FCC RF Test Report

APPLICANT	:	TP-Link Technologies Co., Ltd.
EQUIPMENT	:	AC1900 Smart Home Router with Touch Screen
BRAND NAME	:	TP-Link
MODEL NAME	:	SR20
MARKETING NAME	:	AC1900 Smart Home Router With Touch Screen
FCC ID	:	TE7SR20
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jan. 28, 2016 and testing was completed on Aug. 02, 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

Testing Laboratory
1190

TABLE OF CONTENTS

SUMMARY OF TEST RESULT **4**

1 GENERAL DESCRIPTION **5**

1.1 Applicant 5
1.2 Manufacturer 5
1.3 Product Feature of Equipment Under Test 5
1.4 Product Specification subjective to this standard 5
1.5 Modification of EUT 6
1.6 Testing Location 6
1.7 Applicable Standards 6

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST **7**

2.1 Descriptions of Test Mode 7
2.2 Carrier Frequency Channel 7
2.3 Test Mode 8
2.4 Connection Diagram of Test System 9
2.5 Support Unit used in test configuration and system 10
2.6 EUT Operation Test Setup 10
2.7 Measurement Results Explanation Example 10

3 TEST RESULT **11**

3.1 6dB and 99% Bandwidth Measurement 11
3.2 Peak Output Power Measurement 13
3.3 Power Spectral Density Measurement 14
3.4 Conducted Band Edges and Spurious Emission Measurement 16
3.5 Radiated Band Edges and Spurious Emission Measurement 20
3.6 AC Conducted Emission Measurement 24
3.7 Antenna Requirements 30

4 LIST OF MEASURING EQUIPMENT **31**

5 UNCERTAINTY OF EVALUATION **32**

APPENDIX A. CONDUCTED TEST RESULTS

APPENDIX B. RADIATED SPURIOUS EMISSION

APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS

APPENDIX D. DUTY CYCLE PLOTS

APPENDIX E. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR612811C	Rev. 01	Initial issue of report	Nov. 01, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Pass	-
3.2	15.247(b)(1)	Peak Output Power	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.51 dB at 2483.640 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 2.90 dB at 0.638 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

TP-Link Technologies Co., Ltd.
Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

1.2 Manufacturer

TP-Link Technologies Co., Ltd.
Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	AC1900 Smart Home Router with Touch Screen
Brand Name	TP-Link
Model Name	SR20
Marketing Name	AC1900 Smart Home Router With Touch Screen
FCC ID	TE7SR20
EUT supports Radios application	WLAN a/b/g/n HT20/HT40 WLAN ac VHT20/VHT40/VHT80 Zigbee Z-Wave
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 subjective to this standard

Product Specification subjective to this standard	
Frequency Range	2405 MHz ~ 2475 MHz
Number of Channels	15
Channel Spacing	5 MHz
Maximum Output Power to Antenna	20.46 dBm (0.1112 W)
99% Occupied Bandwidth	2.47MHz
Antenna Type/ Gain	Dipole Antenna with gain 2.80 dBi
Type of Modulation	OQPSK

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 1st 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	CO05-HY	03CH07-HY
Test Engineer	Osolemio Chang	Kai-Chun Chu	Jesse Wang and James Chiu
Temperature	21~25 ℃	23~24 ℃	21~24 ℃
Relative Humidity	51~54 %	58~59 %	50~54 %

Note: The test site complies with ANSI C63.4 2009 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

2.1 Descriptions of Test Mode

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).

2.2 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2.4 GHz Band	11	2405	19	2445
	12	2410	20	2450
	13	2415	21	2455
	14	2420	22	2460
	15	2425	23	2465
	16	2430	24	2470
	17	2435	25	2475
	18	2440	-	-

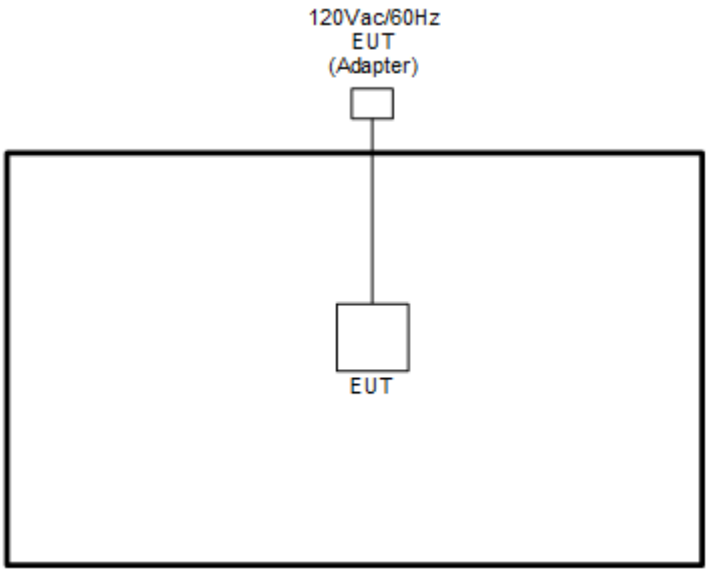
2.3 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

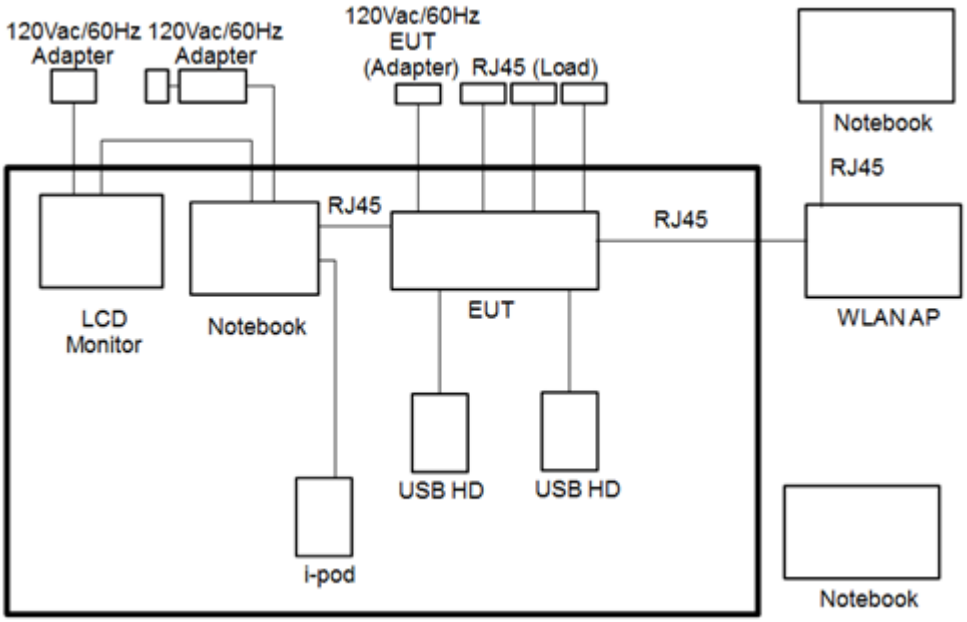
Summary table of Test Cases	
Test Item	**Test mode**
Conducted TCs	Mode 1: Zigbee Tx CH11_2405 MHz_250 kbps Mode 2: Zigbee Tx CH18_2440 MHz_250 kbps Mode 3: Zigbee Tx CH25_2475 MHz_250 kbps
Radiated TCs	Mode 1: Zigbee Tx CH11_2405 MHz_250 kbps Mode 2: Zigbee Tx CH18_2440 MHz_250 kbps Mode 3: Zigbee Tx CH25_2475 MHz_250 kbps
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Zigbee Link + Z-wave Link + LAN Link + WAN Link + USB HD + Adapter 1

2.4 Connection Diagram of Test System

<Zigbee Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	USB HD	WD	WDBAAR3200AB K-PESN	FCC DoC	Unshielded, 0.5 m	N/A
5.	USB HD	PQI	H568V	FCC DoC	Unshielded, 0.5m	N/A
6.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2.6 EUT Operation Test Setup

For Zigbee function, programmed RF utility, “command prompt” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 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.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

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.

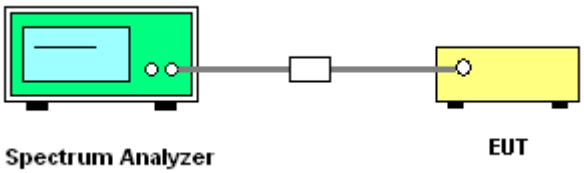
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

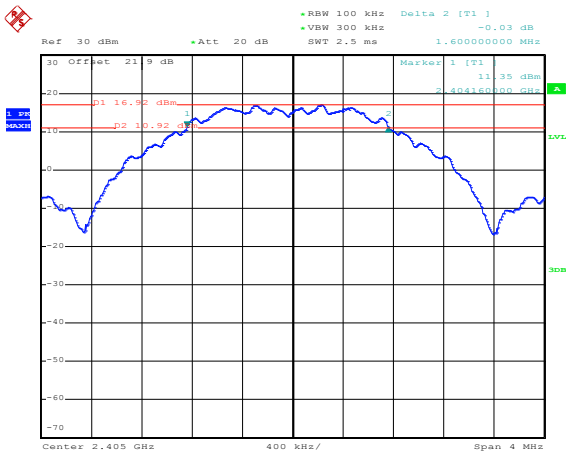
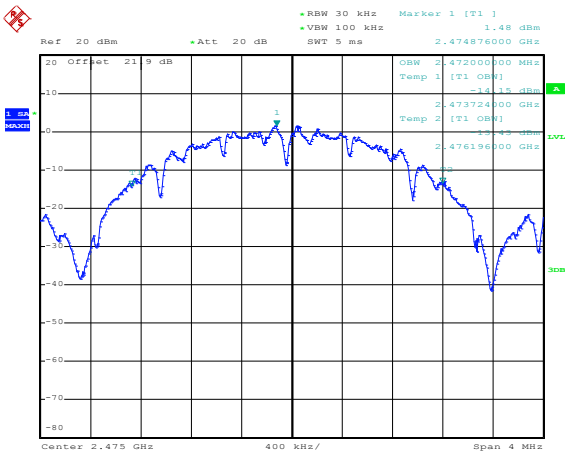
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 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) is set 30kHz and set the Video bandwidth (VBW) = 100kHz.
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 of this test report.

Minimum 6dB Bandwidth	Maximum 99% Occupied Bandwidth
	
Date: 8.APR.2016 23:09:08	Date: 5.JUL.2016 17:57:45

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

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power

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

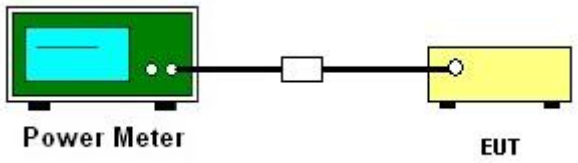
3.2.2 Measuring Instruments

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 of this test report.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this test report.

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.

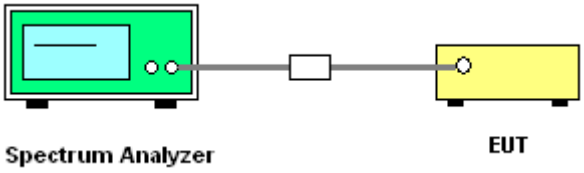
3.3.2 Measuring Instruments

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.
7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

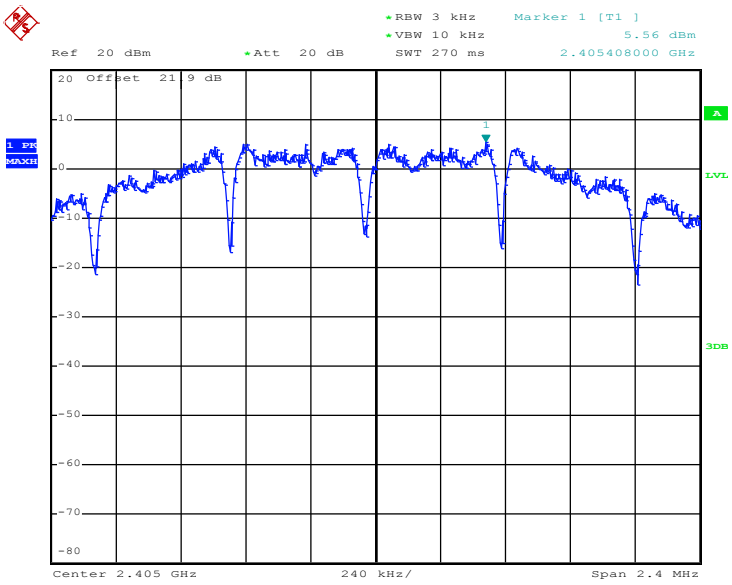
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.

Worst Case Power Density (dBm/3kHz)



Date: 8.APR.2016 23:43:58

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

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).

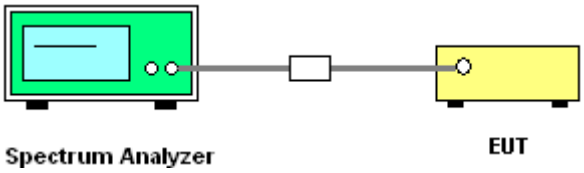
3.4.2 Measuring Instruments

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

3.4.3 Test Procedure

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.

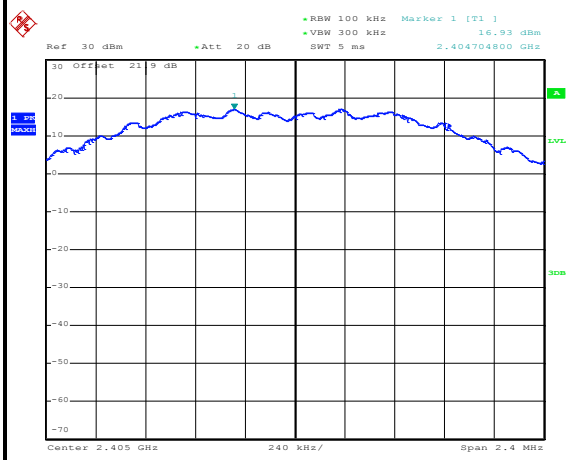
3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges

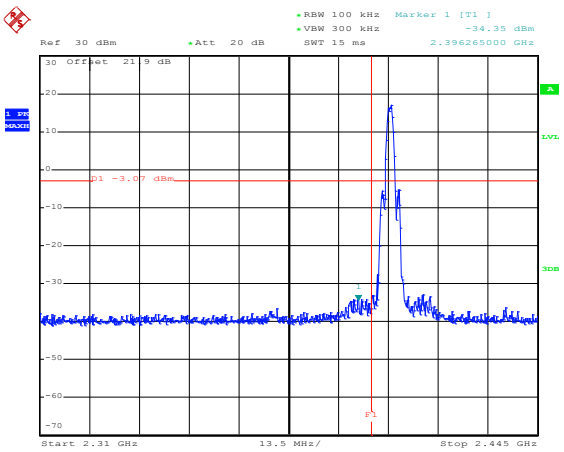
Test Mode :	Zigbee 2.4 GHz Band	Test Channel :	11

100kHz PSD reference Level



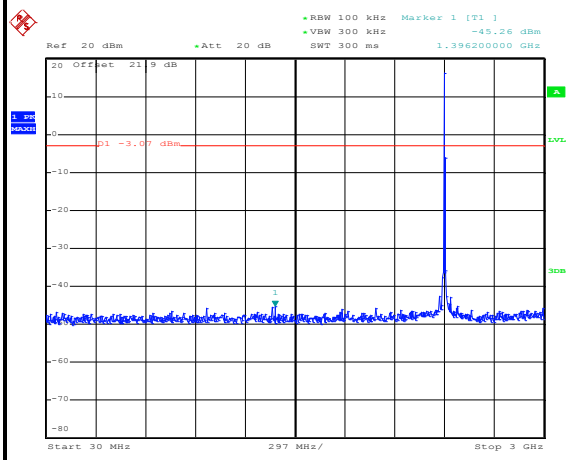
Date: 8.APR.2016 23:45:16

Low Channel Plot



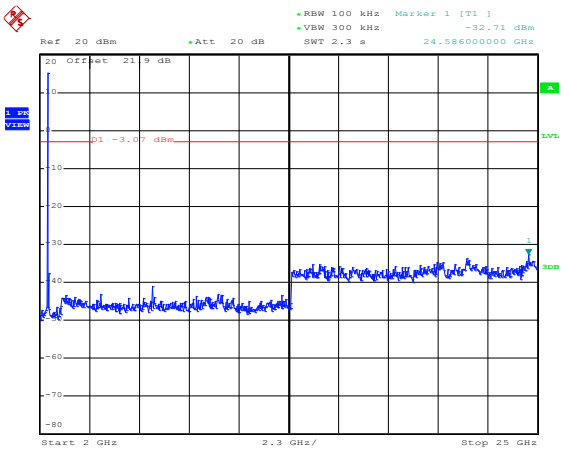
Date: 8.APR.2016 23:57:29

Spurious Emission 30MHz~3GHz



Date: 9.APR.2016 00:20:42

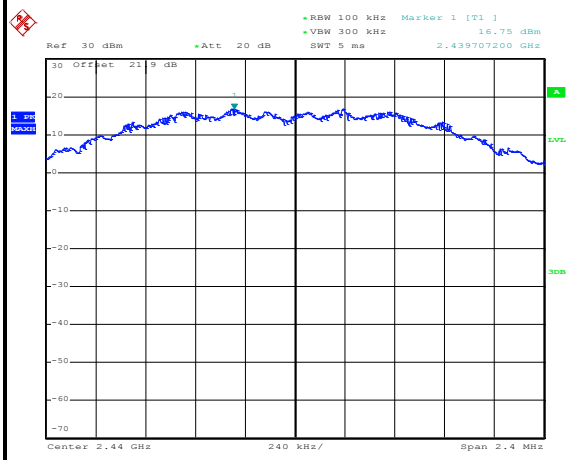
Spurious Emission 2GHz~25GHz



Date: 9.APR.2016 00:21:32

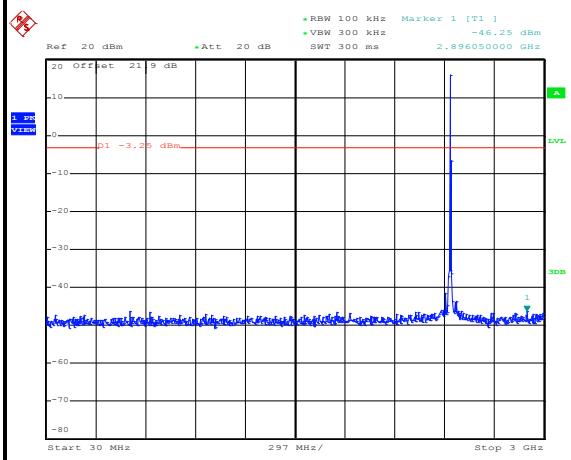
Test Mode :	Zigbee 2.4 GHz Band	Test Channel :	18

100kHz PSD reference Level



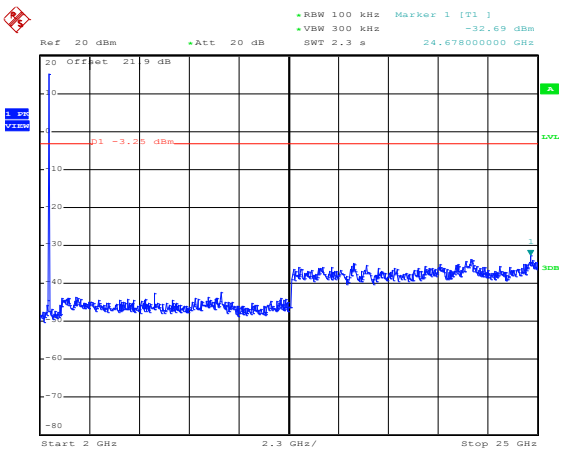
Date: 8.APR.2016 22:50:38

Spurious Emission 30MHz~3GHz



Date: 8.APR.2016 22:55:05

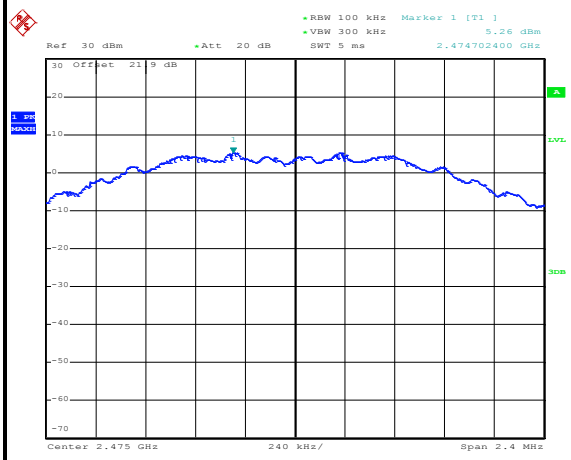
Spurious Emission 2GHz~25GHz



Date: 8.APR.2016 22:54:13

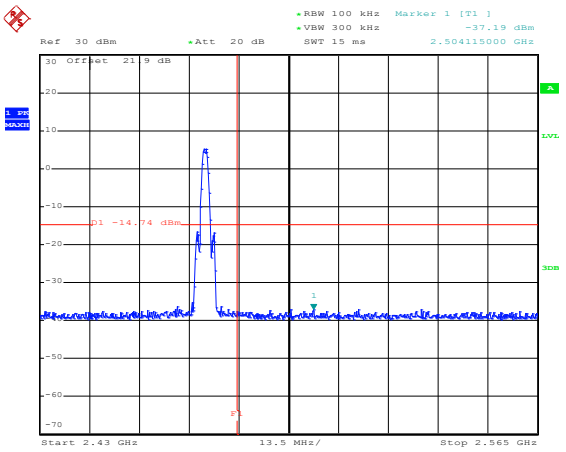
Test Mode :	Zigbee 2.4 GHz Band	Test Channel :	25

100kHz PSD reference Level



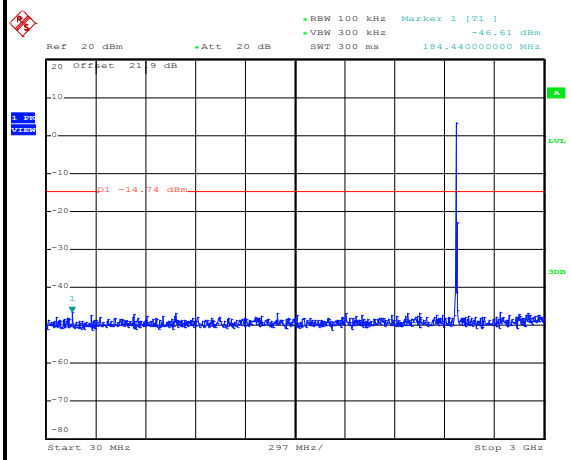
Date: 5.JUL.2016 17:56:00

High Channel Plot



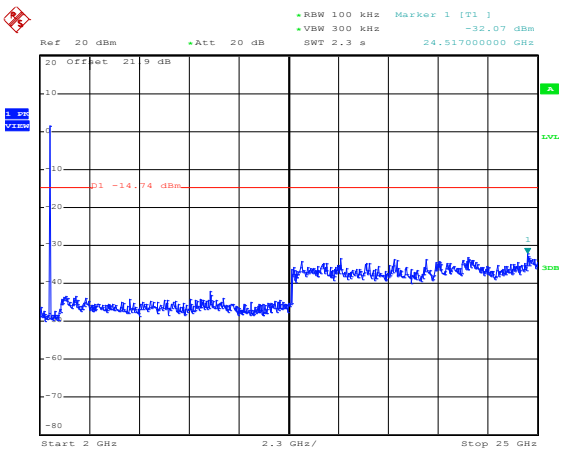
Date: 2.AUG.2016 17:53:20

Spurious Emission 30MHz~3GHz



Date: 5.JUL.2016 17:56:21

Spurious Emission 2GHz~25GHz



Date: 5.JUL.2016 17:56:29

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

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

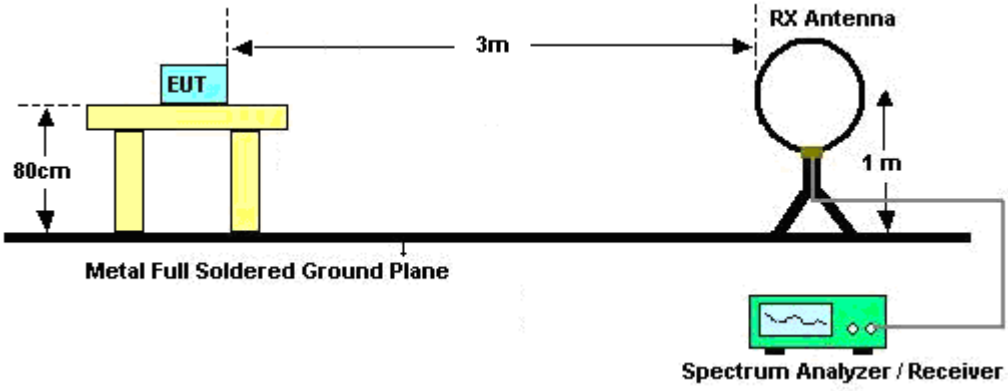
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

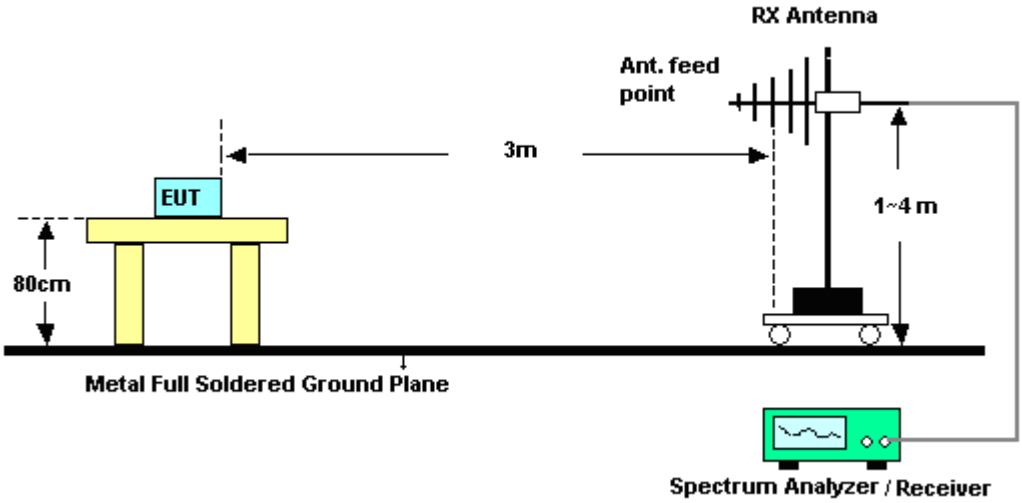
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

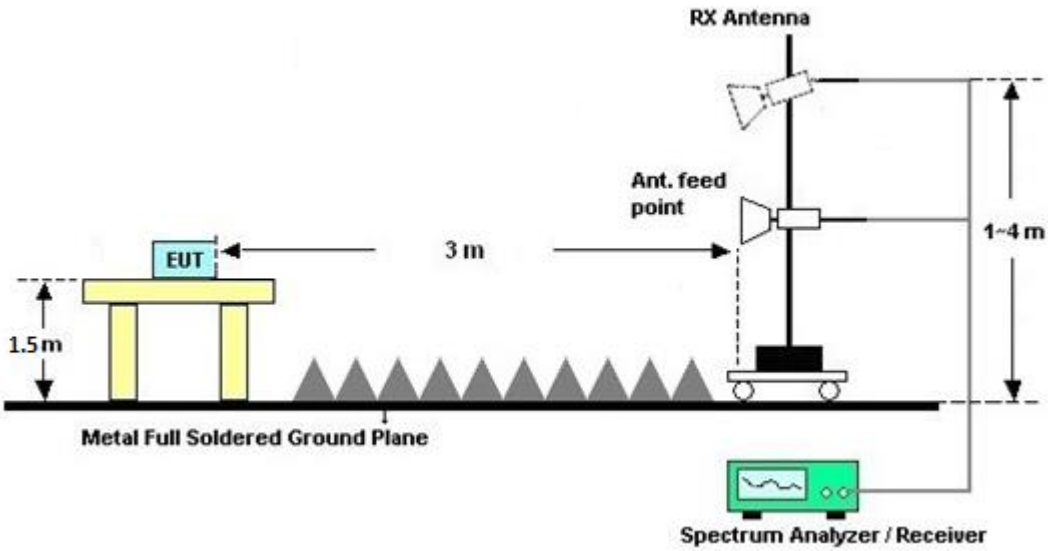
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (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.

3.5.6 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 (dBμV)	
	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.

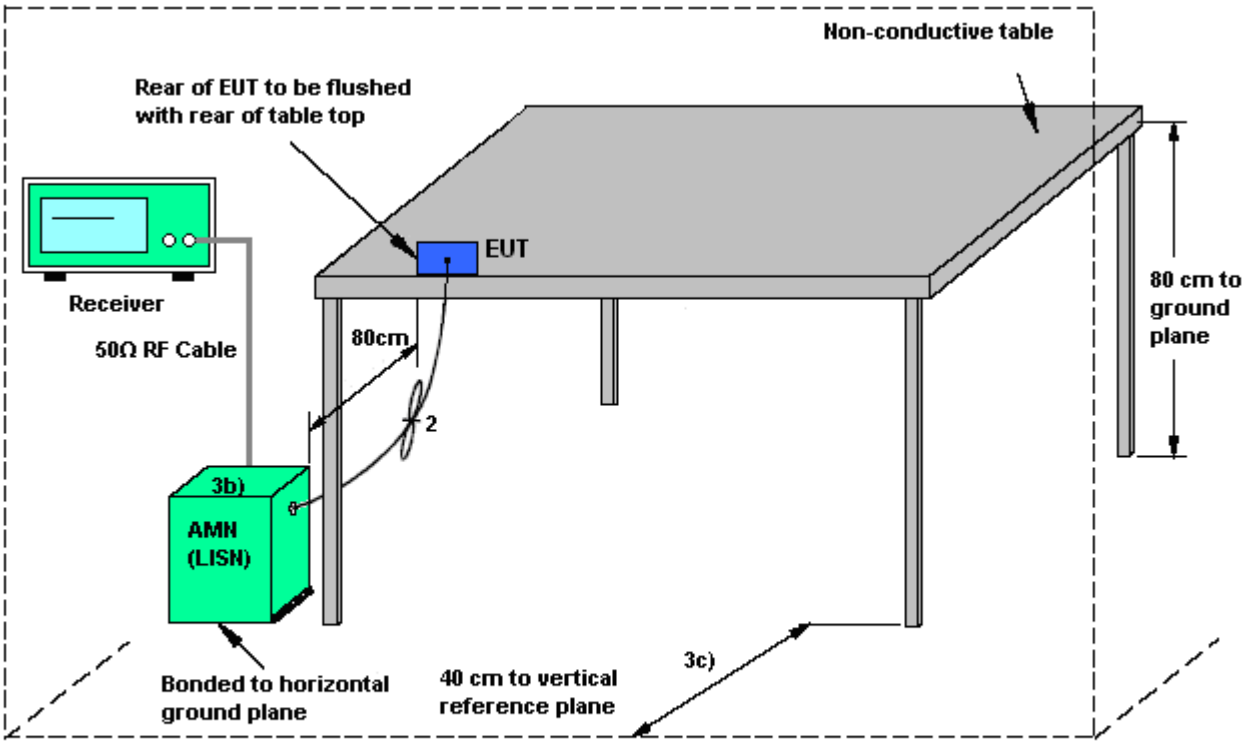
3.6.2 Measuring Instruments

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 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. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

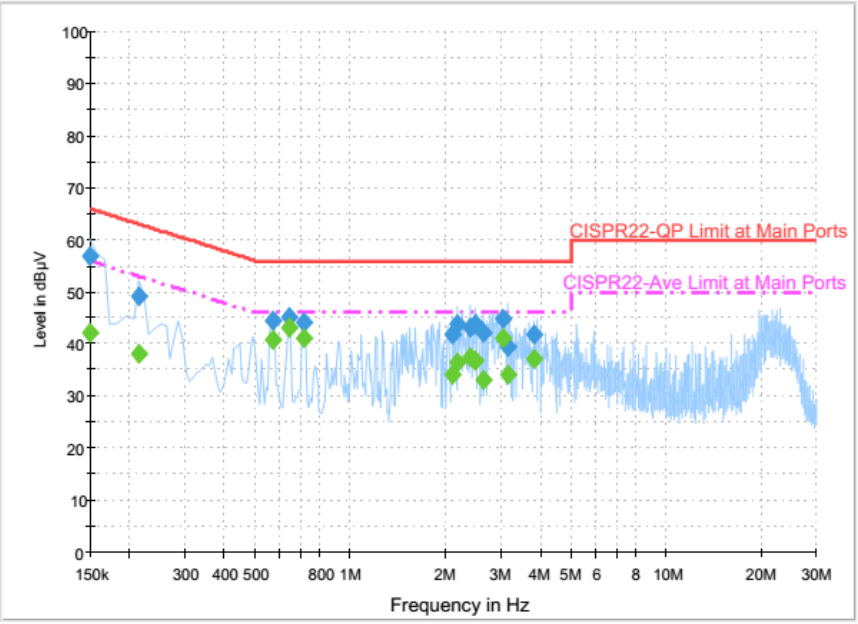
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

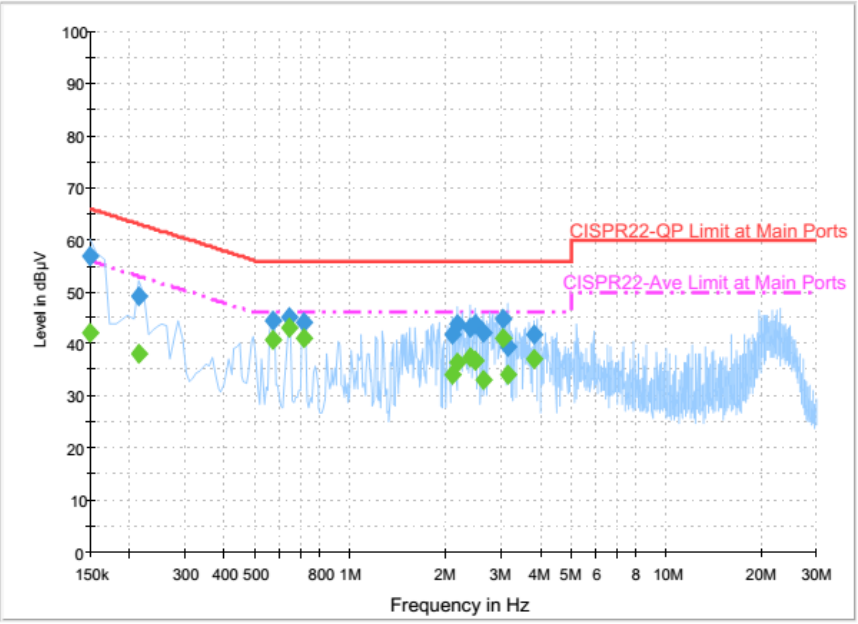
Test Mode :	Mode 1	Phase :	Line



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	56.7	Off	L1	19.6	9.3	66.0
0.214000	49.0	Off	L1	19.6	14.0	63.0
0.566000	44.6	Off	L1	19.6	11.4	56.0
0.638000	45.0	Off	L1	19.6	11.0	56.0
0.710000	44.3	Off	L1	19.6	11.7	56.0
2.118000	41.7	Off	L1	19.5	14.3	56.0
2.182000	43.9	Off	L1	19.5	12.1	56.0
2.398000	43.2	Off	L1	19.6	12.8	56.0
2.486000	43.9	Off	L1	19.6	12.1	56.0
2.646000	42.1	Off	L1	19.6	13.9	56.0
3.038000	44.7	Off	L1	19.6	11.3	56.0
3.158000	39.5	Off	L1	19.6	16.5	56.0
3.830000	41.9	Off	L1	19.7	14.1	56.0

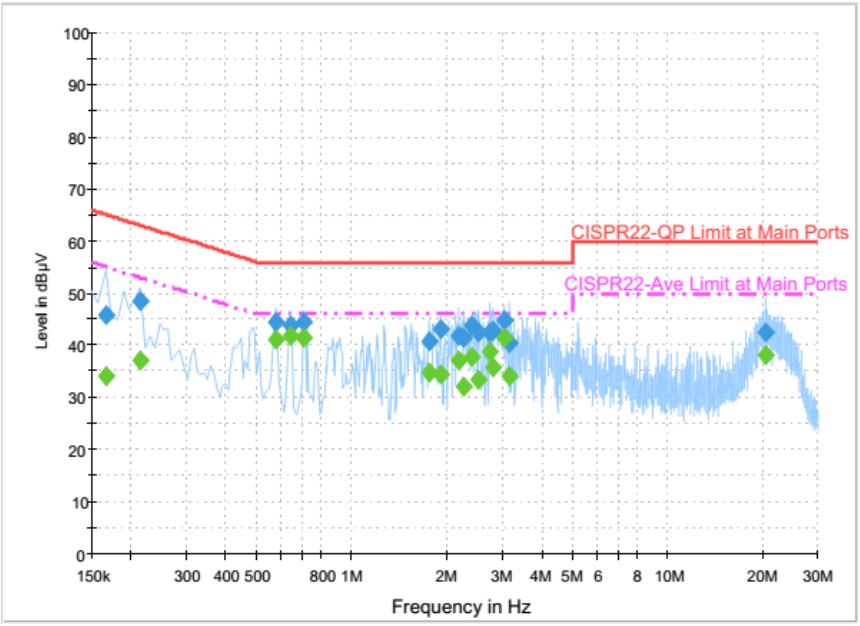
Test Mode :	Mode 1	Phase :	Line



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	42.0	Off	L1	19.6	14.0	56.0
0.214000	38.2	Off	L1	19.6	14.8	53.0
0.566000	40.7	Off	L1	19.6	5.3	46.0
0.638000	43.1	Off	L1	19.6	2.9	46.0
0.710000	41.1	Off	L1	19.6	4.9	46.0
2.118000	34.2	Off	L1	19.5	11.8	46.0
2.182000	36.5	Off	L1	19.5	9.5	46.0
2.398000	37.5	Off	L1	19.6	8.5	46.0
2.486000	36.7	Off	L1	19.6	9.3	46.0
2.646000	33.0	Off	L1	19.6	13.0	46.0
3.038000	41.2	Off	L1	19.6	4.8	46.0
3.158000	34.0	Off	L1	19.6	12.0	46.0
3.830000	37.0	Off	L1	19.7	9.0	46.0

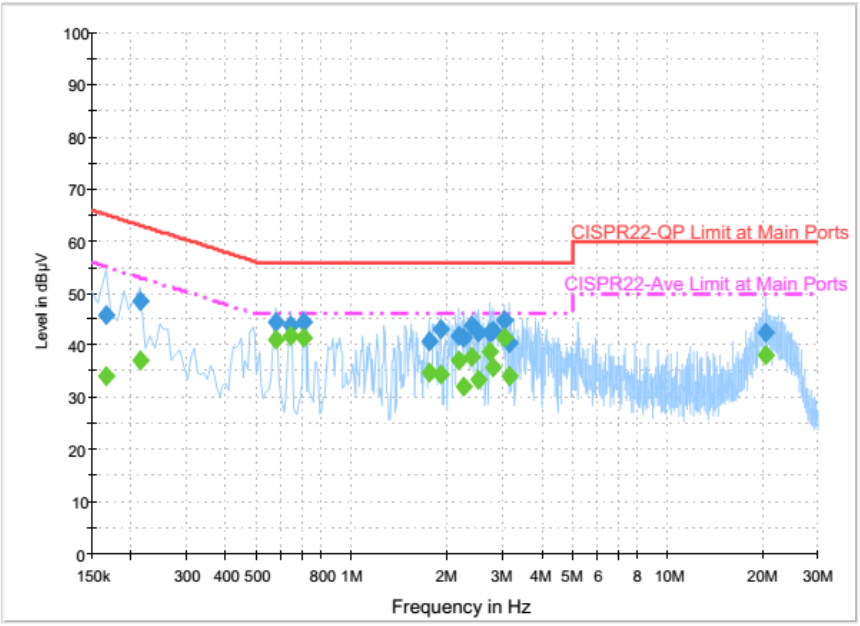
Test Mode :	Mode 1	Phase :	Neutral



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	45.7	Off	N	19.6	19.5	65.2
0.214000	48.6	Off	N	19.6	14.4	63.0
0.574000	44.6	Off	N	19.6	11.4	56.0
0.638000	43.9	Off	N	19.6	12.1	56.0
0.702000	44.5	Off	N	19.6	11.5	56.0
1.758000	40.8	Off	N	19.6	15.2	56.0
1.918000	43.2	Off	N	19.6	12.8	56.0
2.182000	41.8	Off	N	19.5	14.2	56.0
2.278000	41.3	Off	N	19.6	14.7	56.0
2.398000	43.9	Off	N	19.6	12.1	56.0
2.534000	42.6	Off	N	19.6	13.4	56.0
2.734000	42.5	Off	N	19.6	13.5	56.0
2.822000	42.8	Off	N	19.6	13.2	56.0
3.038000	44.7	Off	N	19.6	11.3	56.0
3.158000	40.6	Off	N	19.6	15.4	56.0
20.382000	42.5	Off	N	19.9	17.5	60.0

Test Mode :	Mode 1	Phase :	Neutral



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	34.0	Off	N	19.6	21.2	55.2
0.214000	37.2	Off	N	19.6	15.8	53.0
0.574000	41.2	Off	N	19.6	4.8	46.0
0.638000	41.8	Off	N	19.6	4.2	46.0
0.702000	41.3	Off	N	19.6	4.7	46.0
1.758000	34.7	Off	N	19.6	11.3	46.0
1.918000	34.3	Off	N	19.6	11.7	46.0
2.182000	37.1	Off	N	19.5	8.9	46.0
2.278000	32.2	Off	N	19.6	13.8	46.0
2.398000	37.6	Off	N	19.6	8.4	46.0
2.534000	33.6	Off	N	19.6	12.4	46.0
2.734000	38.9	Off	N	19.6	7.1	46.0
2.822000	35.6	Off	N	19.6	10.4	46.0
3.038000	41.5	Off	N	19.6	4.5	46.0
3.158000	34.2	Off	N	19.6	11.8	46.0
20.382000	38.2	Off	N	19.9	11.8	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	Agilent	E4416A	GB41292344	300MHz~40GHz	Jan. 08, 2016	Apr. 08, 2016~ Aug. 02, 2016	Jan. 07, 2017	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	300MHz~40GHz	Jan. 07, 2016	Apr. 08, 2016~ Aug. 02, 2016	Jan. 06, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 18, 2015	Apr. 08, 2016~ Jun. 15, 2016	Jun. 16, 2016	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 17, 2016	Jun. 18, 2016~ Aug. 02, 2016	Jun. 16, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 21, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Apr. 21, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Apr. 21, 2016	Dec. 01, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 14, 2015	Apr. 21, 2016	Dec. 13, 2016	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Apr. 21, 2016	Jan. 07, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	May 05, 2016~ Jun. 06, 2016	Sep. 01, 2016	Radiation (03CH07-HY)
Bilog Antenna	TESEQ	CBL 6111D	35419	30MHz to 1GHz	Jan. 13, 2016	May 05, 2016~ Jun. 06, 2016	Jan. 12, 2017	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 21, 2015	May 05, 2016~ Jun. 06, 2016	Aug. 20, 2016	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Oct. 12, 2015	May 05, 2016~ Jun. 06, 2016	Oct. 11, 2016	Radiation (03CH07-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Nov. 04, 2015	May 05, 2016~ Jun. 06, 2016	Nov. 04, 2016	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Feb. 27, 2016	May 05, 2016~ Jun. 06, 2016	Feb. 26, 2017	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1000MHz	Mar. 18, 2016	May 05, 2016~ Jun. 06, 2016	Mar. 17, 2017	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz ~ 18GHz	Apr. 15, 2016	May 05, 2016~ Jun. 06, 2016	Apr. 14, 2017	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Oct. 19, 2015	May 05, 2016~ Jun. 06, 2016	Oct. 18, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2015	May 05, 2016~ Jun. 06, 2016	Feb. 14, 2017	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	May 05, 2016~ Jun. 06, 2016	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 degree	N/A	May 05, 2016~ Jun. 06, 2016	N/A	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.7**

Appendix A. Conducted Test Results

Report Number : FR612811C

Zigbee 2.4 GHz Band

Test Engineer:		Osolemio Chang	Temperature:	21~25	°C
Test Date:		2016/04/08 ~ 2016/08/02	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
Zigbee	250 kbps	1	11	2405	2.46	1.60	0.50	Pass
Zigbee	250 kbps	1	18	2440	2.46	1.60	0.50	Pass
Zigbee	250 kbps	1	25	2475	2.47	1.60	0.50	Pass

TEST RESULTS DATA
Peak Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
Zigbee	250 kbps	1	11	2405	20.46	30.00	2.80	23.26	36.00	Pass
Zigbee	250 kbps	1	18	2440	20.36	30.00	2.80	23.16	36.00	Pass
Zigbee	250 kbps	1	25	2475	9.14	30.00	2.80	11.94	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
Zigbee	250 kbps	1	11	2405	0.00	20.25
Zigbee	250 kbps	1	18	2440	0.00	20.15
Zigbee	250 kbps	1	25	2475	0.00	8.47

TEST RESULTS DATA
Peak Power Density

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
Zigbee	250 kbps	1	11	2405	16.93	5.56	2.80	8.00	Pass
Zigbee	250 kbps	1	18	2440	16.75	5.14	2.80	8.00	Pass
Zigbee	250 kbps	1	25	2475	5.26	-6.57	2.80	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

Appendix B. Radiated Spurious Emission

2.4GHz Zigbee (Band Edge @ 3m)

Zigbee	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)
Zigbee CH 11 2405MHz		2389.2	62.85	-11.15	74	57.94	31.93	7.31	34.33	351	194	P	H
		2390	52.17	-1.83	54	47.26	31.93	7.31	34.33	351	194	A	H
	*	2405	119.17	-	-	114.19	31.98	7.31	34.31	351	194	P	H
	*	2405	117.07	-	-	112.09	31.98	7.31	34.31	351	194	A	H
													H
													H
		2389.83	56.77	-17.23	74	51.86	31.93	7.31	34.33	309	259	P	V
		2390	46.01	-7.99	54	41.1	31.93	7.31	34.33	309	259	A	V
	*	2405	112.03	-	-	107.05	31.98	7.31	34.31	309	259	P	V
	*	2405	109.97	-	-	104.99	31.98	7.31	34.31	309	259	A	V
													V
													V
Zigbee CH 18 2440MHz		2383.17	58.25	-15.75	74	53.39	31.89	7.31	34.34	146	205	P	H
		2376.24	47.09	-6.91	54	42.32	31.89	7.24	34.36	146	205	A	H
	*	2440	119.29	-	-	114.11	32.07	7.36	34.25	146	205	P	H
	*	2440	116.17	-	-	110.99	32.07	7.36	34.25	146	205	A	H
		2495.84	58.79	-15.21	74	53.35	32.2	7.4	34.16	146	205	P	H
		2488.04	47.9	-6.1	54	42.47	32.2	7.4	34.17	146	205	A	H
		2380.38	56.29	-17.71	74	51.44	31.89	7.31	34.35	110	107	P	V
		2384.34	45.14	-8.86	54	40.28	31.89	7.31	34.34	110	107	A	V
	*	2440	110.6	-	-	105.42	32.07	7.36	34.25	110	107	P	V
	*	2440	107.45	-	-	102.27	32.07	7.36	34.25	110	107	A	V
		2486.44	57.92	-16.08	74	52.53	32.16	7.4	34.17	110	107	P	V
		2488.48	45.88	-8.12	54	40.45	32.2	7.4	34.17	110	107	A	V

Zigbee CH 25 2475MHz	*	2475	109.97	-	-	104.6	32.16	7.4	34.19	374	184	P	H
	*	2475	107.89	-	-	102.52	32.16	7.4	34.19	374	184	A	H
		2483.56	61.92	-12.08	74	56.54	32.16	7.4	34.18	374	184	P	H
		2483.64	53.49	-0.51	54	48.11	32.16	7.4	34.18	374	184	A	H
													H
													H
	*	2475	105.68	-	-	100.31	32.16	7.4	34.19	378	85	P	V
	*	2475	103.63	-	-	98.26	32.16	7.4	34.19	378	85	A	V
		2483.88	59.56	-14.44	74	54.18	32.16	7.4	34.18	378	85	P	V
		2483.64	50.02	-3.98	54	44.64	32.16	7.4	34.18	378	85	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz Zigbee (Harmonic @ 3m)

Zigbee	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)
Zigbee CH 11 2405MHz		4812	57.18	-16.82	74	70.24	34.19	11.83	59.08	100	130	P	H
		4812	51.38	-2.62	54	64.44	34.19	11.83	59.08	100	130	A	H
													H
													H
		4806	53.98	-20.02	74	67.04	34.19	11.83	59.08	100	262	P	V
		4806	47.72	-6.28	54	60.78	34.19	11.83	59.08	100	262	A	V
													V
													V
Zigbee CH 18 2440MHz		4878	58.19	-15.81	74	71.37	34.23	11.53	58.94	100	217	P	H
		4878	52.86	-1.14	54	66.04	34.23	11.53	58.94	100	217	A	H
		7320	50.6	-23.4	74	59.15	35.6	13.81	57.96	100	0	P	H
													H
		4878	55.53	-18.47	74	68.71	34.23	11.53	58.94	100	268	P	V
		4878	50	-4	54	63.18	34.23	11.53	58.94	100	268	A	V
		7320	52.53	-21.47	74	61.08	35.6	13.81	57.96	100	178	P	V
		7320	45.46	-8.54	54	54.01	35.6	13.81	57.96	100	178	A	V
Zigbee CH 25 2475MHz		4950	45.72	-28.28	74	59.03	34.27	11.22	58.8	100	0	P	H
		7428	40.76	-33.24	74	49.21	35.6	14.05	58.1	100	0	P	H
													H
													H
		4950	43.57	-30.43	74	56.88	34.27	11.22	58.8	100	0	P	V
		7428	40.64	-33.36	74	49.09	35.6	14.05	58.1	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz Zigbee (LF)

Zigbee	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)
2.4GHz Zigbee LF		79.14	33.06	-6.94	40	49.54	13.79	1.28	31.55	-	-	P	H
		140.7	38.6	-4.9	43.5	50.35	17.97	1.78	31.5	100	0	P	H
		234.93	40.15	-5.85	46	51.89	17.6	2.07	31.41	-	-	P	H
		449.8	36.62	-9.38	46	41.73	23.1	2.89	31.1	-	-	P	H
		762	39.48	-6.52	46	38.97	27.33	3.82	30.64	-	-	P	H
		990.2	44.55	-9.45	54	40.81	30.28	3.98	30.52	-	-	P	H
													H
													H
													H
													H
													H
													H
		63.48	34.58	-5.42	40	52.6	12.28	1.28	31.58	100	0	P	V
		170.67	36.05	-7.45	43.5	49.81	15.95	1.78	31.49	-	-	P	V
		264.9	38.15	-7.85	46	47.47	19.7	2.32	31.34	-	-	P	V
		449.8	34.57	-11.43	46	39.68	23.1	2.89	31.1	-	-	P	V
		641.6	35.29	-10.71	46	36.68	25.82	3.57	30.78	-	-	P	V
		988.8	44.63	-9.37	54	40.89	30.28	3.98	30.52	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

WIFI Ant. 1+2	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		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. 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)

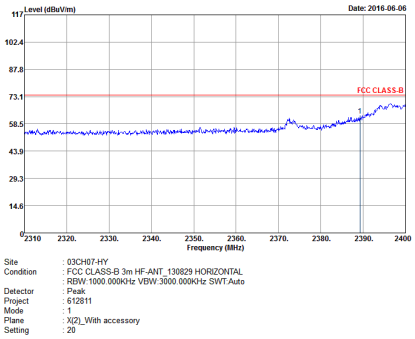
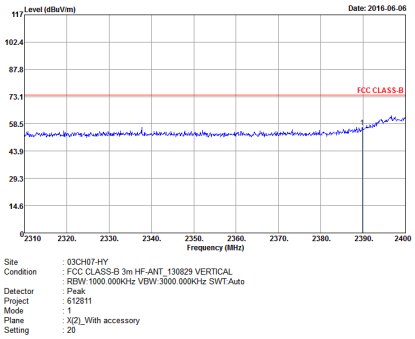
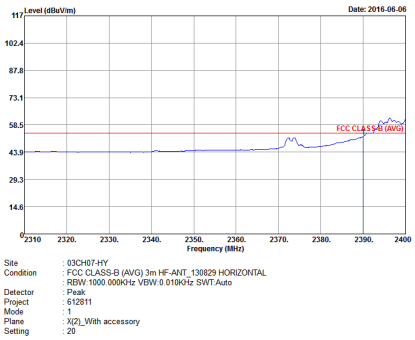
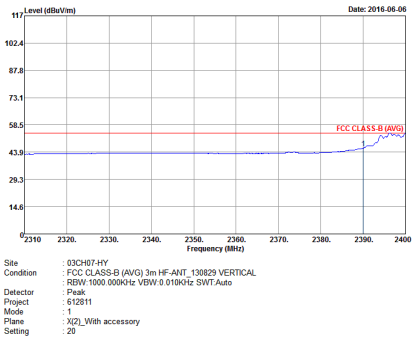
Both peak and average measured complies with the limit line, so test result is “PASS”.

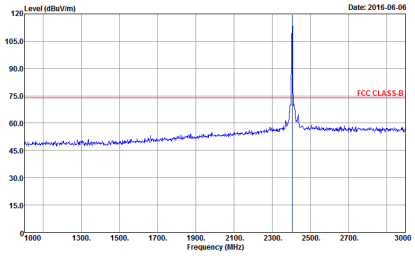
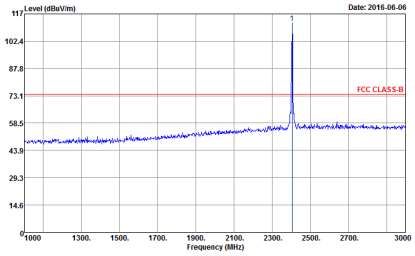
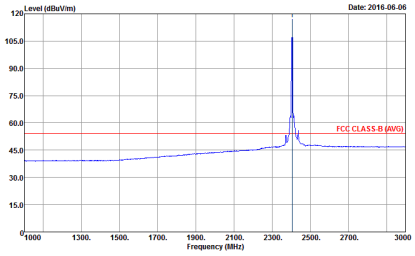
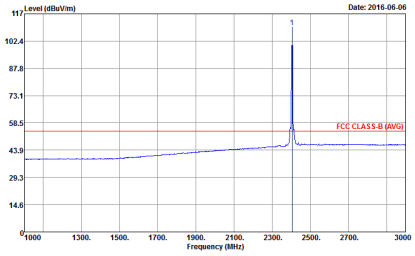
Appendix C. Radiated Spurious Emission

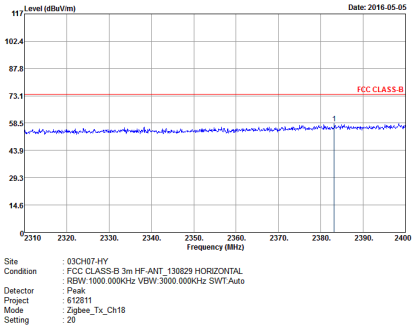
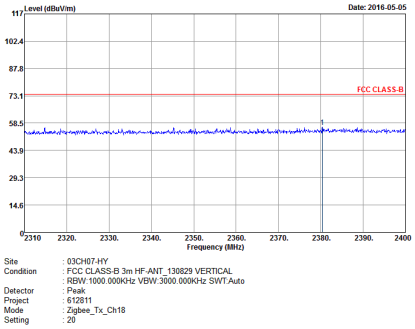
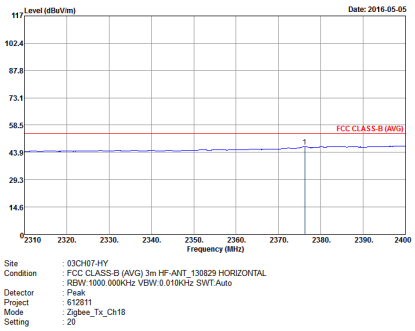
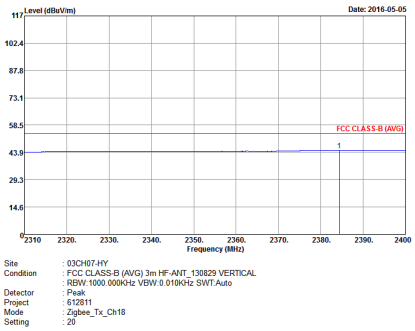
Note symbol

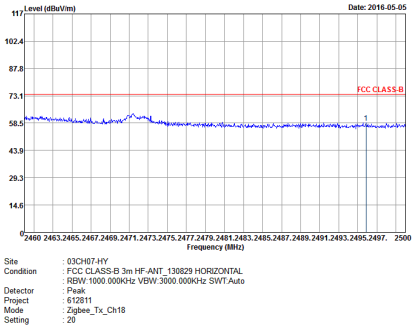
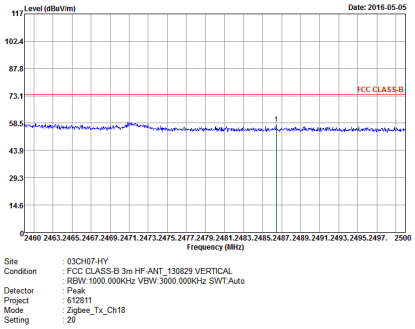
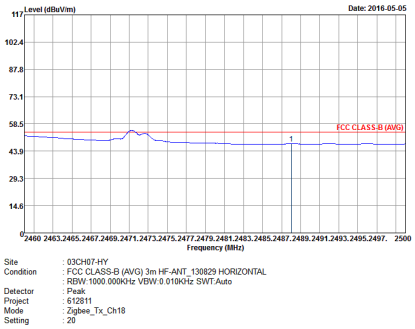
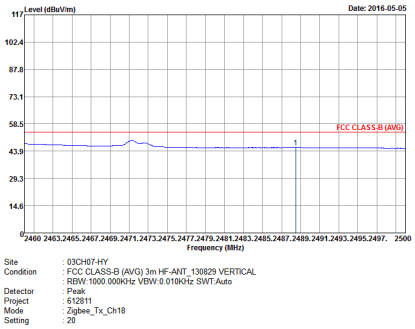
-L	**Low channel location**
-R	**High channel location**

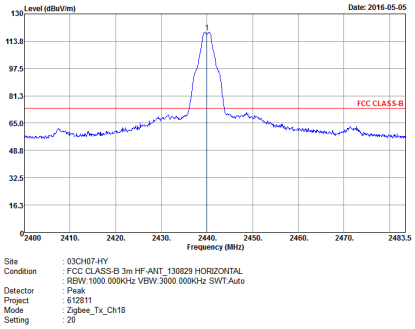
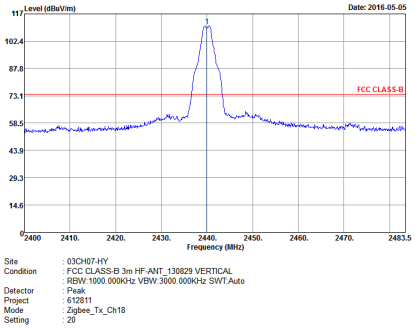
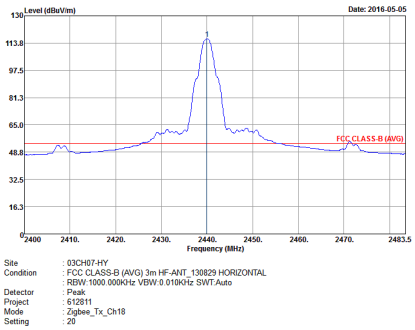
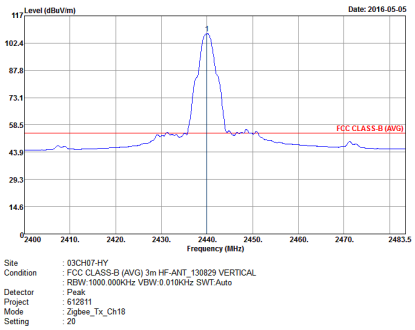
2.4GHz Zigbee (Band Edge @ 3m)

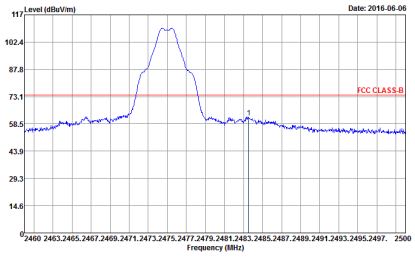
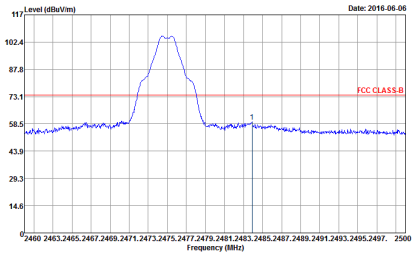
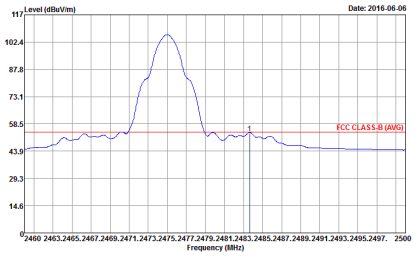
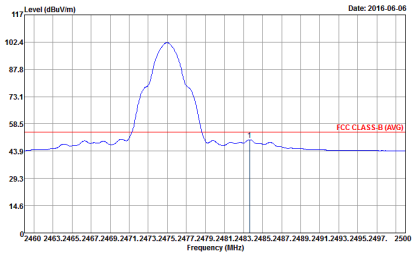
Zigbee	2.4GHz Band Edge @ 3m	
ANT	Zigbee CH11 2405MHz	
1	Horizontal	Vertical
Peak		
Avg.		

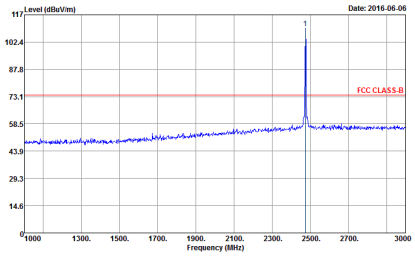
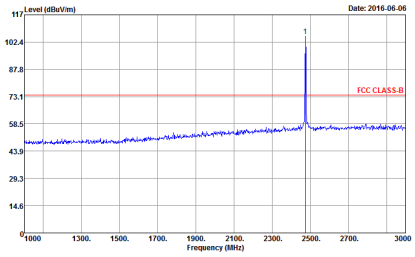
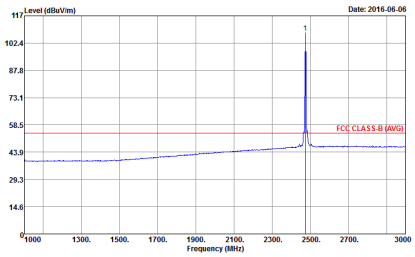
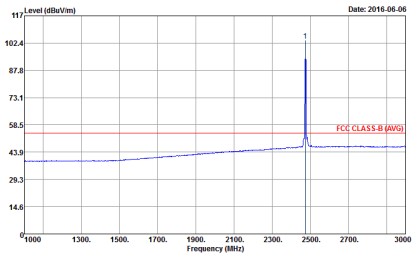
Zigbee	2.4GHz Fundamental @ 3m	
ANT	Zigbee CH11 2405MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20
Avg	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20

Zigbee	2.4GHz Band Edge @ 3m	
ANT	Zigbee CH18 2440MHz - L	
1	Horizontal	Vertical
Peak		
Avg.		

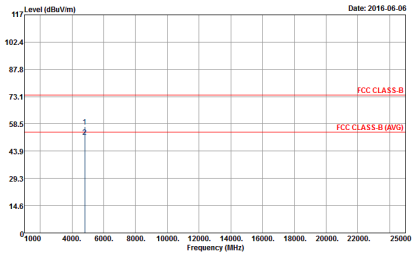
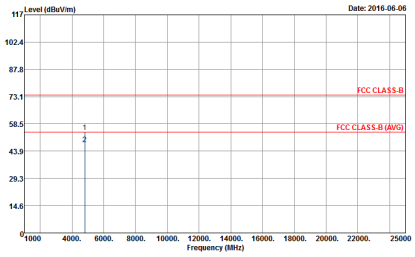
Zigbee	2.4GHz Band Edge @ 3m	
ANT	Zigbee CH18 2440MHz - R	
1	Horizontal	Vertical
Peak		
Avg.		

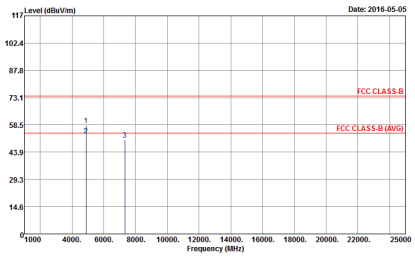
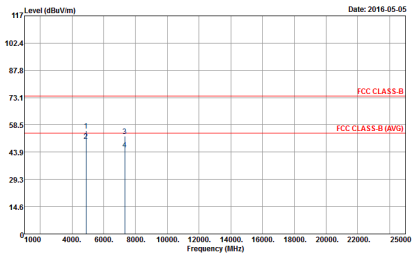
Zigbee	2.4GHz Fundamental @ 3m	
ANT	Zigbee CH18 2440MHz	
1	Horizontal	Vertical
Peak		
Avg.		

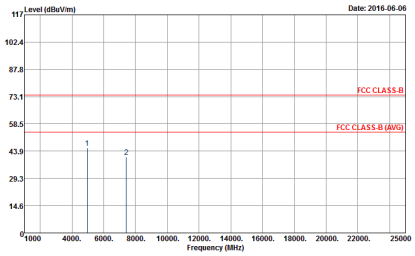
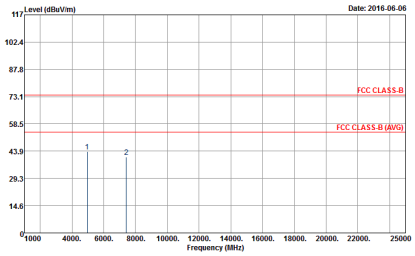
Zigbee	2.4GHz Band Edge @ 3m	
ANT	Zigbee CH25 2475MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13
Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13

Zigbee	2.4GHz Fundamental @ 3m	
ANT	Zigbee CH25 2475MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13	 Site : 03CH07-HY Condition : FCC CLASS-B 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13
Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13	 Site : 03CH07-HY Condition : FCC CLASS-B (AVG) 3m HF-ANT_130829 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13

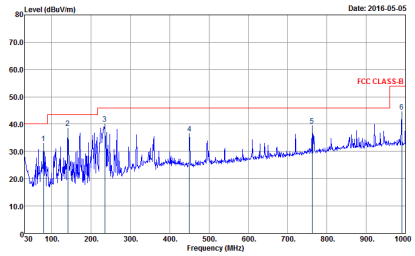
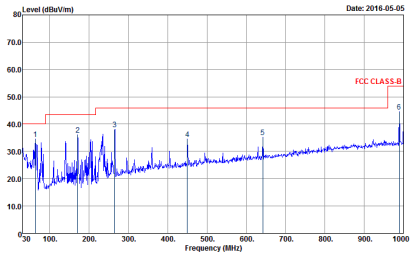
2.4GHz Zigbee (Harmonic @ 3m)

Zigbee	2.4GHz Harmonic @ 3m	
ANT	Zibgee CH11 2405MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL Detector : Peak Project : 612811 Mode : 1 Plane : X(2)_With accessory Setting : 20

Zigbee	2.4GHz Harmonic @ 3m	
ANT	Zigbee CH18 2440MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL Detector : Peak Project : 612811 Mode : Zigbee_Tx_Ch18 Setting : 20	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL Detector : Peak Project : 612811 Mode : Zigbee_Tx_Ch18 Setting : 20

Zigbee	2.4GHz Harmonic @ 3m	
ANT	Zigbee CH25 2475MHz	
1	Horizontal	Vertical
Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 HORIZONTAL Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13	 Site : 03CH07-HY Condition : FCC CLASS-B 3m SHF-EHF_131029 VERTICAL Detector : Peak Project : 612811 Mode : 3 Plane : X(2)_With accessory Setting : 13

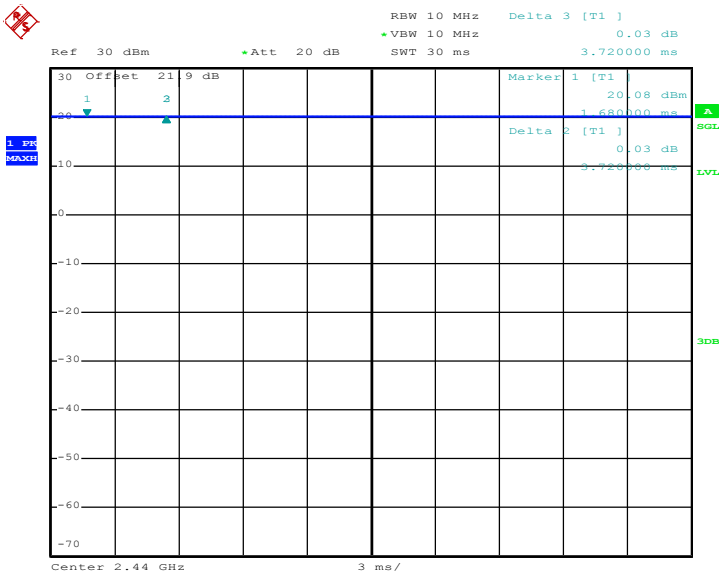
Emission below 1GHz
2.4GHz Zigbee (LF)

Zigbee	2.4GHz	
ANT	Zigbee LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH07-HY Condition : FCC CLASS-B 3m LF-ANT-35419(6) HORIZONTAL Detector : Peak Project : 612811 Mode : 4	 Site : 03CH07-HY Condition : FCC CLASS-B 3m LF-ANT-35419(6) VERTICAL Detector : Peak Project : 612811 Mode : 4

Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(μs)	1/T(kHz)	VBW Setting
Zigbee 2.4 GHz Band	100.00	-	-	10Hz

Zigbee 2.4 GHz



Date: 8.APR.2016 22:44:34