



FCC ID: 009RG50

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

G.TECH TECHNOLOGY LTD

Wireless Receiver

Brand Name	Model No.
ASUS	RG50

FCC ID: 009RG50

Prepared for : G.TECH TECHNOLOGY LTD
No.21, Jinding Industrial Park, West Jinfeng Road,
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Guangdong China

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F16119
Date of Test : May.23~26, 2016
Date of Report : Jun.21, 2016

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FCC ID: 009RG50

TEST REPORT CERTIFICATION

Applicant : G.TECH TECHNOLOGY LTD

Product : Wireless Receiver

FCC ID : 009RG50

(A) Brand Name & :
Model No.

Brand Name	Model No.
ASUS	RG50

(B) Serial No. : N/A

(C) Power Supply : DC 5V

(D) Test Voltage : DC 5V From PC Input AC 120V/60Hz

Tested for comply with:
FCC CFR 47 Part 15 Subpart C: 2014

Test procedure used:
ANSI C63.10:2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. This report contains data that are not covered by the NVLAP accreditation. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : May.23~26, 2016 Report of date: Jun.21, 2016

Prepared by : Cindy Zhu / Assistant Reviewed by : Sunny Lu / Assistant Manager

Approved & Authorized Signer :



信華科技(深圳)有限公司

Audix Technology (Shenzhen) Co., Ltd.

EMC 部門報告專用章

Stamp only for EMC Dept. Report

Signature: David Jin

David Jin / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 15C: 15.207 ANSI C63.10-2013	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2013	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10-2013	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10-2013	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product : Wireless Receiver

Brand Name& Model No.	:		Brand Name	Model No.
			ASUS	RG50

FCC ID : OO9RG50

Operation frequency : 2403MHz-2479MHz

Antenna : PCB antenna, -2.268dBi

Modulation : GFSK

Applicant : G.TECH TECHNOLOGY LTD
No.21, Jinding Industrial Park, West Jinfeng Road,
Tangjiawan Town, Xiangzhou District Zhuhai
Guangdong China

Date of Test : May.23~26, 2016

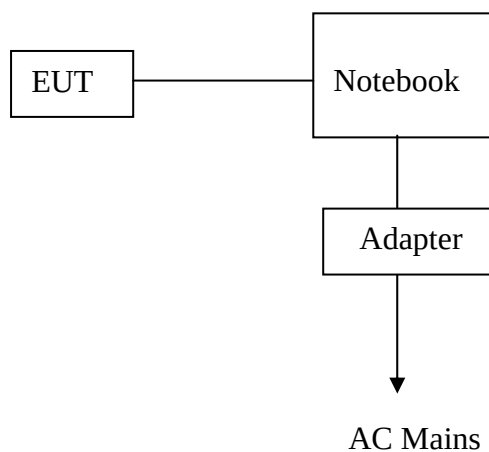
Date of Receipt : May.21, 2016

Sample Type : Prototype production

2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number
1.	Notebook	N/A	SONY	SVF143A1QT	N/A
		Power Adapter: Manufacturer: SONY, Model: VGP-AC19V77 Input: 100-240V~, 1.5A, 50/60Hz Output: 19.5V---3.3A Power Cord: Unshielded, Detachable, 1.8m			

2.3. EUT Configuration and operation conditions for test



(EUT: Wireless Receiver)

2.4. Test Facility

Site Description

Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd. No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
3m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 90454 Valid Date: Dec.30, 2017
3m & 10m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 794232 Valid Date: Jul.12, 2016
EMC Lab.	:	Certificated by Industry Canada Registration Number: IC 5183A-1 Valid Date: May.14, 2017
	:	Certificated by DAkkS, Germany Registration No: D-PL-12151-01-00 Valid Date: Dec.15, 2016
	:	Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2017

2.5. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.2dB (150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	2.8dB(30~200MHz, Polarization: H)
	2.8dB(30~200MHz, Polarization: V)
	2.8dB(200M~1GHz, Polarization: H)
	2.8dB(200M~1GHz, Polarization: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	5.8dB (1~6GHz, Distance: 3m)
	5.8dB (6~18GHz, Distance: 3m)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.6 dB
Uncertainty for Conduction Spurious emission test	2.0 dB
Uncertainty for Output power test	0.8 dB
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.1 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

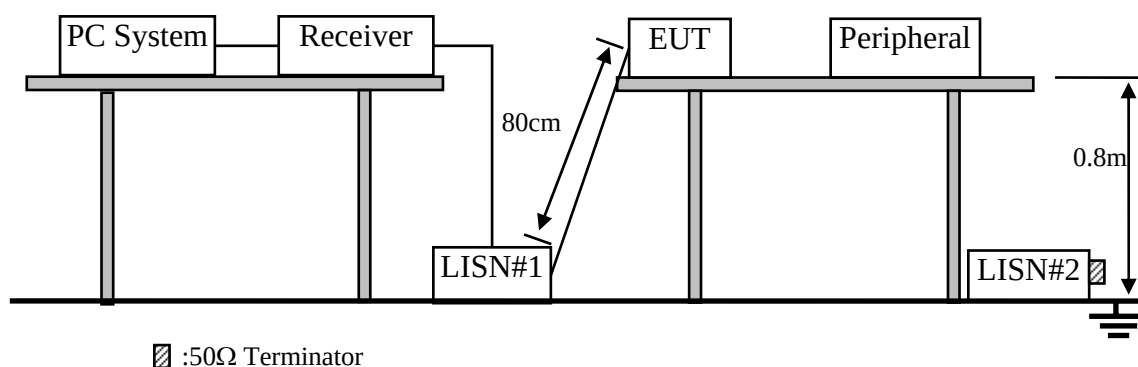
3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	Apr.17,16	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCI	100842	Apr.24,16	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	100429	Oct.18,15	1 Year
4.	L.I.S.N.#2	Kyoritsu	K NW-403D	8-1750-2	Apr.24,16	1 Year
5.	Terminator	Hubersuhner	50Ω	No.1	May.5.16	1 Year
6.	Terminator	Hubersuhner	50Ω	No.2	May.5.16	1 Year
7.	RF Cable	MIYAZAKI	3D-2W	No.1	Apr.24,16	1Year
8.	Coaxial Switch	Anritsu	MP59B	6200766906	Apr.23,16	1 Year
9.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. Wireless Receiver (EUT)

Model Number : RG50

Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. PC run test software to control EUT work in Tx mode.

3.6. Test Procedure

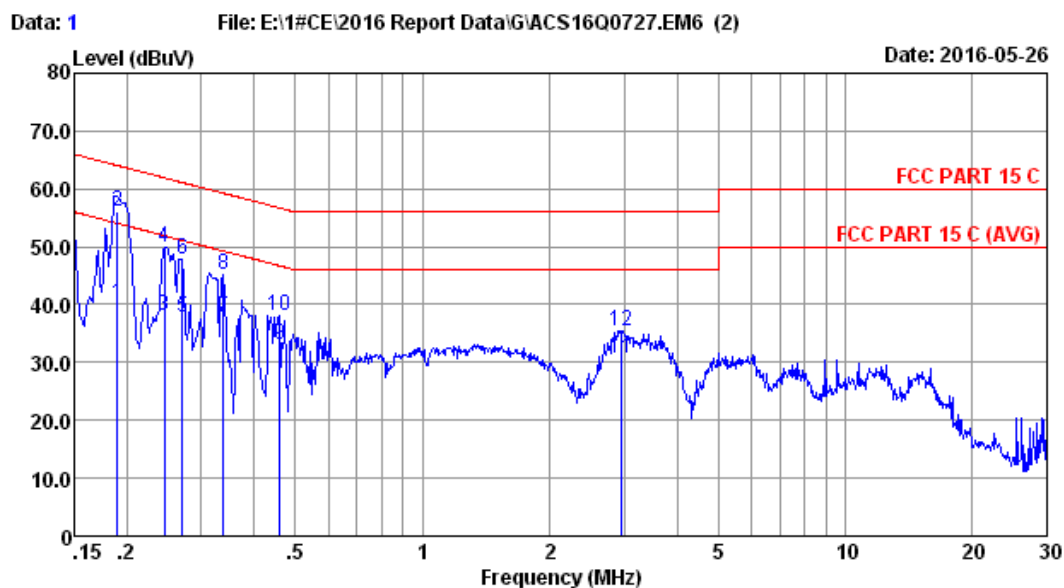
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7. Power Line Conducted Emission Test Results

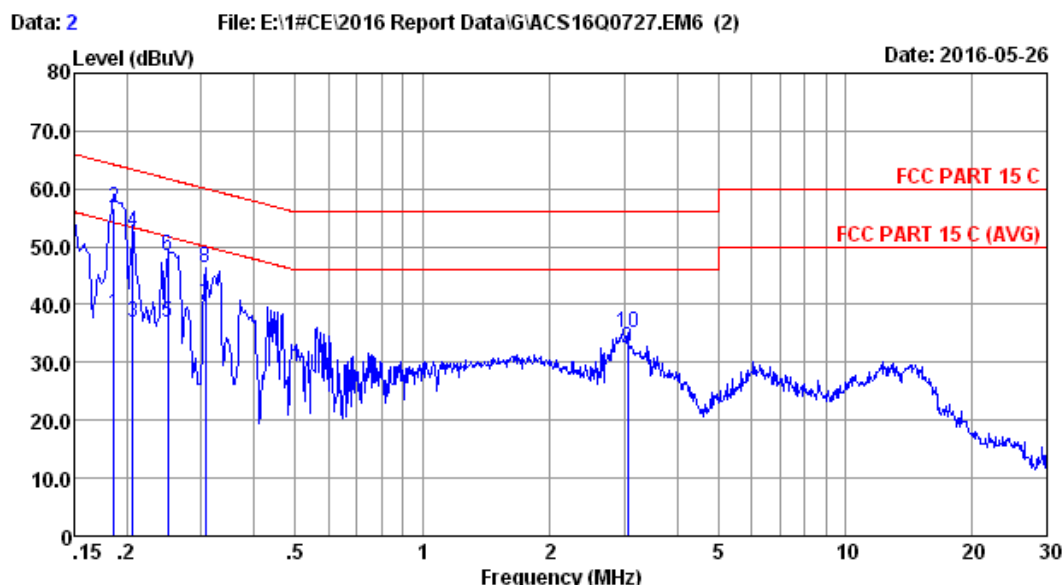
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1# Conduction Data No :1
 Dis./Lisn :2016 KNW-242C VA
 Limit :FCC PART 15 C
 Env./Ins. :21.4°C/52% Engineer :Alvis-Wu
 EUT :Wireless Receiver M/N:RG50
 Power Rating :DCSV From PC Input AC 120V/60Hz
 Test Mode :TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.190	0.15	0.02	39.90	40.07	54.04	13.97	Average
2	0.190	0.15	0.02	55.80	55.97	64.04	8.07	QP
3	0.246	0.15	0.02	37.81	37.98	51.91	13.93	Average
4	0.246	0.15	0.02	49.85	50.02	61.91	11.89	QP
5	0.270	0.15	0.02	37.69	37.86	51.12	13.26	Average
6	0.270	0.15	0.02	47.75	47.92	61.12	13.20	QP
7	0.337	0.16	0.02	37.54	37.72	49.27	11.55	Average
8	0.337	0.16	0.02	44.89	45.07	59.27	14.20	QP
9	0.459	0.16	0.03	32.85	33.04	46.71	13.67	Average
10	0.459	0.16	0.03	37.76	37.95	56.71	18.76	QP
11	2.962	0.20	0.08	30.51	30.79	46.00	15.21	Average
12	2.962	0.20	0.08	35.25	35.53	56.00	20.47	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.



Site no :1# Conduction Data No :2
 Dis./Lisn :2016 KNW-242C VB
 Limit :FCC PART 15 C
 Env./Ins. :21.4°C/52% Engineer :Alvis-Wu
 EUT :Wireless Receiver M/N:RG50
 Power Rating :DC5V From PC Input AC 120V/60Hz
 Test Mode :TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.186	0.38	0.02	37.87	38.27	54.21	15.94	Average
2	0.186	0.38	0.02	56.20	56.60	64.21	7.61	QP
3	0.206	0.38	0.02	36.59	36.99	53.36	16.37	Average
4	0.206	0.38	0.02	52.28	52.68	63.36	10.68	QP
5	0.249	0.39	0.02	36.47	36.88	51.78	14.90	Average
6	0.249	0.39	0.02	48.14	48.55	61.78	13.23	QP
7	0.307	0.40	0.02	39.54	39.96	50.06	10.10	Average
8	0.307	0.40	0.02	45.79	46.21	60.06	13.85	QP
9	3.058	0.49	0.08	31.85	32.42	46.00	13.58	Average
10	3.058	0.49	0.08	34.55	35.12	56.00	20.88	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1. Test Equipment

Frequency range: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Mar.28,16	1 Year
2.	EMI Spectrum	Agilent	E4407B	MY41440292	Apr.24,16	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Apr.24,16	1 Year
4.	Amplifier	HP	8447D	2648A04738	Apr.24,16	1 Year
5.	Bi-log Antenna	TESEQ	CBL6112D	35375	Jun.30,15	1 Year
6.	RF Cable	MIYAZAKI	CFD400-N W(3.5M)	No.3	Apr.24,16	1 Year
7.	RF Cable	MIYAZAKI	CFD400-L W(22M)	No.7	Apr.24,16	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6201397222	Apr.23,16	1 Year
9.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A

Note: N/A means Not applicable.

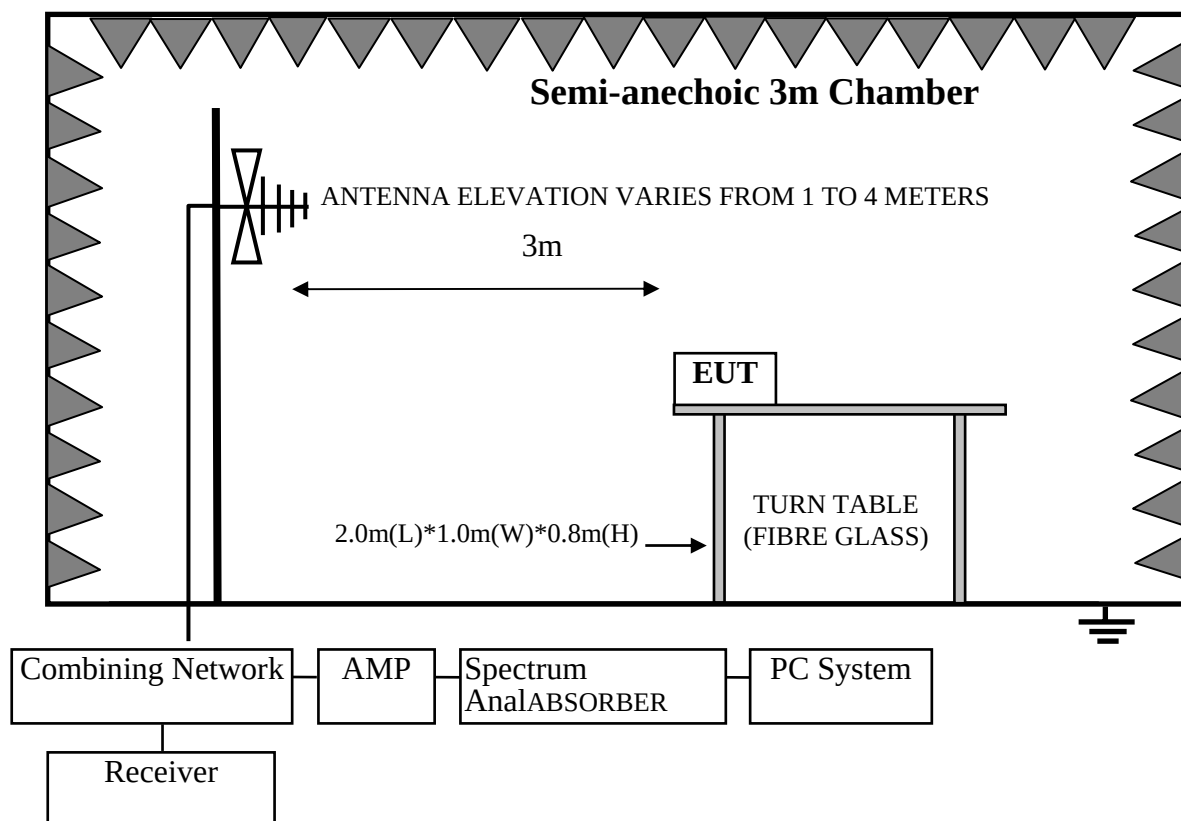
Frequency range: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	Apr.24,16	1 Year
2.	Horn Antenna	ETS	3115	9510-4580	Oct.15,15	1 Year
3.	Amplifier	Agilent	8449B	3008A02495	Apr.24,16	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX104	274094/4	Apr.24,16	1 Year
5.	Horn Antenna	ETS	3116	00060089	Oct.15,15	1 Year
6.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A

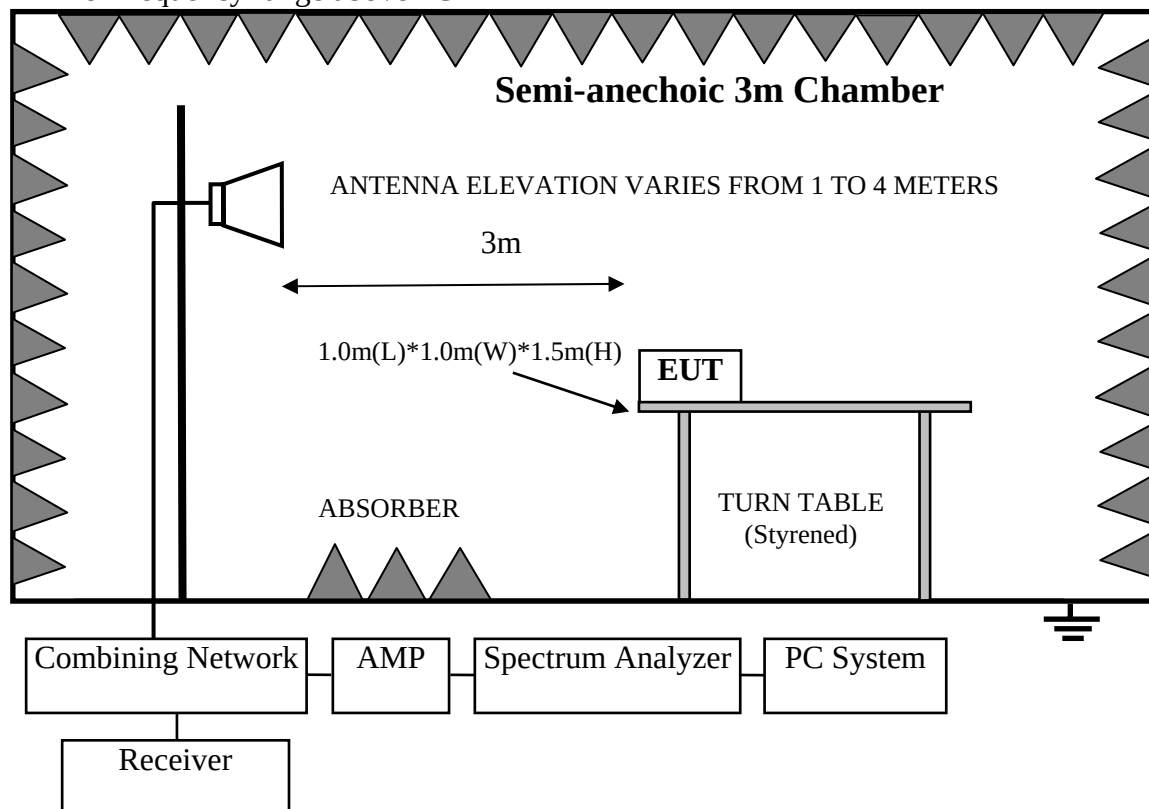
Note: N/A means Not applicable.

4.2. Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range above 1GHz



4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of fundamental emissions for 2.4GHz-2.4835GHz	3	114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 - (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.5.Operating Condition of EUT

- 4.5.1.Setup the EUT and simulator as shown as Section 4.2.
- 4.5.2.Turn on the power of all equipments.
- 4.5.3.Let EUT work in Tx mode.

4.6.Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground . The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it.EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horn antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions.

After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation show in the test setup photos.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz

This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level.

The frequency range from 30MHz to 10th harmonic (25GHz) is checked. And no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

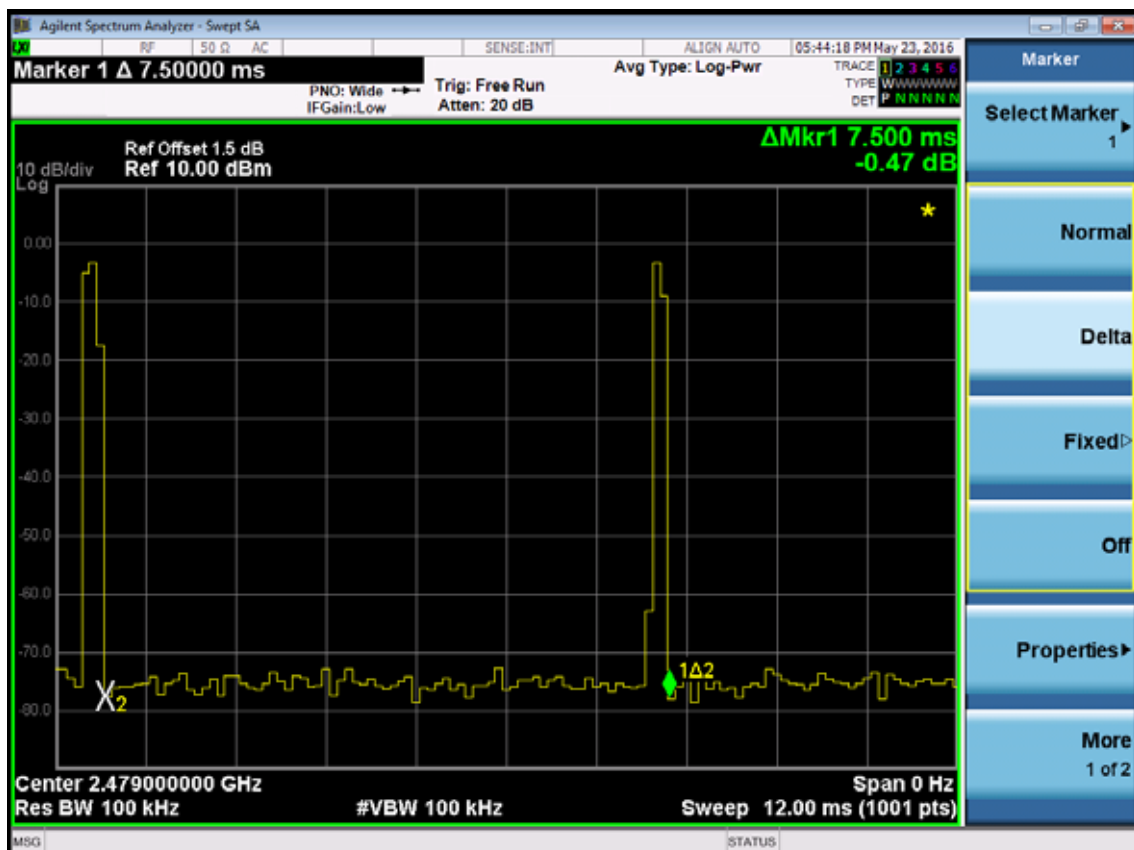
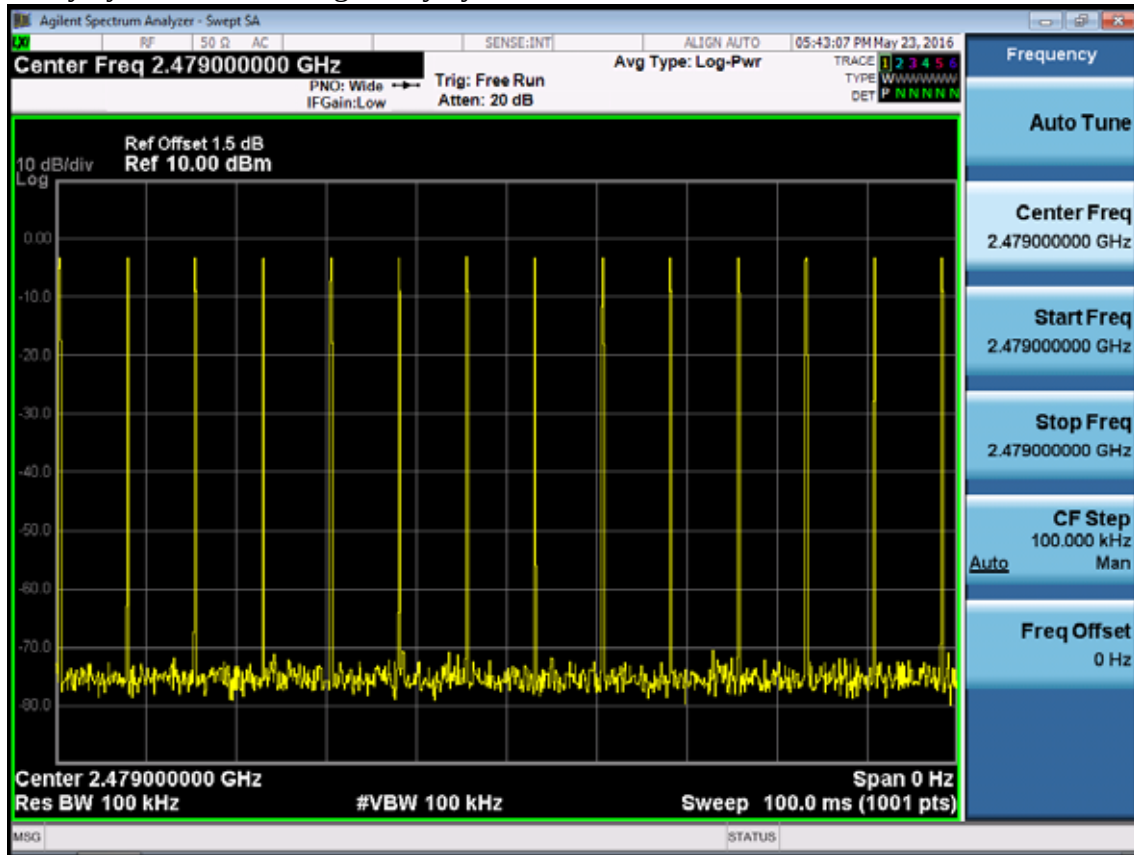
4.7. Radiated Emission Test Results

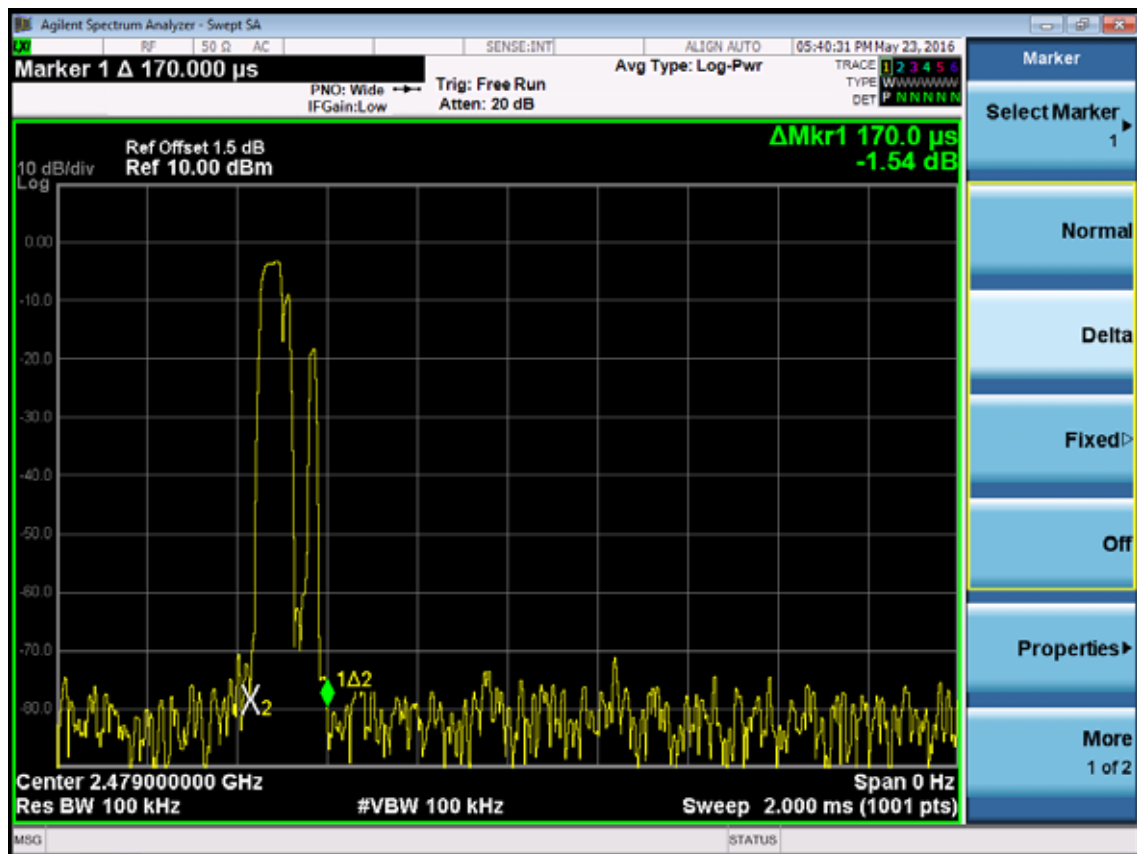
PASS.

All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Note: The duty cycle factor for calculate average level is -32.468dB, and average limit is 20dB below peak limit, so if peak measured level comply with average limit, the average level was deemed to comply with average limit.

Duty cycle factor = $20\log(\text{duty cycle}) = -32.468\text{dB}$



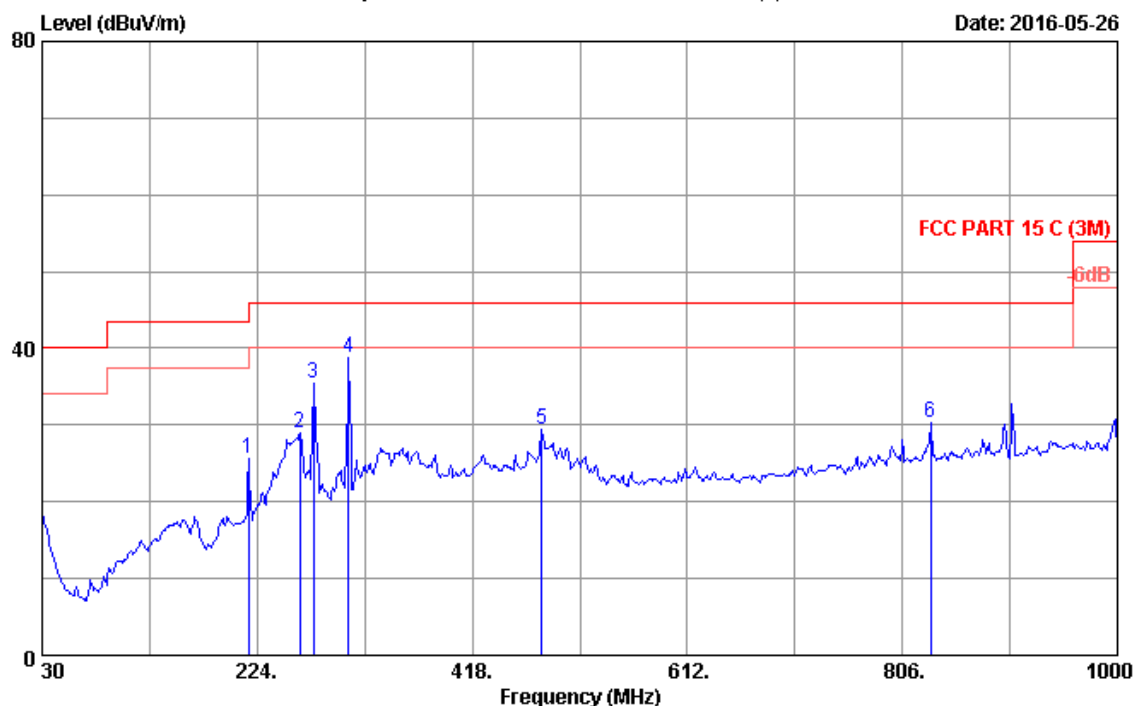


Frequency: 30MHz~1GHz

Data: 3

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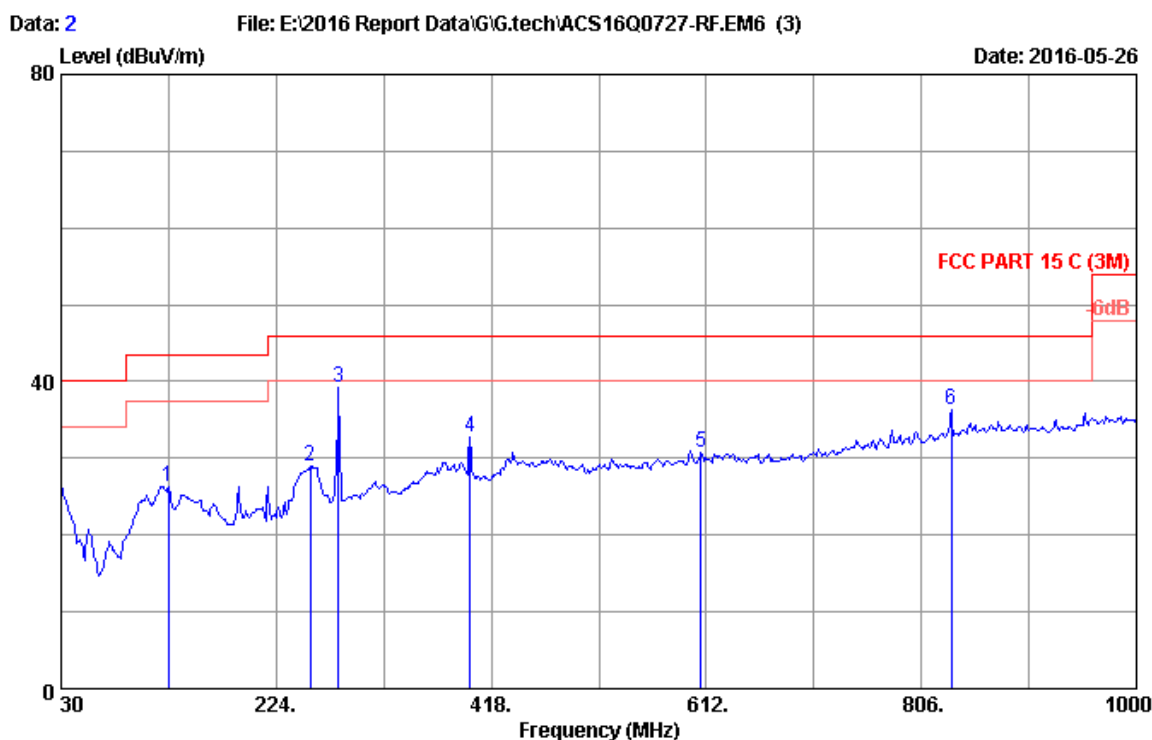
Date: 2016-05-26



Site no. : 3m Chamber Data no. : 3
Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 22.9°C/53.5% Engineer : Brown
EUT : Wireless Receiver M/N:RG50
Power rating : DC 5V From PC Input AC 120V/60Hz
Test Mode : Tx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	216.240	10.92	2.03	12.78	25.73	46.00	20.27	QP
2	262.800	14.24	2.21	12.43	28.88	46.00	17.12	QP
3	274.440	14.01	2.26	19.26	35.53	46.00	10.47	QP
4	306.450	14.38	2.40	21.92	38.70	46.00	7.30	QP
5	481.050	18.11	3.13	8.07	29.31	46.00	16.69	QP
6	831.220	21.38	4.86	4.11	30.35	46.00	15.65	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 22.9°C/53.5% Engineer : Brown
 EUT : Wireless Receiver M/N:RG50
 Power rating : DC 5V From PC Input AC 120V/60Hz
 Test Mode : Tx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	127.000	12.88	1.42	12.01	26.31	43.50	17.19	QP
2	255.040	13.90	2.18	12.96	29.04	46.00	16.96	QP
3	280.260	13.90	2.28	23.04	39.22	46.00	6.78	QP
4	398.600	16.87	2.90	12.95	32.72	46.00	13.28	QP
5	607.150	19.35	3.65	7.78	30.78	46.00	15.22	QP
6	833.160	21.40	4.87	10.08	36.35	46.00	9.65	QP

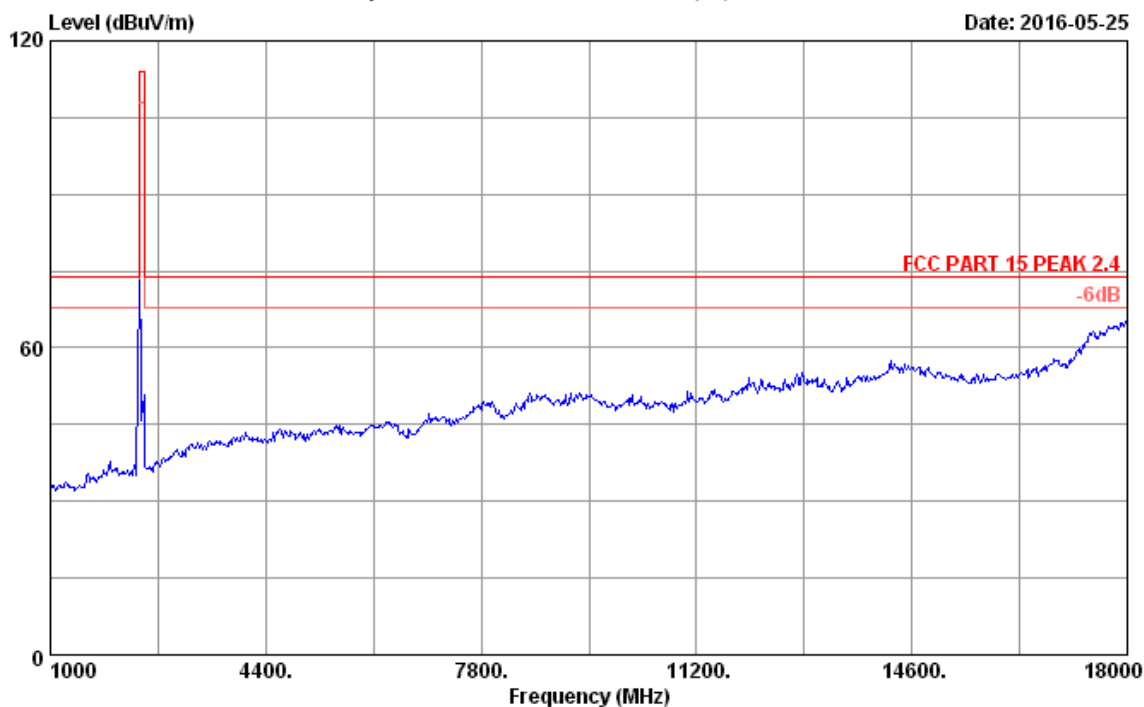
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz

Data: 1

File: F:\2016 Report\GIG.TECH\ACS16Q0727.EM6 (16)

Date: 2016-05-25



Site no. : 3m Chamber

Data no. : 1

Dis. / Ant. : 3m 2016 3115(4580)

Ant. pol. : VERTICAL

Limit : FCC PART 15 PEAK 2.4

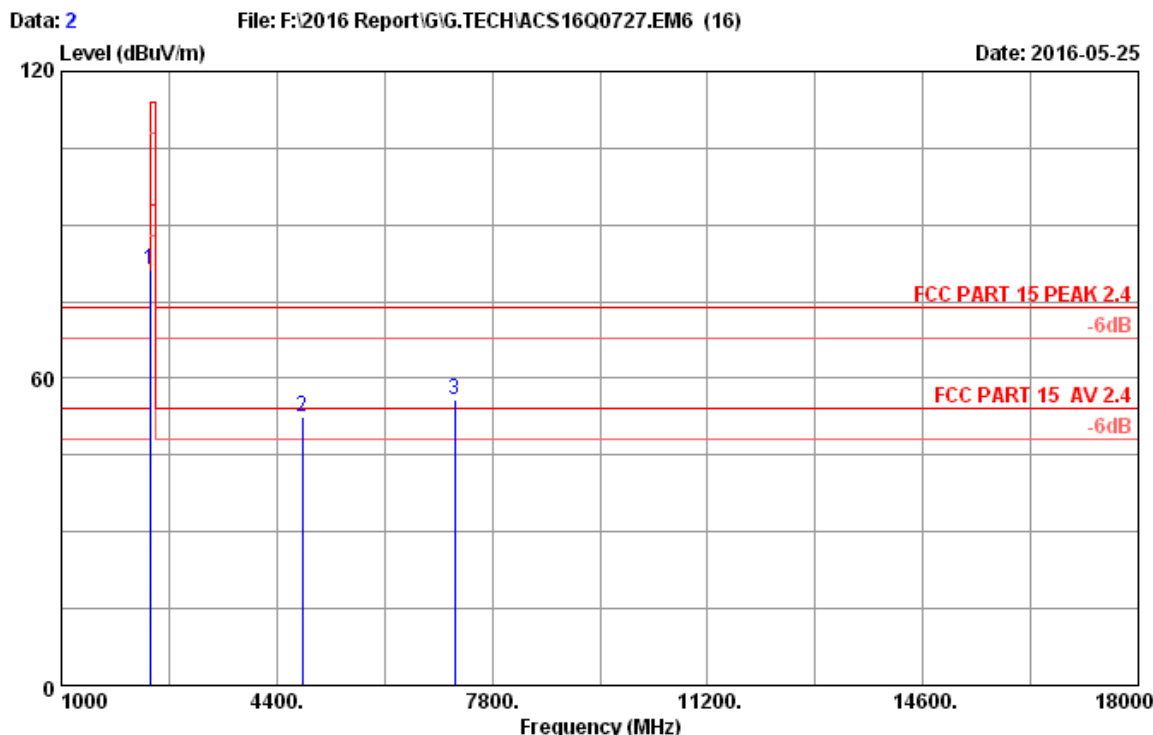
Env. / Ins. : 23.6°C/53.4%

Engineer : Leo-Li

EUT : Wireless Receiver

Power rating : DC 5V From PC

Test Mode : 2403MHz Tx

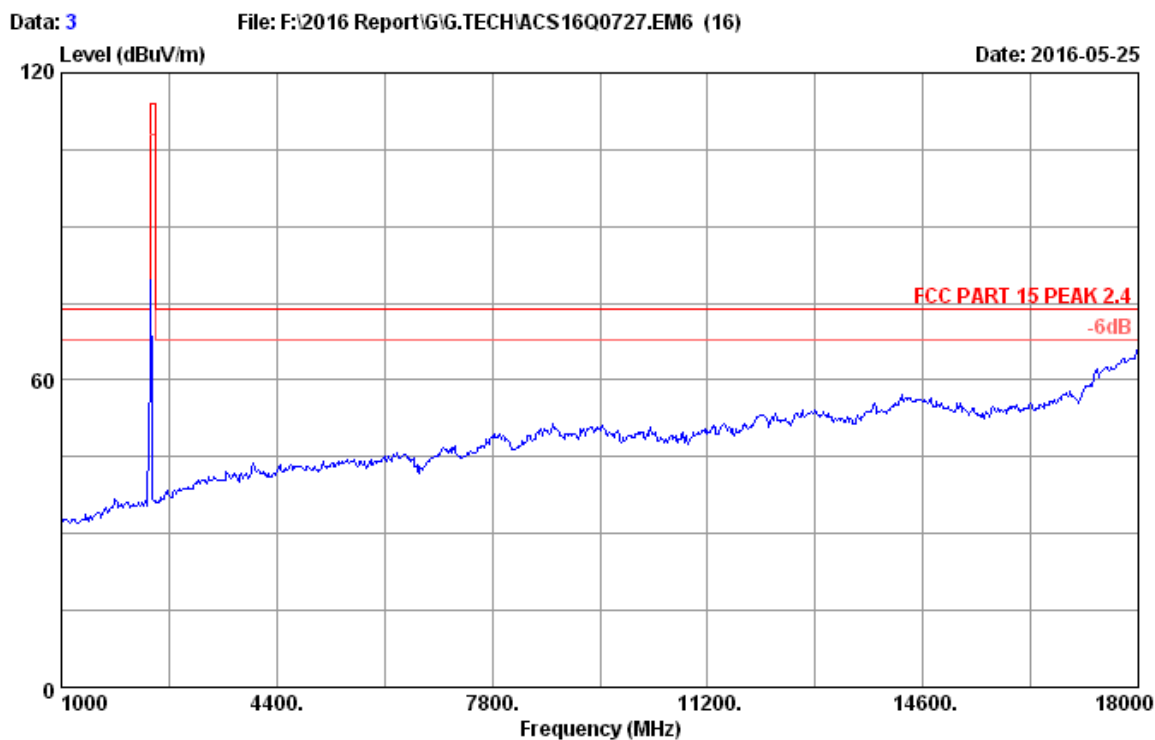


Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2403MHz Tx

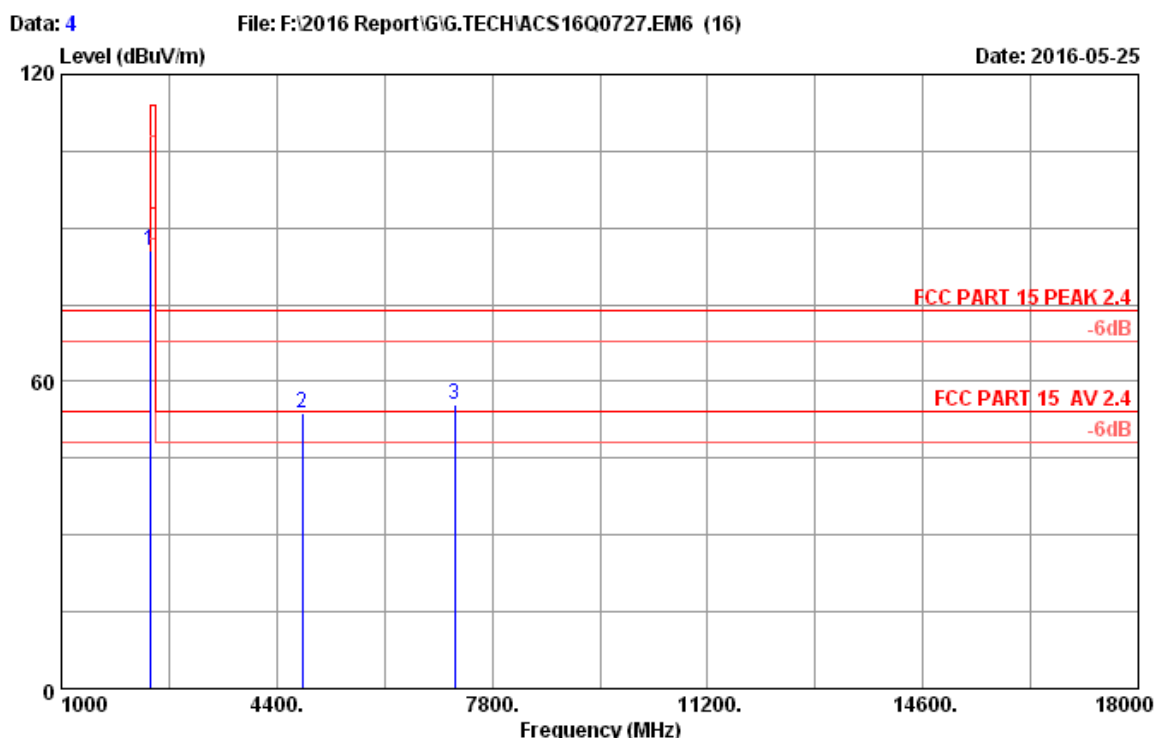
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2403.000	28.24	8.34	36.39	81.12	81.31	114.00	32.69	Peak
2	4806.000	32.93	11.76	35.67	43.62	52.64	74.00	21.36	Peak
3	7209.000	35.79	12.45	35.55	42.99	55.68	74.00	18.32	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7209	55.68	-32.468	23.212	54	Pass



Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 2016 3115(4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23.6°C/53.4%		
Engineer	: Leo-Li		
EUT	: Wireless Receiver		
Power rating	: DC 5V From PC		
Test Mode	: 2403MHz Tx		

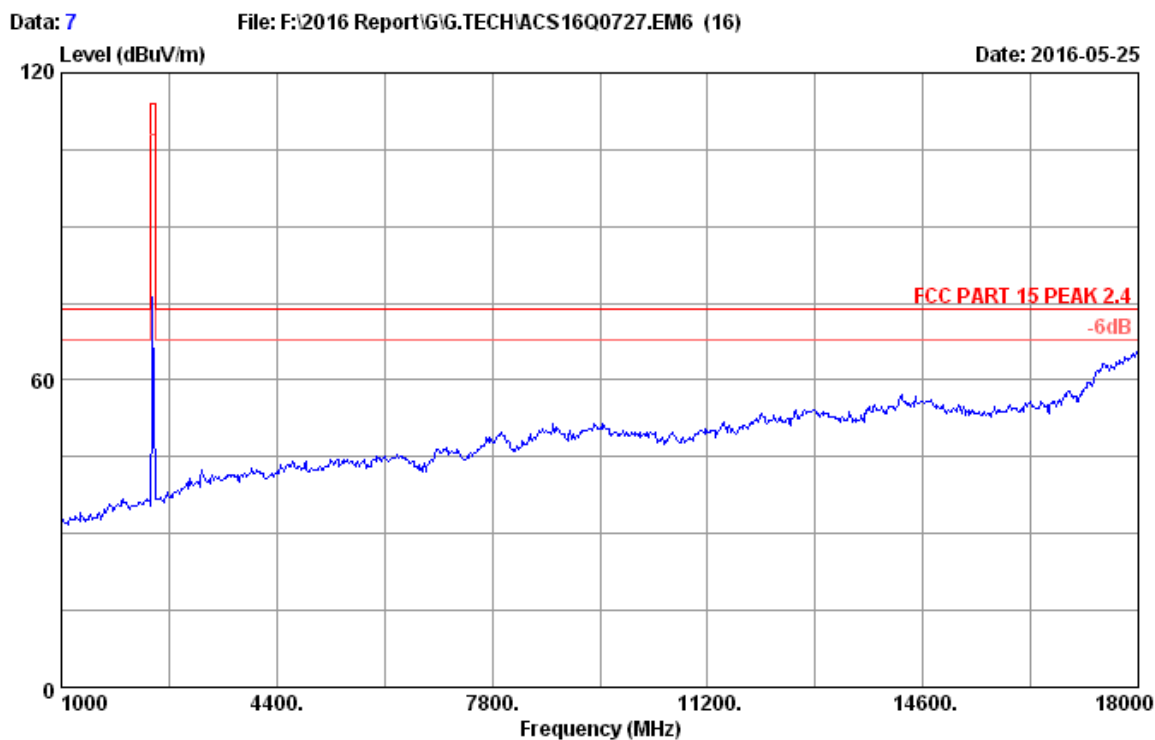


Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2403MHz Tx

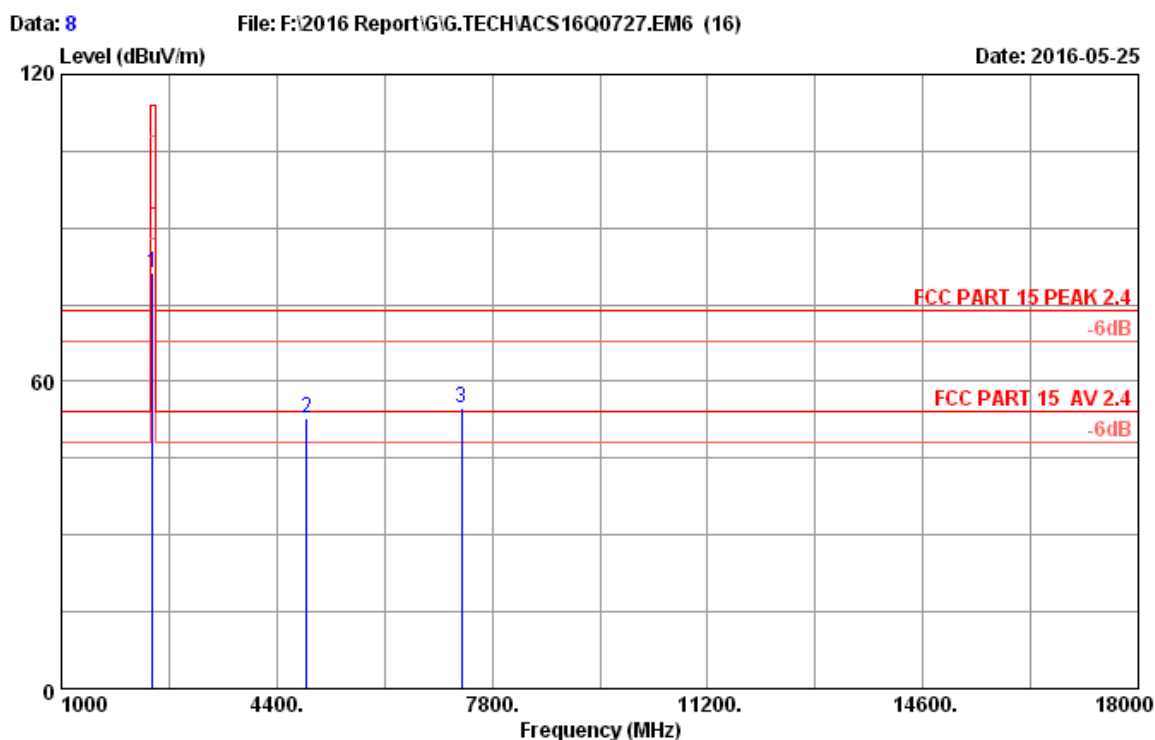
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2403.000	28.24	8.34	36.39	85.48	85.67	114.00	28.33	Peak
2	4806.000	32.93	11.76	35.67	44.86	53.88	74.00	20.12	Peak
3	7209.000	35.79	12.45	35.55	42.90	55.59	74.00	18.41	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7209	55.59	-32.468	23.122	54	Pass



Site no.	: 3m Chamber	Data no.	: 7
Dis. / Ant.	: 3m 2016 3115(4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23.6°C/53.4%		
Engineer	: Leo-Li		
EUT	: Wireless Receiver		
Power rating	: DC 5V From PC		
Test Mode	: 2439MHz Tx		

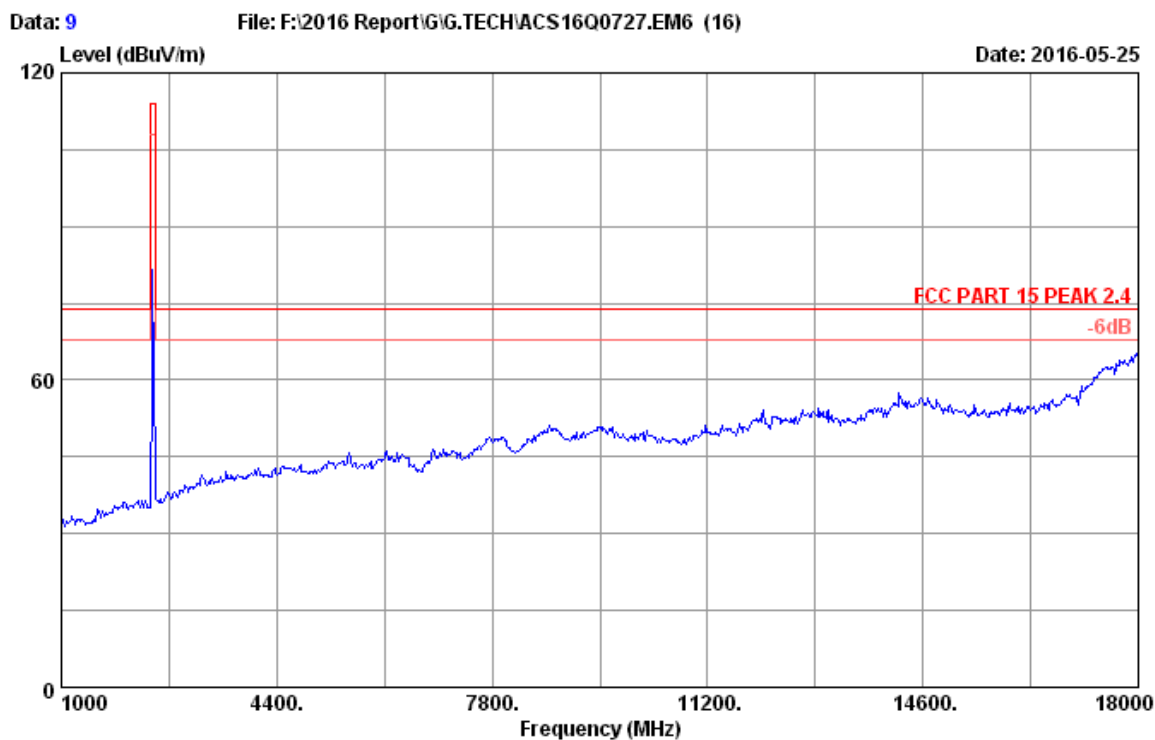


Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2439MHz Tx

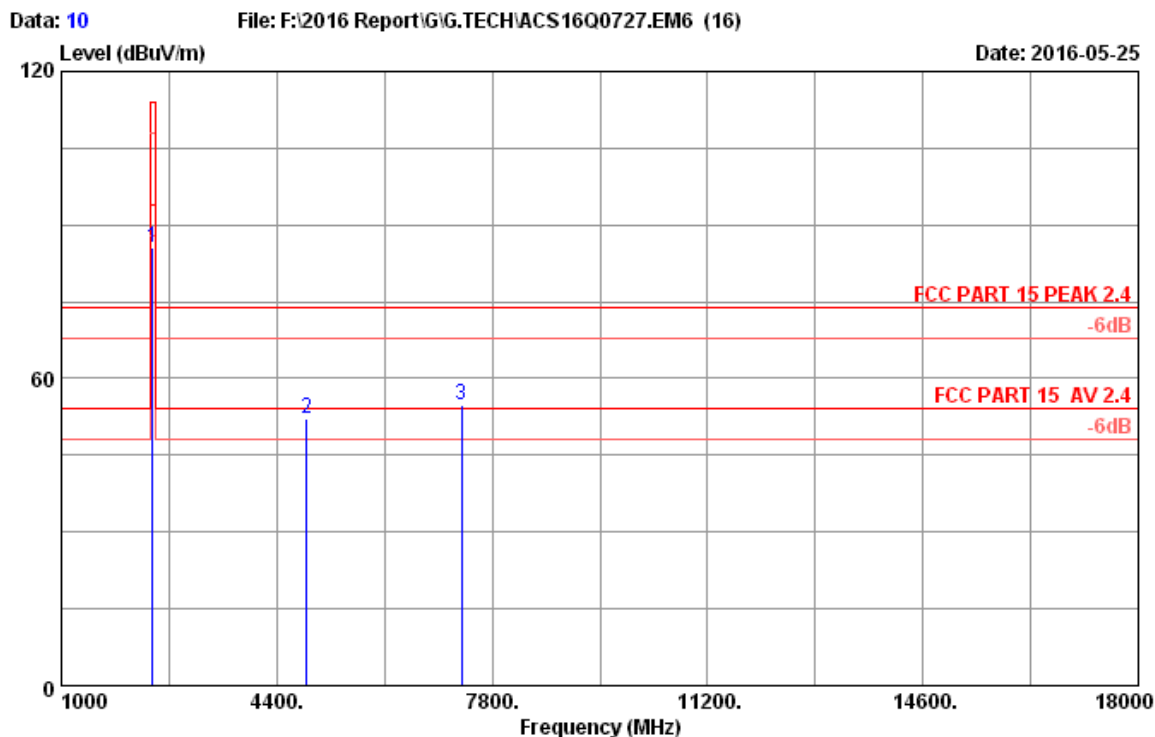
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2439.000	28.26	8.38	36.38	80.95	81.21	114.00	32.79	Peak
2	4878.000	33.11	11.80	35.69	43.58	52.80	74.00	21.20	Peak
3	7317.000	36.09	12.54	35.57	41.69	54.75	74.00	19.25	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7317	54.75	-32.468	22.282	54	Pass



Site no.	: 3m Chamber	Data no.	: 9
Dis. / Ant.	: 3m 2016 3115(4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23.6°C/53.4%		
Engineer	: Leo-Li		
EUT	: Wireless Receiver		
Power rating	: DC 5V From PC		
Test Mode	: 2439MHz Tx		

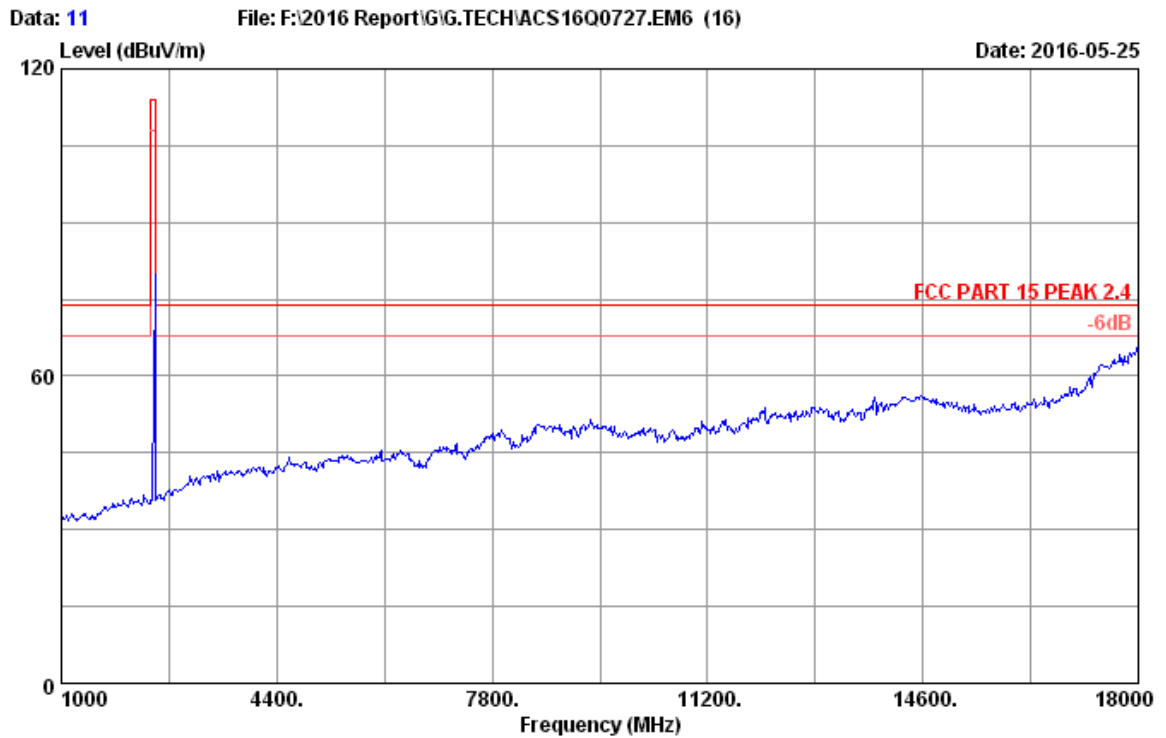


Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2439MHz Tx

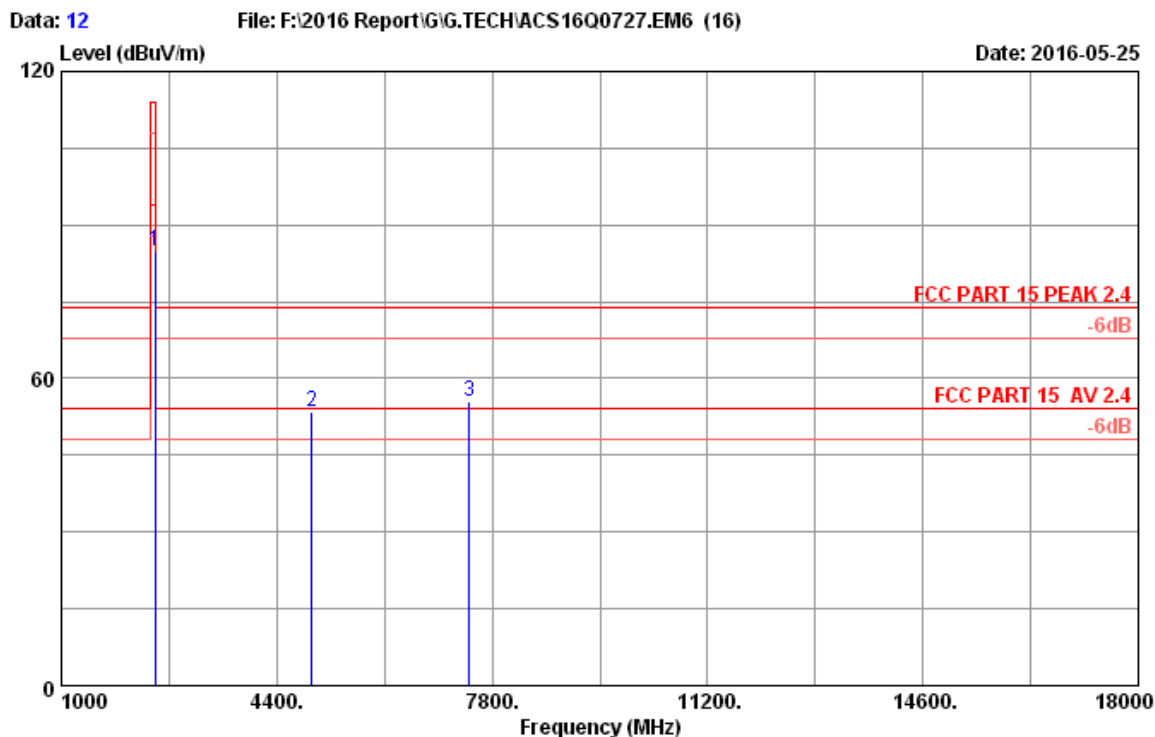
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2439.000	28.26	8.38	36.38	85.21	85.47	114.00	28.53	Peak
2	4878.000	33.11	11.80	35.69	42.99	52.21	74.00	21.79	Peak
3	7317.000	36.09	12.54	35.57	41.59	54.65	74.00	19.35	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7317	54.65	-32.468	22.182	54	Pass



Site no.	: 3m Chamber	Data no.	: 11
Dis. / Ant.	: 3m 2016 3115(4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23.6°C/53.4%		
Engineer	: Leo-Li		
EUT	: Wireless Receiver		
Power rating	: DC 5V From PC		
Test Mode	: 2479MHz Tx		

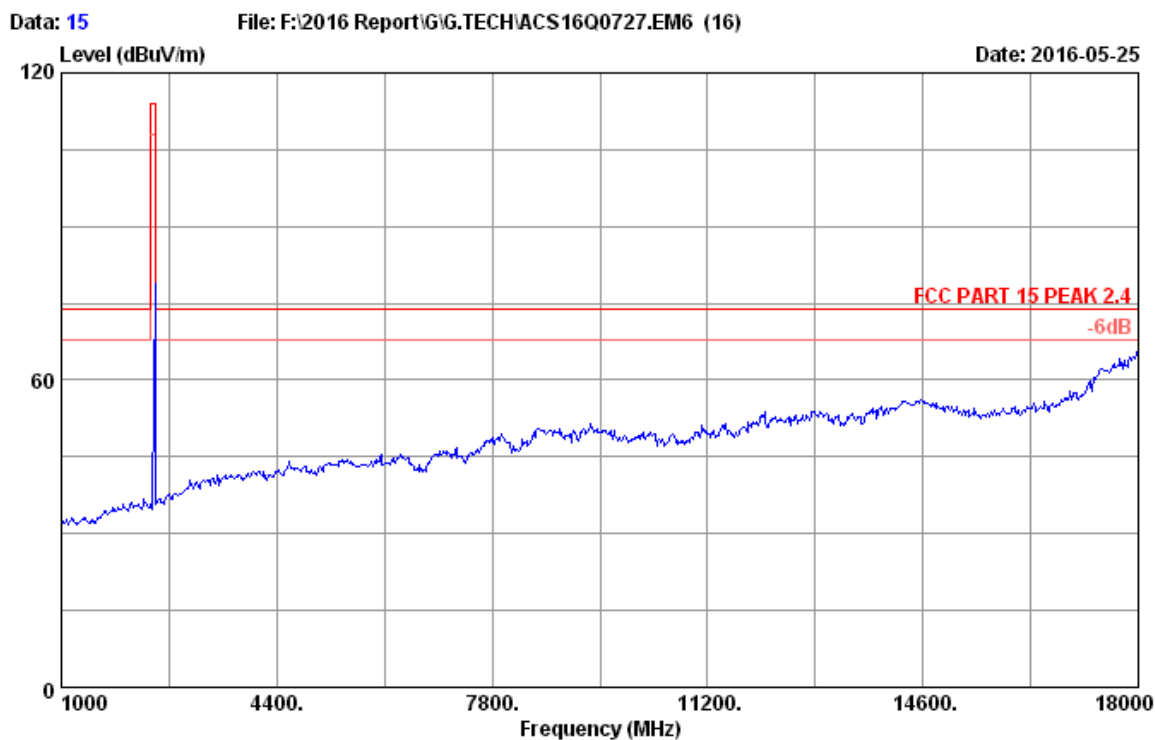


Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2479MHz Tx

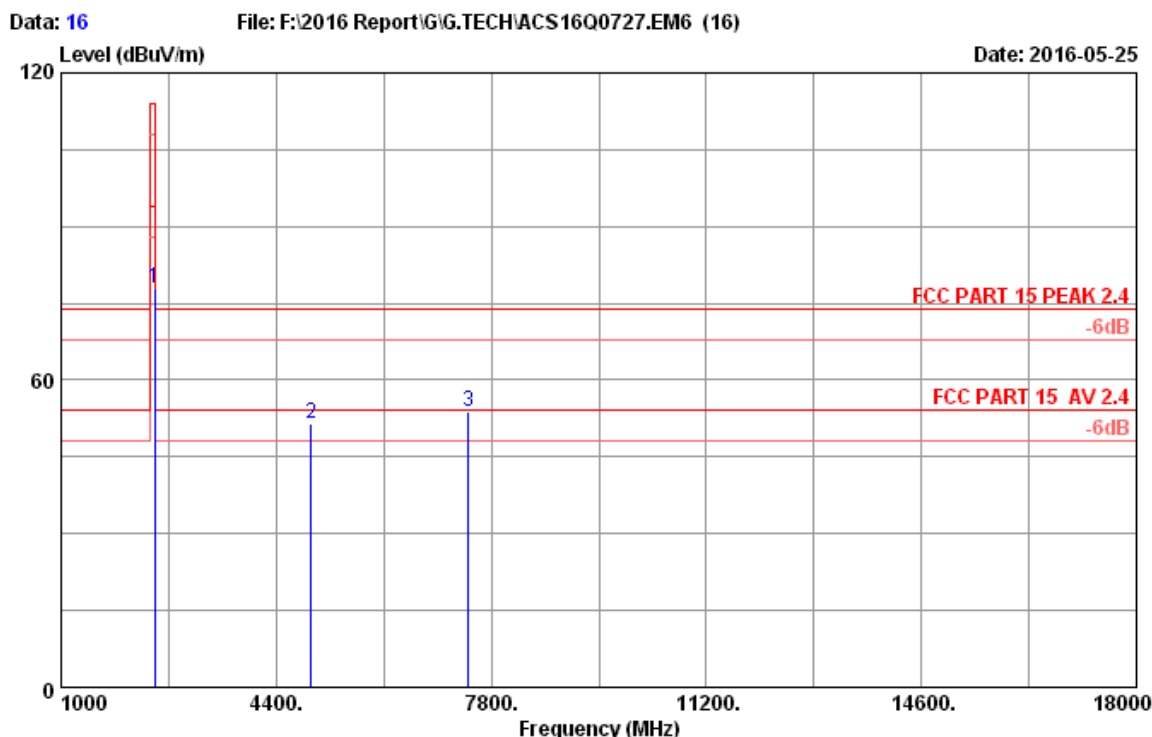
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.000	28.29	8.42	36.38	84.62	84.95	114.00	29.05	Peak
2	4958.000	33.30	11.85	35.71	44.16	53.60	74.00	20.40	Peak
3	7437.000	36.42	12.64	35.59	41.95	55.42	74.00	18.58	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7437	55.42	-32.468	22.952	54	Pass



Site no.	: 3m Chamber	Data no.	: 15
Dis. / Ant.	: 3m 2016 3115(4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23.6°C/53.4%		
Engineer	: Leo-Li		
EUT	: Wireless Receiver		
Power rating	: DC 5V From PC		
Test Mode	: 2479MHz Tx		



Site no. : 3m Chamber Data no. : 16
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2479MHz Tx

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.000	28.29	8.42	36.38	77.48	77.81	114.00	36.19	Peak
2	4958.000	33.30	11.85	35.71	42.16	51.60	74.00	22.40	Peak
3	7437.000	36.42	12.64	35.59	40.22	53.69	74.00	20.31	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

5. 20 DB BANDWIDTH TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.18,15	1Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.23,16	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17.15	1 Year

5.2. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

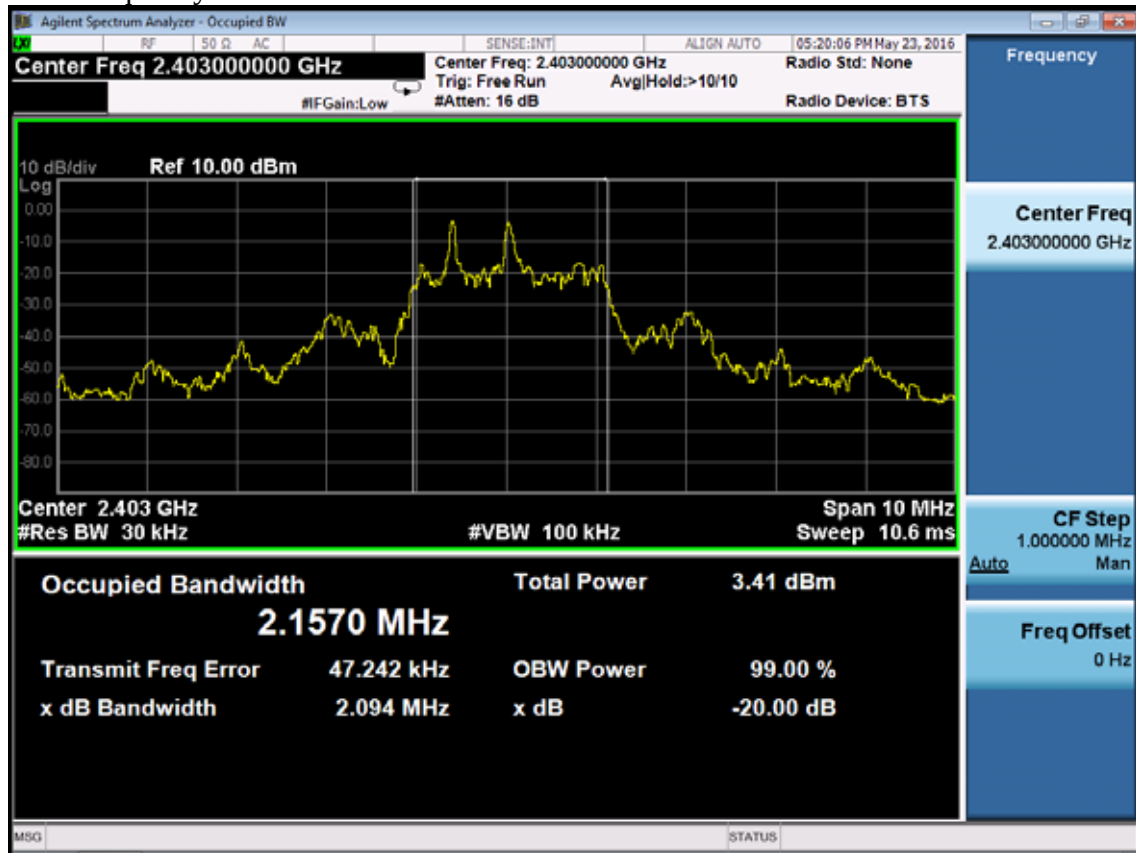
5.3. Test Results

EUT: Wireless Receiver		
M/N: RG50		
Test date: 2016-05-23	Pressure: 101.6±1.0 kpa	Humidity: 51.5±3.0%
Tested by: zack_zhu	Test site: RF site	Temperature:23.4±0.6 °C

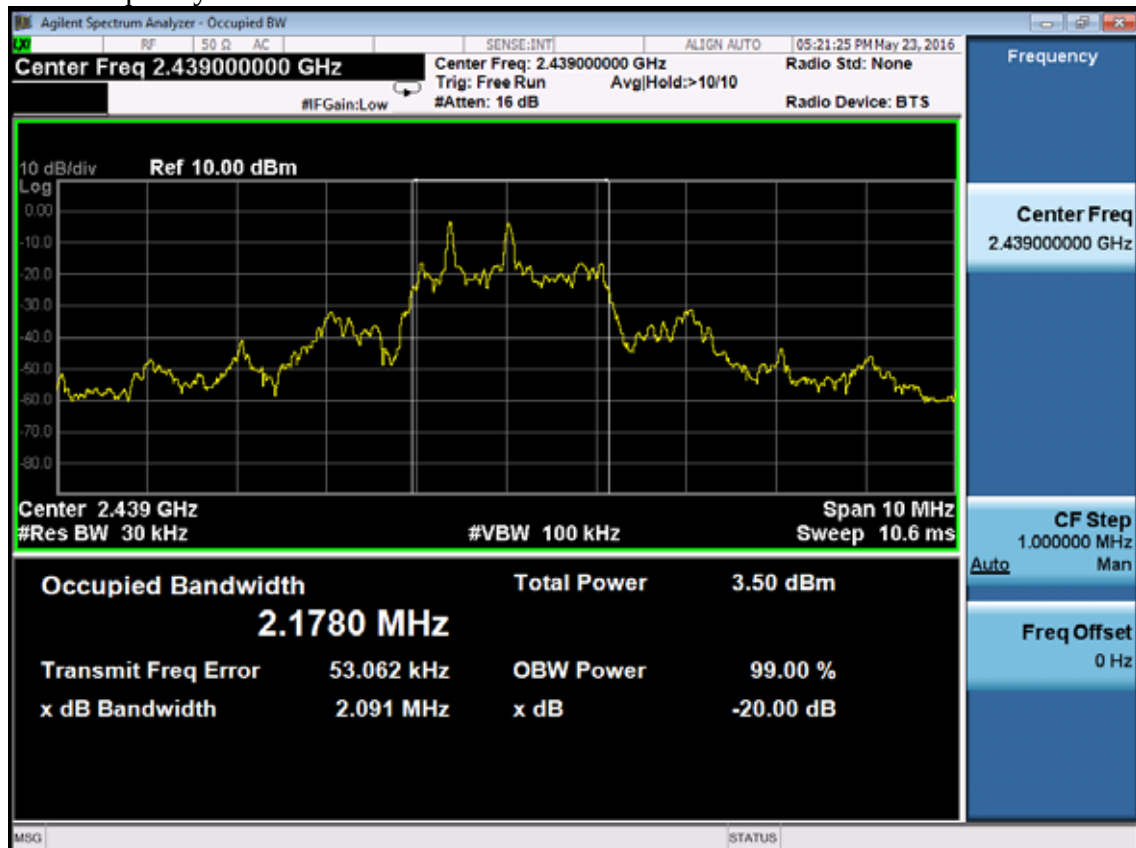
Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
2403	2.094	N/A
2439	2.091	N/A
2479	2.102	N/A

Conclusion : PASS

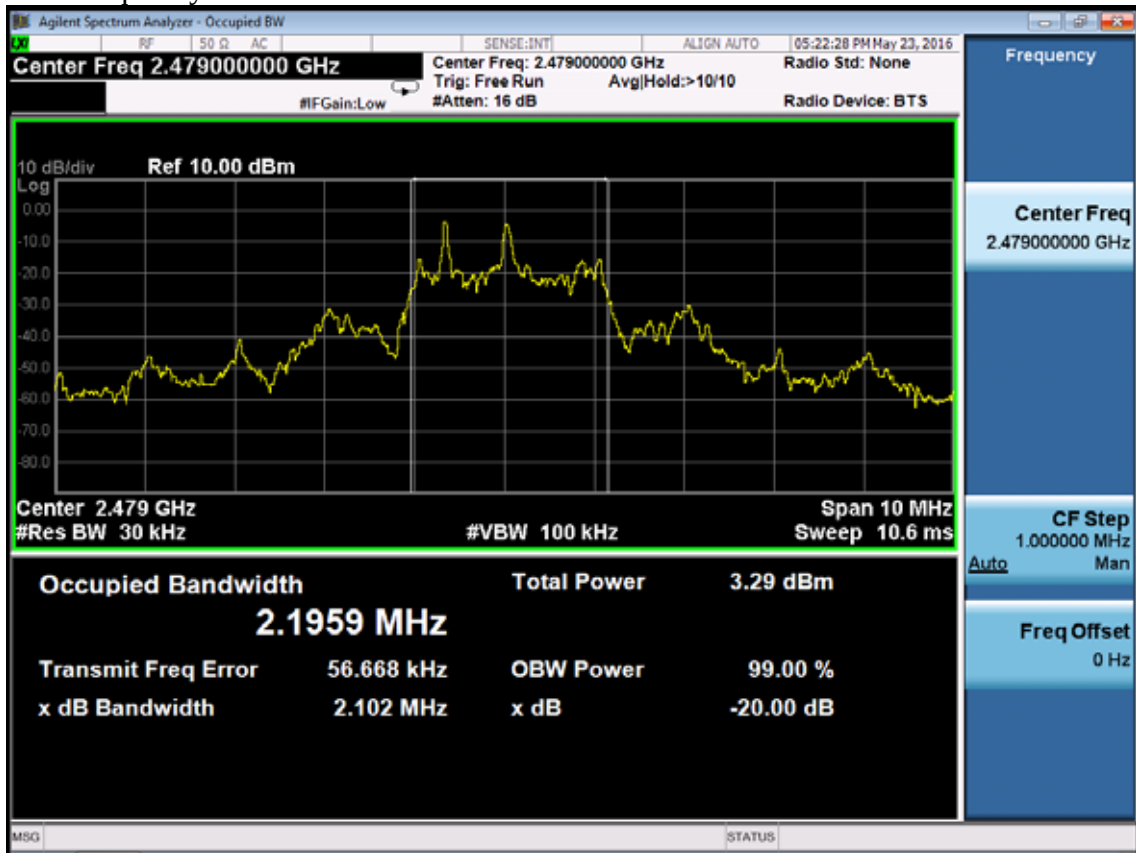
Test Frequency: 2403MHz



Test Frequency: 2439MHz



Test Frequency: 2479MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	Apr.24,16	1 Year
2.	Amp	HP	8449B	3008A02495	Apr.24,16	1 Year
3.	Horn Antenna	ETS	3115	9510-4580	Oct.15,15	1 Year
4.	HF Cable	Hubersuhner	Sucoflex104	274094/4	Apr.24,16	1 Year

6.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 50dB below the fundamental emissions, or comply with 15.209 limits.

6.3. Test Produce

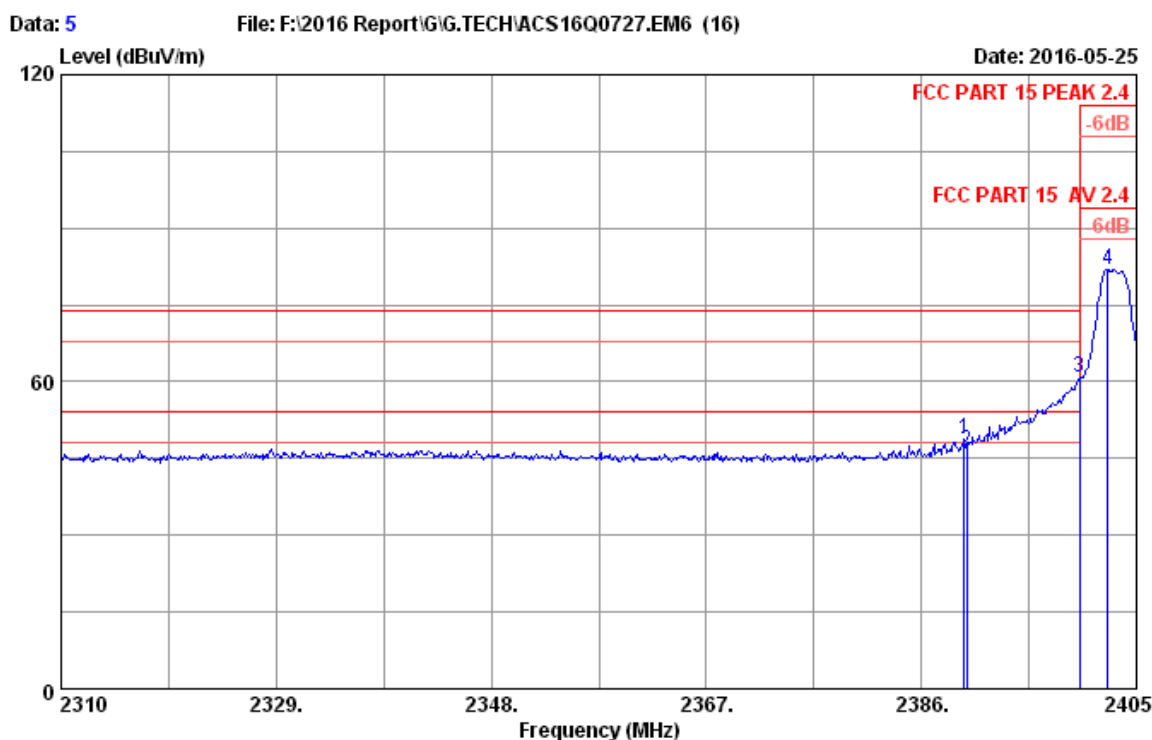
1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
 - (b) This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level

6.4. Test Results

Pass (The testing data was attached in the next pages.)

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Note: The duty cycle factor for calculate average level is -32.468 dB, and average limit is 20dB below peak limit, so if peak measured level comply with average limit, the average level was deemed to comply with average limit.

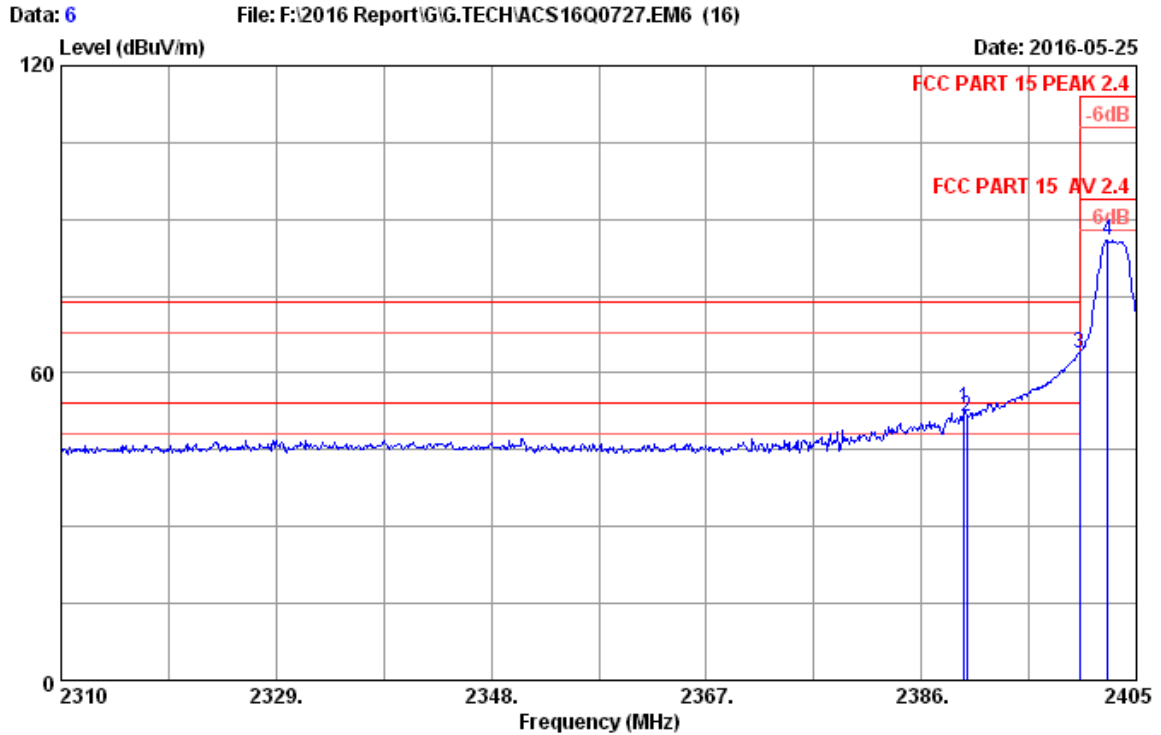


Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2403MHz Tx
 M/N : RG50

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2389.800	28.23	8.33	36.39	48.51	48.68	74.00	25.32	Peak
2	2390.000	28.23	8.33	36.39	46.27	46.44	74.00	27.56	Peak
3	2400.000	28.24	8.34	36.39	60.53	60.72	74.00	13.28	Peak
4	2402.435	28.24	8.34	36.39	81.79	81.98	114.00	32.02	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2400	60.72	-32.468	28.252	54	Pass

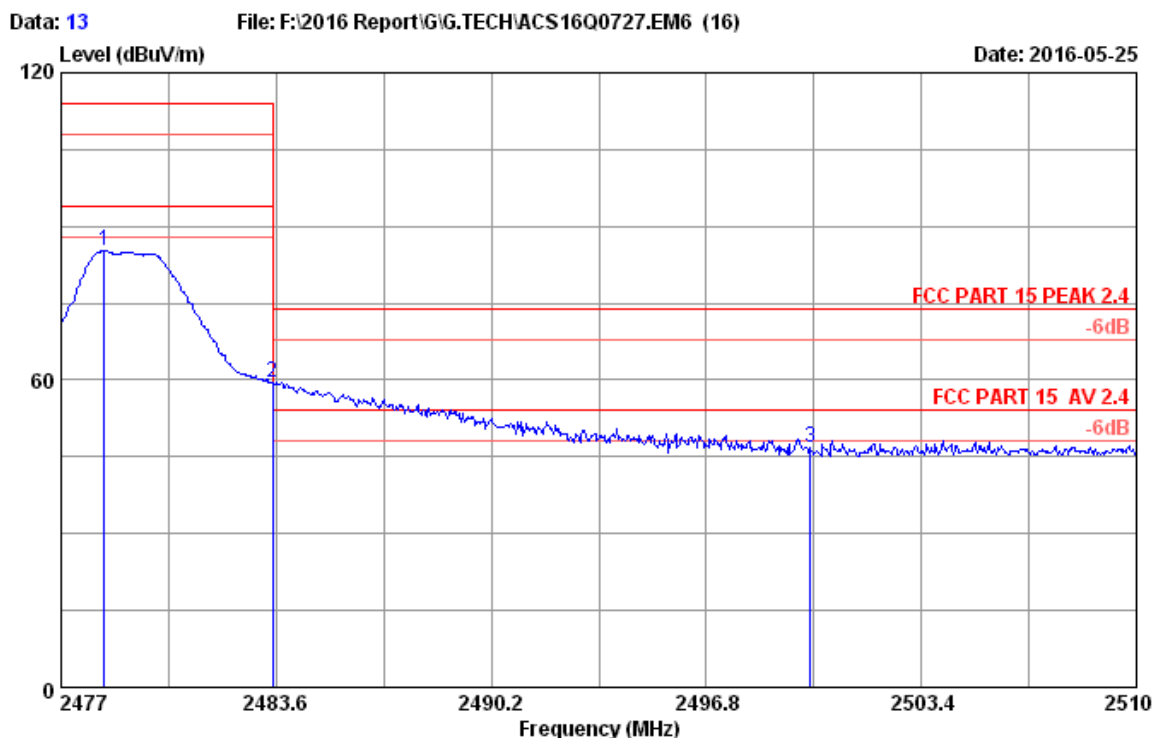


Site no. : 3m Chamber Data no. : 6
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2403MHz Tx
 M/N : RG50

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2389.800	28.23	8.33	36.39	53.06	53.23	74.00	20.77	Peak
2	2390.000	28.23	8.33	36.39	51.30	51.47	74.00	22.53	Peak
3	2400.000	28.24	8.34	36.39	63.73	63.92	74.00	10.08	Peak
4	2402.435	28.24	8.34	36.39	85.60	85.79	114.00	28.21	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2400	63.92	-32.468	31.452	54	Pass

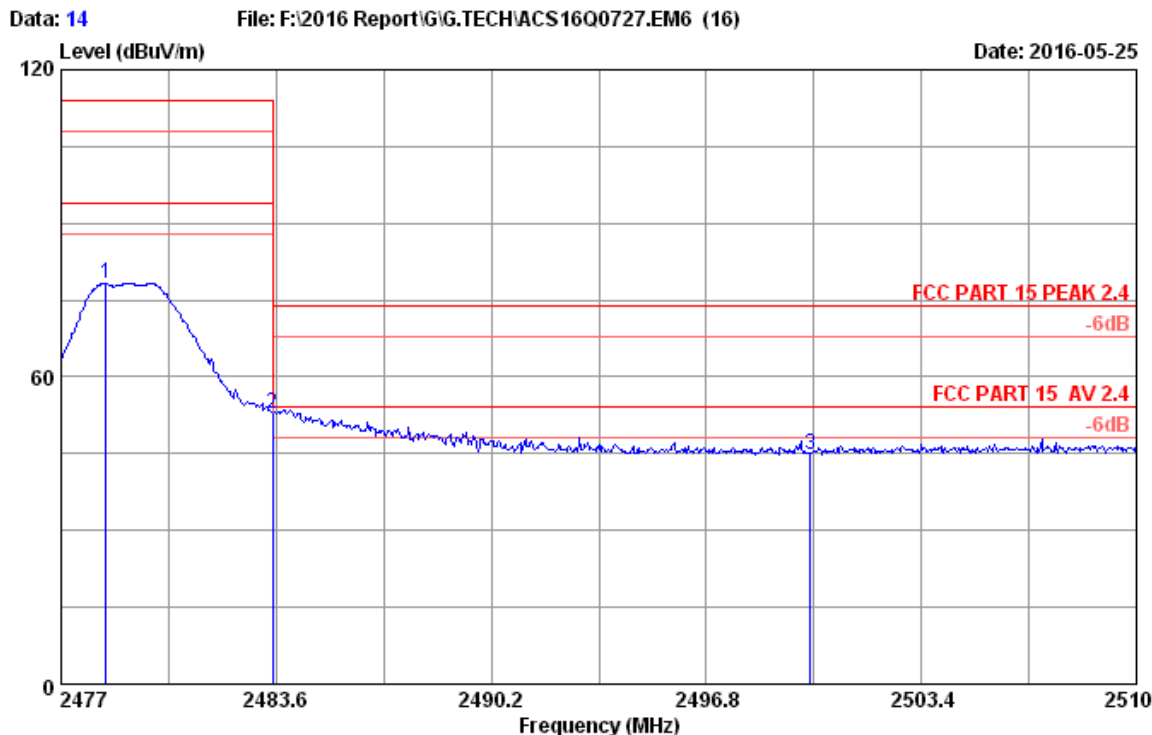


Site no. : 3m Chamber Data no. : 13
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2479MHz Tx
 M/N : RG50

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2478.320	28.29	8.42	36.38	84.90	85.23	114.00	28.77	Peak
2	2483.500	28.29	8.42	36.38	59.15	59.48	74.00	14.52	Peak
3	2500.000	28.30	8.44	36.38	46.48	46.84	74.00	27.16	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2483.500	59.48	-32.468	27.012	54	Pass



Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2016 3115(4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23.6°C/53.4%
 Engineer : Leo-Li
 EUT : Wireless Receiver
 Power rating : DC 5V From PC
 Test Mode : 2479MHz Tx
 M/N : RG50

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2478.386	28.29	8.42	36.38	77.90	78.23	114.00	35.77	Peak
2	2483.500	28.29	8.42	36.38	52.59	52.92	74.00	21.08	Peak
3	2500.000	28.30	8.44	36.38	44.45	44.81	74.00	29.19	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

7. ANTENNA REQUIREMENT

RESULT : **PASS**

Test Date : May.23~26, 2016

Test standard : FCC Part 15.203

Limit : An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device

According to the manufacturer declared, the EUT has an PCB antenna, the directional gain of antenna is -2.268dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply the provision.

8. DEVIATION TO TEST SPECIFICATIONS

[NONE]