

APPLICATION CERTIFICATION

On Behalf of
Radiopaq Limited

Bluetooth Receiver

Model No.: Bayan StreamPort, Bayan Universal Streamport , BT-01, BT-02, BT-03

FCC ID: ROF-STREAMPORT

Prepared for : Radiopaq Limited
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Report Number : ATE20122817
Date of Test : Dec 13-Dec 20, 2012
Date of Report : Dec 20, 2012

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Test Report Certification

Applicant : Radiopaq Limited
Manufacturer : Musilab Electronic (DongGuan) Co., Ltd
EUT Description : Bluetooth Receiver
(A) MODEL NO.: Bayan StreamPort, BT-01, BT-02, BT-03,
Bayan Universal Streamport
(B) Trade Name.: Bayan Audio
(C) POWER SUPPLY: DC 5V (USB input)

Measurement Procedure Used:

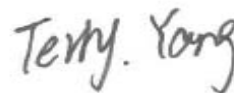
FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4: 2009
ANSI C63.10: 2009

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

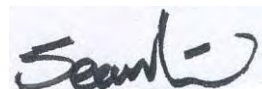
Date of Test : Dec 13- Dec 20, 2012

Prepared by :



(Engineer)

Approved & Authorized Signer :



(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Bluetooth Receiver
Model Number	:	Bayan StreamPort, BT-01, BT-02, BT-03, Bayan Universal Streamport
		NOTE: These models are identical in interior structure; electrical circuits and components, and just model names, plastic surface and color are different for the marketing requirement. So we prepare Bayan StreamPort for test only
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain	:	2.5dBi
Power Supply	:	DC 5V (USB input)
	:	
Applicant	:	Radiopaq Limited
Address	:	5 The Pavilions, Brighton Road, Pease Pottage, West Sussex, RH11 9BJ UNITED KINGDOM
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd
Address	:	A2, LinDong 3 Road, LinCun, TangXia Town, DongGuan City, Guangdong Province, China
Date of sample received	:	Dec 13, 2012
Date of Test	:	Dec 13- Dec 20, 2012

1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC
The Registration Number is 752051

Listed by Industry Canada
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee
for Laboratories
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.
Science & Industry Park, Nanshan, Shenzhen, Guangdong
P.R. China

1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated date	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 7, 2012	Jan. 7, 2013
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 7, 2012	Jan. 7, 2013
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 7, 2012	Jan. 7, 2013
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 7, 2012	Jan. 7, 2013
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 7, 2012	Jan. 7, 2013
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 7, 2012	Jan. 7, 2013
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 7, 2012	Jan. 7, 2013
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 7, 2012	Jan. 7, 2013
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 7, 2012	Jan. 7, 2013
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 7, 2012	Jan. 7, 2013

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode

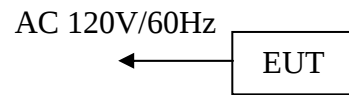
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2.Configuration and peripherals



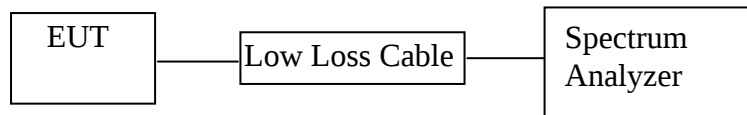
(EUT: Bluetooth Receiver)

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

5.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.3. EUT Configuration on Measurement

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

5.3.1. Bluetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

5.5.3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6. Test Result

PASS.

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Alen</u>

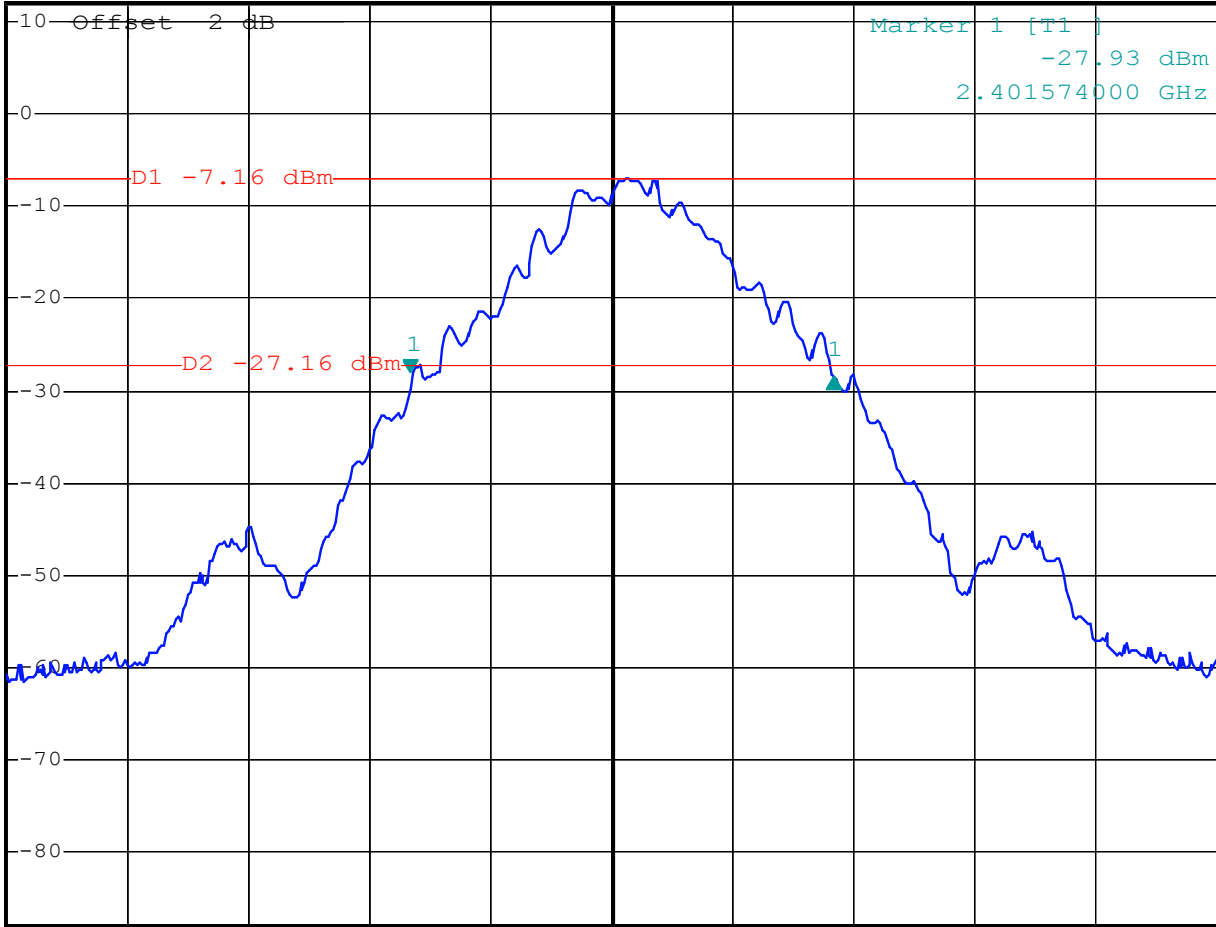
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2402	1.035	---
Middle	2441	1.104	---
High	2480	1.032	---

The spectrum analyzer plots are attached as below.



1 PK
MAXH

Ref 12 dBm * Att 20 dB * RBW 30 kHz Delta 1 [T1]
* VBW 100 kHz -0.57 dB
SWT 5 ms 1.035000000 MHz



A

LVL

3DB

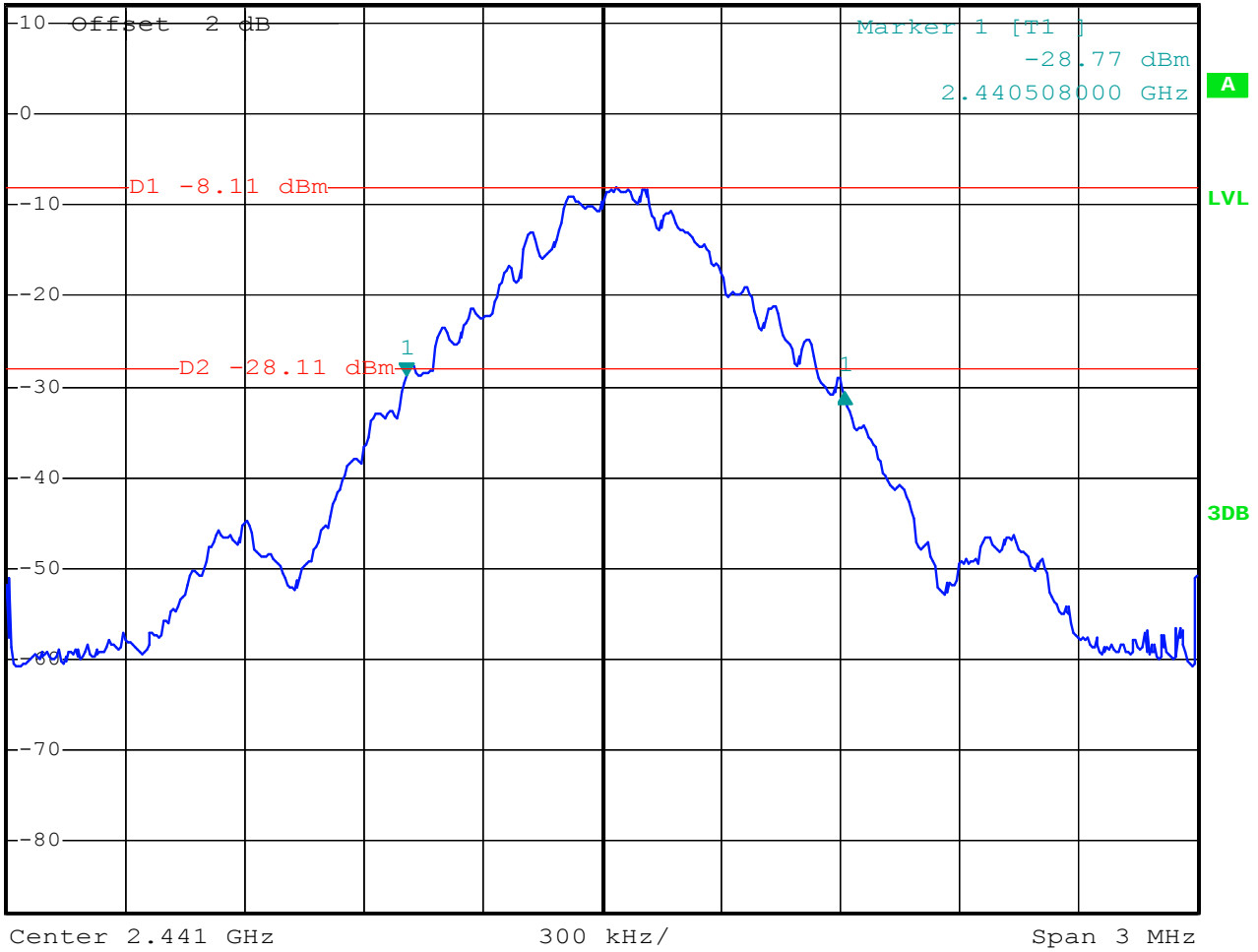
Center 2.402 GHz 300 kHz/ Span 3 MHz

Date: 20.DEC.2012 15:52:53



1 PK
MAXH

Ref 12 dBm * Att 20 dB * RBW 30 kHz Delta 1 [T1]
* VBW 100 kHz -1.99 dB
SWT 5 ms 1.104000000 MHz

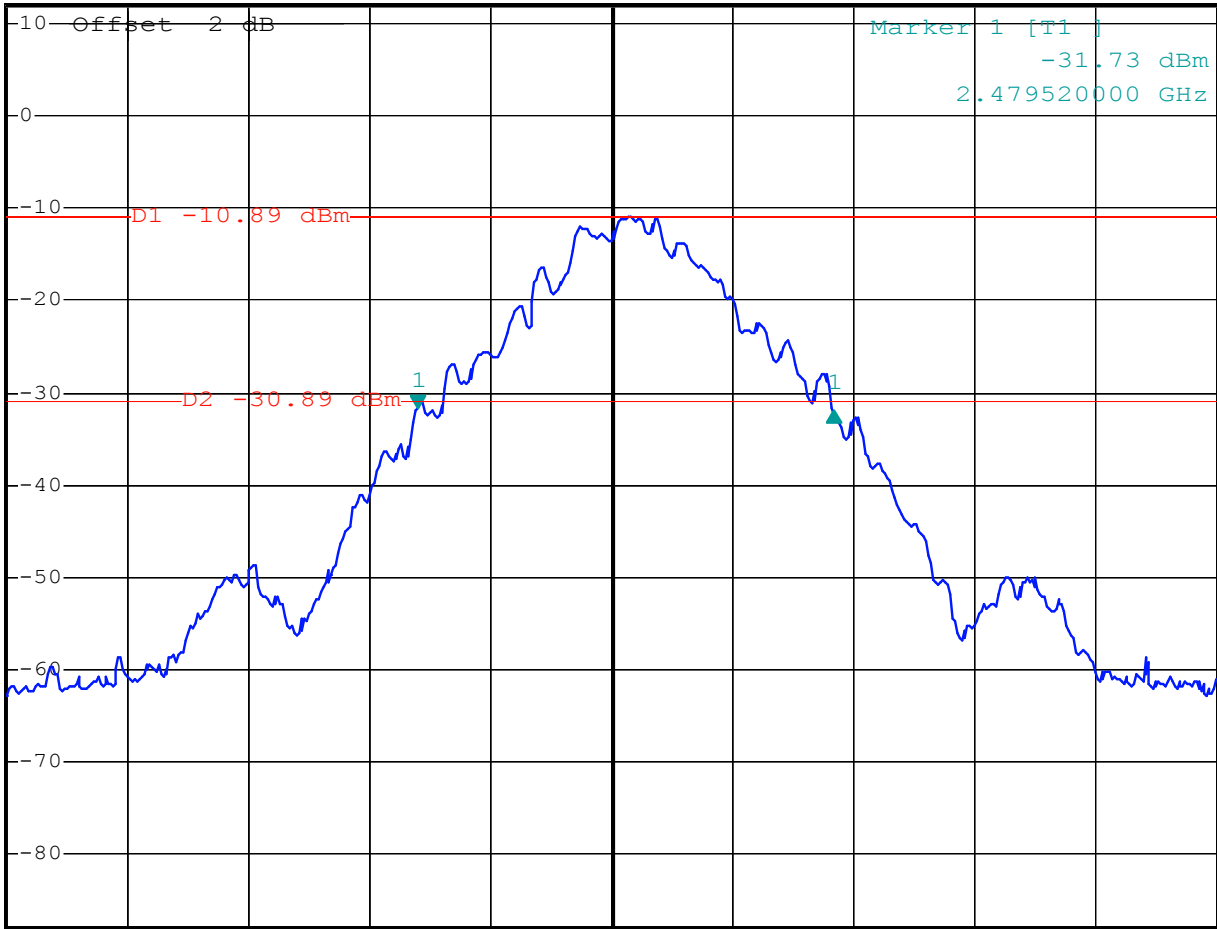


Date: 20.DEC.2012 16:28:05



1 PK
MAXH

Ref 12 dBm * Att 20 dB * RBW 30 kHz Delta 1 [T1]
* VBW 100 kHz -0.33 dB
SWT 5 ms 1.032000000 MHz



A

LVL

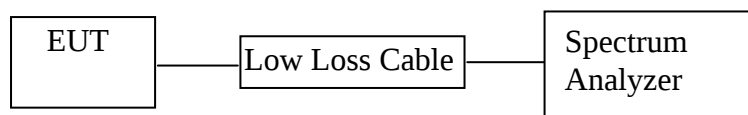
3DB

Center 2.48 GHz 300 kHz/ Span 3 MHz

Date: 20.DEC.2012 16:19:34

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

6.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.3. EUT Configuration on Measurement

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

6.3.1. Bluetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

6.5. Test Procedure

- 6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 6.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz. Adjust Span to 3 MHz.
- 6.5.3. Set the adjacent channel of the EUT maxhold another trace.
- 6.5.4. Measurement the channel separation

6.6. Test Result

PASS.

Date of Test:	Dec 20, 2012	Temperature:	25°C
EUT:	Bluetooth Receiver	Humidity:	50%
Model No.:	Bayan StreamPort	Power Supply:	DC 5V
Test Mode:	TX	Test Engineer:	Alen

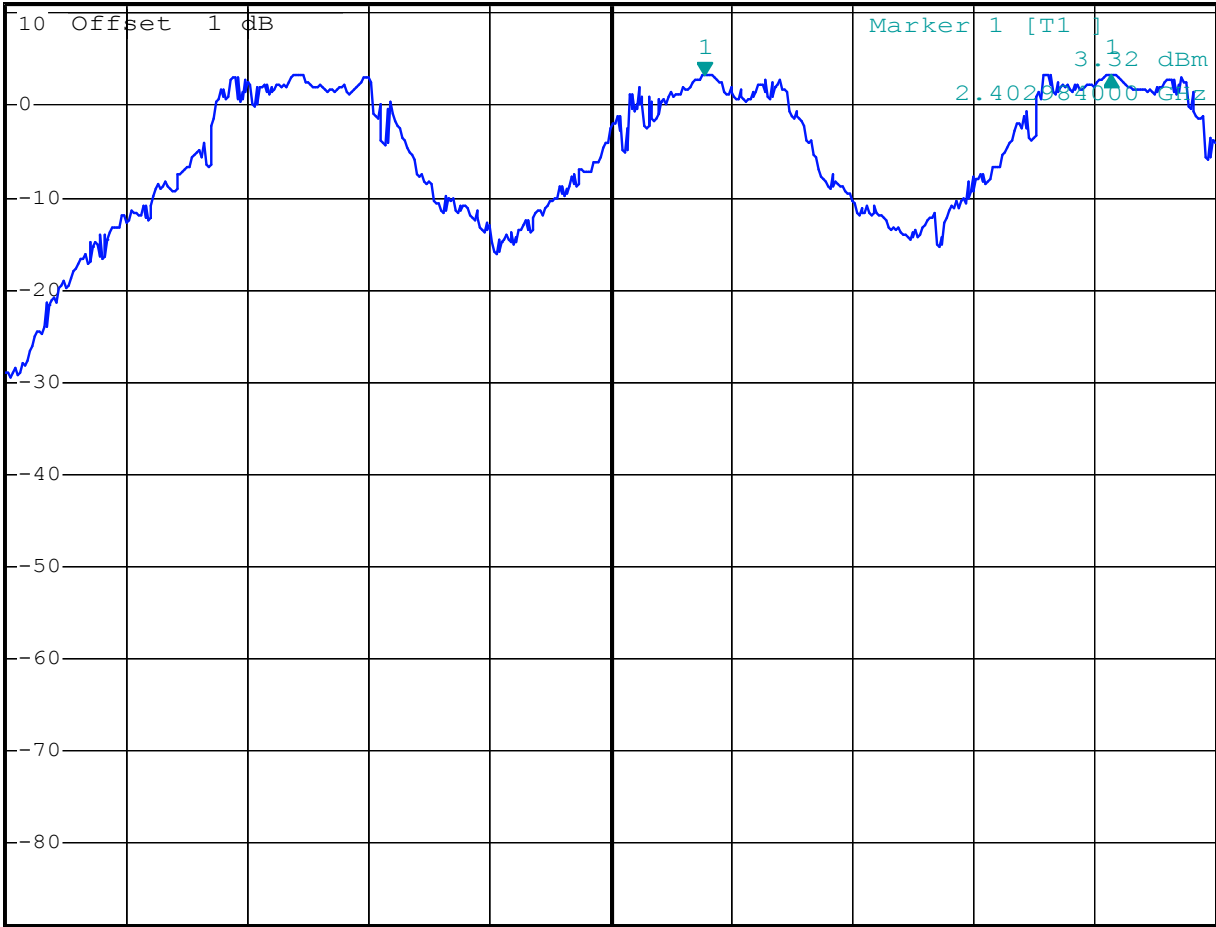
Channel	Channel Frequency (MHz)	Channel separation (MHz)	Limit (MHz)
Low	2402	1.008	0.690
Middle	2441	1.008	0.736
High	2480	1.008	0.688

The spectrum analyzer plots are attached as below.



1 PK
MAXH

* RBW 100 kHz Delta 1 [T1]
* VBW 300 kHz -0.01 dB
Ref 11 dBm * Att 20 dB SWT 2.5 ms 1.008000000 MHz



Center 2.40275 GHz 300 kHz/ Span 3 MHz

A

LVL

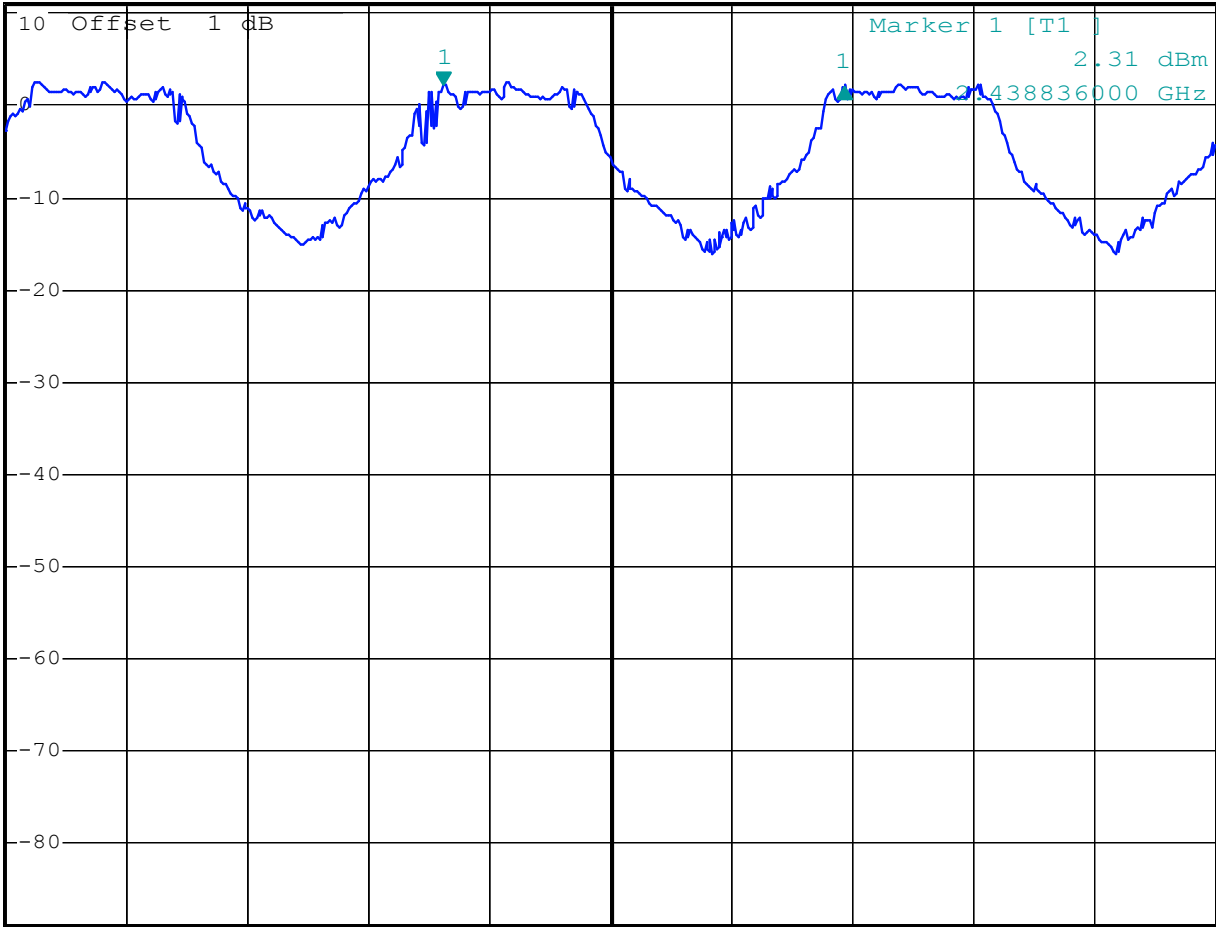
3DB

Date: 20.OCT.2012 11:27:34



1 PK
MAXH

*RBW 100 kHz Delta 1 [T1]
*VBW 300 kHz -0.71 dB
Ref 11 dBm *Att 20 dB SWT 2.5 ms 1.008000000 MHz



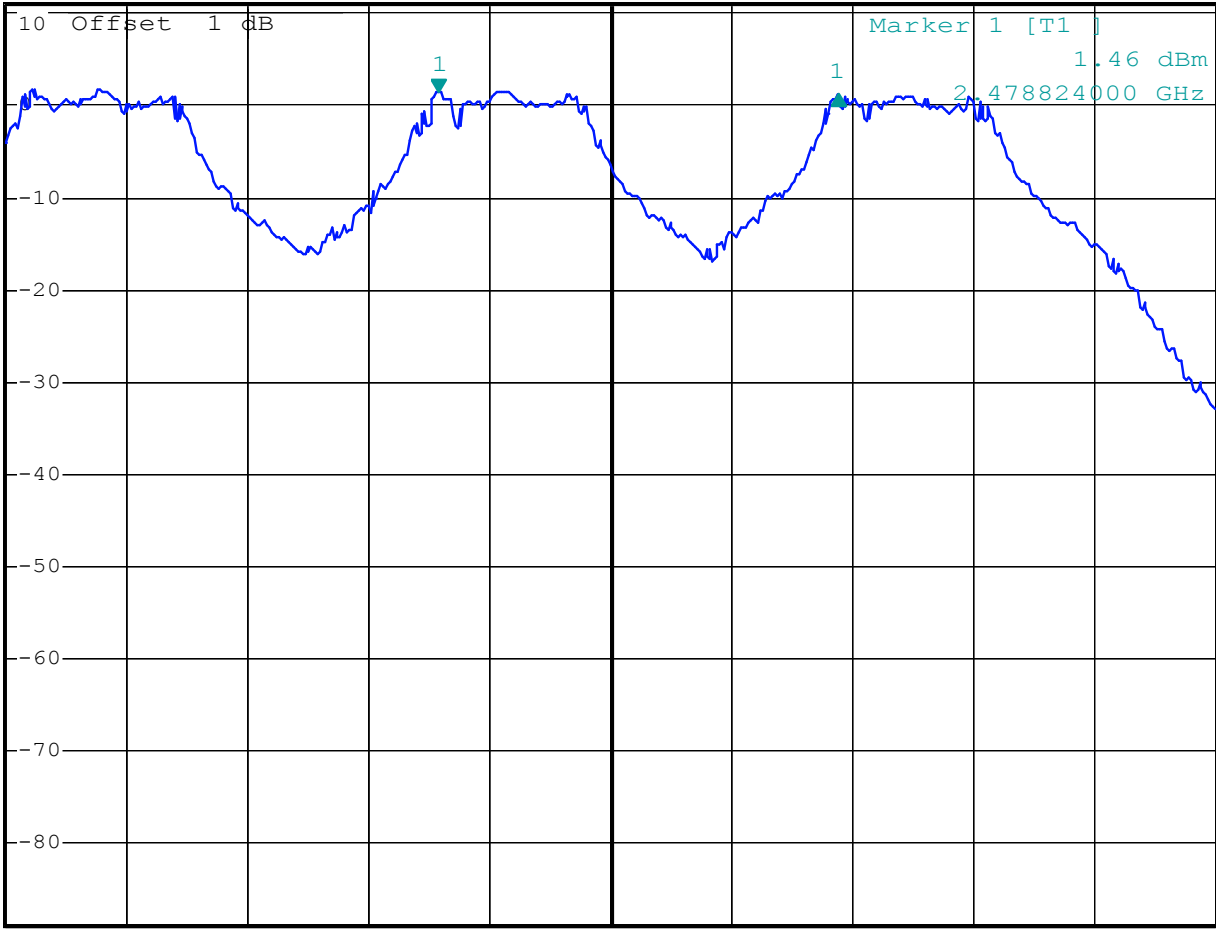
Center 2.43925 GHz 300 kHz/ Span 3 MHz

Date: 20.DEC.2012 11:24:16



1 PK
MAXH

*RBW 100 kHz Delta 1 [T1]
*VBW 300 kHz -0.79 dB
Ref 11 dBm *Att 20 dB SWT 2.5 ms 1.008000000 MHz

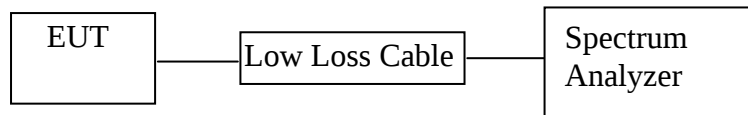


Center 2.47925 GHz 300 kHz/ Span 3 MHz

Date: 20.DEC.2012 11:21:05

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

7.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3. EUT Configuration on Measurement

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

7.3.1. Bluetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX (Hopping on) modes measure it.

7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Set the spectrum analyzer as Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.

7.5.3. Max hold, view and count how many channel in the band.

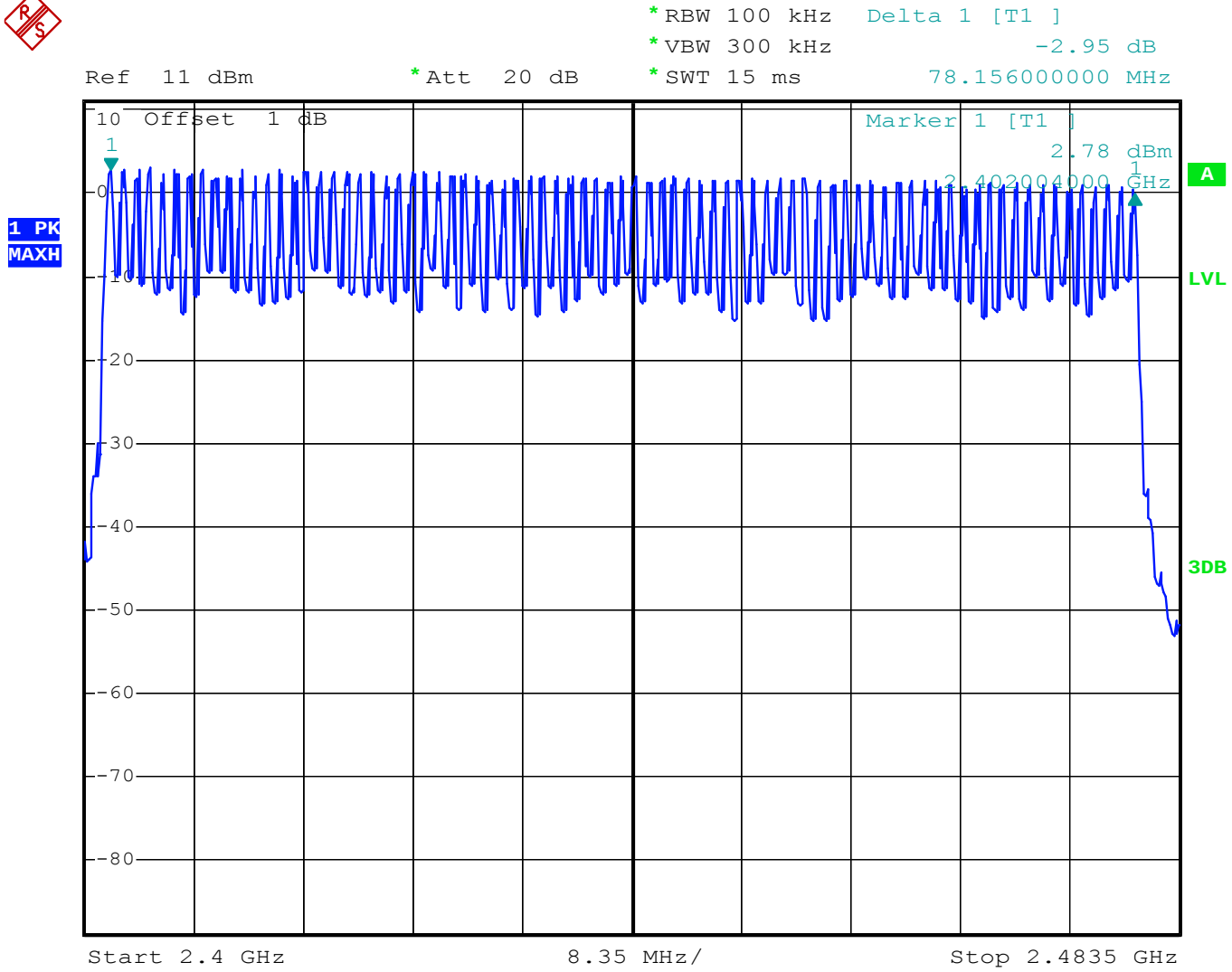
7.6. Test Result

PASS.

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Alen</u>

Total number of hopping channel	Measurement result (CH)	Limit (CH)
	79	>15

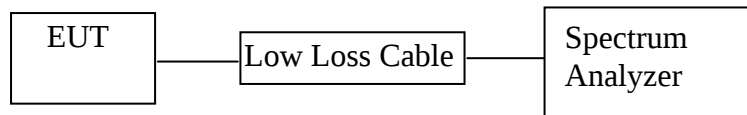
The spectrum analyzer plots are attached as below.



Date: 20.DEC.2012 15:48:09

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

8.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3. EUT Configuration on Measurement

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

8.3.1. Bluetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

8.5. Test Procedure

- 8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 8.5.2. Set center frequency of spectrum analyzer = operating frequency.
- 8.5.3. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Span=0Hz, Adjust Sweep=1s. Get the burst (in 1 sec.).
- 8.5.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=2ms. Get the pulse time.
- 8.5.5. Repeat above procedures until all frequency measured were complete.

8.6. Test Result

PASS.

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Alen</u>

DH1:

A period transmit time = $0.4 \times 79 = 31.6$

Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
Low	2402	0.537	171.840	400
Middle	2441	0.559	178.880	400
High	2480	0.537	171.840	400

DH3:

A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
Low	2402	1.806	288.960	400
Middle	2441	1.812	289.920	400
High	2480	1.812	289.920	400

DH5:

A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$

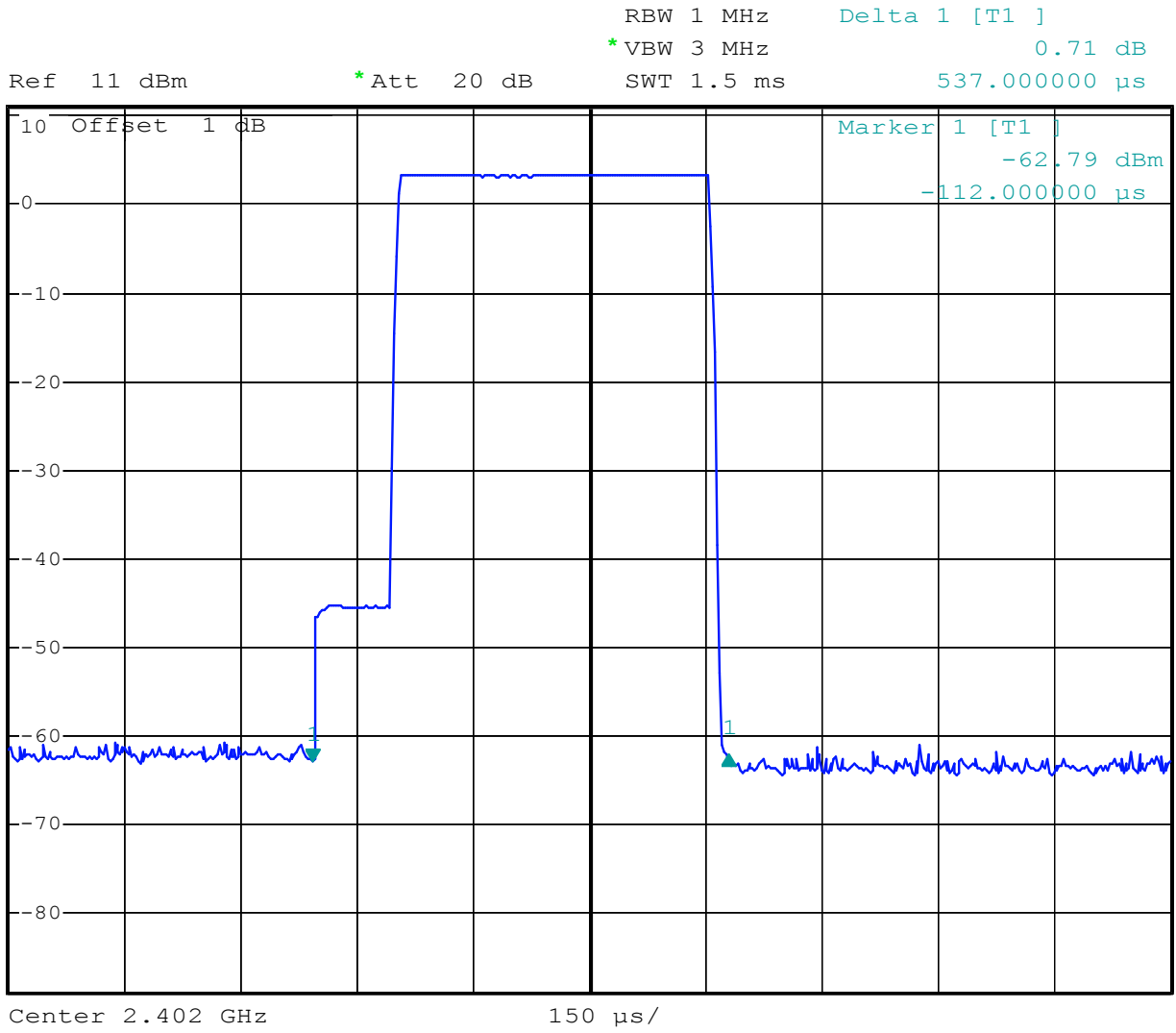
Channel	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
Low	2402	3.062	326.613	400
Middle	2441	3.062	326.613	400
High	2480	3.062	326.613	400

The spectrum analyzer plots are attached as below.

DH1:



1 PK
MAXH

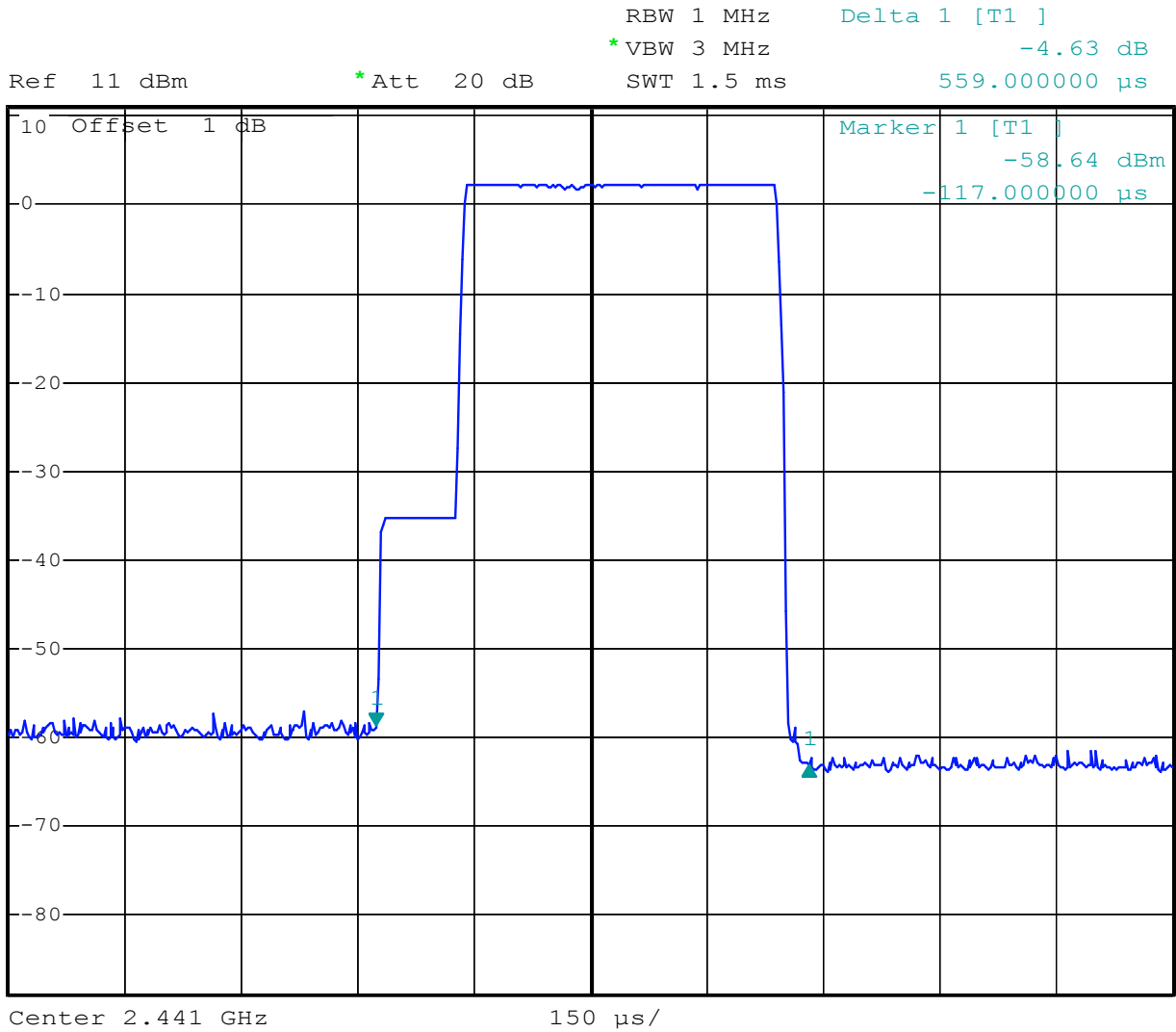


Date: 20.DEC.2012 11:32:33

DH1:



1 PK
MAXH

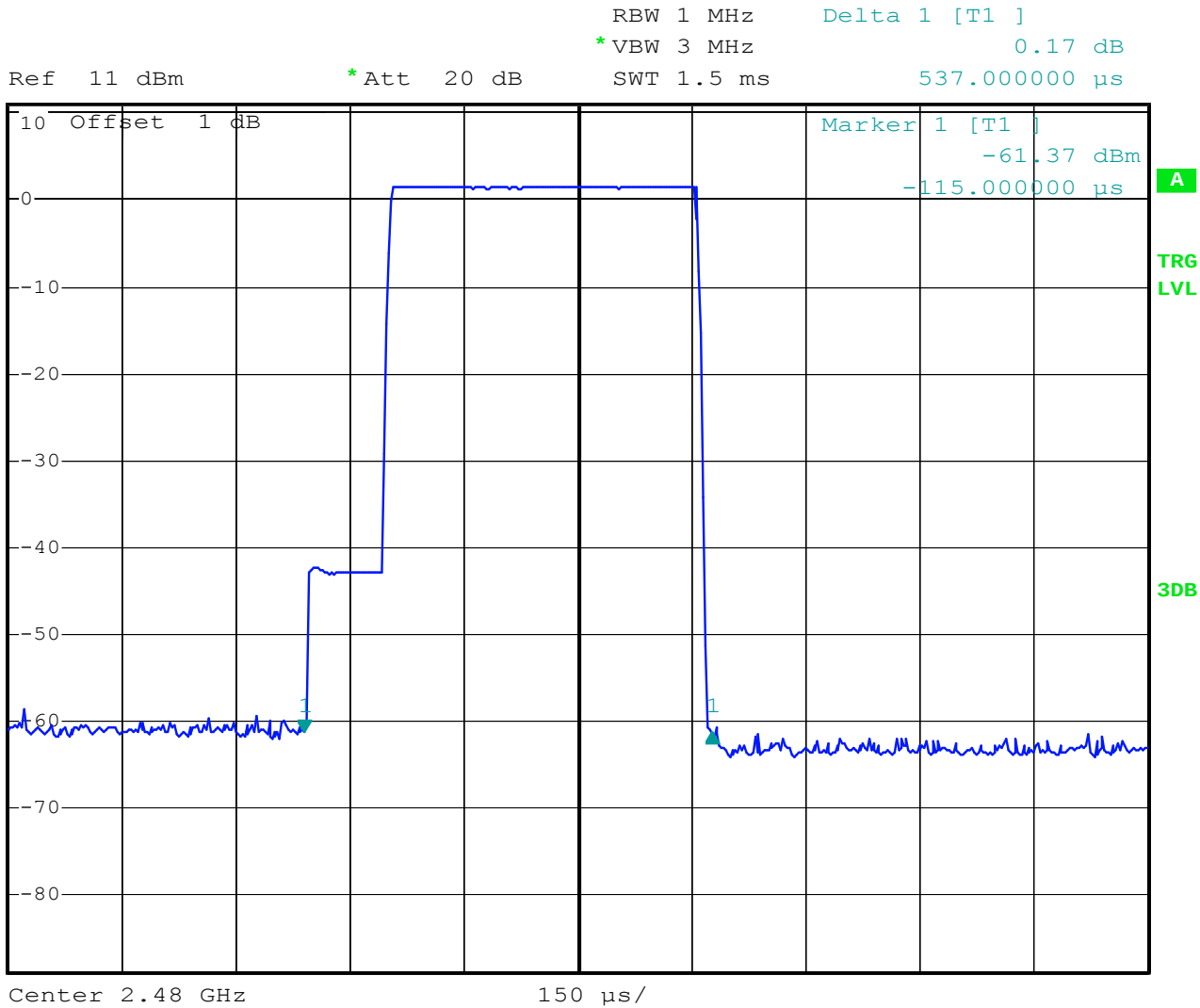


Date: 20.DEC.2012 15:44:05

DH1:



1 PK
MAXH

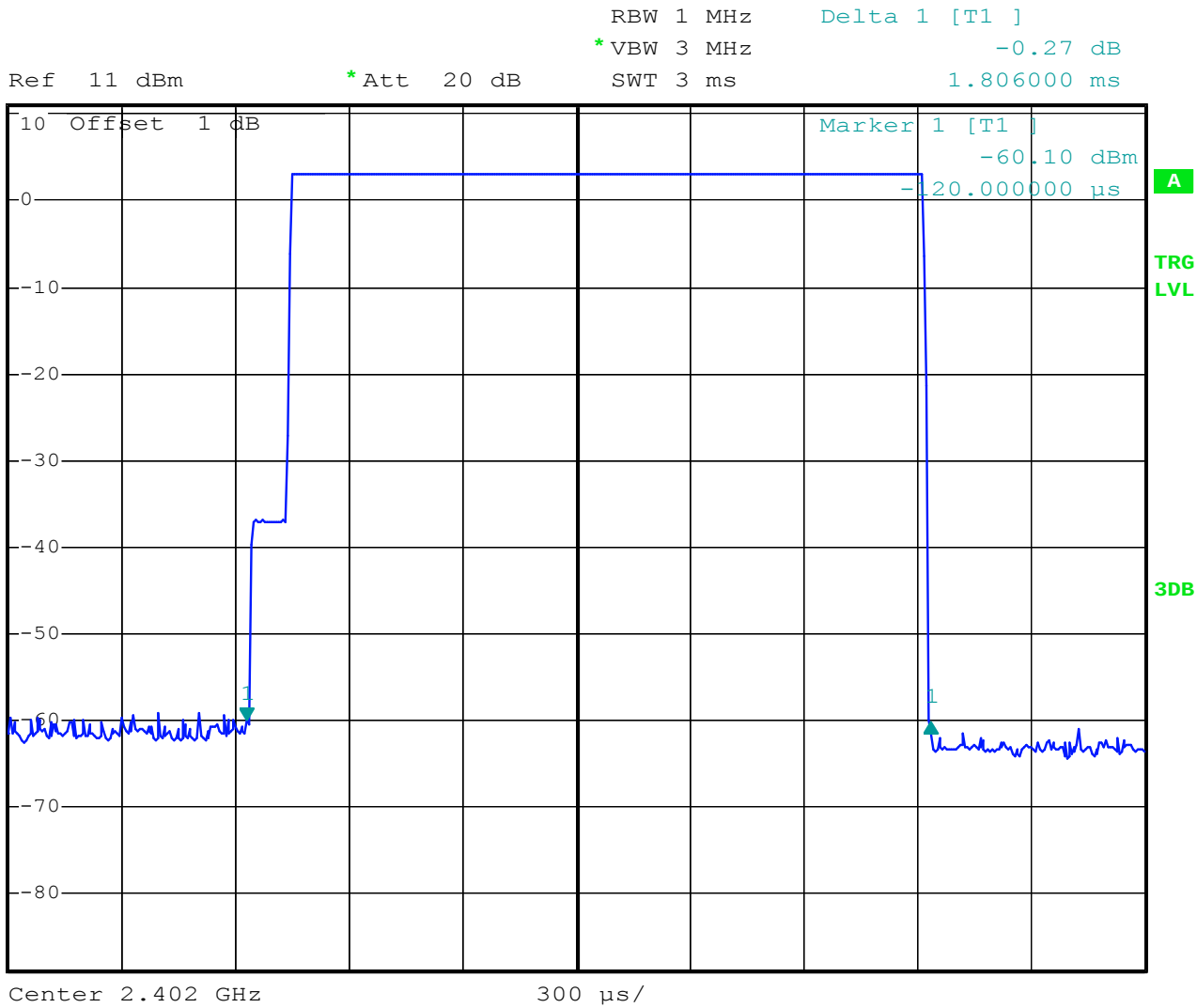


Date: 20.DEC.2012 11:33:53

DH3:



1 PK
MAXH



Date: 20.DEC.2012 15:41:28

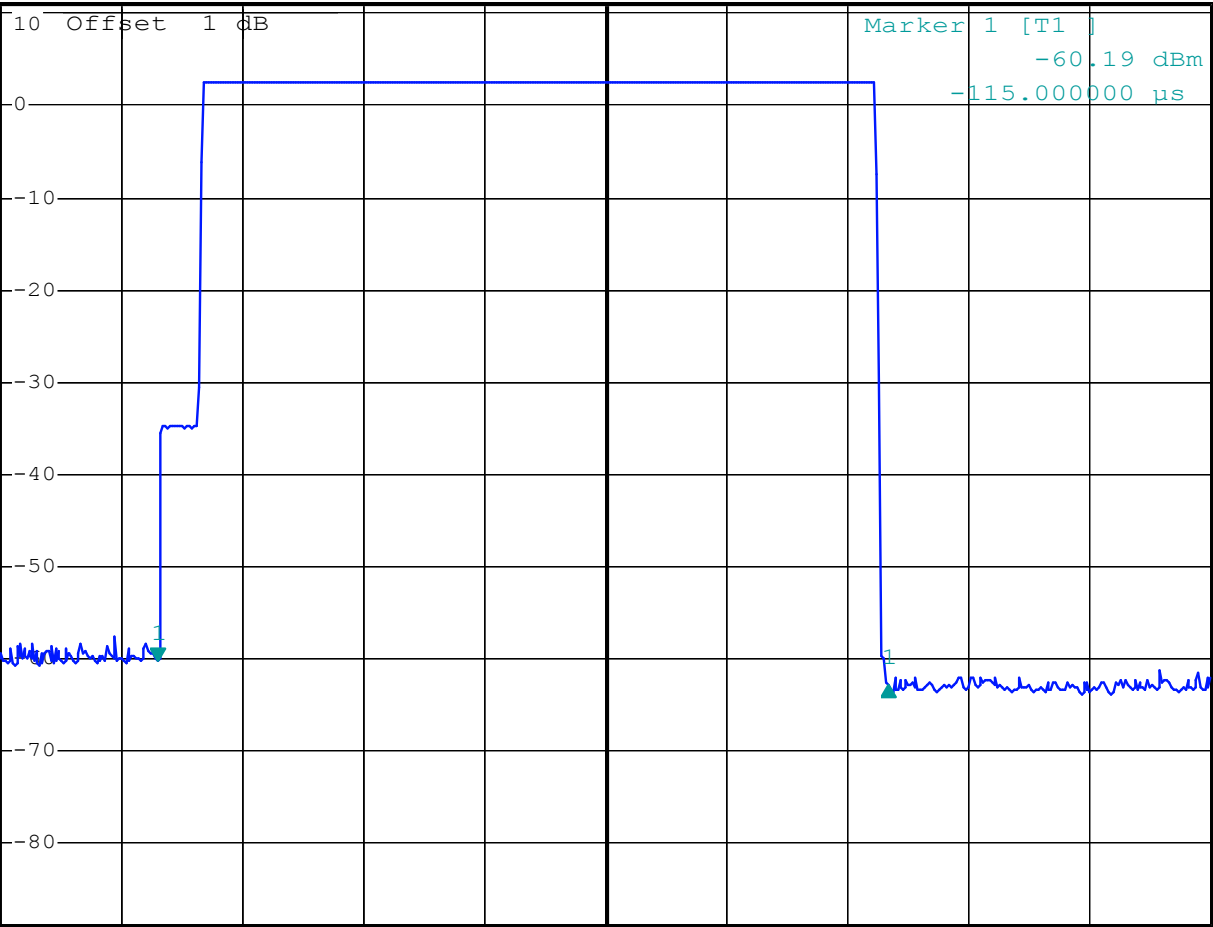
DH3:



RBW 1 MHz Delta 1 [T1]
*VBW 3 MHz -2.57 dB
SWT 3 ms 1.812000 ms

Ref 11 dBm *Att 20 dB

1 PK
MAXH



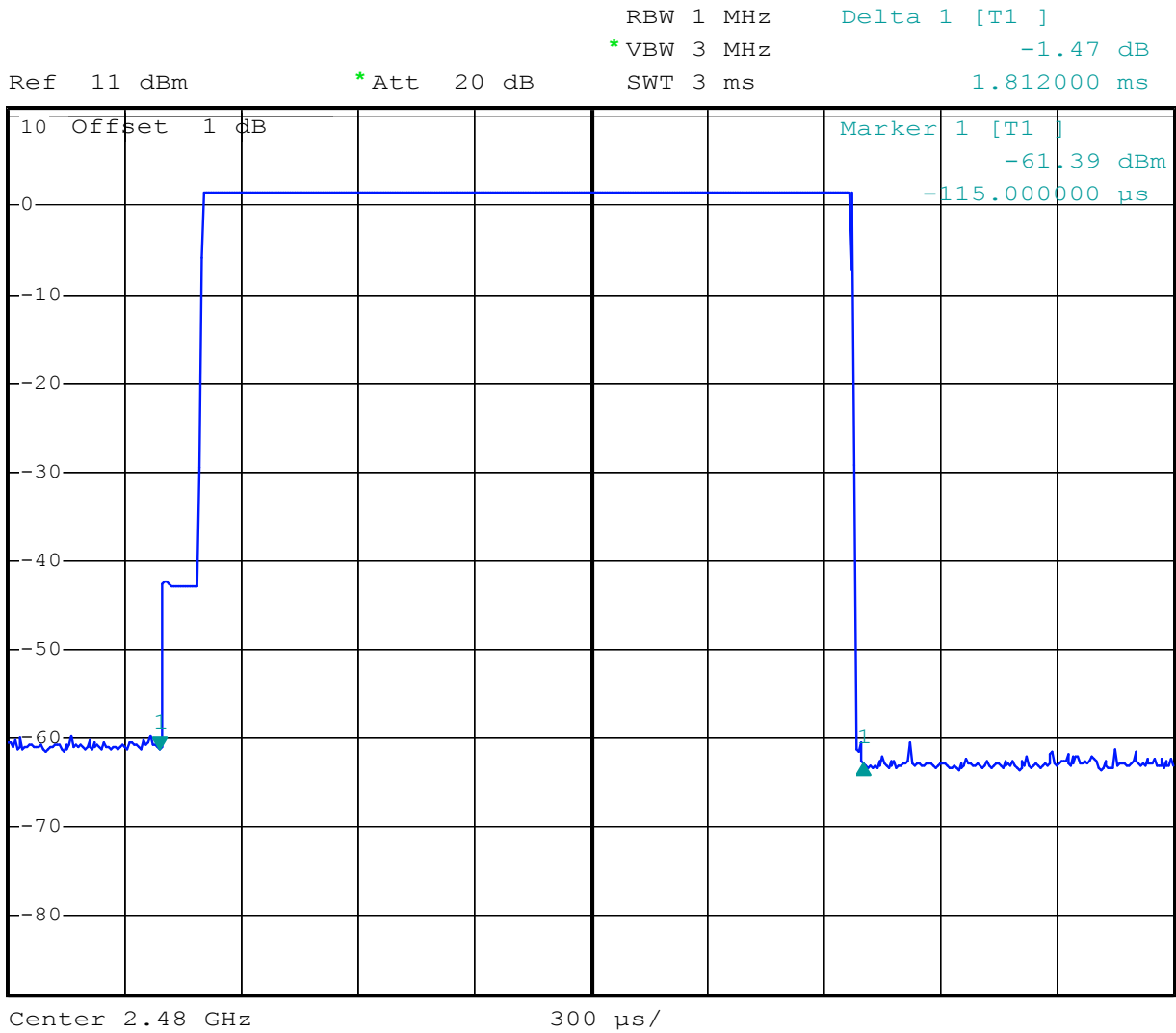
Center 2.441 GHz 300 μ s/

Date: 20.DEC.2012 11:36:44

DH3:



1 PK
MAXH



Date: 20.DEC.2012 11:35:58

DH5:

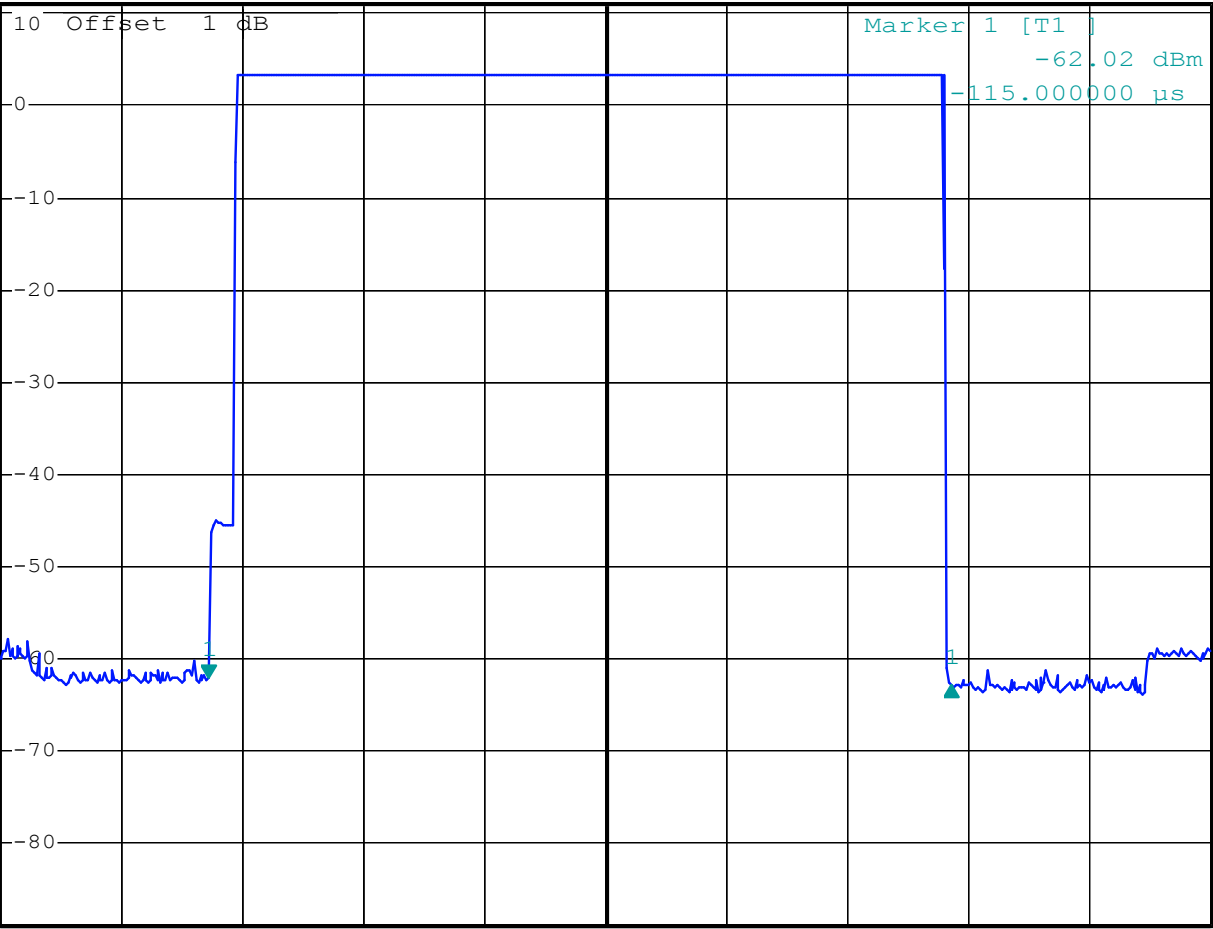


RBW 1 MHz Delta 1 [T1]
*VBW 3 MHz -0.84 dB
SWT 5 ms 3.062000 ms

Ref 11 dBm

*Att 20 dB

1 PK
MAXH



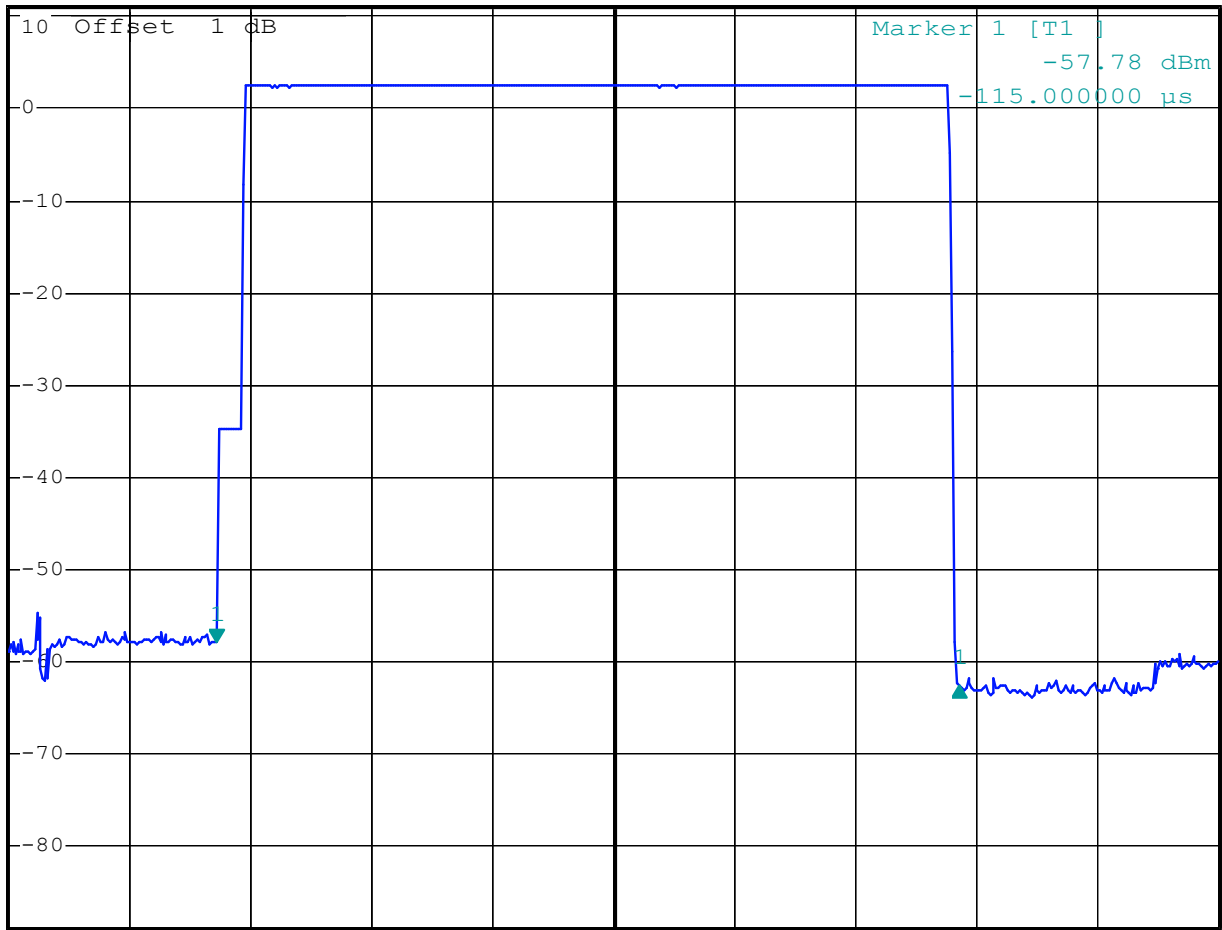
Date: 20.DEC.2012 11:38:43

DH5:



1 PK
MAXH

Ref 11 dBm *Att 20 dB RBW 1 MHz Delta 1 [T1]
*VBW 3 MHz -4.76 dB
SWT 5 ms 3.062000 ms



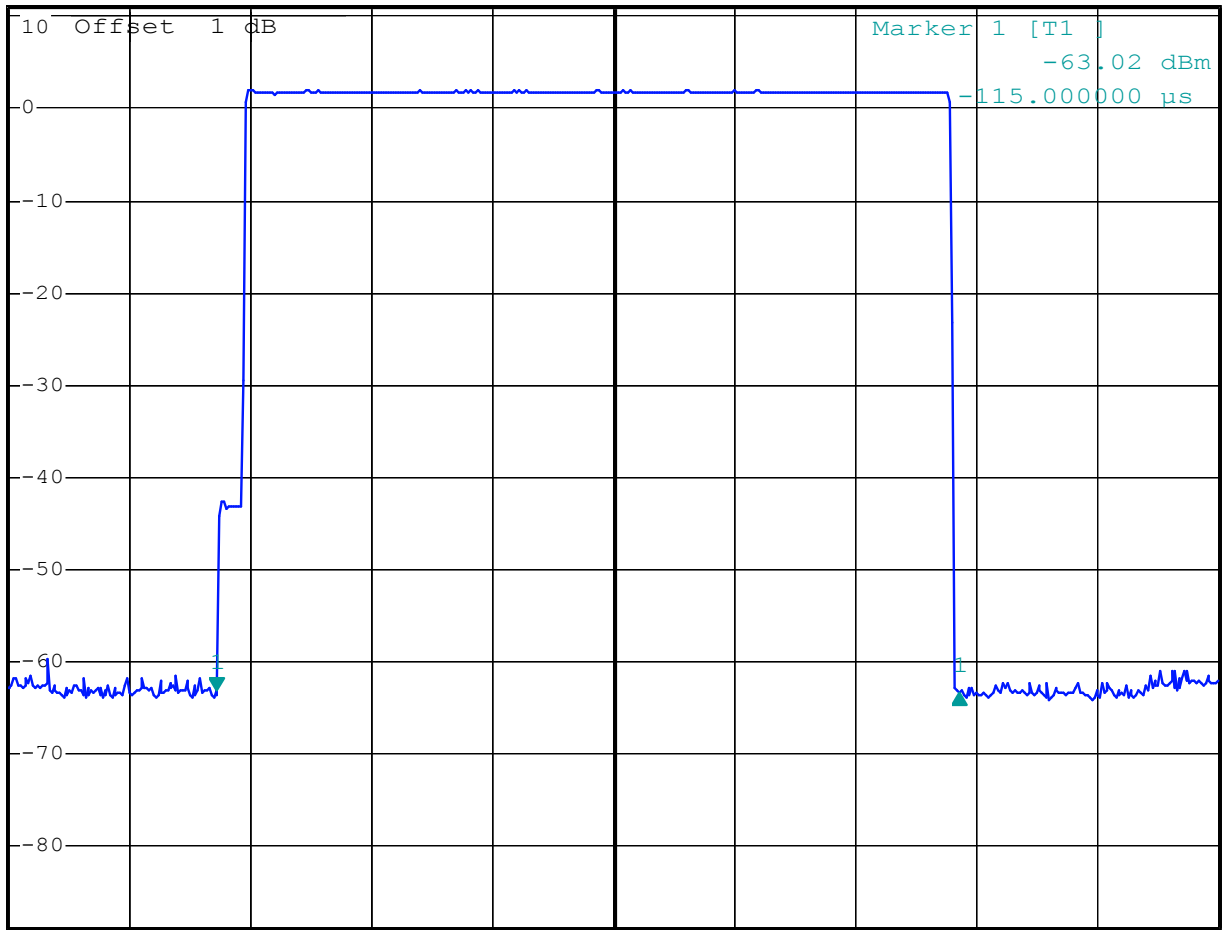
Date: 20.DEC.2012 11:39:41

DH5:



1 PK
MAXH

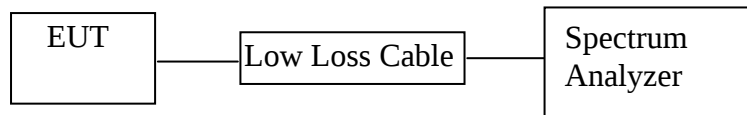
Ref 11 dBm *Att 20 dB RBW 1 MHz Delta 1 [T1]
*VBW 3 MHz -0.41 dB
SWT 5 ms 3.062000 ms



Date: 20.DEC.2012 11:40:51

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

9.2. The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3. EUT Configuration on Measurement

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

9.3.1. Bluetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz.

9.5.3. Measurement the maximum peak output power.

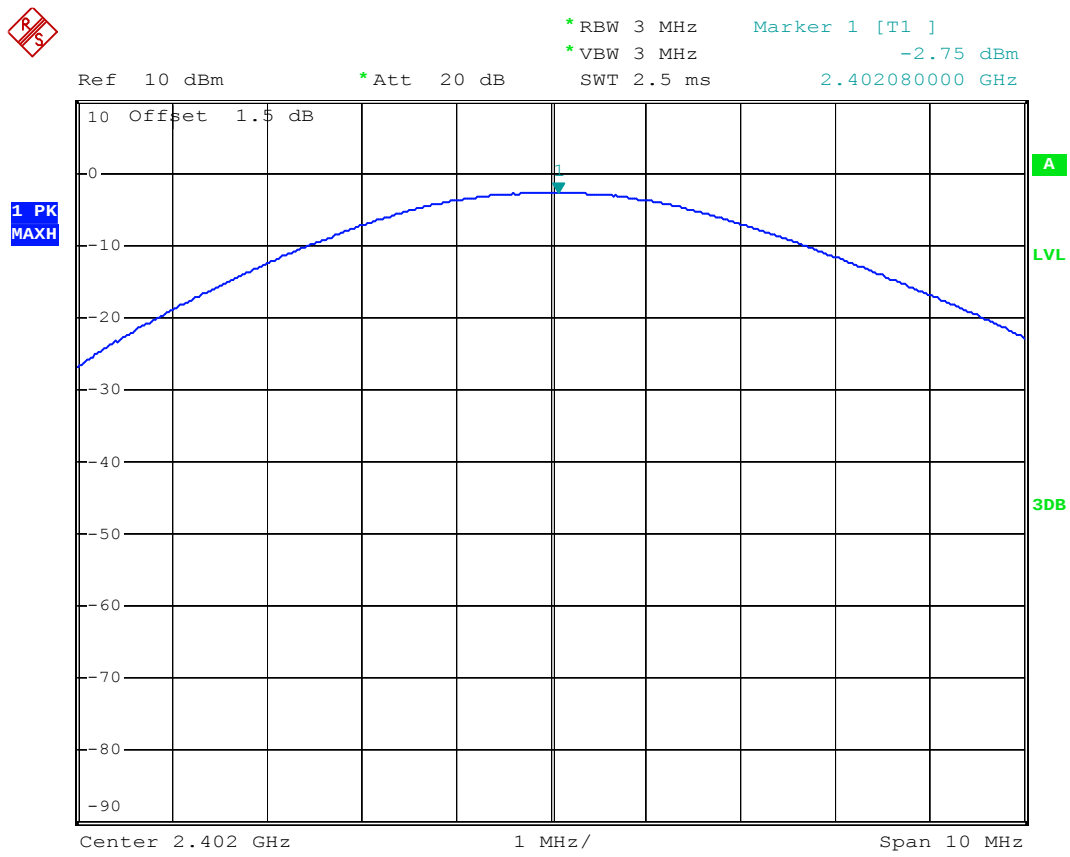
9.6. Test Result

PASS.

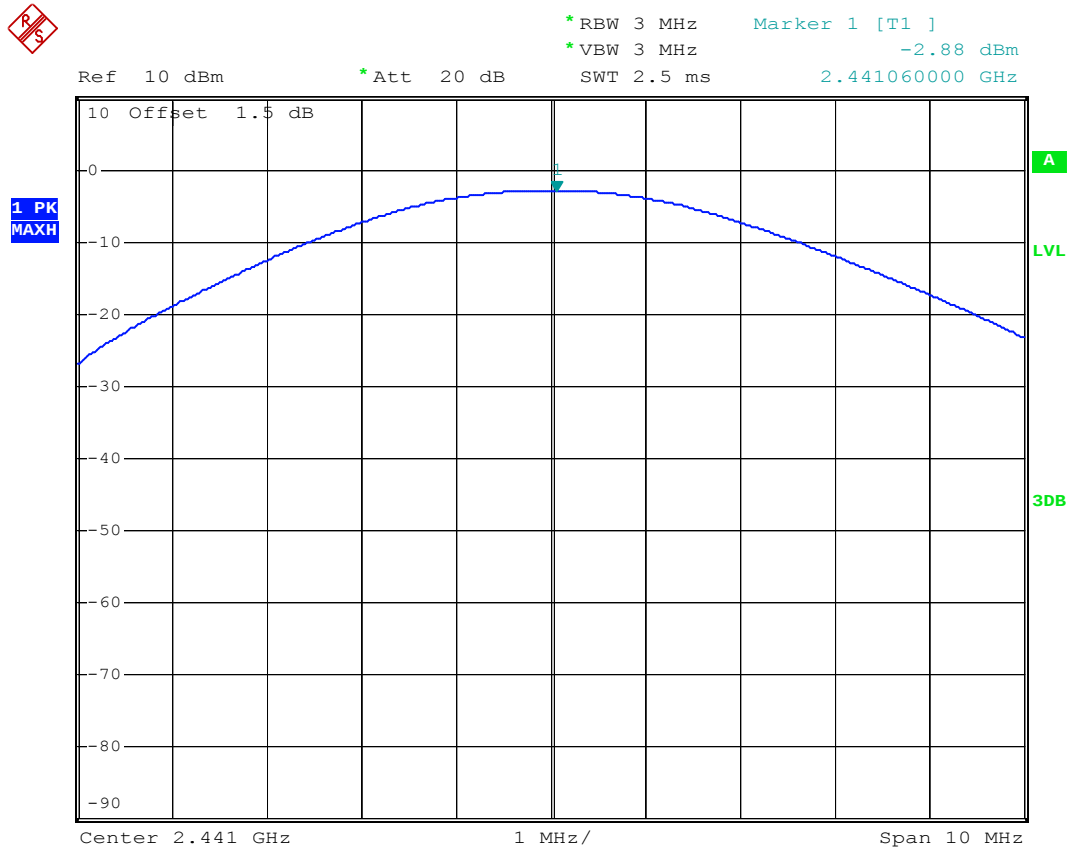
Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Alen</u>

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limits dBm / W
Low	2402	-2.75	0.53	21 / 0.125
Middle	2441	-2.88	0.52	21 / 0.125
High	2480	-1.71	0.67	21 / 0.125

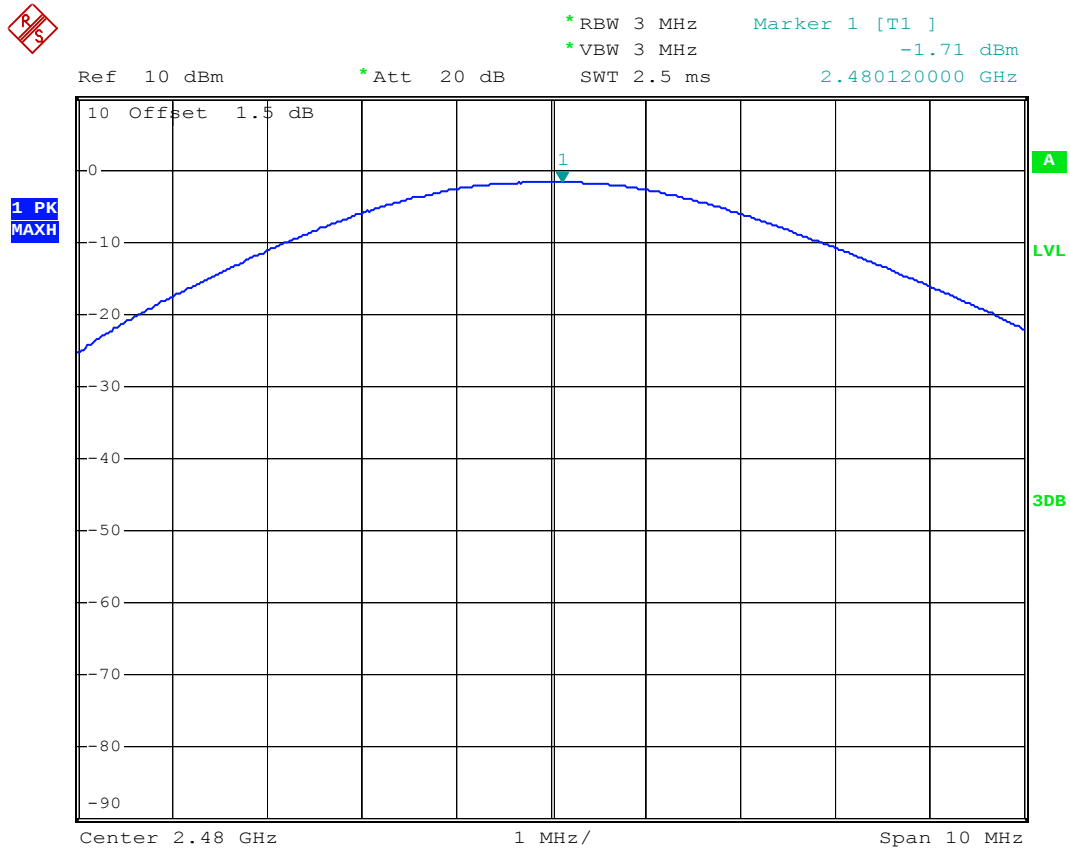
The spectrum analyzer plots are attached as below.



Date: 20.DEC.2012 16:31:31



Date: 20.DEC.2012 16:39:24

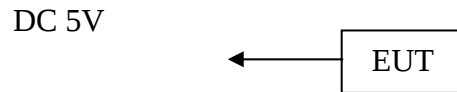


Date: 20.DEC.2012 16:41:32

10. RADIATED EMISSION TEST

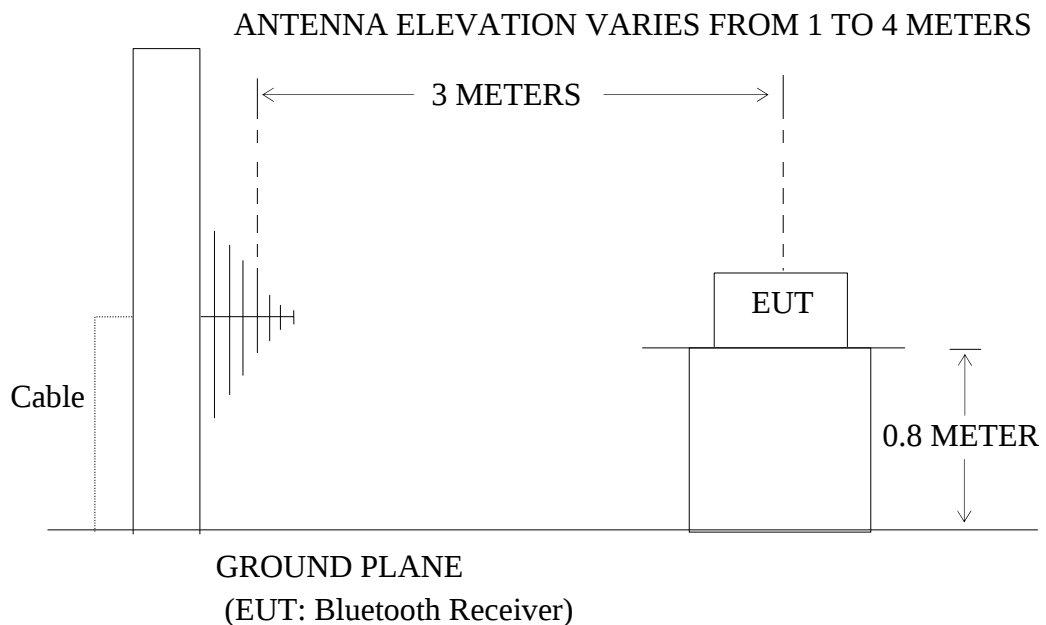
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and simulators



(EUT: Bluetooth Receiver)

10.1.2. Anechoic Chamber Test Setup Diagram



10.2. The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

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

10.4.1.Bluetooth Receiver (EUT)

Model Number : Bayan StreamPort
 Serial Number : N/A
 Manufacturer : Musilab Electronic (DongGuan) Co., Ltd

10.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 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 polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120 KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

10.6.The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	Dec 18, 2012	Temperature:	25°C
EUT:	Bluetooth Receiver	Humidity:	50%
Model No.:	Bayan StreamPort	Power Supply:	DC 5V
Test Mode:	TX (2402MHz)	Test Engineer:	Alen

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
84.5806	7.32	13.46	20.78	40.00	-19.22	Vertical
170.7878	8.21	12.92	21.13	43.50	-22.37	Vertical
357.1923	8.75	21.17	29.92	46.00	-16.08	Vertical
160.8850	8.36	12.11	20.47	43.50	-23.03	Horizontal
362.2479	4.05	21.35	25.40	43.50	-20.60	Horizontal
476.4624	4.02	23.76	27.78	46.00	-18.22	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4804.000	45.01	48.75	-0.47	44.54	48.28	54.00	74.00	-9.46	-25.72	Vertical
4804.000	45.36	48.57	-0.47	44.89	48.10	54.00	74.00	-9.11	-25.90	Horizontal

Note: 1.The emission emitted by the EUT is too low to be measured except the emission listed above.

2. *: Denotes restricted band of operation.

3. The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.

Date of Test:	Dec 18, 2012	Temperature:	25°C
EUT:	Bluetooth Receiver	Humidity:	50%
Model No.:	Bayan StreamPort	Power Supply:	DC 5V
Test Mode:	TX (2441MHz)	Test Engineer:	Alen

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
81.3740	8.69	12.76	21.45	40.00	-18.55	Vertical
167.8136	8.97	12.58	21.55	43.50	-21.95	Vertical
357.1923	8.14	21.17	29.31	46.00	-16.69	Vertical
170.7878	9.01	12.92	21.93	43.50	-21.57	Horizontal
289.2986	4.20	18.58	22.78	46.00	-23.22	Horizontal
744.4265	3.58	27.55	31.13	46.00	-14.87	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4882.000	44.82	48.23	-0.15	44.67	48.08	54.00	74.00	-9.33	-25.92	Vertical
4882.000	45.14	48.40	-0.15	44.99	48.25	54.00	74.00	-9.01	-25.75	Horizontal

Note: 1.The emission emitted by the EUT is too low to be measured except the emission listed above.**2. *: Denotes restricted band of operation.****3. The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.**

Date of Test:	Dec 18, 2012	Temperature:	25°C
EUT:	Bluetooth Receiver	Humidity:	50%
Model No.:	Bayan StreamPort	Power Supply:	DC 5V
Test Mode:	TX (2480MHz)	Test Engineer:	Alen

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
79.1185	8.76	12.23	20.99	40.00	-19.01	Vertical
165.4716	7.98	12.24	20.22	43.50	-23.28	Vertical
357.1923	9.01	21.17	30.18	46.00	-15.82	Vertical
171.3890	6.98	12.93	19.91	43.50	-23.59	Horizontal
338.8546	5.32	19.98	25.30	46.00	-20.70	Horizontal
776.4849	4.02	27.84	31.86	46.00	-14.14	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4960.000	44.82	48.03	0.24	45.06	48.27	54.00	74.00	-8.94	-25.73	Vertical
4960.000	44.28	47.52	0.24	44.52	47.76	54.00	74.00	-9.48	-26.24	Horizontal

Note: 1.The emission emitted by the EUT is too low to be measured except the emission listed above.**2. *: Denotes restricted band of operation.****3. The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.**



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Site: 2# Chamber
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Fax:+86-0755-26503396

Job No.: ALEN #816

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2402MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

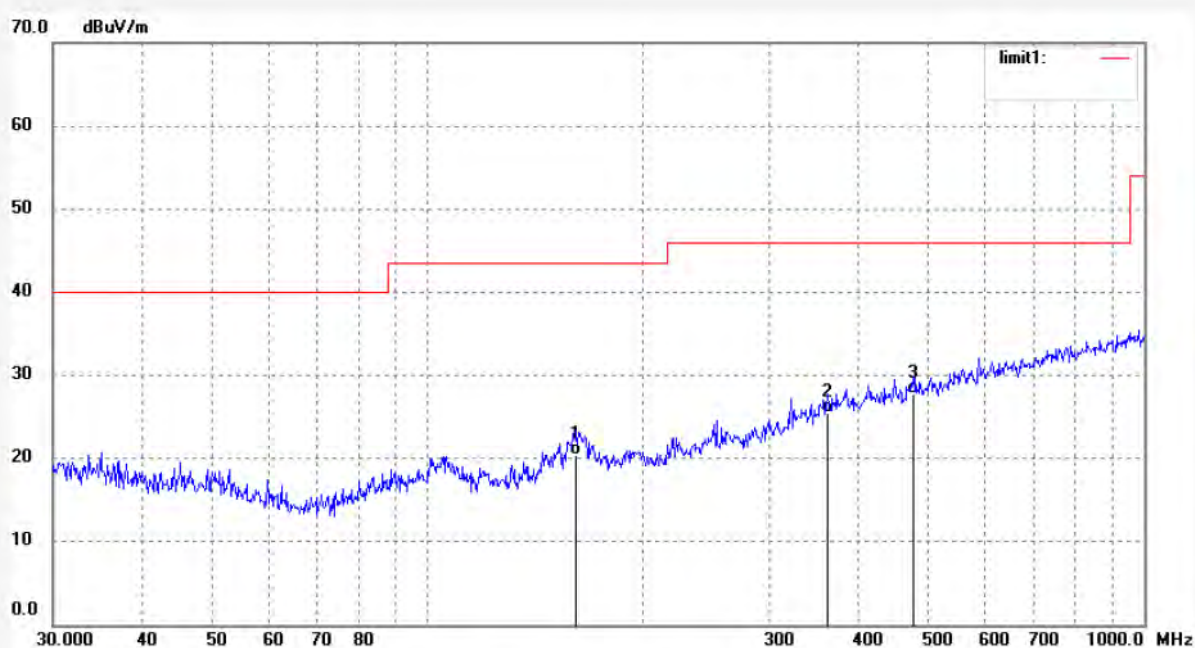
Date: 2012/12/18

Time: 15:55:15

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	160.8850	8.36	12.11	20.47	43.50	-23.03	QP			
2	362.2479	4.05	21.35	25.40	46.00	-20.60	QP			
3	476.4624	4.02	23.76	27.78	46.00	-18.22	QP			



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Fax:+86-0755-26503396

Job No.: ALEN #817

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2402MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

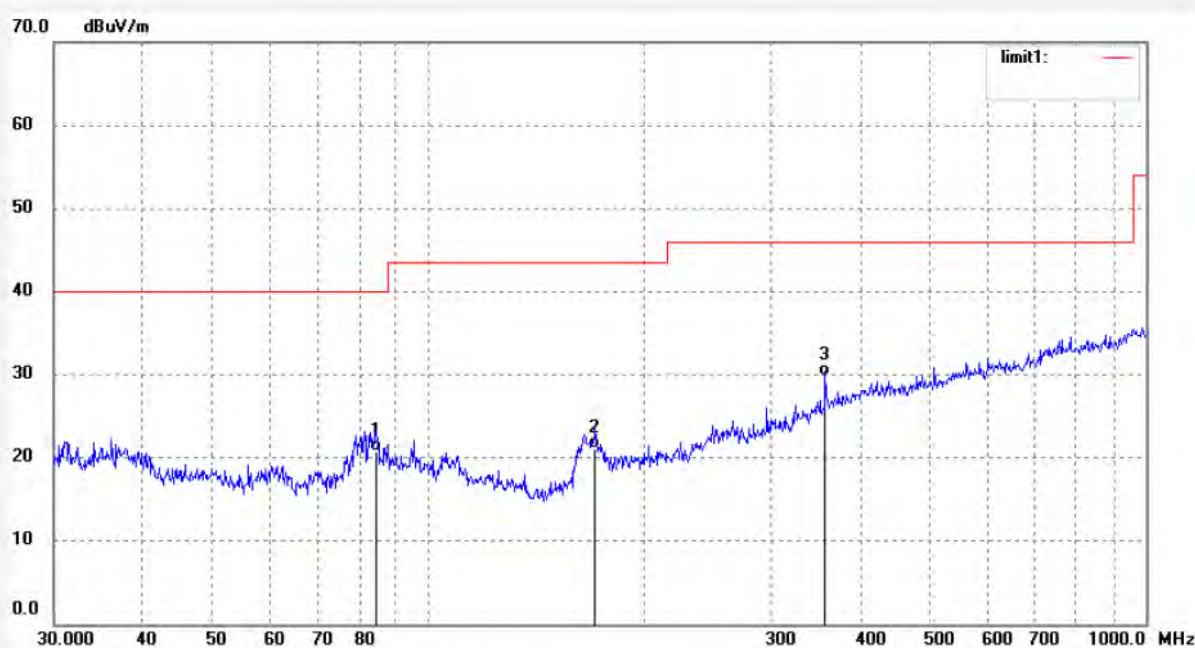
Date: 2012/12/18

Time: 15:56:50

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	84.5806	7.32	13.46	20.78	40.00	-19.22	QP			
2	170.7878	8.21	12.92	21.13	43.50	-22.37	QP			
3	357.1923	8.75	21.17	29.92	46.00	-16.08	QP			



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Fax:+86-0755-26503396

Job No.: ALEN #820

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2441MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

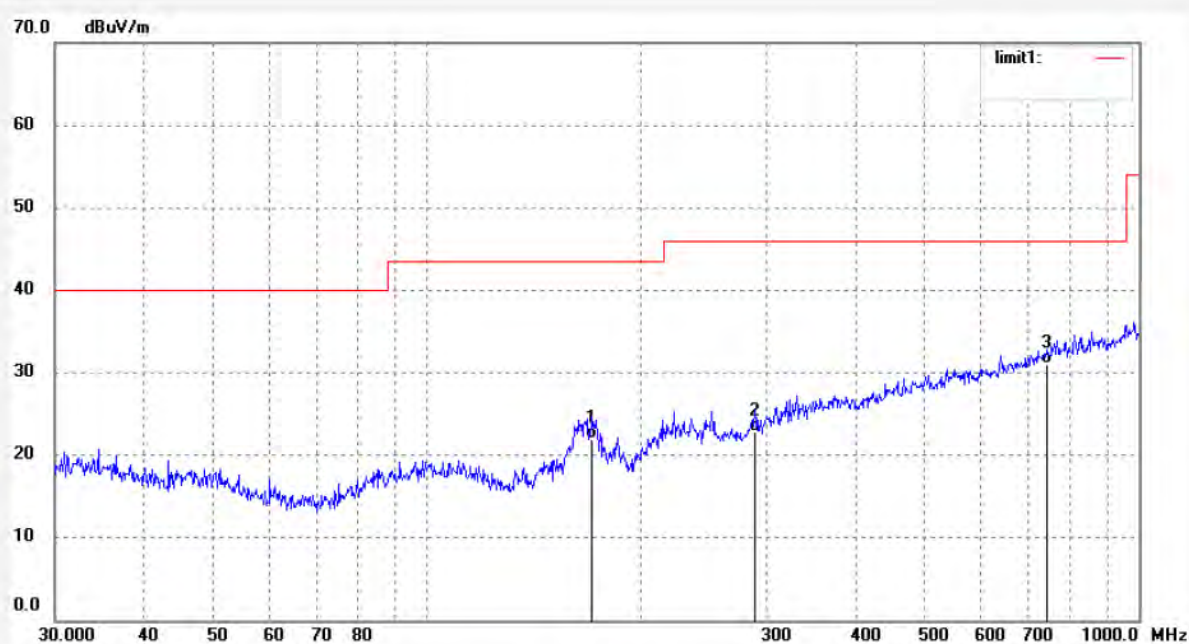
Date: 2012/12/18

Time: 15:59:37

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	170.7878	9.01	12.92	21.93	43.50	-21.57	QP			
2	289.2986	4.20	18.58	22.78	46.00	-23.22	QP			
3	744.4265	3.58	27.55	31.13	46.00	-14.87	QP			



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Job No.: ALEN #821

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2441MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

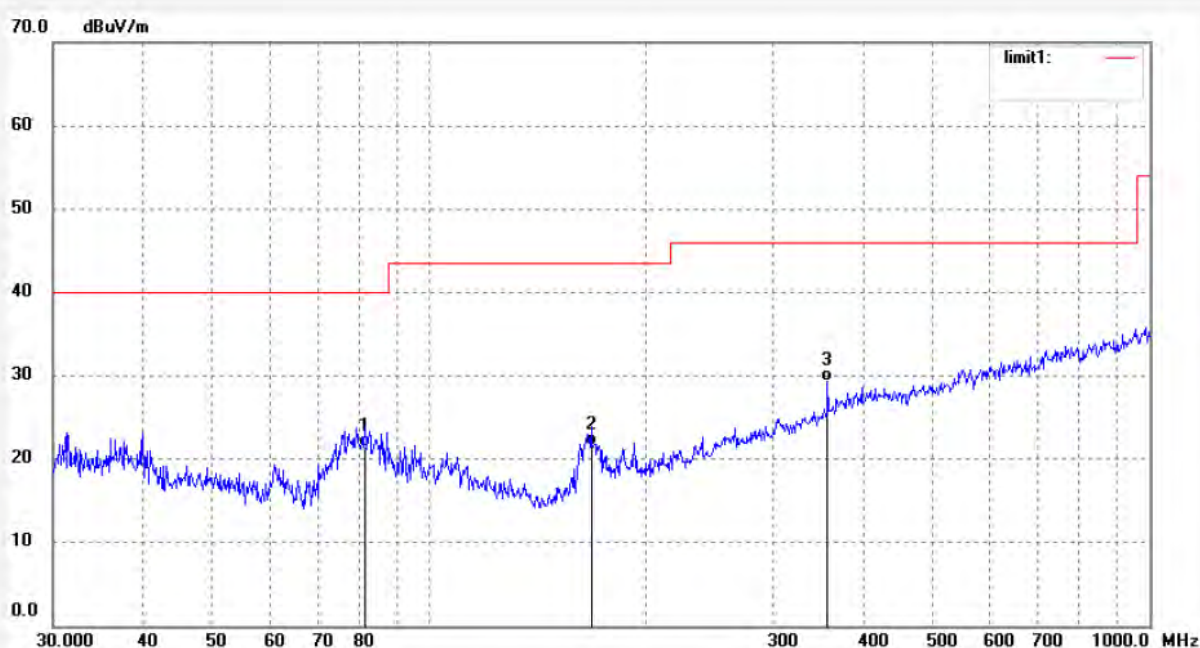
Date: 2012/12/18

Time: 16:00:33

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	81.3740	8.69	12.76	21.45	40.00	-18.55	QP			
2	167.8136	8.97	12.58	21.55	43.50	-21.95	QP			
3	357.1923	8.14	21.17	29.31	46.00	-16.69	QP			



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Job No.: ALEN #818

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2480MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

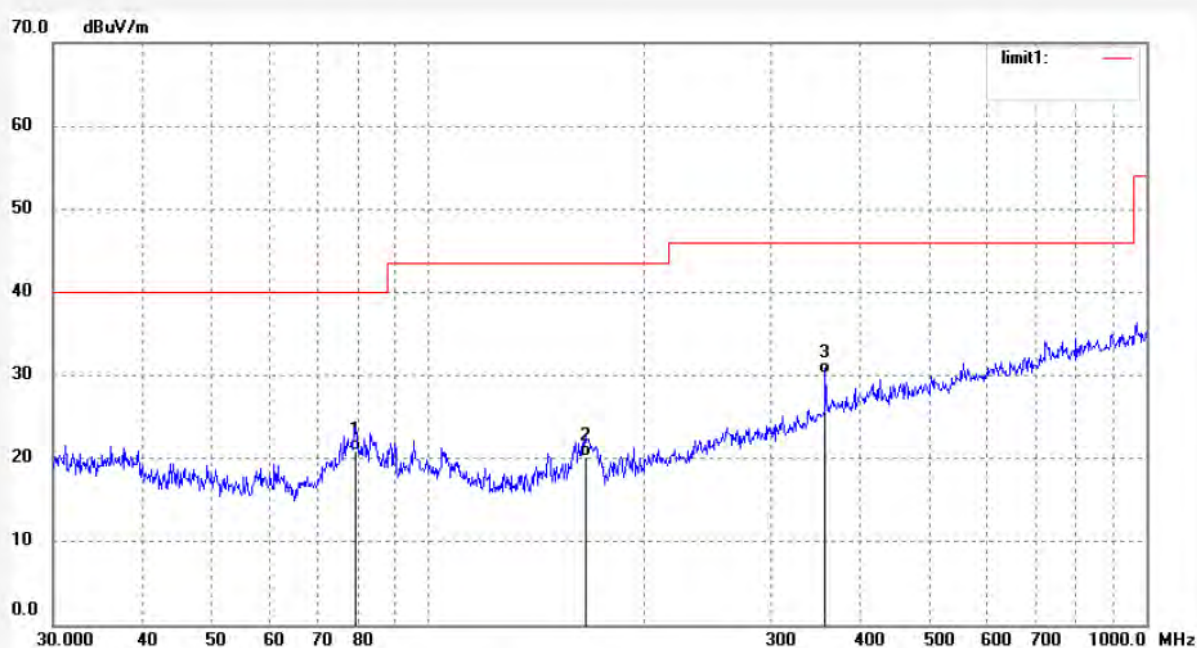
Date: 2012/12/18

Time: 15:57:51

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	79.1185	8.76	12.23	20.99	40.00	-19.01	QP			
2	165.4716	7.98	12.24	20.22	43.50	-23.28	QP			
3	357.1923	9.01	21.17	30.18	46.00	-15.82	QP			



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Job No.: ALEN #819

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2480MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

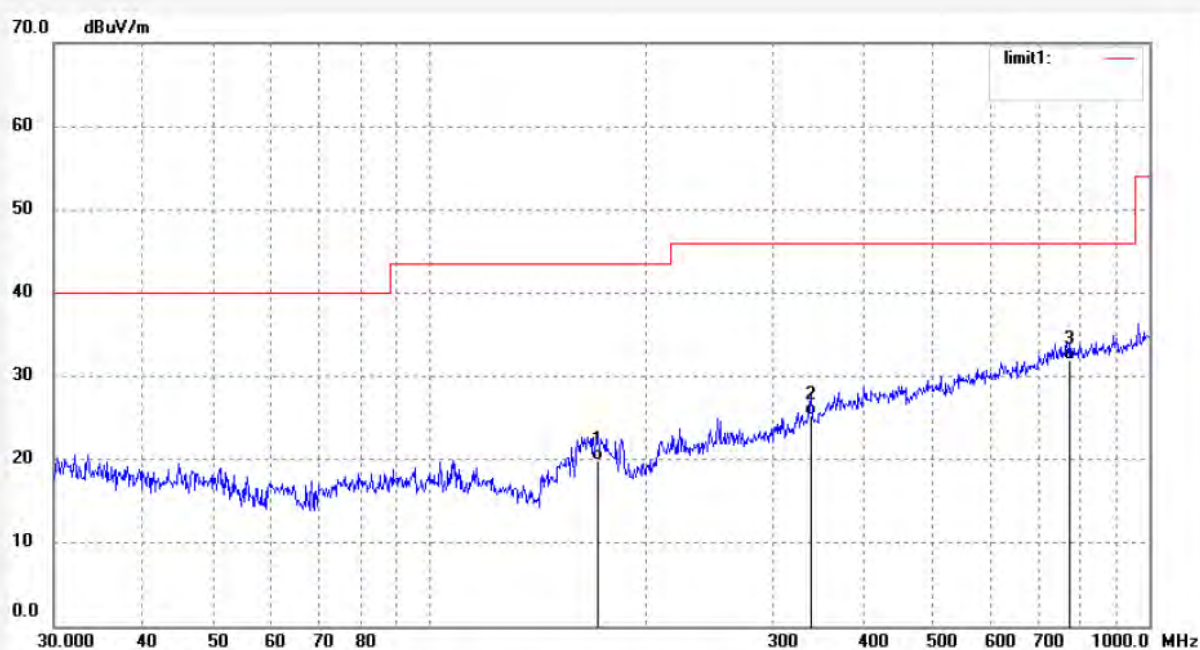
Date: 2012/12/18

Time: 15:58:48

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	171.3890	6.98	12.93	19.91	43.50	-23.59	QP			
2	338.8546	5.32	19.98	25.30	46.00	-20.70	QP			
3	776.4849	4.02	27.84	31.86	46.00	-14.14	QP			



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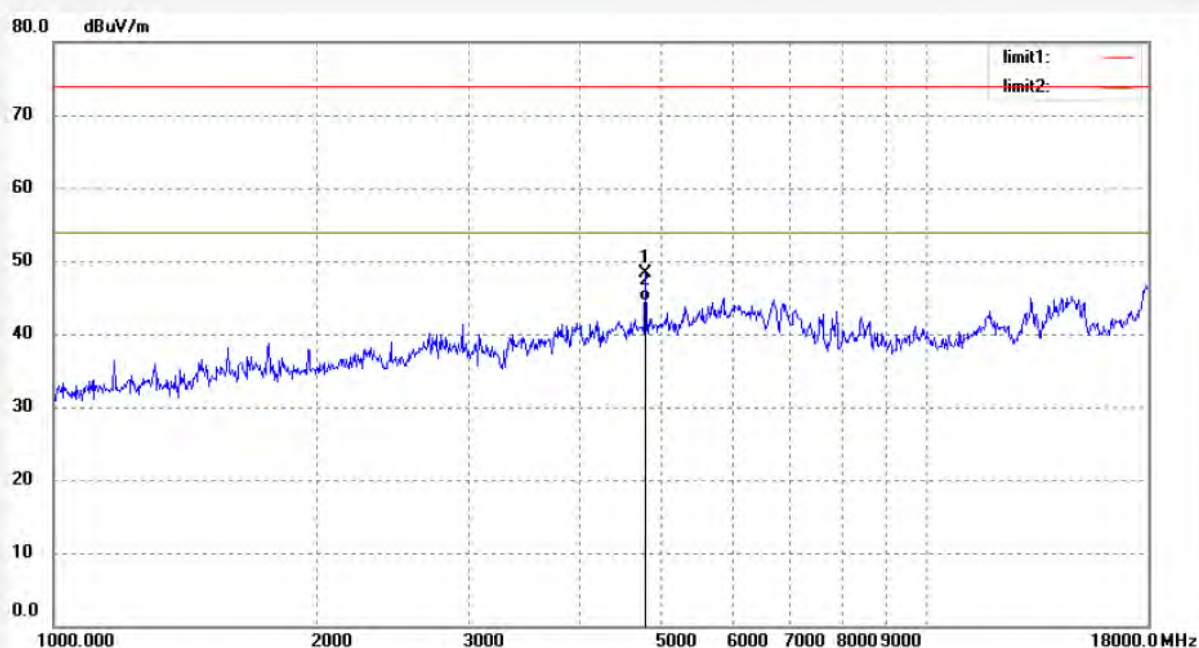
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #425
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2402MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Vertical
Power Source: USB 5V
Date: 12/10/29/
Time: 9/20/44
Engineer Signature:
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.000	48.75	-0.47	48.28	74.00	-25.72	peak			
2	4804.000	45.01	-0.47	44.54	54.00	-9.46	AVG			



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #426

Standard: FCC 15C PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2402MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

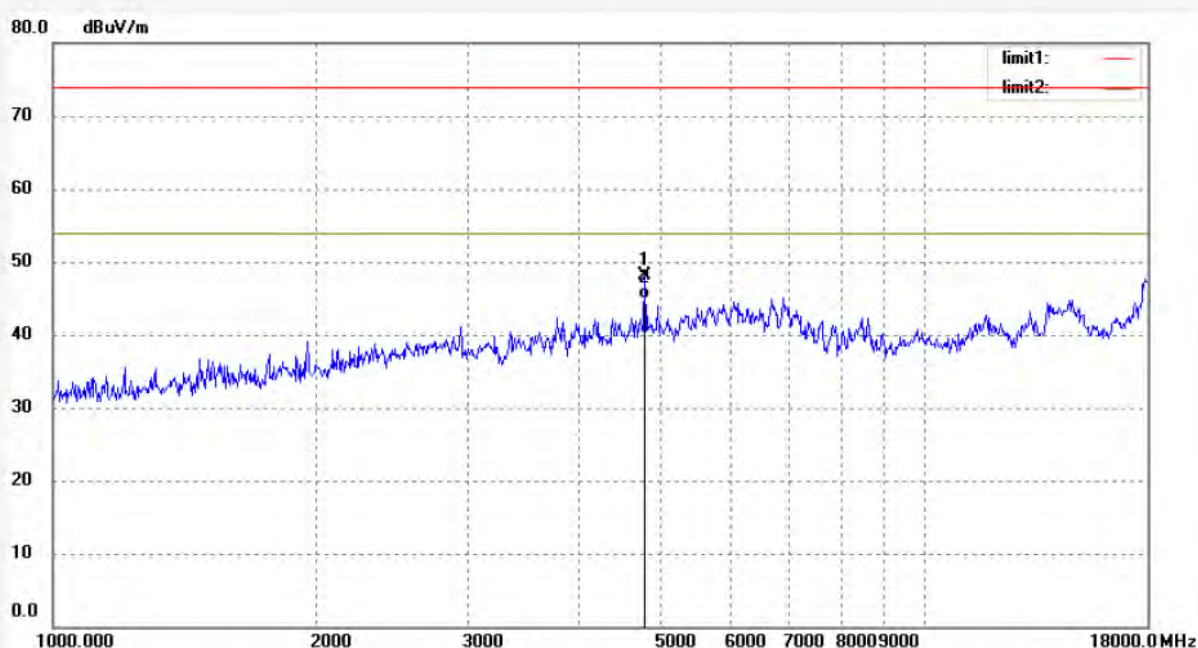
Date: 12/10/29/

Time: 9/22/02

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.000	48.57	-0.47	48.10	74.00	-25.90	peak			
2	4804.000	45.36	-0.47	44.89	54.00	-9.11	AVG			



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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #427

Standard: FCC 15C PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2441MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

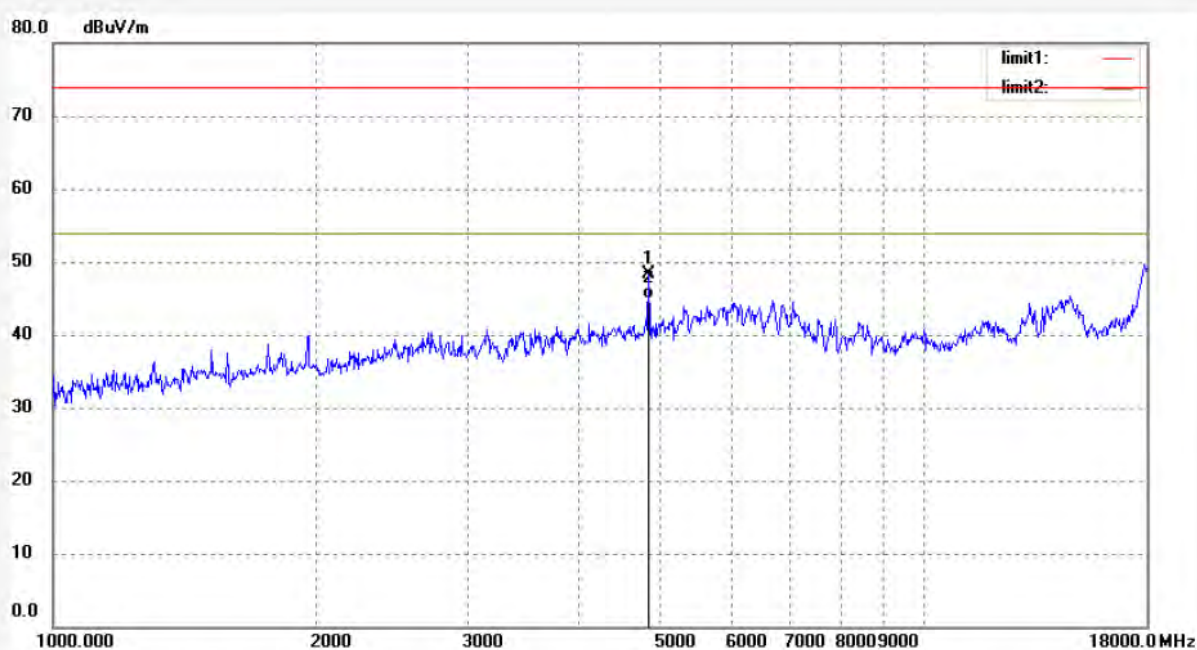
Date: 12/10/29/

Time: 9/25/02

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4882.000	48.40	-0.15	48.25	74.00	-25.75	peak			
2	4882.000	45.14	-0.15	44.99	54.00	-9.01	AVG			



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Site: 2# Chamber

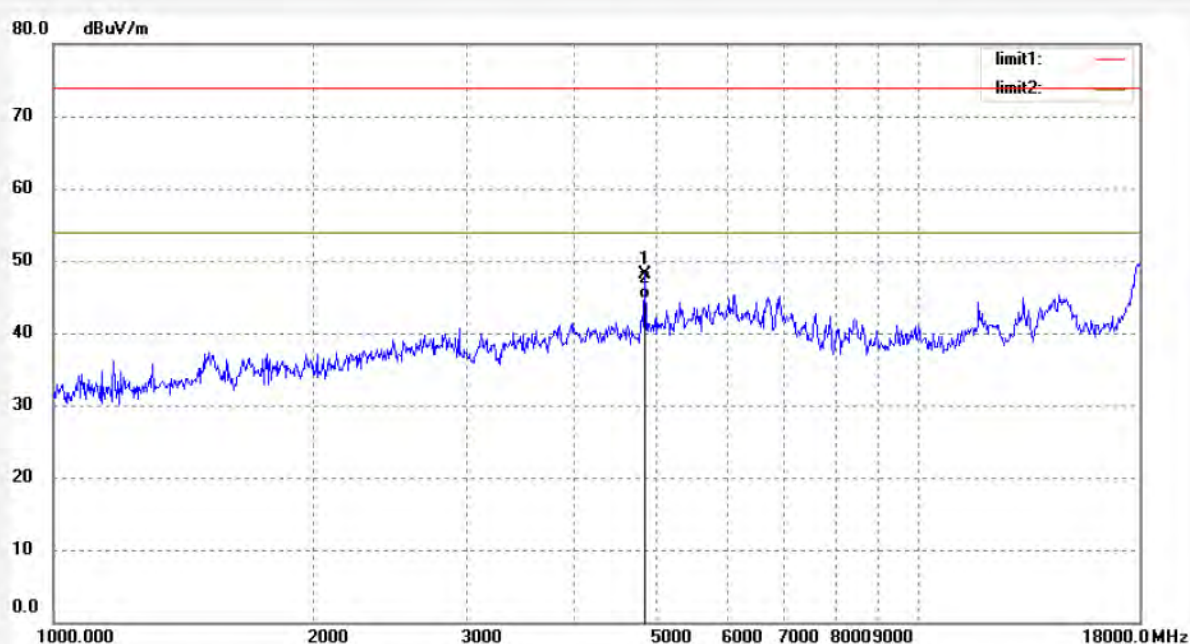
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #428
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2441MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Vertical
Power Source: USB 5V
Date: 12/10/29/
Time: 9/25/44
Engineer Signature:
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4882.000	48.23	-0.15	48.08	74.00	-25.92	peak			
2	4882.000	44.82	-0.15	44.67	54.00	-9.33	AVG			



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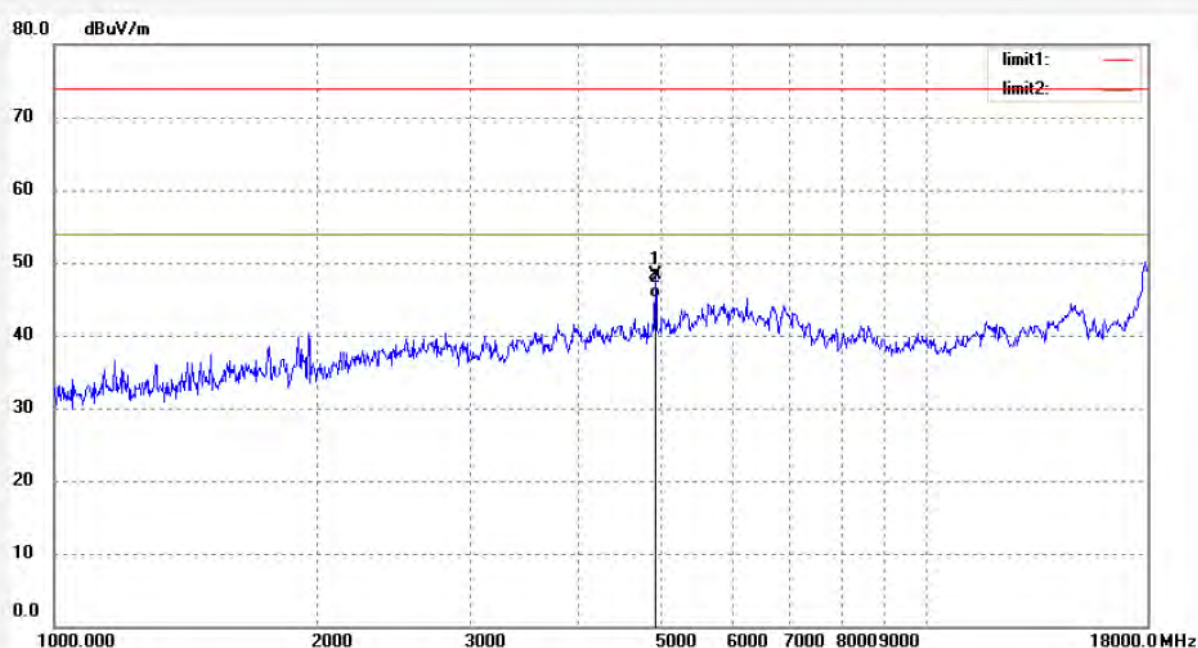
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #429
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2480MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Vertical
Power Source: USB 5V
Date: 12/10/29/
Time: 9/29/43
Engineer Signature:
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4960.000	48.03	0.24	48.27	74.00	-25.73	peak			
2	4960.000	44.82	0.24	45.06	54.00	-8.94	AVG			



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Site: 2# Chamber

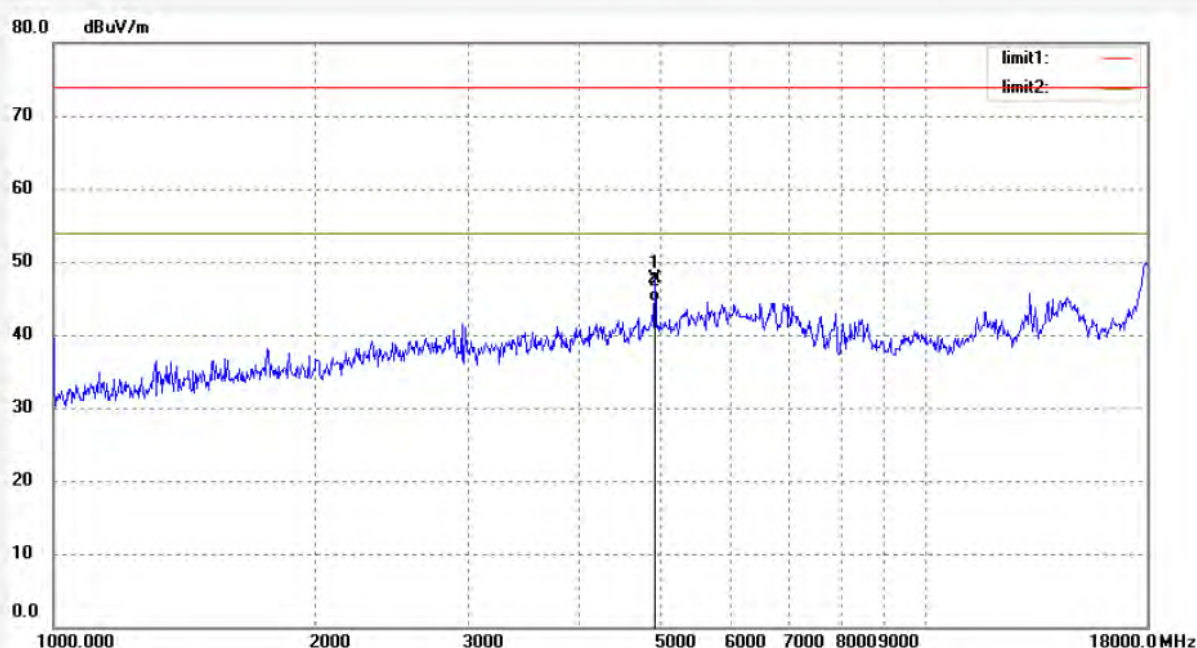
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #430
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2480MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Horizontal
Power Source: USB 5V
Date: 12/10/29/
Time: 9/30/38
Engineer Signature:
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4960.000	47.52	0.24	47.76	74.00	-26.24	peak			
2	4960.000	44.28	0.24	44.52	54.00	-9.48	AVG			



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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Alen #848

Standard: FCC 15C

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Bluetooth reciver

Mode: TX 2402MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

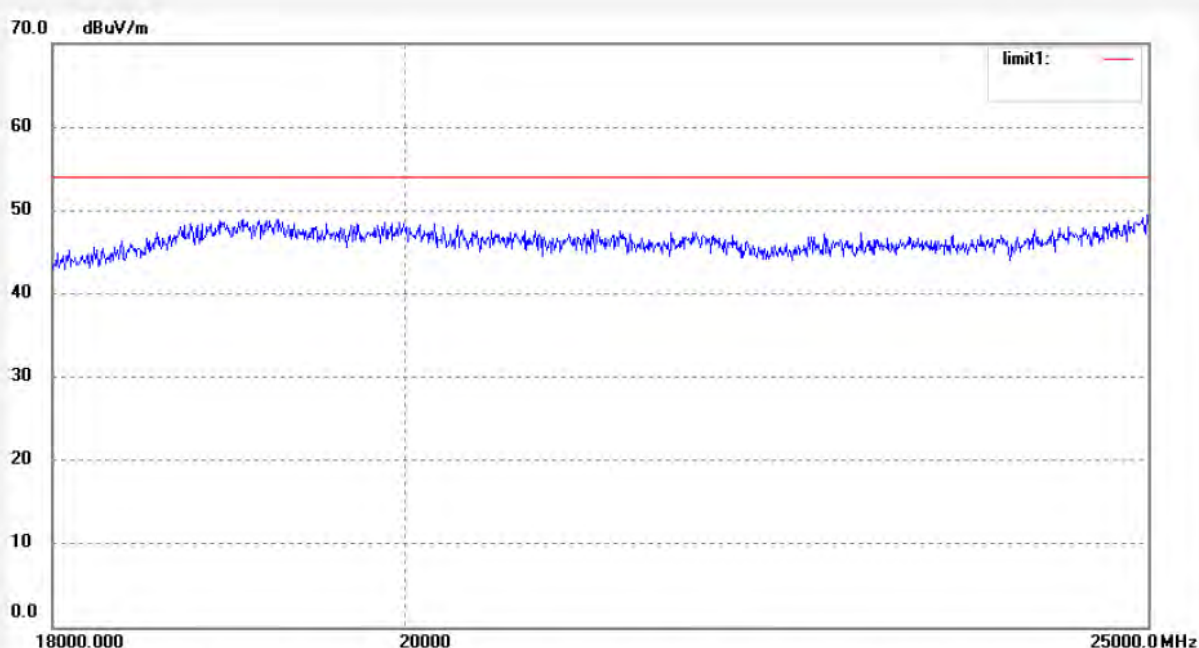
Date: 12/12/17/

Time: 10:32:05

Engineer Signature: Alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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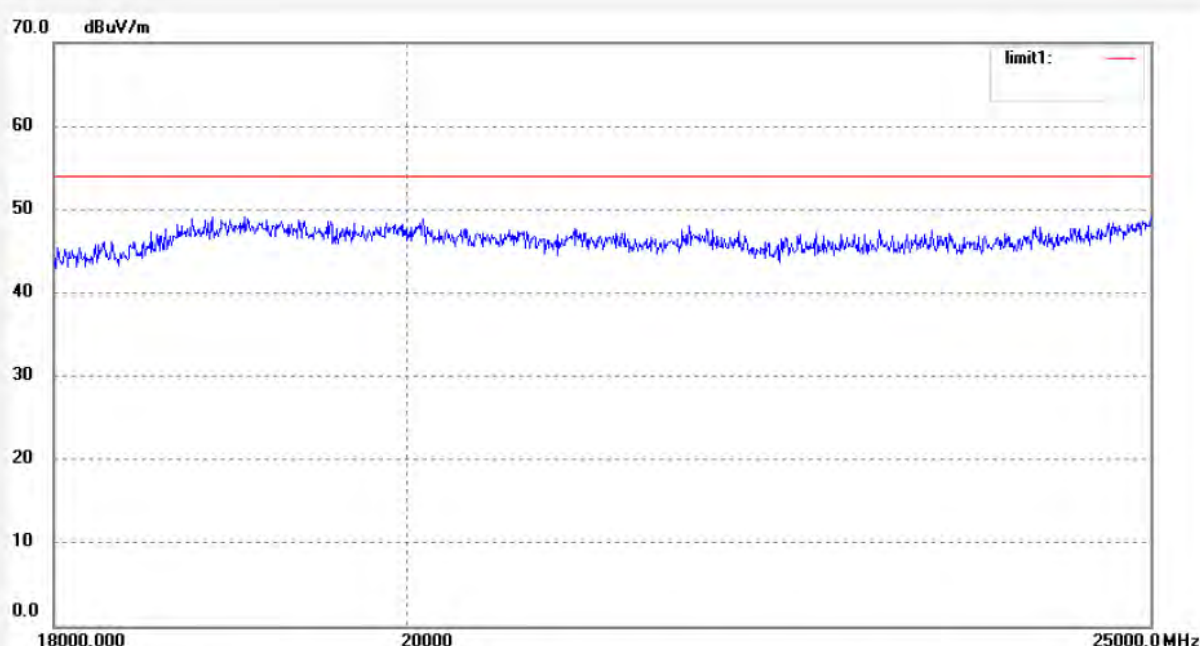
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Alen #849	Polarization: Horizontal
Standard: FCC 15C	Power Source: USB 5V
Test item: Radiation Test	Date: 12/12/17/
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 10:37:56
EUT: Bluetooth reciver	Engineer Signature: Alen
Mode: TX 2402MHz	Distance: 3m
Model: Bayan SteamPort	
Manufacturer: Musilab	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Alen #850

Standard: FCC 15C

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Bluetooth reciver

Mode: TX 2441MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

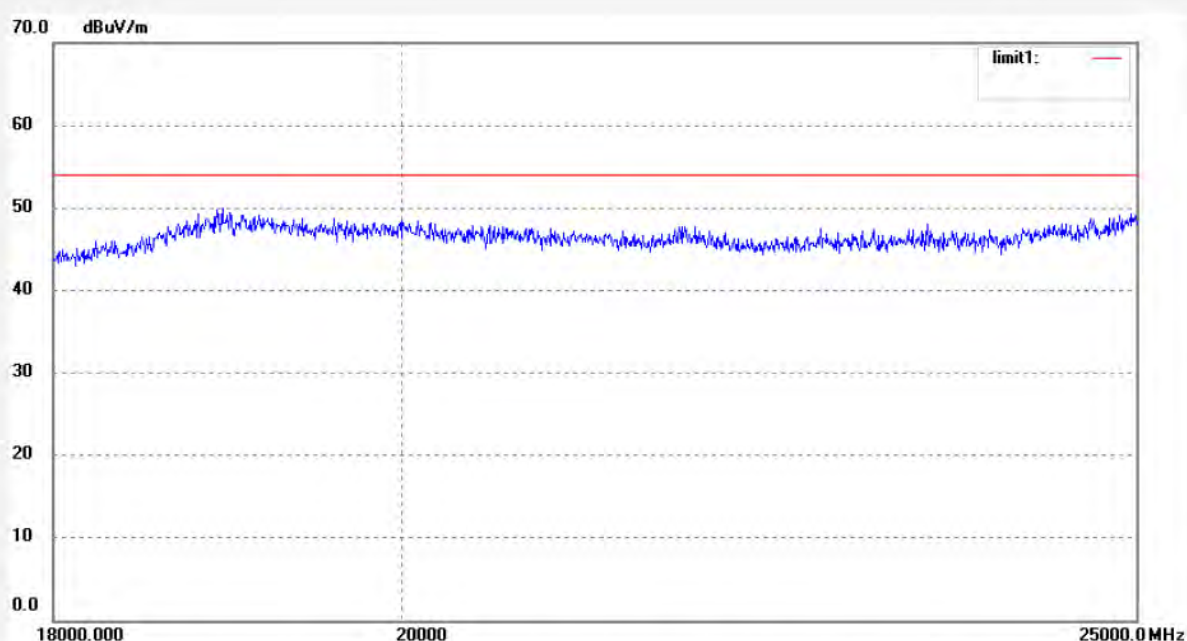
Date: 12/12/17/

Time: 10:40:38

Engineer Signature: Alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Alen #851

Standard: FCC 15C

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Bluetooth reciver

Mode: TX 2441MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

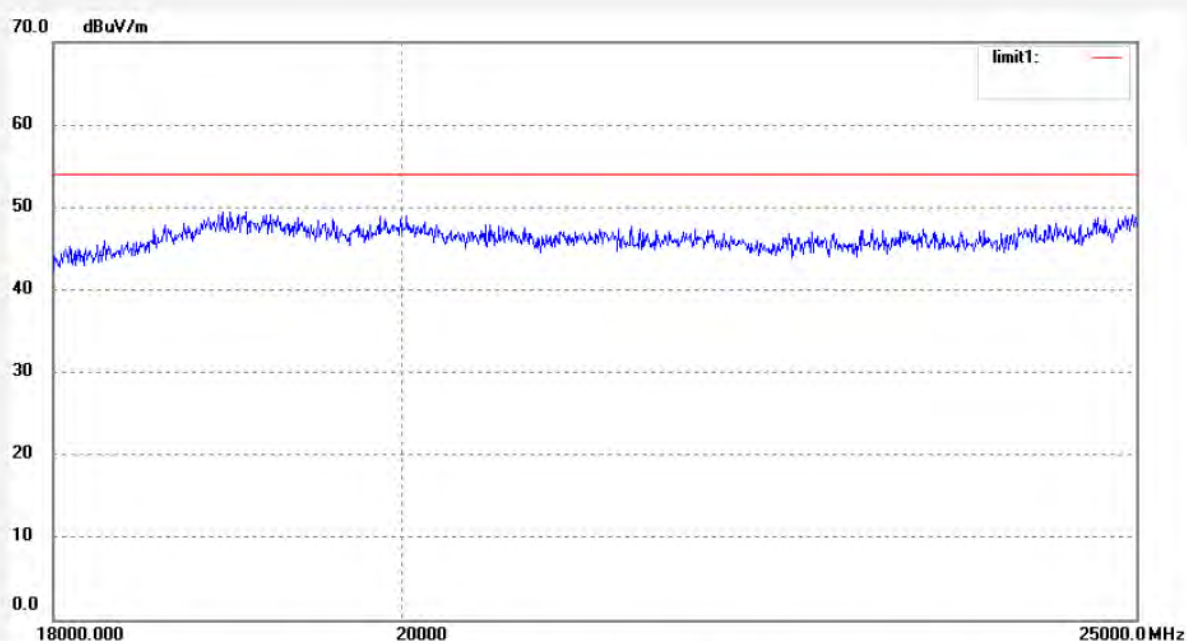
Date: 12/12/17/

Time: 10:44:42

Engineer Signature: Alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Alen #852

Standard: FCC 15C

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Bluetooth reciver

Mode: TX 2480MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

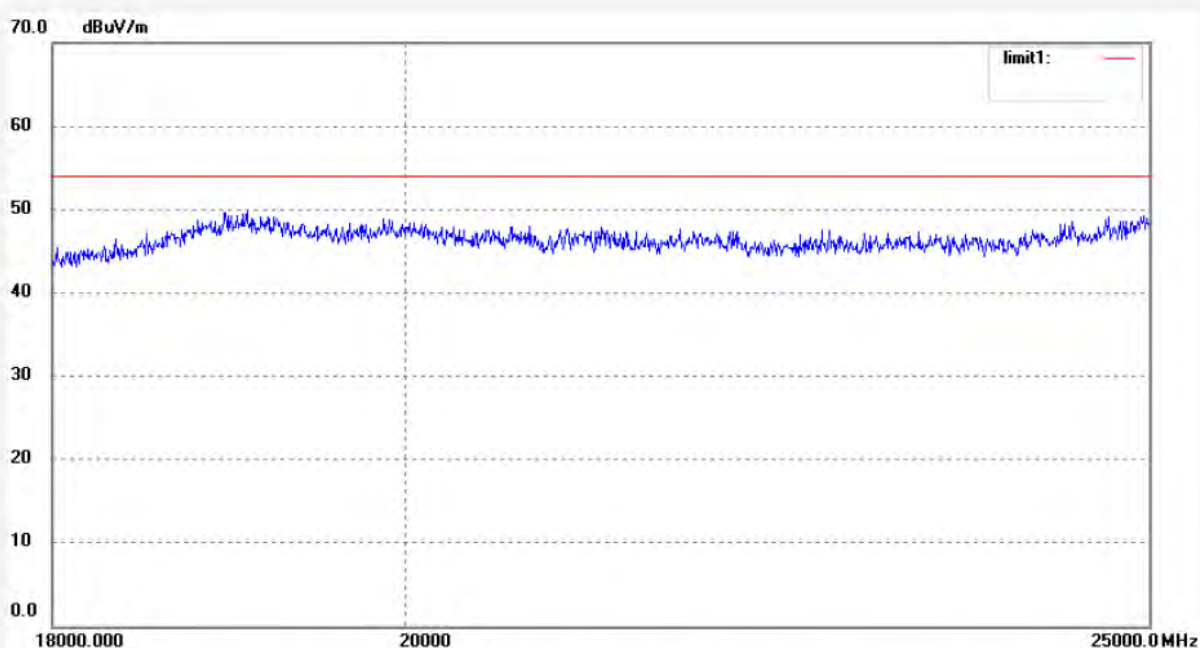
Date: 12/12/17/

Time: 10:48:59

Engineer Signature: Alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
-----	----------------	---------------------	----------------	--------------------	-------------------	----------------	----------	----------------	------------------	--------



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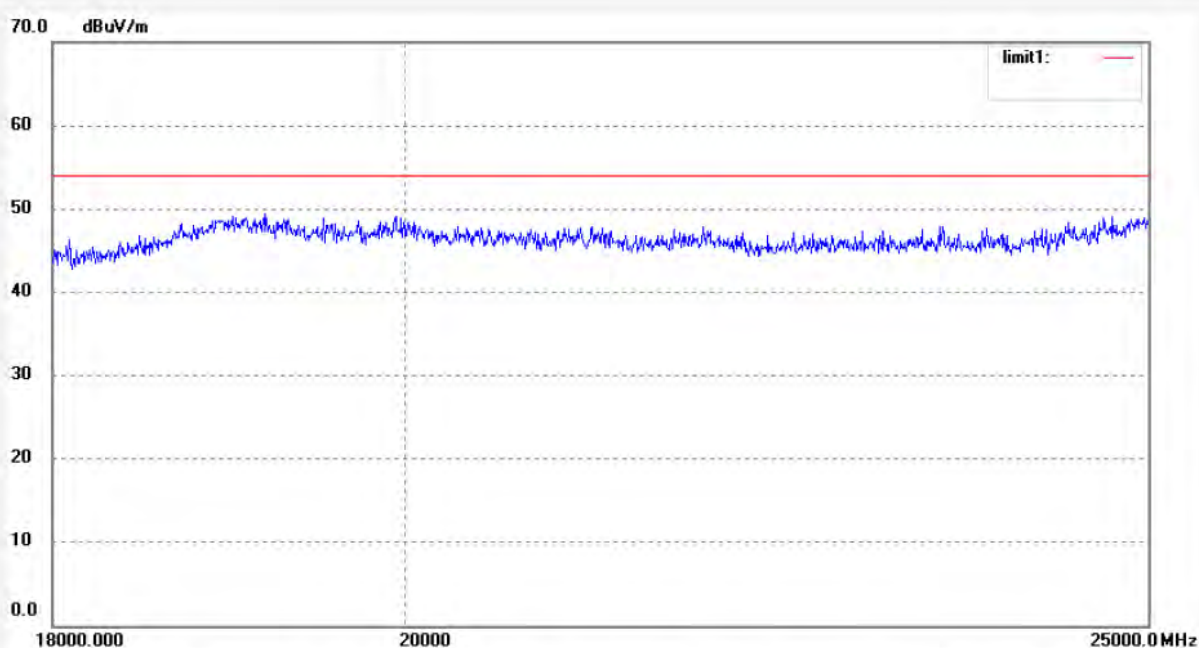
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: Alen #853
Standard: FCC 15C
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 50 %
EUT: Bluetooth reciver
Mode: TX 2480MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Horizontal
Power Source: USB 5V
Date: 12/12/17/
Time: 10:52:35
Engineer Signature: Alen
Distance: 3m

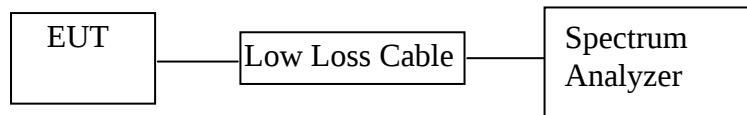
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Bluetooth Receiver)

11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

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

11.3.1.Blutetooth Receiver (EUT)

Model Number	:	Bayan StreamPort
Serial Number	:	N/A
Manufacturer	:	Musilab Electronic (DongGuan) Co., Ltd

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3.The band edges was measured and recorded.

11.6. Test Result

Pass

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX 2402MHz</u>	Test Engineer:	<u>Alen</u>

Conducted test

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2399.760	48.05	> 20dBc

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX 2480MHz</u>	Test Engineer:	<u>Allen</u>

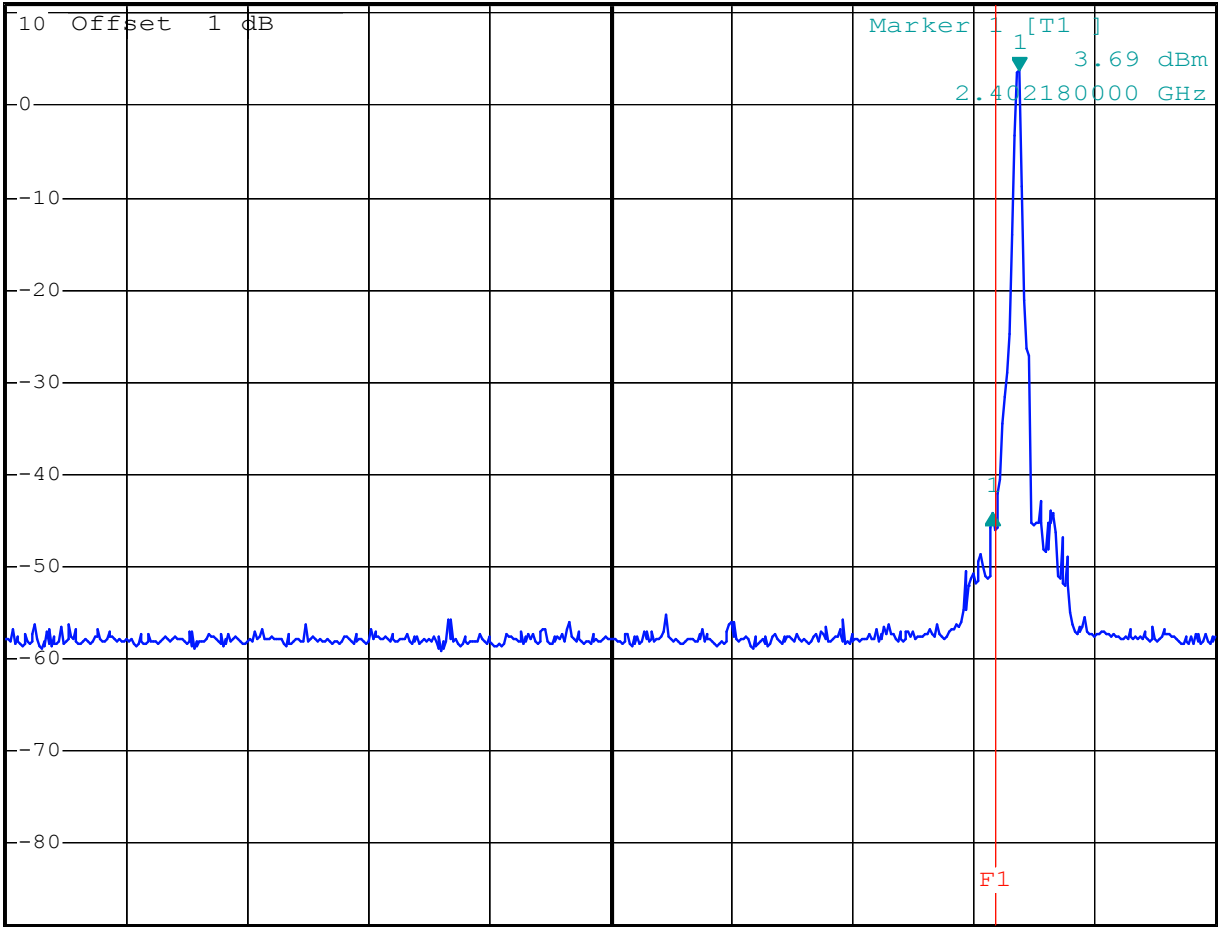
Conducted test

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2483.980	54.20	> 20dBc



1 PK
MAXH

* RBW 100 kHz Delta 1 [T1]
* VBW 300 kHz -48.05 dB
Ref 11 dBm * Att 20 dB SWT 15 ms -2.420000000 MHz



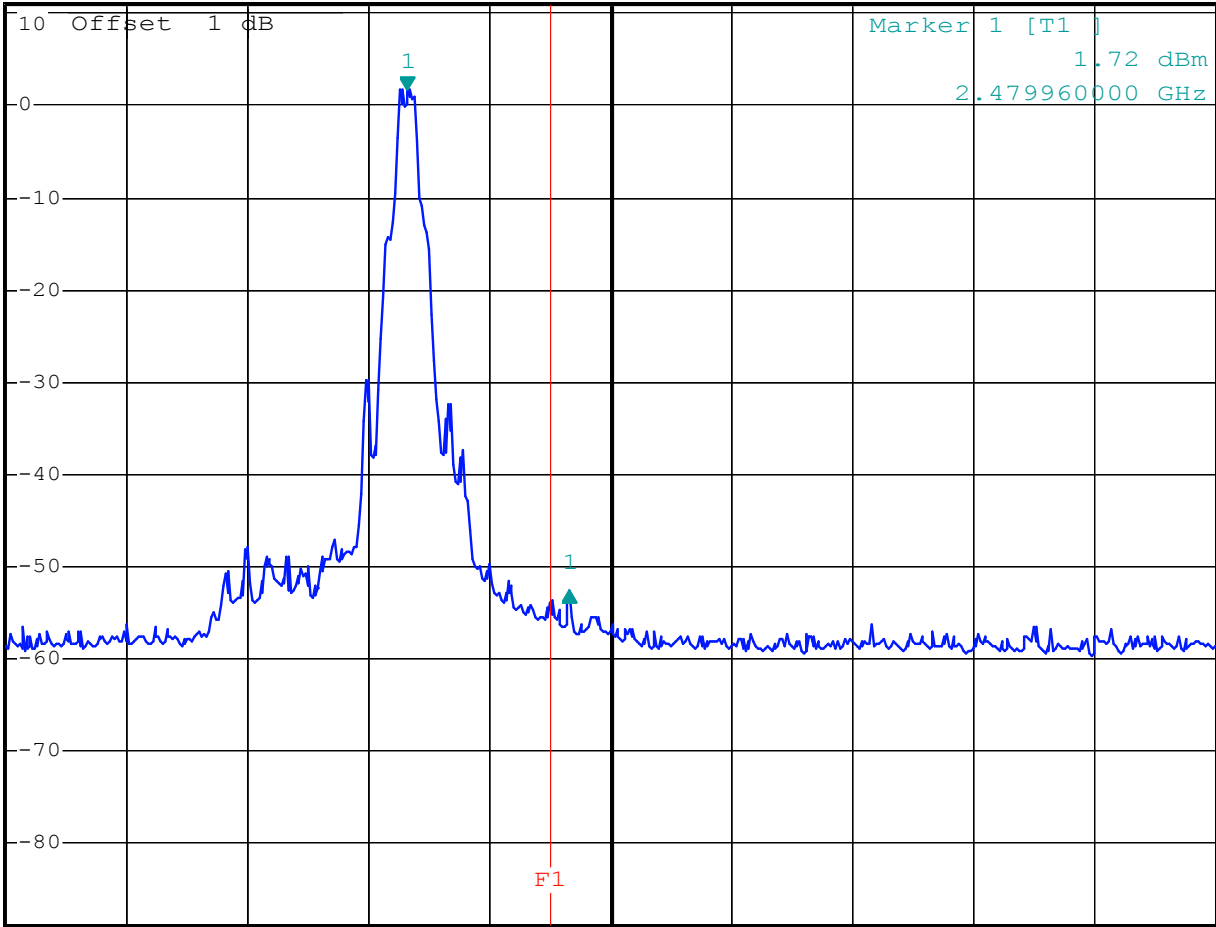
Start 2.31 GHz 11 MHz/ Stop 2.42 GHz

Date: 20.DEC.2012 11:10:26



1 PK
MAXH

* RBW 100 kHz Delta 1 [T1]
* VBW 300 kHz -54.20 dB
Ref 11 dBm * Att 20 dB SWT 5 ms 4.020000000 MHz



Start 2.47 GHz 3 MHz/ Stop 2.5 GHz

Date: 20.DEC.2012 11:13:54

Radiated Band Edge Result

Date of Test:	<u>Dec 20, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX (2402MHz)</u>	Test Engineer:	<u>Alen</u>

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2400.000	57.03	60.34	-7.46	49.57	52.88	54.00	74.00	-4.43	-21.12	Vertical
2400.000	55.68	58.94	-7.46	48.22	51.48	54.00	74.00	-5.78	-22.52	Horizontal

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

3. Display the measurement of peak values.

Date of Test:	Dec 20, 2012	Temperature:	25°C
EUT:	Bluetooth Receiver	Humidity:	50%
Model No.:	Bayan StreamPort	Power Supply:	DC 5V
Test Mode:	TX (2480MHz)	Test Engineer:	Alen

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	38.85	40.68	-7.37	31.48	33.31	54.00	74.00	-22.52	-40.69	Vertical
2483.500	36.34	38.63	-7.37	28.98	31.26	54.00	74.00	-25.02	-42.74	Horizontal

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.



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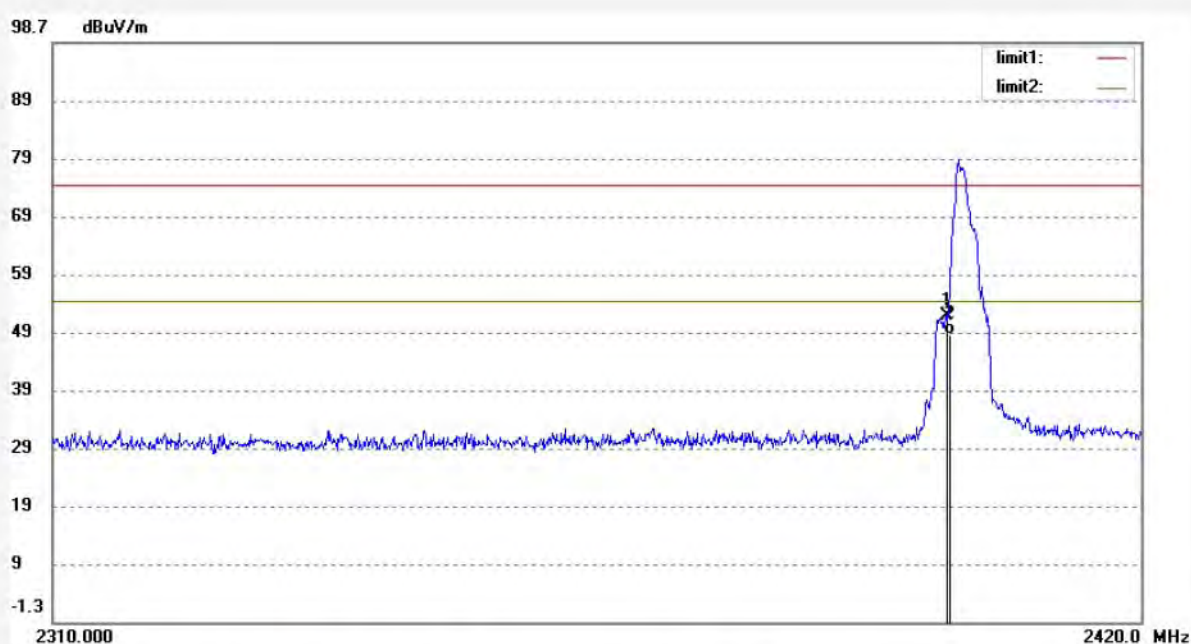
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: ALEN #859
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2402MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Horizontal
Power Source: USB 5V
Date: 2012/12/20
Time: 15:01:20
Engineer Signature: alen
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	58.94	-7.46	51.48	74.00	-22.52	peak			
2	2400.000	55.68	-7.46	48.22	54.00	-5.78	AVG			



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #860

Standard: FCC 15C PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2402MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Vertical

Power Source: USB 5V

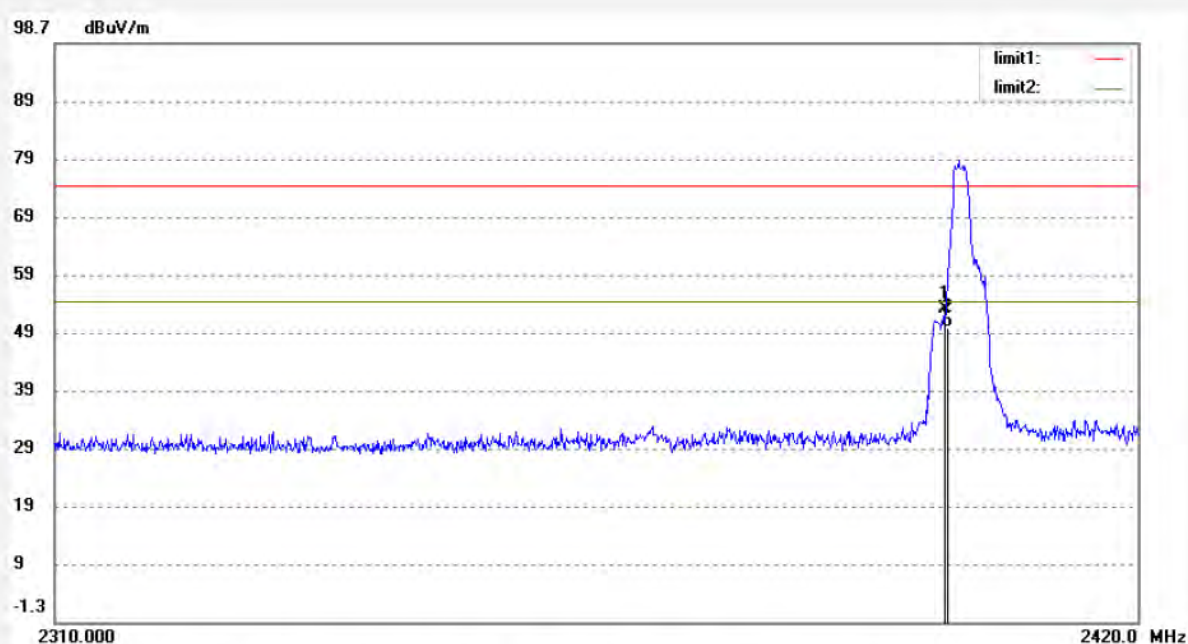
Date: 2012/12/20

Time: 14:57:26

Engineer Signature: alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	60.34	-7.46	52.88	74.00	-21.12	peak			
2	2400.000	57.03	-7.46	49.57	54.00	-4.43	AVG			



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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #861

Standard: FCC 15C PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 49 %

EUT: Bluetooth receiver

Mode: TX 2480MHz

Model: Bayan SteamPort

Manufacturer: Musilab

Polarization: Horizontal

Power Source: USB 5V

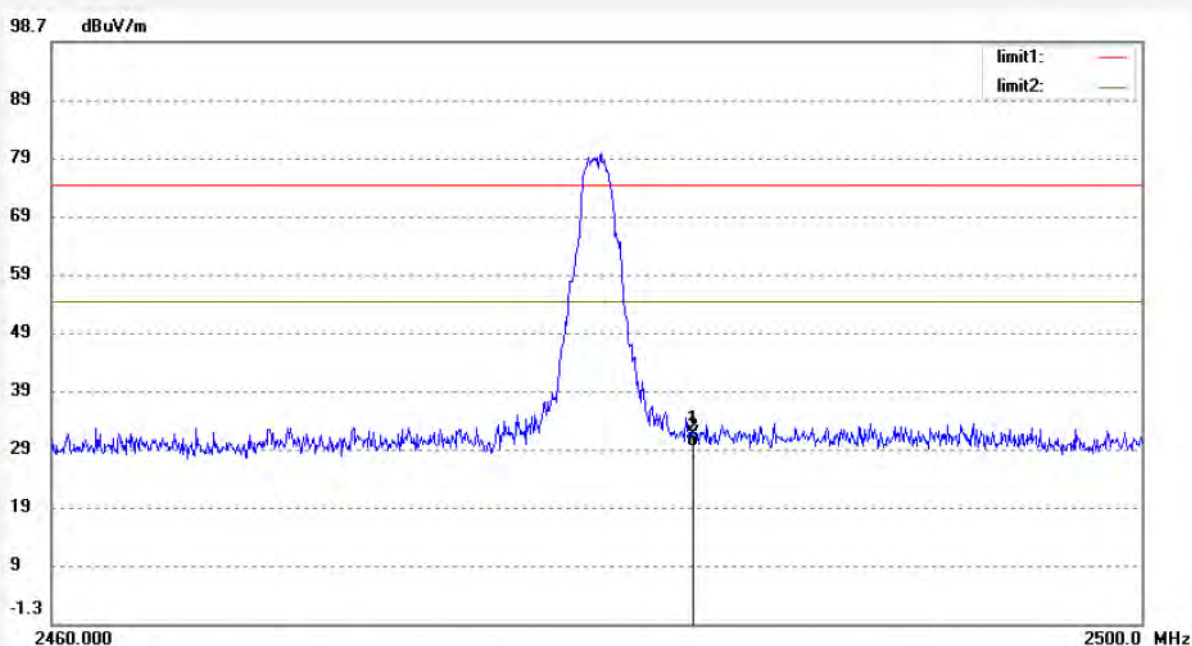
Date: 2012/12/20

Time: 14:52:53

Engineer Signature: alen

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	38.63	-7.37	31.26	74.00	-42.74	peak			
2	2483.500	36.35	-7.37	28.98	54.00	-25.02	AVG			



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

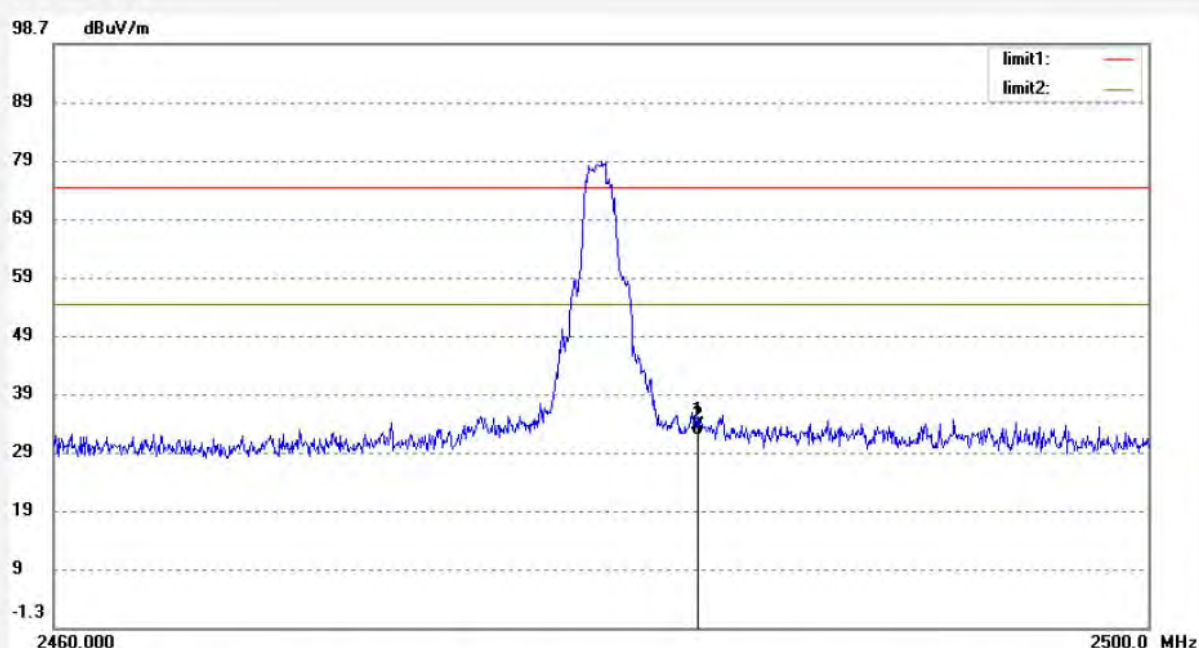
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ALEN #862
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth receiver
Mode: TX 2480MHz
Model: Bayan SteamPort
Manufacturer: Musilab

Polarization: Vertical
Power Source: USB 5V
Date: 2012/12/20
Time: 14:50:31
Engineer Signature: alen
Distance: 3m

Note:

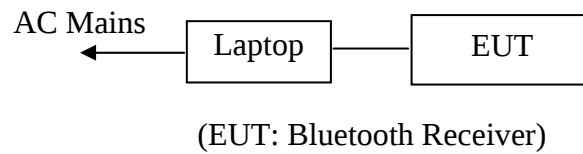


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	40.68	-7.37	33.31	74.00	-40.69	peak			
2	2483.500	38.85	-7.37	31.48	54.00	-22.52	AVG			

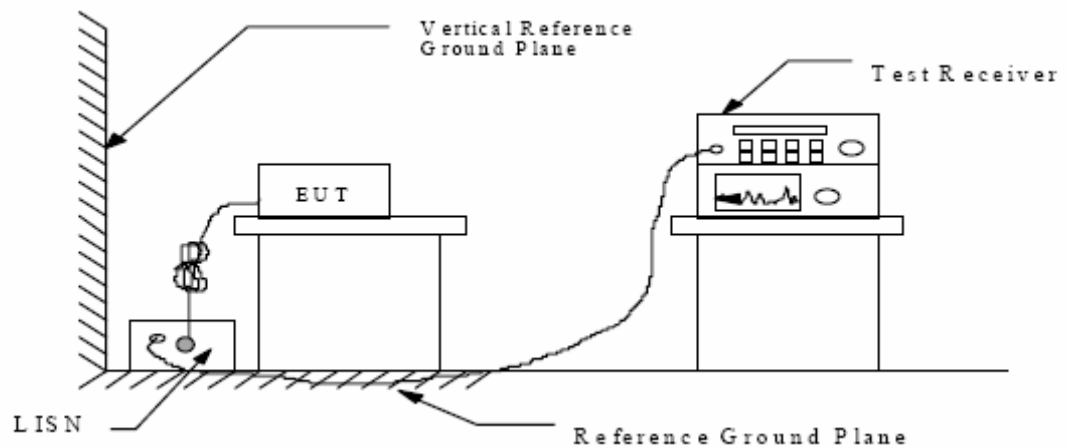
12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

12.1.Block Diagram of Test Setup

12.1.1.Block diagram of connection between the EUT and simulators



12.1.2.Shielding Room Test Setup Diagram



(EUT: Bluetooth Receiver)

12.2.The Emission Limit

12.2.1.Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

* Decreases with the logarithm of the frequency.

12.3.Configuration of EUT on Measurement

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

12.3.1. Bluetooth Receiver (EUT)

Model Number : Bayan StreamPort
Serial Number : N/A
Manufacturer : Musilab Electornic (DongGuan) Co., Ltd

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 11.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in TX (Operation) mode measure it.

12.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

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

12.6. Power Line Conducted Emission Measurement Results

PASS.

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

Date of Test:	<u>Dec 17, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>Bluetooth Receiver</u>	Humidity:	<u>50%</u>
Model No.:	<u>Bayan StreamPort</u>	Power Supply:	<u>AC 120V/60Hz</u>
Test Mode:	<u>operation</u>	Test Engineer:	<u>Alen</u>

Frequency (MHz)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector	Line
0.170439	53.00	56	11.9	QP	Neutral
2.832069	38.10	56	17.9	QP	
0.173876	40.80	55	14.0	AV	
2.832069	31.50	46	14.5	AV	
5.385570	28.20	50	21.8	AV	
0.172493	55.20	65	9.6	QP	Live
2.820786	38.00	56	18.0	QP	
26.589904	32.10	60	27.9	QP	
0.175269	42.00	55	12.7	AV	
2.900722	31.50	46	14.5	AV	
18.713286	27.00	50	23.0	AV	

Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART 15 B**

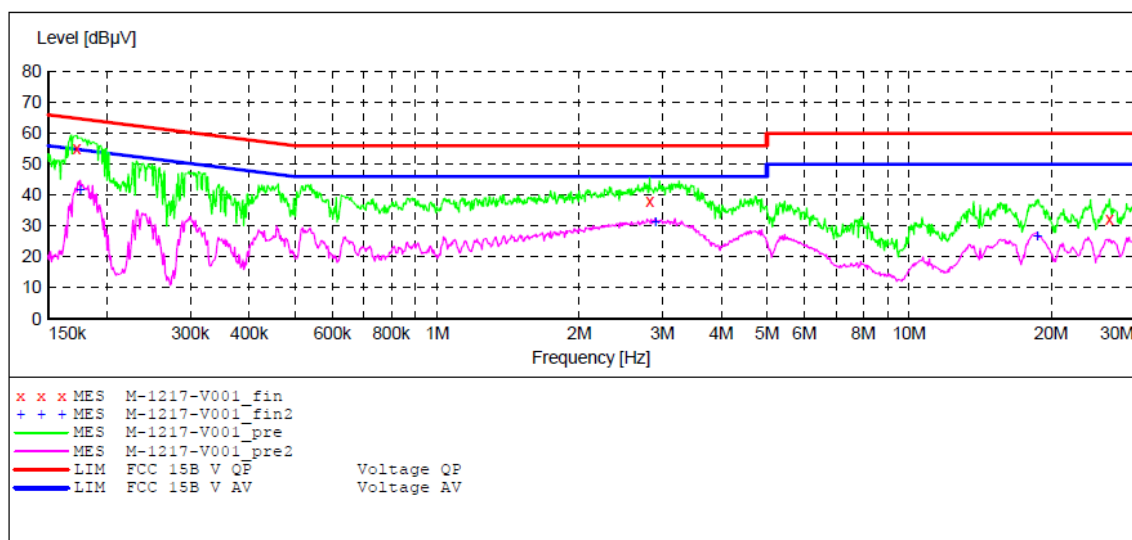
EUT: Bluetooth receiver M/N:Bayan SteamPort
 Manufacturer: Musilab
 Operating Condition: Operation
 Test Site: 1#Shielding Room
 Operator: Alen
 Test Specification: L 120V/60Hz
 Comment: Mains port
 Start of Test: 12/17/2012 / 11:03:24AM

SCAN TABLE: "V 150K-30MHZ fin"

Short Description: SUB STD VTERM2 1.70

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	0.8 %	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008

 Average

**MEASUREMENT RESULT: "M-1217-V001_fin"**

12/17/2012 11:05AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.172493	55.20	11.2	65	9.6	QP	L1	GND
2.820786	38.00	11.4	56	18.0	QP	L1	GND
26.589904	32.10	11.5	60	27.9	QP	L1	GND

MEASUREMENT RESULT: "M-1217-V001_fin2"

12/17/2012 11:05AM

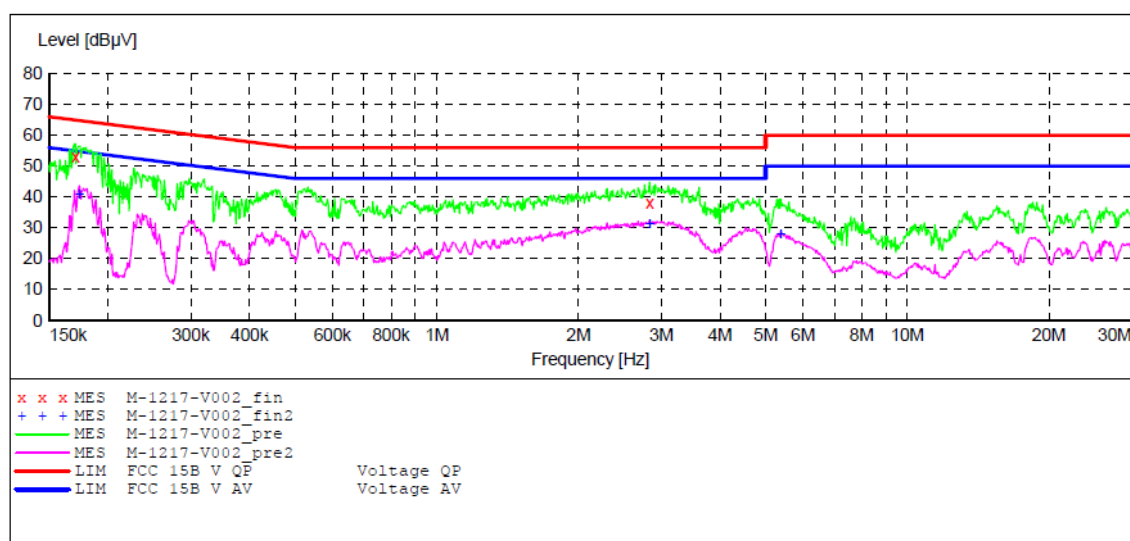
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.175269	42.00	11.2	55	12.7	AV	L1	GND
2.900722	31.50	11.4	46	14.5	AV	L1	GND
18.713286	27.00	11.5	50	23.0	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART 15 B**

EUT: Bluetooth receiver M/N:Bayan SteamPort
 Manufacturer: Musilab
 Operating Condition: Operation
 Test Site: 1#Shielding Room
 Operator: Alen
 Test Specification: N 120V/60Hz
 Comment: Mains port
 Start of Test: 12/17/2012 / 11:06:33AM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB STD VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average

**MEASUREMENT RESULT: "M-1217-V002_fin"**

12/17/2012 11:08AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.170439	53.00	11.2	65	11.9	QP	N	GND
2.832069	38.10	11.4	56	17.9	QP	N	GND

MEASUREMENT RESULT: "M-1217-V002_fin2"

12/17/2012 11:08AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.173876	40.80	11.2	55	14.0	AV	N	GND
2.832069	31.50	11.4	46	14.5	AV	N	GND
5.385570	28.20	11.4	50	21.8	AV	N	GND

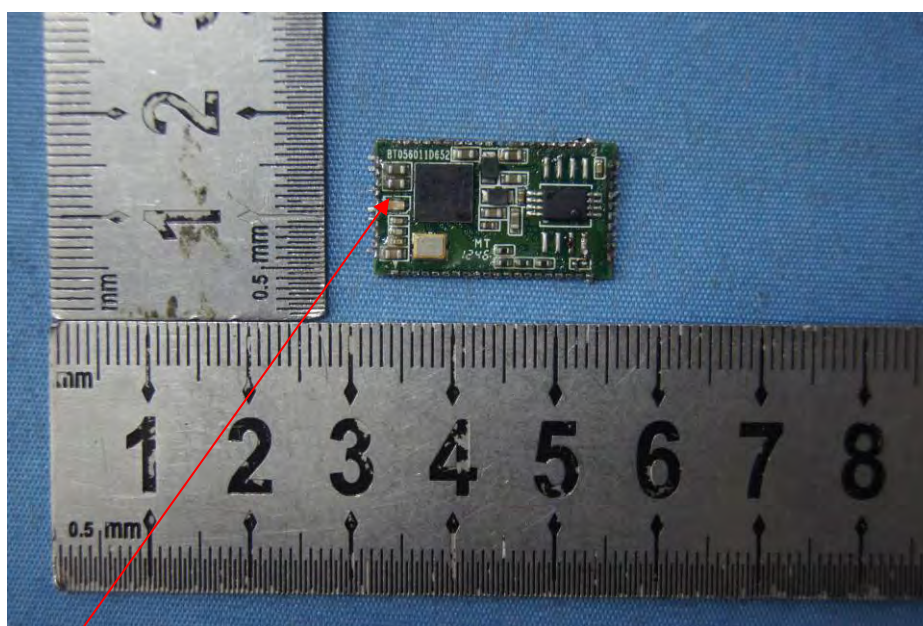
13.ANTENNA REQUIREMENT

13.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2.Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna