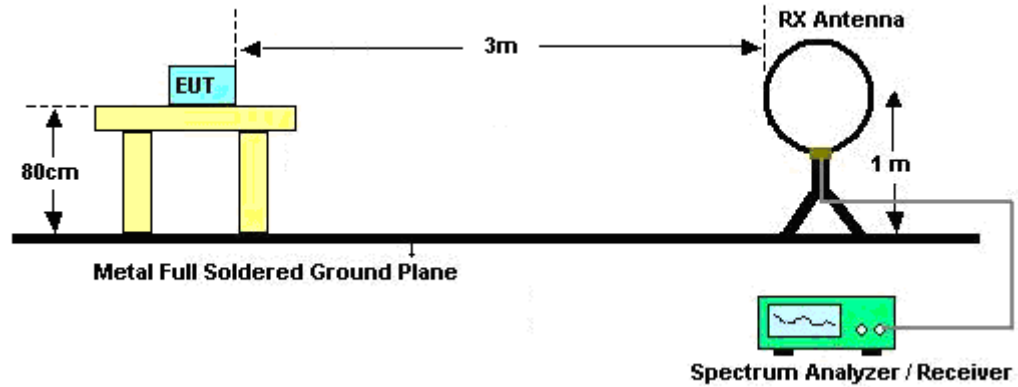
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

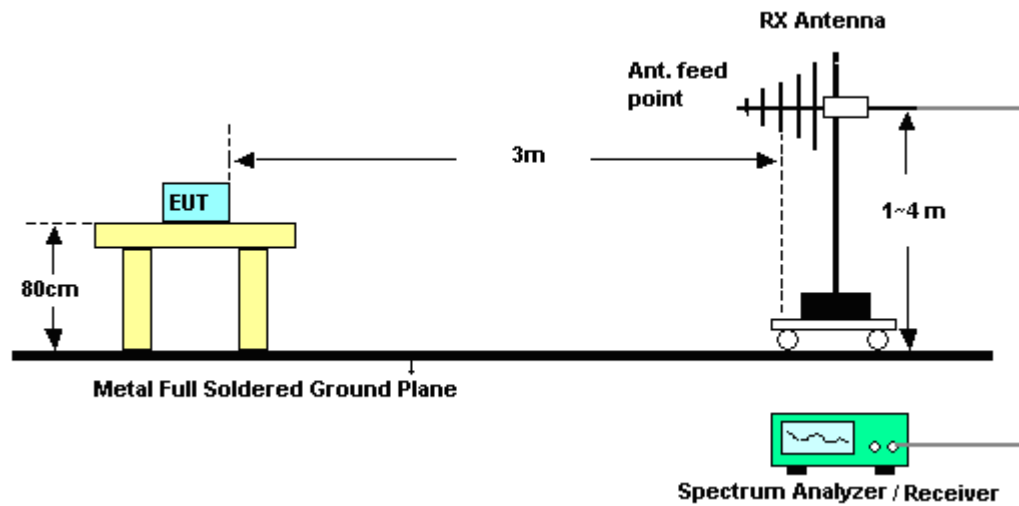
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

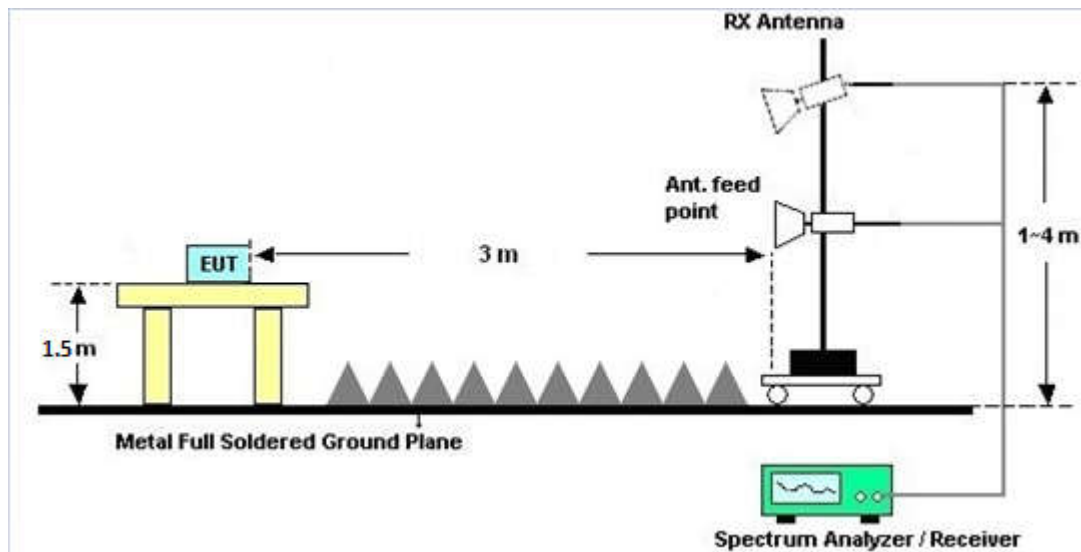
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 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 per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

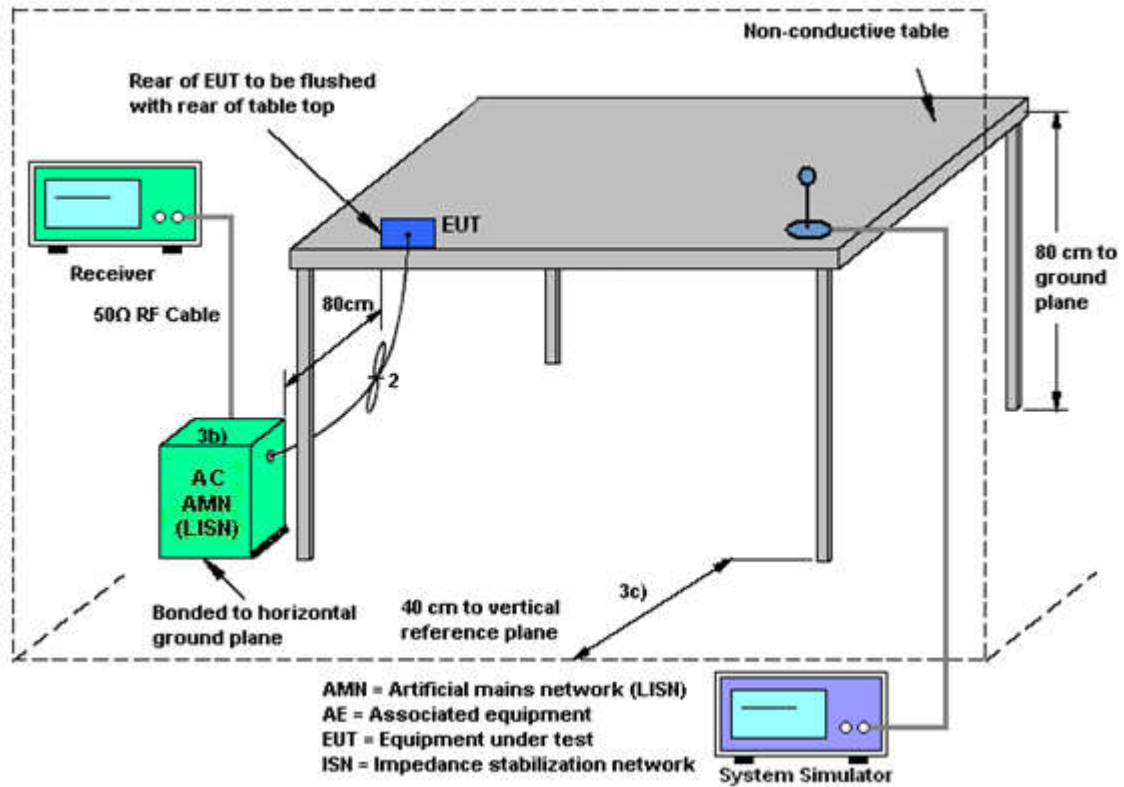
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

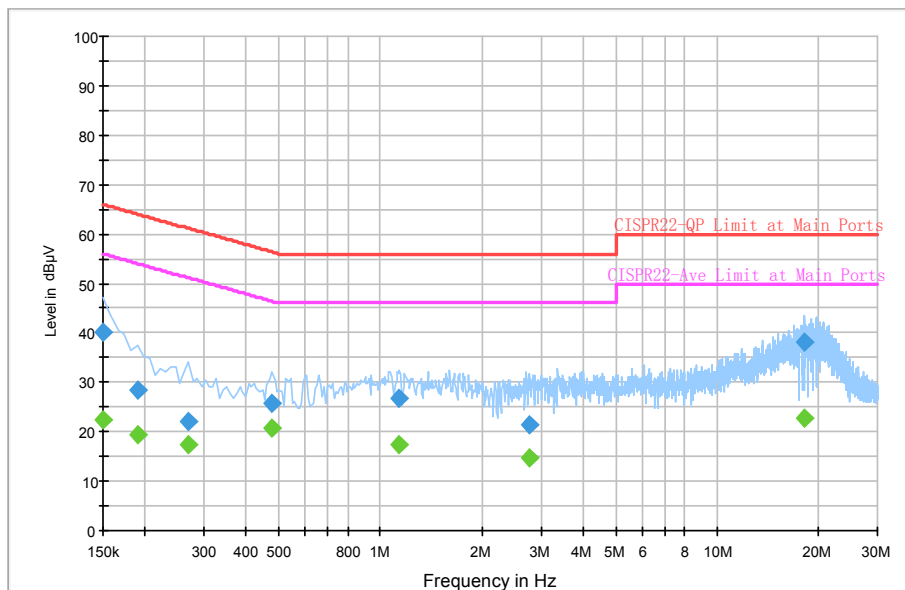
3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		

ENV216 Auto Test FCC Power Bar - L



Final Result : Quasi-Peak

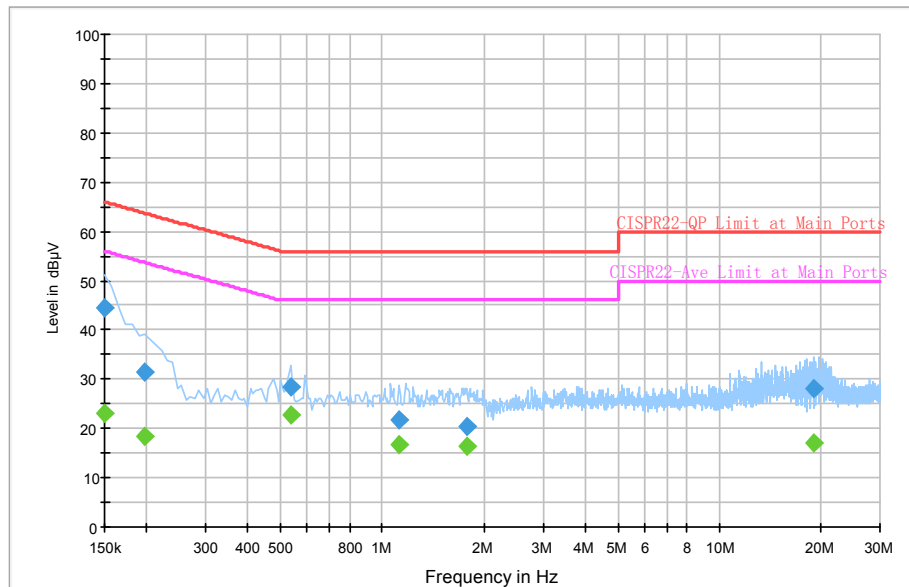
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	40.2	Off	L1	19.6	25.8	66.0
0.190000	28.4	Off	L1	19.6	35.6	64.0
0.270000	22.2	Off	L1	19.6	38.9	61.1
0.478000	25.8	Off	L1	19.6	30.6	56.4
1.142000	26.9	Off	L1	19.7	29.1	56.0
2.758000	21.4	Off	L1	19.5	34.6	56.0
18.150000	38.1	Off	L1	20.6	21.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	22.3	Off	L1	19.6	33.7	56.0
0.190000	19.3	Off	L1	19.6	34.7	54.0
0.270000	17.4	Off	L1	19.6	33.7	51.1
0.478000	20.7	Off	L1	19.6	25.7	46.4
1.142000	17.6	Off	L1	19.7	28.4	46.0
2.758000	14.7	Off	L1	19.5	31.3	46.0
18.150000	22.9	Off	L1	20.6	27.1	50.0

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	49~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		

ENV216 Auto Test FCC Power Bar - N


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.3	Off	N	19.6	21.7	66.0
0.198000	31.4	Off	N	19.6	32.3	63.7
0.534000	28.3	Off	N	19.6	27.7	56.0
1.126000	21.6	Off	N	19.6	34.4	56.0
1.782000	20.4	Off	N	19.7	35.6	56.0
19.158000	28.2	Off	N	20.7	31.8	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	23.0	Off	N	19.6	33.0	56.0
0.198000	18.5	Off	N	19.6	35.2	53.7
0.534000	22.6	Off	N	19.6	23.4	46.0
1.126000	16.7	Off	N	19.6	29.3	46.0
1.782000	16.2	Off	N	19.7	29.8	46.0
19.158000	17.0	Off	N	20.7	33.0	50.0



3.7 Antenna Requirements

3.7.1 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 FCC rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 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	1132003	300MHz~40GHz	Aug. 04, 2016	Sep. 07, 2016~ Sep. 20, 2016	Aug. 03, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 04, 2016	Sep. 07, 2016~ Sep. 20, 2016	Aug. 03, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 23, 2015	Sep. 07, 2016~ Sep. 20, 2016	Nov. 22, 2016	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 14, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Sep. 14, 2016	Aug. 29, 2017	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 19, 2016	Sep. 14, 2016	Apr. 18, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Sep. 14, 2016	Dec. 01, 2016	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 06, 2016	Sep. 14, 2016	Jan. 05, 2017	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Sep. 14, 2016	Jan. 07, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Sep. 13, 2016~ Sep. 23, 2016	Sep. 01, 2017	Radiation (03CH12-HY)
Loop Cable	Rohde & Schwarz	N/A	N/A	9KHz~30MHz	Dec. 03, 2015	Sep. 13, 2016~ Sep. 23, 2016	Dec. 02, 2016	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Nov. 16, 2015	Sep. 13, 2016~ Sep. 23, 2016	Nov. 15, 2016	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D	37059	30MHz~1GHz	Dec. 29, 2015	Sep. 13, 2016~ Sep. 23, 2016	Dec. 28, 2016	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 21, 2015	Sep. 13, 2016~ Sep. 23, 2016	Dec. 20, 2016	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Nov. 02, 2015	Sep. 13, 2016~ Sep. 23, 2016	Nov. 01, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1815698	1GHz~18GHz	Dec. 14, 2015	Sep. 13, 2016~ Sep. 23, 2016	Dec. 13, 2016	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 30, 2016	Sep. 13, 2016~ Sep. 23, 2016	Jan. 29, 2017	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Sep. 13, 2016~ Sep. 23, 2016	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Sep. 13, 2016~ Sep. 23, 2016	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Sep. 13, 2016~ Sep. 23, 2016	N/A	Radiation (03CH12-HY)
Preamplifier	MITEQ	JS44-1800400 0-33-8P	1840917	18GHz ~ 40GHz	Jun. 14, 2016	Sep. 13, 2016~ Sep. 23, 2016	Jun. 13, 2017	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 02, 2015	Sep. 13, 2016~ Sep. 23, 2016	Nov. 01, 2016	Radiation (03CH12-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3dB
--	-------

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

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

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

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

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7dB
--	-------



Appendix A. Conducted Test Results

A1 - DTS Part

Test Engineer:	AC Chang	Temperature:	21~25	°C
Test Date:	2016/9/7~2016/9/20	Relative Humidity:	50~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	13.25	8.06	0.50	Pass
11b	1Mbps	1	6	2437	13.30	8.06	0.50	Pass
11b	1Mbps	1	11	2462	13.30	8.06	0.50	Pass
11g	6Mbps	1	1	2412	18.15	16.36	0.50	Pass
11g	6Mbps	1	6	2437	18.30	16.38	0.50	Pass
11g	6Mbps	1	11	2462	18.25	16.38	0.50	Pass
HT20	MCS0	1	1	2412	19.20	17.58	0.50	Pass
HT20	MCS0	1	6	2437	19.05	17.58	0.50	Pass
HT20	MCS0	1	11	2462	19.00	17.58	0.50	Pass

TEST RESULTS DATA
Peak Power Table

2.4GHz Band										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	21.05	30.00	-3.90	17.15	36.00	Pass
11b	1Mbps	1	6	2437	20.93	30.00	-3.90	17.03	36.00	Pass
11b	1Mbps	1	11	2462	20.31	30.00	-3.90	16.41	36.00	Pass
11g	6Mbps	1	1	2412	21.82	30.00	-3.90	17.92	36.00	Pass
11g	6Mbps	1	6	2437	21.76	30.00	-3.90	17.86	36.00	Pass
11g	6Mbps	1	11	2462	21.54	30.00	-3.90	17.64	36.00	Pass
HT20	MCS0	1	1	2412	22.15	30.00	-3.90	18.25	36.00	Pass
HT20	MCS0	1	6	2437	21.96	30.00	-3.90	18.06	36.00	Pass
HT20	MCS0	1	11	2462	21.29	30.00	-3.90	17.39	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.09	18.42
11b	1Mbps	1	6	2437	0.09	18.35
11b	1Mbps	1	11	2462	0.09	17.75
11g	6Mbps	1	1	2412	0.61	13.12
11g	6Mbps	1	6	2437	0.61	13.11
11g	6Mbps	1	11	2462	0.61	12.55
HT20	MCS0	1	1	2412	0.66	12.62
HT20	MCS0	1	6	2437	0.66	12.52
HT20	MCS0	1	11	2462	0.66	12.01

TEST RESULTS DATA
Peak Power Density

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-4.74	-3.90	8.00	Pass
11b	1Mbps	1	6	2437	-3.29	-3.90	8.00	Pass
11b	1Mbps	1	11	2462	-4.97	-3.90	8.00	Pass
11g	6Mbps	1	1	2412	-11.06	-3.90	8.00	Pass
11g	6Mbps	1	6	2437	-11.10	-3.90	8.00	Pass
11g	6Mbps	1	11	2462	-11.39	-3.90	8.00	Pass
HT20	MCS0	1	1	2412	-12.97	-3.90	8.00	Pass
HT20	MCS0	1	6	2437	-13.55	-3.90	8.00	Pass
HT20	MCS0	1	11	2462	-14.35	-3.90	8.00	Pass



Appendix B. Radiated Spurious Emission

Sample 1

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable 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 01 2412MHz		2386.65	57.74	-16.26	74	54.73	27.05	7.45	31.49	222	331	P	H
		2387.385	49.58	-4.42	54	46.57	27.05	7.45	31.49	222	331	A	H
	*	2412	103.36	-	-	100.31	27.09	7.45	31.49	222	331	P	H
	*	2412	98.95	-	-	95.9	27.09	7.45	31.49	222	331	A	H
		2387.07	58.35	-15.65	74	55.34	27.05	7.45	31.49	300	127	P	V
		2386.65	50.03	-3.97	54	47.02	27.05	7.45	31.49	300	127	A	V
	*	2412	102.02	-	-	98.97	27.09	7.45	31.49	300	127	P	V
	*	2412	97.76	-	-	94.71	27.09	7.45	31.49	300	127	A	V
802.11b CH 06 2437MHz		2386.86	55.68	-18.32	74	52.67	27.05	7.45	31.49	228	26	P	H
		2379.86	44.5	-9.5	54	41.61	27.01	7.37	31.49	228	26	A	H
	*	2437	101.76	-	-	98.57	27.18	7.49	31.48	228	26	P	H
	*	2437	97.46	-	-	94.27	27.18	7.49	31.48	228	26	A	H
		2500	56.68	-17.32	74	53.31	27.3	7.53	31.46	228	26	P	H
		2499.02	44.16	-9.84	54	40.79	27.3	7.53	31.46	228	26	A	H
		2348.78	56.76	-17.24	74	53.96	26.93	7.37	31.5	362	109	P	V
		2381.12	44.1	-9.9	54	41.13	27.01	7.45	31.49	362	109	A	V
	*	2437	99.4	-	-	96.21	27.18	7.49	31.48	362	109	P	V
	*	2437	95.06	-	-	91.87	27.18	7.49	31.48	362	109	A	V
		2492.65	56.1	-17.9	74	52.73	27.3	7.53	31.46	362	109	P	V
		2498.11	44.11	-9.89	54	40.74	27.3	7.53	31.46	362	109	A	V



802.11b CH 11 2462MHz	*	2462	100.07	-	-	96.79	27.22	7.53	31.47	225	27	P	H
	*	2462	95.65	-	-	92.37	27.22	7.53	31.47	225	27	A	H
		2498.72	56.03	-17.97	74	52.66	27.3	7.53	31.46	225	27	P	H
		2487.4	44.9	-9.1	54	41.58	27.26	7.53	31.47	225	27	A	H
	*	2462	98.38	-	-	95.1	27.22	7.53	31.47	400	66	P	V
	*	2462	93.99	-	-	90.71	27.22	7.53	31.47	400	66	A	V
		2490.12	55.69	-18.31	74	52.33	27.3	7.53	31.47	400	66	P	V
		2486.4	44.65	-9.35	54	41.33	27.26	7.53	31.47	400	66	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	39.95	-34.05	74	56.09	31.26	10.74	58.14	100	0	P	H
		4824	41.13	-32.87	74	57.27	31.26	10.74	58.14	100	0	P	V
802.11b CH 06 2437MHz		4872	38.68	-35.32	74	54.56	31.33	10.89	58.1	100	0	P	H
		7308	42.54	-31.46	74	51.38	36.07	14.18	59.09	100	0	P	H
		4872	41.1	-32.9	74	56.98	31.33	10.89	58.1	100	0	P	V
		7308	42.32	-31.68	74	51.16	36.07	14.18	59.09	100	0	P	V
802.11b CH 11 2462MHz		4926	37.15	-36.85	74	52.77	31.4	11.04	58.06	100	0	P	H
		7386	42.68	-31.32	74	51.24	36.31	14.27	59.14	100	0	P	H
		4926	37.68	-36.32	74	53.3	31.4	11.04	58.06	100	0	P	V
		7386	42.32	-31.68	74	50.88	36.31	14.27	59.14	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.905	62.62	-11.38	74	59.61	27.05	7.45	31.49	296	25	P	H
		2390	50.14	-3.86	54	47.13	27.05	7.45	31.49	296	25	A	H
	*	2414	100.74	-	-	97.69	27.09	7.45	31.49	296	25	P	H
	*	2410	90.9	-	-	87.85	27.09	7.45	31.49	296	25	A	H
		2389.905	61.87	-12.13	74	58.86	27.05	7.45	31.49	301	86	P	V
		2389.59	48.29	-5.71	54	45.28	27.05	7.45	31.49	301	86	A	V
	*	2410	98.66	-	-	95.61	27.09	7.45	31.49	301	86	P	V
	*	2410	88.16	-	-	85.11	27.09	7.45	31.49	301	86	A	V
802.11g CH 06 2437MHz		2383.36	55.82	-18.18	74	52.85	27.01	7.45	31.49	228	24	P	H
		2384.9	45.23	-8.77	54	42.26	27.01	7.45	31.49	228	24	A	H
	*	2437	98.82	-	-	95.63	27.18	7.49	31.48	228	24	P	H
	*	2437	89.47	-	-	86.28	27.18	7.49	31.48	228	24	A	H
		2487.75	55.57	-18.43	74	52.21	27.3	7.53	31.47	228	24	P	H
		2489.01	44.62	-9.38	54	41.26	27.3	7.53	31.47	228	24	A	H
		2380.28	55.97	-18.03	74	53	27.01	7.45	31.49	371	106	P	V
		2383.22	44.53	-9.47	54	41.56	27.01	7.45	31.49	371	106	A	V
	*	2437	97.18	-	-	93.99	27.18	7.49	31.48	371	106	P	V
	*	2437	87.76	-	-	84.57	27.18	7.49	31.48	371	106	A	V
		2498.46	55.41	-18.59	74	52.04	27.3	7.53	31.46	371	106	P	V
		2487.4	44.58	-9.42	54	41.26	27.26	7.53	31.47	371	106	A	V



802.11g CH 11 2462MHz	*	2462	97.52	-	-	94.24	27.22	7.53	31.47	198	24	P	H
	*	2462	86.95	-	-	83.67	27.22	7.53	31.47	198	24	A	H
		2483.52	59.51	-14.49	74	56.19	27.26	7.53	31.47	198	24	P	H
		2483.64	45.71	-8.29	54	42.39	27.26	7.53	31.47	198	24	A	H
	*	2462	96.16	-	-	92.88	27.22	7.53	31.47	400	65	P	V
	*	2462	86.11	-	-	82.83	27.22	7.53	31.47	400	65	A	V
		2483.88	57.44	-16.56	74	54.12	27.26	7.53	31.47	400	65	P	V
		2483.52	45.03	-8.97	54	41.71	27.26	7.53	31.47	400	65	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	36.99	-37.01	74	53.13	31.26	10.74	58.14	100	0	P	H
		4824	36.94	-37.06	74	53.08	31.26	10.74	58.14	100	0	P	V
802.11g CH 06 2437MHz		4872	37.6	-36.4	74	53.48	31.33	10.89	58.1	100	0	P	H
		7308	42	-32	74	50.84	36.07	14.18	59.09	100	0	P	H
		4872	37.56	-36.44	74	53.44	31.33	10.89	58.1	100	0	P	V
		7308	41.79	-32.21	74	50.63	36.07	14.18	59.09	100	0	P	V
802.11g CH 11 2462MHz		4926	38.72	-35.28	74	54.34	31.4	11.04	58.06	100	0	P	H
		7386	41.55	-32.45	74	50.11	36.31	14.27	59.14	100	0	P	H
		4926	37.5	-36.5	74	53.12	31.4	11.04	58.06	100	0	P	V
		7386	41.52	-32.48	74	50.08	36.31	14.27	59.14	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.59	65.9	-8.1	74	62.89	27.05	7.45	31.49	206	28	P	H
		2390	49.78	-4.22	54	46.77	27.05	7.45	31.49	206	28	A	H
	*	2412	99.35	-	-	96.3	27.09	7.45	31.49	206	28	P	H
	*	2412	89.35	-	-	86.3	27.09	7.45	31.49	206	28	A	H
		2389.905	61.79	-12.21	74	58.78	27.05	7.45	31.49	379	78	P	V
		2390	47.6	-6.4	54	44.59	27.05	7.45	31.49	379	78	A	V
	*	2412	98.6	-	-	95.55	27.09	7.45	31.49	379	78	P	V
	*	2412	88.37	-	-	85.32	27.09	7.45	31.49	379	78	A	V
802.11n HT20 CH 06 2437MHz		2369.08	55.55	-18.45	74	52.66	27.01	7.37	31.49	228	27	P	H
		2385.32	45.39	-8.61	54	42.42	27.01	7.45	31.49	228	27	A	H
	*	2437	99.01	-	-	95.82	27.18	7.49	31.48	228	27	P	H
	*	2437	89.15	-	-	85.96	27.18	7.49	31.48	228	27	A	H
		2499.86	56.31	-17.69	74	52.94	27.3	7.53	31.46	228	27	P	H
		2484.32	44.72	-9.28	54	41.4	27.26	7.53	31.47	228	27	A	H
		2384.76	55.73	-18.27	74	52.76	27.01	7.45	31.49	371	110	P	V
		2386.02	44.48	-9.52	54	41.47	27.05	7.45	31.49	371	110	A	V
	*	2437	97.66	-	-	94.47	27.18	7.49	31.48	371	110	P	V
	*	2437	87.14	-	-	83.95	27.18	7.49	31.48	371	110	A	V
		2488.87	55.58	-18.42	74	52.22	27.3	7.53	31.47	371	110	P	V
		2498.95	44.54	-9.46	54	41.17	27.3	7.53	31.46	371	110	A	V



802.11n HT20 CH 11 2462MHz	*	2462	97.92	-	-	94.64	27.22	7.53	31.47	222	26	P	H
	*	2462	87.45	-	-	84.17	27.22	7.53	31.47	222	26	A	H
		2483.56	62.65	-11.35	74	59.33	27.26	7.53	31.47	222	26	P	H
		2483.84	46.39	-7.61	54	43.07	27.26	7.53	31.47	222	26	A	H
	*	2462	94.78	-	-	91.5	27.22	7.53	31.47	400	68	P	V
	*	2462	85.76	-	-	82.48	27.22	7.53	31.47	400	68	A	V
		2483.84	58.66	-15.34	74	55.34	27.26	7.53	31.47	400	68	P	V
		2483.56	45.4	-8.6	54	42.08	27.26	7.53	31.47	400	68	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	38.12	-35.88	74	54.26	31.26	10.74	58.14	100	0	P	H
		4824	37.77	-36.23	74	53.91	31.26	10.74	58.14	100	0	P	V
802.11n HT20 CH 06 2437MHz		4872	38.33	-35.67	74	54.21	31.33	10.89	58.1	100	0	P	H
		7308	42.41	-31.59	74	51.25	36.07	14.18	59.09	100	0	P	H
		4872	37.73	-36.27	74	53.61	31.33	10.89	58.1	100	0	P	V
		7308	41.56	-32.44	74	50.4	36.07	14.18	59.09	100	0	P	V
802.11n HT20 CH 11 2462MHz		4926	37.88	-36.12	74	53.5	31.4	11.04	58.06	100	0	P	H
		7386	41.16	-32.84	74	49.72	36.31	14.27	59.14	100	0	P	H
		4926	37.44	-36.56	74	53.06	31.4	11.04	58.06	100	0	P	V
		7386	41.11	-32.89	74	49.67	36.31	14.27	59.14	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

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)
2.4GHz 802.11g LF		49.17	24.6	-15.4	40	40.95	15.33	0.78	32.46	-	-	P	H
		94.26	26.6	-16.9	43.5	42.69	15.28	1.06	32.43	-	-	P	H
		172.29	26.02	-17.48	43.5	40.95	15.74	1.75	32.42	-	-	P	H
		263.82	25.66	-20.34	46	36.36	19.34	2.25	32.29	-	-	P	H
		745.2	31.91	-14.09	46	32.78	27.48	3.97	32.32	391	257	P	H
		930.7	31.39	-14.61	46	28.31	29.78	4.6	31.3			P	H
		45.12	30.39	-9.61	40	45	17.07	0.78	32.46	100	320	P	V
		87.78	22.86	-17.14	40	39.66	14.58	1.06	32.44	-	-	P	V
		161.76	26.71	-16.79	43.5	40.6	16.78	1.75	32.42	-	-	P	V
		171.75	27.02	-16.48	43.5	41.9	15.79	1.75	32.42	-	-	P	V
		635.3	26.76	-19.24	46	29.73	25.82	3.61	32.4	-	-	P	V
		947.5	31.43	-14.57	46	27.59	30.25	4.75	31.16	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Sample 2

2.4GHz 2400~2483.5MHz

WIFI 802.11g (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)
802.11g CH 01 2412MHz		2389.905	65.77	-8.23	74	62.76	27.05	7.45	31.49	160	359	P	H
		2390	48.99	-5.01	54	45.98	27.05	7.45	31.49	160	359	A	H
	*	2412	97.62	-	-	94.57	27.09	7.45	31.49	160	359	P	H
	*	2412	87.53	-	-	84.48	27.09	7.45	31.49	160	359	A	H
		2389.59	62.29	-11.71	74	59.28	27.05	7.45	31.49	137	350	P	V
		2390	48.07	-5.93	54	45.06	27.05	7.45	31.49	137	350	A	V
	*	2412	96.27	-	-	93.22	27.09	7.45	31.49	137	350	P	V
	*	2412	86.27	-	-	83.22	27.09	7.45	31.49	137	350	A	V

2.4GHz 2400~2483.5MHz

WIFI 802.11g (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)
802.11g CH 01 2412MHz		4824	36.5	-37.5	74	52.64	31.26	10.74	58.14	100	0	P	H
		4824	36.29	-37.71	74	52.43	31.26	10.74	58.14	100	0	P	V



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

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)
2.4GHz 802.11g LF		46.74	25.31	-14.69	40	40.36	16.63	0.78	32.46	322	11	P	H
		93.18	28.6	-14.9	43.5	44.81	15.16	1.06	32.43	-	-	P	H
		154.74	27.48	-16.02	43.5	40.9	17.25	1.75	32.42	-	-	P	H
		268.68	24.8	-21.2	46	35.7	19.14	2.25	32.29	-	-	P	H
		867.7	29.73	-16.27	46	28.34	28.71	4.45	31.77	-	-	P	H
		923	31.19	-14.81	46	28.4	29.56	4.6	31.37	-	-	P	H
		46.74	32.66	-7.34	40	47.71	16.63	0.78	32.46	100	0	QP	V
		91.02	26.85	-16.65	43.5	43.31	14.92	1.06	32.44	-	-	P	V
		158.79	28.08	-15.42	43.5	41.7	17.05	1.75	32.42	-	-	P	V
		173.1	25.36	-18.14	43.5	40.35	15.68	1.75	32.42	-	-	P	V
		908.3	31.06	-14.94	46	28.84	29.12	4.6	31.5	-	-	P	V
		955.9	31.62	-14.38	46	27.73	30.22	4.75	31.08	-	-	P	V
Remark	3. No other spurious found.												
	4. 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	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”.

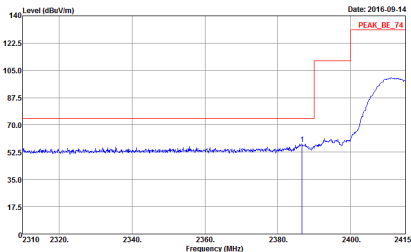
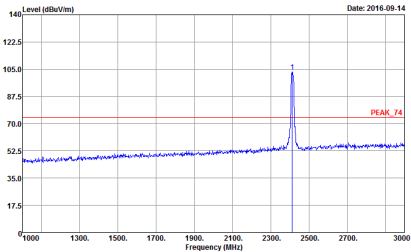
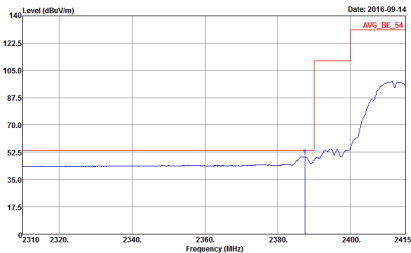
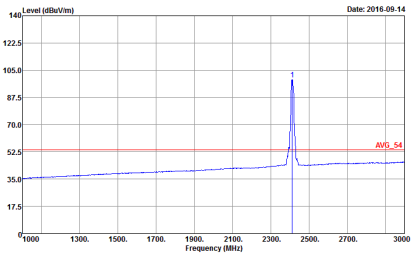


Appendix C. Radiated Spurious Emission Plots

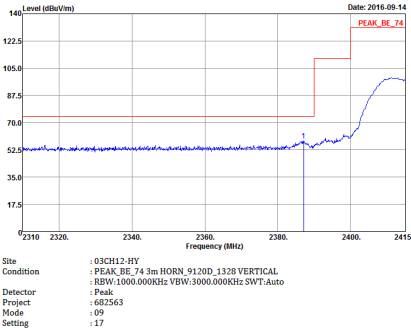
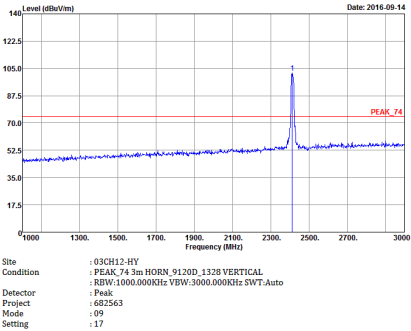
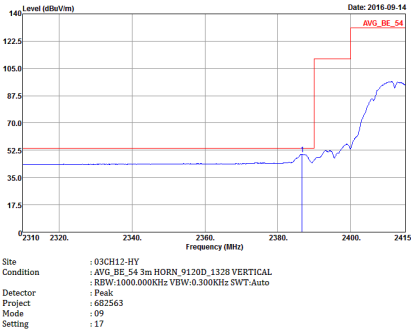
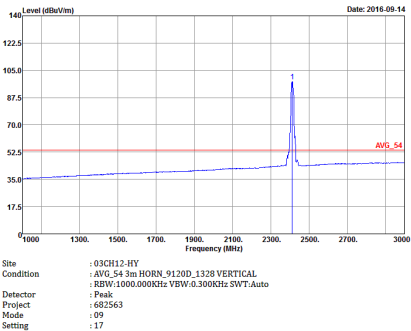
Sample 1

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site Condition : 03CH12-HY : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 09 Setting : 17	 Site Condition : 03CH12-HY : PEAK_74 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 09 Setting : 17
Avg.	 Site Condition : 03CH12-HY : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 682563 Mode : 09 Setting : 17	 Site Condition : 03CH12-HY : AVG_54 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 682563 Mode : 09 Setting : 17

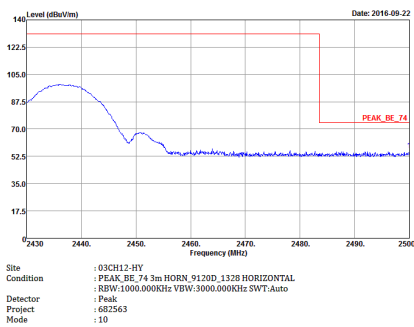
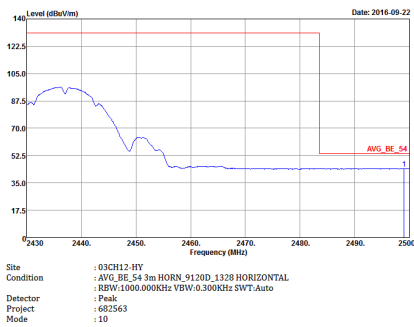


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 10	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 10
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 682563 Mode : 10	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 682563 Mode : 10

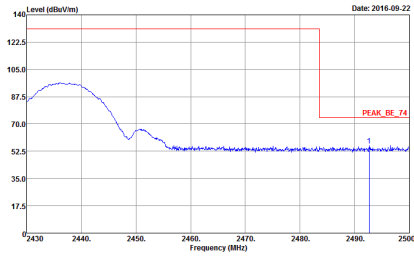
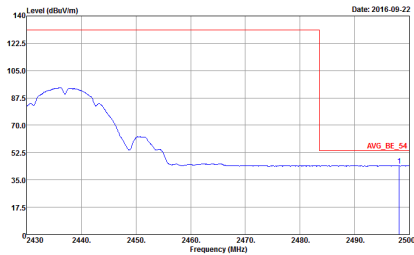


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1378 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 602563 10	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1378 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Project : Peak Mode : 602563 10	

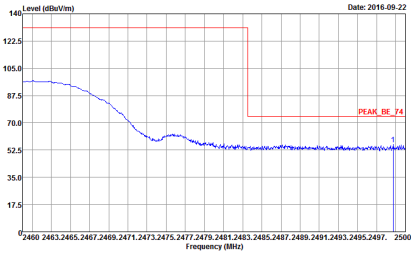
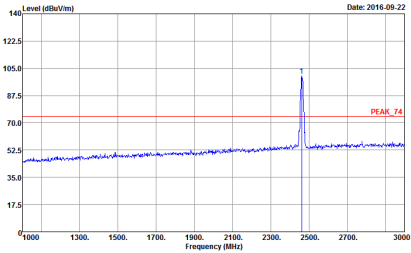
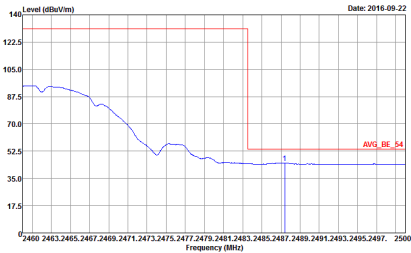
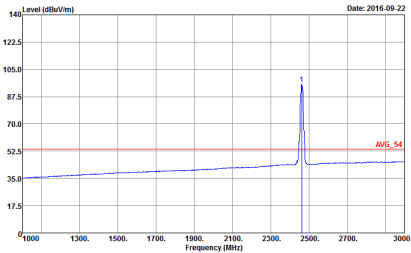


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 10	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 10
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 10	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 10

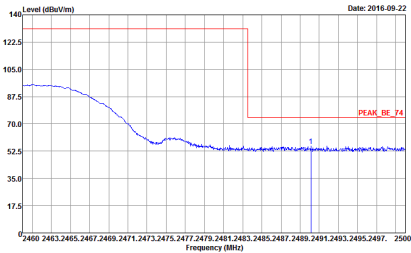
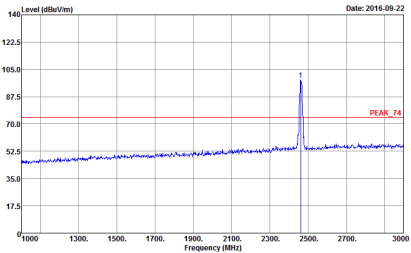
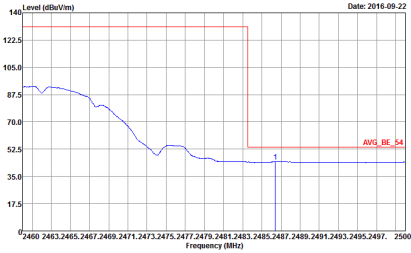
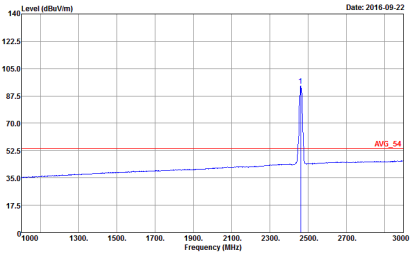


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 602563 10	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 602563 10	

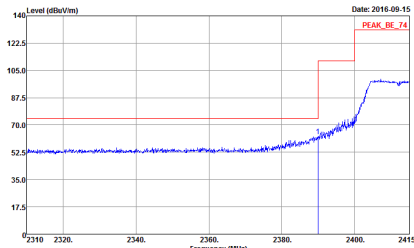
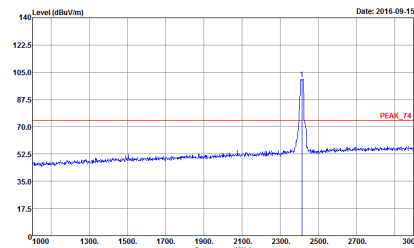
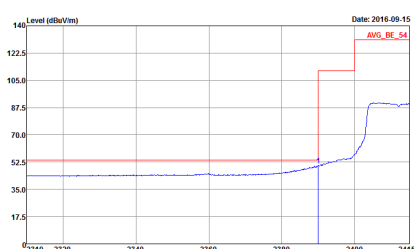
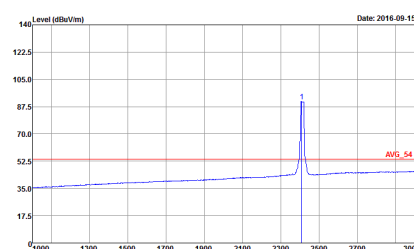


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : PEAK_T4 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : AVG_T4 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 11	 Site : 03CH12-HY Condition : PEAK_T4 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 11
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Project : Peak Mode : 682563 11	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:0.300KHz SWT:Auto Project : Peak Mode : 682563 11

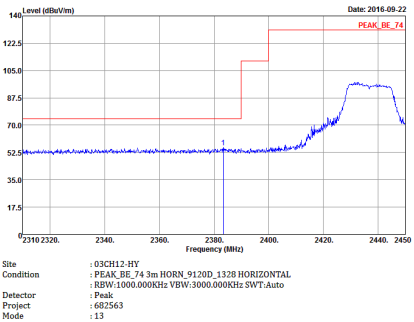
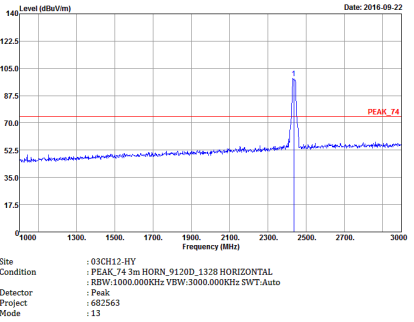
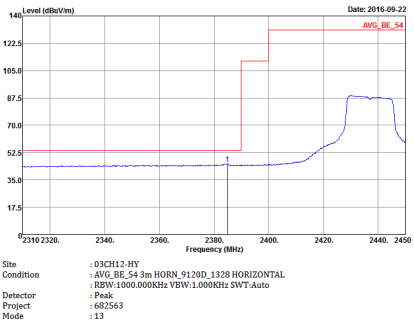
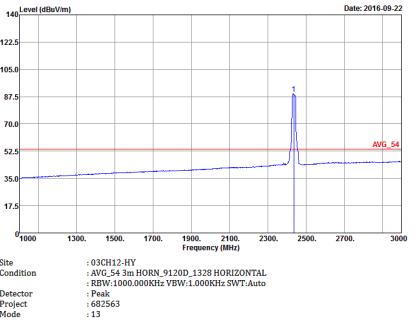
**2.4GHz 2400~2483.5MHz****WIFI 802.11g (Band Edge @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5

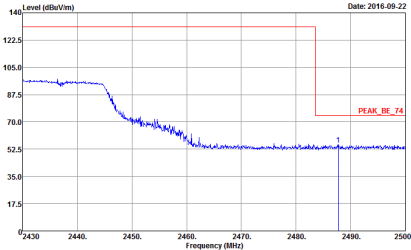
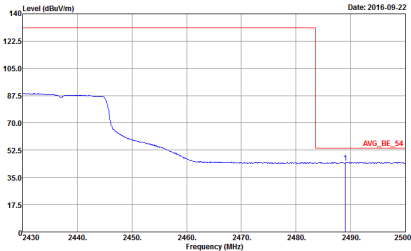


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 12 Setting : 15.5



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

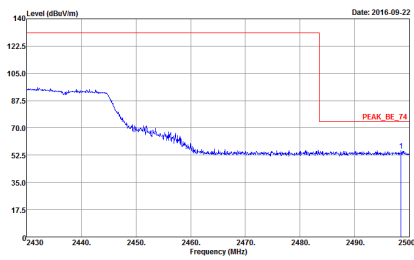
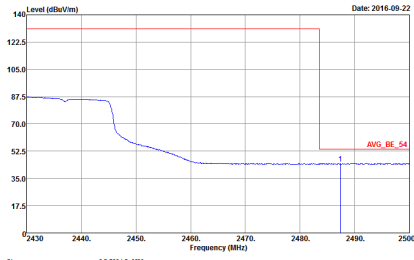


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 682563 Mode : 13	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : 682563 Mode : 13	



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 13	Site : 03CH12-HY Condition : PEAK_T4 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 13
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 13	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 13

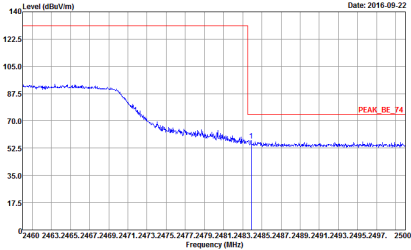
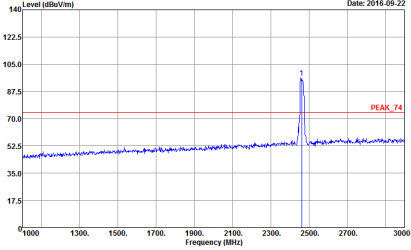
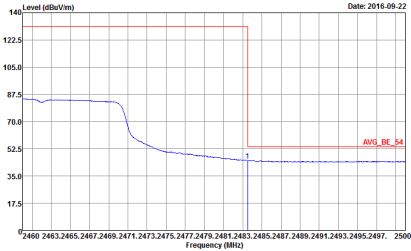
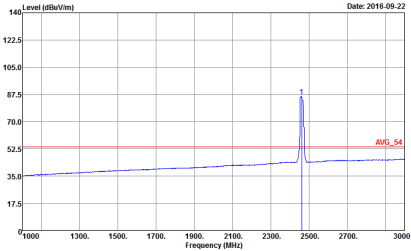


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 13	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 13	



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 14	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 14
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 14	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 682563 Mode : 14



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22

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

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22

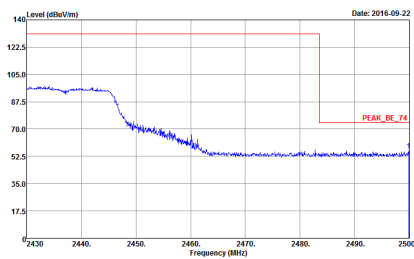
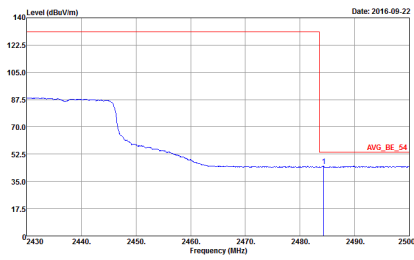


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22

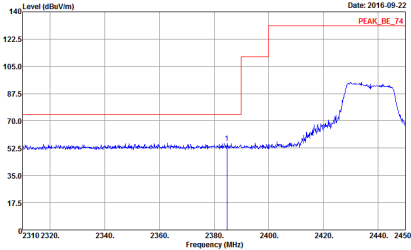
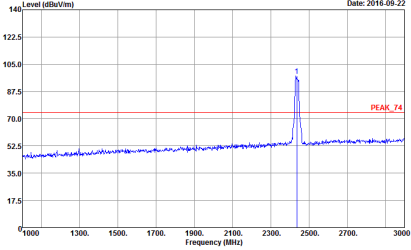
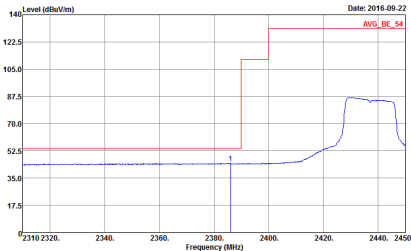
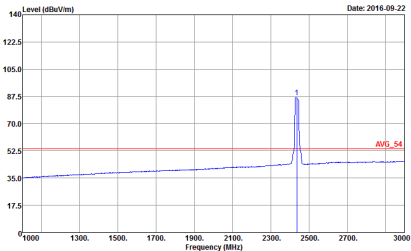


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22

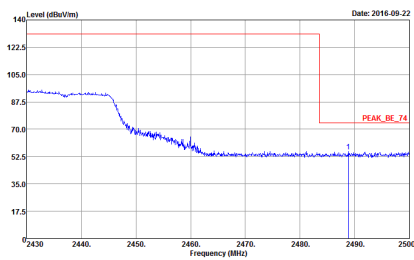
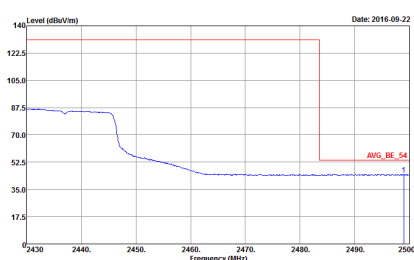


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 602563 Mode : 16	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 602563 Mode : 16	



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-22

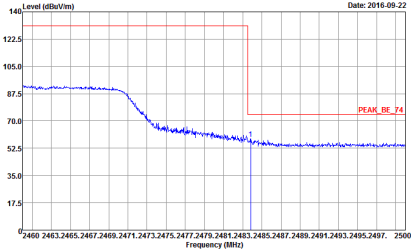
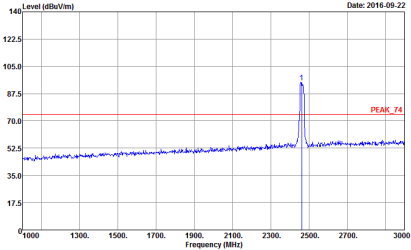
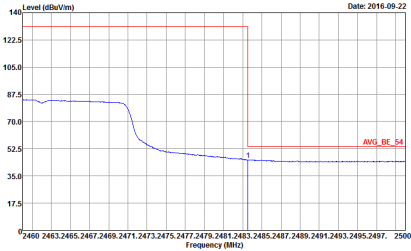
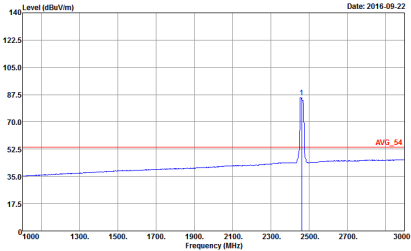


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 602563 16	
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 602563 16	



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 17	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 17
Avg.	Site : 03CH12-HY Condition : AVG_96_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 17	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 HORIZONTAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 17



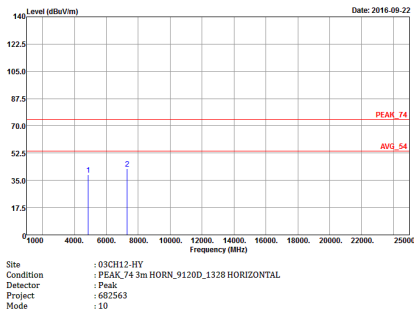
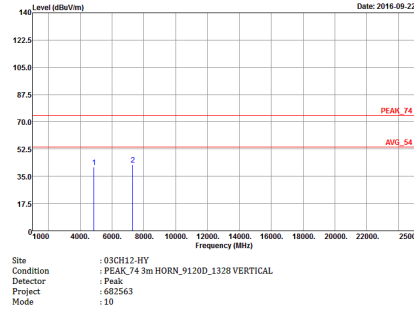
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 17	 Site : 03CH12-HY Condition : PEAK_T4 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 17
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 17	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 17



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

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 9	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 9



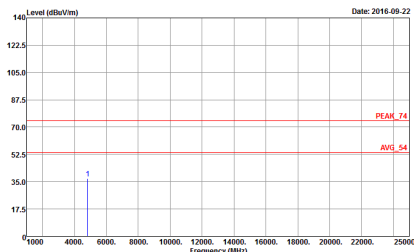
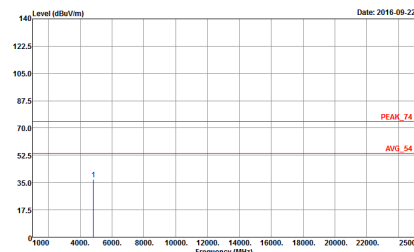
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 602563 Mode : 10	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 602563 Mode : 10



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 11	Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 11



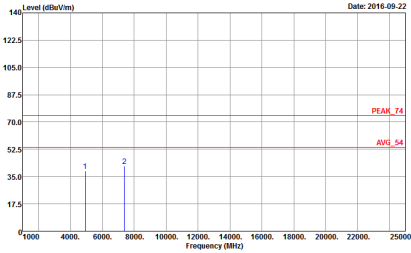
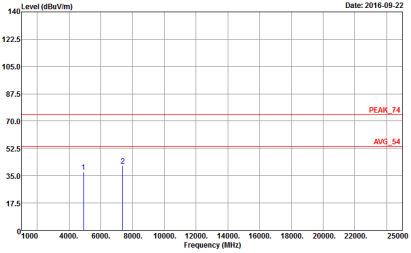
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 12	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 12

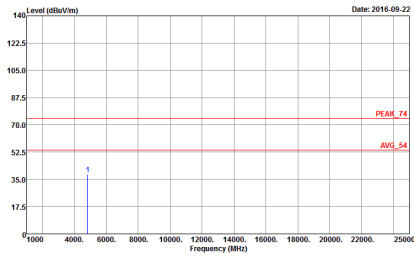
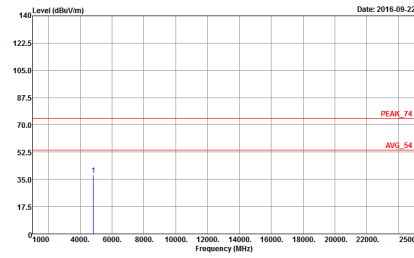


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH12-MY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 13	Site : 03CH12-MY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 13



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 14	 Site : 03CH13-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 14

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

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 15	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 15



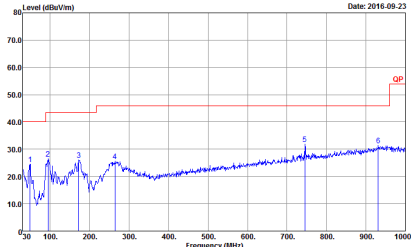
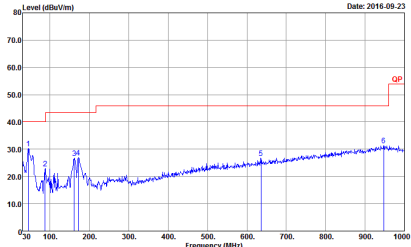
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 16	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : Peak Project : 682563 Mode : 16



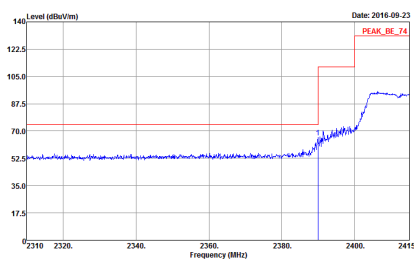
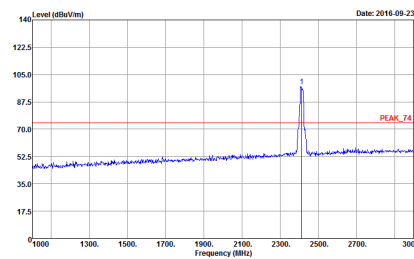
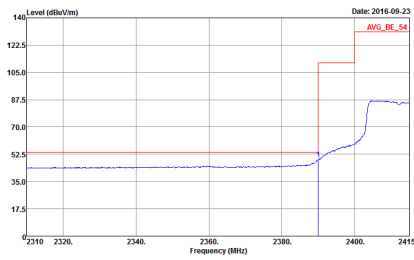
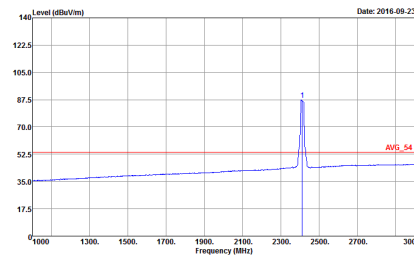
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_132B HORIZONTAL Detector : Peak Project : 602563 Mode : 17	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_132B VERTICAL Detector : Peak Project : 602563 Mode : 17



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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH12-HY Condition : QP 3m BIL06_6111D_37059 HORIZONTAL Detector : Peak Project : 682563 Mode : 18	 Site : 03CH12-HY Condition : QP 3m BIL06_6111D_37059 VERTICAL Detector : Peak Project : 682563 Mode : 18

**Sample 2****2.4GHz 2400~2483.5MHz****WIFI 802.11g (Band Edge @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN 9120D 1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 21	 Site : 03CH12-HY Condition : PEAK_74 3m HORN 9120D 1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 21
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN 9120D 1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 21	 Site : 03CH12-HY Condition : AVG_54 3m HORN 9120D 1328 HORIZONTAL Detector : Peak Project : 682563 Mode : 21



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak	Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-23	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-23
Avg.	Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-23	Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL Detector : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Project : Peak Mode : 682563 Date: 2016-09-23

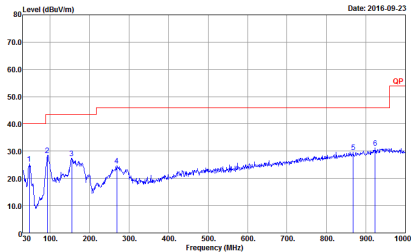
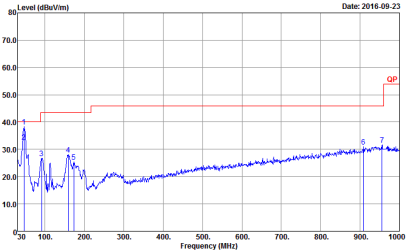


2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_132B HORIZONTAL Detector : Peak Project : 682563 Mode : 21	Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_132B VERTICAL Detector : Peak Project : 682563 Mode : 21



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

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11g LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH12-HY Condition : QP 3m BILOG_6111D_37059 HORIZONTAL Detector : Peak Project : 602563 Mode : 24	 Site : 03CH12-HY Condition : QP 3m BILOG_6111D_37059 VERTICAL Detector : Peak Project : 602563 Mode : 24



Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.87	8.25	0.12	300Hz
802.11g	86.90	1.36	0.74	1kHz
802.11n HT20	85.91	1.28	0.78	1kHz

Ref 30 dBm *Att 20 dB RBW 10 MHz Delta 3 [T1] 0.00 dB 8.430000 ms

30 Offset 23.8 dB

Marker 1 [T1] 22.40 dBm 10.260000 ms

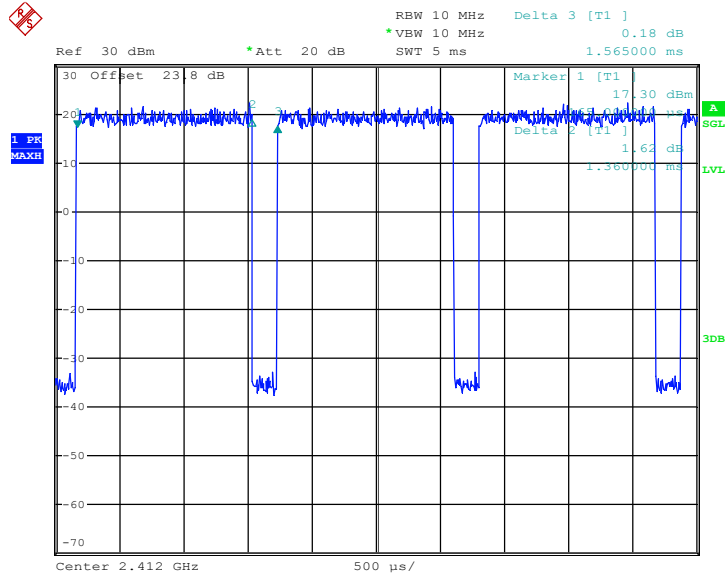
Delta 2 [T1] -0.21 dB 8.230000 ms

Center 2.412 GHz 3 ms/

A
SGL
LVL
3DB



802.11g



802.11n20

