FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

KYE SYSTEMS CORP.

Dongle

Model Number: A79D, KM001W

FCC ID: FSUKM018

Prepared for : KYE SYSTEMS CORP.
No. 492, Sec. 5, Chongxin Rd., Sanchong Dist., New Taipei City, Taiwan

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number	:	ACS-F11214
Date of Test	:	Sep.17~20, 2011
Date of Report	:	Sep.26, 2011

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TEST REPORT CERTIFICATION

Applicant	:	KYE SYSTEMS CORP.
Manufacturer	:	KYE SYSTEMS CORP.
EUT Description	:	Dongle
FCC ID	:	FSUKM018
(A) MODEL NO.	:	A79D, KM001W
(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 Rules and Regulations Part 15 Subpart C:2008

Test procedure used:
ANSI C63.10:2009

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 : Sep.17~ 20, 2011 Report of date: Sep.26, 2011

Prepared by : Blove Ye
Blove Ye/ Assistant

Reviewer by :
Sunny Lu / Supervisor

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: Ken Lu 10/13/11

Approved & Authorized Signer :
Ken Lu / 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 C63.10-2009	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10-2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10-2009	PASS

2. GENERAL INFORMATION

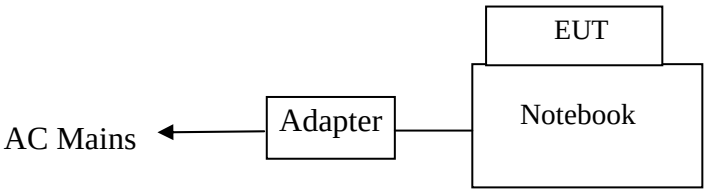
2.1.Description of Device (EUT)

Product Name	:	Dongle
Model Number	:	A79D, KM001W The device contains two module numbers, A79D and KM001W. The difference between them is module number only.
FCC ID	:	FSUKM018
Operation frequency	:	2405MHz~2480MHz
Antenna	:	Integrated PCB antenna, 0dBi gain
Modulation	:	O-QPSK
Power Supply	:	DC 5V
Applicant	:	KYE SYSTEMS CORP. No. 492, Sec. 5, Chongxin Rd., Sanchong Dist., New Taipei City, Taiwan
Manufacturer	:	KYE SYSTEMS CORP. No. 492, Sec. 5, Chongxin Rd., Sanchong Dist., New Taipei City, Taiwan
Date of Test	:	Sep.17~20, 2011
Date of Receipt	:	Sep.16, 2011
Sample Type	:	Prototype production

2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Notebook	N/A	DELL	PP09S	N/A	☑FCC DoC ☑BSMI ID: R41108
		Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m(Bond one ferrite core)				

2.3. EUT Configuration and operation conditions for test.



PC run test software to control EUT work in test mode

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: Mar.31, 2012

3m & 10m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 794232
Valid Date: Dec.30, 2012

EMC Lab. : Certificated by Industry Canada
Registration Number: IC 5183A-1
Valid Date: Jun.13, 2014

Certificated by DAkkS, Germany
Registration No: D-PL-12151-01-01
Valid Date: Feb.01, 2014

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2012

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

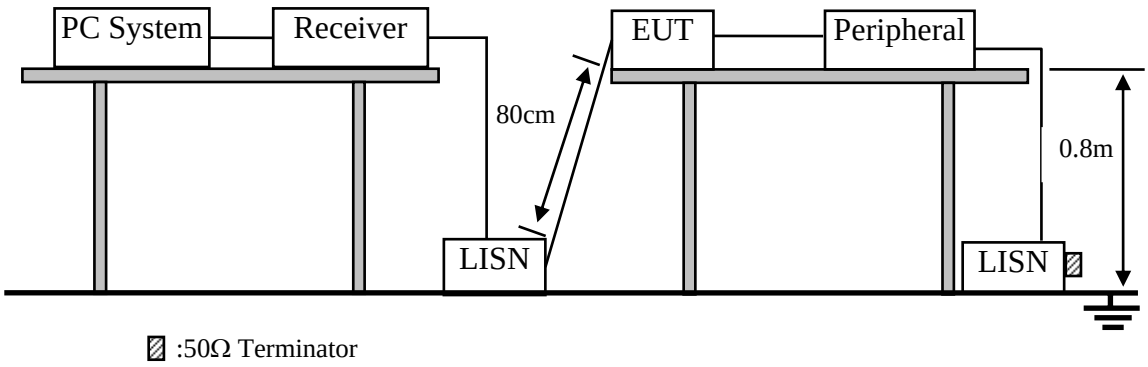
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.2 dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6 dB(30~200MHz, Polarize: H)
	3.7 dB(30~200MHz, Polarize: V)
	4.0 dB(200M~1GHz, Polarize: H)
	3.7 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.57dB
Uncertainty for Conduction Spurious emission test	2.00 dB
Uncertainty for Output power test	0.73 dB
Uncertainty for Power density test	2.00 dB
Uncertainty for Frequency range test	$7x10^{-8}$
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6℃
	3%

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Nov.05, 10	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Nov.05, 10	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 11	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 11	1 Year
5.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 11	1Year
6.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 11	1 Year
7.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 11	1 Year

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency range MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0,15 to 0,5	79	66
0,5 to 30	73	60

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. Dongle (EUT)

Model Number : A79D
Serial Number : N/A
Manufacturer : KYE SYSTEMS CORP.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 2.2.

3.5.2. Turn on the power of all equipment.

3.5.3. Let the EUT work in test mode (Tx Mode) and measure it.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

3.7. Conducted Disturbance at Mains Terminals Test Results

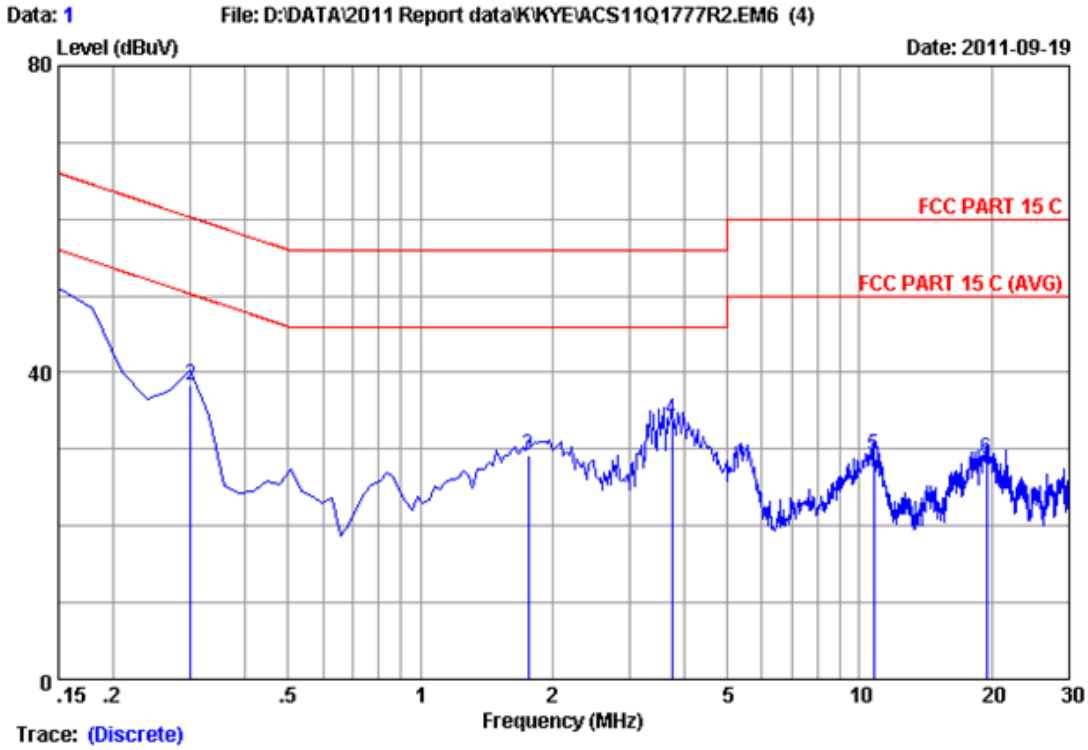
PASS. (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes were tested and selected to read Q.P values and average values, all the test results are listed in next pages.

EUT: Dongle Model No. : A79D
Test Date: Sep.19, 2011 Temperature: 29.5℃ Humidity: 55%

The details of test modes are as follows：

No.	Test Mode	Reference Test Data No.	
		Line	Neutral
1.	TX Mode	#1	#2

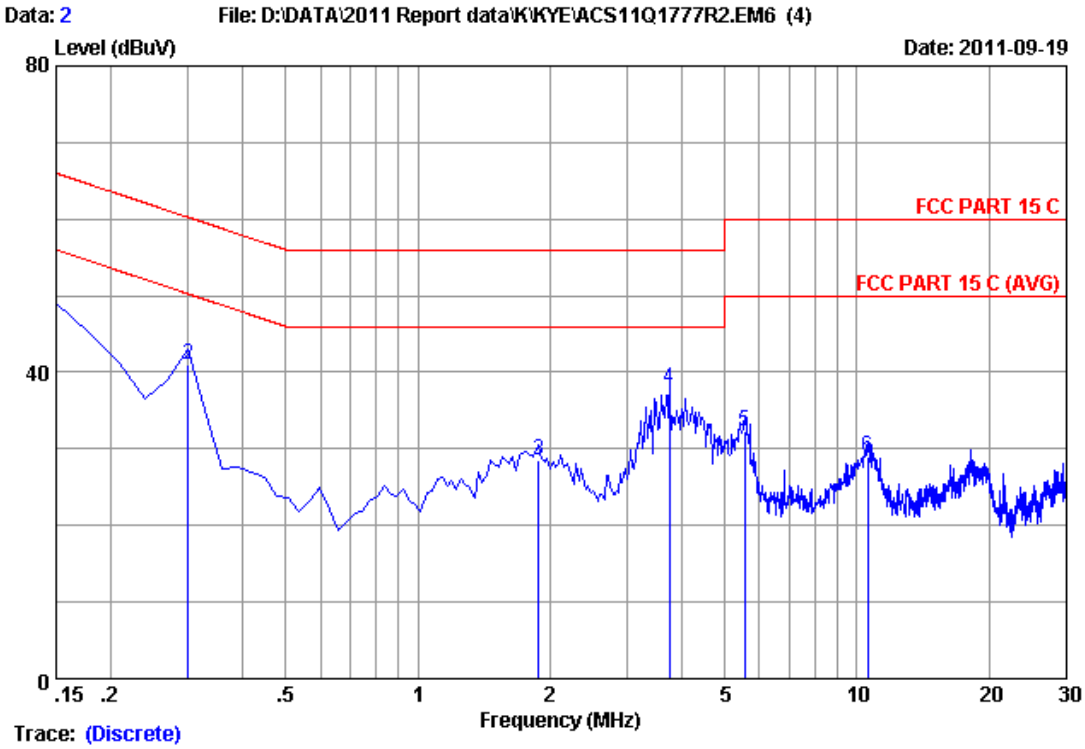


Trace: (Discrete)

Site no :1#conduction Data No :1
Dis./Ant. :** 2011 ESH2-Z5 LINE
Limit :FCC PART 15 C
Env./Ins. :29.5*C/55% Engineer :Gary
EUT :Dongle
Power Rating :DC 5V From PC Input AC 120V/60Hz
Test Mode :Tx Mode
M/N : A79D

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.98	38.85	49.00	66.00	17.00	QP
2	0.29925	0.18	9.98	28.10	38.26	60.26	22.00	QP
3	1.762	0.29	9.96	18.99	29.24	56.00	26.76	QP
4	3.732	0.34	9.94	23.51	33.79	56.00	22.21	QP
5	10.777	0.71	9.90	18.55	29.16	60.00	30.84	QP
6	19.463	0.99	10.00	17.65	28.64	60.00	31.36	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing 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./Ant. :** 2011 ESH2-Z5 NEUTRAL
Limit :FCC PART 15 C
Env./Ins. :29.5*C/55% Engineer :Gary
EUT :Dongle
Power Rating :DC 5V From PC Input AC 120V/60Hz
Test Mode :Tx Mode
M/N : A79D

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.21	9.98	36.86	47.05	66.00	18.95	QP
2	0.29925	0.21	9.98	30.75	40.94	60.26	19.32	QP
3	1.881	0.27	9.96	18.21	28.44	56.00	27.56	QP
4	3.732	0.30	9.94	27.70	37.94	56.00	18.06	QP
5	5.553	0.35	9.93	21.97	32.25	60.00	27.75	QP
6	10.598	0.47	9.90	18.61	28.98	60.00	31.02	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing 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 rang: 30~1000MHz

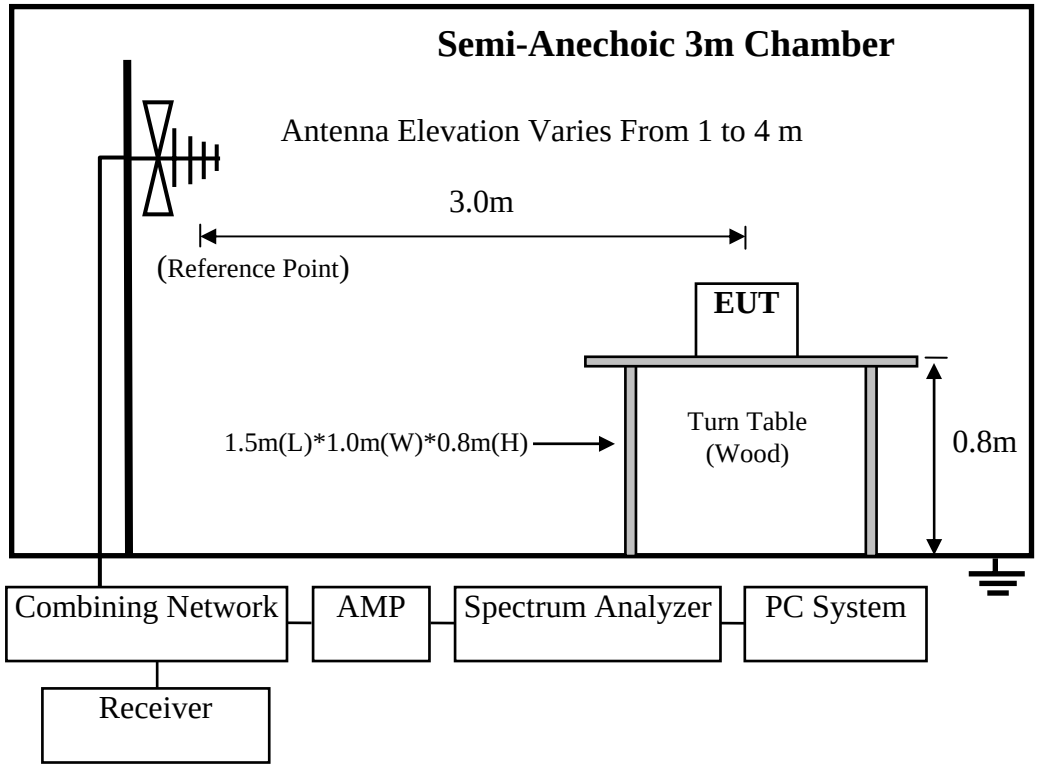
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.06,10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 11	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 11	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 11	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Oct.26, 10	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 11	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 11	1 Year

Frequency rang: above 1000MHz

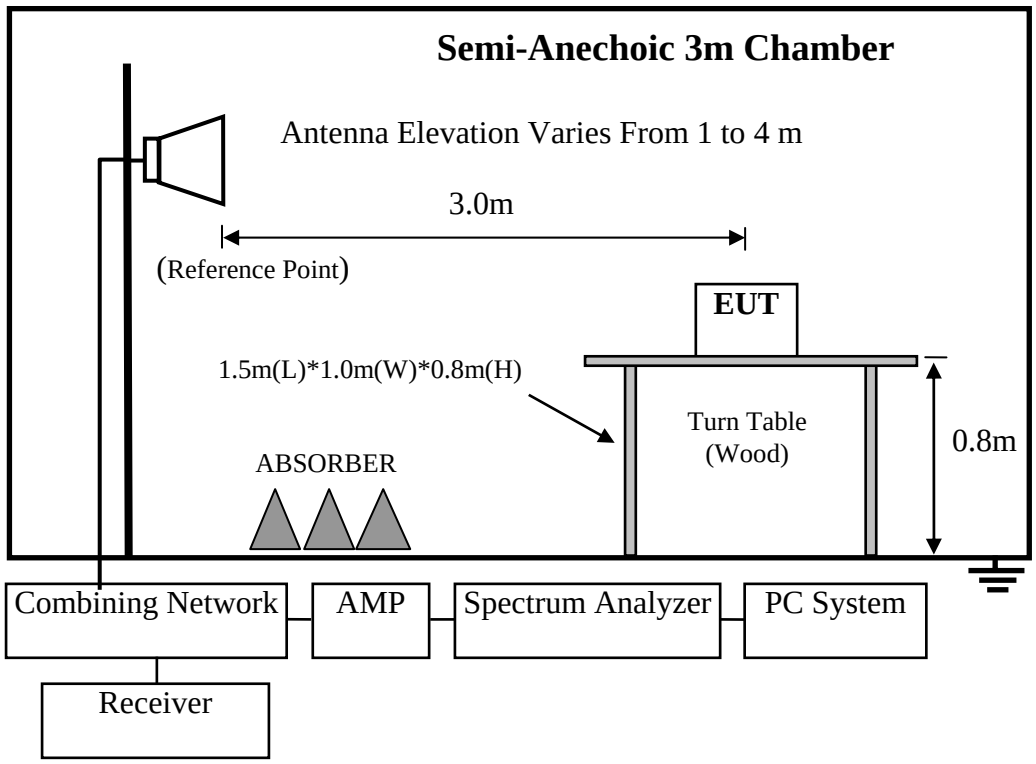
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 11	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	July.01, 11	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 11	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX102	28622/2	May.08, 11	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 11	1 Year

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	
		μV/m	dB(μV)/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 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Field Strength of fundamental emissions for 2.4GHz-2.4835GHz	3	114.0 dB(μV)/m (Peak) 94.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/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. Turned on the power of all equipment.

4.5.3. Let EUT work in Tx Mode.

4.6.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The 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. 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 C63.10-2009 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) are 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

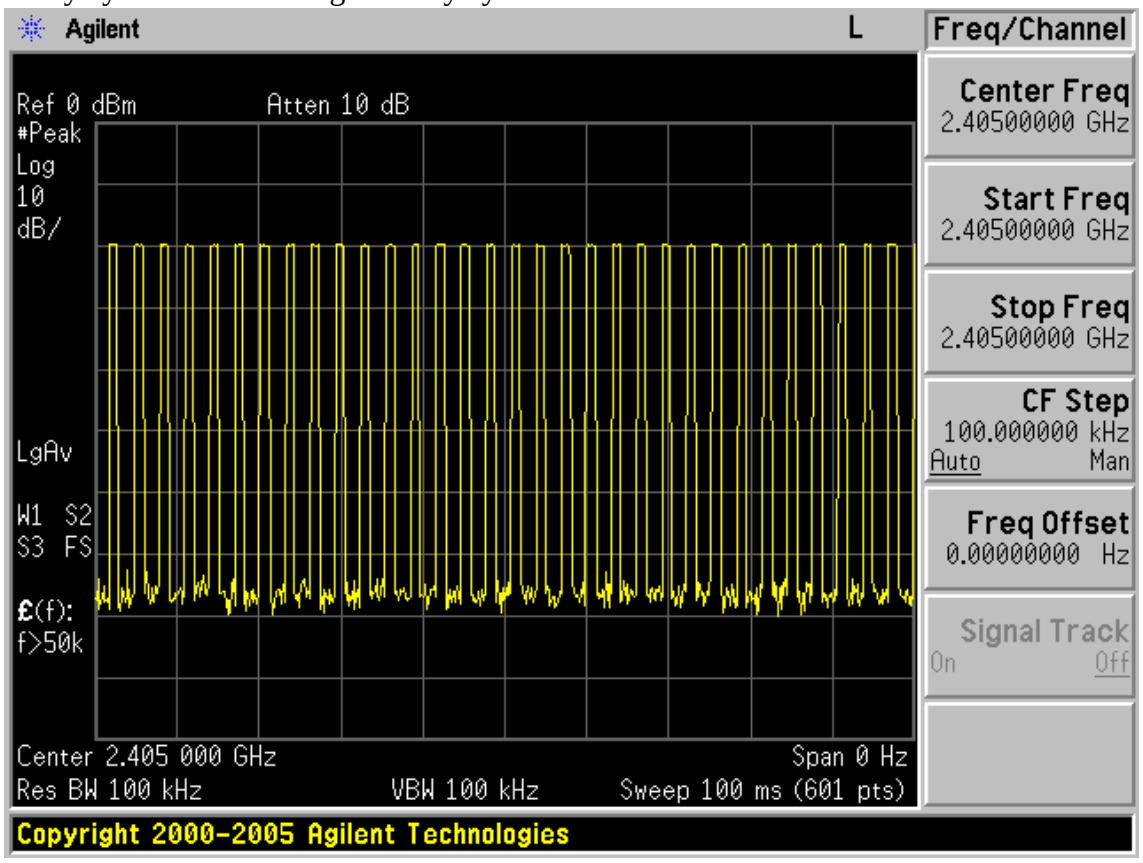
PASS.

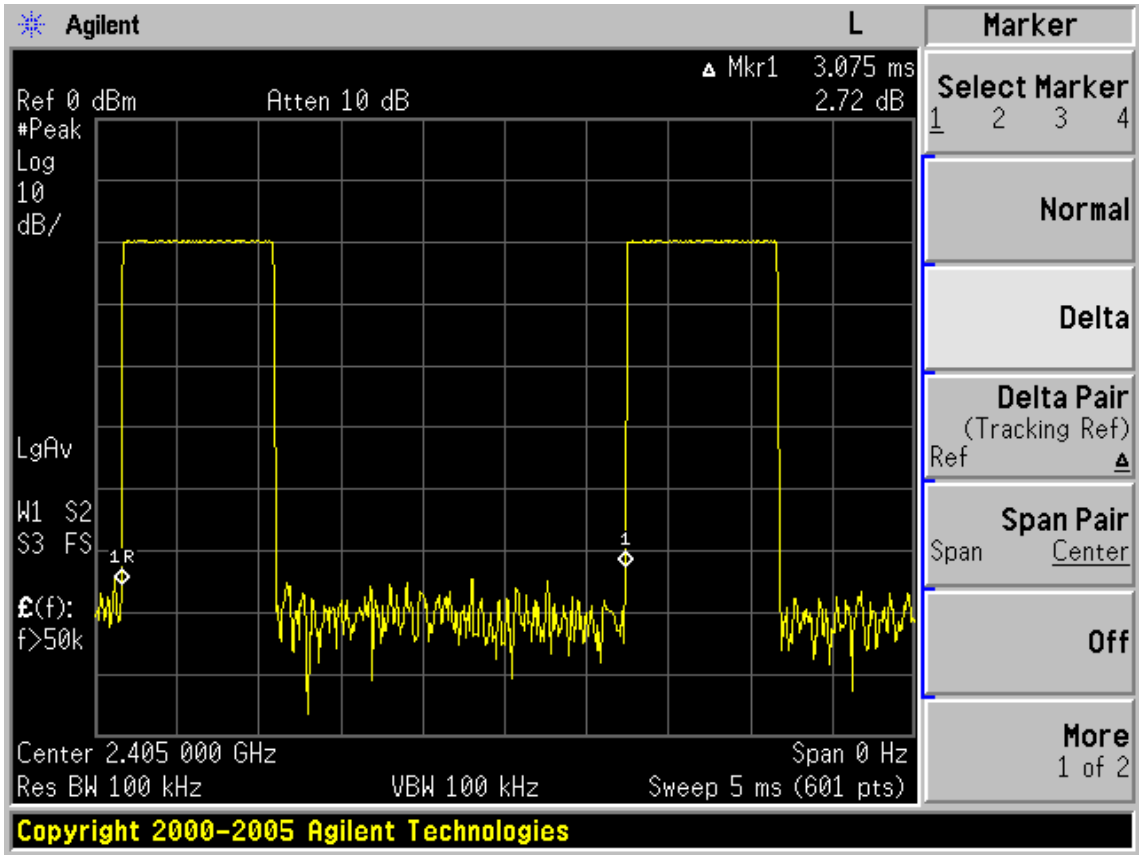
All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

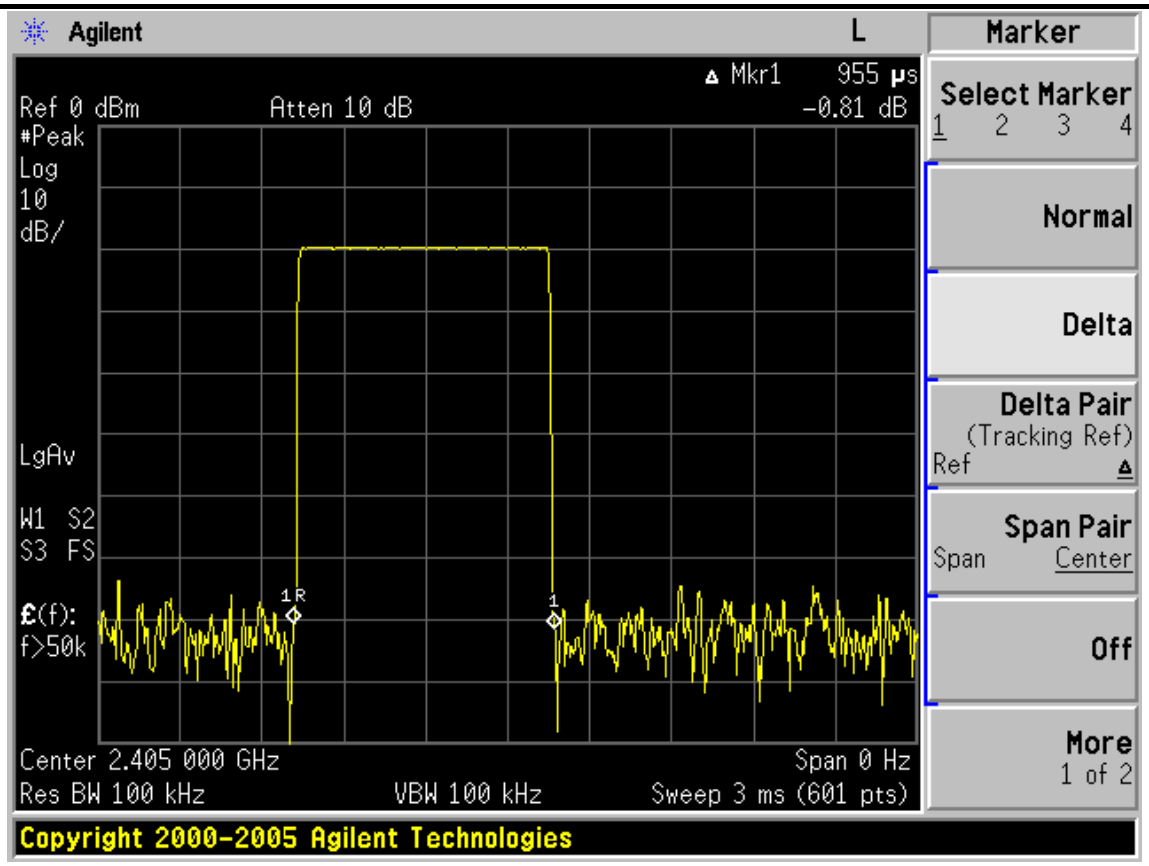
Note: The duty cycle factor for calculate average level is 10.15dB, and average limit is 20dB below peak limit, so if peak measured level comply with peak limit, the average level was deemed to comply with average limit.

Duty cycle: 0.955us /3.075ms *100% = 31%

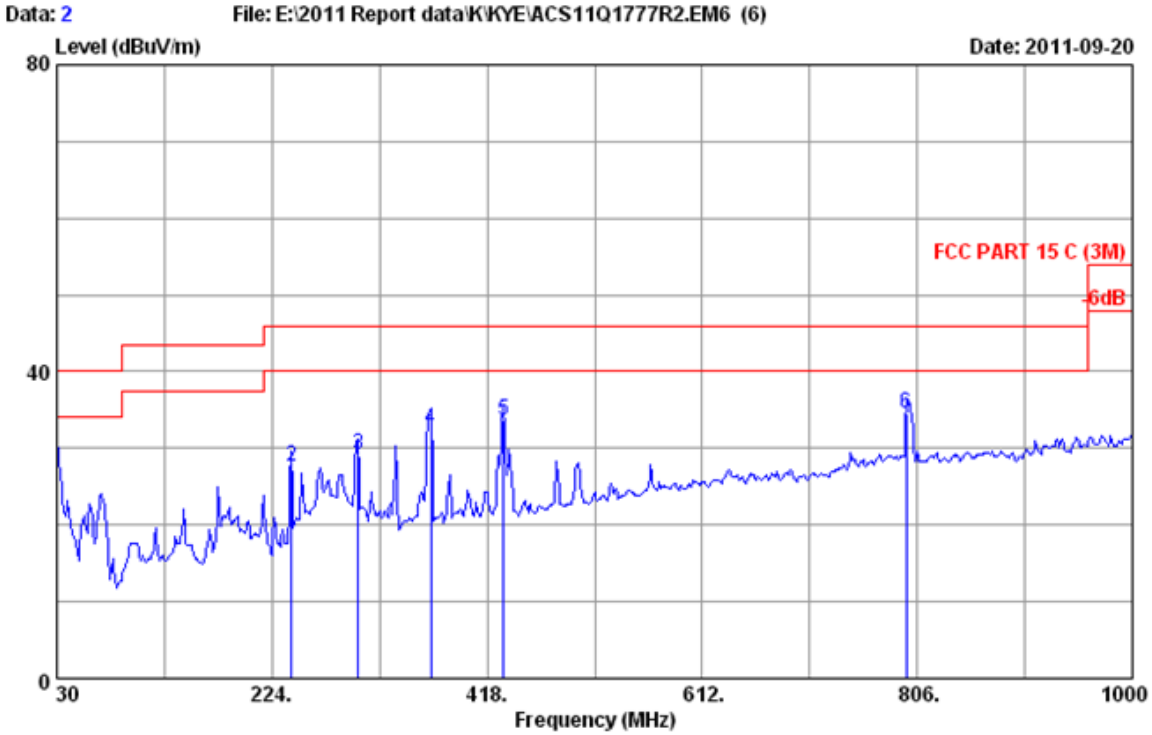
Duty cycle factor = 20log（1/duty cycle）= 10.15dB






Agilent
L
Marker
Mkr1 955 µs
Ref 0 dBm
Atten 10 dB
-0.81 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 FS
£(f):
f>50k
1R
1
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Center 2.405 000 GHz
Span 0 Hz
Res BW 100 kHz
VBW 100 kHz
Sweep 3 ms (601 pts)
Copyright 2000-2005 Agilent Technologies

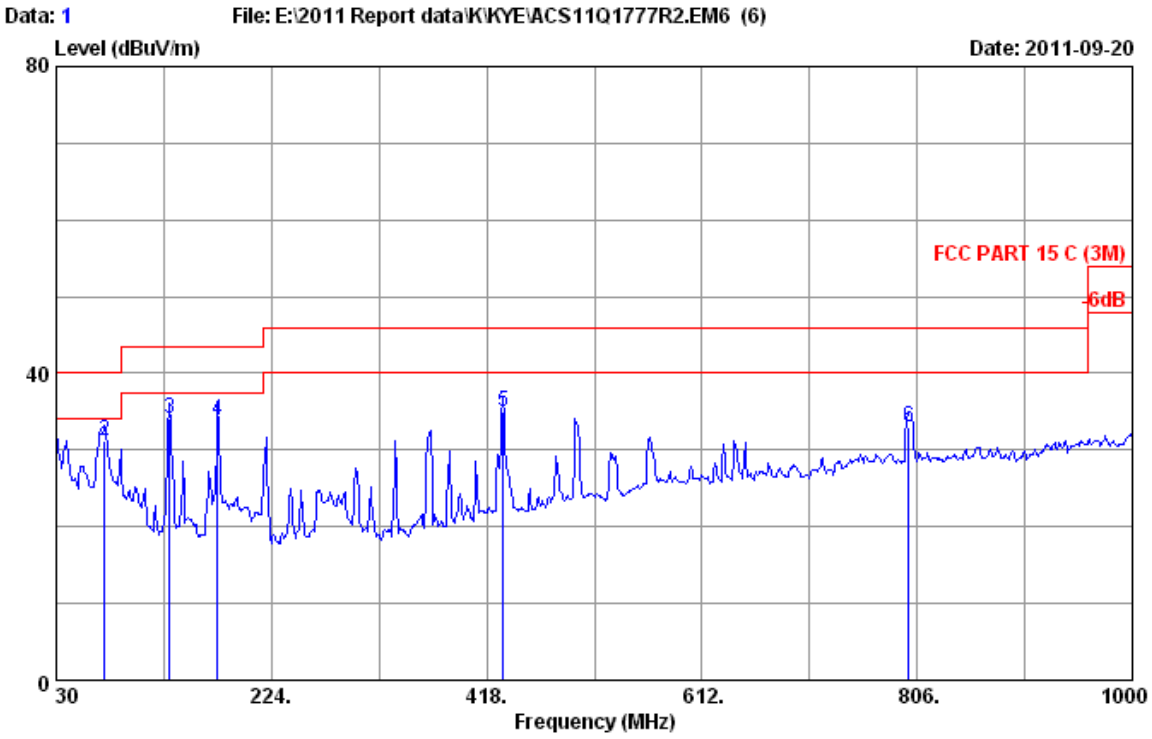
Frequency: 30MHz~1GHz




```
Site no.      : 3m Chamber                    Data no.   : 2
Dis. / Ant.   : 3m   2010 CBL6111C 2598       Ant. pol.  : HORIZONTAL
Limit         : FCC PART 15 C (3M)
Env. / Ins.   : 24*C/56%                      Engineer   : Gary
EUT           : Dongle
Power rating  : DC 5V PC Input AC 120V/60Hz
Test Mode     : Tx Mode
M/N           : A79D
```

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	20.00	0.58	8.32	28.90	40.00	11.10	QP
2	241.460	11.93	2.31	13.37	27.61	46.00	18.39	QP
3	301.600	13.75	3.01	12.44	29.20	46.00	16.80	QP
4	367.560	15.53	3.22	13.78	32.53	46.00	13.47	QP
5	432.550	17.42	3.55	12.62	33.59	46.00	12.41	QP
6	796.300	22.04	5.48	7.02	34.54	46.00	11.46	QP

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

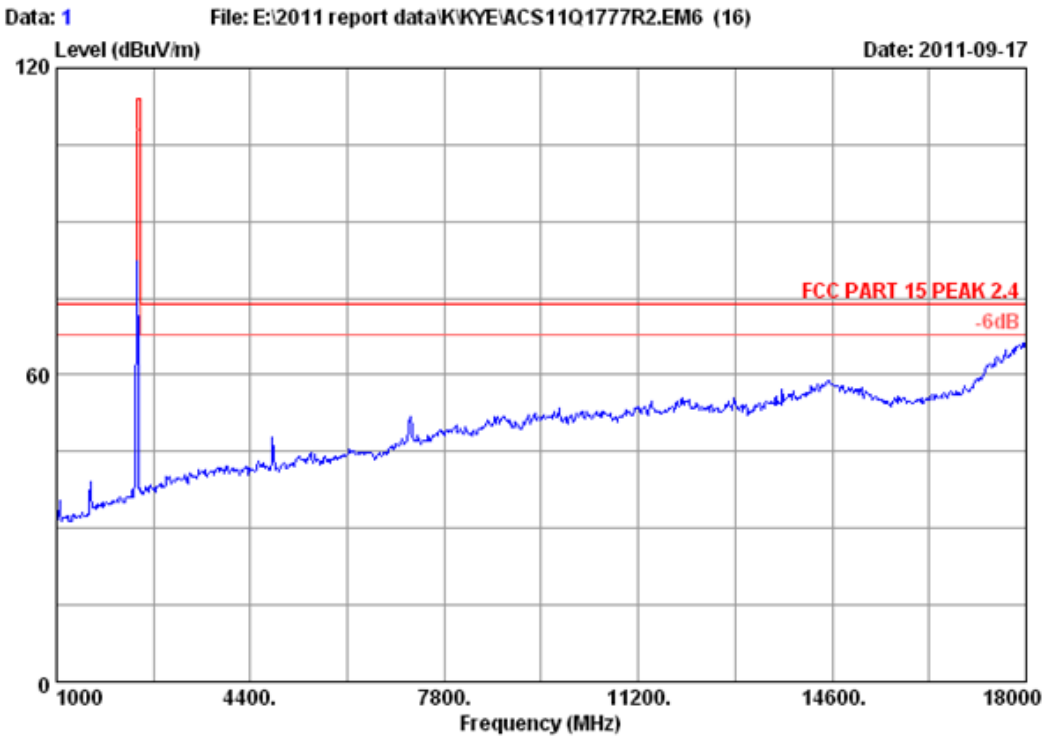


Site no. : 3m Chamber
Data no. : 1
Dis. / Ant. : 3m 2010 CBL6111C 2598
Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56%
Engineer : Gary
EUT : Dongle
Power rating : DC 5V PC Input AC 120V/60Hz
Test Mode : Tx Mode
M/N : A79D

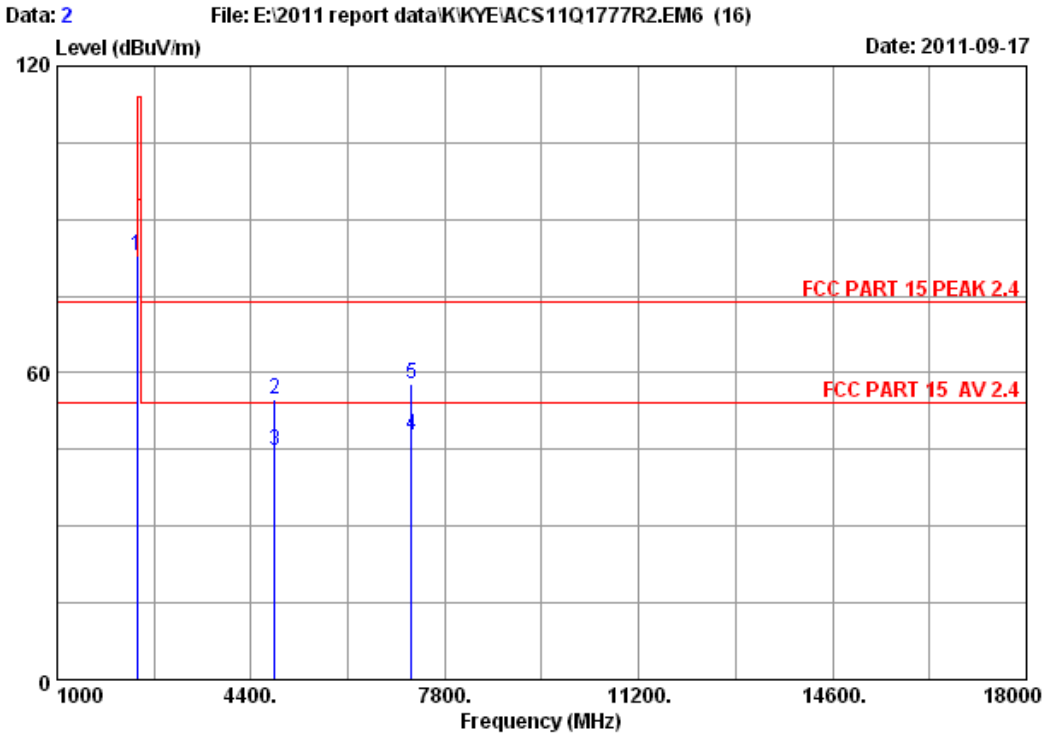
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	20.00	0.58	8.65	29.23	40.00	10.77	QP
2	73.650	7.16	0.99	23.09	31.24	40.00	8.76	QP
3	131.850	12.16	1.38	20.45	33.99	43.50	9.51	QP
4	175.500	9.65	1.66	22.57	33.88	43.50	9.62	QP
5	432.550	17.42	3.55	14.09	35.06	46.00	10.94	QP
6	798.240	22.02	5.49	5.51	33.02	46.00	12.98	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




```
Site no.      : 3m Chamber              Data no. :  1
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2405MHz
M/N           : A79D
              :
```

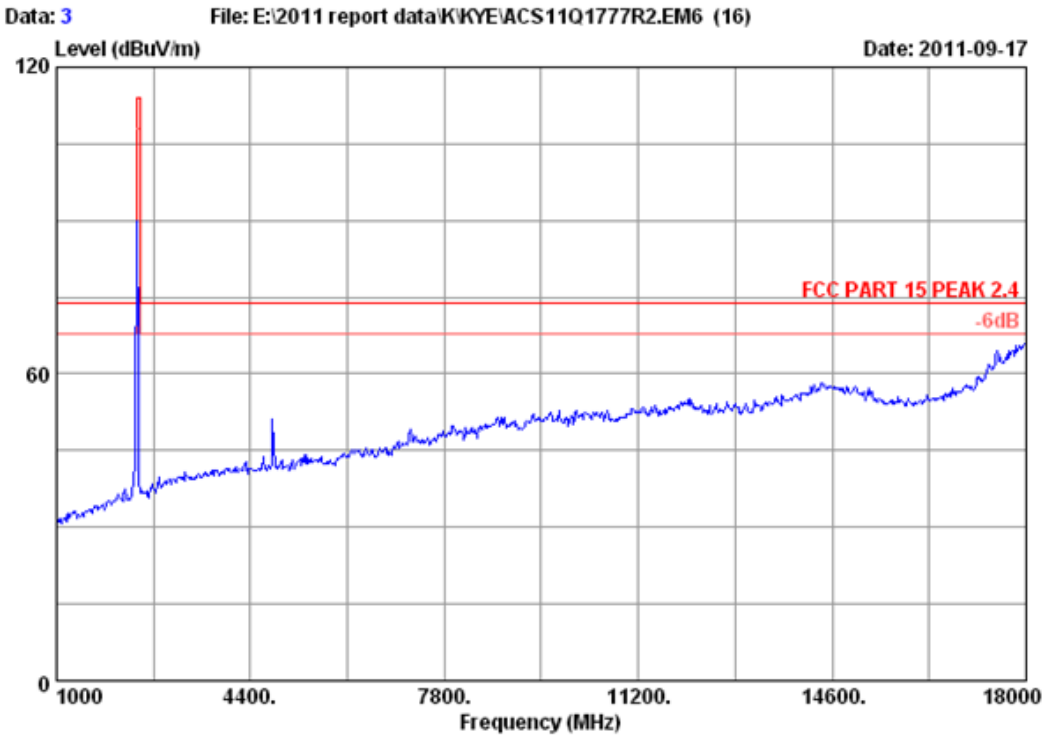



```
Site no.      : 3m Chamber              Data no. :  2
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 230V/50Hz
Test mode     : Tx 2405MHz
M/N           : A79D/KM001W
              :
```

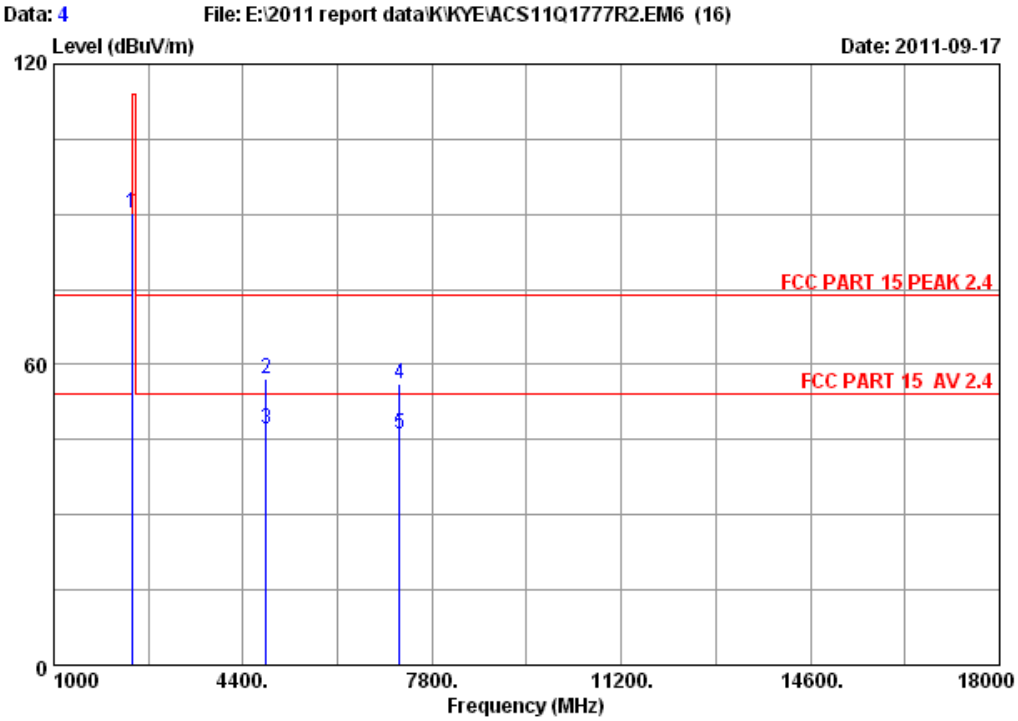
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits dBuV/m)	Margin (dB)	Remark
1	2405.000	27.98	6.75	34.44	82.53	82.82	114.00	31.18	Peak
2	4810.000	32.86	9.55	34.60	47.09	54.90	74.00	19.10	Peak
3	4810.000	32.86	9.55	34.60	36.94	44.75	54.00	9.25	Average
4	7215.000	35.78	11.83	34.72	34.88	47.77	54.00	6.23	Average
5	7215.000	35.78	11.83	34.72	45.03	57.92	74.00	16.08	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2405	82.82	10.15	72.67	94	Pass
4810	54.90	10.15	44.75	54	Pass
7215	57.92	10.15	47.77	54	Pass



Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Paul Tian
EUT	: Dongle		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: Tx 2405MHz		
M/N	: A79D		
	:		

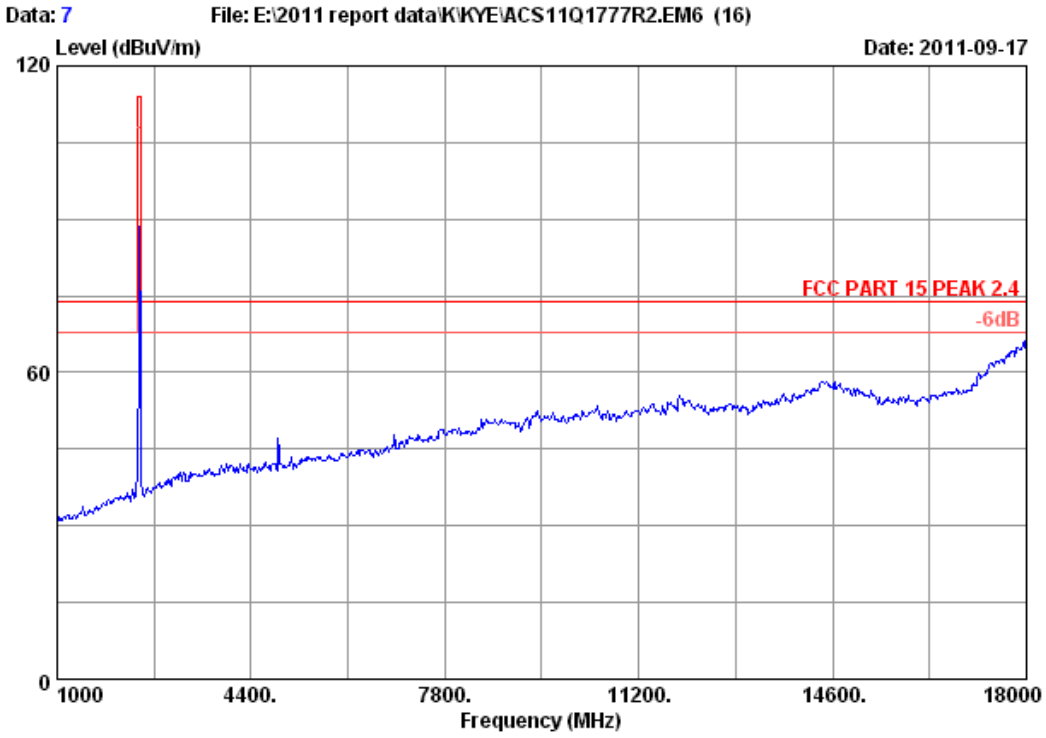



```
Site no.      : 3m Chamber              Data no. :  4
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2405MHz
M/N           : A79D
              :
```

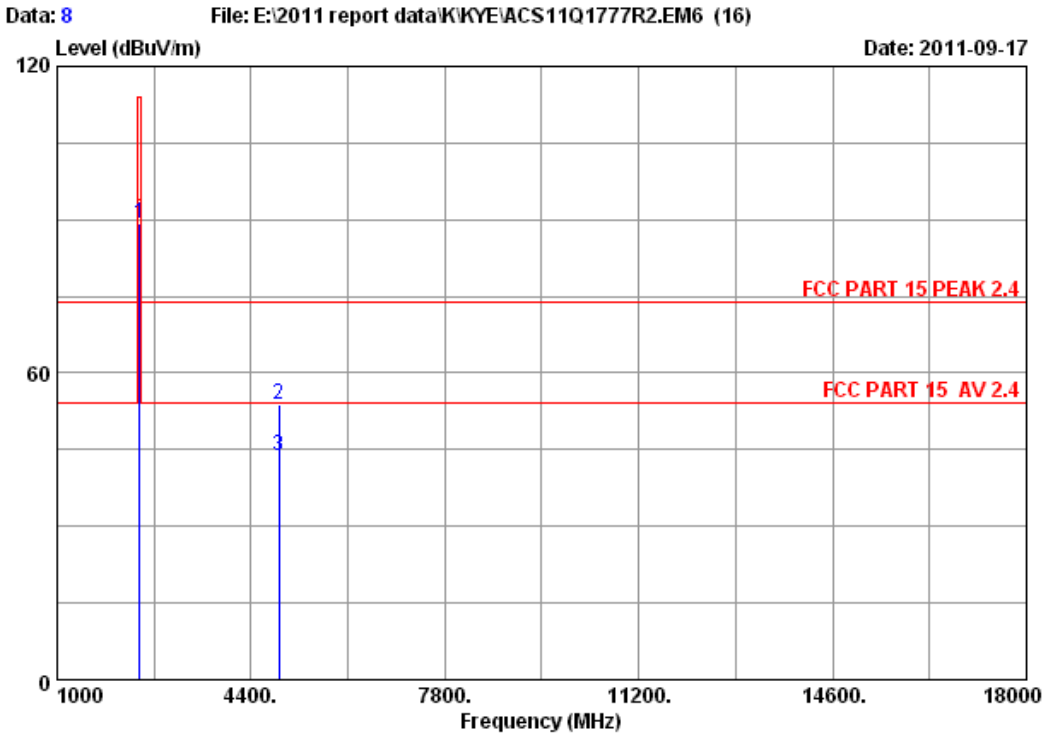
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2405.000	27.98	6.75	34.44	90.10	90.39	114.00	23.61	Peak
2	4810.000	32.86	9.55	34.60	49.48	57.29	74.00	16.71	Peak
3	4810.000	32.86	9.55	34.60	39.33	47.14	54.00	6.86	Average
4	7215.000	35.78	11.83	34.72	43.32	56.21	74.00	17.79	Peak
5	7215.000	35.78	11.83	34.72	33.17	46.06	54.00	7.94	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2405	90.39	10.15	80.24	94	Pass
4810	57.29	10.15	47.14	54	Pass
7215	56.21	10.15	46.06	54	Pass




```
Site no.      : 3m Chamber              Data no. :  7
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2445MHz
M/N           : A79D
              :
```

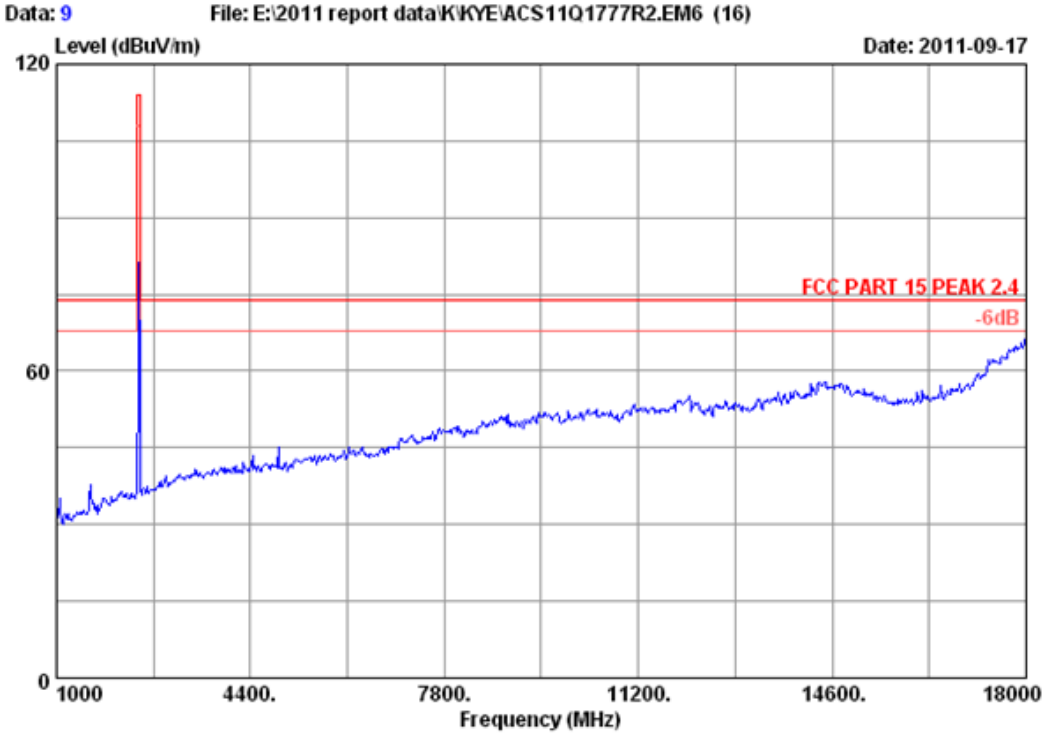



```
Site no.      : 3m Chamber              Data no. :  8
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2445MHz
M/N           : A79D
              :
```

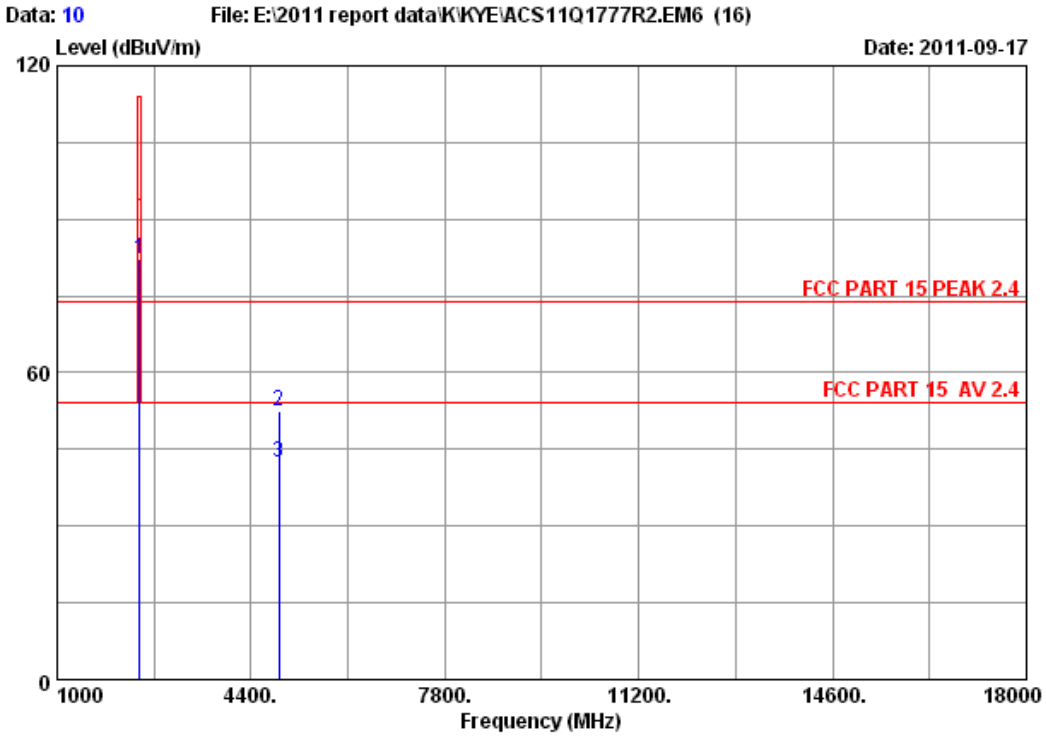
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2445.000	28.03	6.81	34.44	88.72	89.12	114.00	24.88	Peak
2	4890.000	33.01	9.62	34.60	45.79	53.82	74.00	20.18	Peak
3	4890.000	33.01	9.62	34.60	35.64	43.67	54.00	10.33	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2445	89.12	10.15	78.97	94	Pass
4890	53.82	10.15	43.67	54	Pass




```
Site no.      : 3m Chamber              Data no. :  9
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2445MHz
M/N           : A79D
              :
```

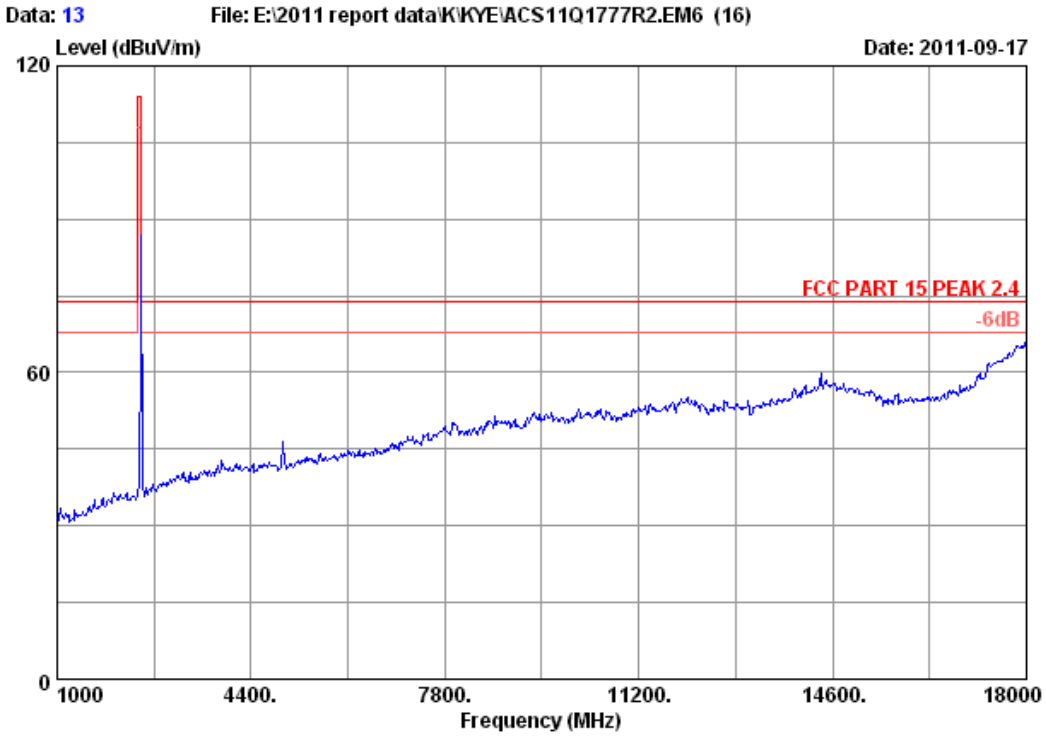



```
Site no.      : 3m Chamber              Data no. :  10
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2445MHz
M/N           : A79D
              :
```

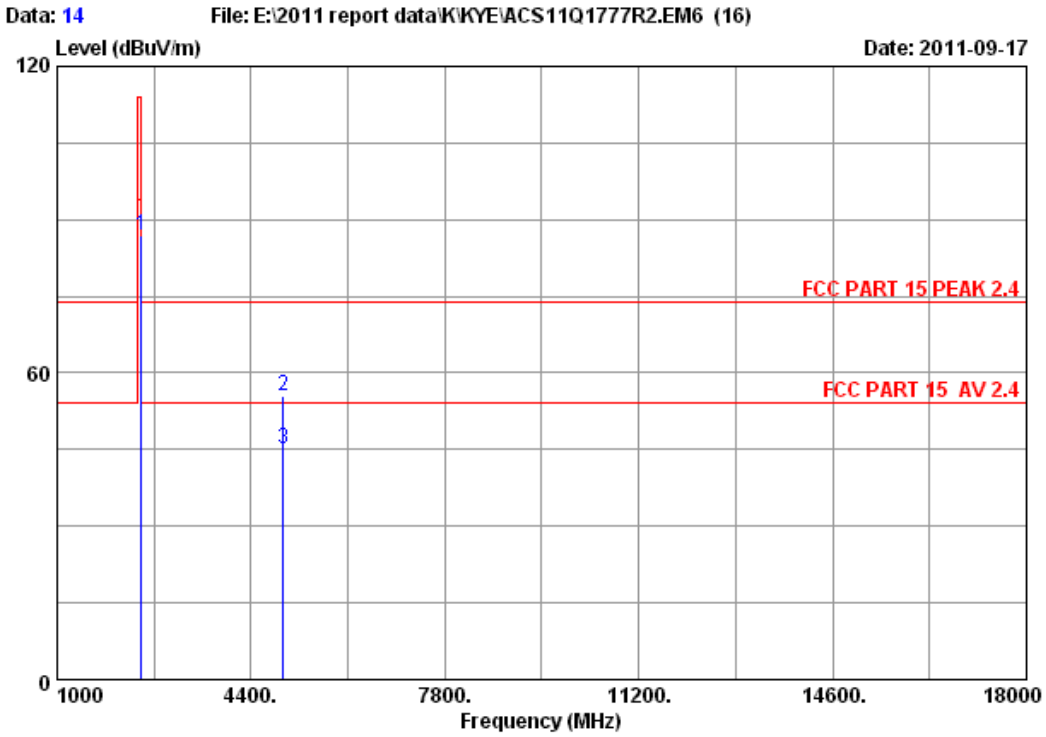
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2445.000	28.03	6.81	34.44	81.86	82.26	114.00	31.74	Peak
2	4890.000	33.01	9.62	34.60	44.53	52.56	74.00	21.44	Peak
3	4890.000	33.01	9.62	34.60	34.38	42.41	54.00	11.59	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2445	82.26	10.15	72.11	94	Pass
4890	52.56	10.15	42.41	54	Pass




```
Site no.      : 3m Chamber              Data no. :  13
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2480MHz
M/N           : A79D
              :
```

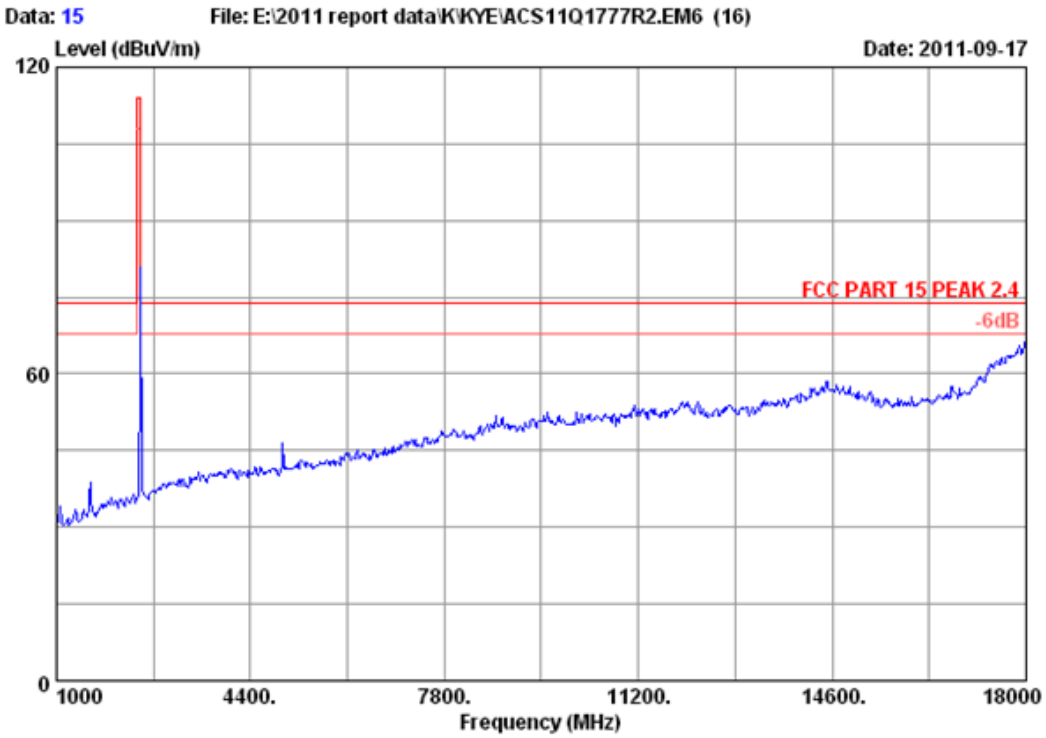



```
Site no.      : 3m Chamber              Data no. :  14
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2480MHz
M/N           : A79D
              :
```

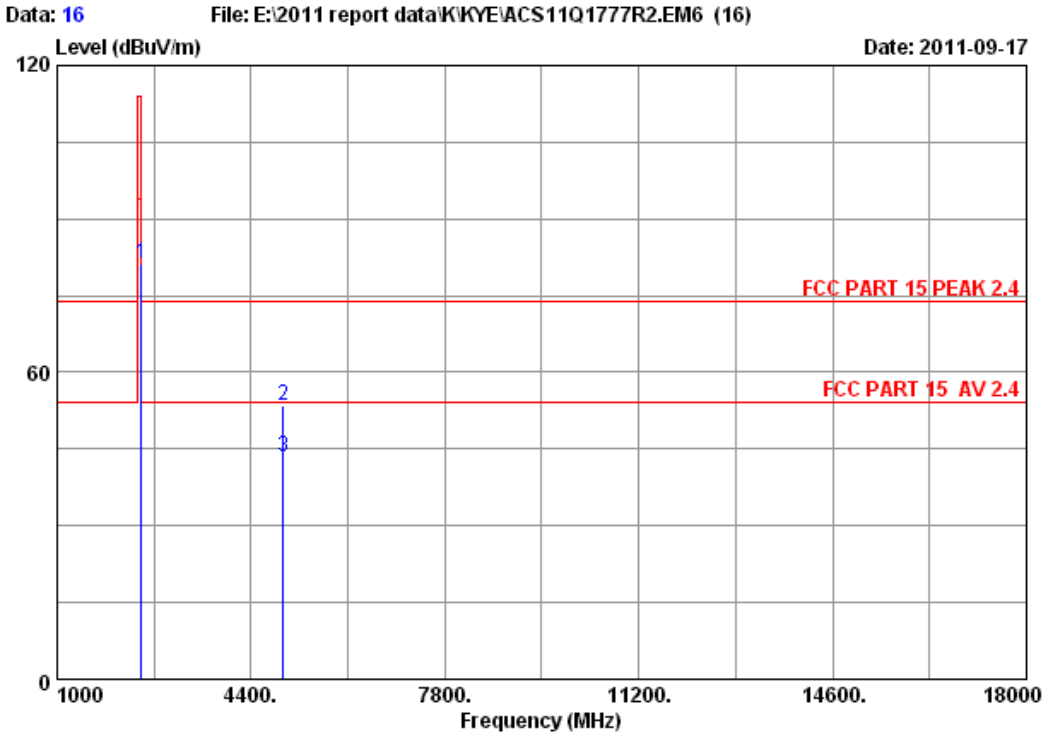
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.000	28.08	6.87	34.45	86.39	86.89	114.00	27.11	Peak
2	4960.000	33.14	9.69	34.60	47.17	55.40	74.00	18.60	Peak
3	4960.000	33.14	9.69	34.60	37.02	45.25	54.00	8.75	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2480	86.89	10.15	76.74	94	Pass
4960	55.40	10.15	45.25	54	Pass



Site no.	: 3m Chamber	Data no.	: 15
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Paul Tian
EUT	: Dongle		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: Tx 2480MHz		
M/N	: A79D		
	:		




```
Site no.      : 3m Chamber              Data no. :  16
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2480MHz
M/N           : A79D
              :
```

	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	2480.000	28.08	6.87	34.45	80.69	81.19	114.00	32.81	Peak
2	4960.000	33.14	9.69	34.60	45.36	53.59	74.00	20.41	Peak
3	4960.000	33.14	9.69	34.60	35.21	43.44	54.00	10.56	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2480	81.19	10.15	71.04	94	Pass
4960	53.59	10.15	43.44	54	Pass

5. 20 DB BANDWIDTH TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,11	1 Year

5.2. Limit

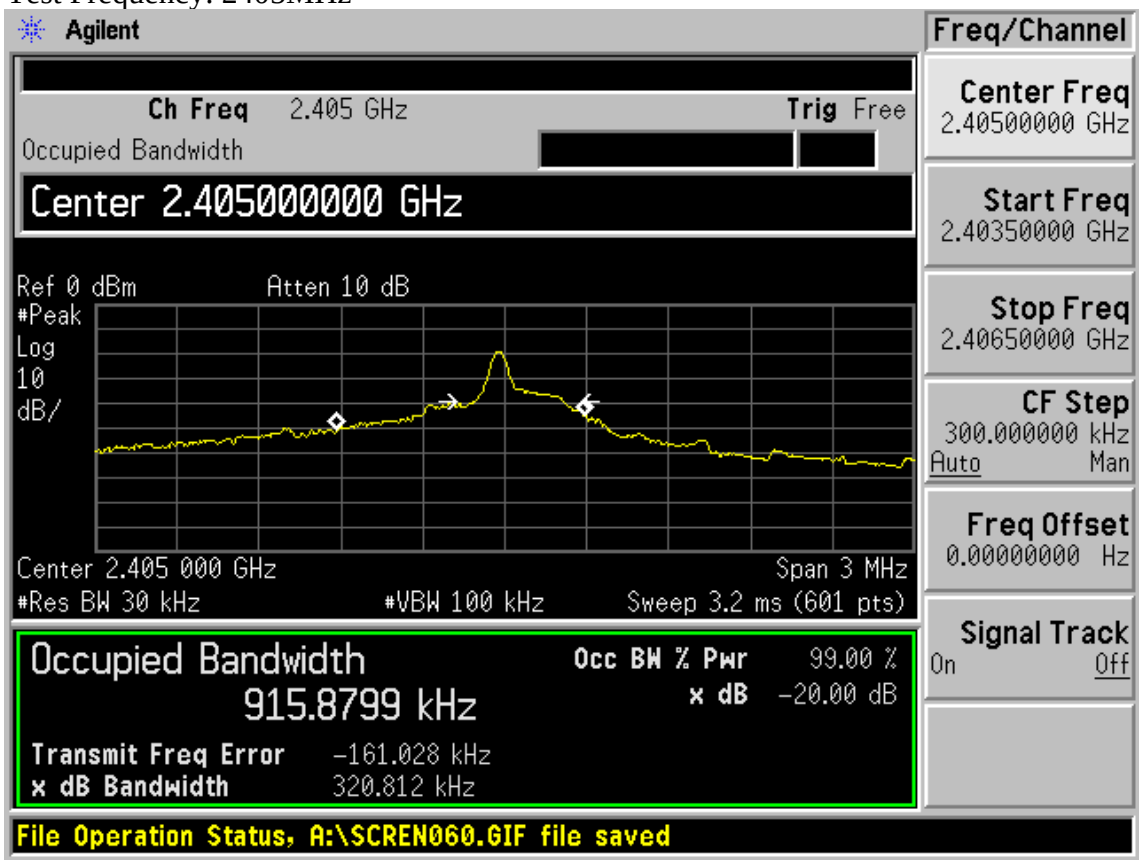
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific 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

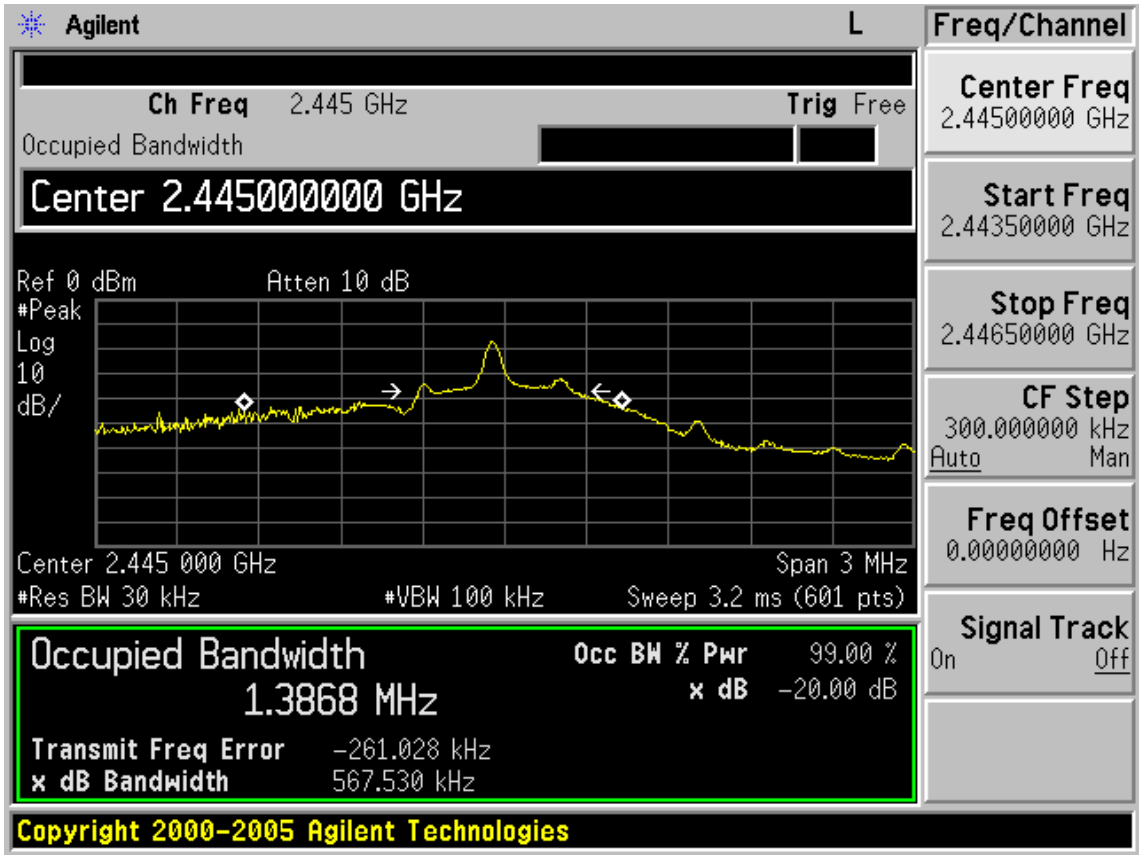
EUT: Dongle		
M/N: A79D		
Test date:2011-09-17	Pressure: 101.7 kpa	Humidity: 52 %
Tested by: Leo-Li	Test site: RF site	Temperature：25.6 ℃

Frequency	20dB bandwidth （KHz）	Limit (KHz)
2405MHz	302.8	N/A
2445MHz	567.5	N/A
2480MHz	206.6	N/A
Conclusion：PASS		

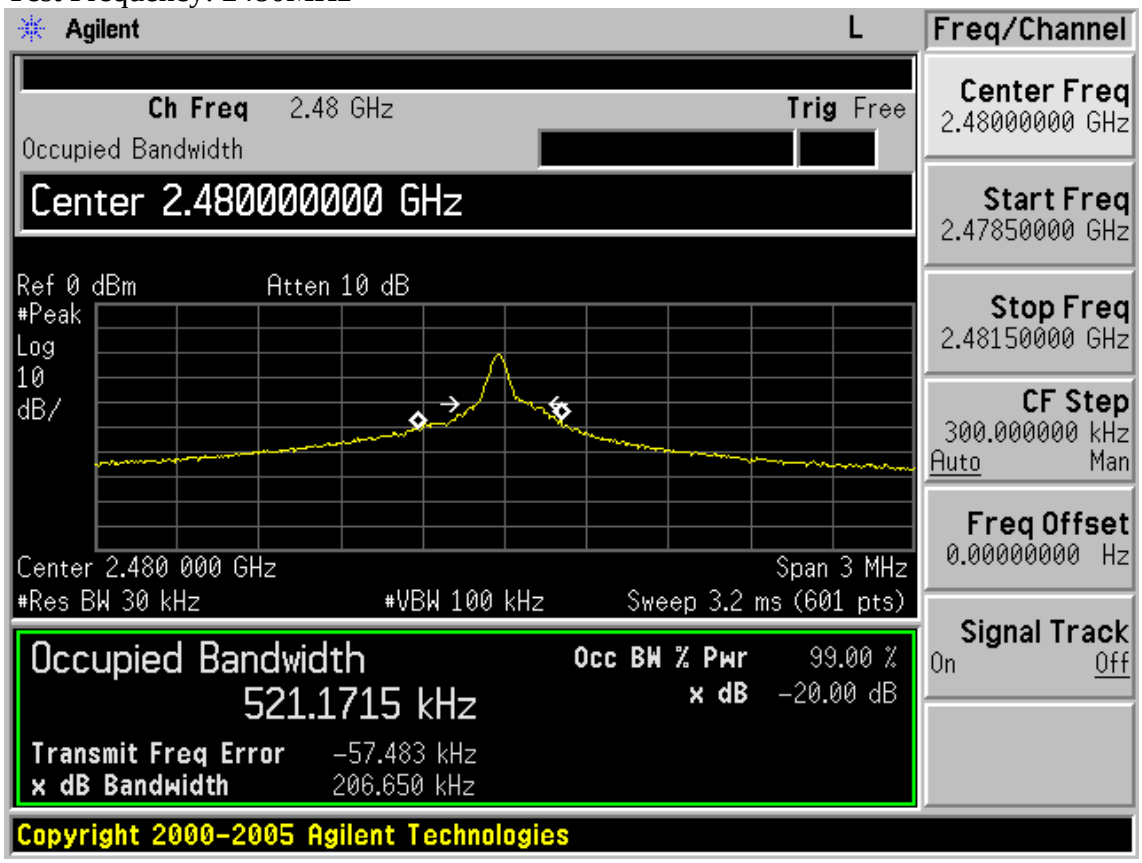
Test Frequency: 2405MHz



Test Frequency: 2445MHz



Test Frequency: 2480MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,11	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 10	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 11	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,11	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,11	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,11	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 20dB 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

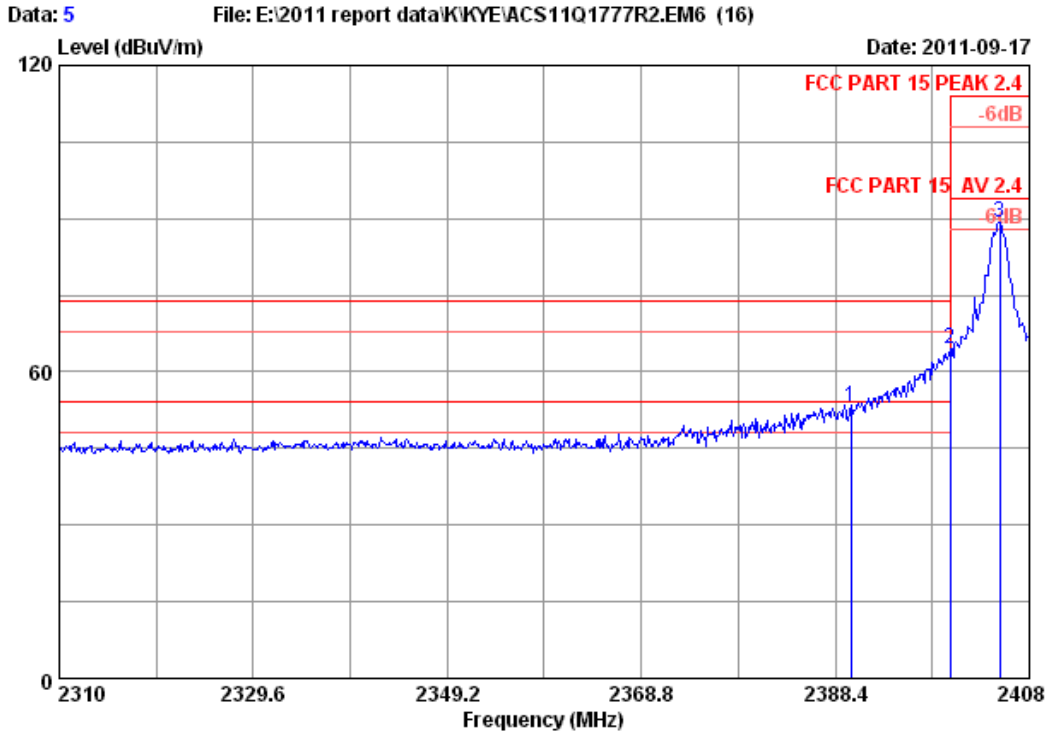
(b)This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level

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 10.15dB, and average limit is 20dB below peak limit, so if peak measured level comply with peak limit, the average level was deemed to comply with average limit.

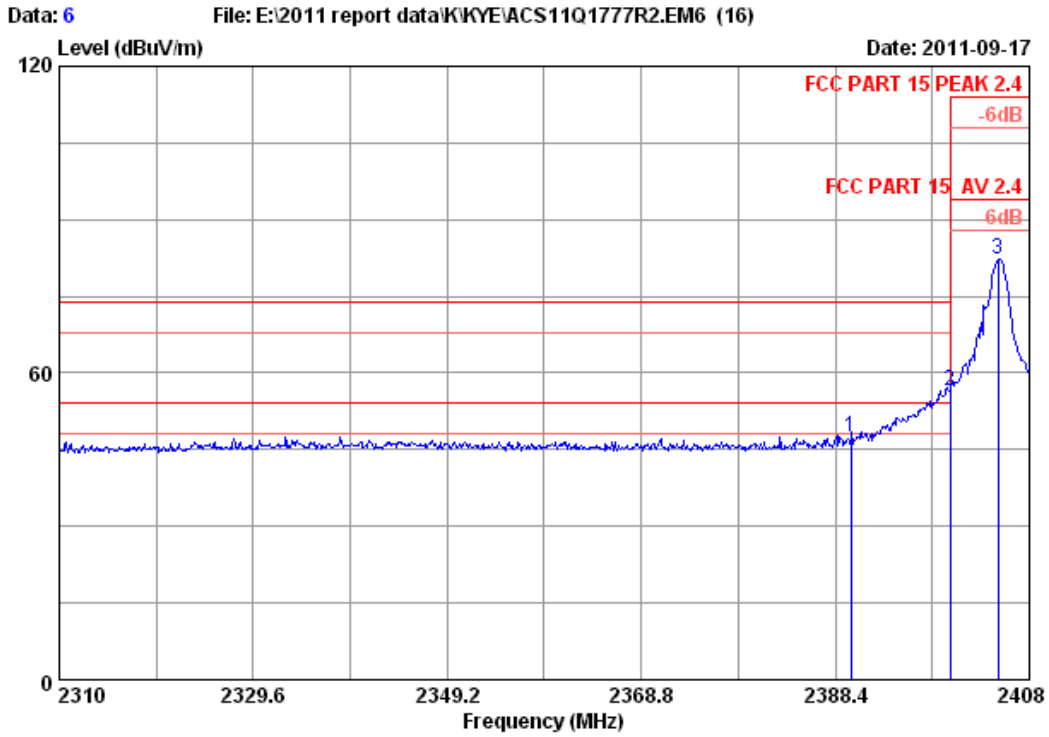


Site no. : 3m Chamber Data no. : 5
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : Paul Tian
EUT : Dongle
Power : DC 5V From PC Input AC 120V/60Hz
Test mode : Tx 2405MHz
M/N : A79D
:

	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	2390.000	27.96	6.72	34.44	52.96	53.20	74.00	20.80	Peak
2	2400.000	27.96	6.75	34.44	64.40	64.67	74.00	9.33	Peak
3	2405.060	27.98	6.75	34.44	88.95	89.24	114.00	24.76	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2390.000	53.20	10.15	43.03	54	Pass
2400.000	64.67	10.15	54.5	54	Pass
2405.060	89.24	10.15	79.07	94	Pass

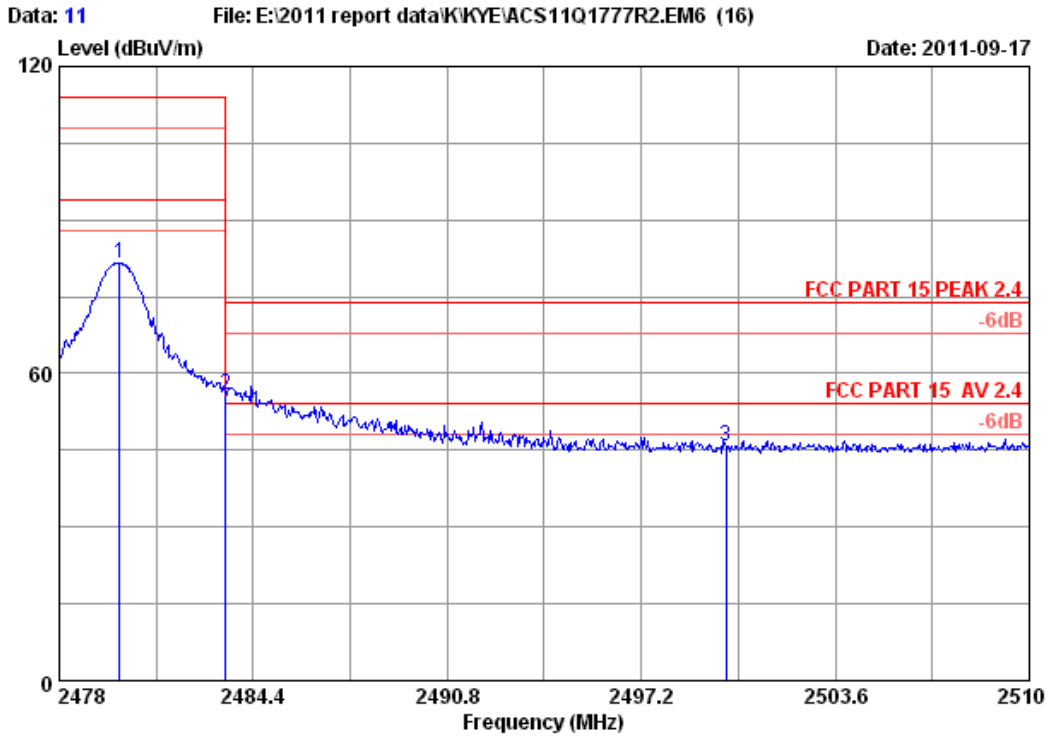



```
Site no.      : 3m Chamber              Data no. :  6
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2405MHz
M/N           : A79D
              :
```

	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	2390.000	27.96	6.72	34.44	47.15	47.39	74.00	26.61	Peak
2	2400.000	27.96	6.75	34.44	56.35	56.62	74.00	17.38	Peak
3	2404.864	27.98	6.75	34.44	81.84	82.13	114.00	31.87	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2390.000	47.39	10.15	37.22	54	Pass
2400.000	56.62	10.15	46.45	54	Pass
2404.864	82.13	10.15	71.96	94	Pass

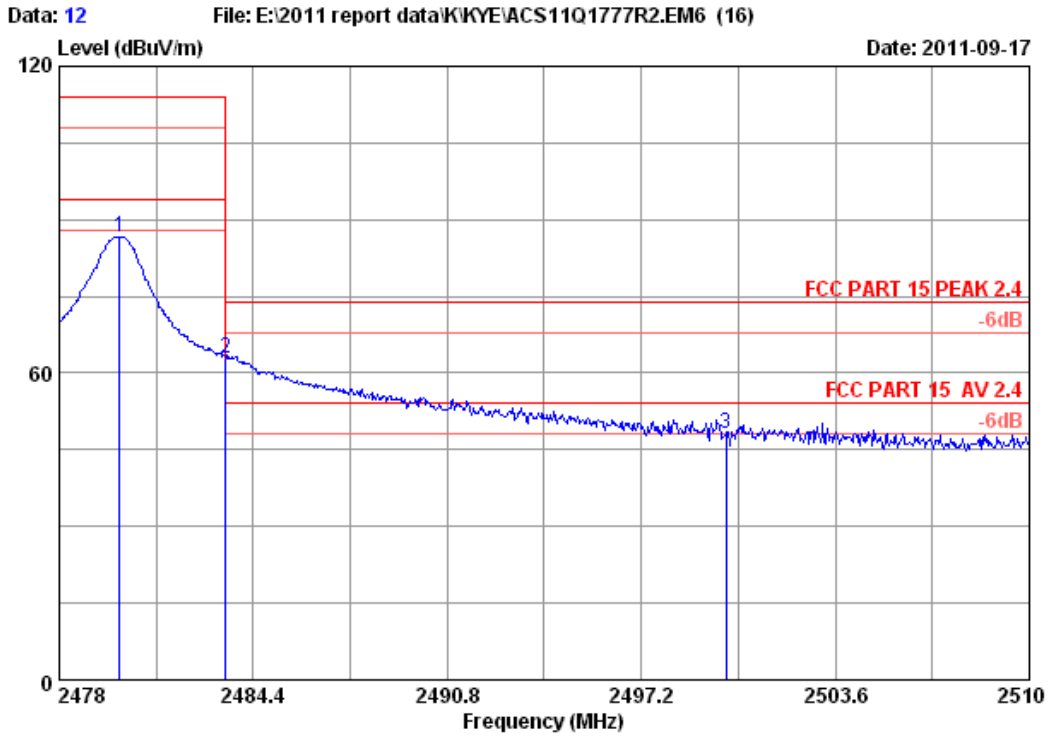



```
Site no.      : 3m Chamber              Data no. :  11
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2480MHz
M/N           : A79D
              :
```

	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	2479.984	28.08	6.87	34.45	81.04	81.54	114.00	32.46	Peak
2	2483.500	28.08	6.90	34.45	55.43	55.96	74.00	18.04	Peak
3	2500.000	28.10	6.90	34.45	45.40	45.95	74.00	28.05	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2479.984	81.54	10.15	71.37	94	Pass
2483.500	55.96	10.15	45.79	54	Pass
2500.000	45.95	10.15	35.78	54	Pass




```
Site no.      : 3m Chamber              Data no. :  12
Dis. / Ant.   : 3m   2011 3115 4580      Ant. pol. : HORIZONTAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 23*C/54%                Engineer  : Paul Tian
EUT           : Dongle
Power         : DC 5V From PC Input AC 120V/60Hz
Test mode     : Tx 2480MHz
M/N           : A79D
              :
```

	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	2479.984	28.08	6.87	34.45	86.18	86.68	114.00	27.32	Peak
2	2483.500	28.08	6.90	34.45	62.47	63.00	74.00	11.00	Peak
3	2500.000	28.10	6.90	34.45	47.61	48.16	74.00	25.84	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
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
2479.984	86.68	10.15	76.51	94	Pass
2483.500	63.00	10.15	52.83	54	Pass
2500.000	48.16	10.15	37.99	54	Pass

7. RADIO FRREQUENCY EXPOSURE COMPLIANCE

RESULT : PASS

Test standard : FCC KDB Publication 447498

Since maximum peak output power of the transmitter is<60/f(GHz)mW, i.e.0.22mW<25(=60/2.4)mW, hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01:Mobile Portable RF Exposure.

8. TEST SOFTWARE

Manufacturer **:** G. tech Technology Ltd.

Version **:** NanoDongle.exe V1.1

The test software is used to control EUT work in TX mode and to change the test channel.

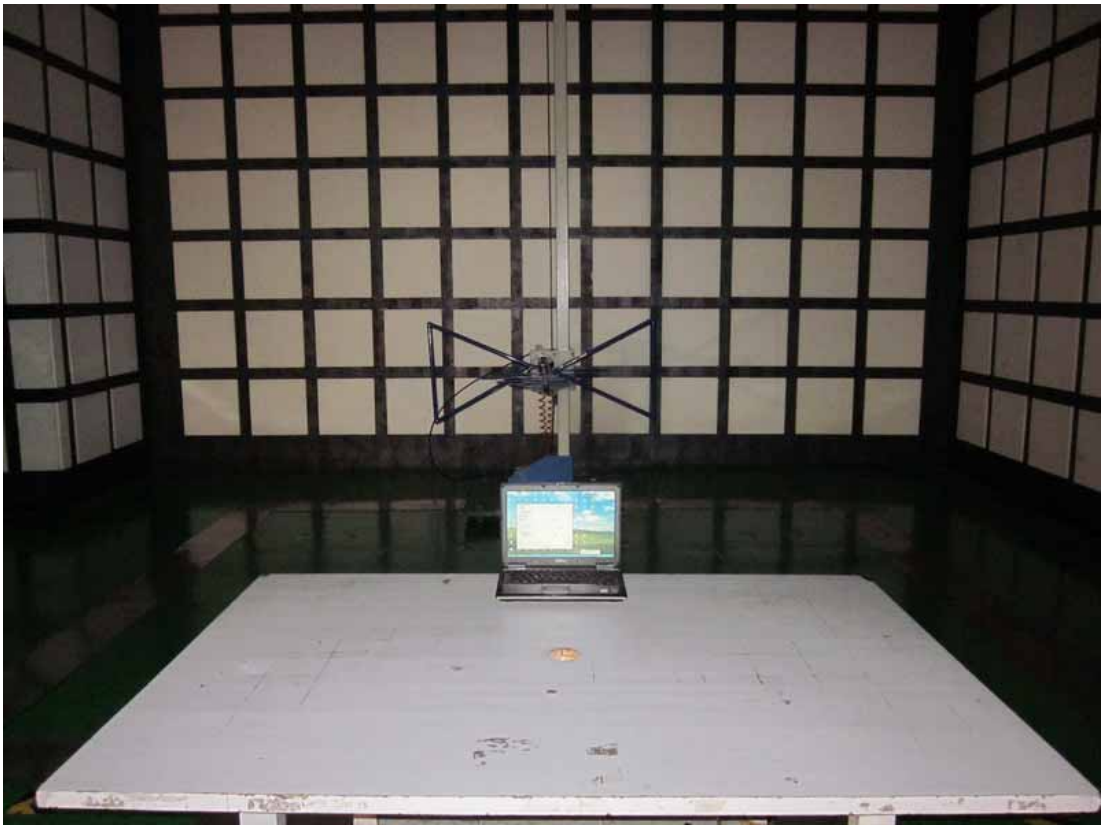
9. DEVIATION TO TEST SPECIFICATIONS

[NONE]

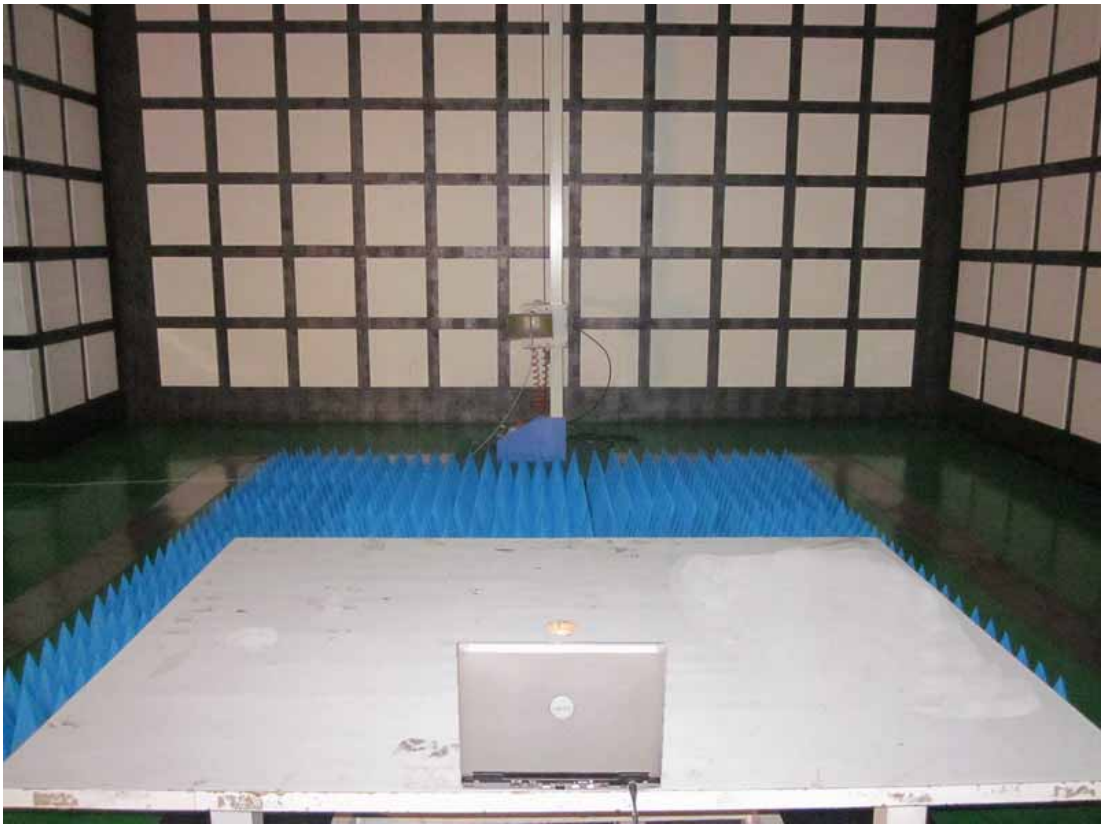
10.PHOTOGRAPH OF TEST

10.1.Photos of Power Line Conducted Emission Test

10.2.Photos of Radiated Emission Test (30-1000MHz)



(Above 1000MHz)



11. PHOTOGRAPH OF EUT

Figure 1
General Appearance of the EUT

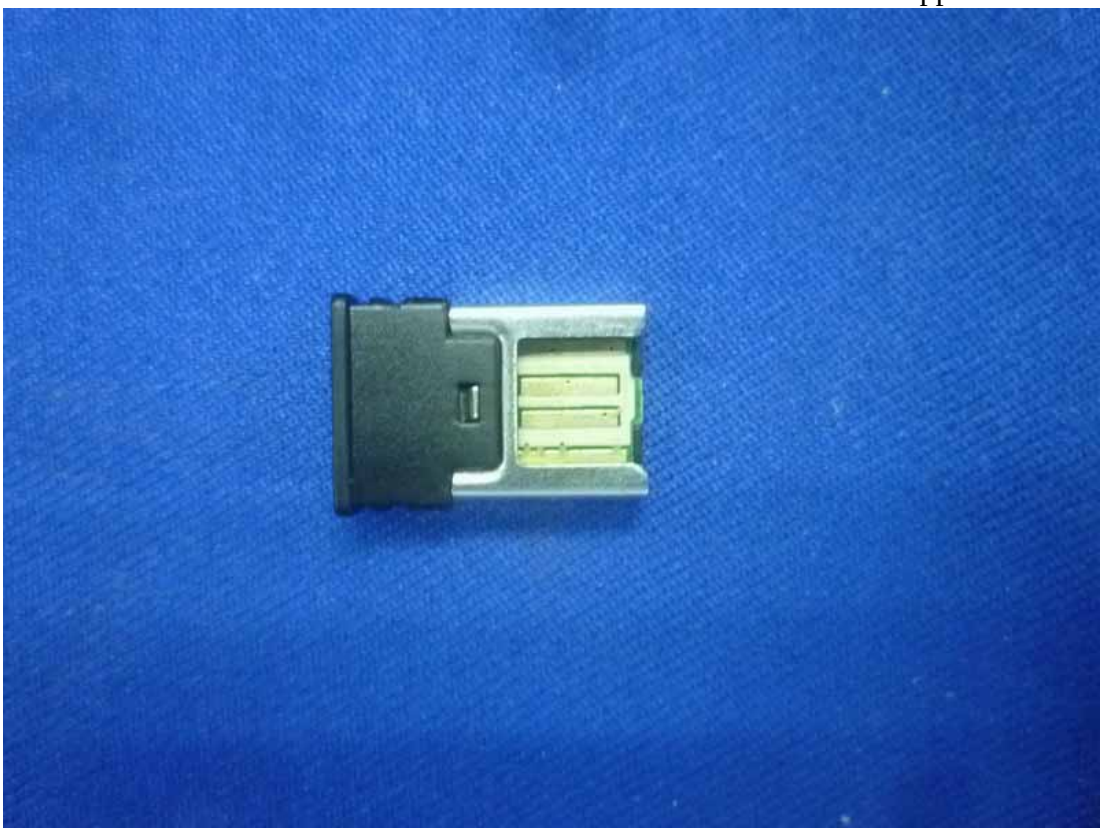


Figure 2
General Appearance of the EUT

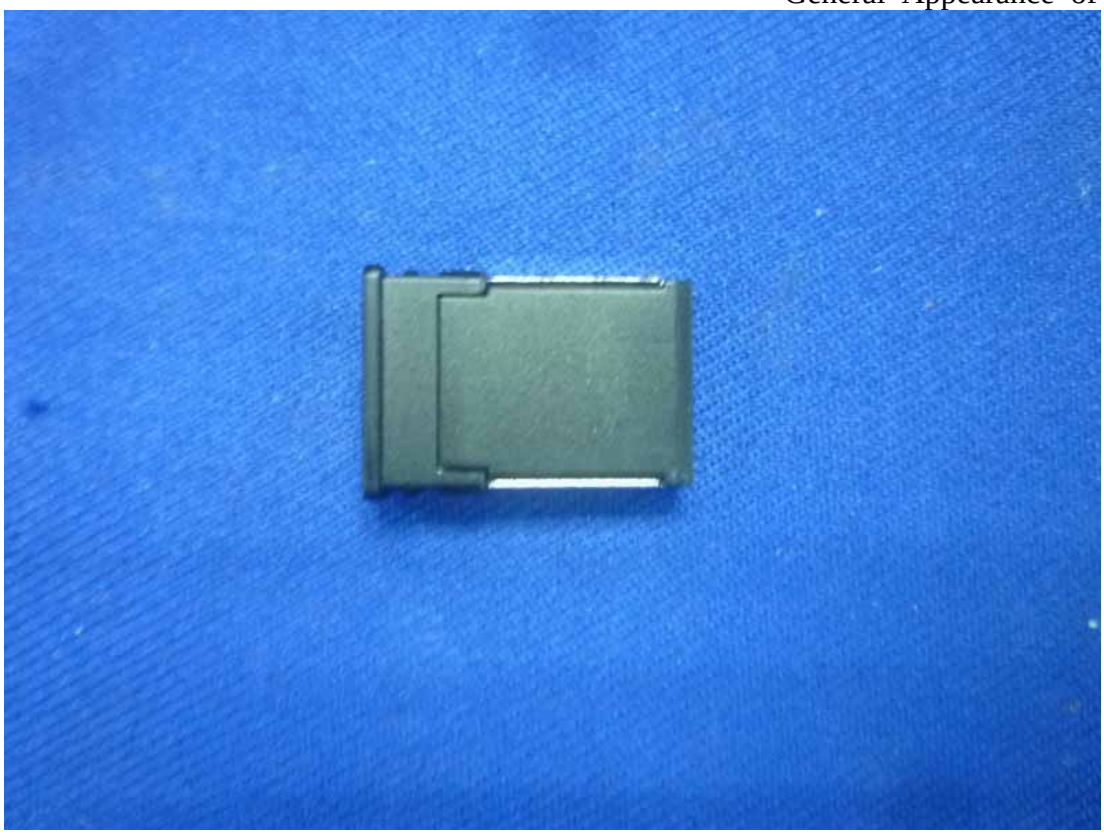


Figure 3
Inside of the EUT

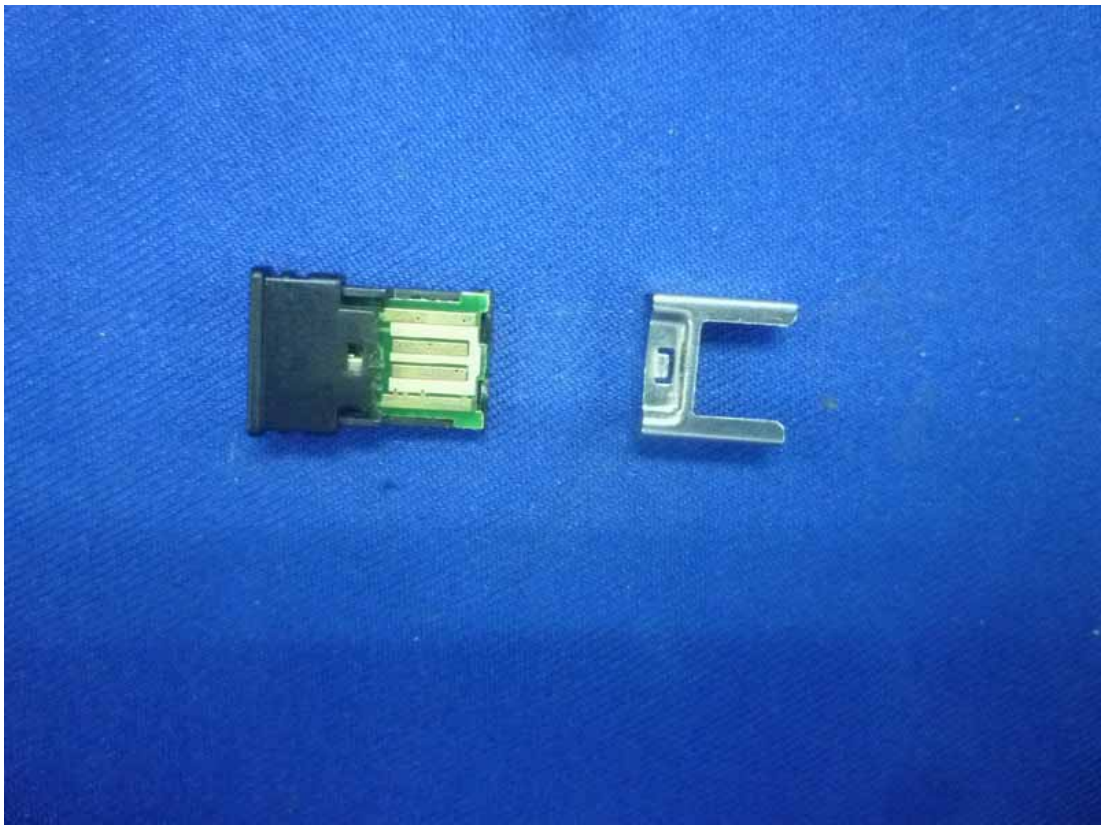


Figure 4
Inside of the EUT

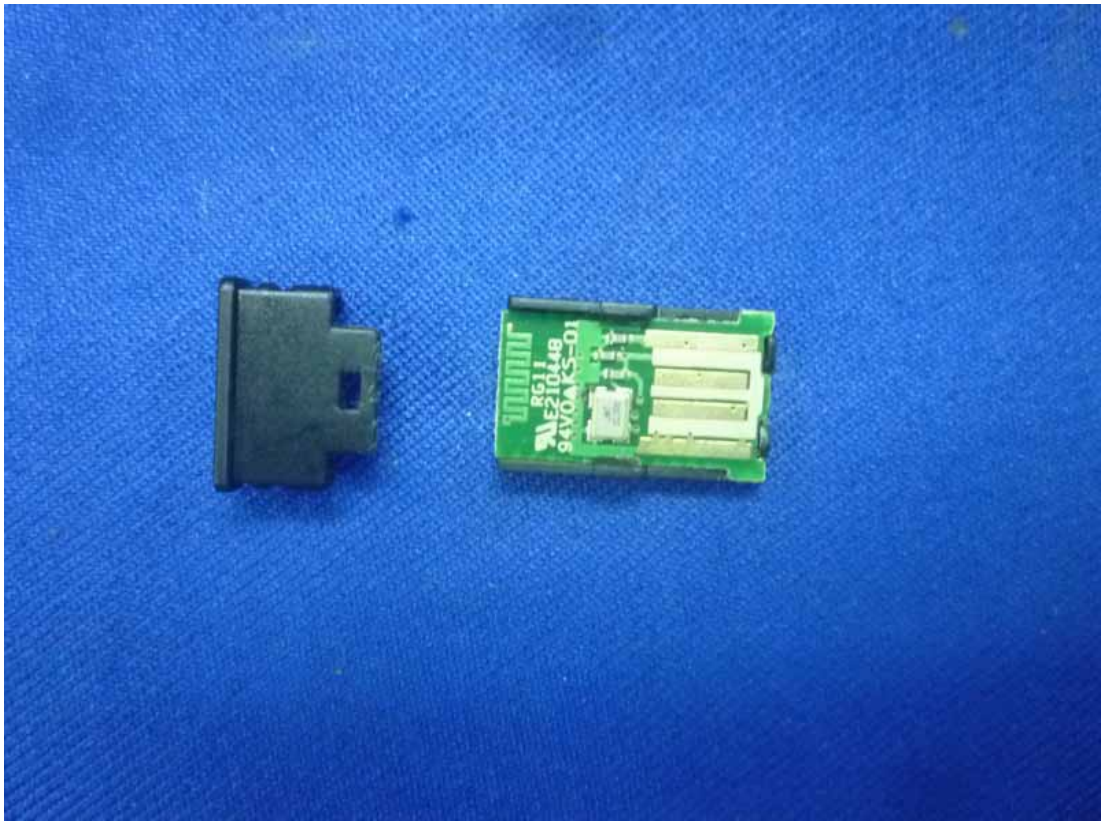


Figure 5
Component Side of the PCB

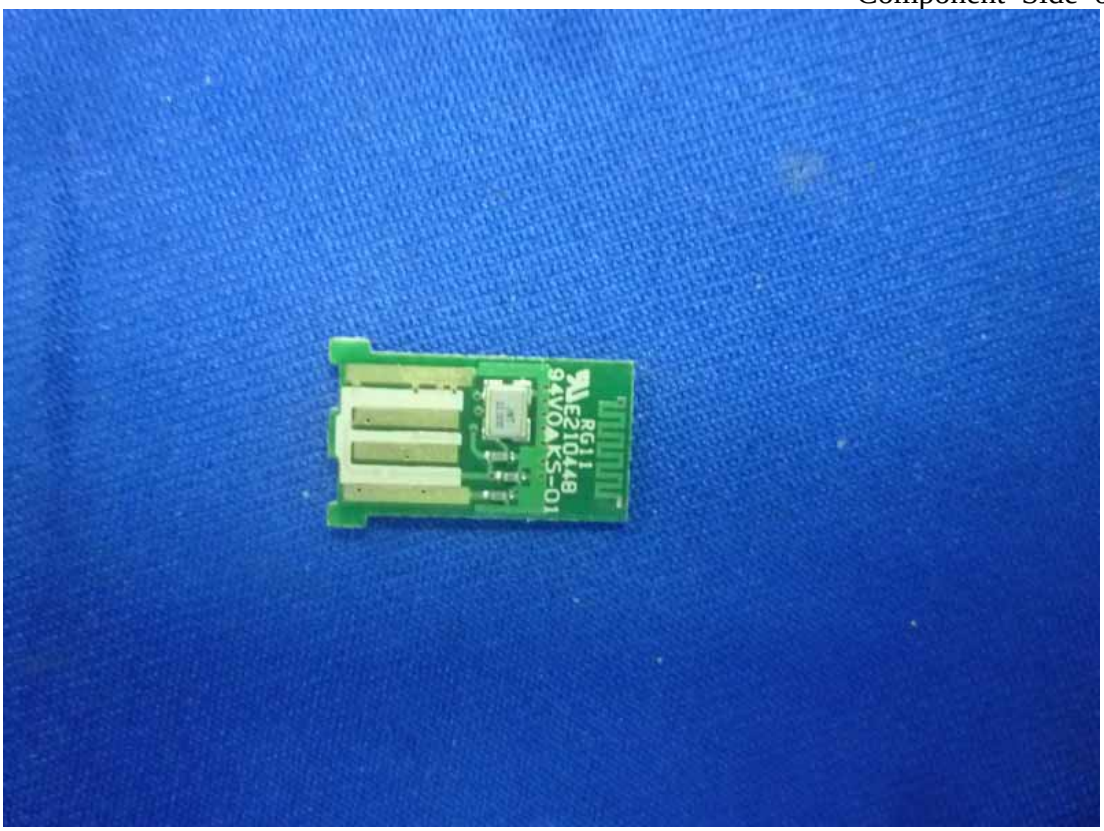


Figure 6
Component Side of the PCB