FCC TEST REPORT

for

Spinal Guides Labs, Inc.

SGL Radiology SmartRay System

Model No.: SmartRay System Version 4

Prepared for	:	Spinal Guides Labs, Inc.
Address	:	109-33 71st Rd., #11B, Forest Hills, NY 11375, USA

Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, Chin Tel: (86) 755-26066544 Fax: (86) 755-26014772

Report Number	:	201308837F
Date of Test	:	Aug. 20~ Sep. 05, 2013
Date of Report	:	Sep. 09, 2013

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Test Report

TEST REPORT

Applicant	:	Spinal Guides Labs, Inc.
Manufacturer	:	Spinal Guides Labs, Inc.
EUT	:	SGL Radiology SmartRay System
Model No.	:	SmartRay System Version 4
Serial No.	:	N/A
Trade Mark	:	SGL Radiology
Rating	:	DC 5V, 7A Via Adapter (AC 100-240V, 50-60Hz, 0.15A)

Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.207, 15.247 & 15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.
This report applies to above tested sample only and shall not be reproduced in part without
written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Aug. 20~ Sep. 05, 2013

Prepared by : Rock zeng
(Tested Engineer / Rock Zeng)

Reviewer : Sally. zhang
(Project Manager / Sally Zhang)

Approved & Authorized Signer : Tom Chen
(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	SGL Radiology SmartRay System
Model Number	:	SmartRay System Version 4
Test Power Supply	:	DC 5V (Powered by Adapter)
Adapter	:	Model: ATADS20C Input: AC 100-240V, 50-60Hz, 0.15A Output: DC 5V, 0.7A
Frequency	:	2402~2480MHz
Antenna Specification	:	Printed Antenna:0dBi
Modulation	:	GFSK, π/4DQPSK, 8DPSK
Applicant	:	Spinal Guides Labs, Inc.
Address	:	109-33 71st Rd., #11B, Forest Hills, NY 11375, USA
Manufacturer	:	Spinal Guides Labs, Inc.
Address	:	109-33 71st Rd., #11B, Forest Hills, NY 11375, USA
Date of receiver	:	Aug. 20, 2013
Date of Test	:	Aug. 20~ Sep. 05, 2013

1.2 Auxiliary Equipment Used during Test

N/A

1.3 Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS - LAB Code: L3503
Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, Jul. 10, 2013.

IC-Registration No.: 8058A-1
Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A-1, Feb. 22, 2013.

Test Location
All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, Chin

1.4 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.3dB
Conduction Uncertainty	:	Uc = 3.4dB

2. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.
When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3. Radiation Interference

3.1 Requirements (15.247, 15.209):

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHz		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBμV/m @3m	54 dBμV/m @3m	ABOVE 960 MHz	54dBuV/m

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.

3.2 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the 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 from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9*6*6 Chamber.
The test results are listed in Section 4.3.

Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

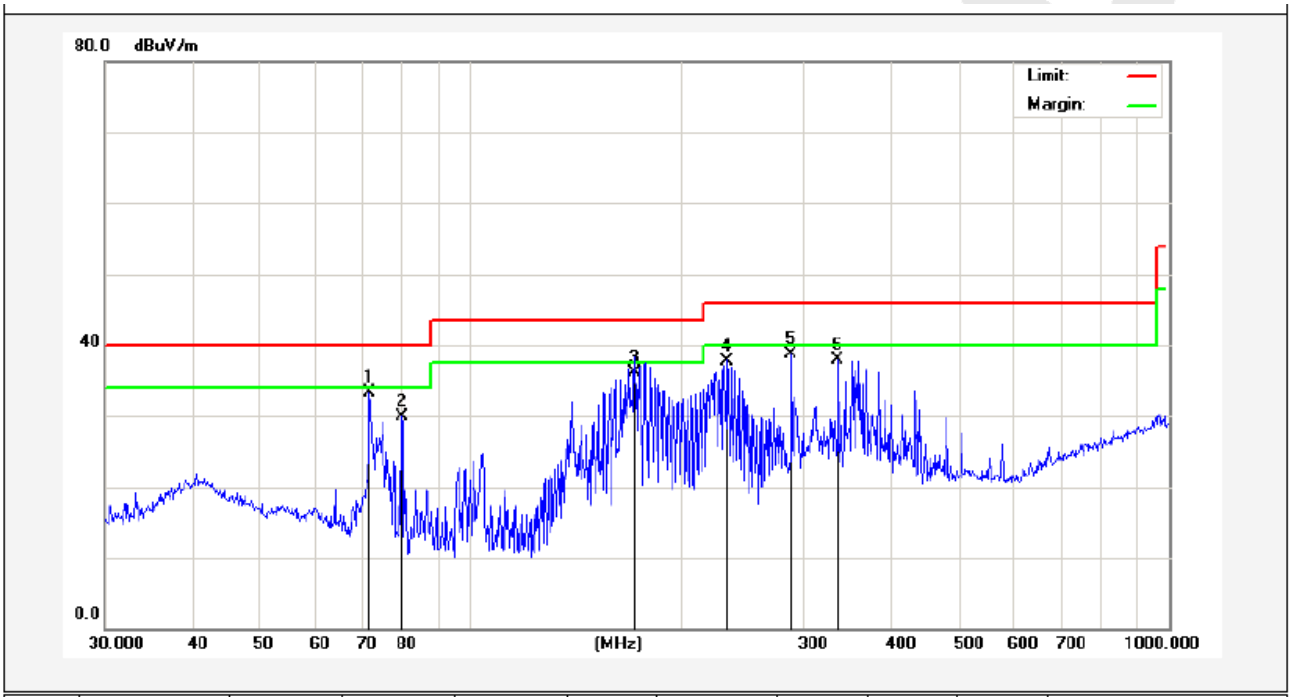
Radiation Uncertainty : Ur = 4.3dB

3.3 Test Results

PASS.

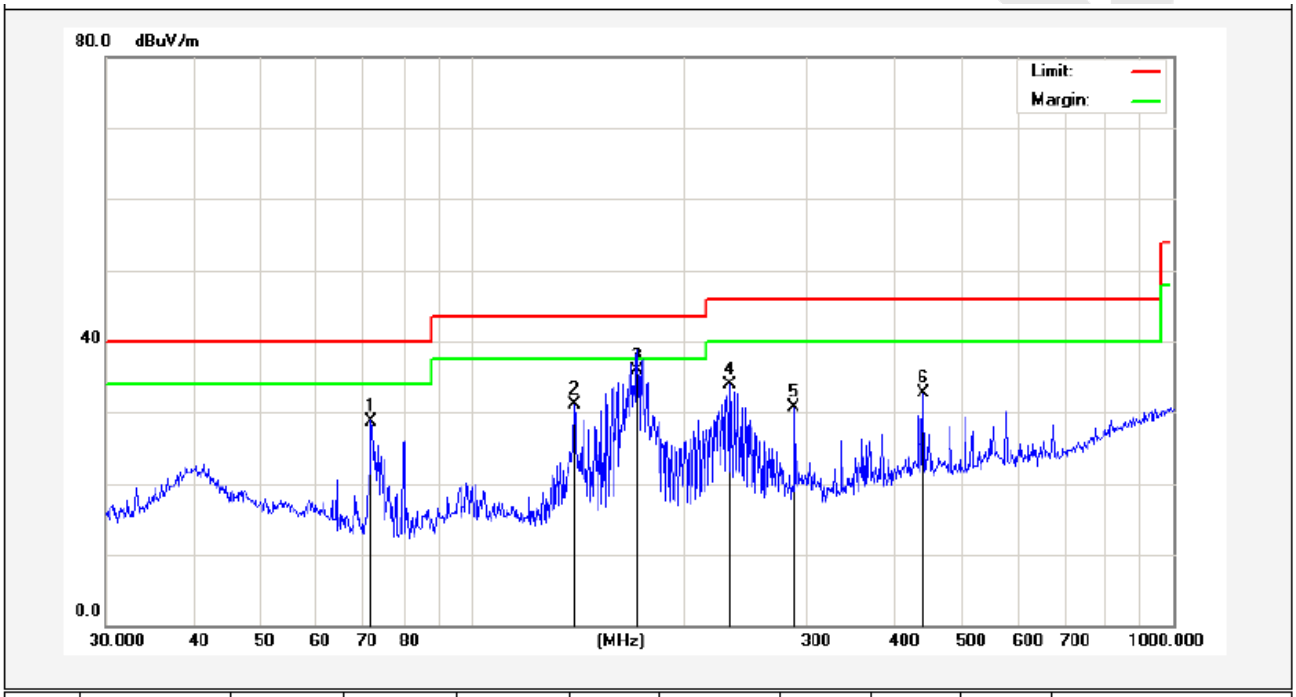
Please refer the following pages.

Job No.:	**AT1308837F**	**Polarziation:**	**Horizontal**
Standard:	**(RE)FCC PART15 C _3m**	**Power Source:**	**DC 5V**
Test item:	**Radiation Test**	**Date:**	**2013/08/21**
Temp.(C)/Hum.(%RH):	**24.3(C)/55%RH**	**Time:**	**23:11:05**
EUT:	**SGL Radiology SmartRay System**	**Test By:**	**Rock Zeng**
Model:	**SmartRay System Version 4**	**Distance:**	**3m**
Mode:	**Bluetooth Mode**		
Note:	**30-1000MHz**		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	71.8319	53.26	-19.98	33.28	40.00	-6.72	peak			
2	79.8002	51.84	-21.92	29.92	40.00	-10.08	peak			
3	171.9945	58.62	-22.42	36.20	43.50	-7.30	QP	100	0	
4	233.3487	56.56	-18.76	37.80	46.00	-8.20	peak			
5	287.9904	56.73	-18.01	38.72	46.00	-7.28	peak			
6	336.0351	52.43	-14.49	37.94	46.00	-8.06	peak			

Job No.:	**AT1308837F**	**Polarziation:**	**Vertical**
Standard:	**(RE)FCC PART15 C _3m**	**Power Source:**	**DC 5V**
Test item:	**Radiation Test**	**Date:**	**2013/08/21**
Temp.(C)/Hum.(%RH):	**24.3(C)/55%RH**	**Time:**	**23:08:04**
EUT:	**SGL Radiology SmartRay System**	**Test By:**	**Rock Zeng**
Model:	**SmartRay System Version 4**	**Distance:**	**3m**
Mode:	**Bluetooth Mode**		
Note:	**30-1000MHz**		

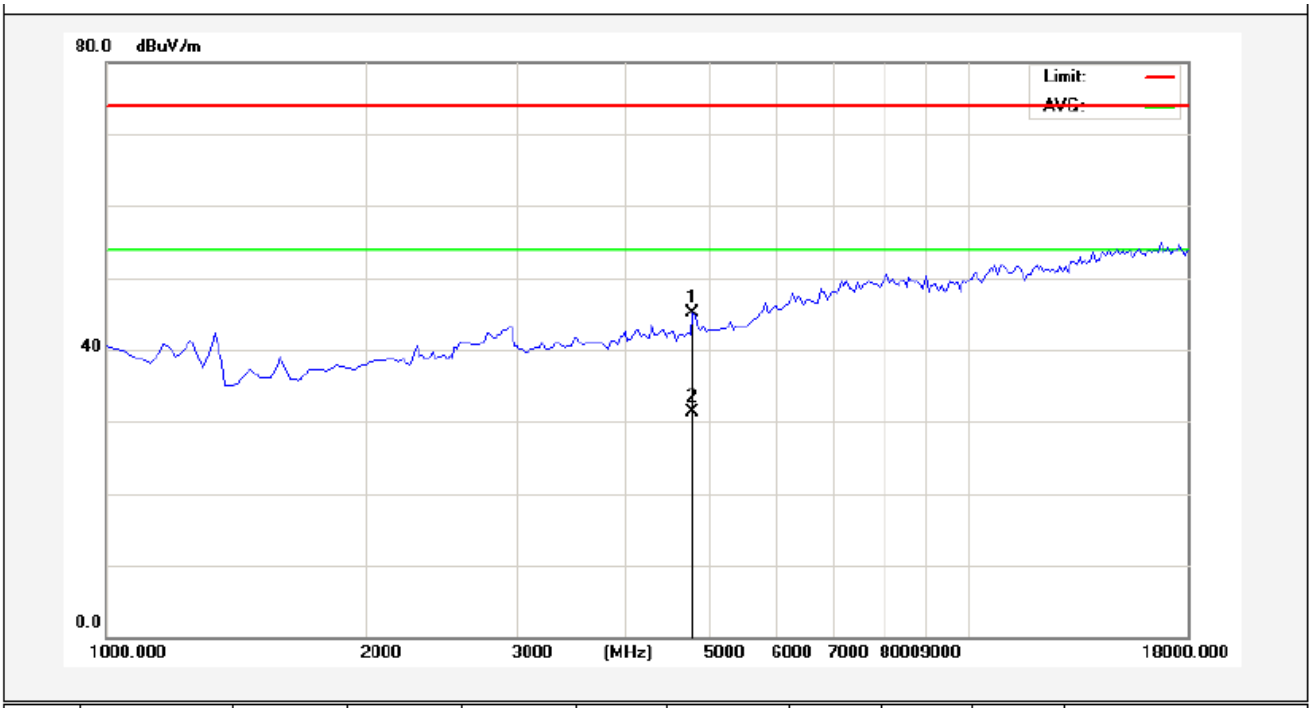


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	71.8319	48.78	-19.98	28.80	40.00	-11.20	peak			
2	139.8507	49.60	-18.47	31.13	43.50	-12.37	peak			
3	171.9945	53.35	-17.42	35.93	43.50	-7.57	QP	100	0	
4	233.3487	48.36	-14.43	33.93	46.00	-12.07	peak			
5	287.9904	45.78	-15.01	30.77	46.00	-15.23	peak			
6	440.1963	43.96	-11.22	32.74	46.00	-13.26	peak			

Above 1 GHz

Operation Mode: TX /CH Low
Temperature: 25℃
Humidity: 50 % RH

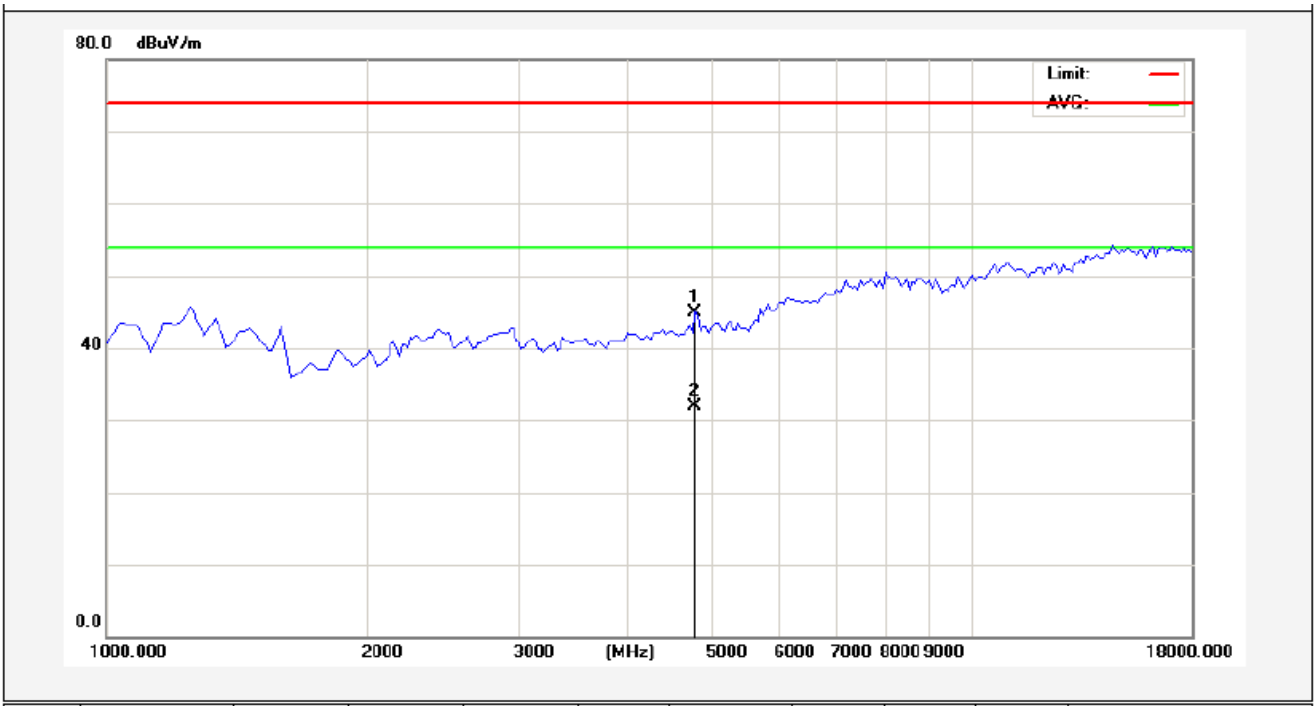
Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	41.68	3.34	45.02	74.00	-28.98	peak			
2	4825.000	27.89	3.34	31.23	54.00	-22.77	AVG			

Operation Mode: TX / CH Low
Temperature: 25℃
Humidity: 50 % RH

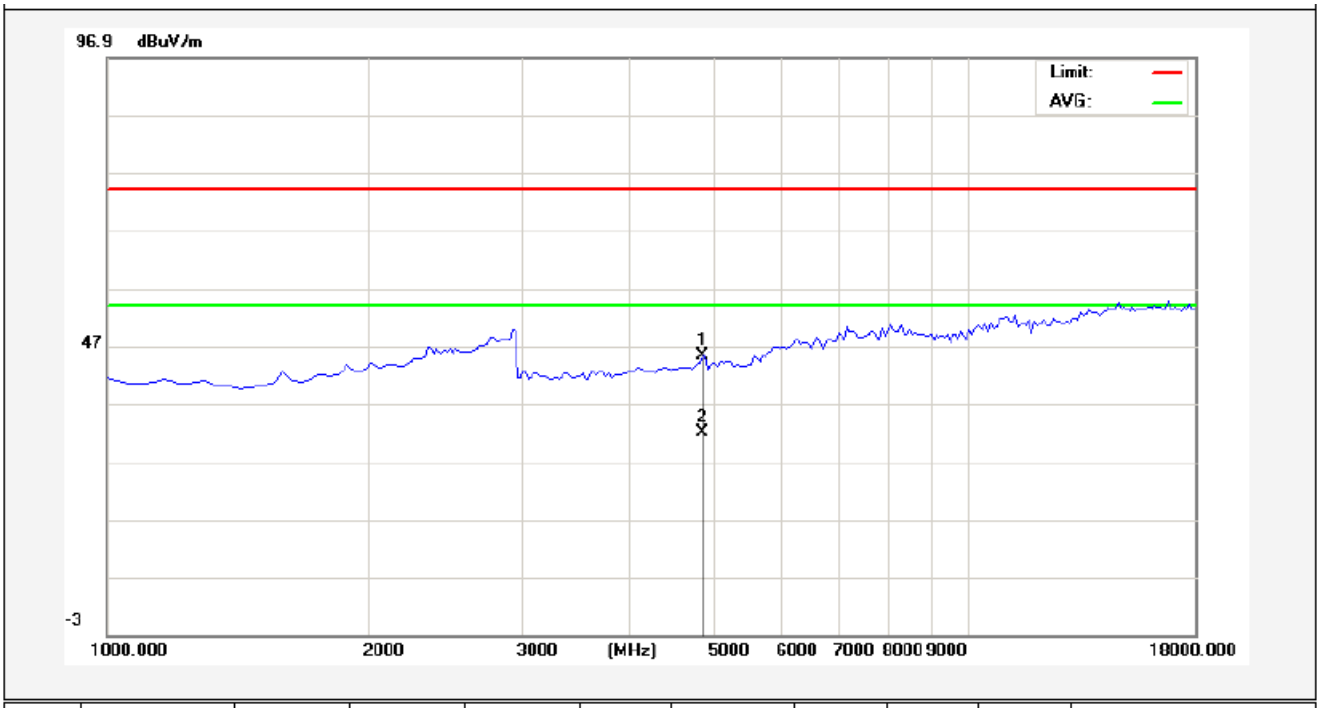
Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	41.66	3.34	45.00	74.00	-29.00	peak			
2	4825.000	28.49	3.34	31.83	54.00	-22.17	AVG			

Operation Mode: TX / CH Mid
Temperature: 25℃
Humidity: 50 % RH

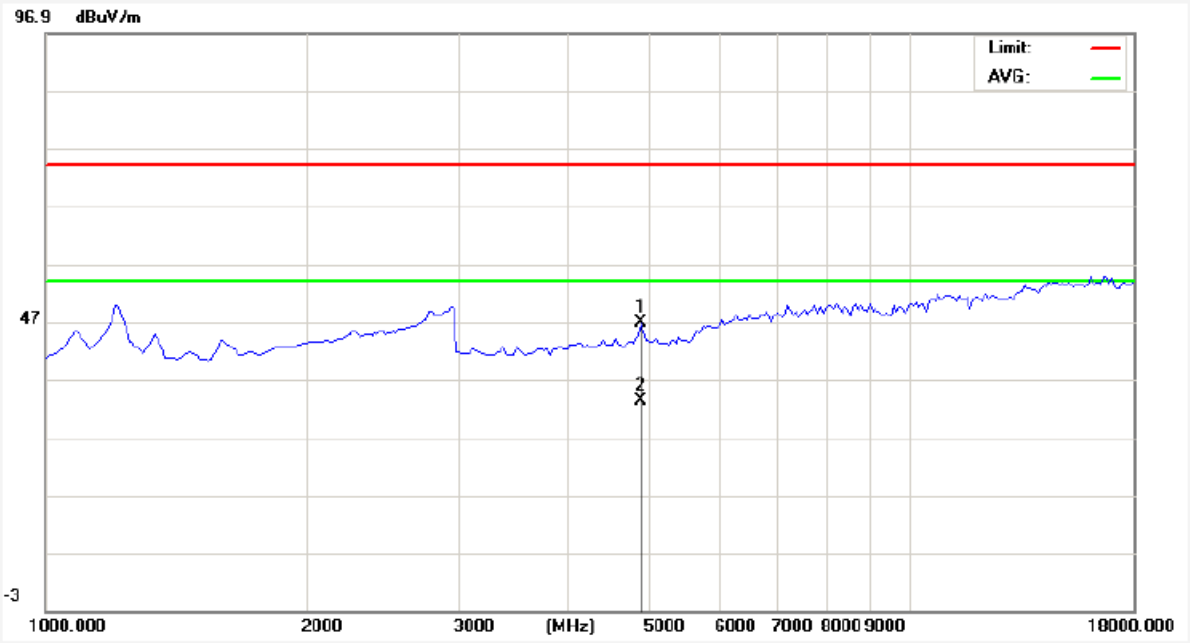
Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	41.92	3.41	45.33	74.00	-28.67	peak			
2	4867.500	28.68	3.41	32.09	54.00	-21.91	AVG			

Operation Mode: TX / CH Mid
Temperature: 25℃
Humidity: 50 % RH

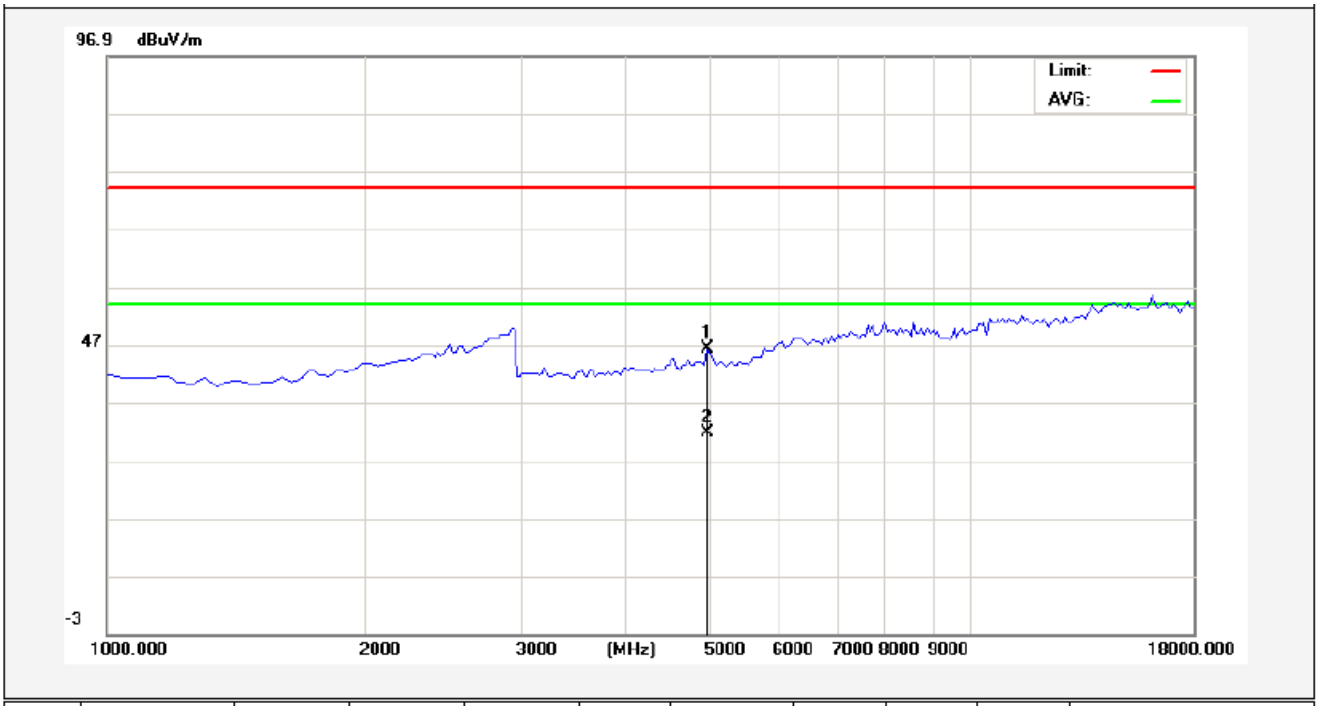
Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	43.32	3.41	46.73	74.00	-27.27	peak			
2	4867.500	29.75	3.41	33.16	54.00	-20.84	AVG			

Operation Mode: TX / CH High
Temperature: 25℃
Humidity: 50 % RH

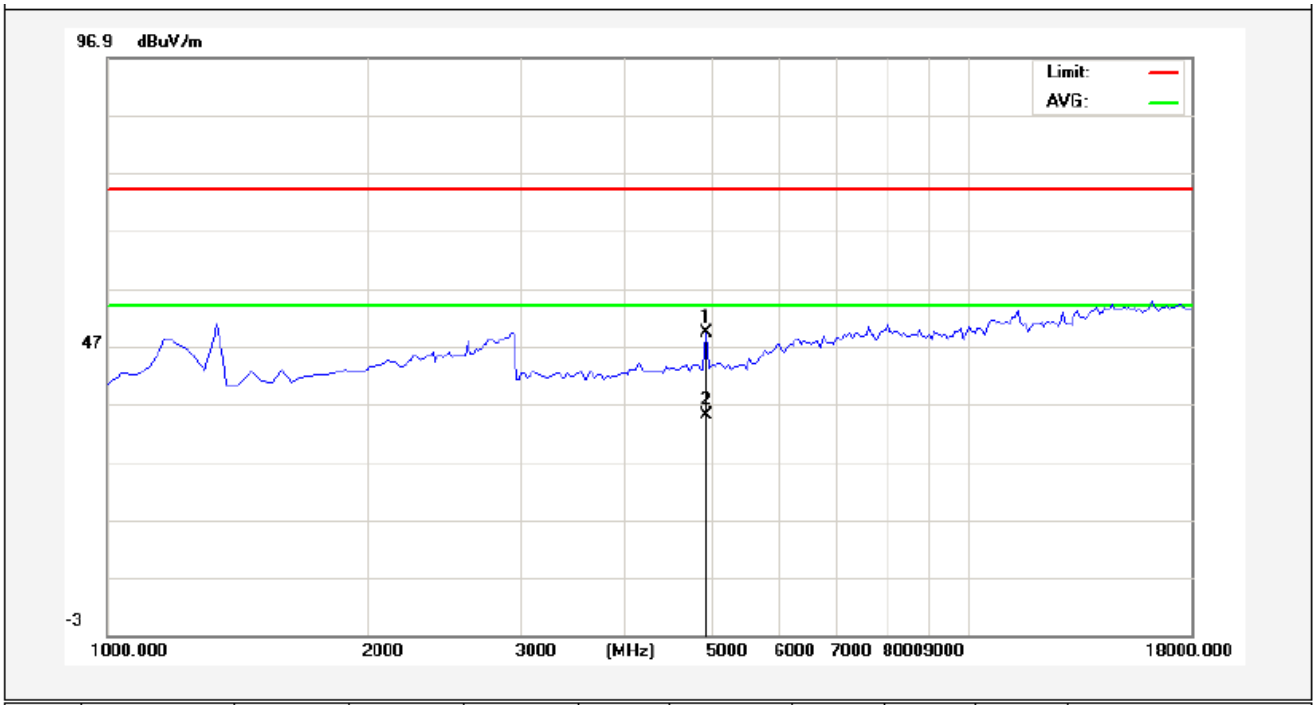
Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4952.500	42.70	3.57	46.27	74.00	-27.73	peak			
2	4952.500	28.29	3.57	31.86	54.00	-22.14	AVG			

Operation Mode: TX / CH High
Temperature: 25℃
Humidity: 50 % RH

Test Date: Sep. 02, 2013
Tested by: Rock Zeng
Polarity: Vertical



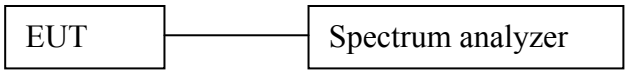
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4952.500	45.72	3.57	49.29	74.00	-24.71	peak			
2	4952.500	31.51	3.57	35.08	54.00	-18.92	AVG			

4. CHANNEL SEPARATION TEST

4.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

4.2 Test SET-UP



4.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

4.4 Test Results

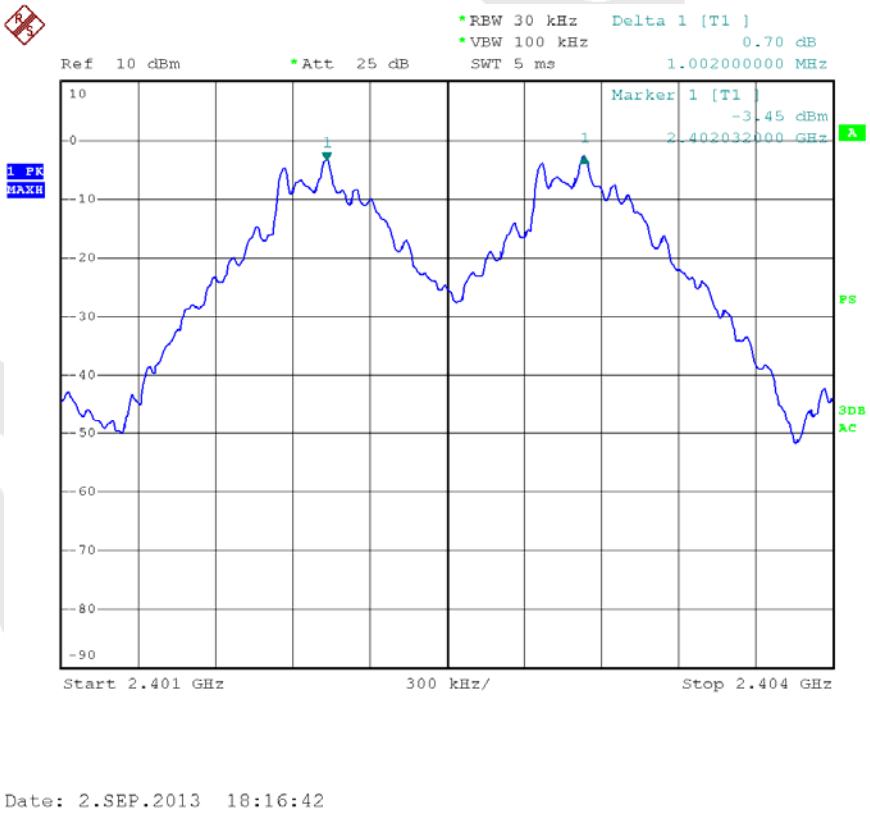
Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	Frequency Separation	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

Channel	Frequency (MHz)	Separation Read Value (kHz)	Limit (kHz)	Modulation Mode
Low	2401	1002	800	GFSK
Mid	2441	1002	800	GFSK
High	2480	1002	840	GFSK
Low	2401	1002	866.67	π /4DQPSK
Mid	2441	1002	840	π /4DQPSK
High	2480	1002	846.67	π /4DQPSK
Low	2401	1002	866.67	8DPSK
Mid	2441	1002	840	8DPSK
High	2480	1002	846.67	8DPSK

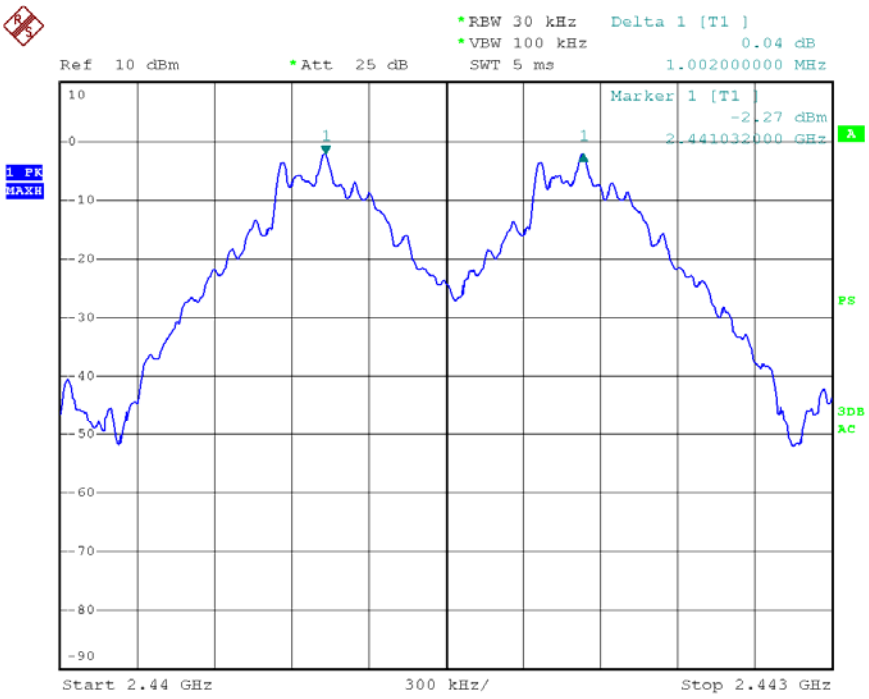
Remark:
1. The limit of modulation (π /4DQPSK, 8DPSK) is 2/3 of 20dB BW;

Modulation Mode: GFSK

CH Low



CH Mid



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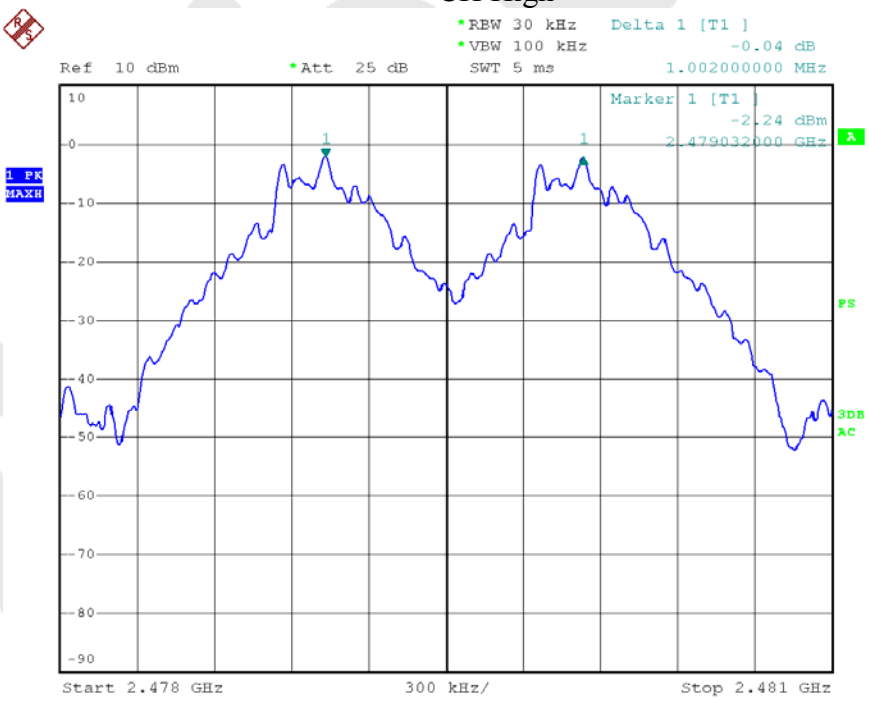
CH High



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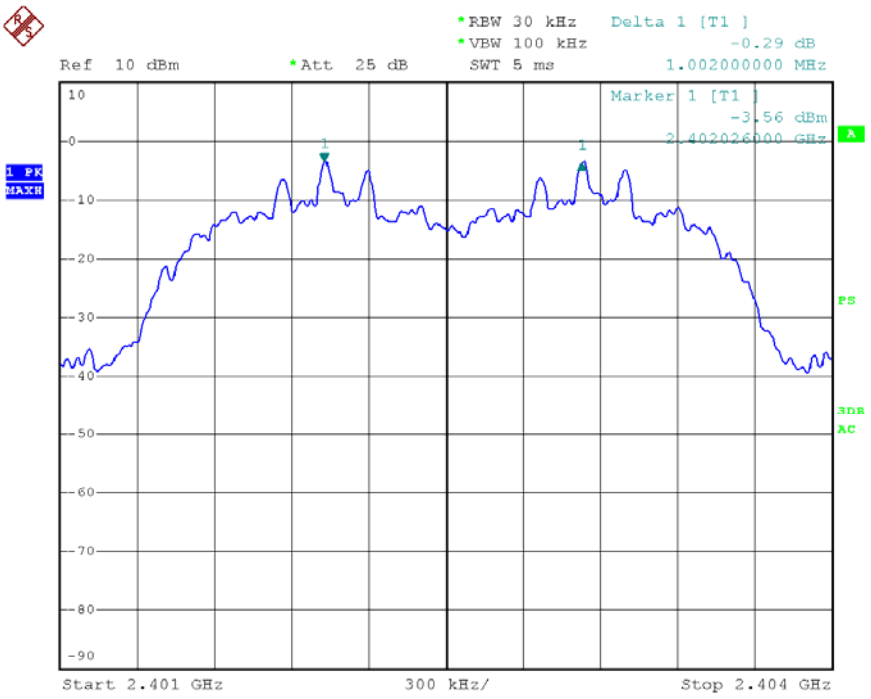
Modulation Mode: π/4DQPSK & 8DPSK

CH Low



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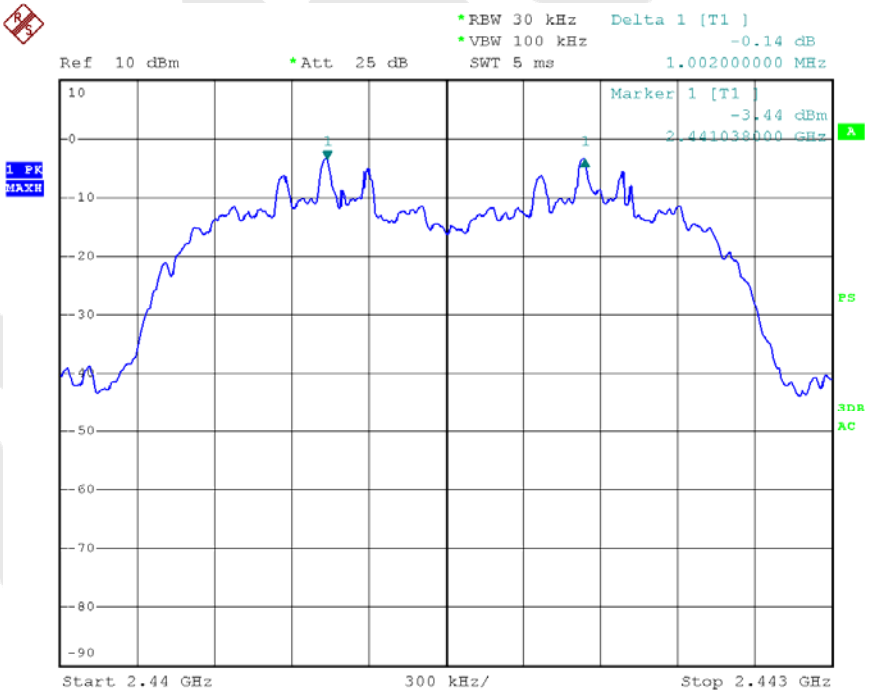
CH Mid



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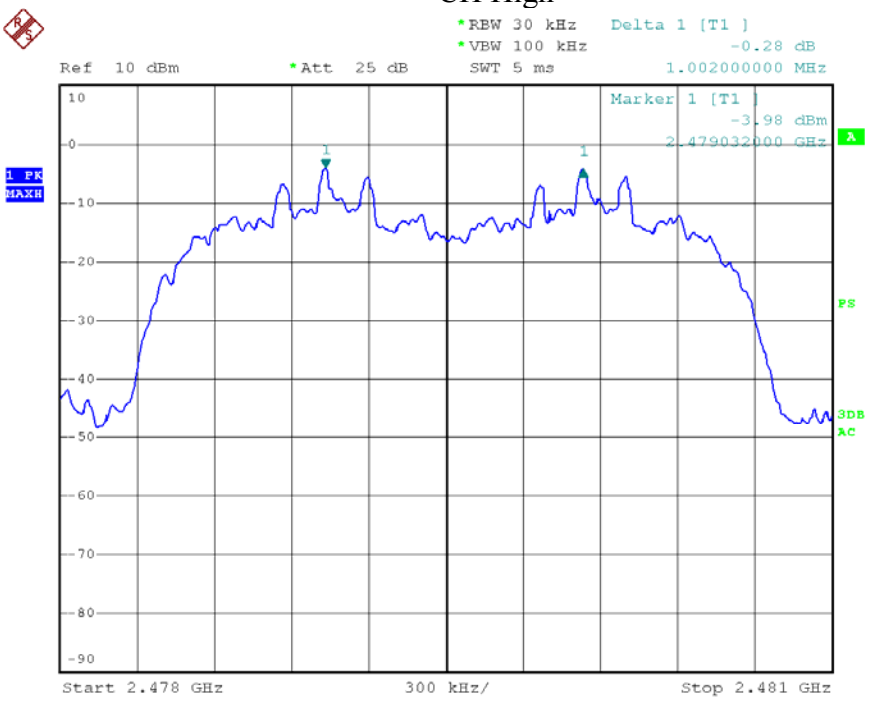
CH High



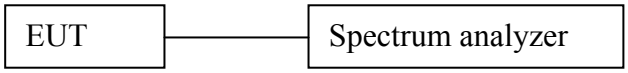
Date: 2.SEP.2013 18:19:12

5. 20DB BANDWIDTH TEST

5.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

5.2 Test SET-UP



5.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

5.4 Test Results

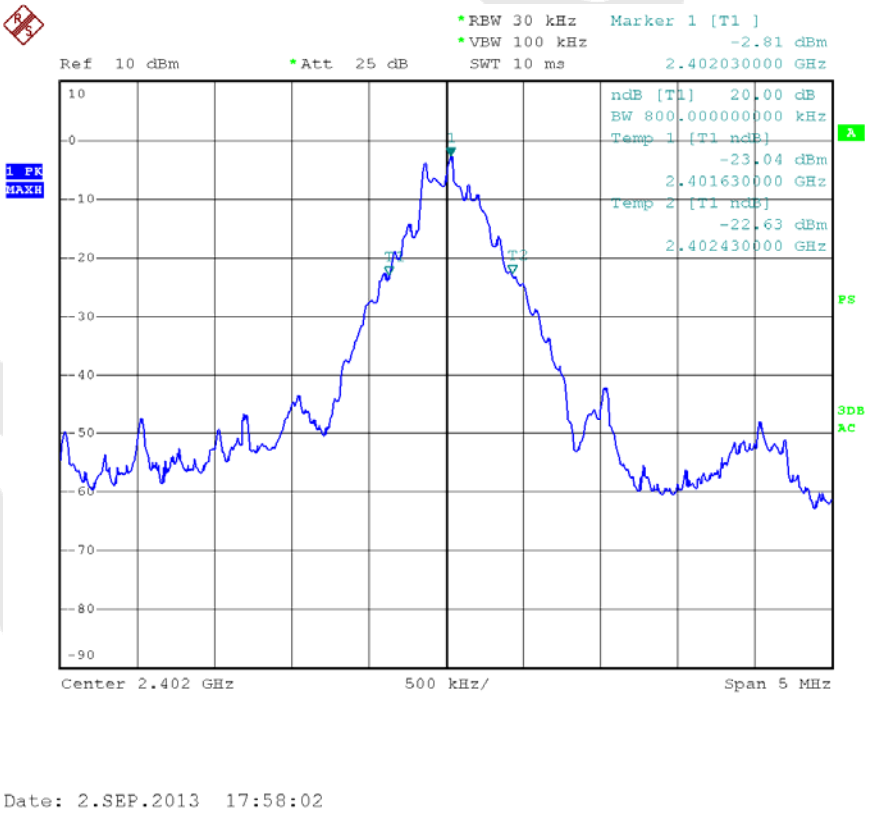
Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	20dB BW	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

Channel	Frequency (MHz)	20dB Down BW(kHz)	Modulation Mode
Low	2401	800	GFSK
Mid	2441	800	GFSK
High	2480	840	GFSK
Low	2401	1300	π /4DQPSK
Mid	2441	1260	π /4DQPSK
High	2480	1270	π /4DQPSK
Low	2401	1300	8DPSK
Mid	2441	1260	8DPSK
High	2480	1270	8DPSK

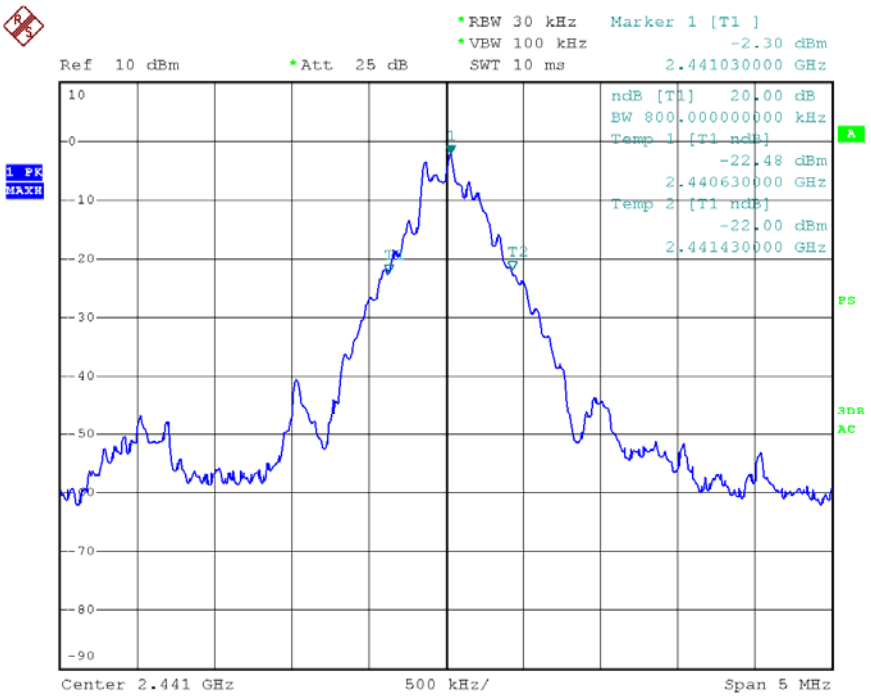
Remark: The results of modulations π /4DQPSK and 8DPSK are the same.

Modulation Mode: GFSK

CH Low



CH Mid



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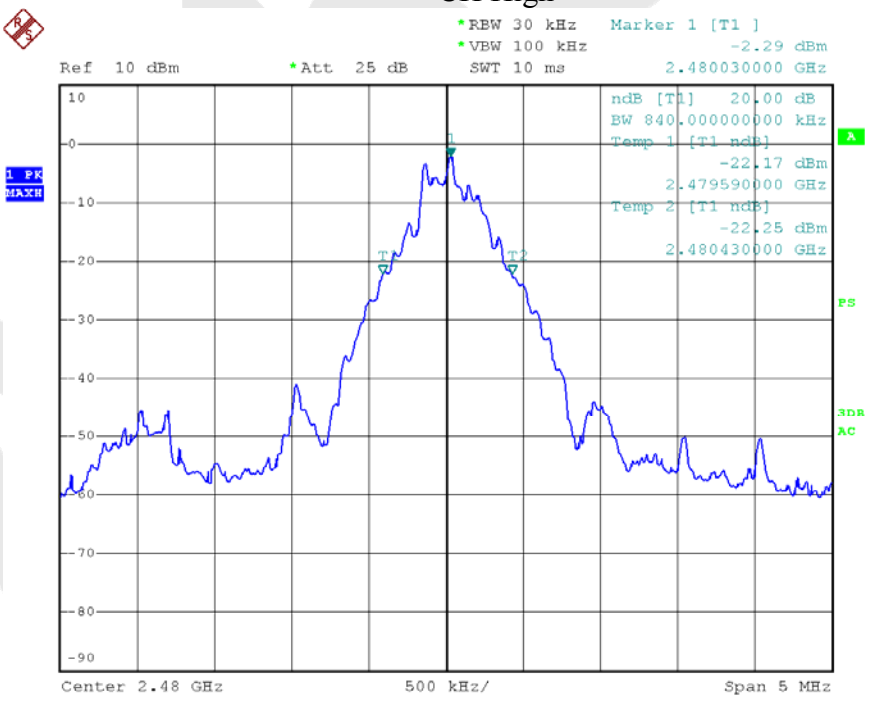
CH High



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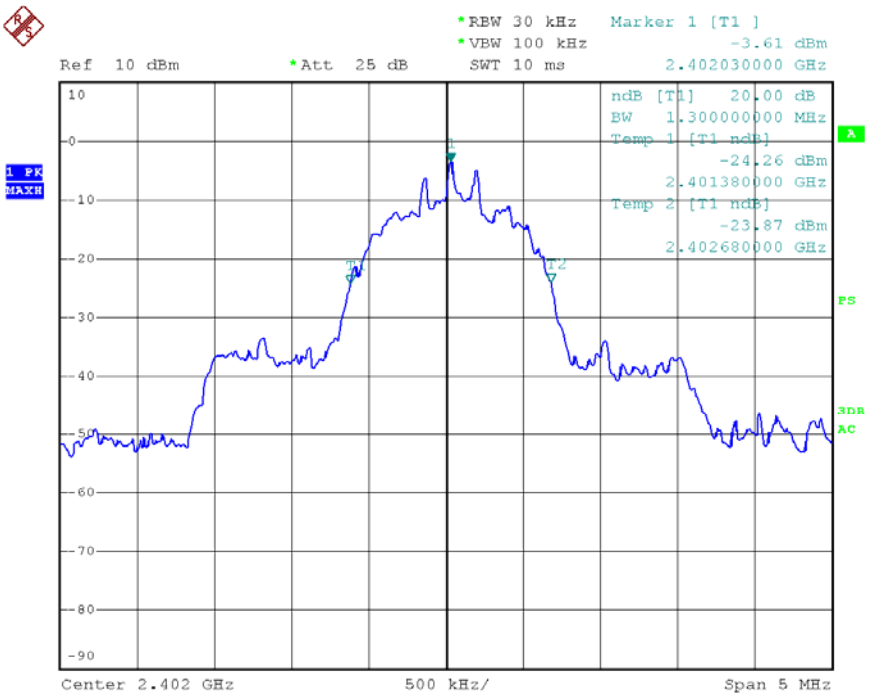
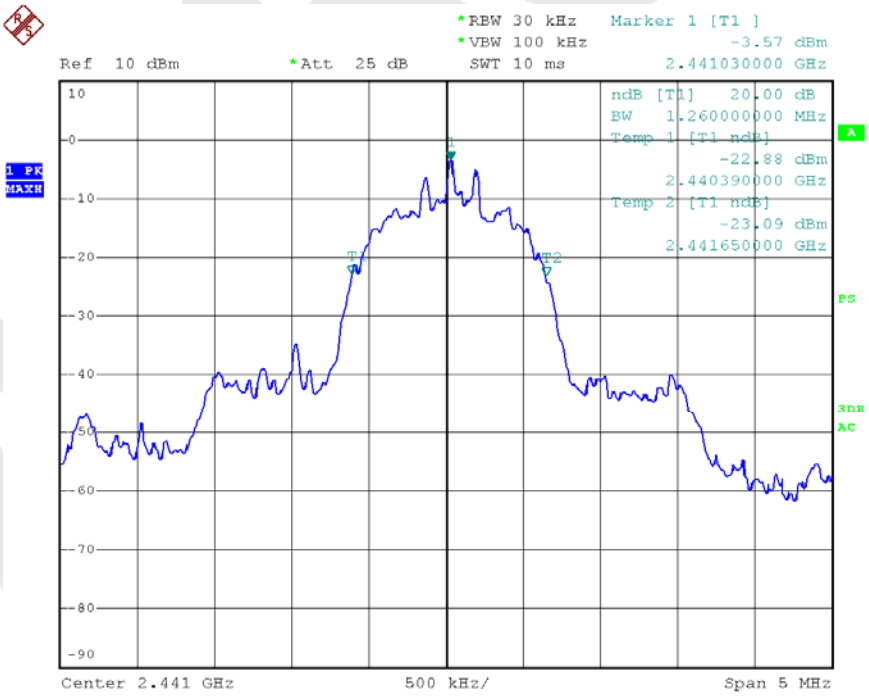
Modulation Mode: π/4DQPSK & 8DPSK

CH Low



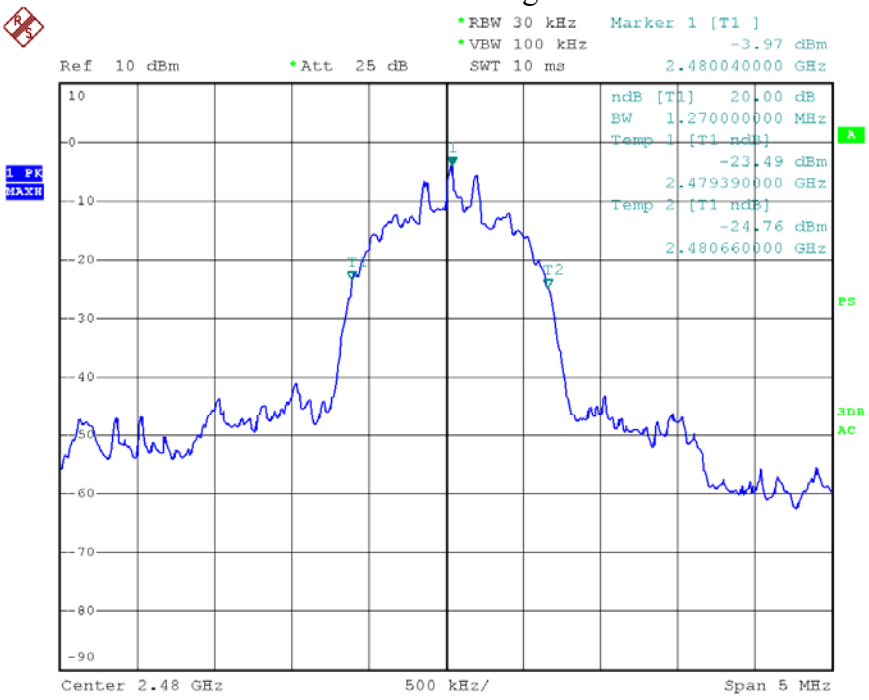
Date: 2.SEP.2013 17:56:32

CH Mid



Date: 2.SEP.2013 17:56:53

CH High



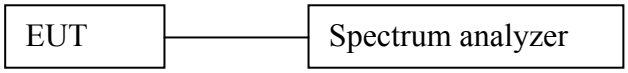
Date: 2.SEP.2013 17:57:17

6. QUANTITY OF HOPPING CHANNEL TEST

6.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

6.2 Test SET-UP



6.3 Test Equipment

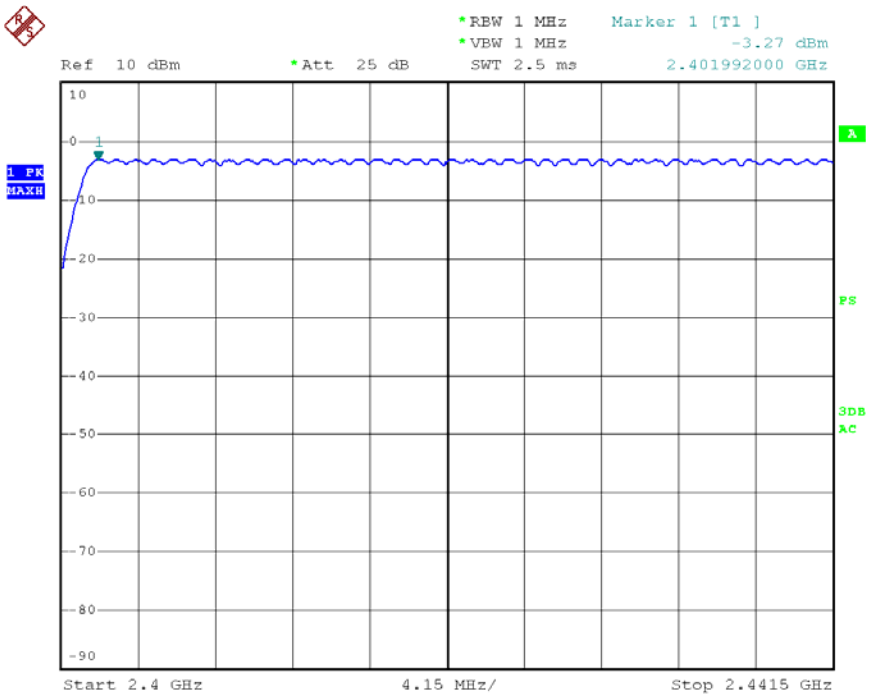
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

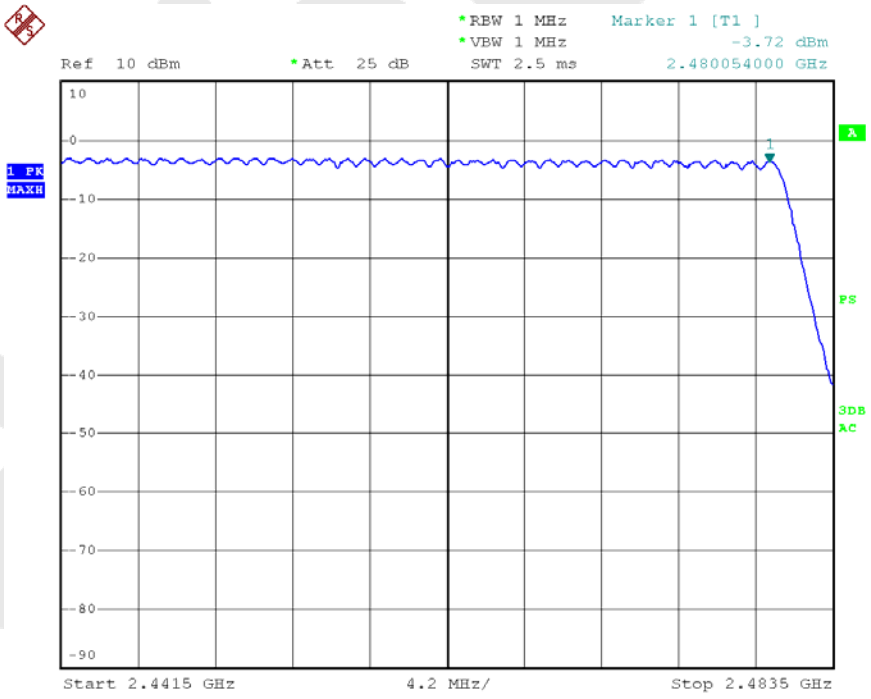
6.4 Test Results

Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	Number of Hopping Frequency	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

Hopping Channel Frequency Range	Quantity of Hopping Channel	Quantity of Hopping Channel
2402-2480	79	＞15



Date: 2.SEP.2013 18:22:09



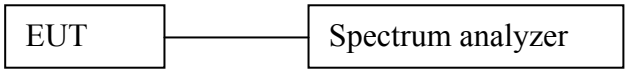
Date: 2.SEP.2013 18:23:04

7. DWELL TIME TEST

7.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

7.2 Test SET-UP



7.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

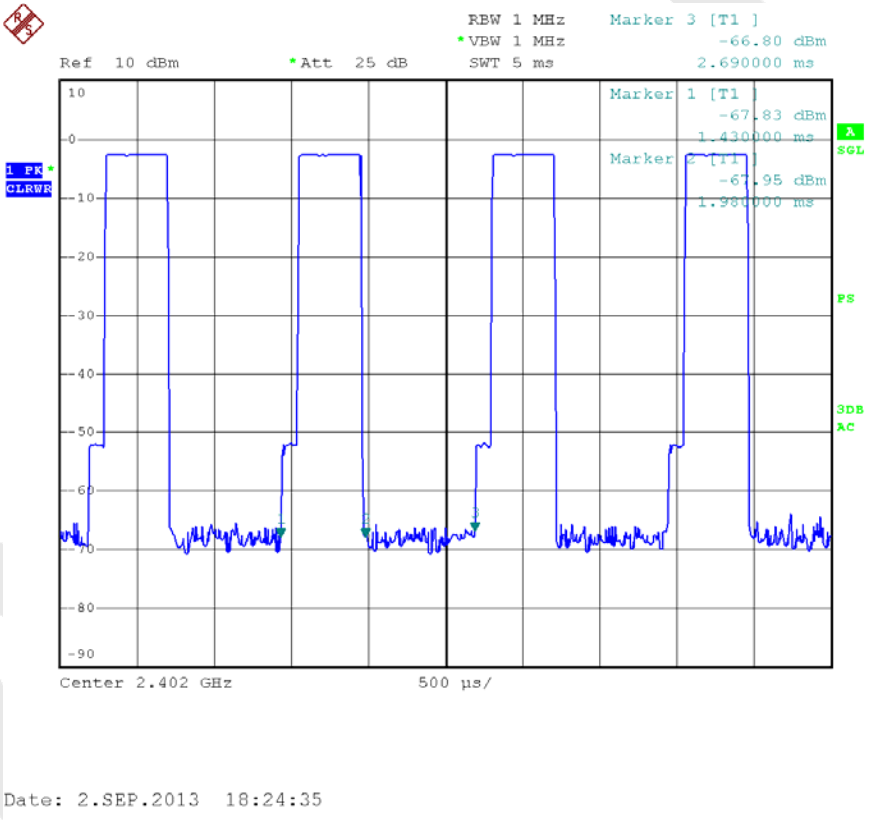
Radiation Uncertainty : Ur = 4.3dB

7.4 Test Results

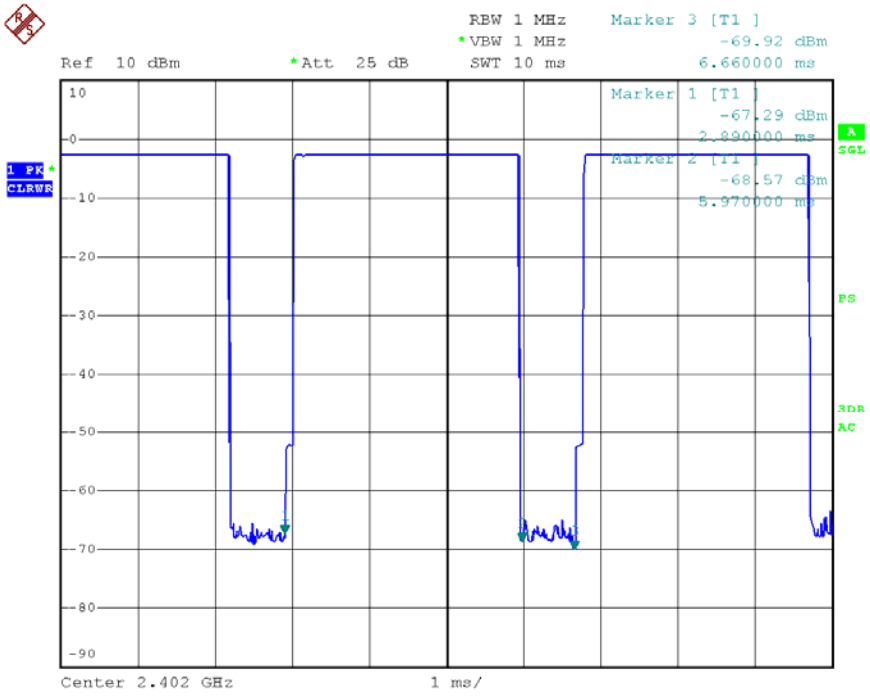
Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	Time of Occupancy	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

Channel	*Pulse width (ms)*	Time slot length(ms)	Dwell time (ms)	Limit (ms)
DH1	0.55	time slot length *1600/2 /79 * 31.6	176	400
DH3	1.80	time slot length *1600/4 /79 * 31.6	288	400
DH5	3.08	time slot length *1600/6 /79 * 31.6	328.53	400

DH1

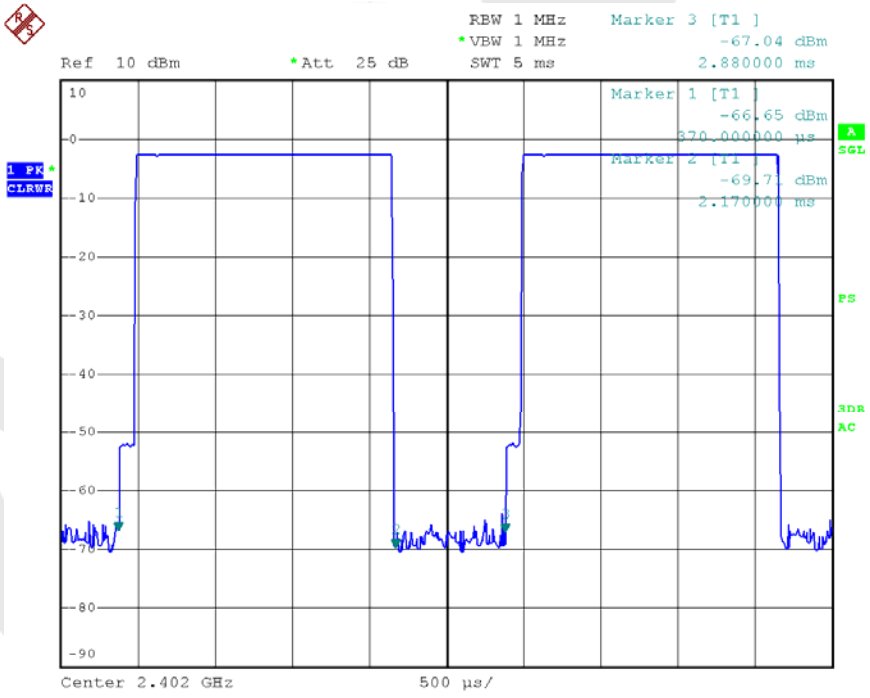


DH3



Date: 2.SEP.2013 18:26:13

DH5



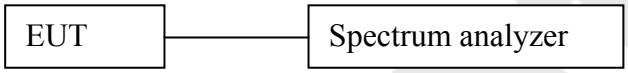
Date: 2.SEP.2013 18:25:31

8. MAX IMUM PEAK OUTPUT POWER TEST

8.1 Measurement Procedure

a. Check the calibration of the measuring instrument(SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
c. The center frequency of the spectrum analyzer is set to the fundamental frequency and using proper RBW and VBW setting.
d. Measure the captured power within the band and recording the plot.
e. Repeat above procedures until all frequencies required were complete.

8.2 Test SET-UP



8.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

8.4 Test Results

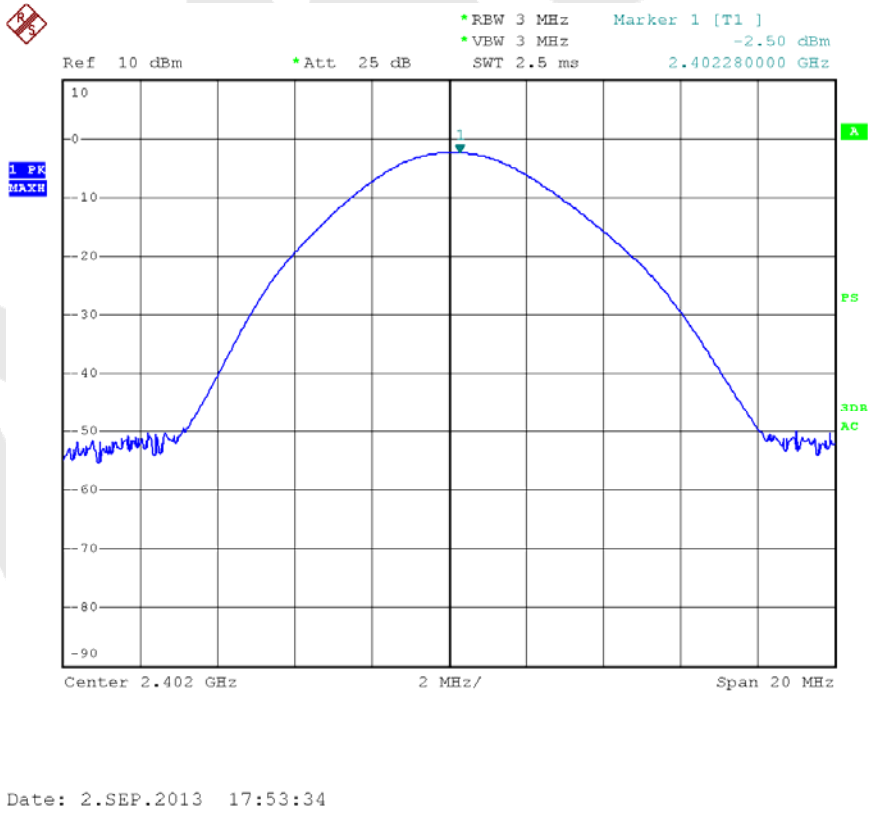
Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	Max. peak output power	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

Channel Frequency (MHz)	Peak Power output(mW)	Peak Power output(dBm)	Peak Power Limit(mW)	Results	Modulation
2402	0.57	-2.50	125	PASS	GFSK
2441	0.64	-1.93	125	PASS	GFSK
2480	**0.65**	**-1.88**	125	PASS	GFSK
2402	0.53	-2.81	125	PASS	π /4DQPSK
2441	0.56	-2.46	125	PASS	π /4DQPSK
2480	0.53	-2.80	125	PASS	π /4DQPSK
2402	0.53	-2.81	125	PASS	8DPSK
2441	0.56	-2.46	125	PASS	8DPSK
2480	0.53	-2.80	125	PASS	8DPSK

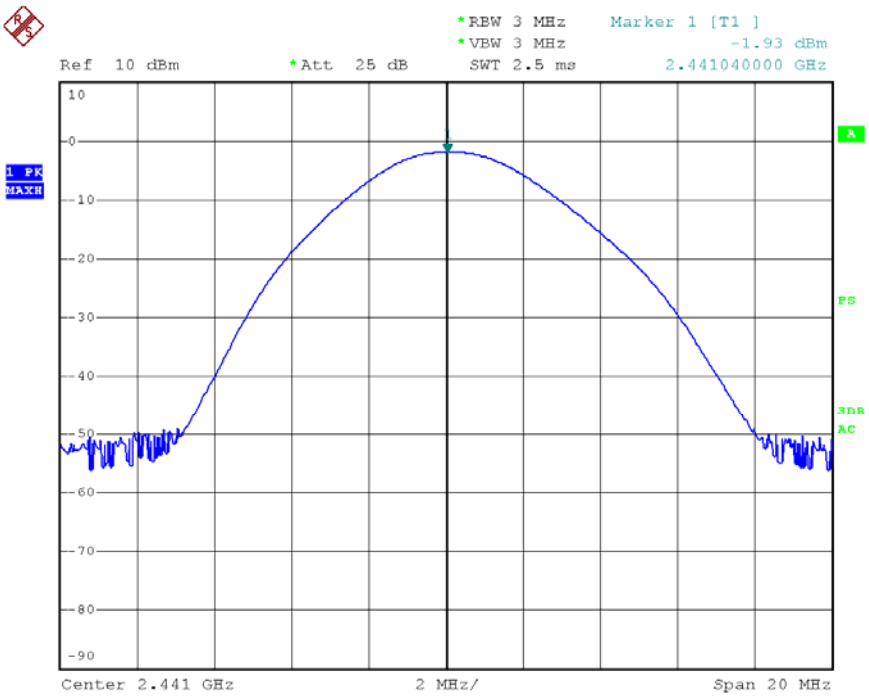
Remark: The results of modulations π /4DQPSK and 8DPSK are the same.

Modulation Mode: GFSK

CH Low

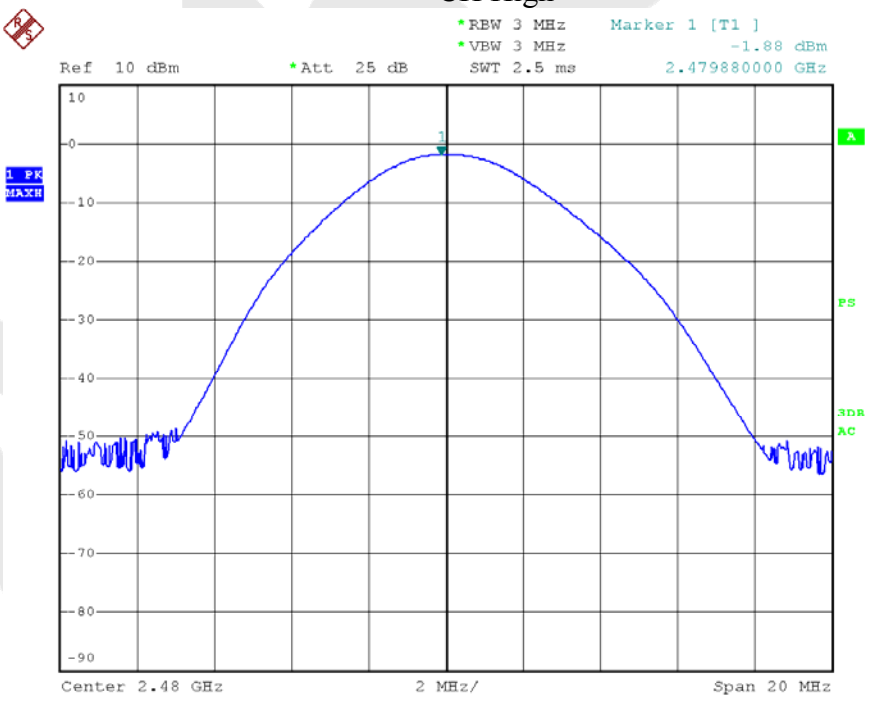


CH Mid



Date: 2.SEP.2013 17:53:55

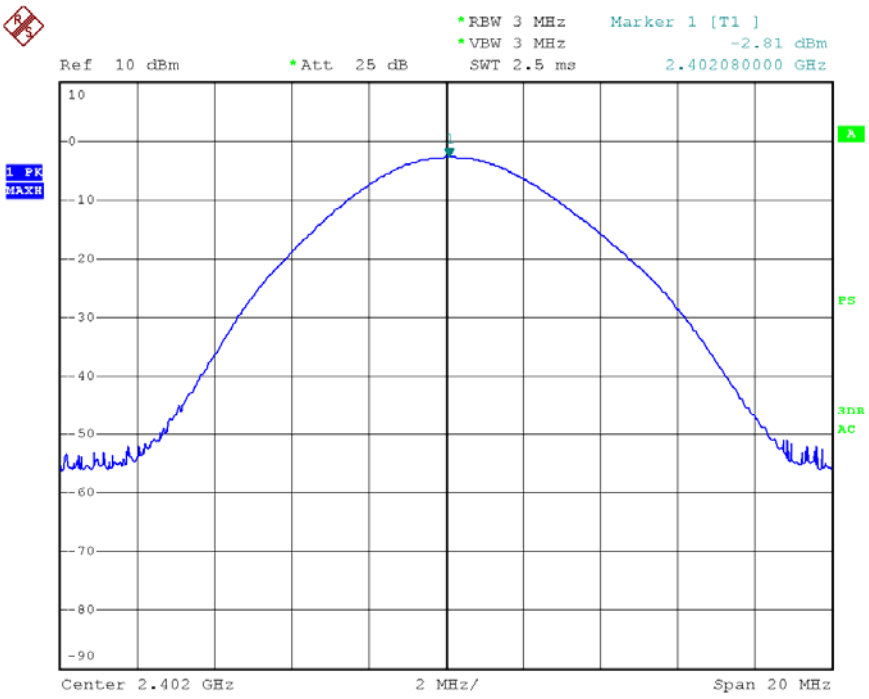
CH High



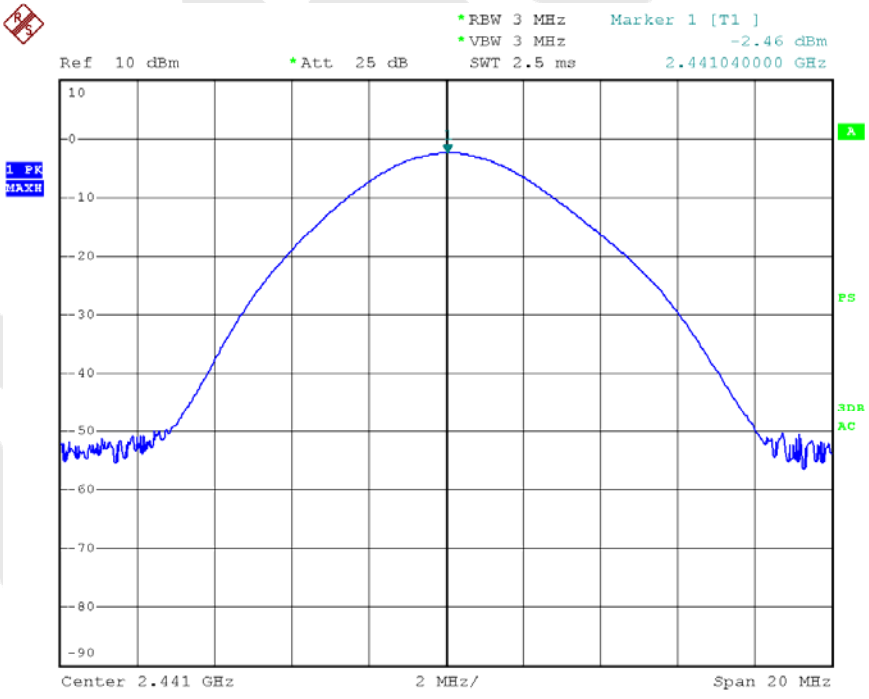
Date: 2.SEP.2013 17:54:11

Modulation Mode: π/4DQPSK & 8DPSK

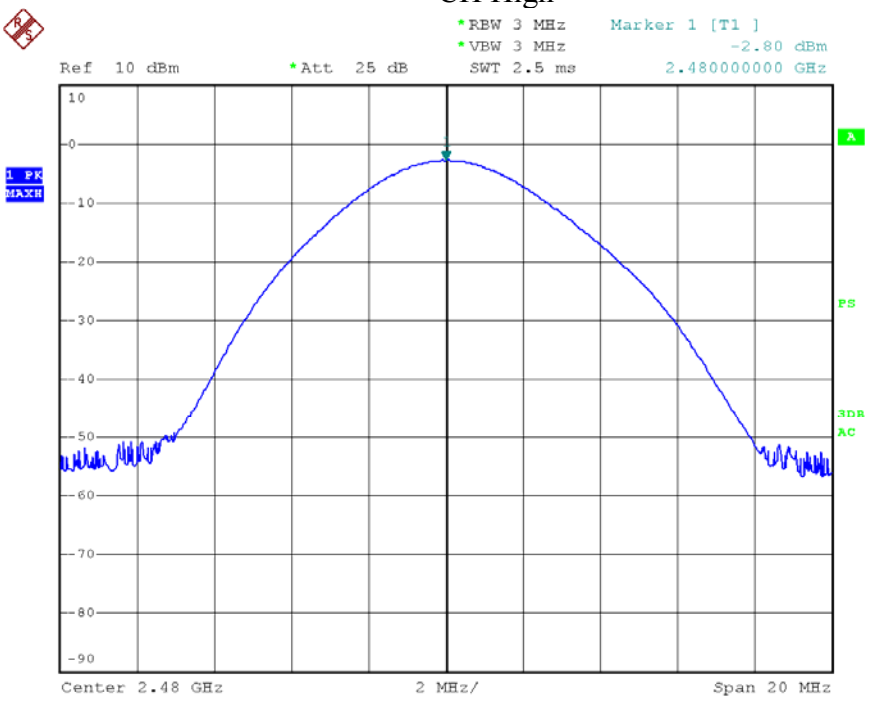
CH Low



CH Mid



CH High



Date: 2.SEP.2013 17:55:32

9. BAND EDGE TEST

9.1 Measurement Procedure

1. The EUT was Operating in hopping mode or could be controlled its channel. Printed out test result from the spectrum by hard copy function.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

9.2 Test SET-UP

Same as the radiated emission test.

9.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

9.4 Test Results

Pass.

Please refer the following data.

Product	:	SGL Radiology SmartRay System	Test Mode	:	CH Low ~ CH High
Test Item	:	Band edge	Temperature	:	24℃
Test Voltage	:	DC 5V	Humidity	:	55%RH
Test Result	:	PASS			

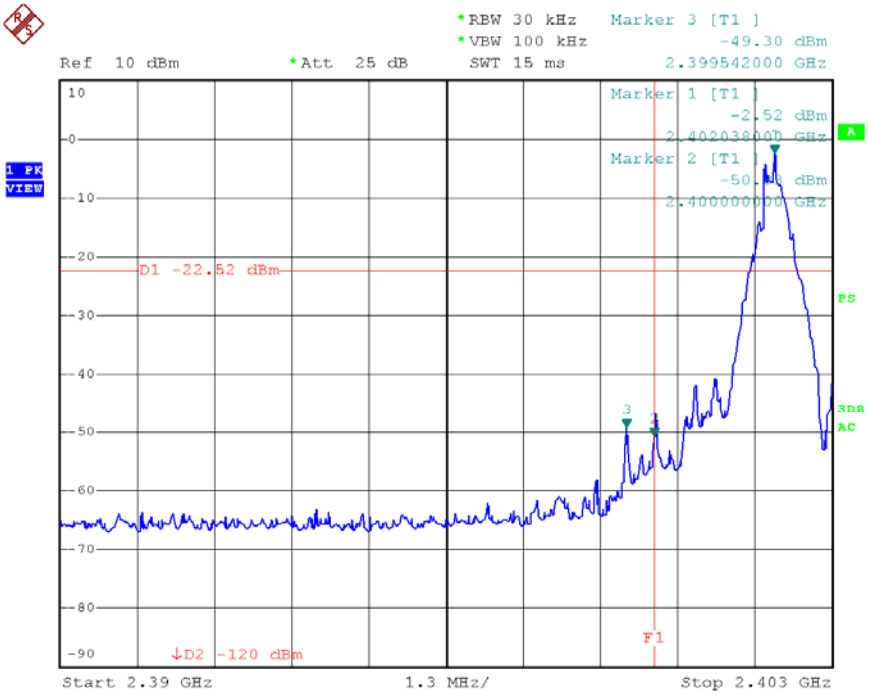
1.Conducted Test

Frequency (MHz)	Peak Power Output(dBm)	Emission read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)	Modulation
<2400	-2.52	-49.30	46.78	>20dBc	GFSK
	-3.51	-49.61	46.10	>20dBc	π /4DQPSK
	-3.51	-49.61	46.10	>20dBc	8DPSK
>2483.5	-2.31	-62.36	60.05	>20dBc	GFSK
	-4.37	-64.44	60.07	>20dBc	π /4DQPSK
	-4.37	-64.44	60.07	>20dBc	8DPSK

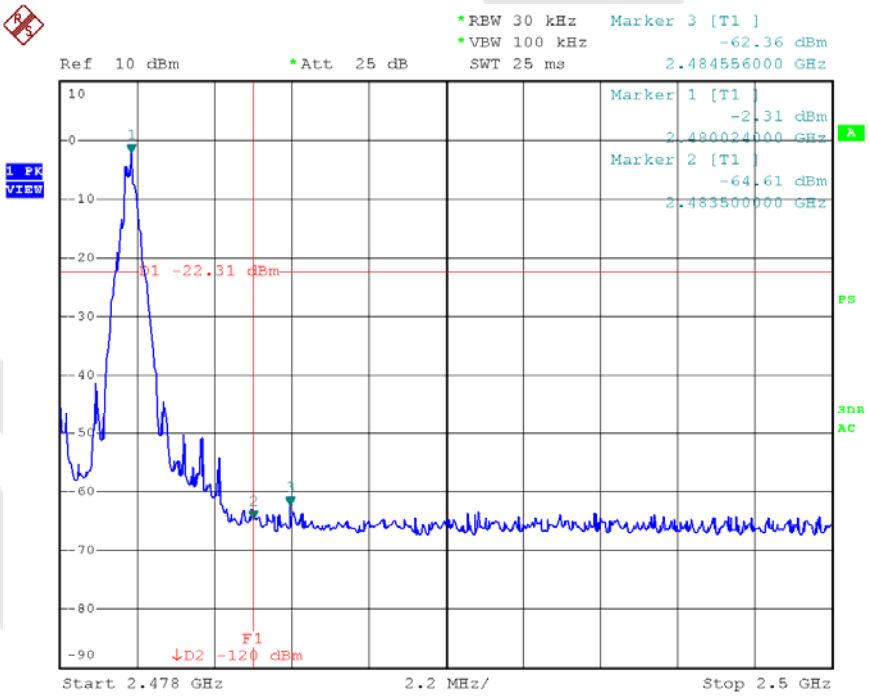
2. Radiated emission Test

Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)		Modulation
		PK	AV	PK	AV	
<2400	H	56.35	43.19	74.00	54.00	GFSK
	V	60.07	44.79	74.00	54.00	GFSK
	H	60.39	46.25	74.00	54.00	π /4DQPSK
	V	61.58	44.04	74.00	54.00	π /4DQPSK
	H	60.37	44.07	74.00	54.00	8DPSK
	V	58.22	45.57	74.00	54.00	8DPSK
>2483.5	H	47.05	37.42	74.00	54.00	GFSK
	V	47.49	38.01	74.00	54.00	GFSK
	H	44.76	38.37	74.00	54.00	π /4DQPSK
	V	48.09	40.33	74.00	54.00	π /4DQPSK
	H	44.25	38.61	74.00	54.00	8DPSK
	V	49.37	40.59	74.00	54.00	8DPSK

Modulation Mode: GFSK

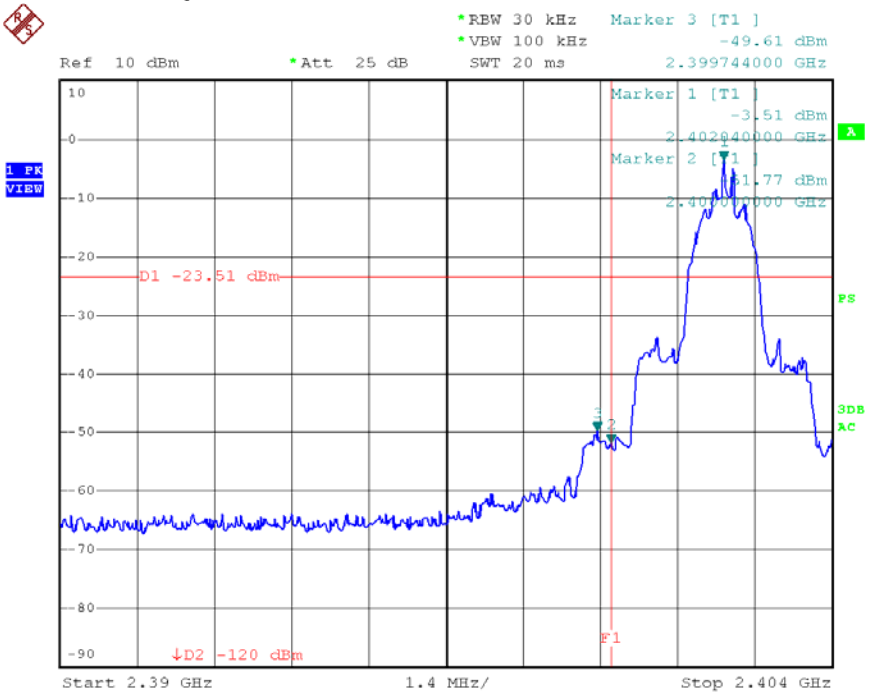


Date: 2.SEP.2013 18:10:06

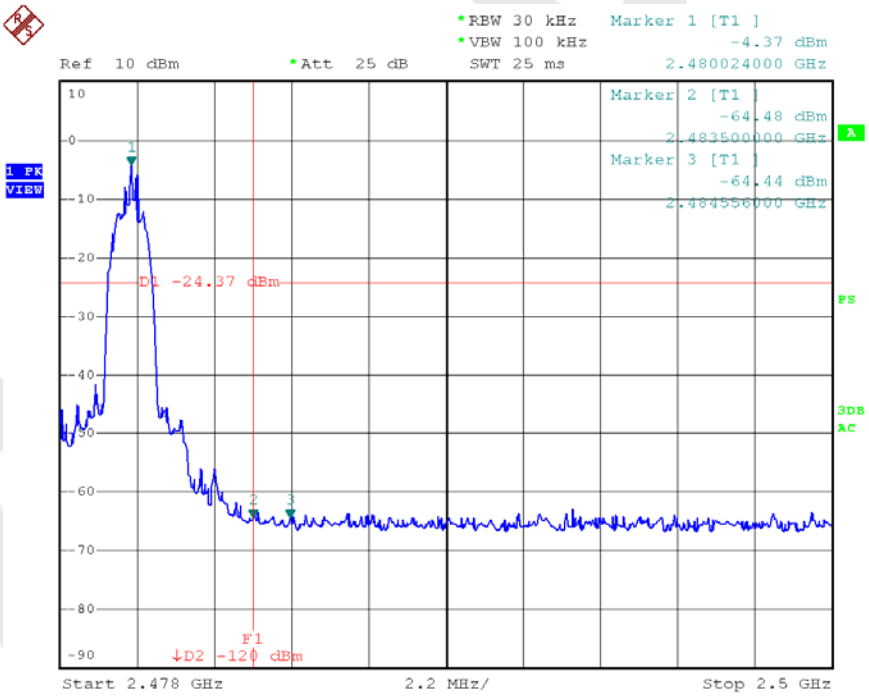


Date: 2.SEP.2013 18:12:12

Modulation Mode: π/4DQPSK & 8DPSK



Date: 2.SEP.2013 18:15:01



Date: 2.SEP.2013 18:13:16

10. ANTENNA APPLICATION

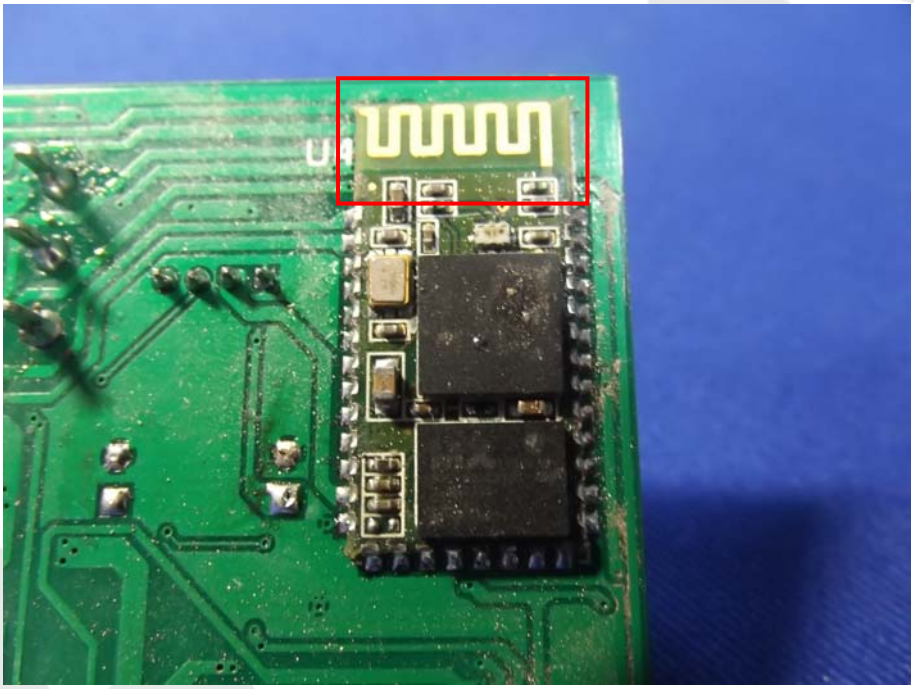
10.1 Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

10.2 Result

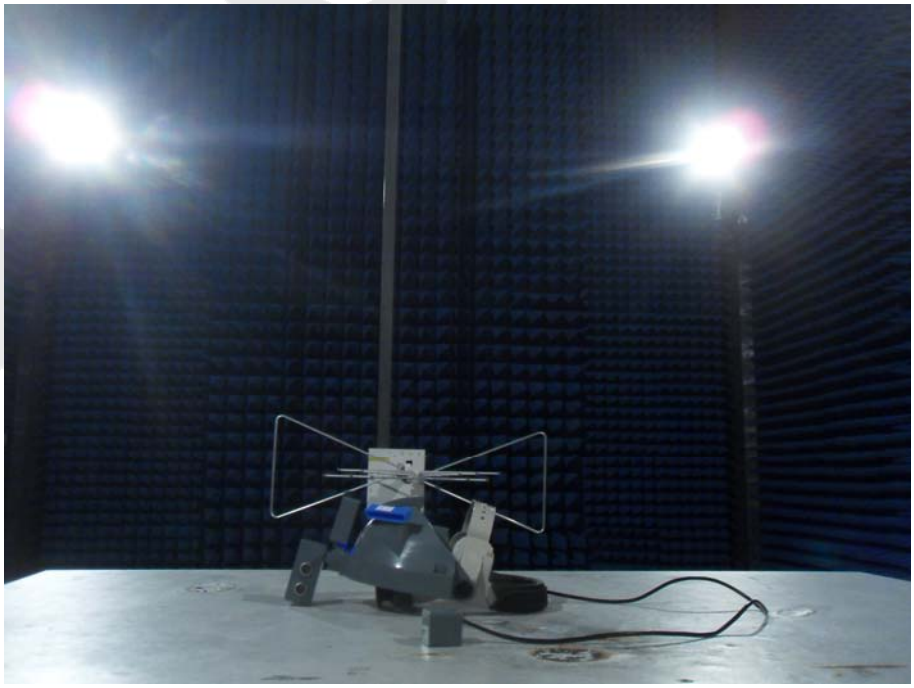
The EUT's antenna used a chip antenna and integrated on PCB, The antenna's gain is 0dBi and meets the requirement.

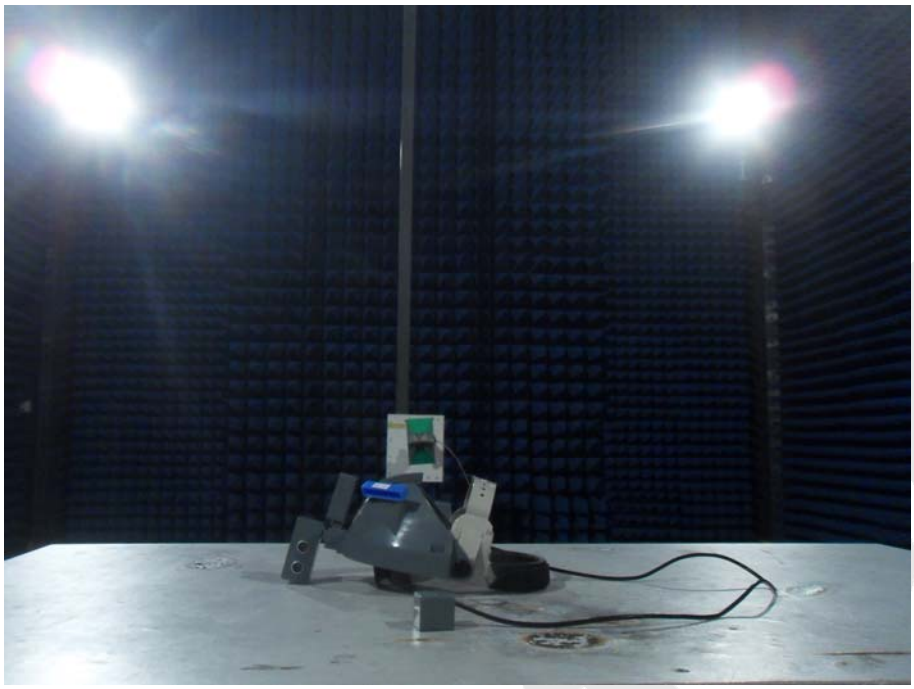


11. PHOTOGRAPH

11.1 Photo of Conducted Emission Test

11.2 Photo of Radiation Emission Test





APPENDIX I (External Photos)

Figure 1
The EUT-Front View

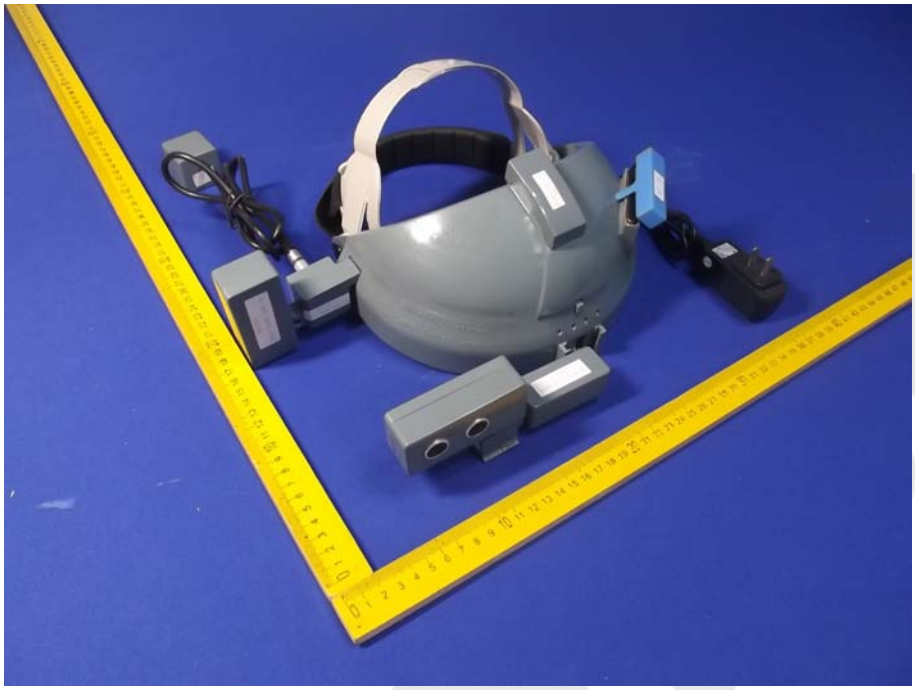


Figure 2
The EUT-Back View

Figure 3
The EUT-Adapter View

APPENDIX Ⅱ (Internal Photos)

Figure 4
The EUT-Inside View

Figure 5
The EUT-BatteryView

Figure 6
PCB of the EUT-Front View

Figure 7
PCB of the EUT-Back View

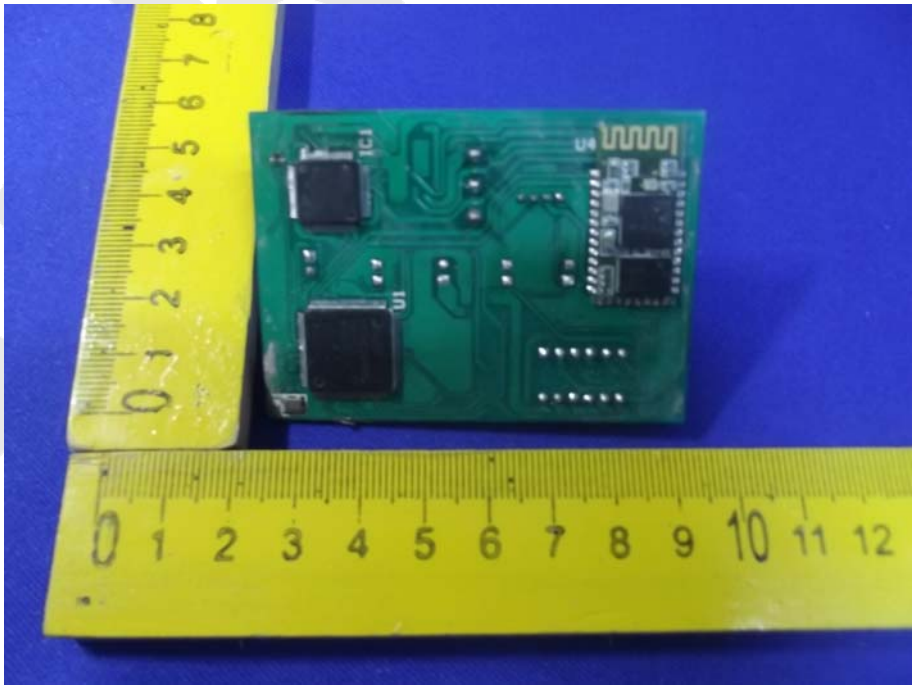


Figure 8
PCB of the BT Module View