RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	**FCC Part 15.247** **IC RSS-247 issue 2 and IC RSS-GEN issue 5**
Product name	**Photocontroller**
Brand Name	**CIMCON**
Model	**iSLC4100-7P-T**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement,** **not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Kevin Tsai
Deputy Manager

Tested by:

Dally Hong
Engineer

Revision History

Rev.	Issue Date	Revisions	Revised By
00	October 17, 2019	Initial Issue	Allison Chen

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	CIMCON Lighting, Inc. 200 Summit Drive, Suite 500, South Tower, Burlington, MA 01803, United States
Manufacturer	CIMCON Lighting, Inc. 200 Summit Drive, Suite 500, South Tower, Burlington, MA 01803, United States
Equipment	Photocontroller
Model No.	iSLC4100-7P-T
Model Discrepancy	N/A
Trade Name	CIMCON
Received Date	May 9, 2019
Date of Test	July 26 ~ September 25, 2019
Output Power(W)	Zigbee: 0.6194 (EIRP: 0.8750)
Power Operation	120 to 277VAC, 50/60Hz

Remark:
1. The above test method for conduction measurements is in accordance with Part 15.247 & RSS-247, so the test data is identical to another test report T190212E01-RP.

1.2 EUT CHANNEL INFORMATION

Frequency Range	Zigbee: 2405~2475MHz
Modulation Type	Zigbee: OQPSK (Offset Quadrature Phase Shift Keyed)
Number of channels	Zigbee: 13 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table A1 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☐ PCB ☐ Dipole ☐ Coils ☒ Monopole Antenna
Antenna Gain	1.5 dBi
Antenna Connector	I-PEX

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

***Remark**:*
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Dally Hong	-
Radiation	Jerry Lu	-
RF Conducted	Dally Hong	-

Remark: *The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Coaxial Cable	Woken	WC12	CC001	06/28/2019	06/27/2020
Coaxial Cable	Woken	WC12	CC003	06/28/2019	06/27/2020
Power Meter	Anritsu	ML2495A	1149001	02/12/2019	02/11/2020
Power Seneor	Anritsu	MA2491A	030982	02/12/2019	02/11/2020
Signal Analyzer	R&S	FSV 40	101073	09/27/2018	09/26/2019
Software	N/A				

For Section 3.3: Test date: 2019/05/15

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/26/2019	02/25/2020
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	02/26/2019	02/25/2020
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/20/2018	08/19/2019
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

Remark: *Each piece of equipment is scheduled for calibration once a year.*

For Section 4.6: Test date: 2019/07/26 ~ 2019/08/23

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Bilog Antenna	Sunol Sciences	JB1	A052609	03/06/2019	03/05/2020
Cable	HUBER SUHNER	SUCOFLEX 104PEA	23452	06/27/2019	06/26/2020
Cable	HUBER SUHNER	SUCOFLEX 104PEA	33960	06/27/2019	06/26/2020
Digital Thermo-Hygro Meter	WISEWIND	1110	D06	01/30/2019	01/29/2020
High Pass Filters	MICRO TRONICS	HPM13195	003	02/26/2019	02/25/2020
Horn Antenna	ETS LINDGREN	3116	00026370	12/26/2018	12/25/2019
Horn Antenna	SCHWARZBECK	BBHA 9120D	779	03/09/2019	03/08/2020
Pre-Amplifier	Anritsu	MH648A	M89145	06/27/2019	06/26/2020
Pre-Amplifier	EMEC	EM01G26G	060570	06/27/2019	06/26/2020
Pre-Amplifier	MITEQ	AMF-6F-18004000-37-8P	985646	06/18/2019	06/17/2020
Signal Analyzer	Agilent	N9010A	MY52220817	03/20/2019	03/19/2020
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	EZ-EMC (CCS-3A1RE)				

Conducted Emission Room # B					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
CABLE	EMCI	CFD300-NL	CERF	06/27/2019	06/26/2020
EMI Test Receiver	R&S	ESCI	100064	07/26/2019	07/25/2020
LISN	SCHWARZBECK	NSLK 8127	8127-541	01/31/2019	01/30/2020
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2019	02/12/2020
Software	EZ-EMC(CCS-3A1-CE-Wugu)				

Remark: *Each piece of equipment is scheduled for calibration once a year.*

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	NB(B)	Toshiba	PORTEGE R30-A	N/A	PD97260H

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01, RSS-247 Issue 2 and RSS-GEN Issue 5

2. TEST SUMMERY

FCC Standard Section	ISED Standard Section	Chapter	Test Item	Result
15.203	-	1.3	Antenna Requirement	Pass
15.207	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(2)	RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
-	RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	-
15.247(b)	RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
15.247(e)	RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Emission	Pass
15.247(d)	RSS-247(5.5)	4.6	Radiation Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	Zigbee
Test Channel Frequencies	**Zigbee:** 1. Lowest Channel : 2405MHz 2. Middle Channel : 2445MHz 3. Highest Channel : 2475MHz

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	**AC Power line conducted emission for line and neutral**
Power supply Mode	**Mode 1:EUT power by AC.**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

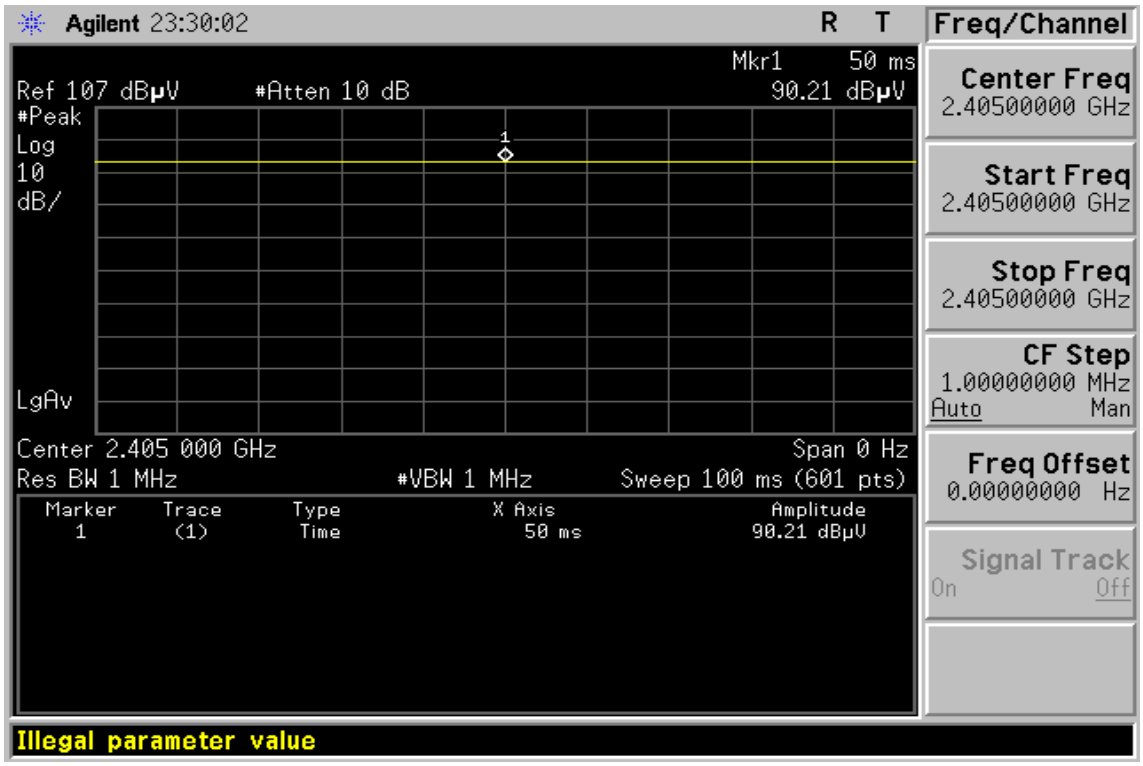
Radiated Emission Measurement Above 1G	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Power supply Mode	**Mode 1:EUT power by AC.**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**
Worst Position	**☐ Placed in fixed position.** **☒ Placed in fixed position at X-Plane (E2-Plane)** **☐ Placed in fixed position at Y-Plane (E1-Plane)** **☐ Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1:EUT power by AC.**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(X-Plane) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

3.3 EUT DUTY CYCLE

Duty Cycle			
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)
Zigbee	1.0000	1.0000	100.00%



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2) and RSS-GEN section 8.8,

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

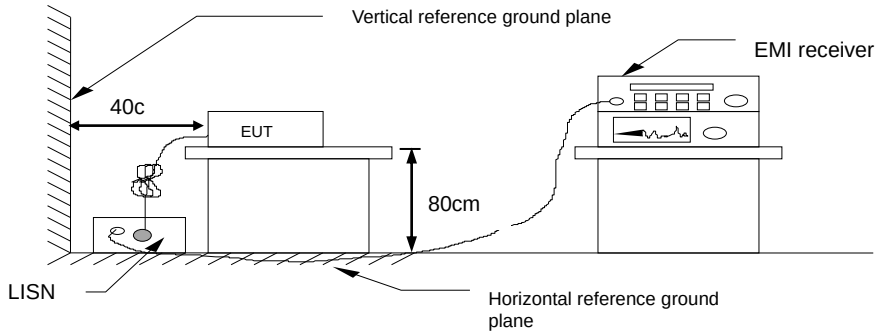
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup

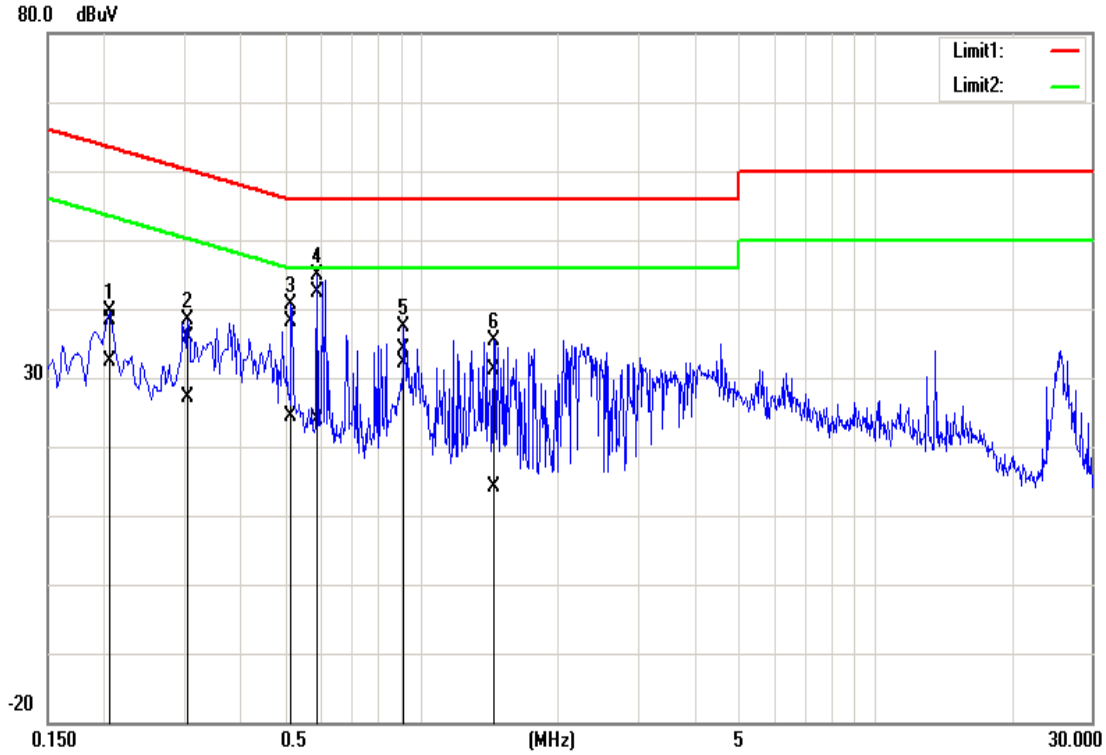


4.1.4 Test Result

Pass.

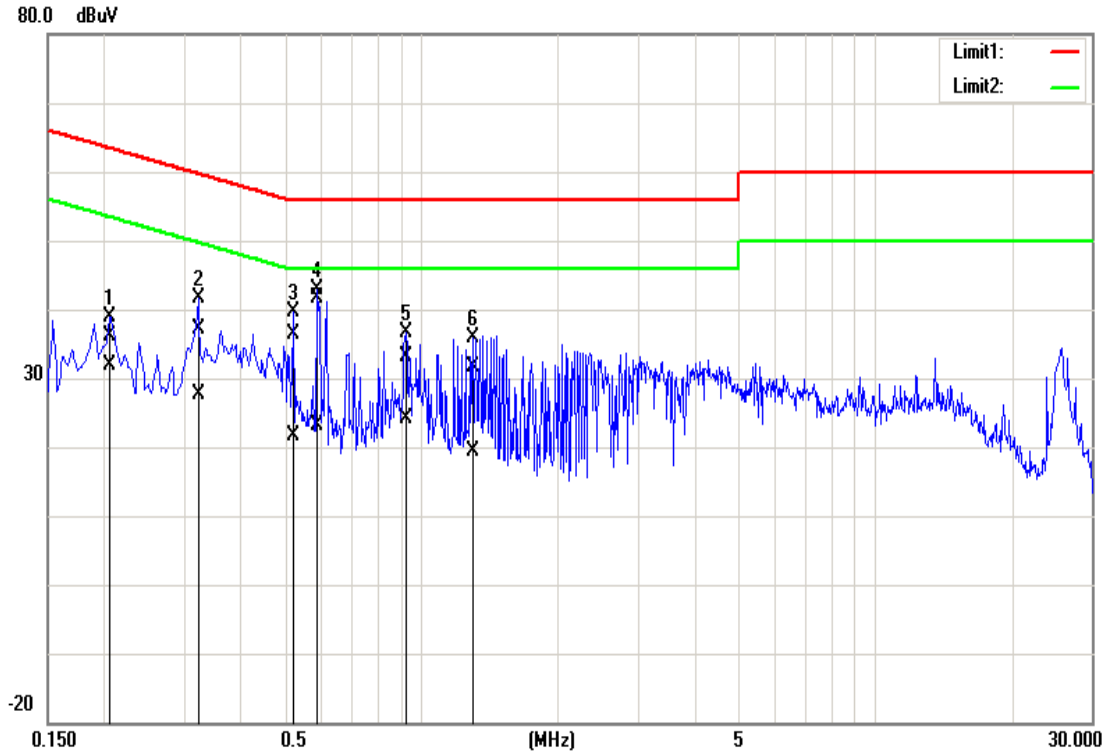
Test Data

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2019/09/25
Phase:	Line	Test Engineer	Dally Hong



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2060	28.22	22.37	10.13	38.35	32.50	63.37	53.37	-25.02	-20.87	Pass
2	0.3060	25.65	17.02	10.14	35.79	27.16	60.08	50.08	-24.29	-22.92	Pass
3	0.5180	28.02	14.29	10.14	38.16	24.43	56.00	46.00	-17.84	-21.57	Pass
4*	0.5900	32.35	13.70	10.15	42.50	23.85	56.00	46.00	-13.50	-22.15	Pass
5	0.9180	23.84	21.84	10.17	34.01	32.01	56.00	46.00	-21.99	-13.99	Pass
6	1.4420	20.98	3.90	10.17	31.15	14.07	56.00	46.00	-24.85	-31.93	Pass

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2019/09/25
Phase:	Neutral	Test Engineer	Dally Hong



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2060	26.07	21.91	10.02	36.09	31.93	63.37	53.37	-27.28	-21.44	Pass
2	0.3220	27.15	17.48	10.03	37.18	27.51	59.66	49.66	-22.48	-22.15	Pass
3	0.5220	26.32	11.71	10.03	36.35	21.74	56.00	46.00	-19.65	-24.26	Pass
4*	0.5900	31.64	13.20	10.03	41.67	23.23	56.00	46.00	-14.33	-22.77	Pass
5	0.9260	23.01	13.99	10.04	33.05	24.03	56.00	46.00	-22.95	-21.97	Pass
6	1.2980	21.52	9.37	10.04	31.56	19.41	56.00	46.00	-24.44	-26.59	Pass

4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2) and RSS-247 section 5.2(a), RSS-GEN 6.7,

6 dB Bandwidth ：

Limit	Shall be at least 500kHz

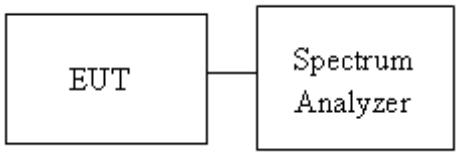
Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth in the test report.

4.2.3 Test Setup



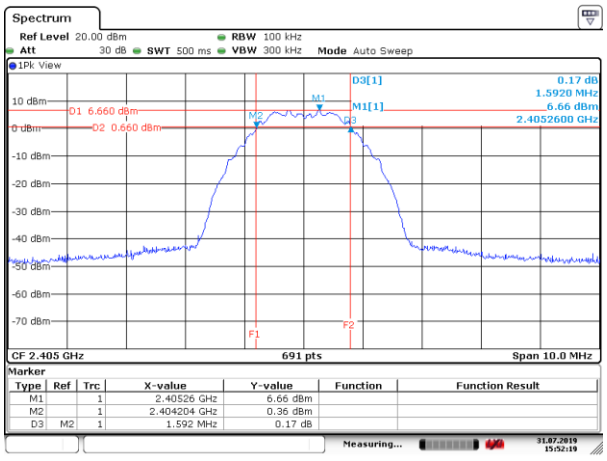
4.2.4 Test Result

Test mode: Zigbee / 2405-2475 MHz				
Channel	**Frequency (MHz)**	**OBW (99%) (MHz)**	**6dB BW (MHz)**	**6dB limit (kHz)**
Low	2405	2.1997	1.5920	≥500
Mid	2445	2.1997	1.5480	
High	2475	2.2286	1.5770	

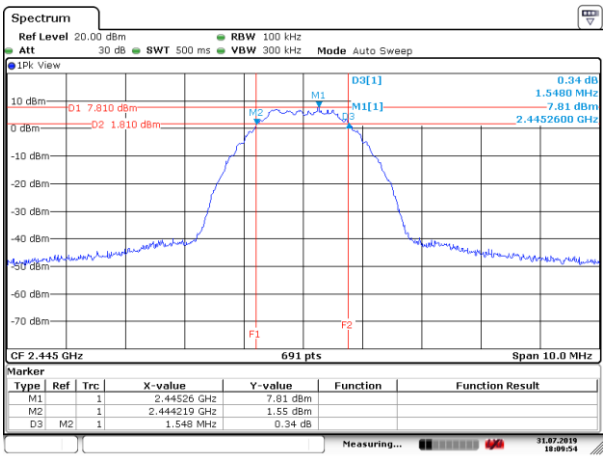
Test Data 6dB BANDWIDTH

Zigbee

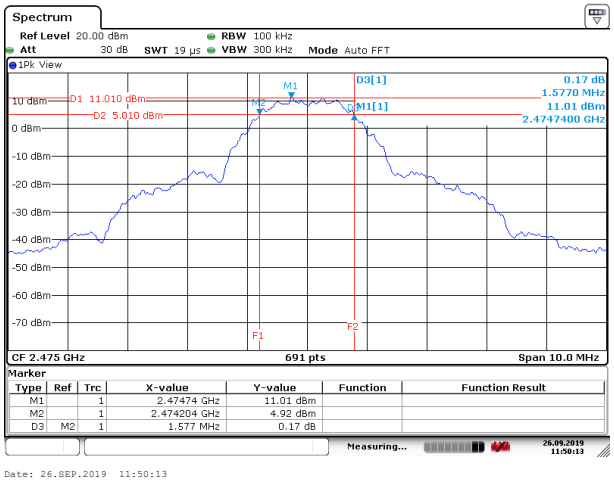
Low CH



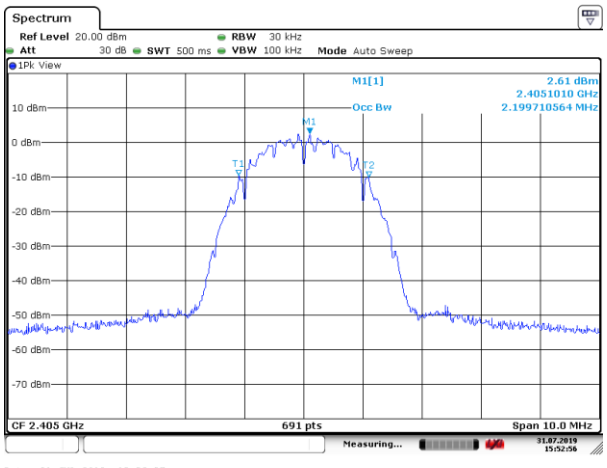
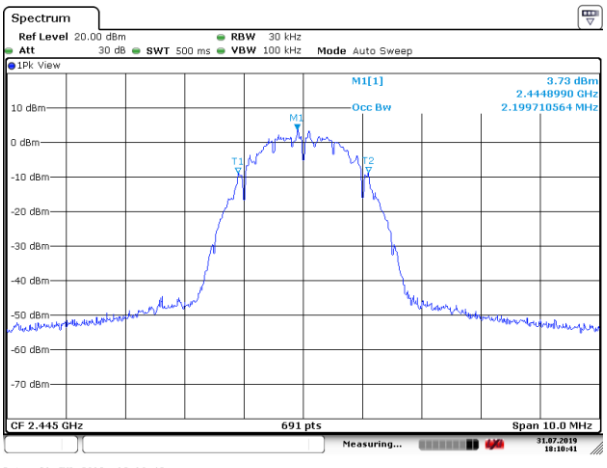
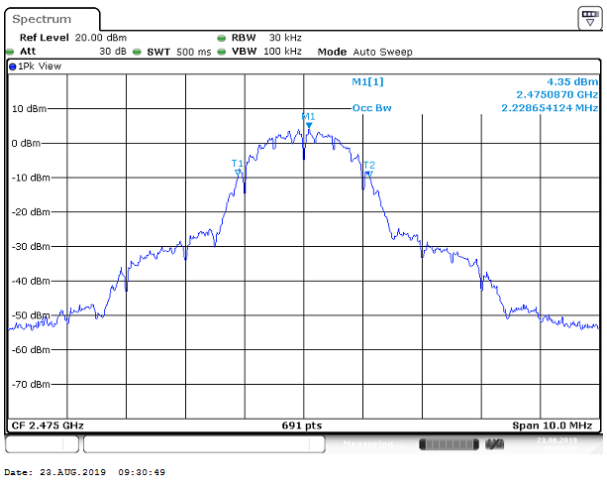
Mid CH



High CH



Test Data BANDWIDTH (99%)

Zigbee	
Low CH	**Mid CH**
	
High CH	
	

4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b) and RSS-247 section 5.4(d),

Peak output power：

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt(30 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced 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 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)] ☐ Point-to-point operation：

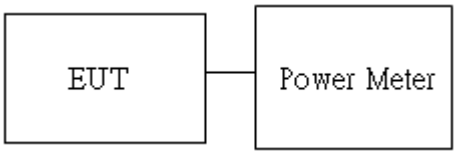
Average output power：For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power in the test report.

4.3.3 Test Setup



4.3.4 Test Result

Peak output power：

Zigbee							
Config.	**Freq. (MHz)**	**Power Setting**	**PK Power (dBm)**	**EIRP PK Power (dBm)**	**PK Power (W)**	**EIRP PK Power (W)**	**Limit (dBm)**
Zigbee	2405	30	27.85	29.35	0.6095	0.8610	30
	2445	30	27.92	29.42	0.6194	0.8750	
	2475	30	27.91	29.41	0.6180	0.8730	

Average output power：

Zigbee			
Config.	**Freq. (MHz)**	**Power Setting**	**AV Power (dBm)**
Zigbee	2405	30	27.18
	2445	30	27.23
	2475	30	27.25

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e), RSS-247 section 5.2(b),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

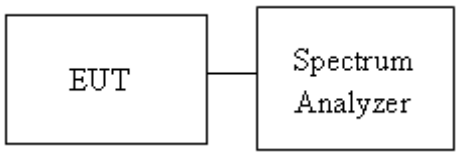
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

4.4.2 Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

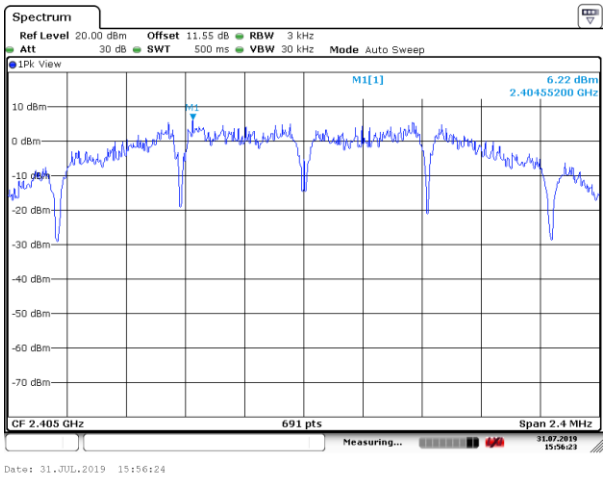
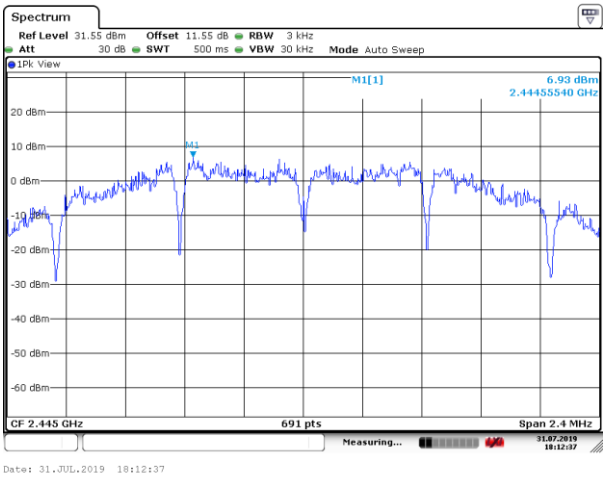
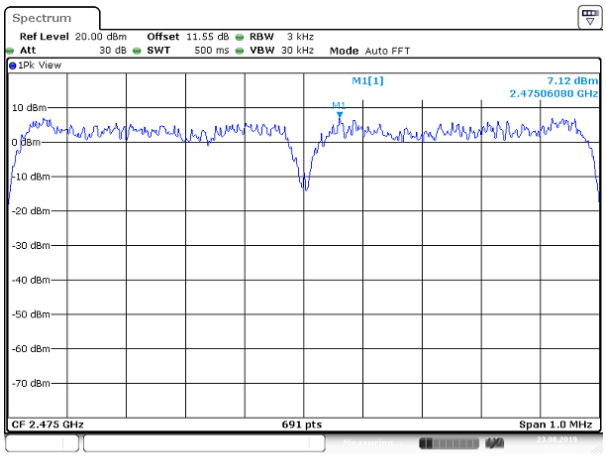
4.4.3 Test Setup



4.4.4 Test Result

Test mode: Zigbee			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	2405	6.22	8
Mid	2445	6.93	
High	2475	7.12	

Test Data

Zigbee	
Low CH	**Mid CH**
	
High CH	
	

4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d) and RSS-247 section 5.5,

In any 100 kHz bandwidth outside the authorized frequency band,

Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.5.2 Test Procedure

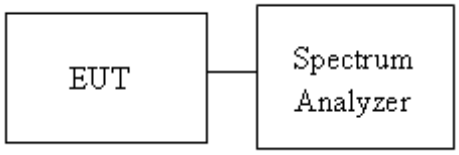
Test method Refer as KDB 558074 D01

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

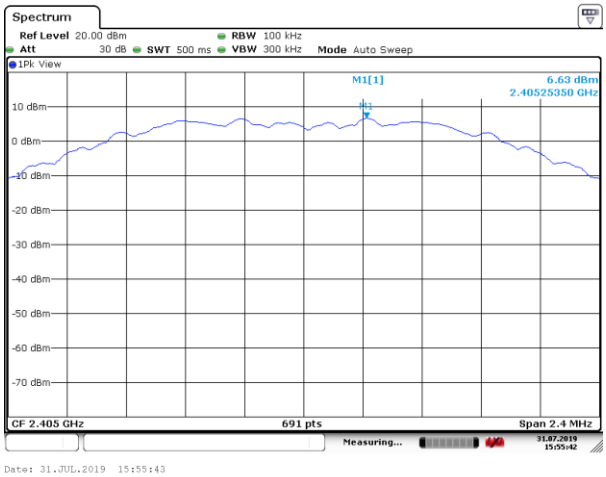
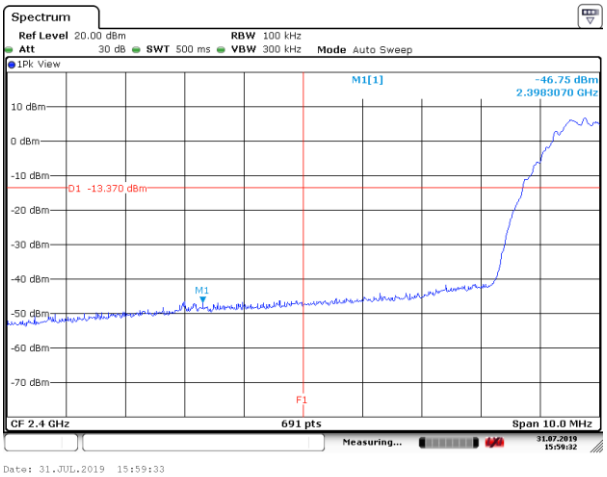
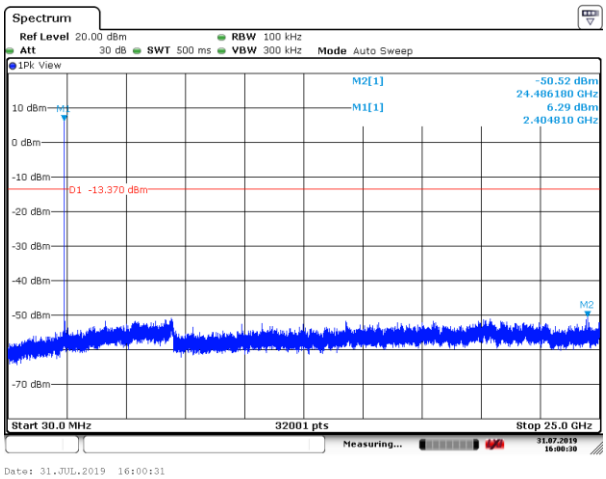
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. f the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

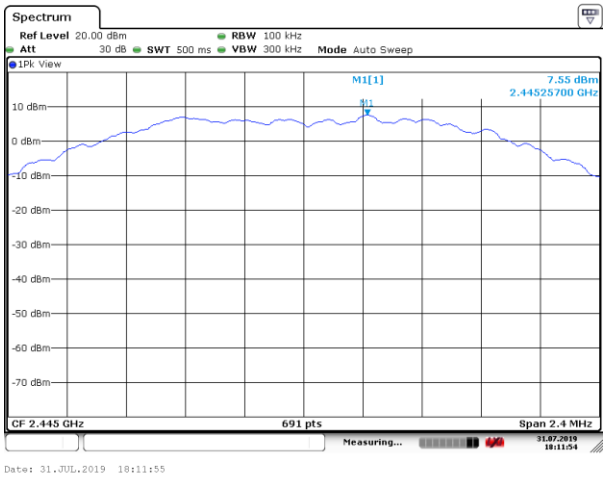
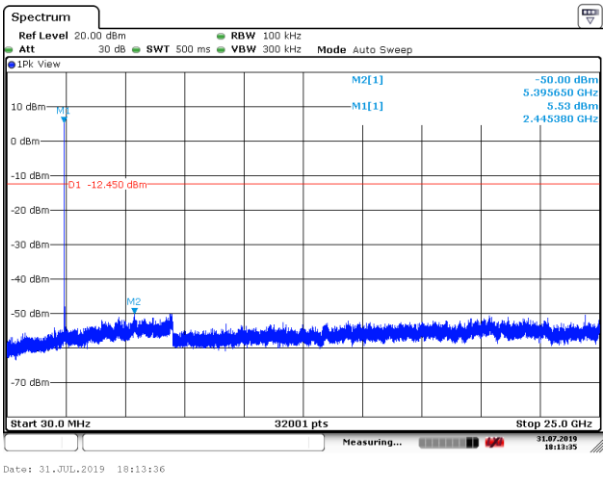
4.5.3 Test Setup

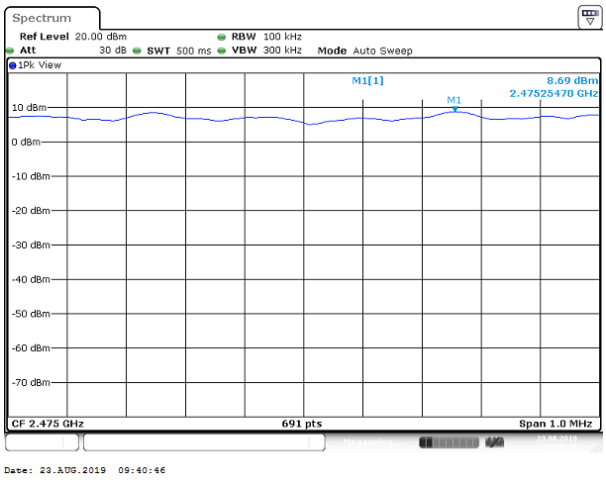
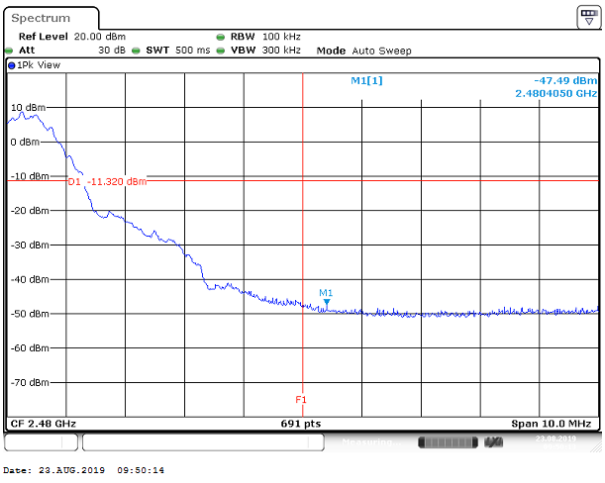
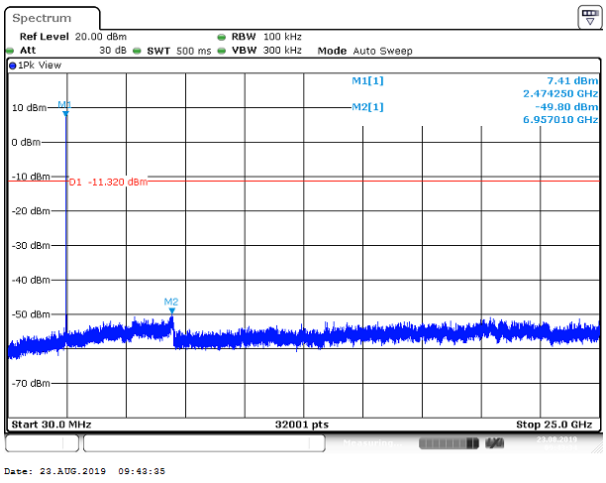


4.5.4 Test Result

Test Data

Zigbee Low CH	
Reference Level of PSD in 100kHz	**Band Edge**
	
Spurious Emission 30MHz-25GHz	
	

Zigbee Mid CH	
Reference Level of PSD in 100kHz	**Spurious Emission 30MHz-25GHz**
	

Zigbee High CH	
Reference Level of PSD in 100kHz	**Band Edge**
	
Spurious Emission 30MHz-25GHz	
	

4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field.

RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz (Note)

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement Distance (m)
9-490 kHz Note	6.37/F (F in kHz)	300
490-1,705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector..

4.6.2 Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 30MHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

4. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

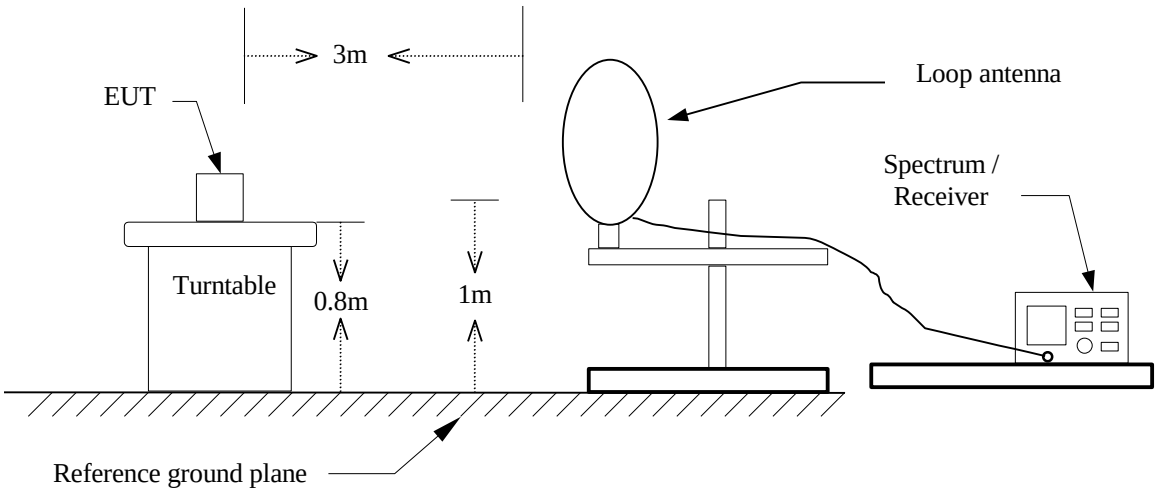
- If Duty Cycle ≥ 98%, VBW=10Hz.
- If Duty Cycle < 98%, VBW≥1/T.

Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
Zigbee	100%	1.0000	-	10Hz

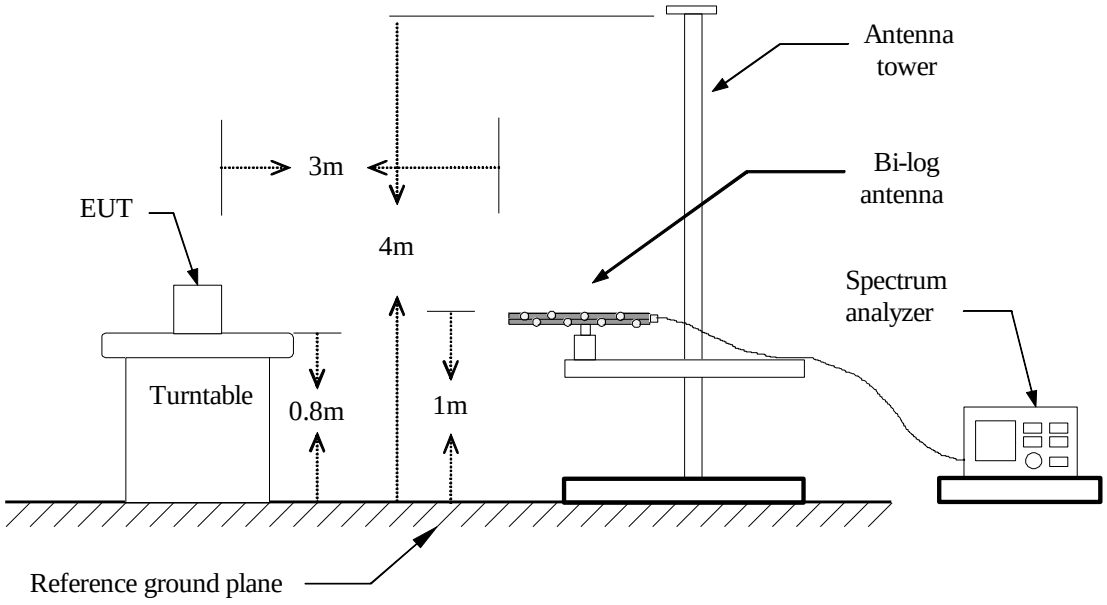
Remark:
1. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
2. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

4.6.3 Test Setup

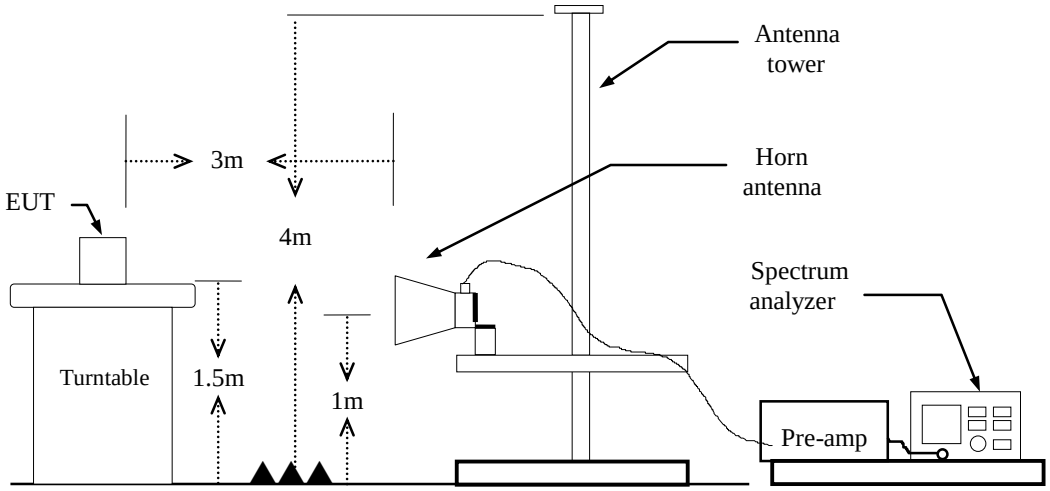
9kHz ~ 30MHz



30MHz ~ 1GHz



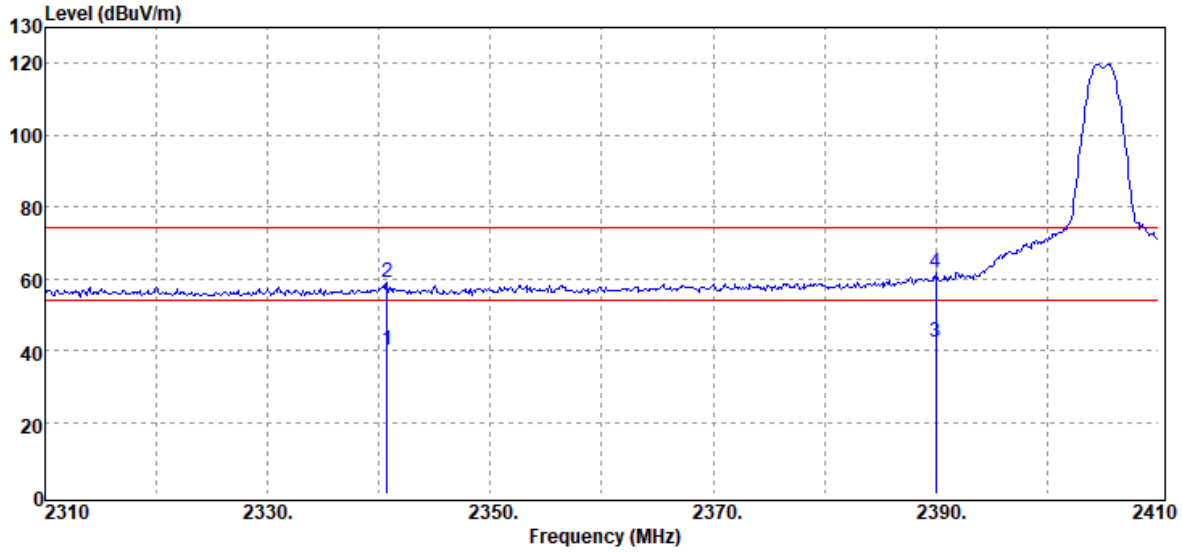
Above 1 GHz



4.6.4 Test Result

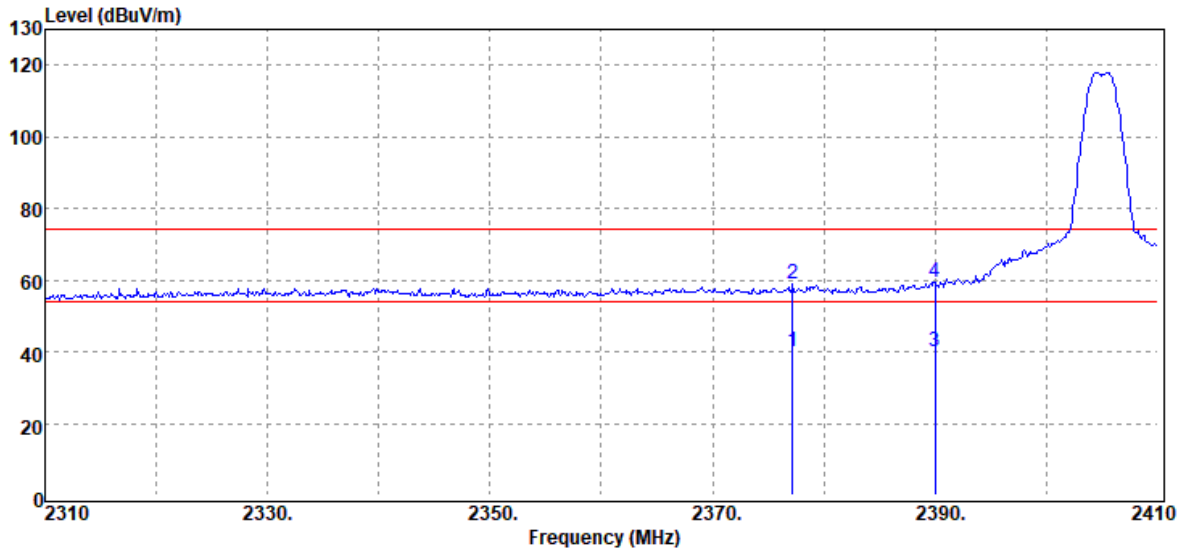
Band Edge Test Data

Test Mode	Zigbee Low CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Band Edge	Test Date	July 30, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak and Average		



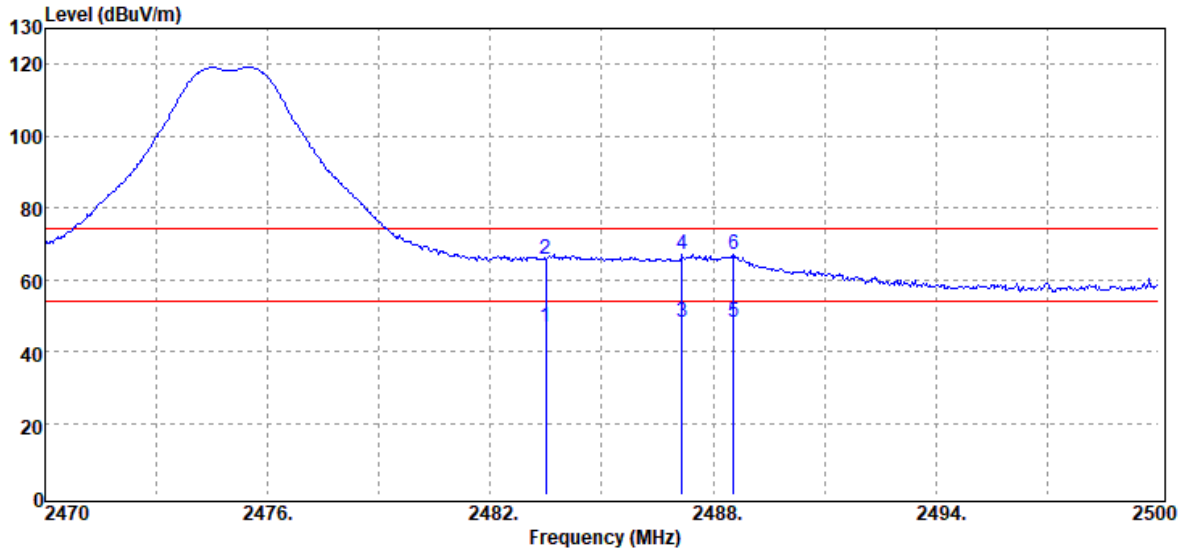
Frequency (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
2340.70	Average	-	-19.09	39.82	54.00	-14.18
2340.70	Peak	62.20	-3.29	58.91	74.00	-15.09
2390.00	Average	-	-19.09	42.46	54.00	-11.54
2390.00	Peak	64.93	-3.38	61.55	74.00	-12.45

Test Mode	Zigbee Low CH	Temperature:	23.6(℃)/ 48%RH
Test Item	Band Edge	Test Date	July 30, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Average		



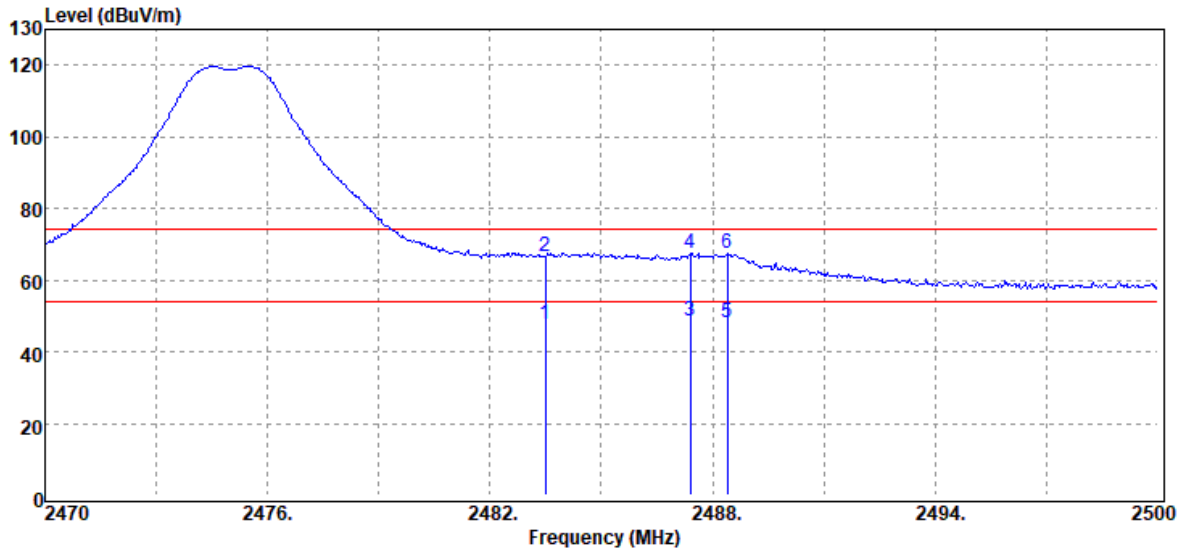
Frequency (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
2377.20	Average	-	-19.09	39.84	54.00	-14.16
2377.20	Peak	62.29	-3.36	58.93	74.00	-15.07
2390.00	Average	-	-19.09	40.16	54.00	-13.84
2390.00	Peak	62.63	-3.38	59.25	74.00	-14.75

Test Mode	Zigbee High CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Band Edge	Test Date	July 30, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak and Average		



Frequency (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
2483.50	Average	-	-19.09	46.73	54.00	-7.27
2483.50	Peak	68.65	-2.83	65.82	74.00	-8.18
2487.16	Average	-	-19.09	48.00	54.00	-6.00
2487.16	Peak	69.89	-2.80	67.09	74.00	-6.91
2488.54	Average	-	-19.09	47.93	54.00	-6.07
2488.54	Peak	69.82	-2.80	67.02	74.00	-6.98

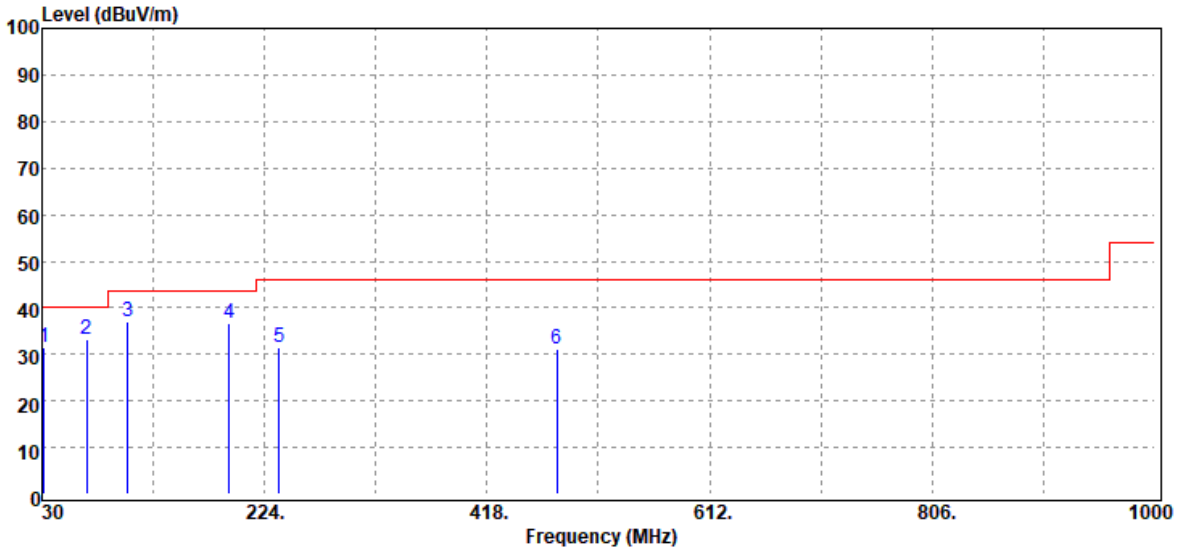
Test Mode	Zigbee High CH	Temperature:	23.6(℃)/ 48%RH
Test Item	Band Edge	Test Date	July 30, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Average		



Frequency (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
2483.50	Average	-	-19.09	47.56	54.00	-6.44
2483.50	Peak	69.48	-2.83	66.65	74.00	-7.35
2487.40	Average	-	-19.09	48.39	54.00	-5.61
2487.40	Peak	70.28	-2.80	67.48	74.00	-6.52
2488.39	Average	-	-19.09	48.32	54.00	-5.68
2488.39	Peak	70.21	-2.80	67.41	74.00	-6.59

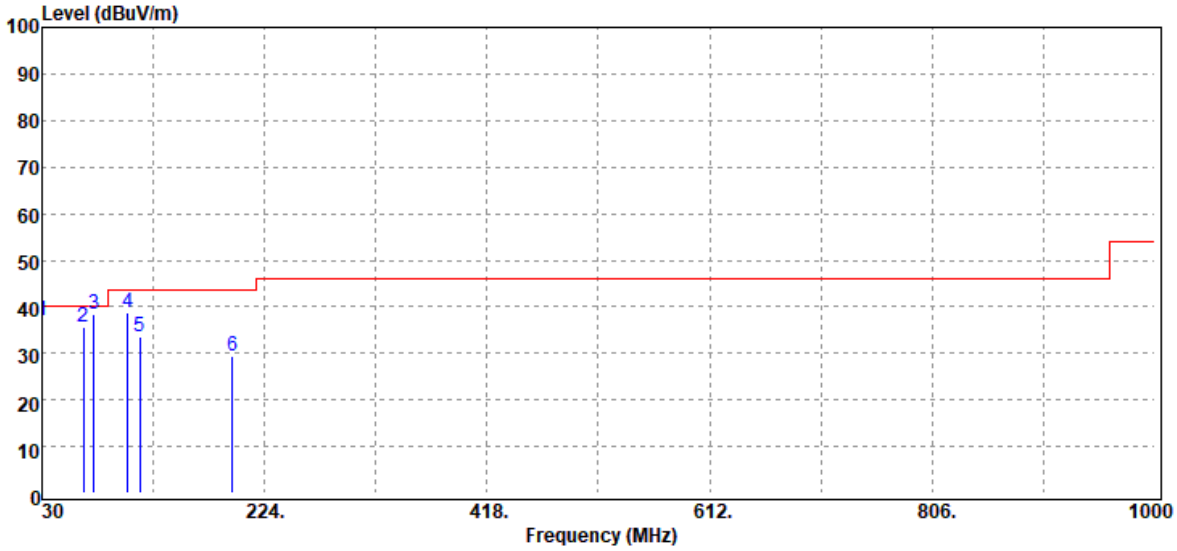
Below 1GHz

Test Mode	Zigbee Mid CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	30MHz-1GHz	Test Date	July 26, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
31.94	Peak	34.84	-3.40	31.44	40.00	-8.56
68.80	Peak	48.17	-14.93	33.24	40.00	-6.76
104.69	Peak	48.31	-11.18	37.13	43.50	-6.37
192.96	Peak	47.09	-10.44	36.65	43.50	-6.85
236.61	Peak	42.01	-10.51	31.50	46.00	-14.50
479.11	Peak	34.17	-2.98	31.19	46.00	-14.81

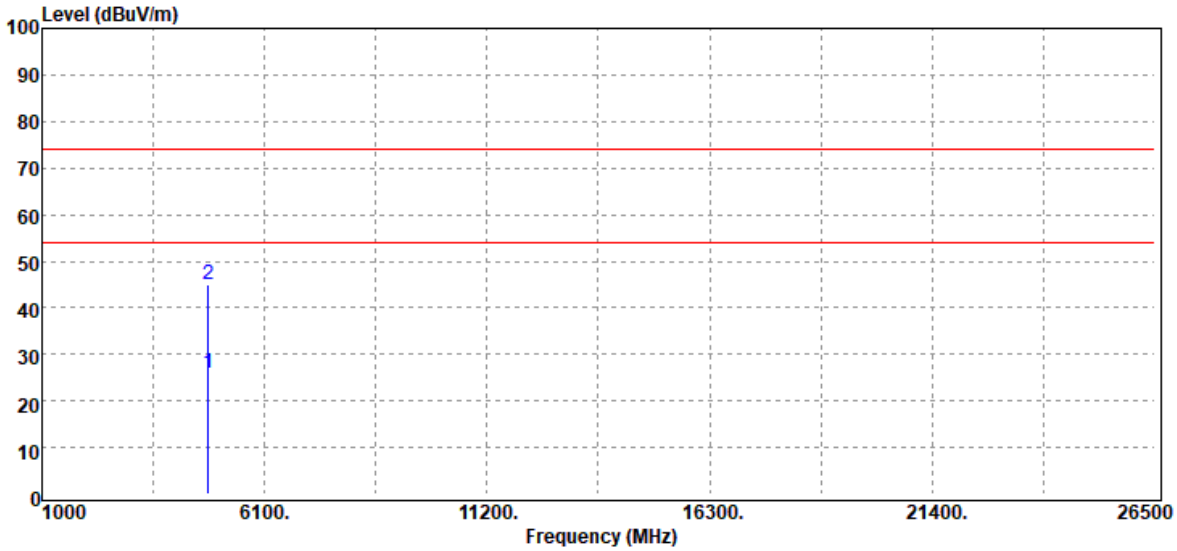
Test Mode	Zigbee Mid CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	30MHz-1GHz	Test Date	July 26, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Quasi-peak		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
30.00	QP	38.65	-1.51	37.14	40.00	-2.86
65.89	QP	50.96	-15.35	35.61	40.00	-4.39
75.59	QP	53.06	-14.79	38.27	40.00	-1.73
104.69	QP	50.05	-11.19	38.86	43.50	-4.64
115.36	Peak	42.86	-9.27	33.59	43.50	-9.91
195.87	Peak	39.25	-9.78	29.47	43.50	-14.03

Above 1 GHz

Test Mode	Zigbee Low CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Harmonic	Test Date	July 30, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak and Average		

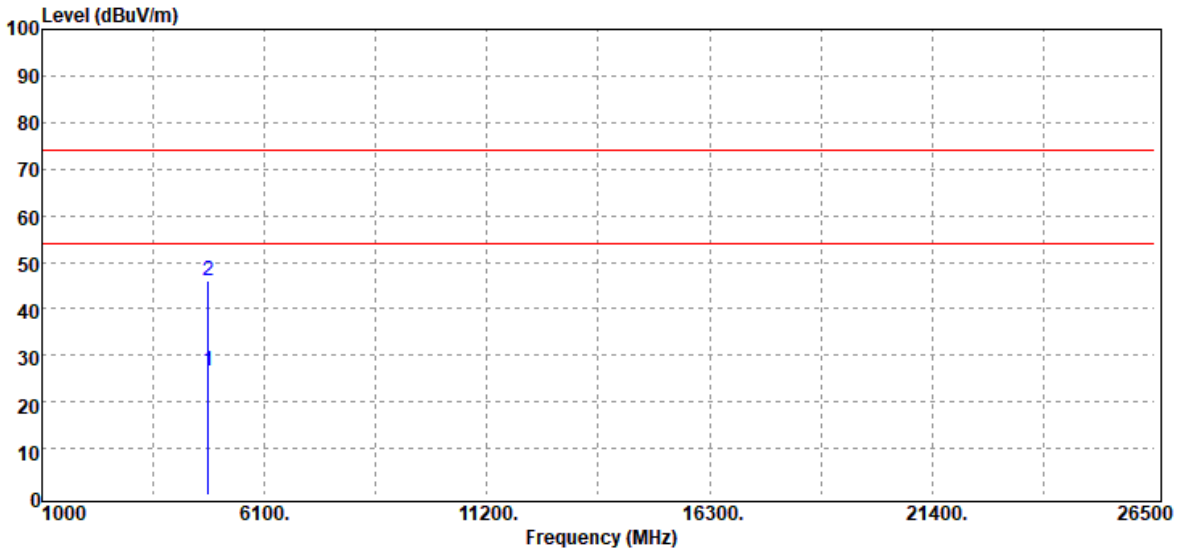


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4810.00	Average	-	-19.09	25.95	54.00	-28.05
4810.00	Peak	42.00	3.04	45.04	74.00	-28.96
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Test Mode	Zigbee Low CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Harmonic	Test Date	July 30, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Average		

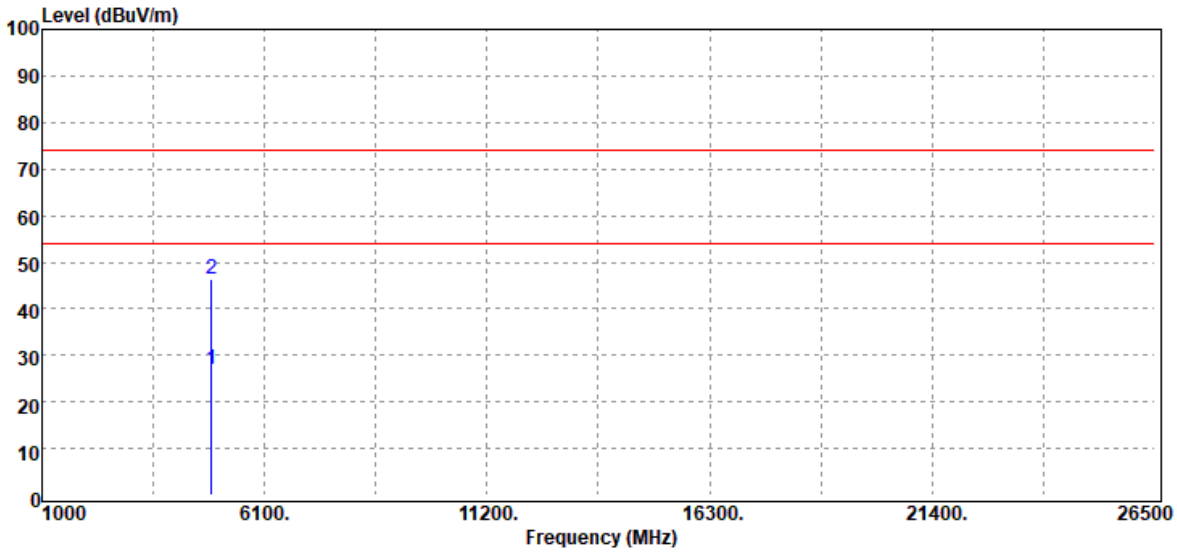


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4810.00	Average	-	-19.09	26.77	54.00	-27.23
4810.00	Peak	42.82	3.04	45.86	74.00	-28.14
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Test Mode	Zigbee Mid CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Harmonic	Test Date	July 30, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak and Average		

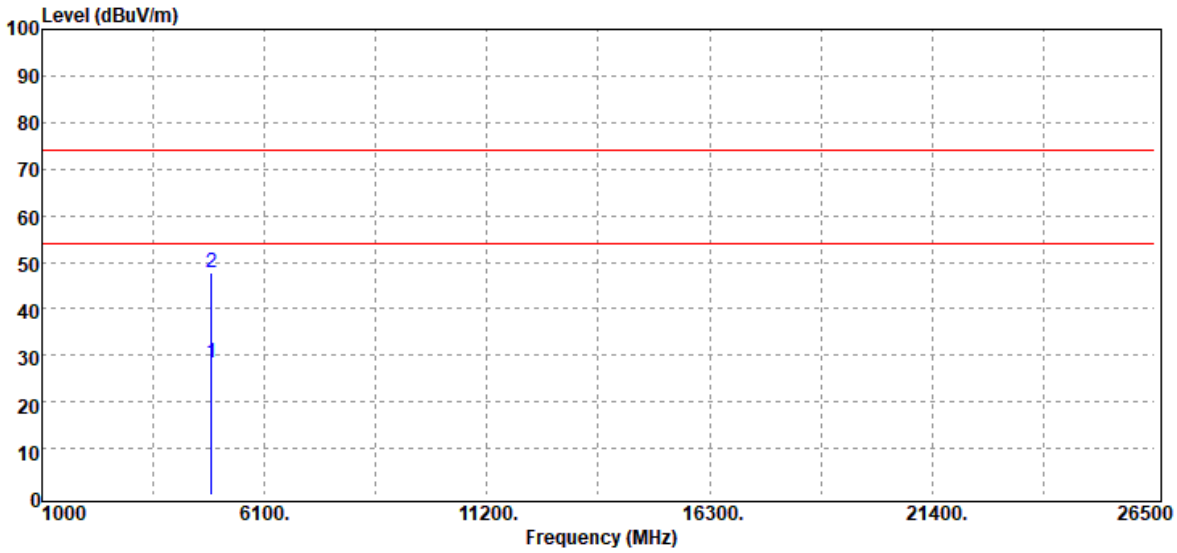


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4890.00	Average	-	-19.09	27.16	54.00	-26.84
4890.00	Peak	42.78	3.47	46.25	74.00	-27.75
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Test Mode	Zigbee Mid CH	Temp/Hum	23.6(℃)/ 48%RH
Test Item	Harmonic	Test Date	July 30, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Average		

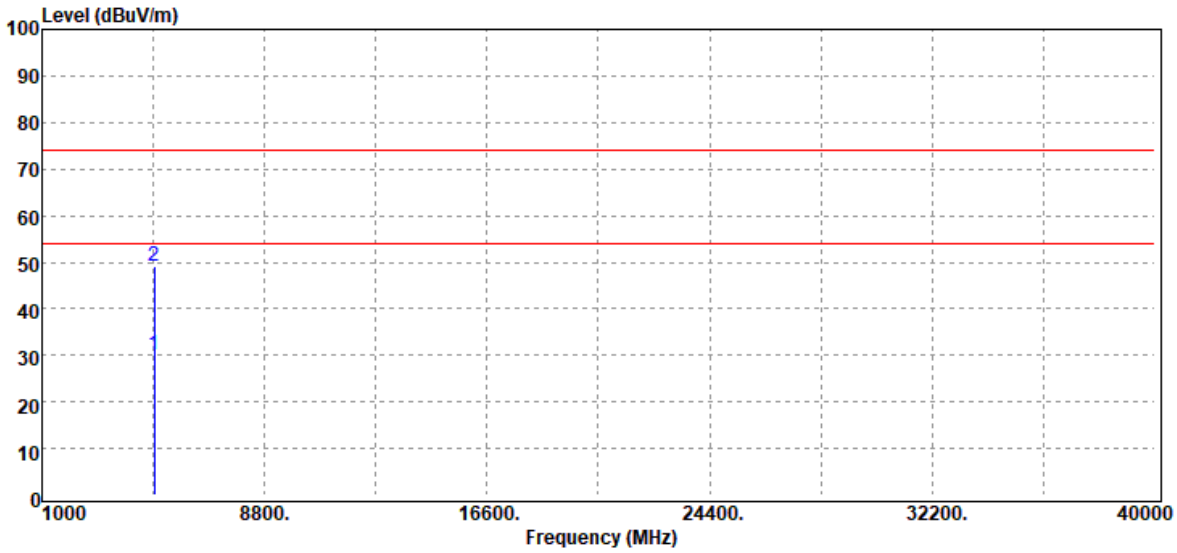


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4890.00	Average	-	-19.09	28.54	54.00	-25.46
4890.00	Peak	44.16	3.47	47.63	74.00	-26.37
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Test Mode	Zigbee High CH	Temp/Hum	28.3(℃)/ 35%RH
Test Item	Harmonic	Test Date	August 23, 2019
Polarize	Vertical	Test Engineer	Jerry Lu
Detector	Peak and Average		

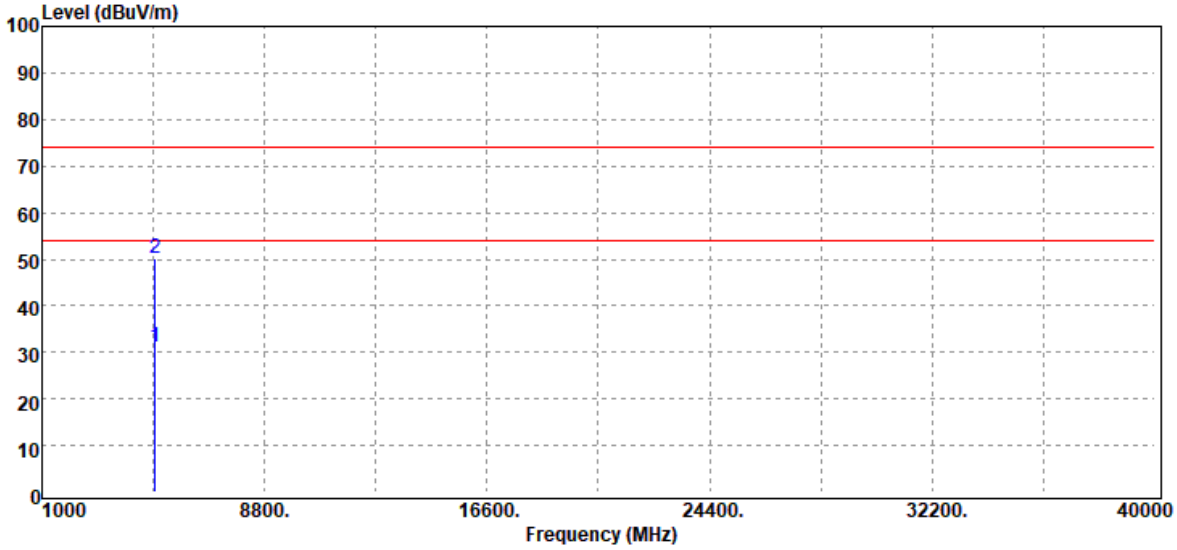


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4890.00	Average	-	-19.09	28.54	54.00	-25.46
4890.00	Peak	44.16	3.47	47.63	74.00	-26.37
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Test Mode	Zigbee High CH	Temp/Hum	28.3(℃)/ 35%RH
Test Item	Harmonic	Test Date	August 23, 2019
Polarize	Horizontal	Test Engineer	Jerry Lu
Detector	Peak and Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
4955.00	Average	-	-19.09	31.17	54.00	-22.83
4955.00	Peak	46.23	4.03	50.26	74.00	-23.74
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

--End of Report--