



Test Report

FCC Part15.249

Product Name : DLP® Interactive Projector
Communication Dongle
Model No. : DLP1S001/DLP2C001
FCC ID : N8N-DLPDONGLE

Applicant : LSD Science & Technology Co., Ltd.
Address : 11F, Lierda Building, No.425 Dengyun Road,
Hangzhou, China(310011)

Date of Receipt : 25/04/2012
Test Date : 26/04/2012 ~ 08/05/2012
Issued Date : 15/05/2012
Report No. : 124S056R-RF-US-P06V01
Report Version : V2.0

Test Report Certification

Issued Date : 15/05/2012

Report No. : 124S056R-RF-US-P06V01



Product Name : DLP® Interactive Projector Communication Dongle
 Applicant : LSD Science & Technology Co., Ltd.
 Address : 11F, Lierda Building, No.425 Dengyun Road, Hangzhou, China(310011)
 Manufacturer : Zhejiang Xianxin Science & Technology Co., Ltd.
 Address : ZHEN ZHU BAN DAO, QIANDAOHU TOWN, CHUN'AN COUNTY, ZHEJIANG, CHINA
 Model No. : DLP1S001/DLP2C001
 FCC ID : N8N-DLPDONGLE
 EUT Voltage : DC: 5V
 Trade Name : LSD
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2008
 ANSI C63.4: 2009
 Test Result : Complied
 Performed Location : Suzhou EMC Laboratory
 No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
 FCC Registration Number: 800392

Documented By : Alice Ni
 (Engineering ADM: Alice Ni)

Reviewed By : Jame Yuan
 (Senior Engineer: Jame Yuan)

Approved By : Marlinchen

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the Government.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

(Engineering Manager: Marlin Chen)

Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
Germany	:	TUV Rheinland
Norway	:	Nemko, DNV
USA	:	FCC, NVLAP
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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TABLE OF CONTENTS

Description	Page
1. General Information.....	6
1.1. EUT Description	6
1.2. Mode of Operation	8
1.3. Tested System Details.....	9
1.4. Configuration of Tested System	10
1.5. EUT Exercise Software	10
2. Technical Test.....	12
2.1. Summary of Test Result	12
2.2. Test Environment	13
3. Conducted Emission	14
3.1. Test Equipment	14
3.2. Test Setup	14
3.3. Limit.....	15
3.4. Test Procedure	15
3.5. Uncertainty	15
3.6. Test Result	15
4. Radiated Emission	16
4.1. Test Equipment	16
4.2. Test Setup	17
4.3. Limit.....	18
4.4. Test Procedure	19
4.5. Uncertainty	19
4.6. Test Result	20
5. Band-edge Compliance of RF Conducted Emissions	25
5.1. Test Equipment	33
5.2. Test Setup	33
5.3. Limit.....	33
5.4. Test Procedure	34
5.5. Uncertainty	34
5.6. Test Result	35

1. General Information

1.1. EUT Description

Product Name	DLP® Interactive Projector Communication Dongle
Model No.	DLP1S001/DLP2C001
Working Voltage	DC: 5V
Frequency Range	2401.249725 – 2481.229965 MHz
Channel Number	29
Type of Modulation	MSK
Date Rate	500bps
Channel Control	Auto
Antenna Type	PCB Antenna
Antenna Gain	3.97dBi

Note: The difference of models are the position of PIN as below, others are the same. The EUT with Horizontal version was chose to test.

Enclosure design drawing:

-Horizontal version:



-Vertical version:



Channel List

Working Frequency of Each Channel:					
Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2401.249725	10	2432.24207	20	2468.233176
1	2402.249478	11	2433.24182	21	2472.232188
2	2403.249231	12	2442.2396	22	2473.231941
3	2407.248243	13	2443.23935	23	2476.2312
4	2408.247996	14	2447.23836	24	2477.230953
5	2417.245773	15	2448.23812	25	2478.230706
6	2422.244538	16	2458.23565	26	2479.230459
7	2423.244291	17	2462.23466	27	2480.230212
8	2427.243303	18	2463.23441	28	2481.229965
9	2428.243056	19	2467.23342	N/A	N/A

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit

Note:

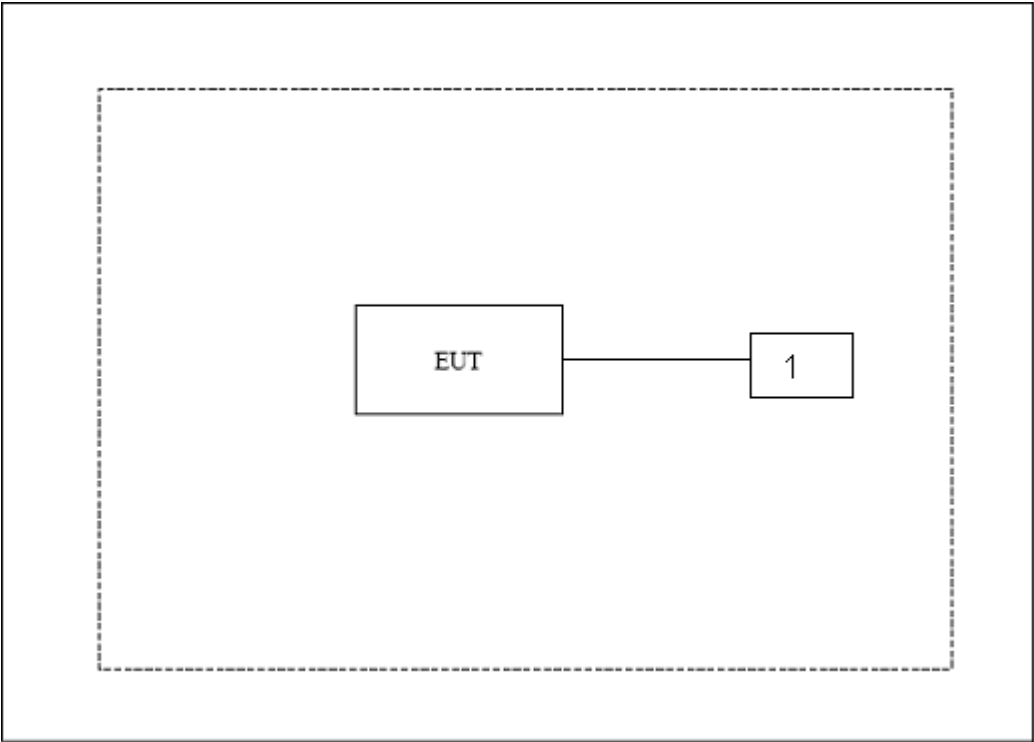
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	DELL	E520	N/A	Non-Shielded, 1.8m

1.4. Configuration of Tested System

Connection Diagram		
		
Signal Cable Type		Signal cable Description
N/A	N/A	N/A

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Open the software "Setup_SmartRF_Studio_7-1.8.0.exe" provided by applicant, Select the channel and test.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.207	N/A	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.209 and 15.249	Yes	No
Band-edge Compliance of RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.215(c)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

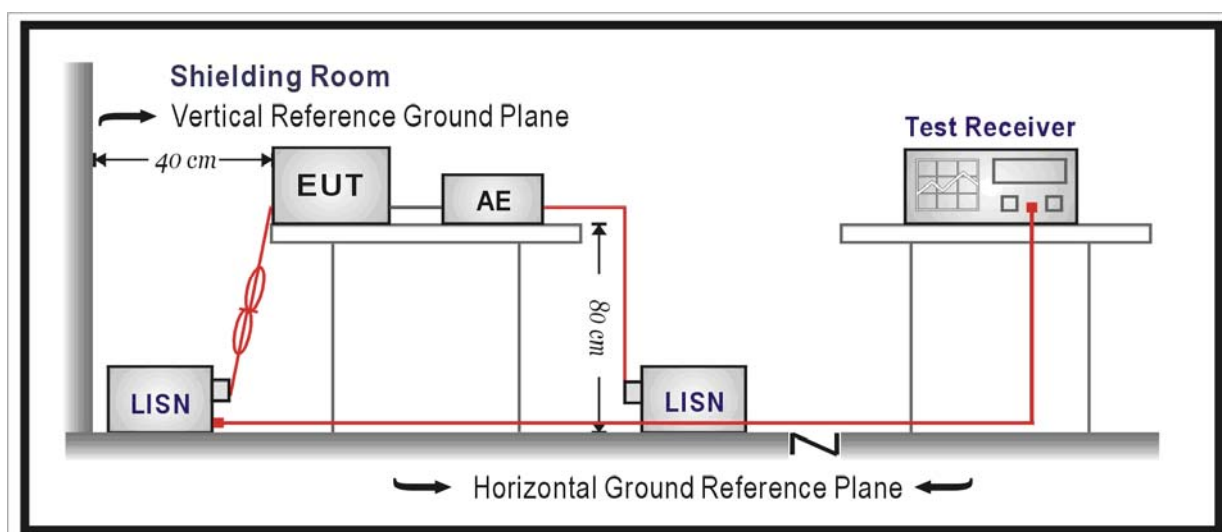
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2013.04.18
Two-Line V-Network	R&S	ENV216	101043	2013.04.18
Two-Line V-Network	R&S	ENV216	101044	2012.09.07
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.03.02
50ohm Termination	SHX	TF2	07081401	2012.09.22
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.10

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

Not applicable.

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

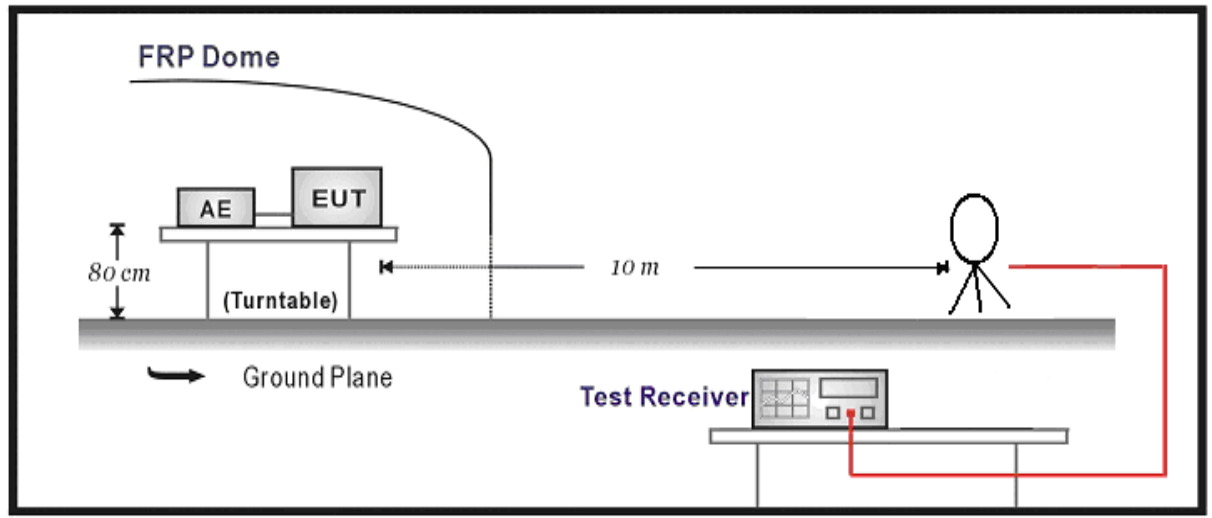
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2012.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2013.03.02
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2013.01.10

Radiated Emission / AC-5

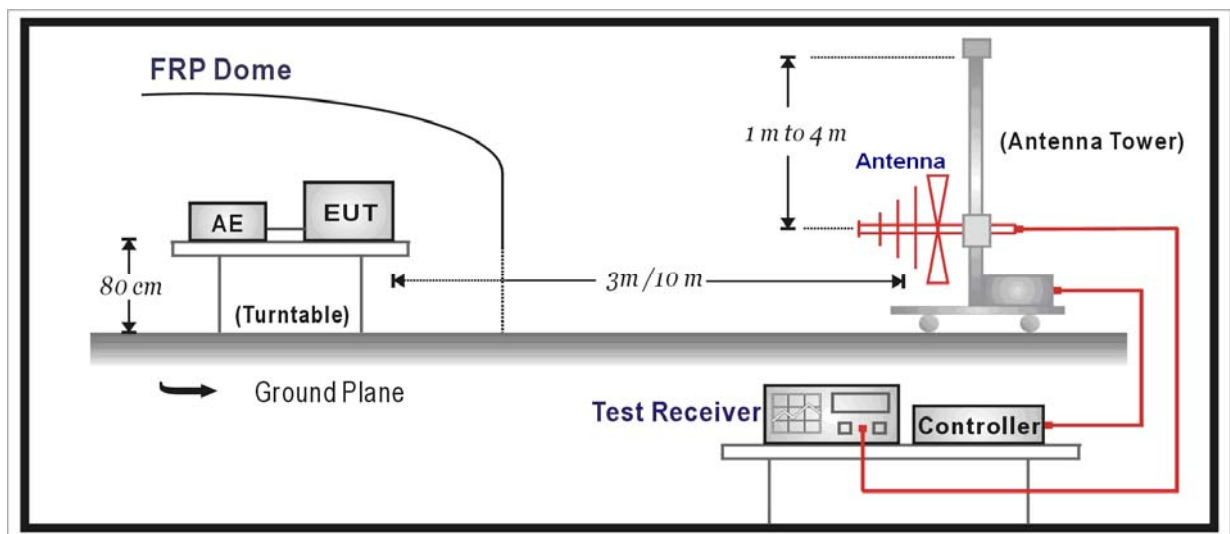
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
Preamplifier	Quietek	AP-025C	CHM-0602008	2013.04.11
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	Quietek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2012.06.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2013.03.02
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2013.03.02
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2013.03.02
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2013.01.10

4.2. Test Setup

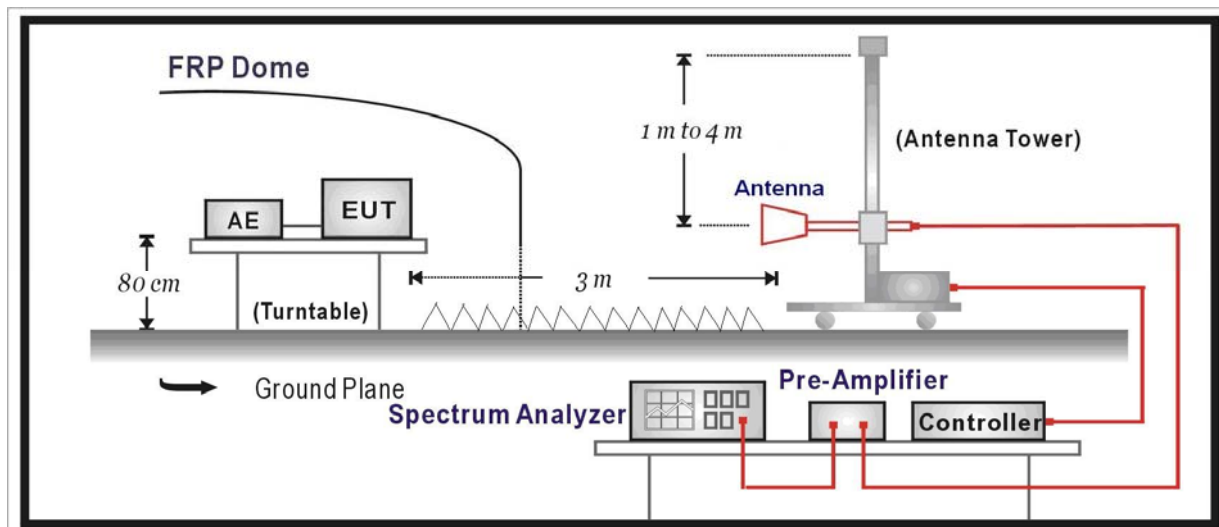
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (uV/m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-80	100**	3
80-216	150**	3
216-960	200**	3
Above 960	500	3

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m).

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902-928(MHz)	50	500
2400-2483.5(MHz)	50	500
5725-5875(MHz)	50	500
24.0-24.25(GHz)	250	2500

- FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

4.4. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 / ANSI C63.10: 2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
below 1G is defined as ± 3.8 dB

4.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

Average detector = Peak detector - 20*Log(1/Duty Cycle)

Fundamental Radiated Emission

Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	Fundamental Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2401.249725	H	113.3	-17.2	96.1	114	-17.9	PK
	V	100.9	-17.2	83.7	114	-30.3	PK
2447.23836	H	113.0	-17.2	95.7	114	-18.3	PK
	V	105.6	-17.2	88.4	114	-25.6	PK
2481.229965	H	111.9	-17.2	94.7	114	-19.3	PK
	V	103.0	-17.2	85.8	114	-28.2	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Peak Measure (dBuV/m)	Duty Cycle Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2401.249725	H	96.1	-20	76.1	94	-17.9	AV
	V	83.7	-20	63.7	94	-30.3	AV
2447.23836	H	95.7	-20	75.8	94	-18.2	AV
	V	88.4	-20	68.4	94	-25.6	AV
2481.229965	H	94.7	-20	74.7	94	-19.3	AV
	V	85.8	-20	65.8	94	-28.2	AV

Note:1. Measure Level = Peak Measure + Duty Cycle Correct Factor.

2. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Harmonic Radiated Emission

Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at Low Channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4802.5	H	55.3	-11.9	43.4	74	-30.6	PK
4802.5	V	52.7	-11.9	40.8	74	-33.2	PK
7253.7	H	48.4	-3.5	44.9	74	-29.1	PK
7253.7	V	47.9	-3.5	44.4	74	-29.6	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4802.4	H	36.2	-11.9	24.3	54	-29.7	AV
4802.5	V	33.6	-11.9	21.7	54	-32.3	AV
7253.7	H	37.6	-3.5	34.2	54	-19.8	AV
7253.8	V	37.7	-3.5	34.2	54	-19.8	AV

Note: Measure Level = Reading Level + Factor.

Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at Mid Channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4893.0	H	54.1	-11.6	42.5	74	-31.5	PK
4893.0	V	53.4	-11.6	41.9	74	-32.1	PK
7341.7	H	47.5	-3.0	44.6	74	-29.4	PK
7341.0	V	47.6	-3.0	44.6	74	-29.4	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4894.6	H	35.7	-11.6	24.1	54	-29.9	AV
4893.2	V	34.5	-11.6	22.9	54	-31.1	AV
7341.6	H	37.4	-3.0	34.4	54	-19.6	AV
7341.2	V	37.6	-3.0	34.6	54	-19.4	AV

Note: Measure Level = Reading Level + Factor.

Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	Harmonic Radiated Emission
Test Site	:	AC-5
Test Mode	:	Mode 1: Transmit at High Channel

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4961.0	H	54.3	-11.4	42.9	74	-31.1	PK
4961.0	V	54.6	-11.4	43.2	74	-30.8	PK
7446.7	H	48.4	-2.5	45.9	74	-28.1	PK
7446.7	V	47.4	-2.5	44.9	74	-29.2	PK

Note: Measure Level = Reading Level + Factor.

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
4964.5	H	35.4	-11.4	24.0	54	-30.0	AV
4964.4	V	49.3	-11.4	37.9	54	-16.1	AV
7446.7	H	38.5	-2.5	35.9	54	-18.1	AV
7446.3	V	37.6	-2.5	35.1	54	-18.9	AV

Note: Measure Level = Reading Level + Factor.

General Radiated Emission

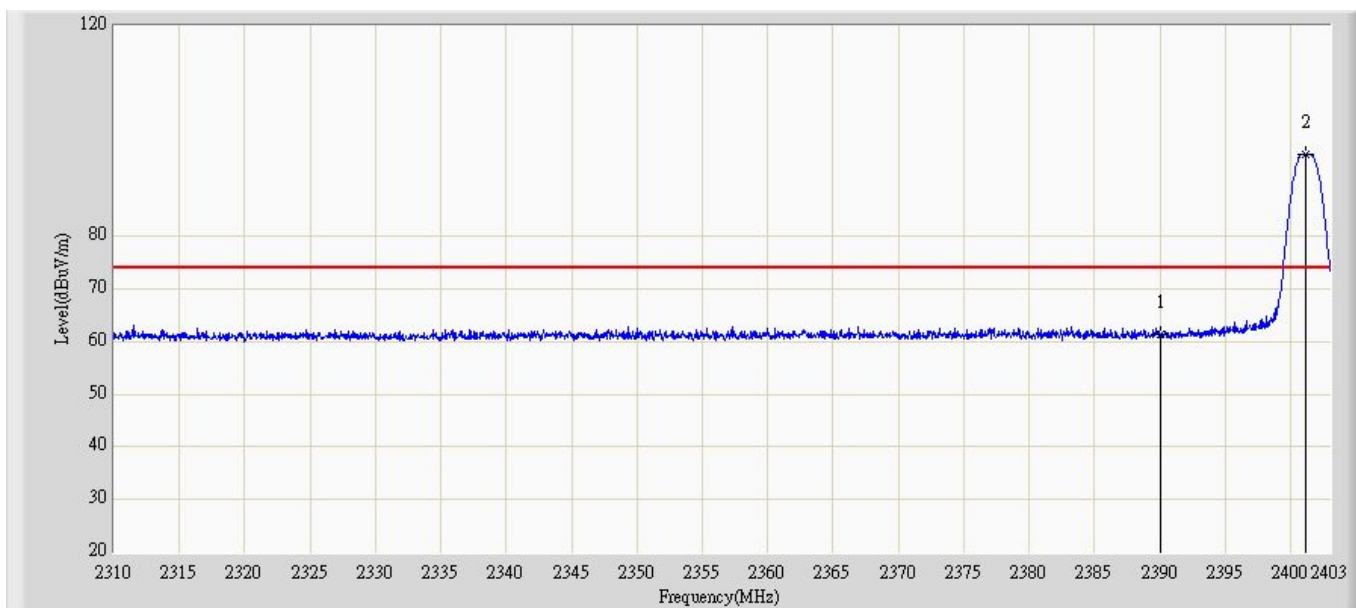
Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	General Radiated Emission
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Antenna	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
244.6	H	15.6	19.4	35.0	46	-11.0	QP
266.2	V	10.9	20.5	31.3	46	-14.7	QP
532.6	H	12.5	26.6	39.1	46	-6.9	QP
532.2	V	9.2	26.6	35.7	46	-10.3	QP
4893.0	H	54.1	-11.6	42.5	74	-31.5	PK
4893.0	V	53.4	-11.6	41.9	74	-32.1	PK
7446.7	H	48.4	-2.5	45.9	74	-28.1	PK
7446.7	V	47.4	-2.5	44.9	74	-29.2	PK

Note:

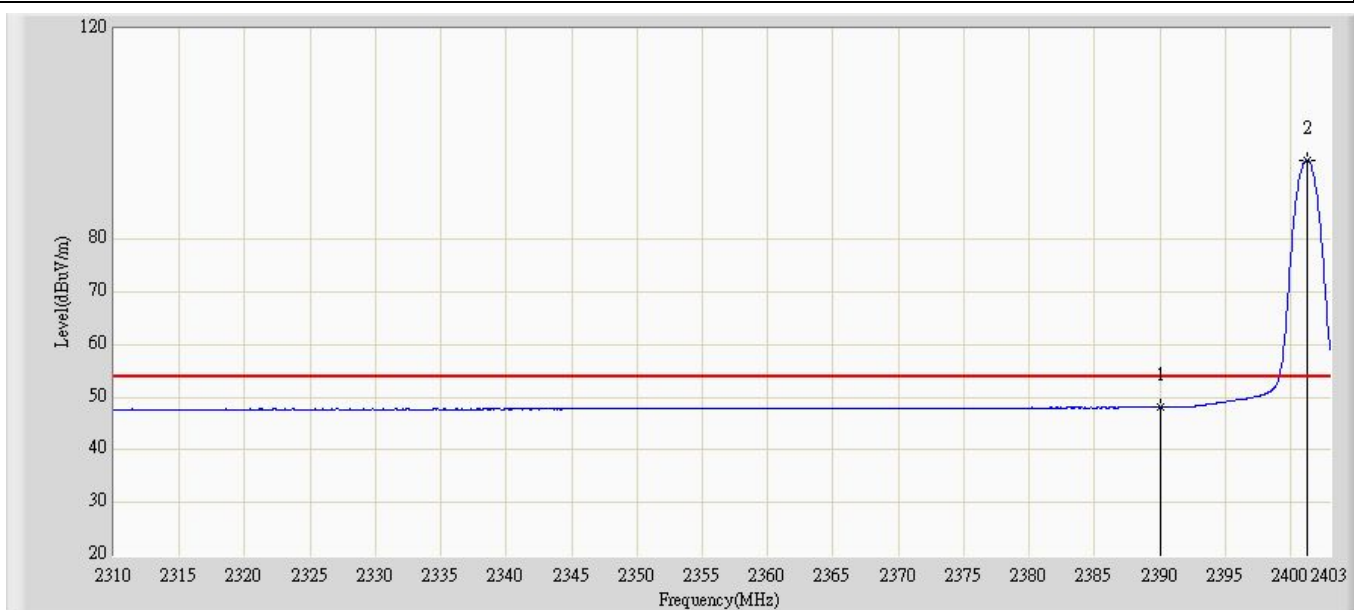
1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2401.249725MHz	



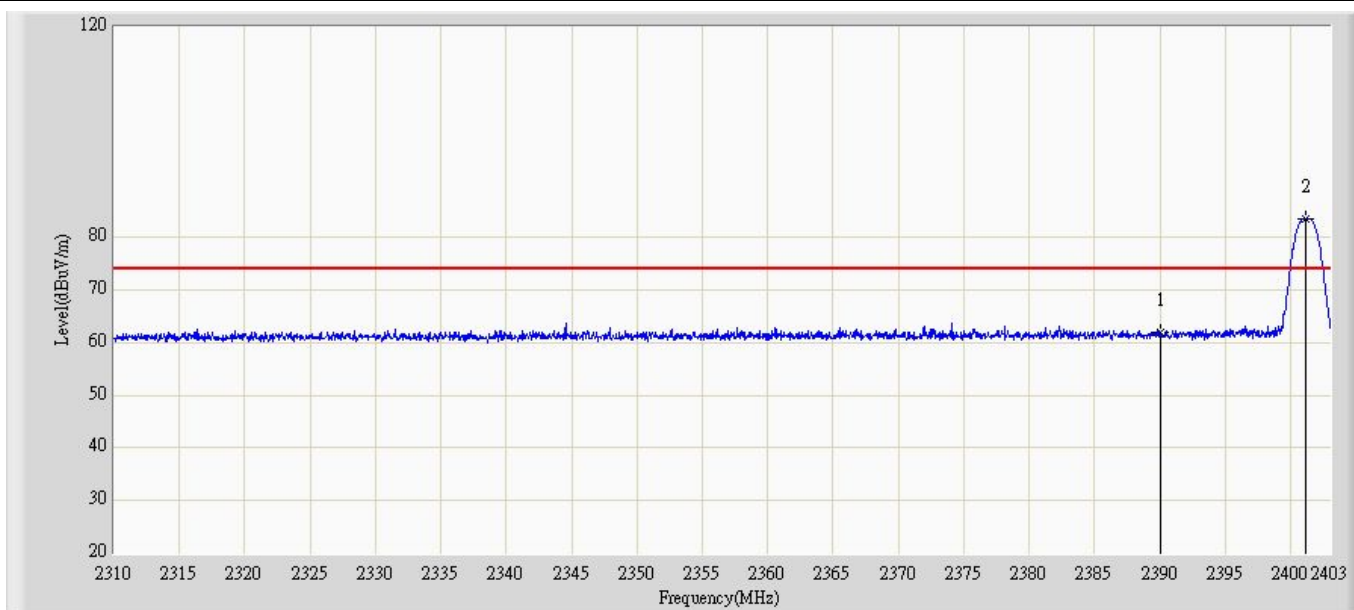
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.368	30.183	-12.632	74.000	31.185	PK
2		*	2401.094	95.657	64.477	N/A	N/A	31.180	PK

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2401.249725MHz	



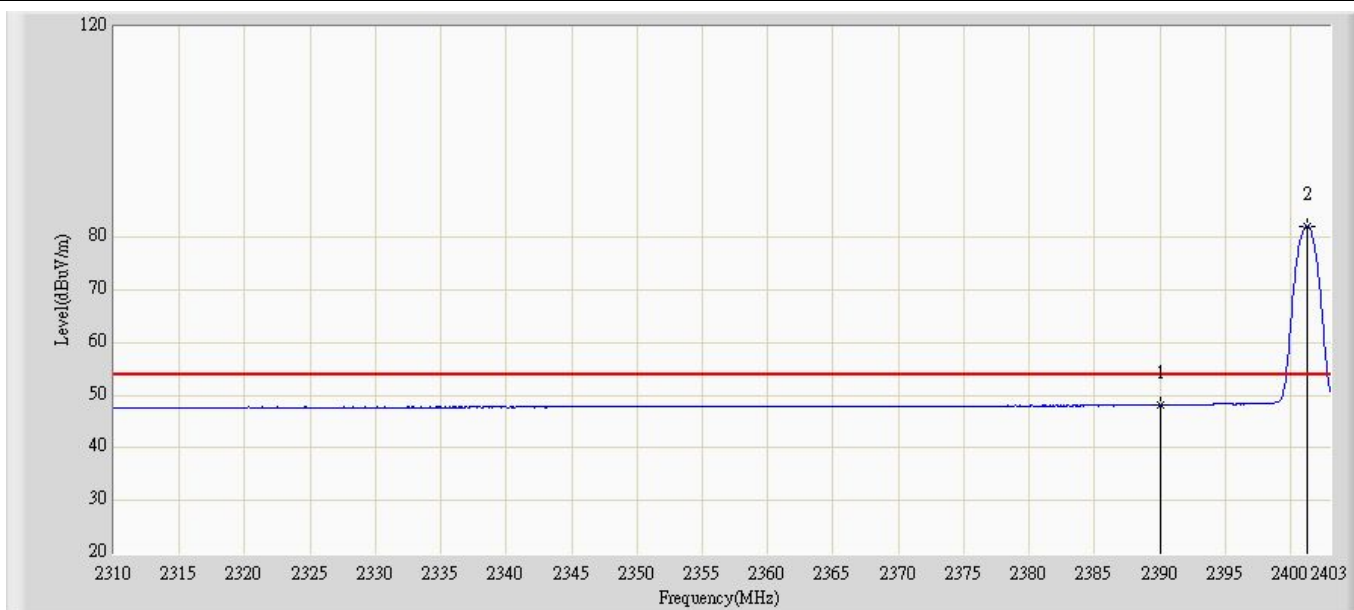
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	48.035	16.850	-5.965	54.000	31.185	AV
2		*	2401.233	95.123	63.943	N/A	N/A	31.180	AV

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2401.249725MHz	



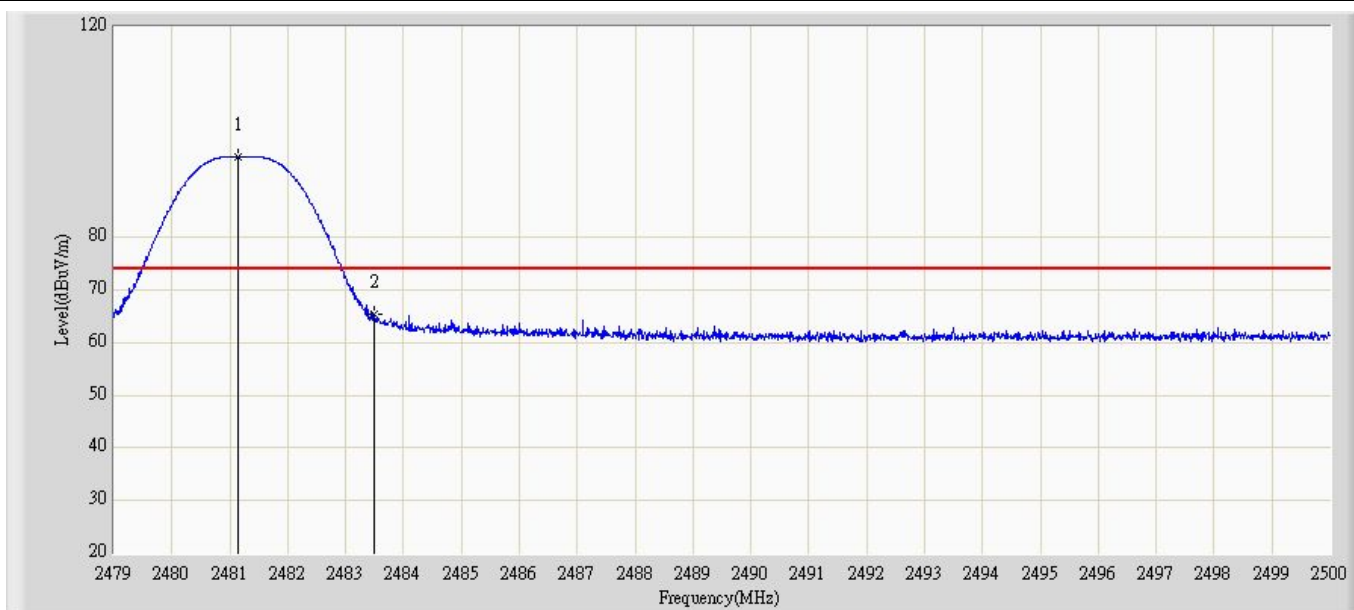
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.970	30.785	-12.030	74.000	31.185	PK
2		*	2401.094	83.535	52.355	N/A	N/A	31.180	PK

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2401.249725MHz	



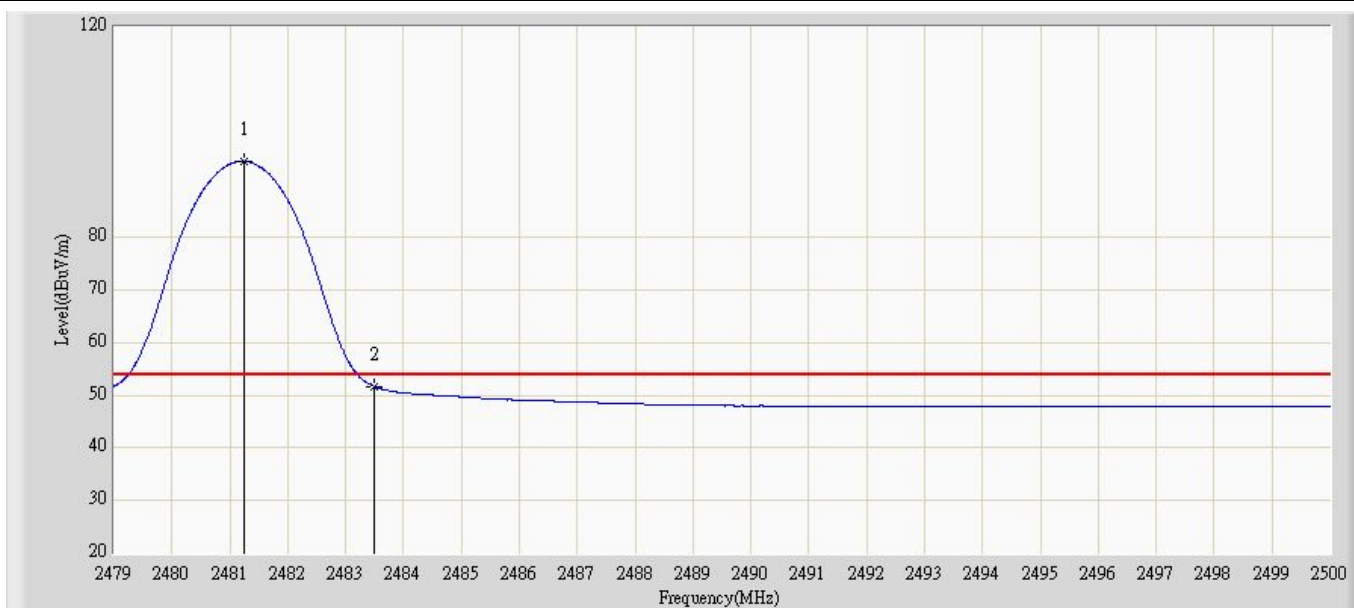
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	48.070	16.885	-5.930	54.000	31.185	AV
2		*	2401.233	82.152	50.972	N/A	N/A	31.180	AV

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2481.229965MHz	



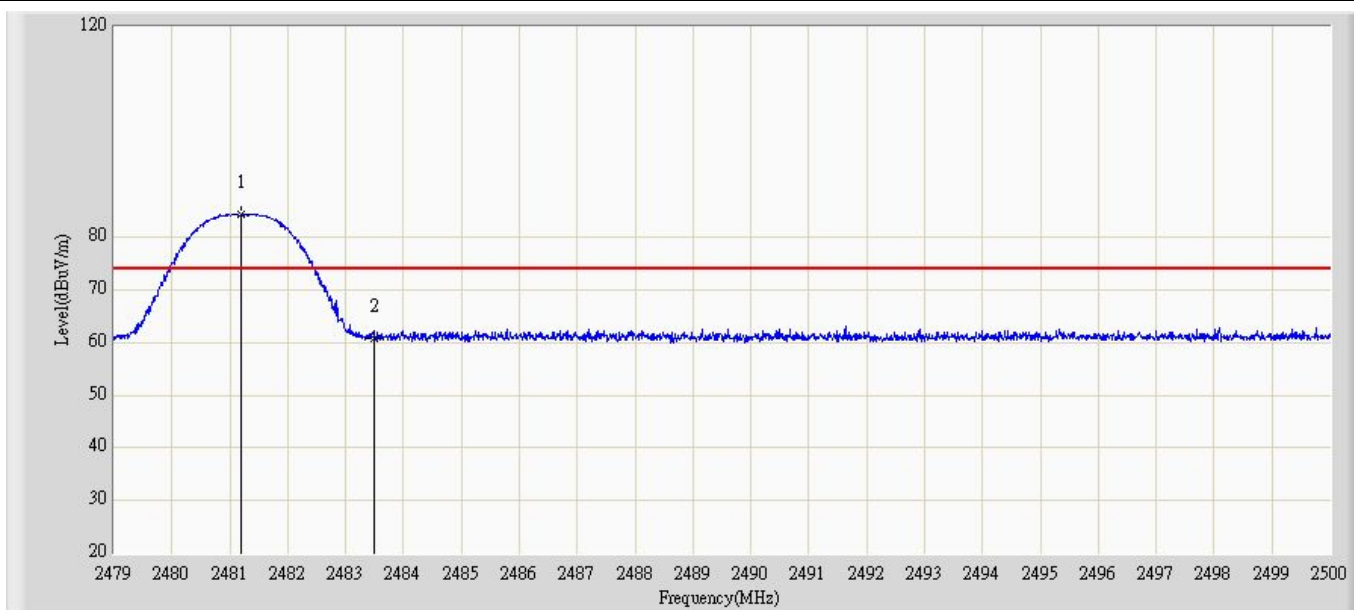
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2481.142	95.239	64.033	N/A	N/A	31.206	PK
2			2483.500	65.277	34.069	-8.723	74.000	31.208	PK

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2481.229965MHz	



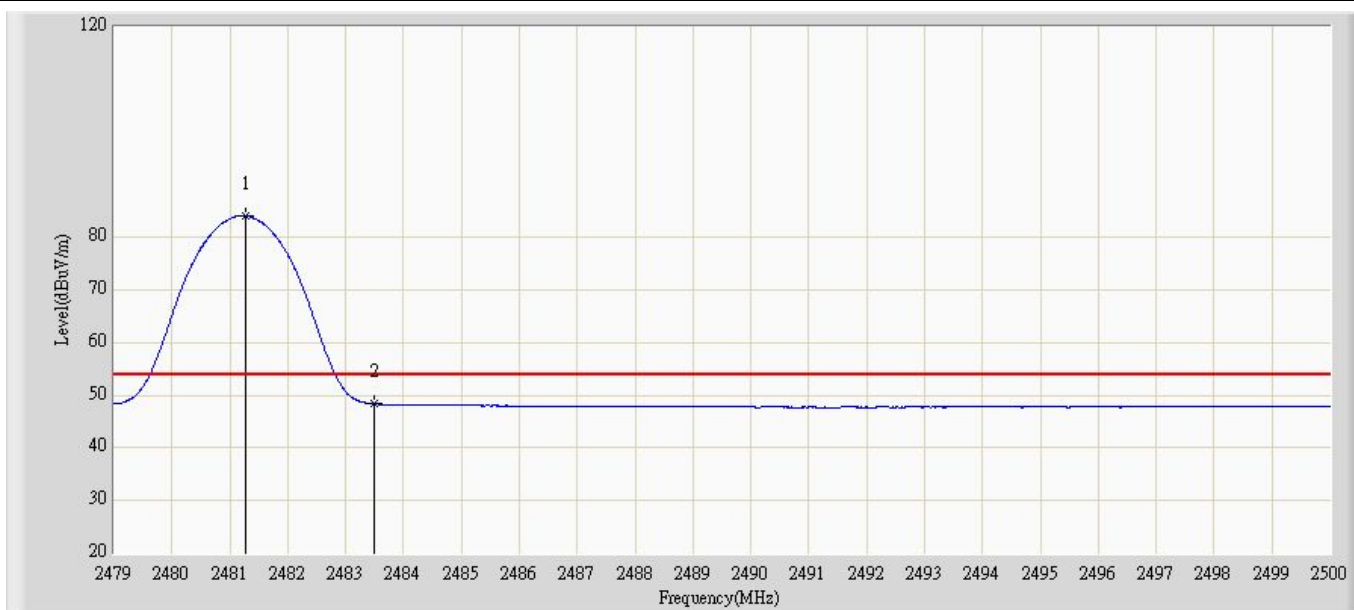
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2481.247	94.471	63.265	N/A	N/A	31.206	AV
2			2483.500	51.639	20.431	-2.361	54.000	31.208	AV

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2481.229965MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2481.205	84.255	53.049	N/A	N/A	31.206	PK
2			2483.500	60.943	29.735	-13.057	74.000	31.208	PK

Engineer: Aileen	
Site: AC5	Time: 2012/05/08 - 10:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: DLP® Interactive Projector Communication Dongle	Power: DC 5V
Note: Mode 1: Transmit at channel 2481.229965MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2481.279	84.068	52.862	N/A	N/A	31.206	AV
2			2483.500	48.393	17.185	-5.607	54.000	31.208	AV

5. Band-edge Compliance of RF Conducted Emissions

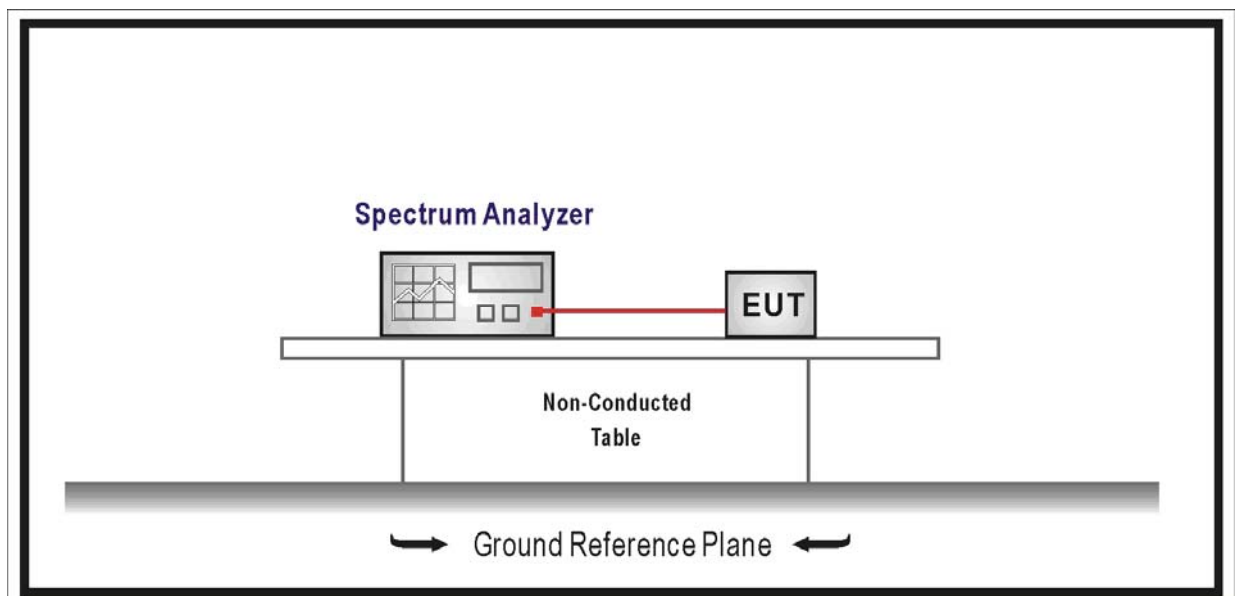
5.1. Test Equipment

Band-edge Compliance of RF Conducted Emissions / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.04.18
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.07

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

- FCC Part 15.215 (c), 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 FCC part 15, must be designed to ensure that 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.

5.4. Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation.

RBW $\geq$ 1% of the span

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge.

Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

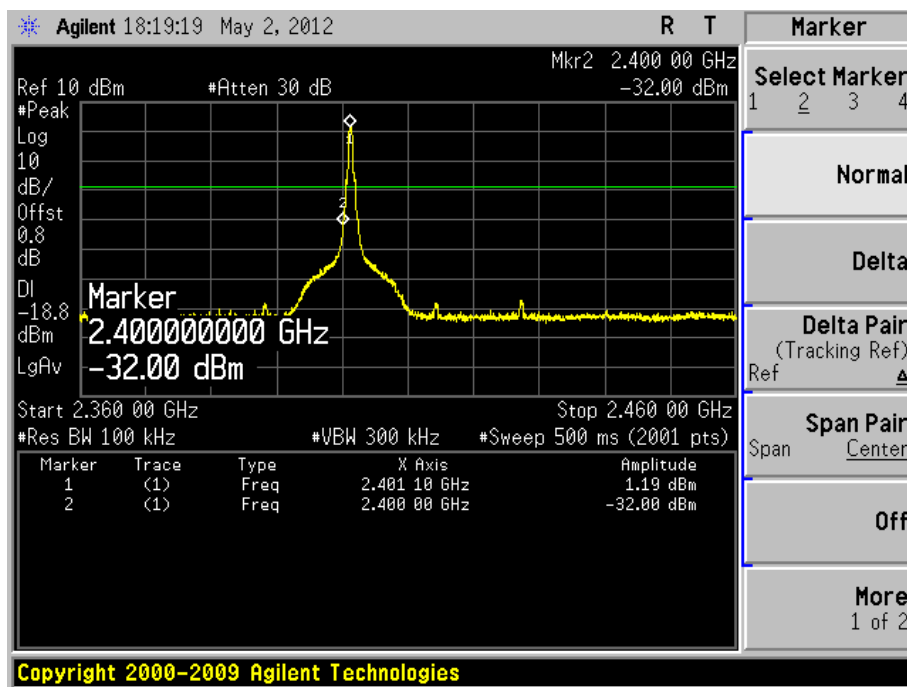
5.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

5.6. Test Result

Product	:	DLP® Interactive Projector Communication Dongle
Test Item	:	Band-edge Compliance of RF Conducted Emissions for FCC Part15.215
Test Mode	:	Mode 1: Transmit

Channel 00 (2401.249725MHz)



Channel 28 (2481.229965MHz)

