

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Modern Marketing Concepts, Inc.

Songbird II Radio

Model No.: CR3034A-BH, CR3034X-XX
("X" can be replaced by letter from "A" to "Z" or blank)

FCC ID: AUSCR3034A

Prepared for : Modern Marketing Concepts, Inc.
Address : 1220 E Oak, St. Louisville Kentucky, United States
40204

Prepared by : Shenzhen Accurate Technology Co., Ltd.
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Report No. : ATE20172583
Date of Test : Jan. 01, 2018--Jan. 15, 2018
Date of Report : Jan. 16, 2018

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Test Report Certification

Applicant : Modern Marketing Concepts, Inc.
Address : 1220 E Oak, St. Louisville Kentucky, United States 40204
Manufacturer : TIMSEN INTERNATIONAL LIMITED
Address : 5F, 447# Tianhebei Road, Guangzhou, China
Product : Songbird II Radio
Model No. : CR3034A-BH,
CR3034X-XX("X" can be replaced by letter from "A" to "Z" or blank)
Trade name : CROSLEY

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013

The device described above is tested by SHENZHEN 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 SHENZHEN 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 SHENZHEN ACCURATE TECHNOLOGY CO. LTD.

Date of Test : Jan. 01, 2018--Jan. 15, 2018
Date of Report : Jan. 16, 2018

Prepared by :
(Tim Liang Engineer)

Approved & Authorized Signer :
(Sean Liu, Manager)



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Songbird II Radio
Model Number	:	CR3034A-BH, CR3034X-XX ("X" can be replaced by letter from "A" to "Z" or blank) Note: these models are identical in interior structure, electrical circuits and components, the main test model is CR3034A-BH
Bluetooth version	:	BT 4.2
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	2dBi
Antenna type	:	PCB Antenna
Trade Name	:	CROSLEY
Rating	:	DC 5V via adapter
Adapter 1 information	:	Model: RHD10W050120 Input: AC 100-240V~50/60Hz 1.5A Output: DC 5V 1200mA
Adapter 2 information	:	Model: SW0501200-F04 Input: AC 100-240V~50/60Hz Max 200mA Output: DC 5V 1200mA
Modulation mode	:	GFSK, $\pi/4$ DQPSK, 8DPSK
Applicant Address	:	Modern Marketing Concepts, Inc. 1220 E Oak, St. Louisville Kentucky, United States 40204
Manufacturer Address	:	TIMSEN INTERNATIONAL LIMITED 5F, 447# Tianhebei Road, Guangzhou, China
Date of sample received	:	Jan. 01, 2018
Date of Test	:	Jan. 01, 2018--Jan. 15, 2018

1.2. Accessory and Auxiliary Equipment

PC
Manufacturer: LENOVO
M/N: 4290-RT8
S/N: R9-FW93G 11/08

1.3. Description of Test Facility

EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)
The Designation Number is CN1189
The Registration Number is 708358

Listed by Innovation, Science and Economic Development Canada (ISED)
The Registration Number is 5077A-2

Accredited by China National Accreditation Service for Conformity Assessment (CNAS)
The Registration Number is CNAS L3193

Accredited by American Association for Laboratory Accreditation (A2LA)
The Certificate Number is 4297.01

Name of Firm : Shenzhen Accurate Technology Co., Ltd.
Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Power Disturbance Expanded Uncertainty = 2.92 dB, k=2

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

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

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

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	Jan. 05, 2019
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 06, 2018	Jan. 05, 2019
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 06, 2018	Jan. 05, 2019
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 06, 2018	Jan. 05, 2019
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	Jan. 05, 2019
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	Jan. 05, 2019
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	Jan. 05, 2019
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 06, 2018	Jan. 05, 2019
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 06, 2018	Jan. 05, 2019
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	Jan. 05, 2019
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 06, 2018	Jan. 05, 2019
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 06, 2018	Jan. 05, 2019

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode

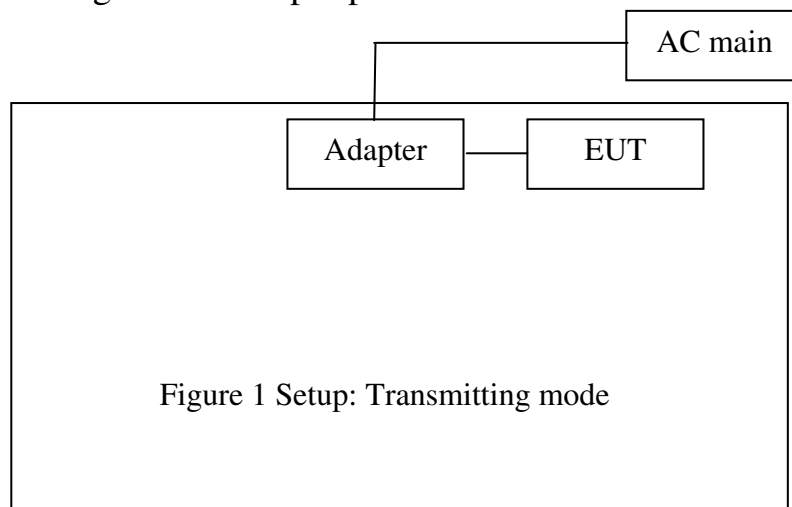
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2.Configuration and peripherals

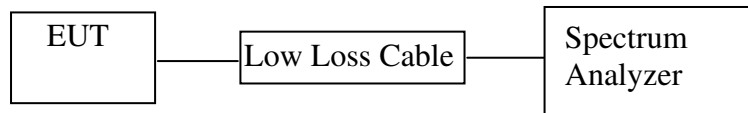


4. TEST PROCEDURES AND RESULTS

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: Songbird II Radio)

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 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.

5.4. 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.

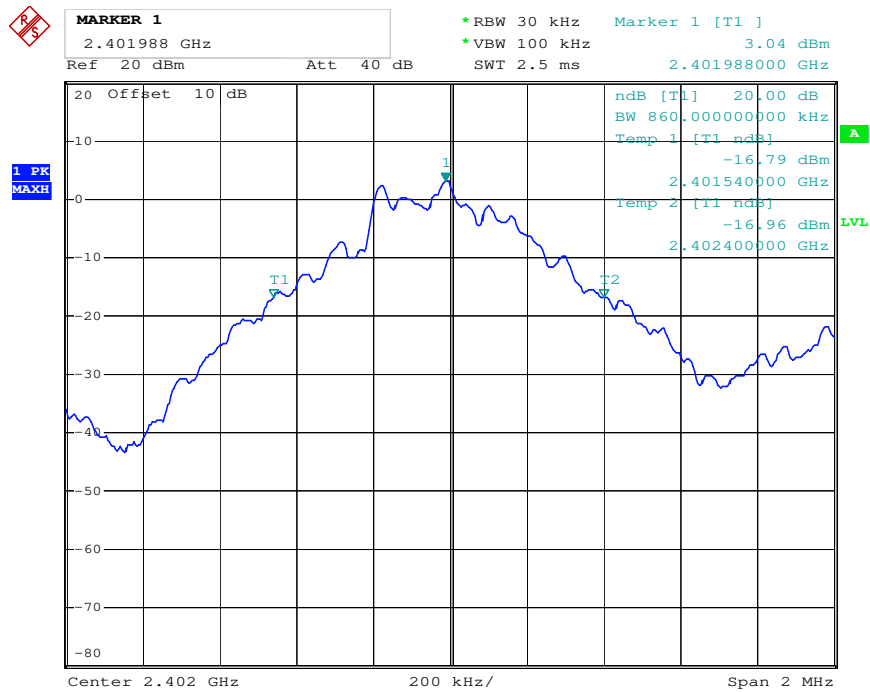
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.860	1.272	1.254	Pass
Middle	2441	0.808	1.266	1.260	Pass
High	2480	0.856	1.260	1.266	Pass

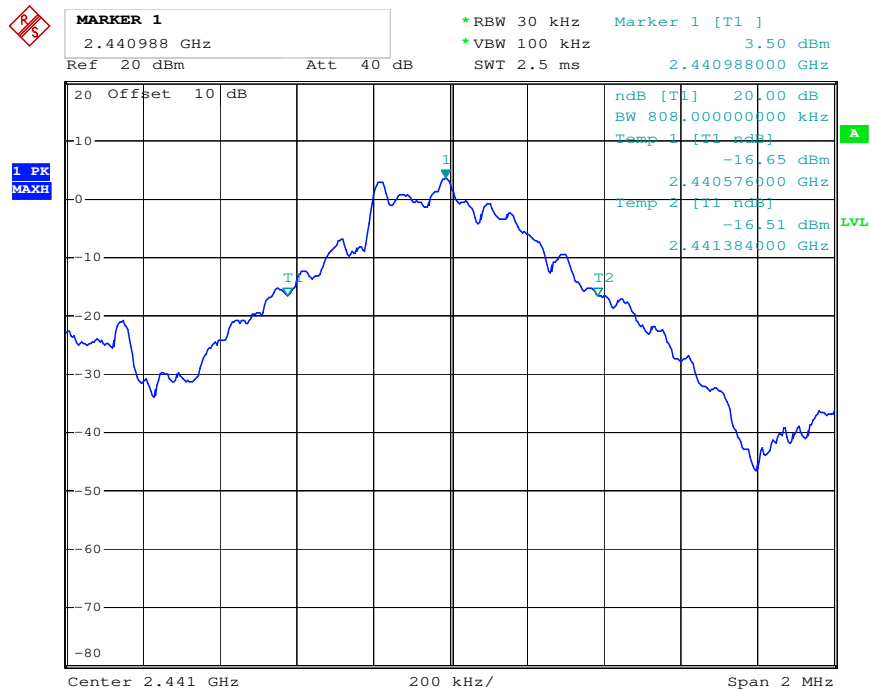
The spectrum analyzer plots are attached as below.

GFSK Mode

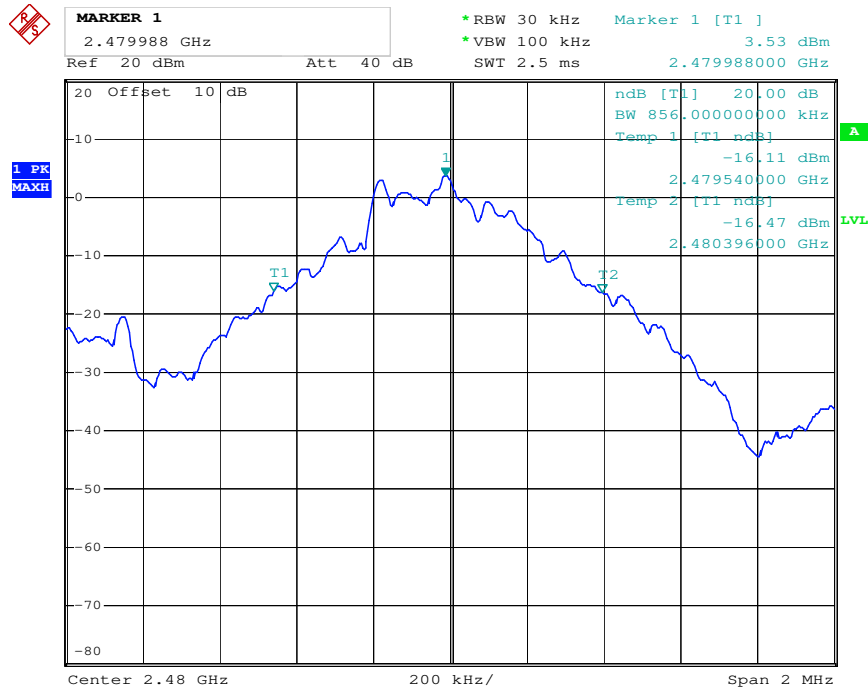
Low channel



Middle channel

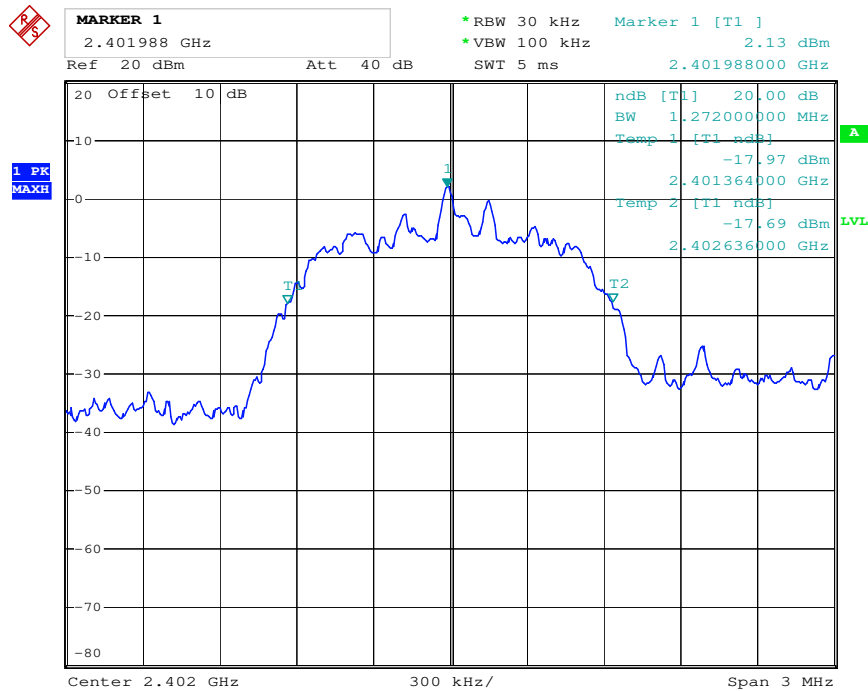


High channel

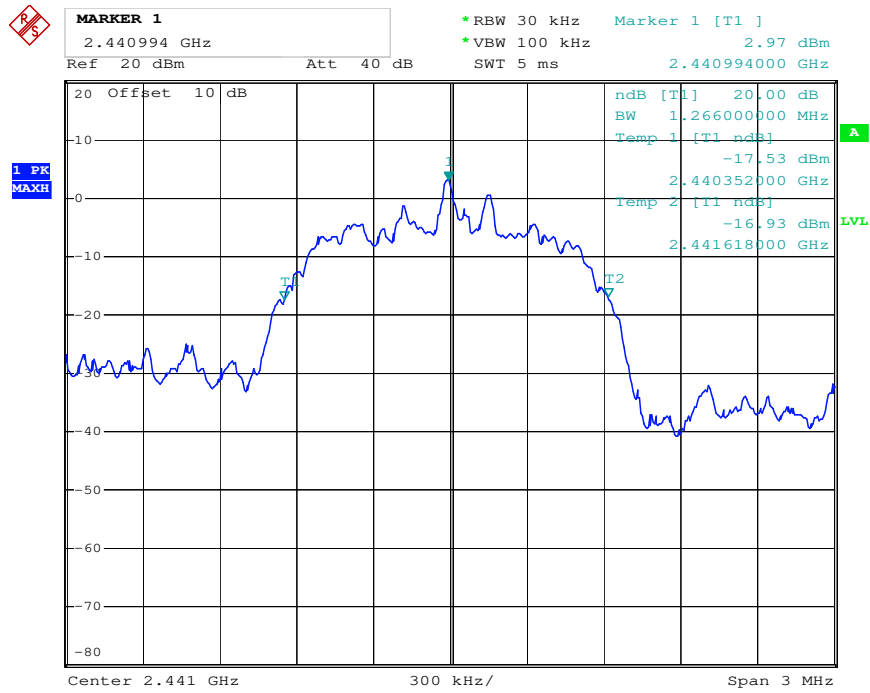


$\Pi/4$ DQPSK Mode

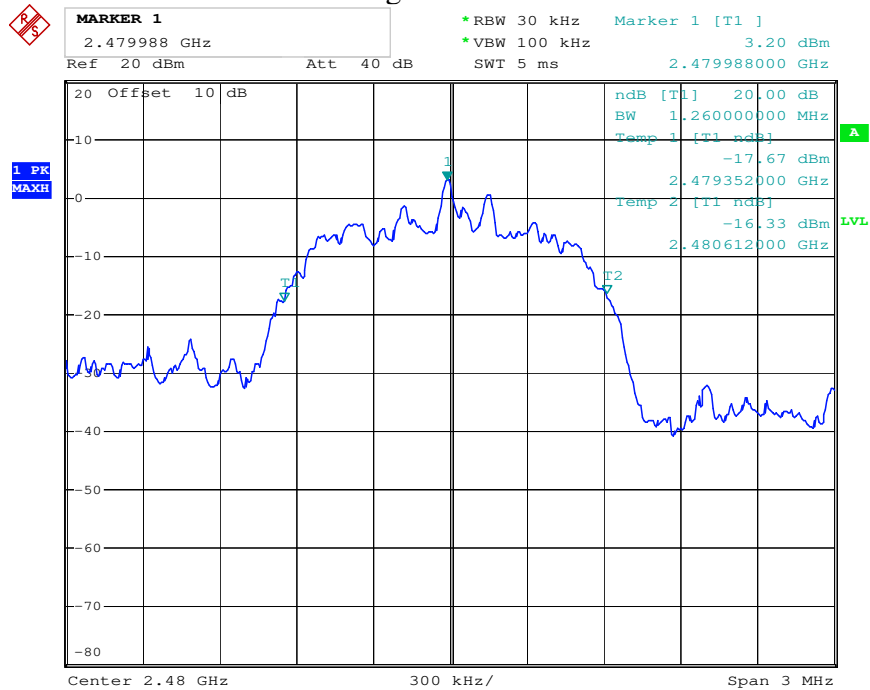
Low channel



Middle channel

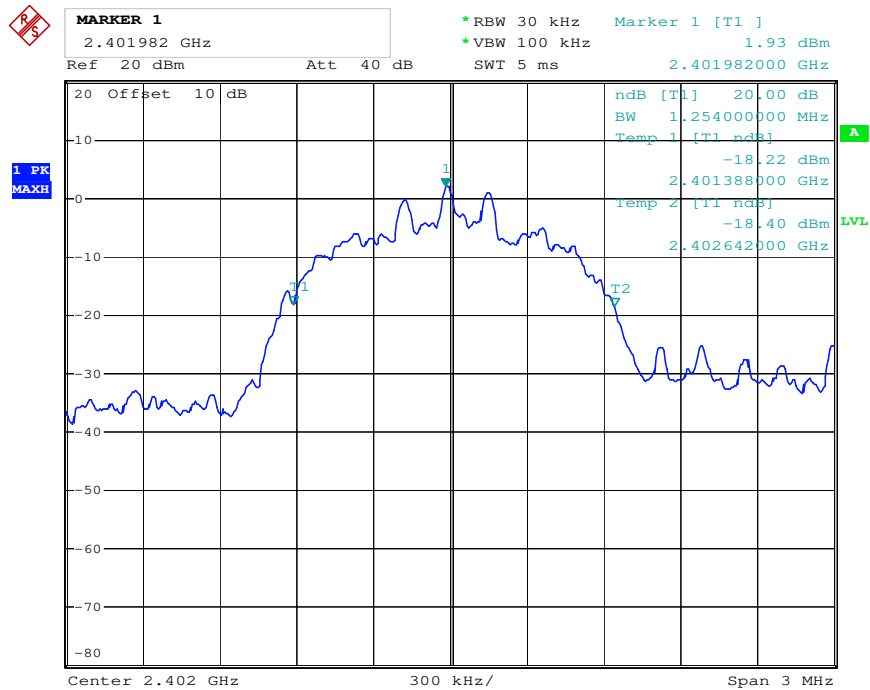


High channel

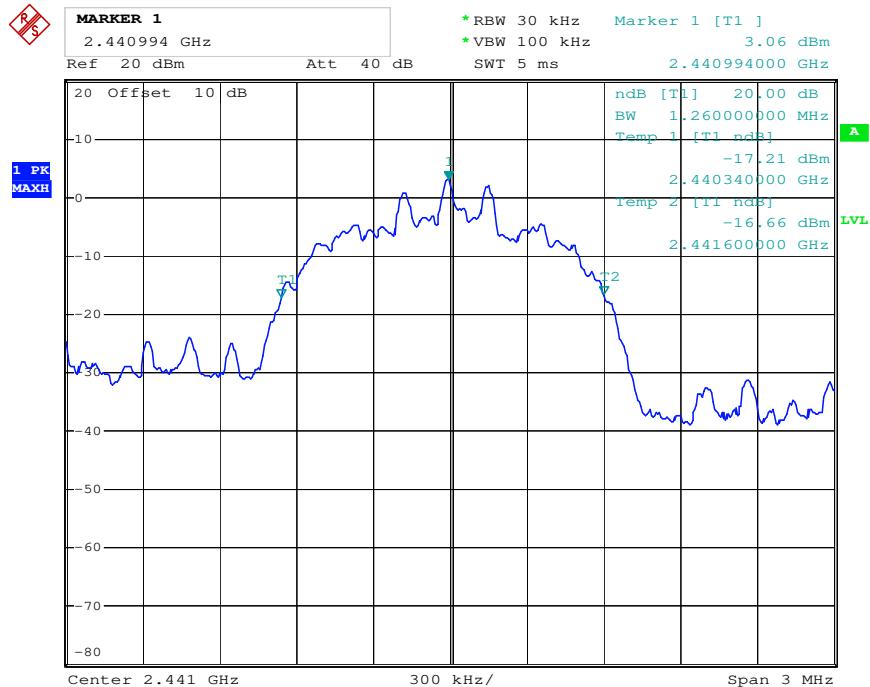


8DPSK Mode

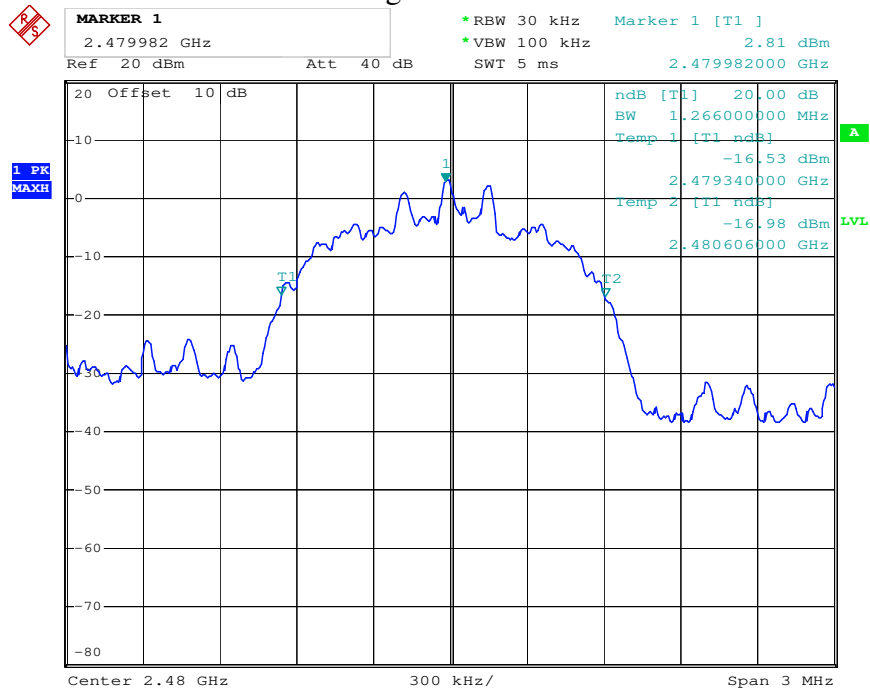
Low channel



Middle channel



High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: Songbird II Radio)

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 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.

6.4. 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 30 kHz and VBW to 100 kHz. Adjust Span to 2MHz.

6.5.3. Set the adjacent channel of the EUT Maxhold another trace.

6.5.4. Measurement the channel separation

6.6. Test Result

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.008	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.004	25KHz or 20dB bandwidth	PASS
	2441			
High	2479	1.008	25KHz or 20dB bandwidth	PASS
	2480			

Π/4 DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2480			

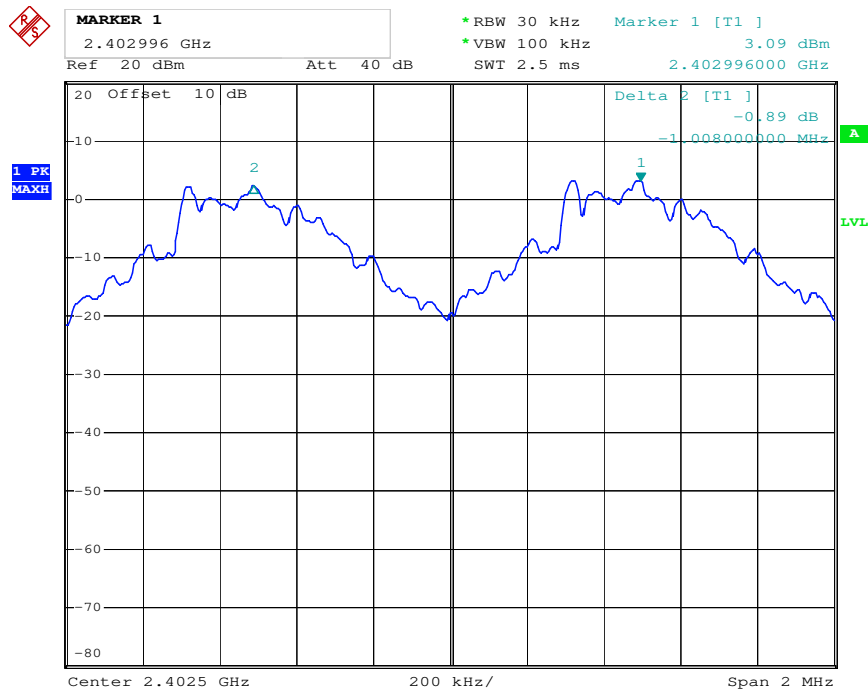
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

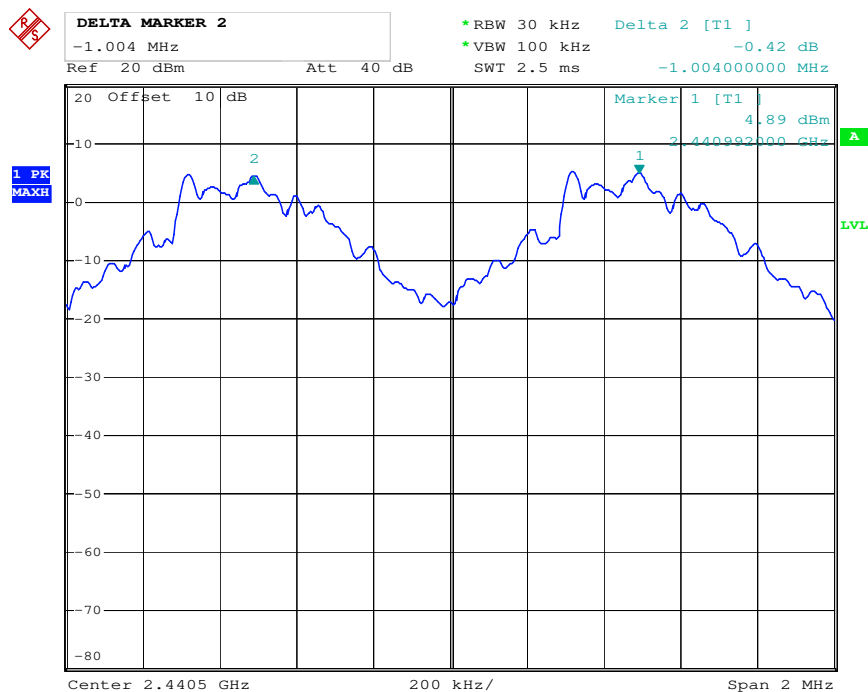
The spectrum analyzer plots are attached as below.

GFSK Mode

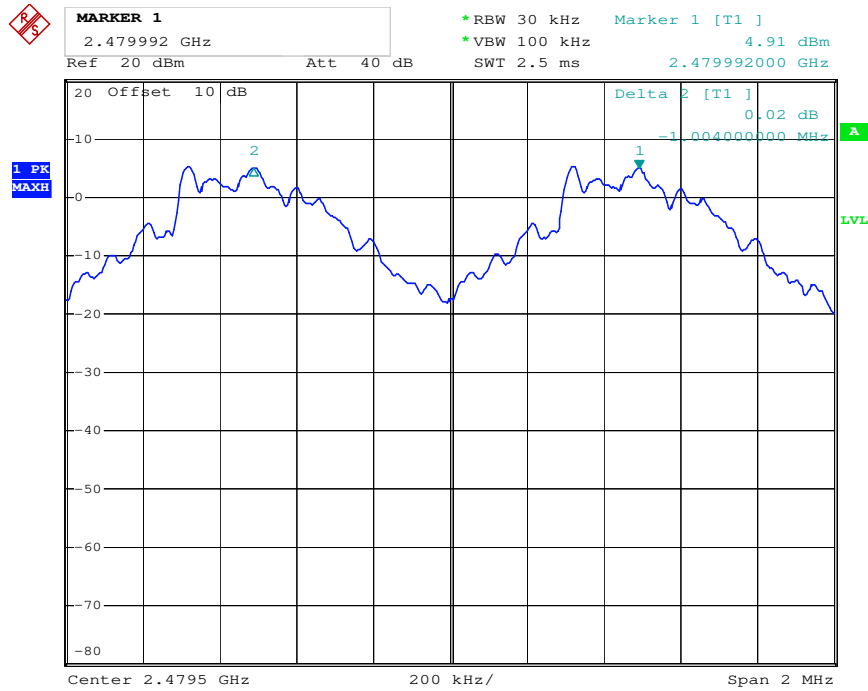
Low channel



Middle channel

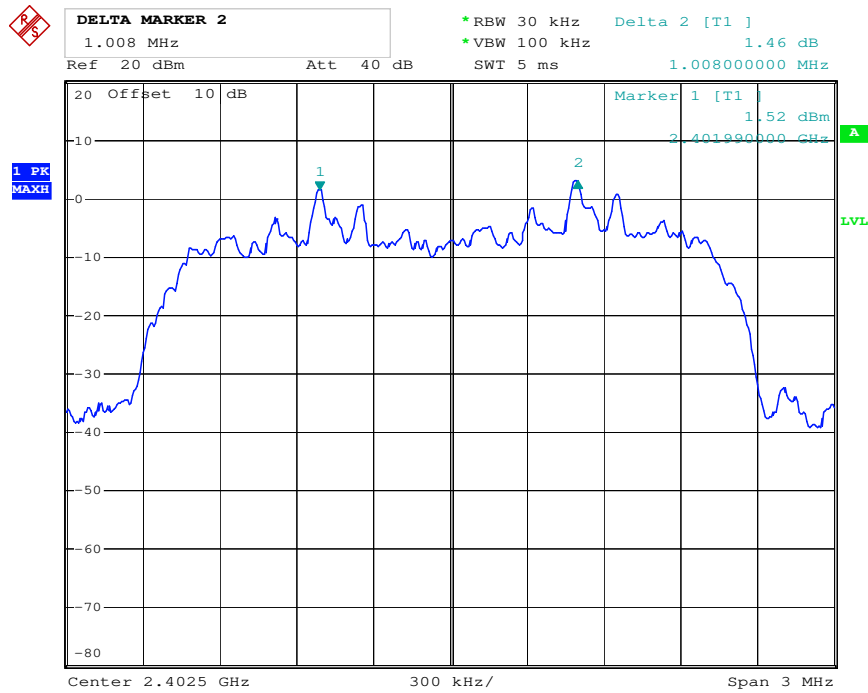


High channel

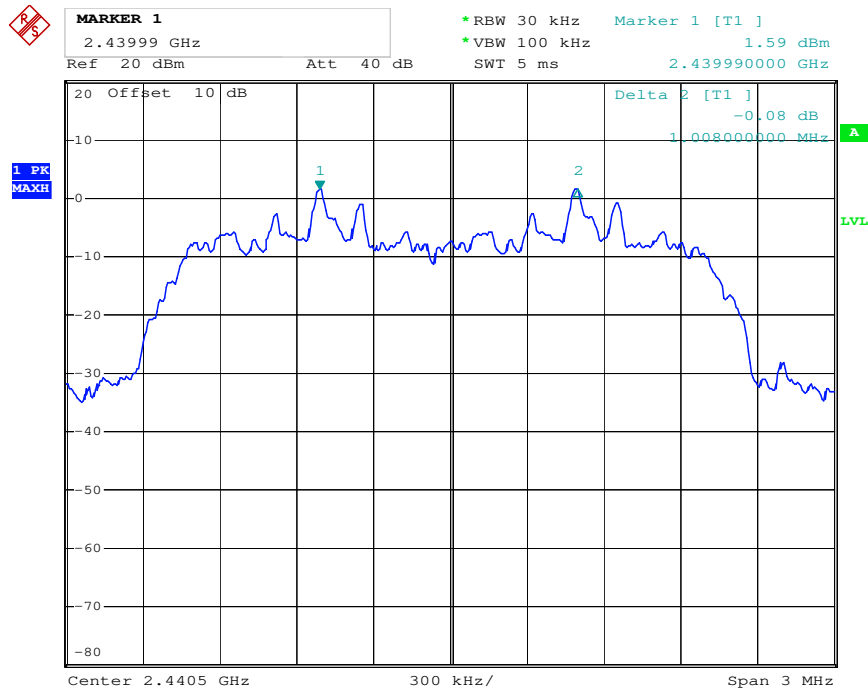


$\Pi/4$ DQPSK Mode

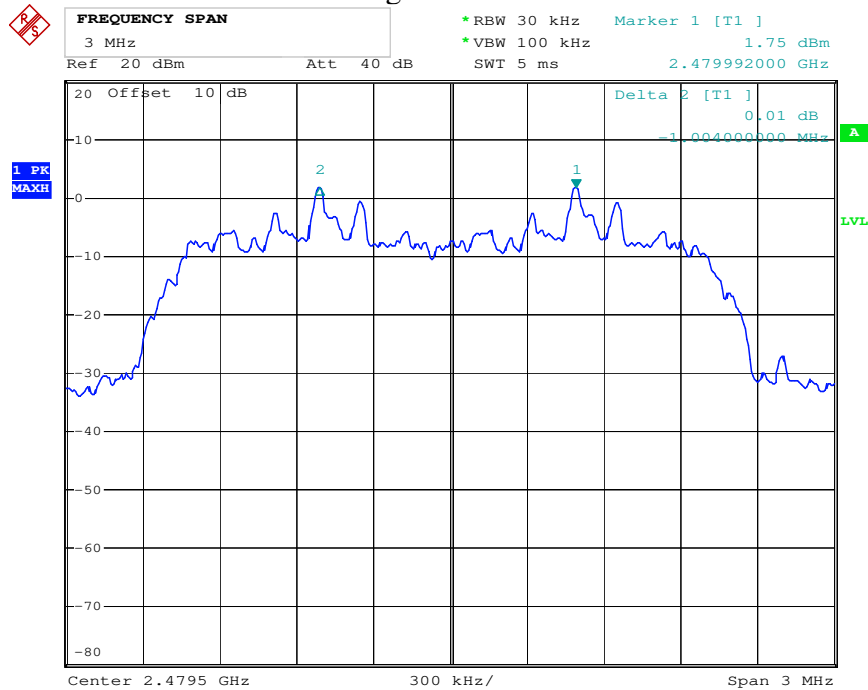
Low channel



Middle channel

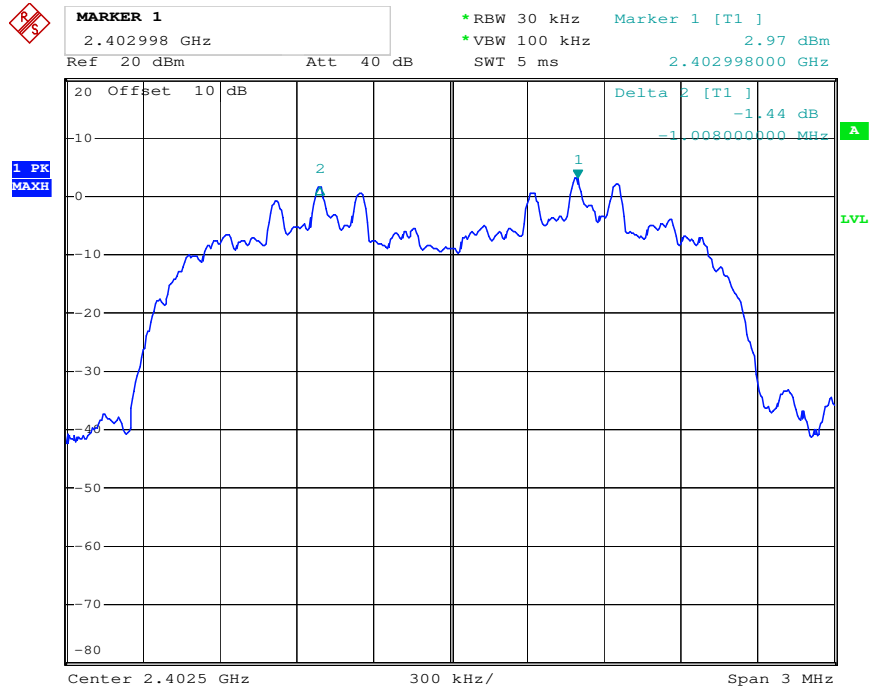


High channel

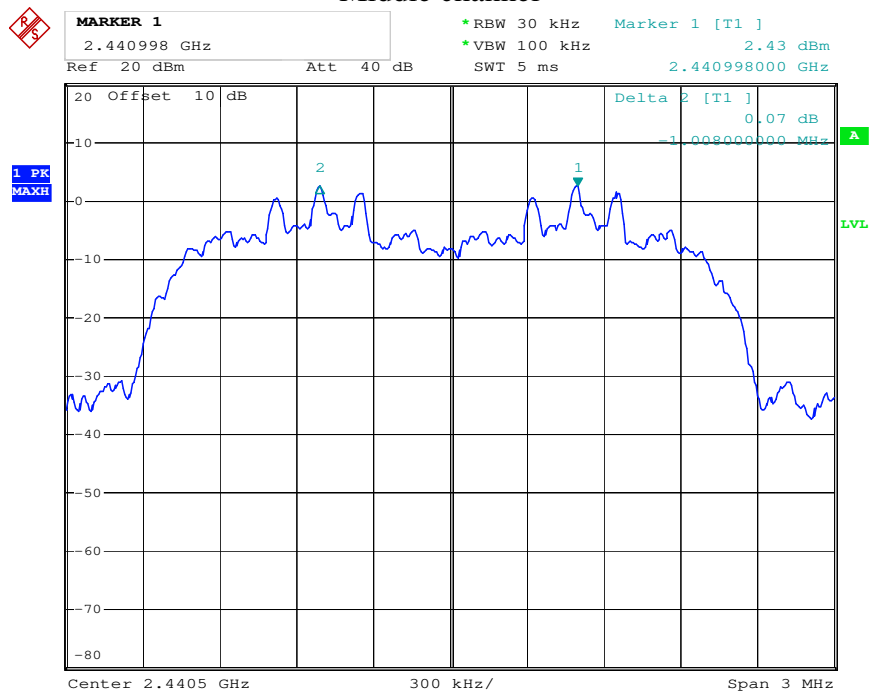


8DPSK Mode

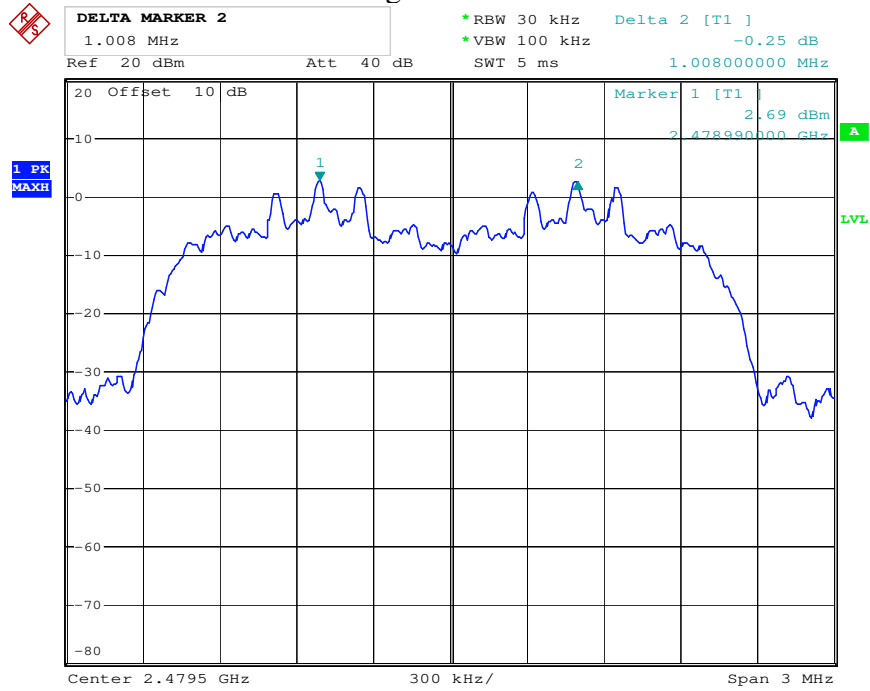
Low channel



Middle channel

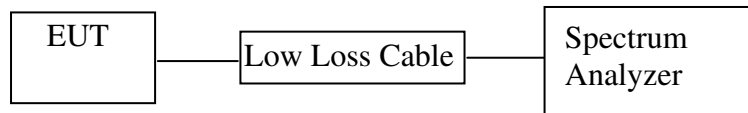


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: Songbird II Radio)

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 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.

7.4. 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.

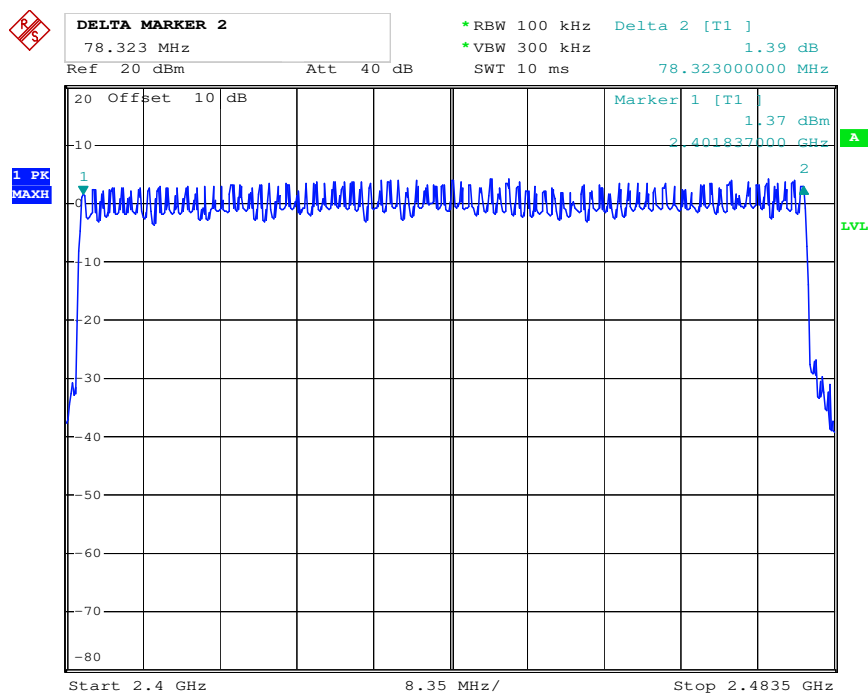
7.5.3. Max hold, view and count how many channel in the band.

7.6.Test Result

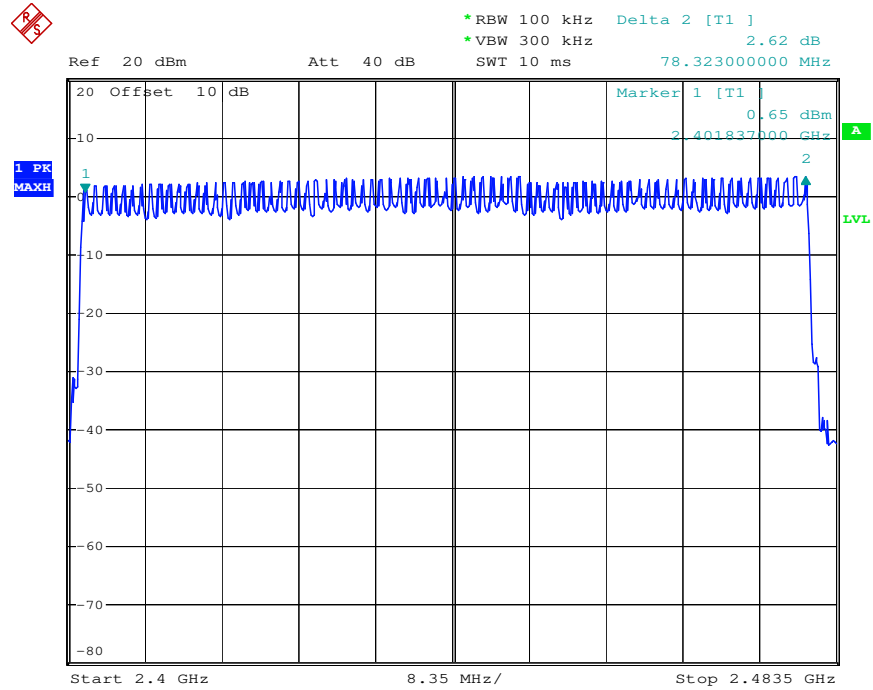
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	≥ 15

The spectrum analyzer plots are attached as below.

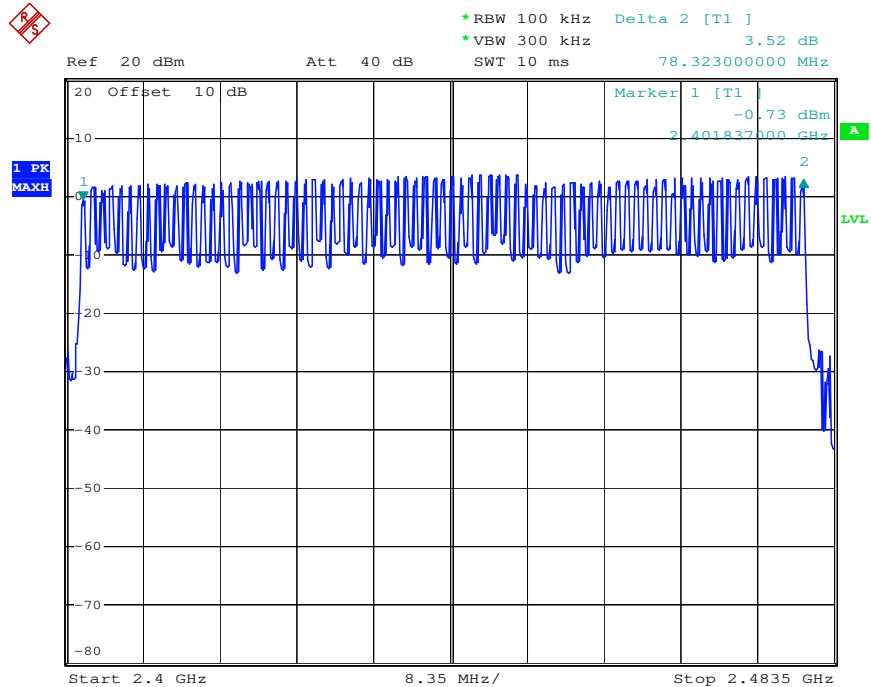
Number of hopping channels(GFSK)



Number of hopping channels($\pi/4$ DQPSK)

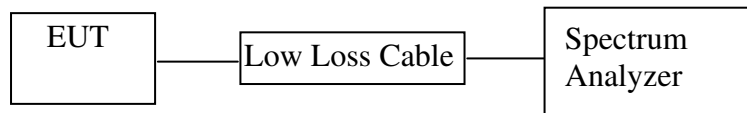


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: Songbird II Radio)

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 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.

8.4. 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=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

8.5.4.Repeat above procedures until all frequency measured were complete.

8.6.Test Result

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.410	131.20	400
	2441	0.405	129.60	400
	2480	0.405	129.60	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.695	271.20	400
	2441	1.695	271.20	400
	2480	1.695	271.20	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	2.970	316.80	400
	2441	2.970	316.80	400
	2480	2.970	316.80	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

$\Pi/4$ DQPSK

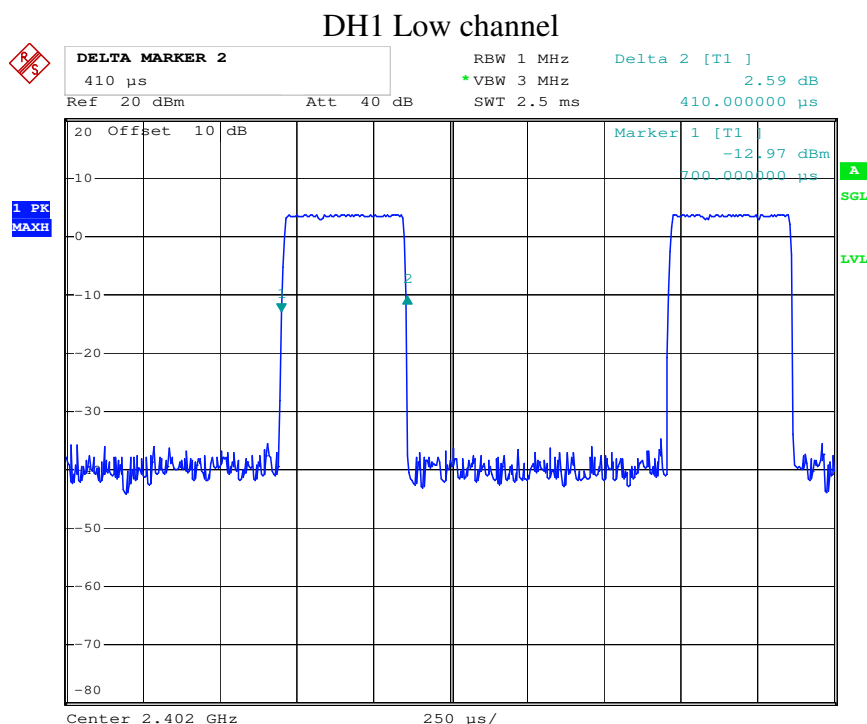
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.430	137.60	400
	2441	0.430	137.60	400
	2480	0.430	137.60	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.690	270.40	400
	2441	1.670	267.20	400
	2480	1.690	270.40	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	2.970	316.80	400
	2441	2.976	317.44	400
	2480	2.976	317.44	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

8DPSK Mode

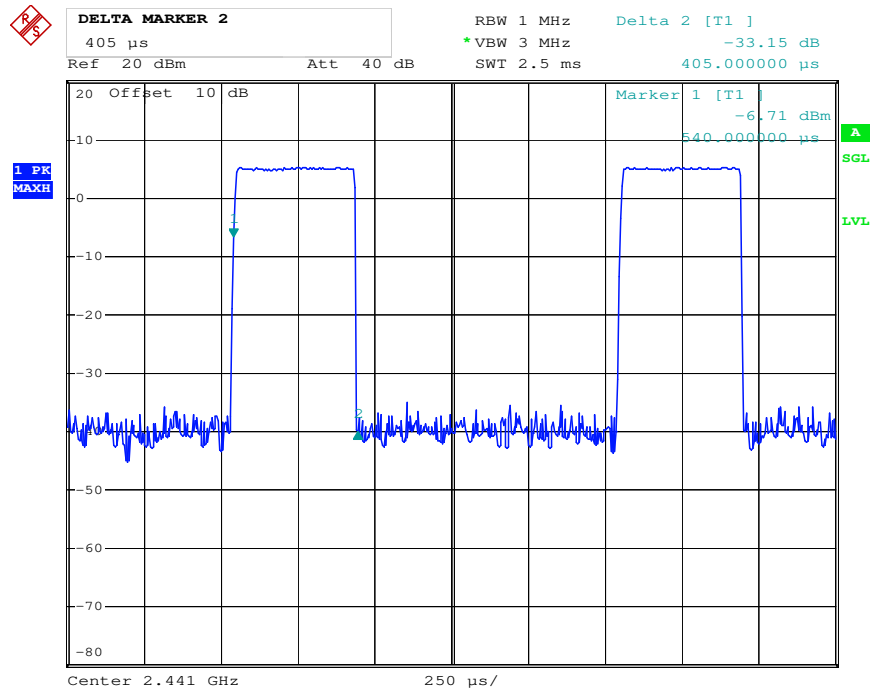
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.425	136.00	400
	2441	0.430	137.60	400
	2480	0.425	136.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
DH3	2402	1.720	275.20	400
	2441	1.700	272.00	400
	2480	1.700	272.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
DH5	2402	2.970	316.80	400
	2441	2.970	316.80	400
	2480	2.970	316.80	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

The spectrum analyzer plots are attached as below.

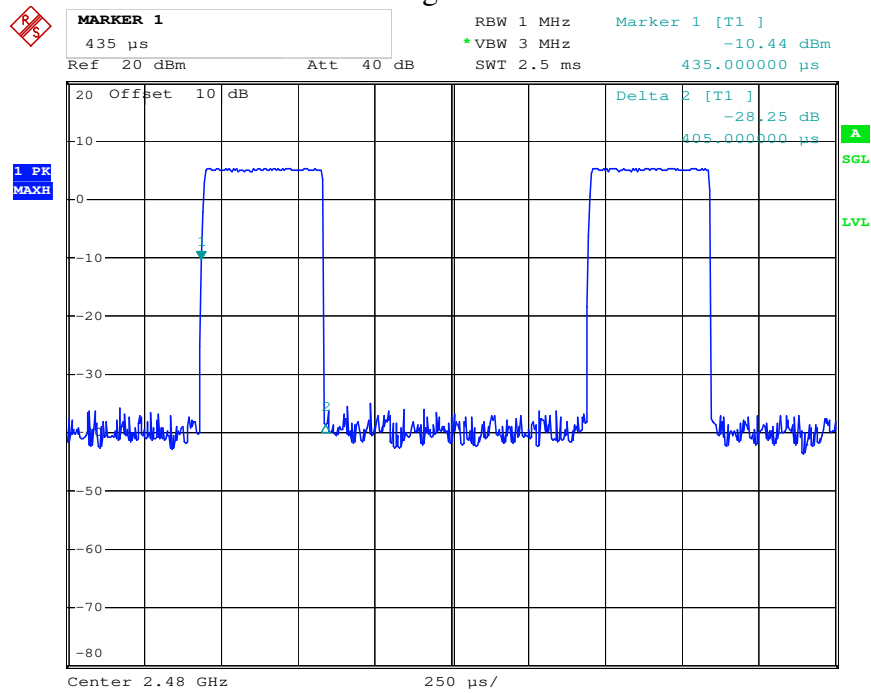
GFSK Mode



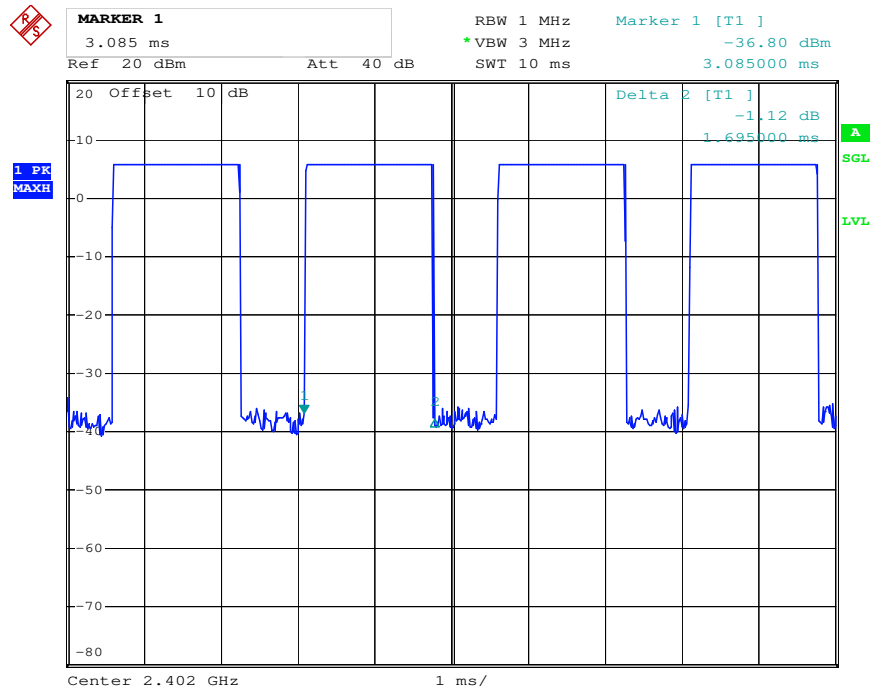
DH1 Middle channel



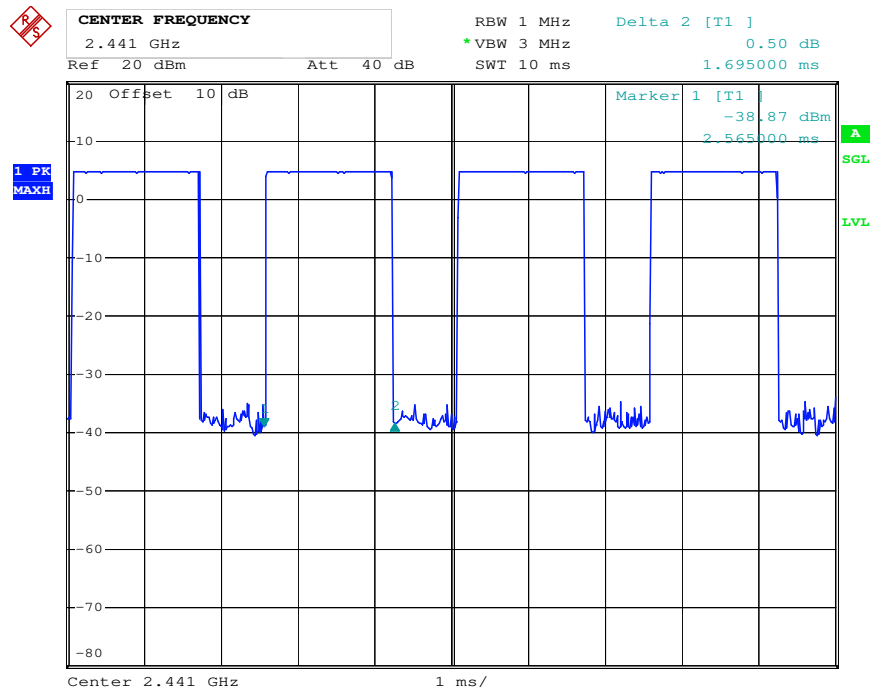
DH1 High channel



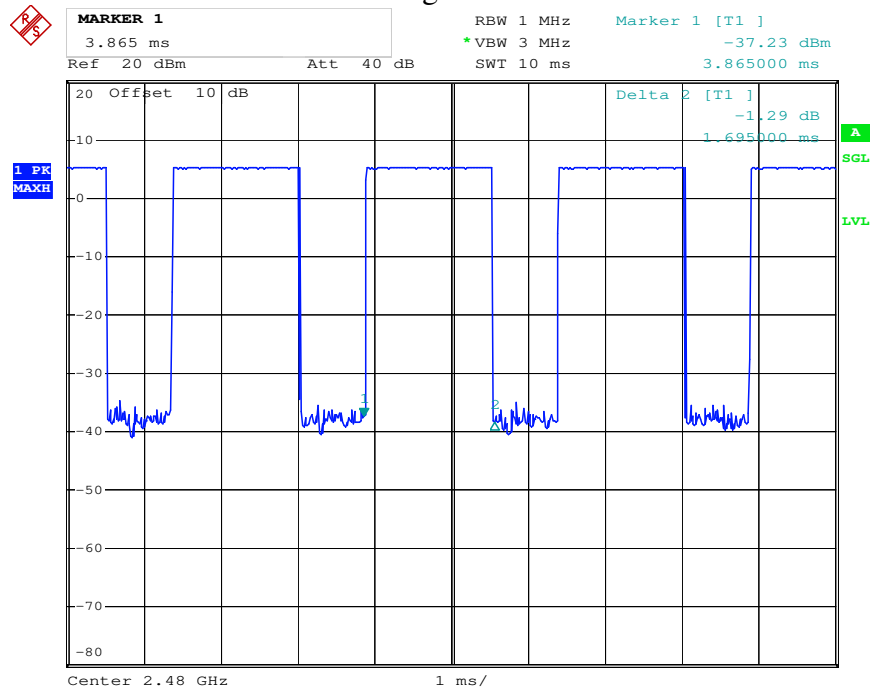
DH3 Low channel



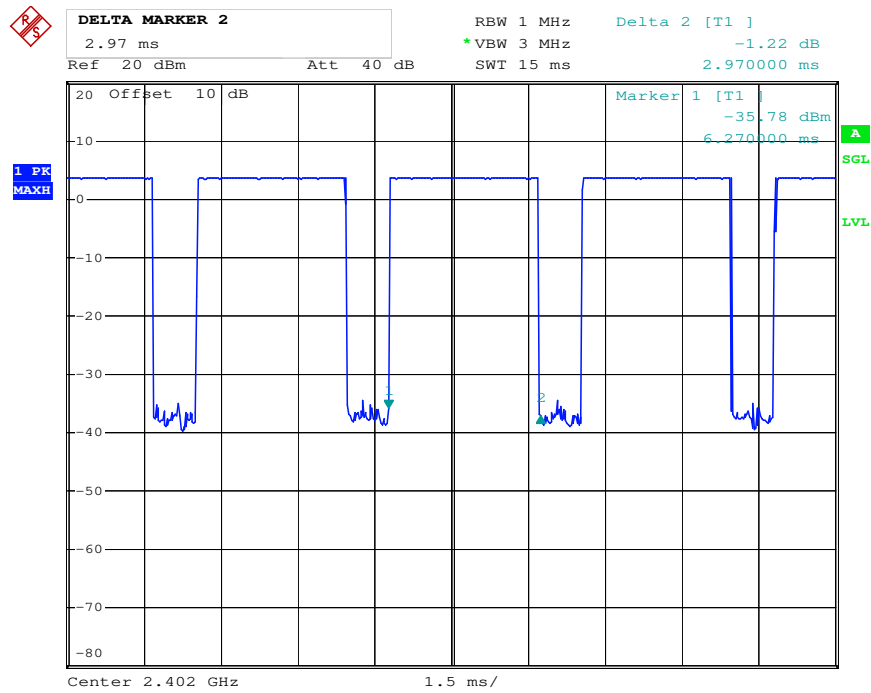
DH3 Middle channel



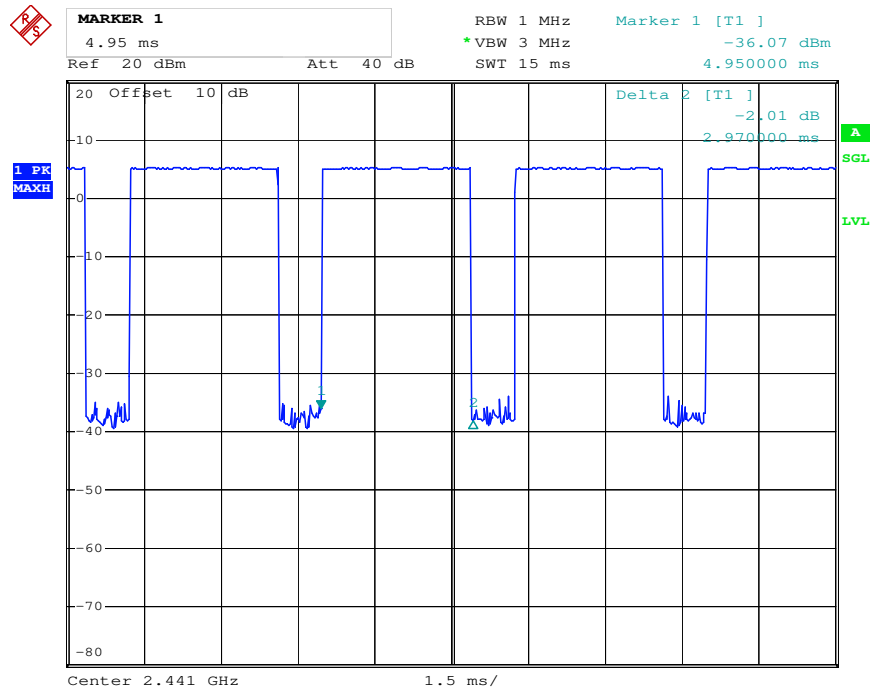
DH3 High channel



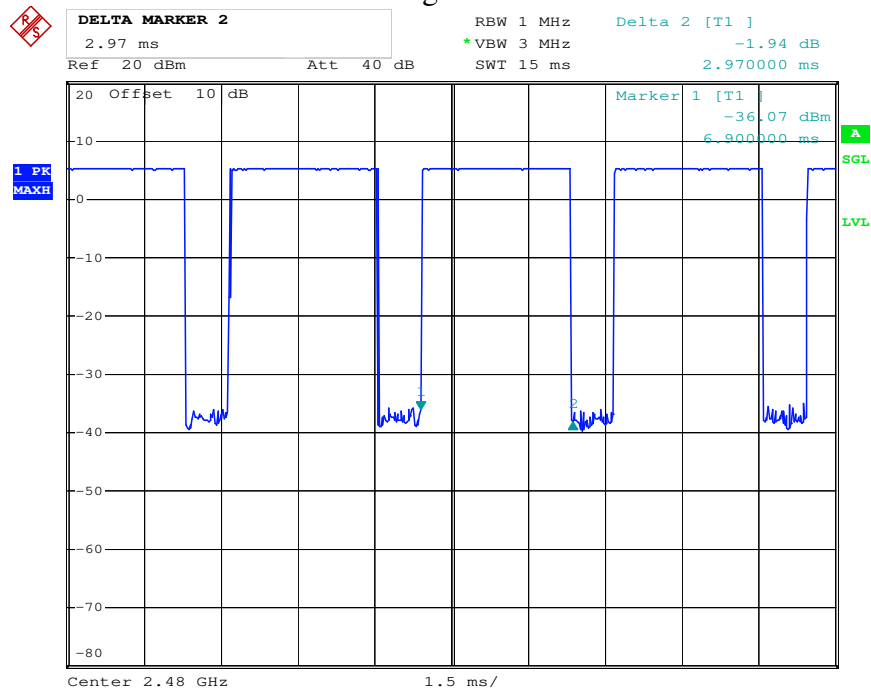
DH5 Low channel



DH5 Middle channel

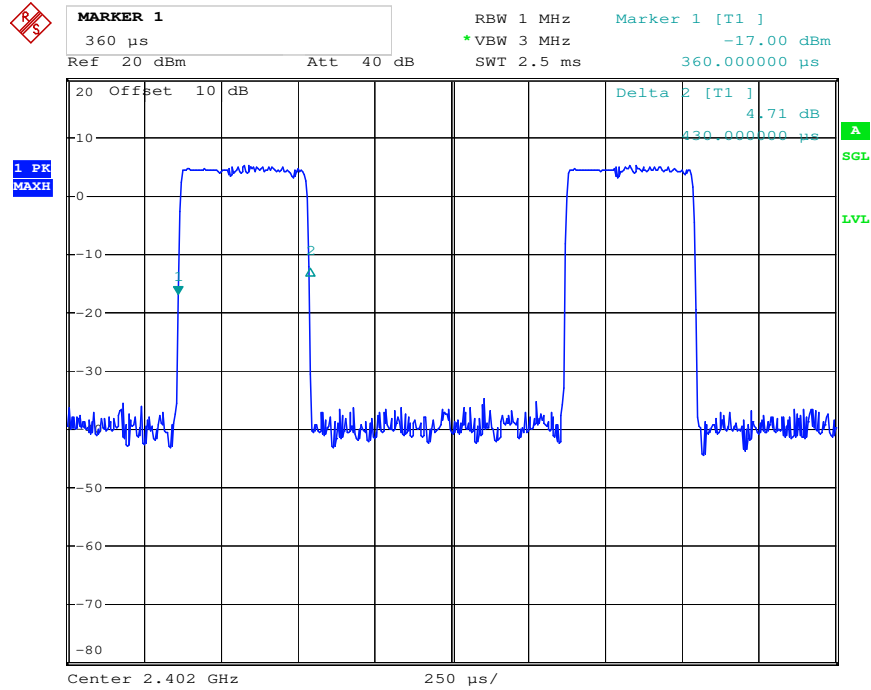


DH5 High channel

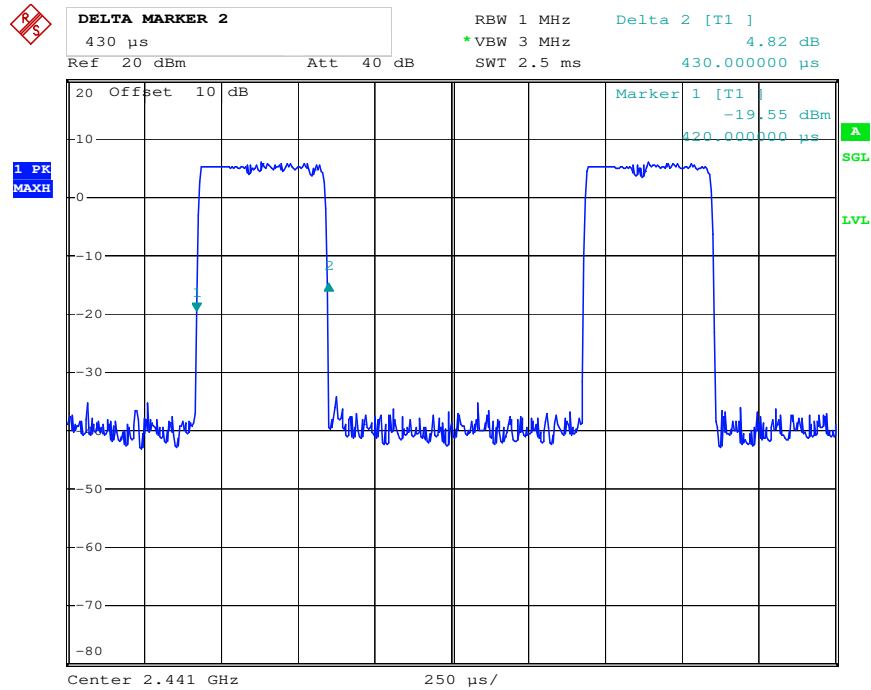


$\Pi/4$ DQPSK

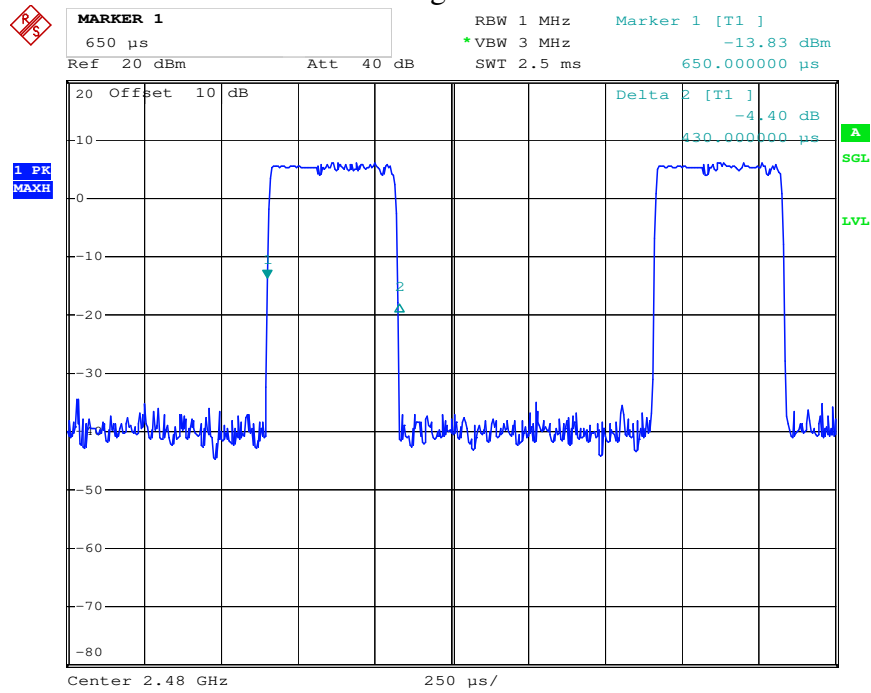
2DH1 Low channel



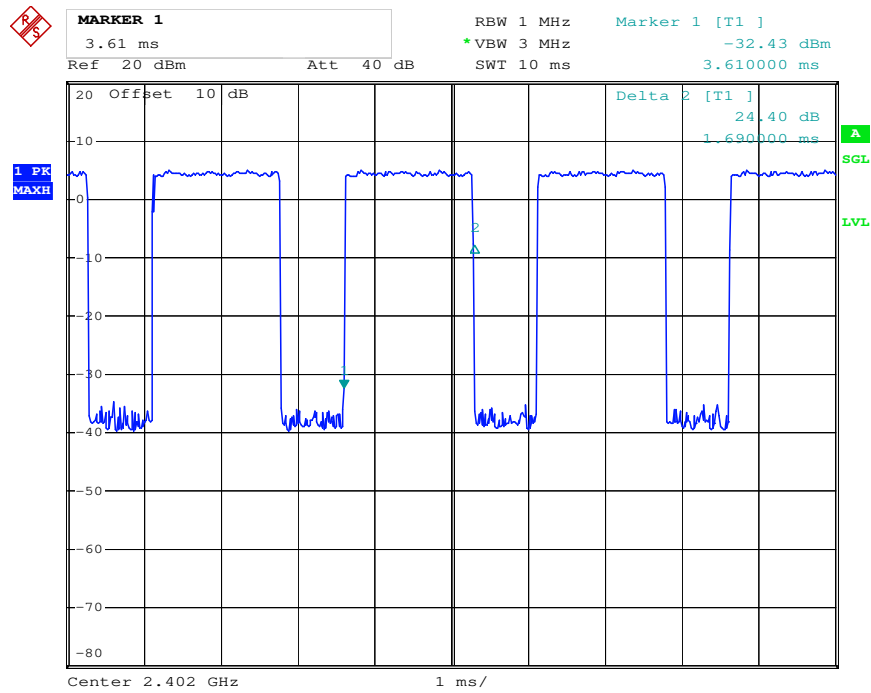
2DH1 Middle channel



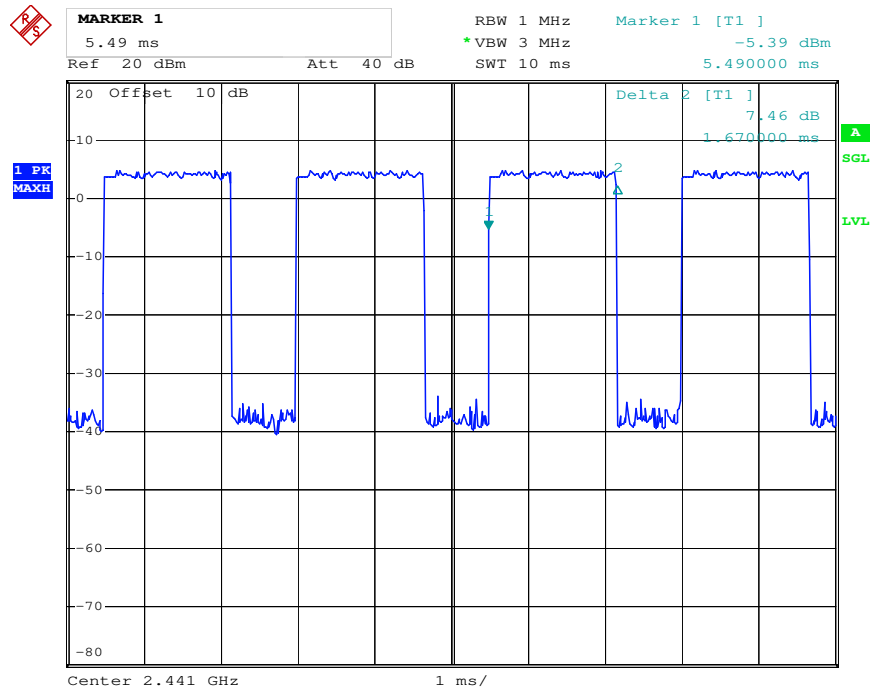
2DH1 High channel



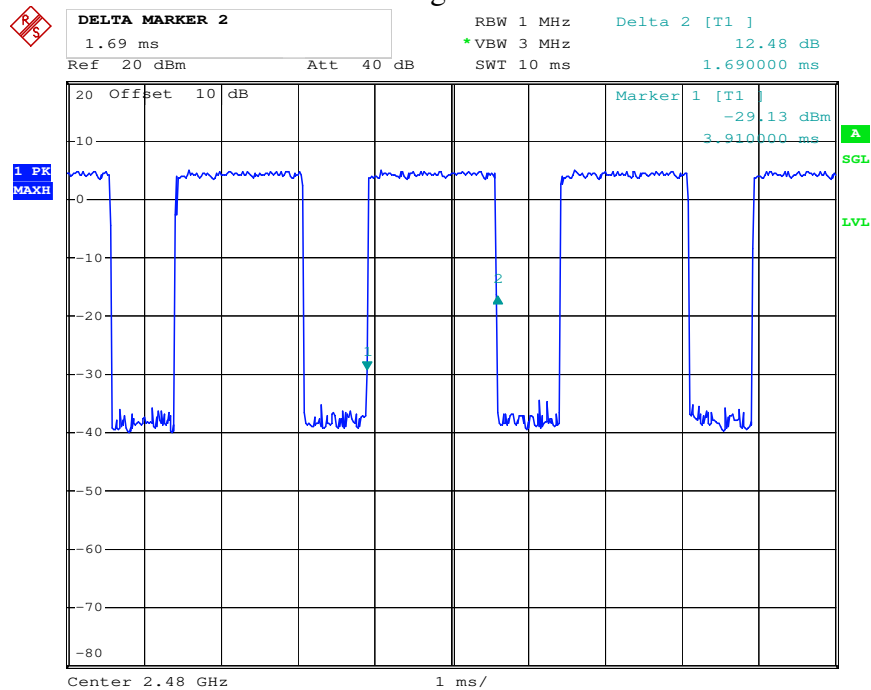
2DH3 Low channel



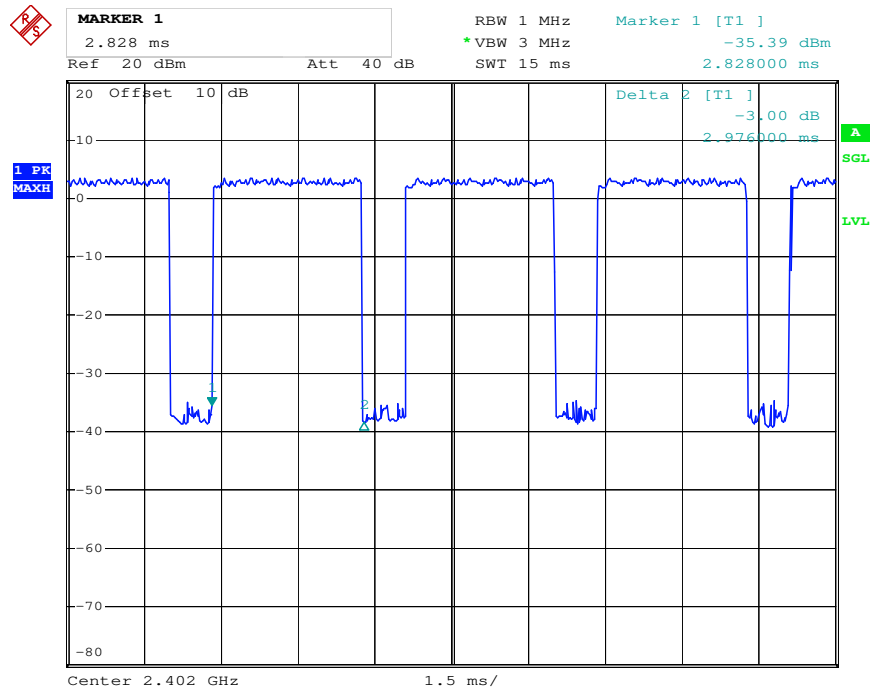
2DH3 Middle channel



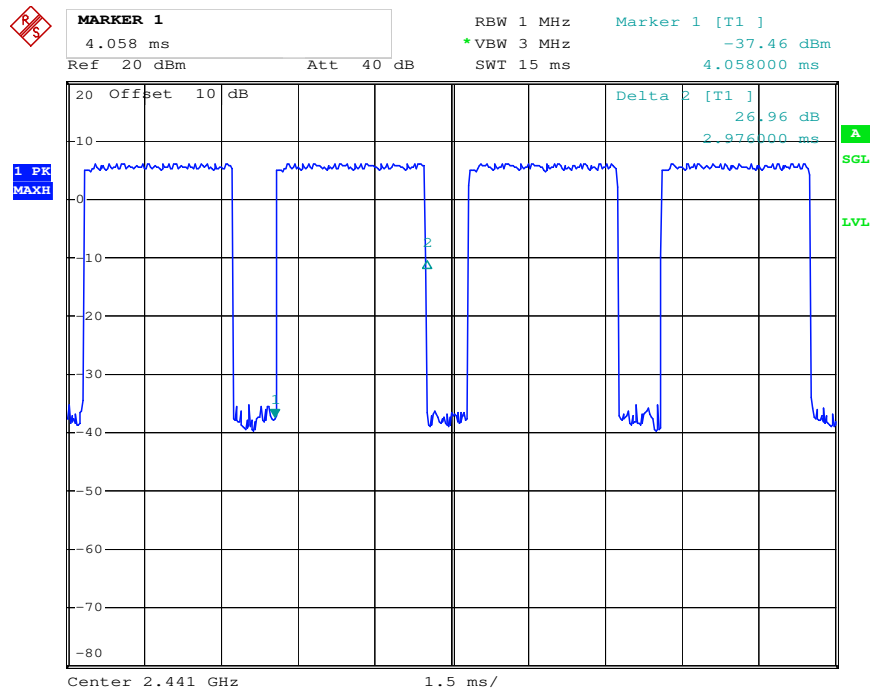
2DH3 High channel



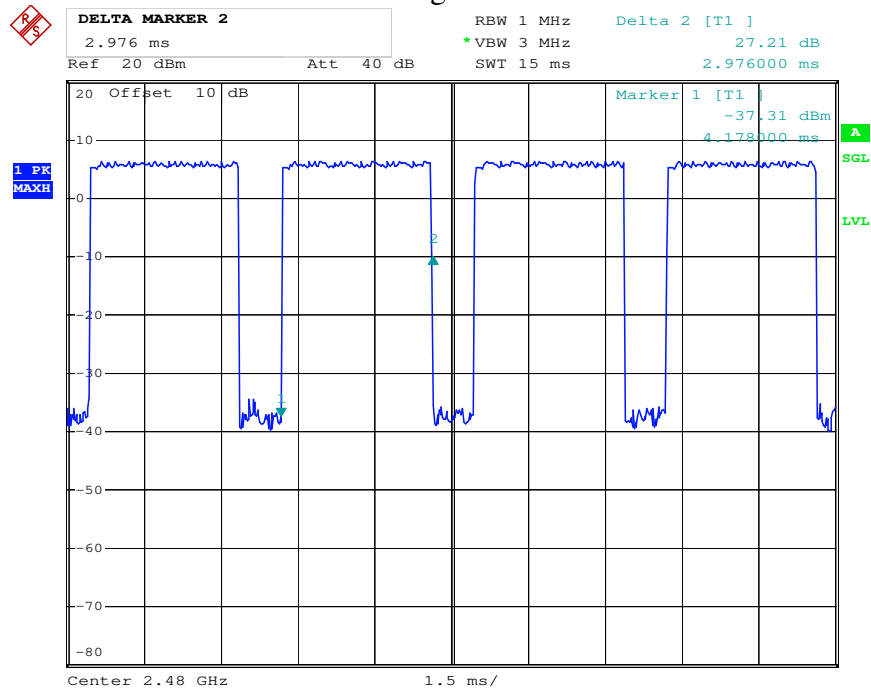
2DH5 Low channel



2DH5 Middle channel

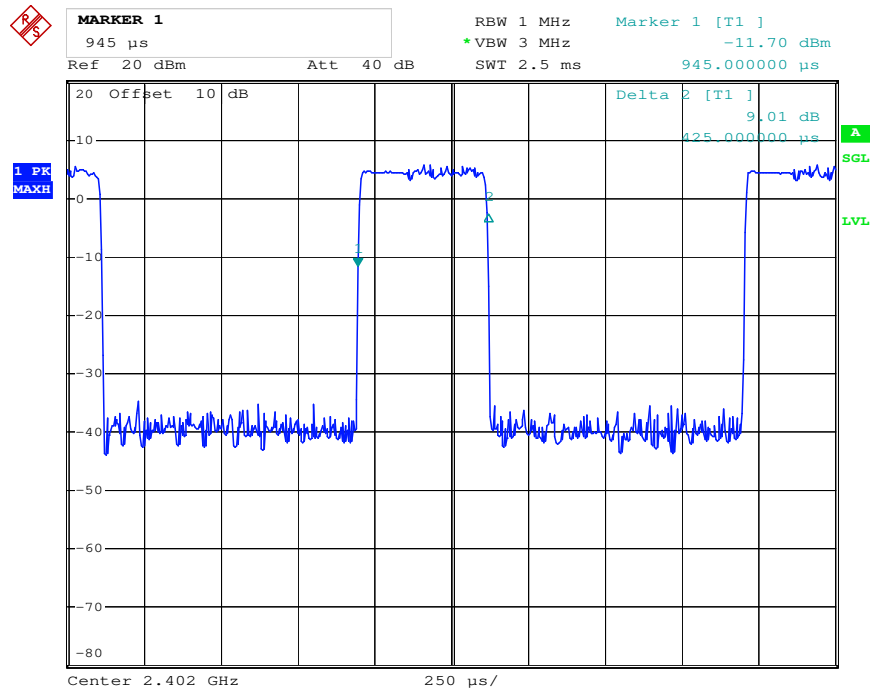


2DH5 High channel

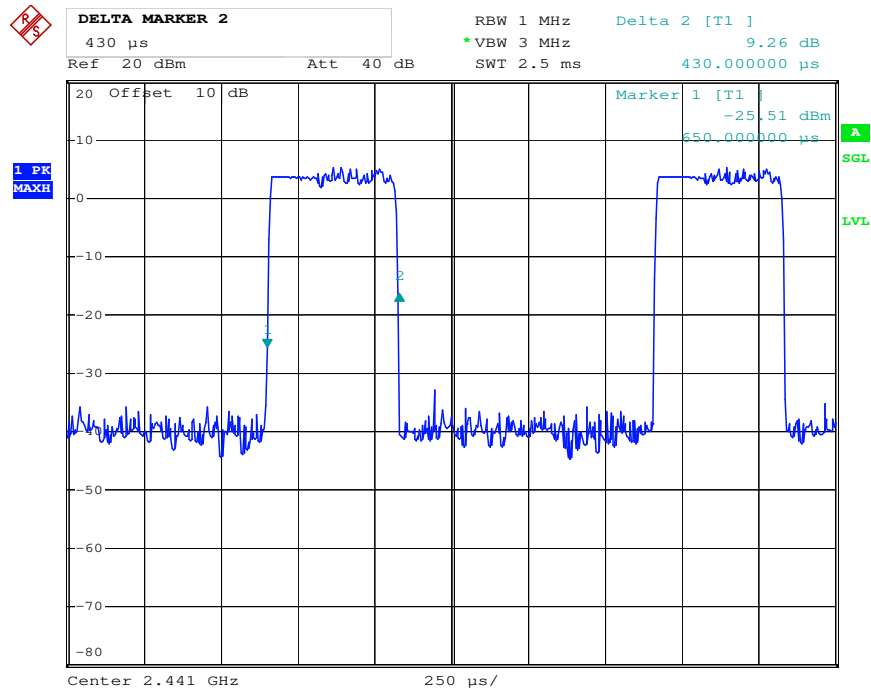


8DPSK Mode

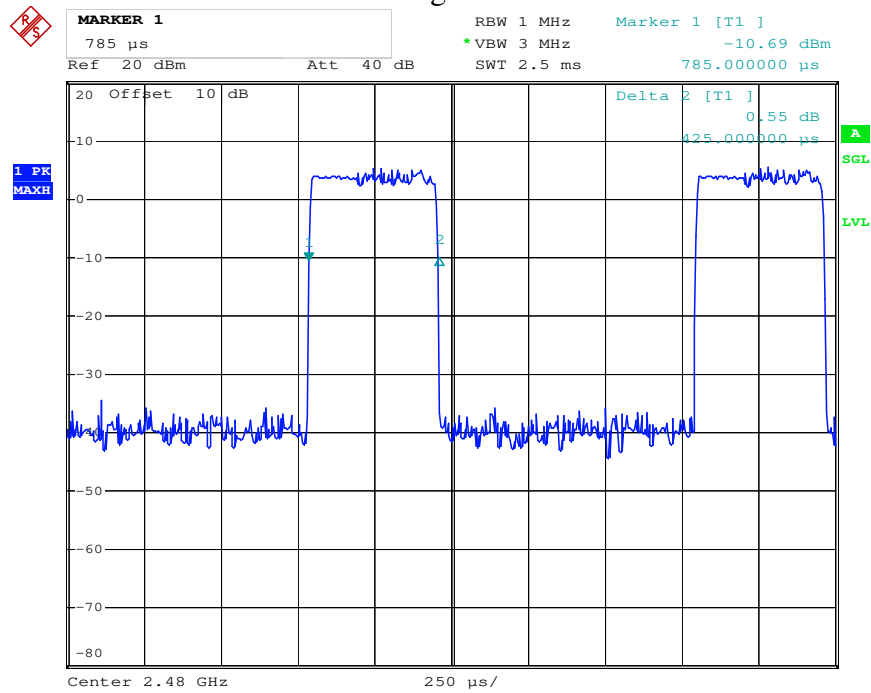
3DH1 Low channel



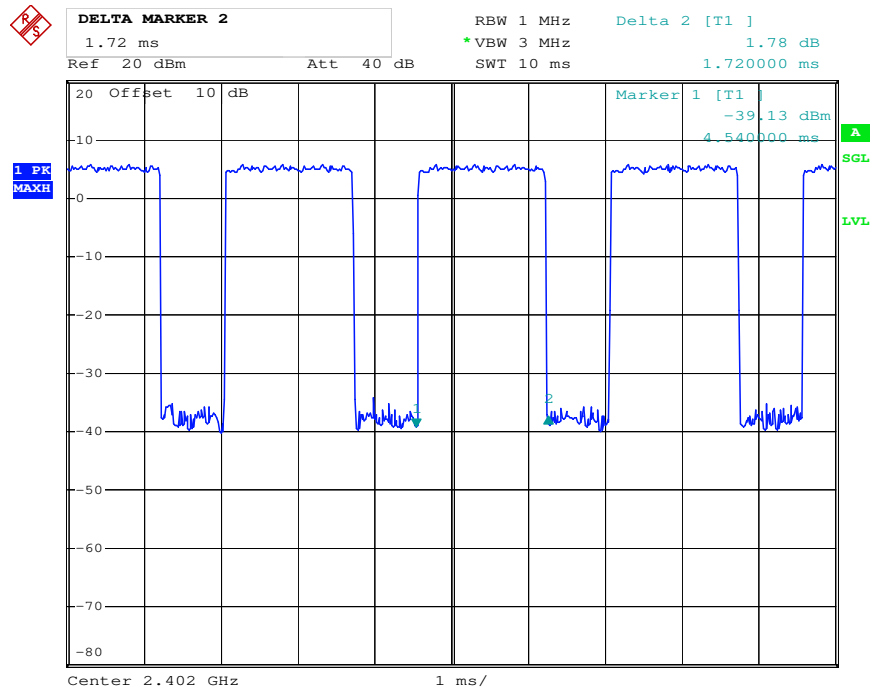
3DH1 Middle channel



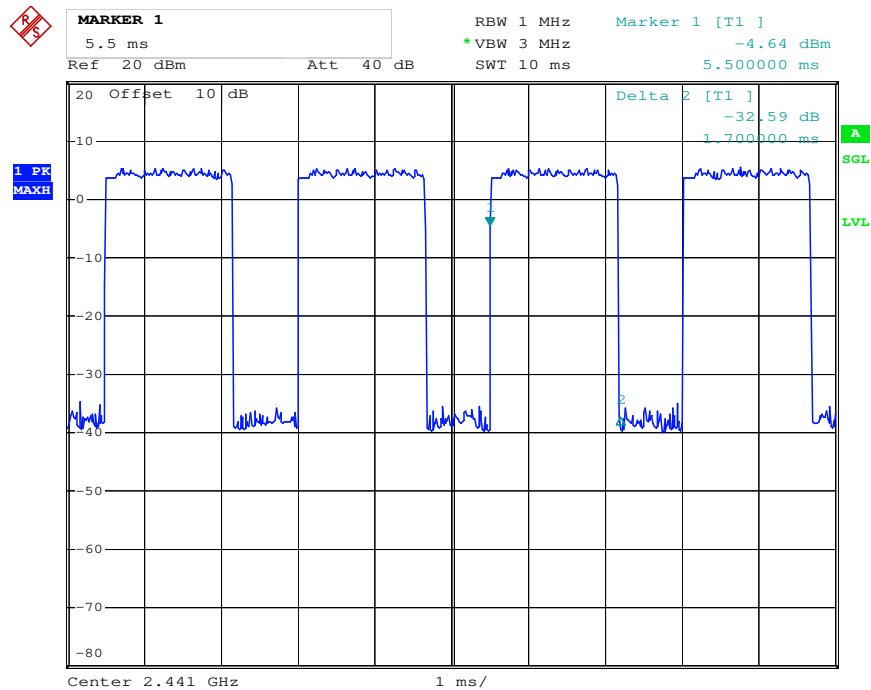
3DH1 High channel



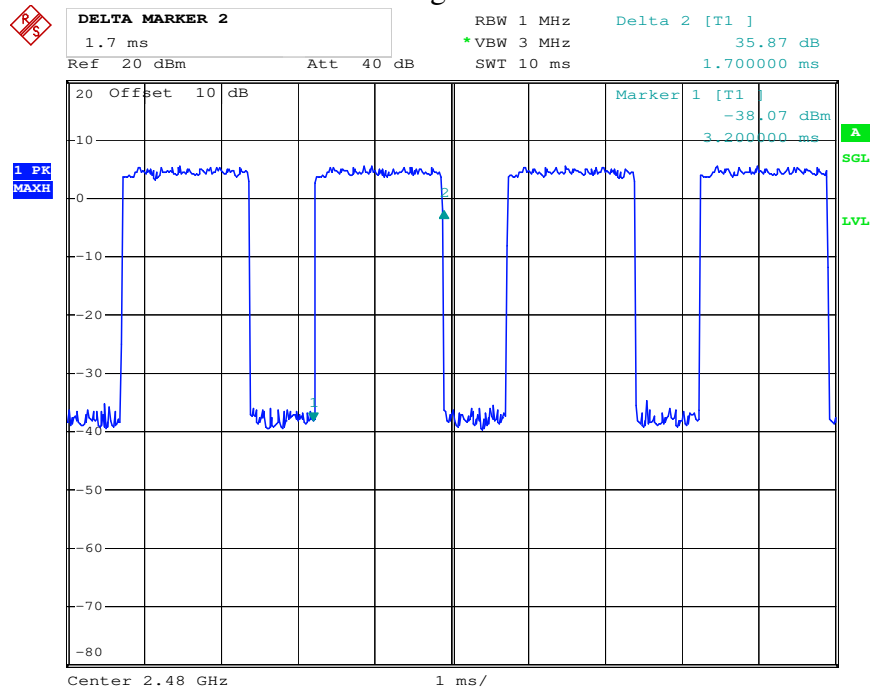
3DH3 Low channel



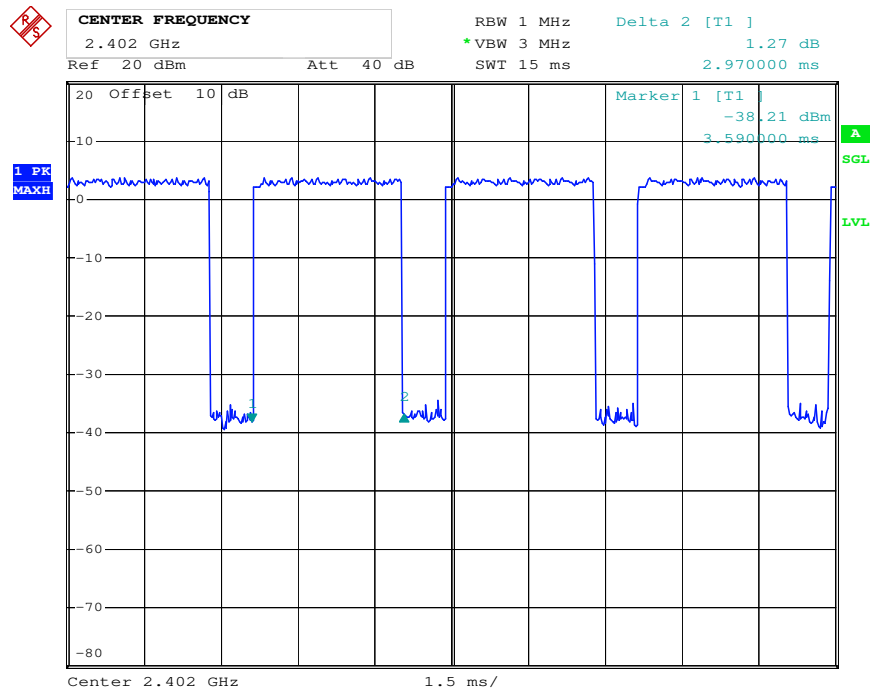
3DH3 Middle channel



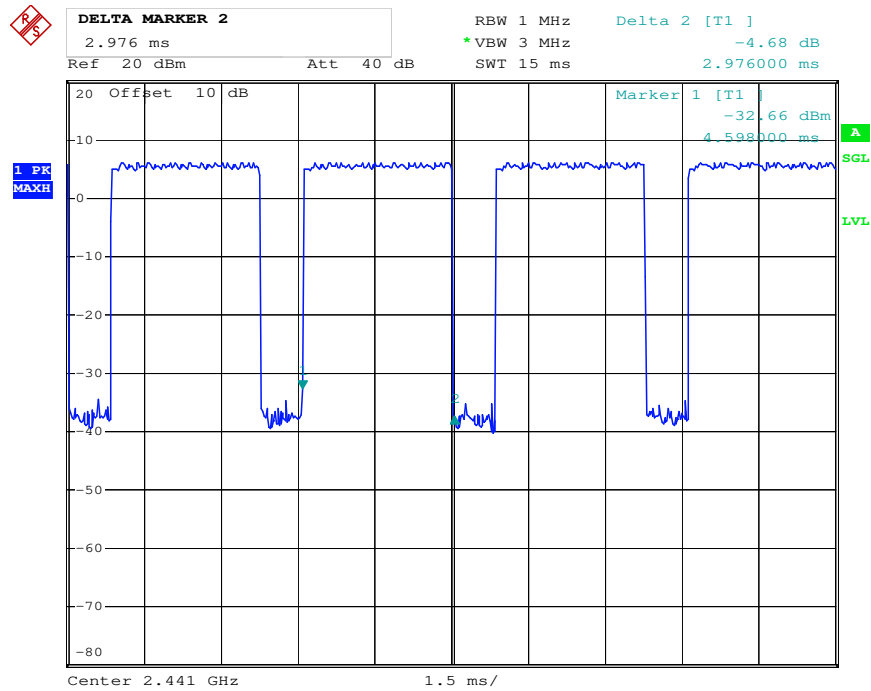
3DH3 High channel



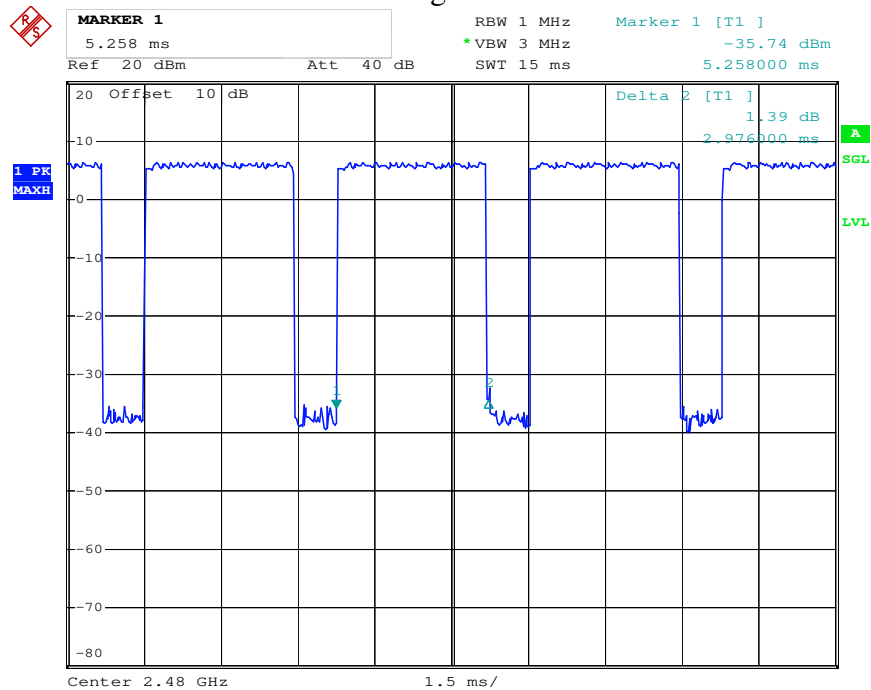
3DH5 Low channel



3DH5 Middle channel

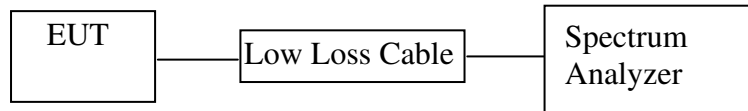


3DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



(EUT: Songbird II Radio)

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 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.

9.4. 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 for GFSK mode

9.5.3. Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz for other mode

9.5.4. Measurement the maximum peak output power.

9.6.Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	6.65/0.0046	30 / 1.0
Middle	2441	7.10/0.0051	30 / 1.0
High	2480	6.76/0.0047	30 / 1.0

Π/4 DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	5.87/0.0039	21 / 0.125
Middle	2441	6.47/0.0044	21 / 0.125
High	2480	6.09/0.0041	21 / 0.125

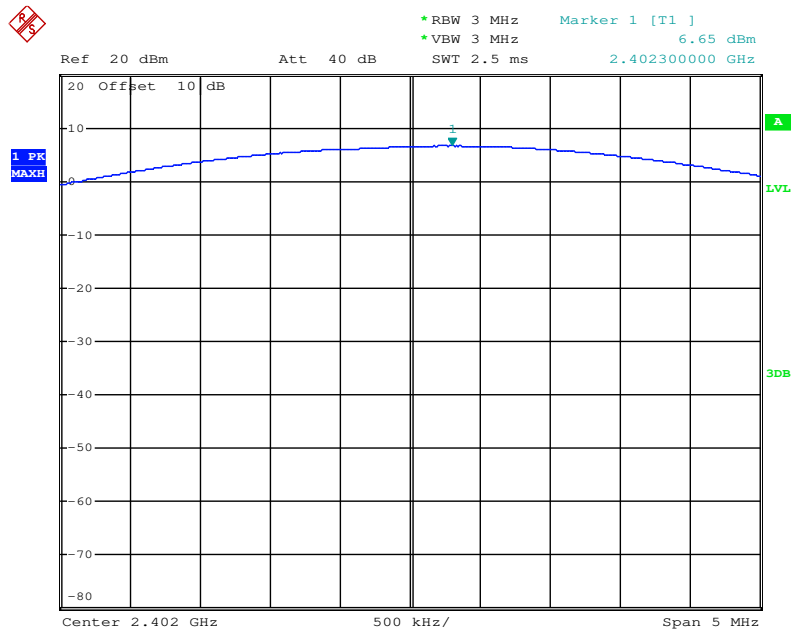
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	5.83/0.0038	21 / 0.125
Middle	2441	6.41/0.0044	21 / 0.125
High	2480	6.09/0.0041	21 / 0.125

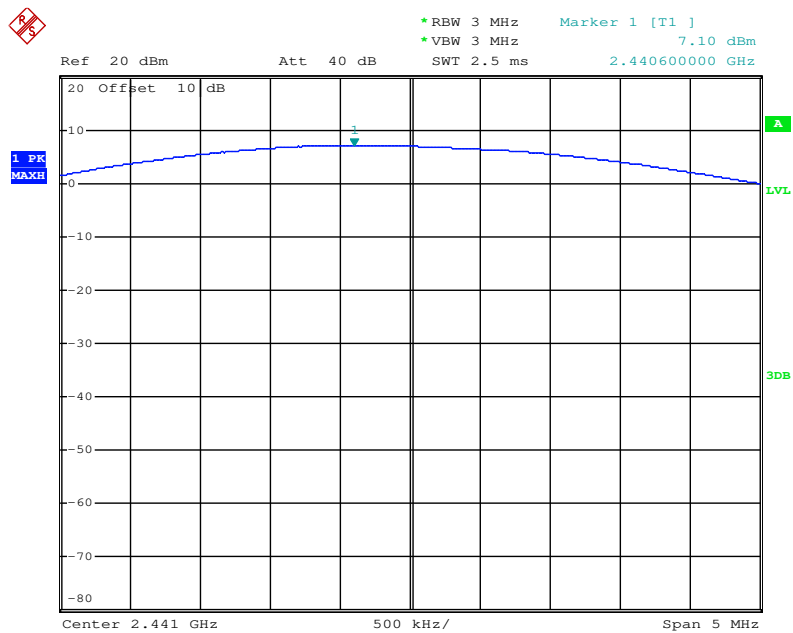
The spectrum analyzer plots are attached as below.

GFSK Mode

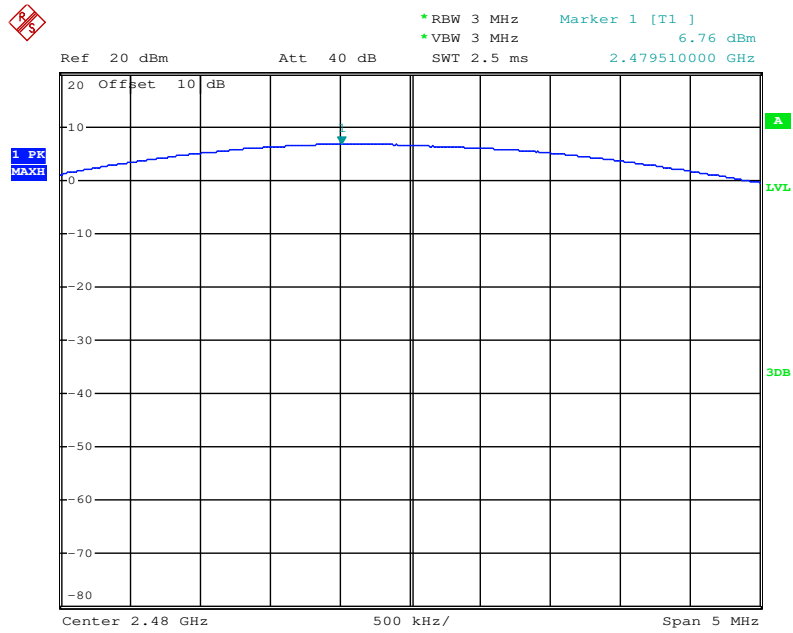
Low channel



Middle channel

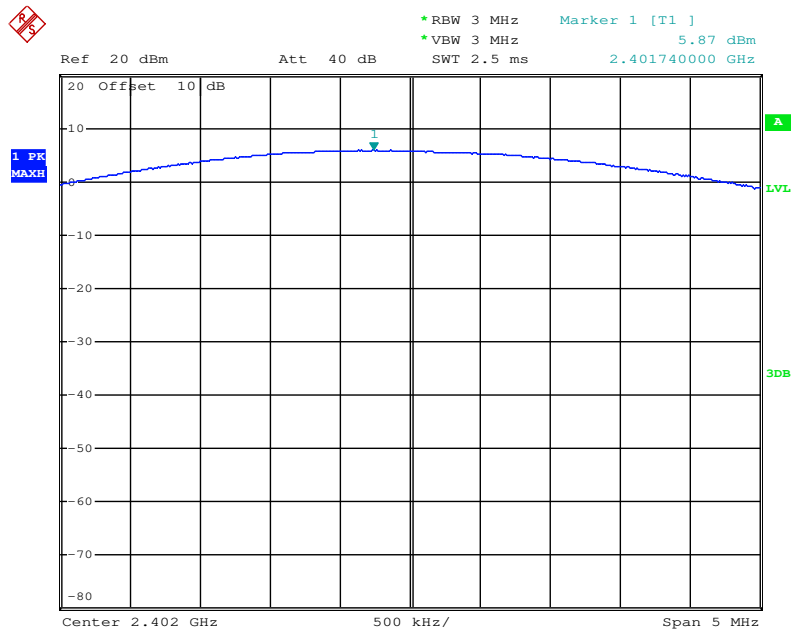


High channel

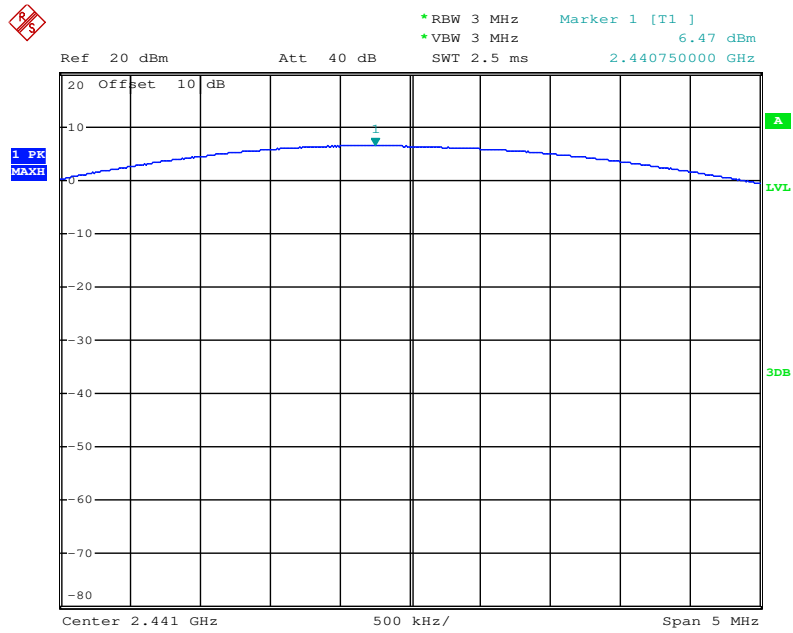


$\Pi/4$ DQPSK Mode

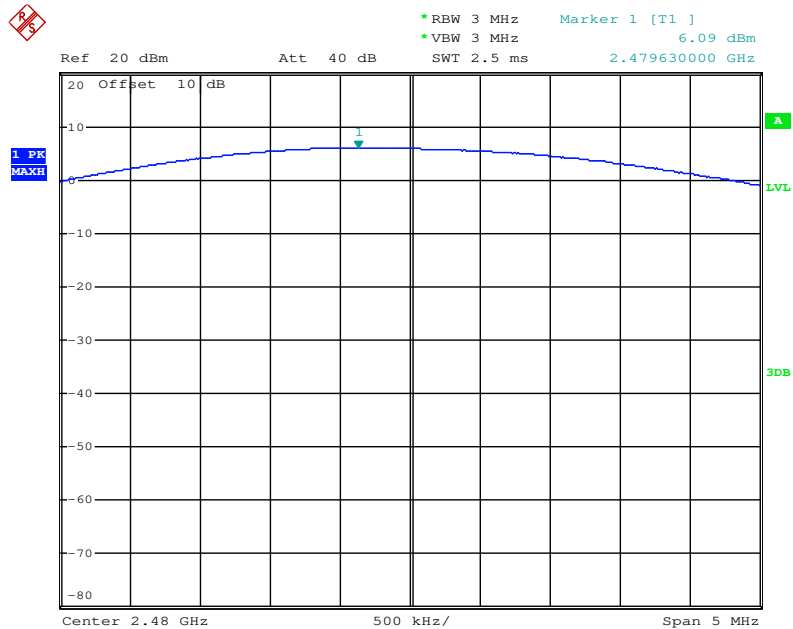
Low channel



Middle channel

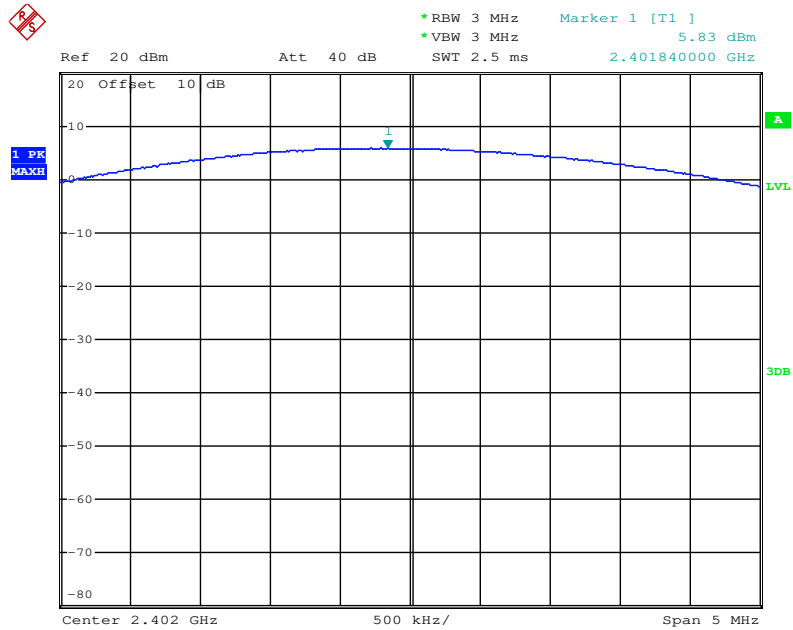


High channel

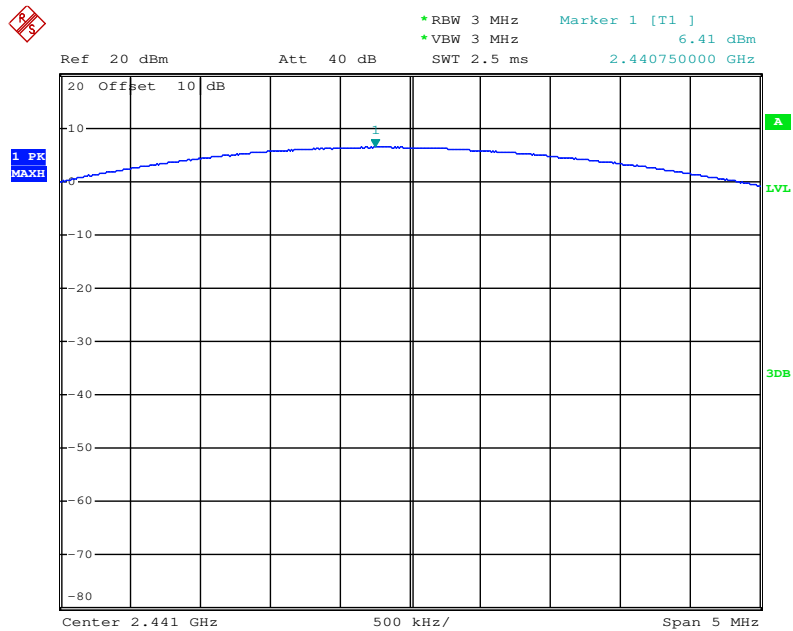


8DPSK Mode

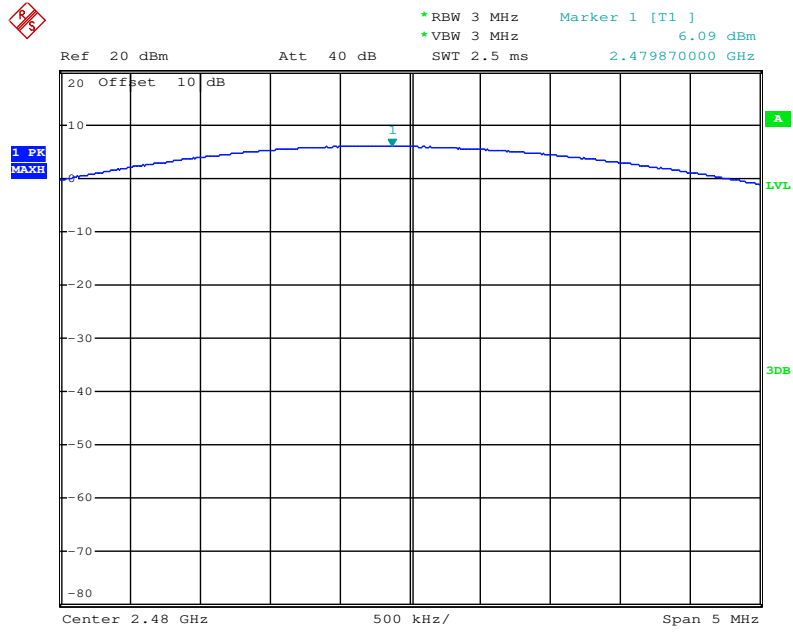
Low channel



Middle channel



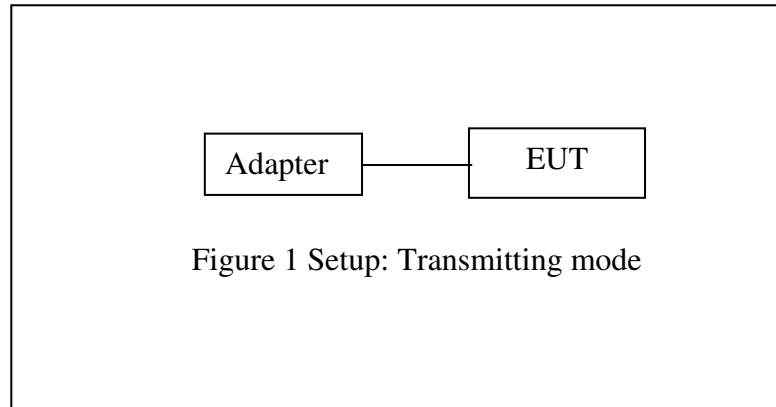
High channel



10. RADIATED EMISSION TEST

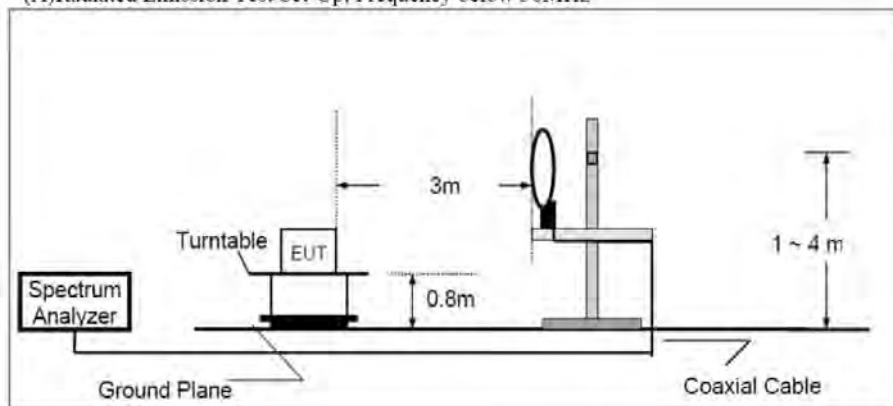
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and peripherals

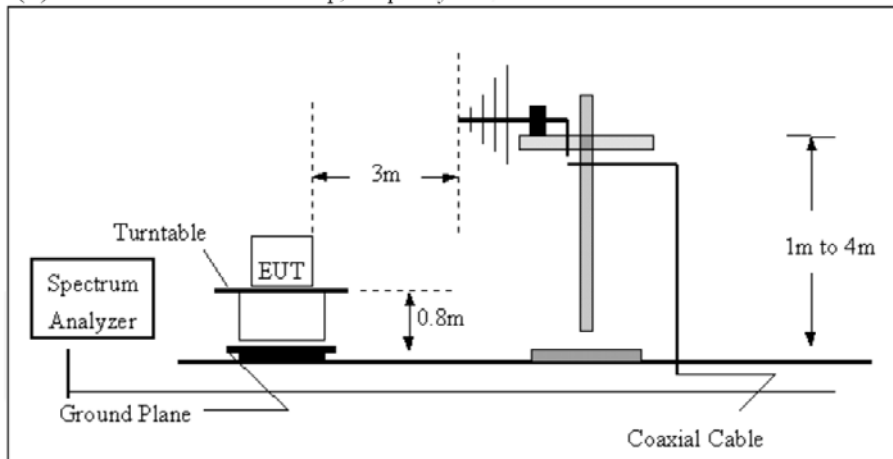


10.1.2. Semi-Anechoic Chamber Test Setup Diagram

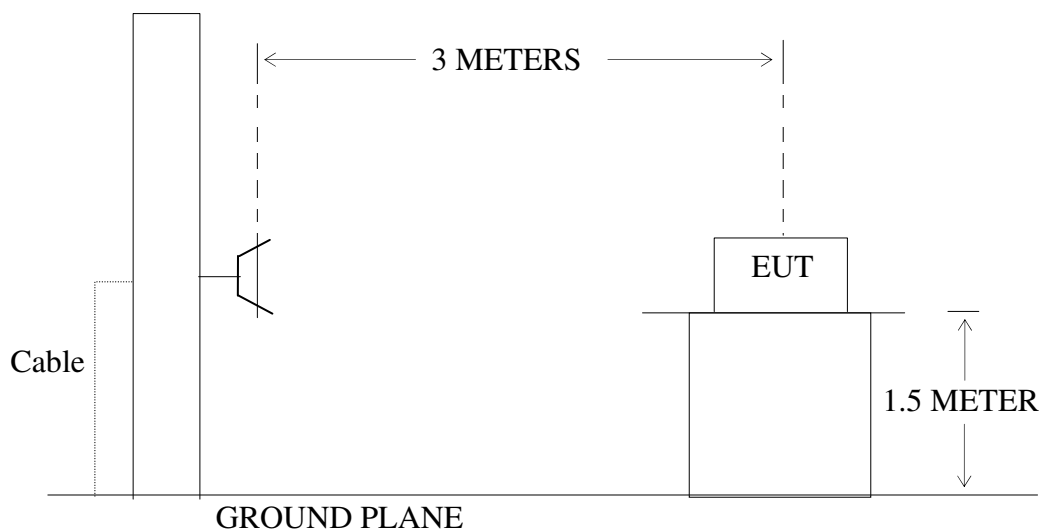
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30-1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



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 equipment is 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.

10.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). 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 bi-log 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 EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.6.The Field Strength of Radiation Emission Measurement Results

Note: 1.We tested GFSK mode, $\pi/4$ DQPSK Mode & 8DPSK mode and recorded the worst case data (GFSK mode) from 30MHz-1GHz.

2.We tested two adapters during the radiation test above 1GHz and recorded the worse case data.

3. The test frequency is from 9KHz to 25GHz, The radiation emission from 9KHz-30MHz and 18-25GHz are not reported, because the levels are too low against the limit.

Below 1GHz(The test data of adapter 1)



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Job No.: FRANK2018 #162

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

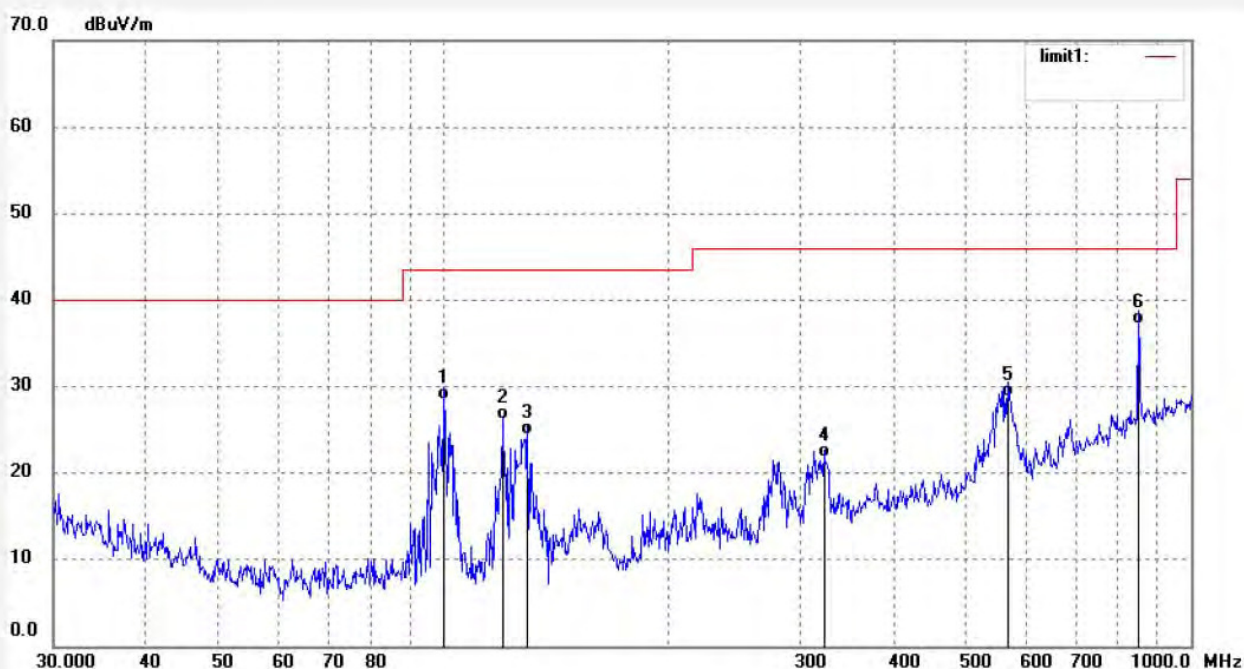
Date: 18/01/13/

Time: 10/27/17

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	56.45	-28.04	28.41	43.50	-15.09	QP	200	148	
2	119.7672	53.68	-27.43	26.25	43.50	-17.25	QP	200	357	
3	129.3923	52.15	-27.70	24.45	43.50	-19.05	QP	200	158	
4	322.5896	42.35	-20.50	21.85	46.00	-24.15	QP	200	92	
5	567.9696	43.15	-14.38	28.77	46.00	-17.23	QP	200	125	
6	850.7603	45.13	-8.01	37.12	46.00	-8.88	QP	200	156	



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2018 #161

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

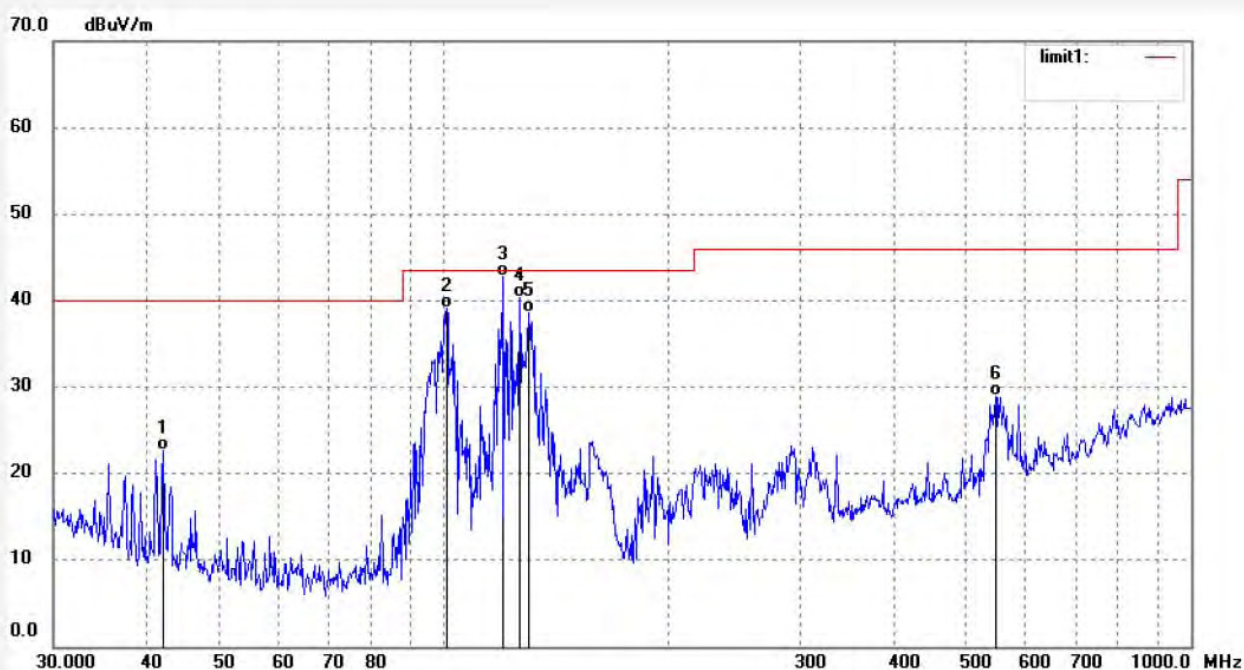
Date: 18/01/13/

Time: 10/26/04

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	42.1828	46.59	-23.95	22.64	40.00	-17.36	QP	100	128	
2	100.8247	67.13	-28.05	39.08	43.50	-4.42	QP	100	150	
3	119.7672	70.26	-27.43	42.83	43.50	-0.67	QP	100	234	
4	126.2486	67.89	-27.62	40.27	43.50	-3.23	QP	100	91	
5	129.8477	66.36	-27.71	38.65	43.50	-4.85	QP	100	199	
6	548.3600	43.82	-14.85	28.97	46.00	-17.03	QP	100	168	

Job No.: FRANK2018 #163

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

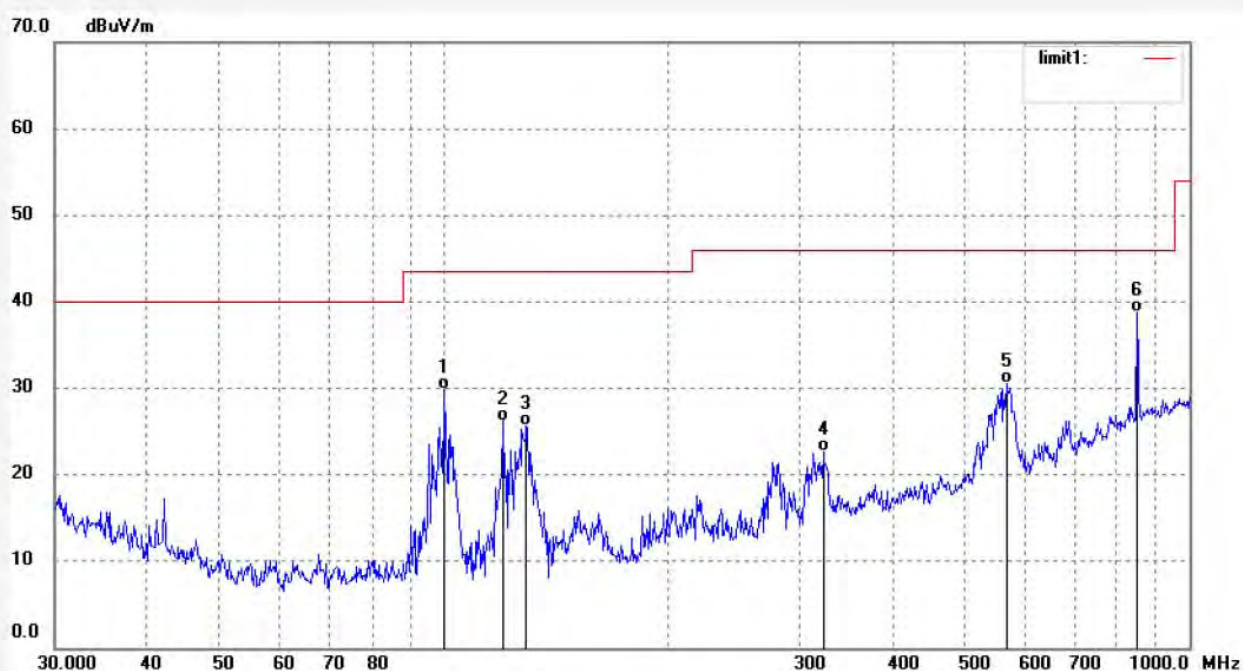
Date: 18/01/13/

Time: 10/29/00

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	57.85	-28.04	29.81	43.50	-13.69	QP	200	156	
2	119.7672	53.68	-27.43	26.25	43.50	-17.25	QP	200	321	
3	128.9385	53.27	-27.69	25.58	43.50	-17.92	QP	200	159	
4	322.5896	43.20	-20.50	22.70	46.00	-23.30	QP	200	46	
5	567.9696	44.89	-14.38	30.51	46.00	-15.49	QP	200	147	
6	850.7603	46.83	-8.01	38.82	46.00	-7.18	QP	200	122	

Job No.: FRANK2018 #164

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

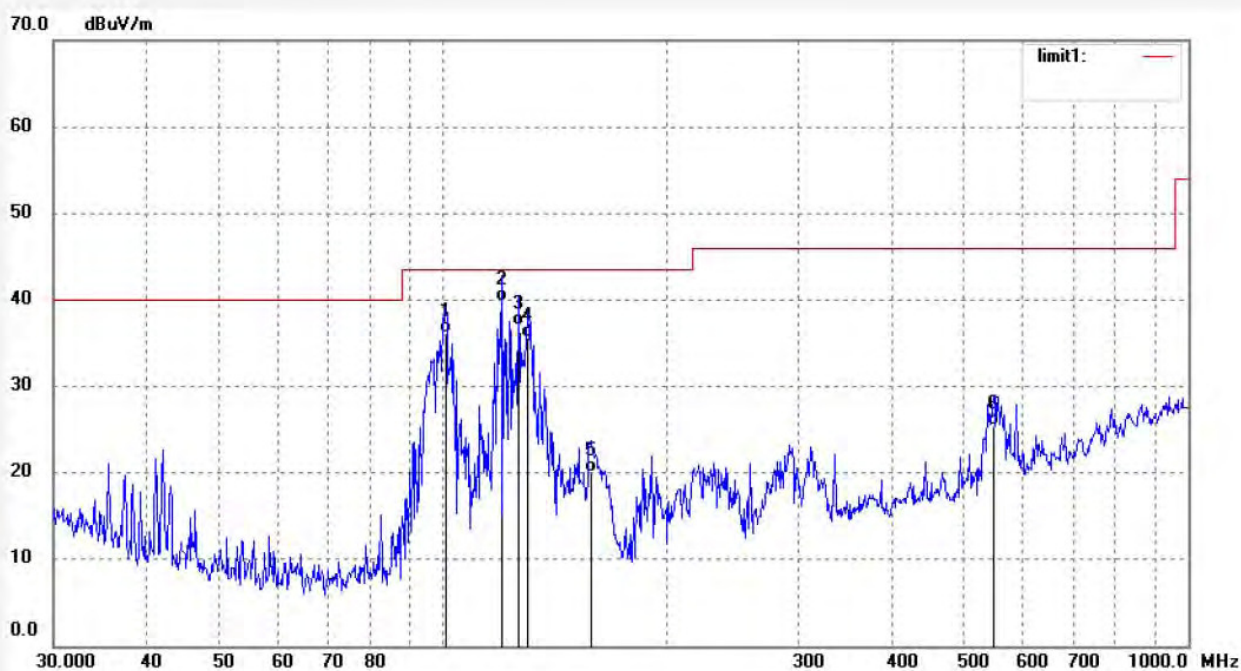
Date: 18/01/13/

Time: 10/26/04

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.8247	64.25	-28.05	36.20	43.50	-7.30	QP	100	53	
2	119.7672	67.26	-27.43	39.83	43.50	-3.67	QP	100	19	
3	126.2485	64.65	-27.62	37.03	43.50	-6.47	QP	100	122	
4	129.8477	63.28	-27.71	35.57	43.50	-7.93	QP	100	110	
5	158.0834	47.35	-27.29	20.06	43.50	-23.44	QP	100	159	
6	548.3600	40.39	-14.85	25.54	46.00	-20.46	QP	100	149	

Job No.: FRANK2018 #166

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

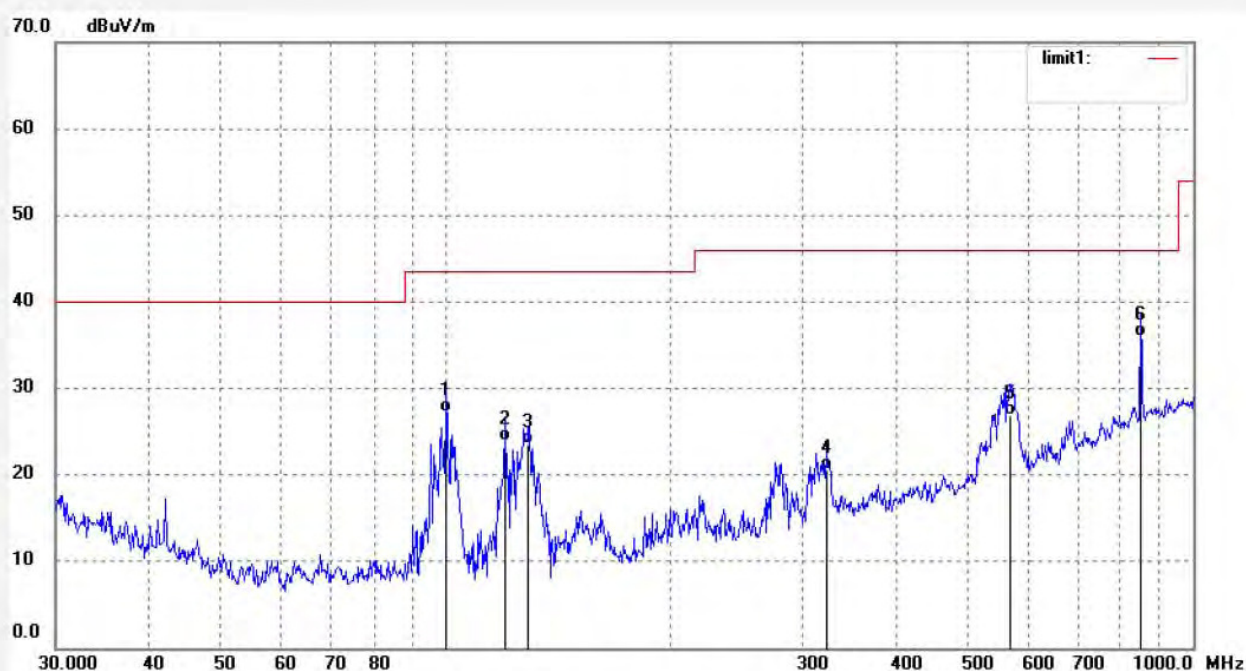
Date: 18/01/13/

Time: 10/29/24

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	55.33	-28.04	27.29	43.50	-16.21	QP	200	39	
2	119.7672	51.32	-27.43	23.89	43.50	-19.61	QP	200	189	
3	128.9385	51.22	-27.69	23.53	43.50	-19.97	QP	200	65	
4	322.5896	41.06	-20.50	20.56	46.00	-25.44	QP	200	121	
5	567.9696	41.33	-14.38	26.95	46.00	-19.05	QP	200	66	
6	850.7603	43.98	-8.01	35.97	46.00	-10.03	QP	200	135	

Job No.: FRANK2018 #165

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

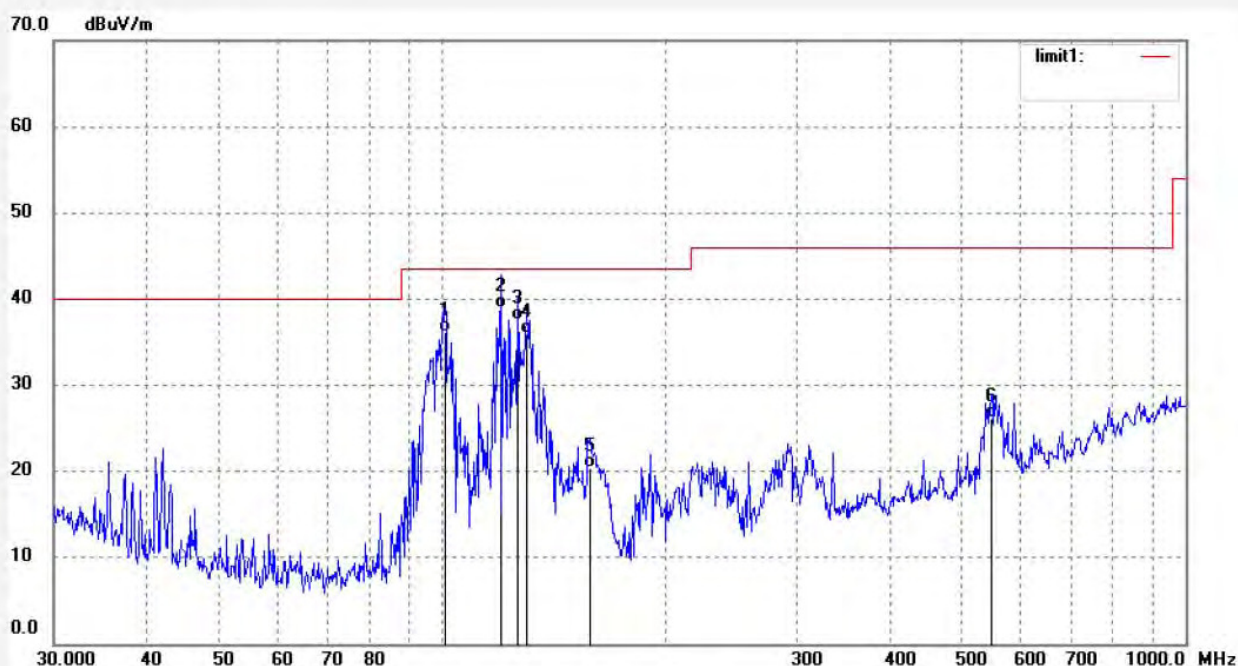
Date: 18/01/13/

Time: 10/26/04

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.8247	64.21	-28.05	36.16	43.50	-7.34	QP	100	184	
2	119.7672	66.45	-27.43	39.02	43.50	-4.48	QP	100	54	
3	126.2485	65.21	-27.62	37.59	43.50	-5.91	QP	100	39	
4	129.8477	63.59	-27.71	35.88	43.50	-7.62	QP	100	115	
5	158.0834	47.69	-27.29	20.40	43.50	-23.10	QP	100	120	
6	548.3600	40.98	-14.85	26.13	46.00	-19.87	QP	100	130	

Below 1GHz(The test data of adapter 2)



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Job No.: FRANK2018 #167

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

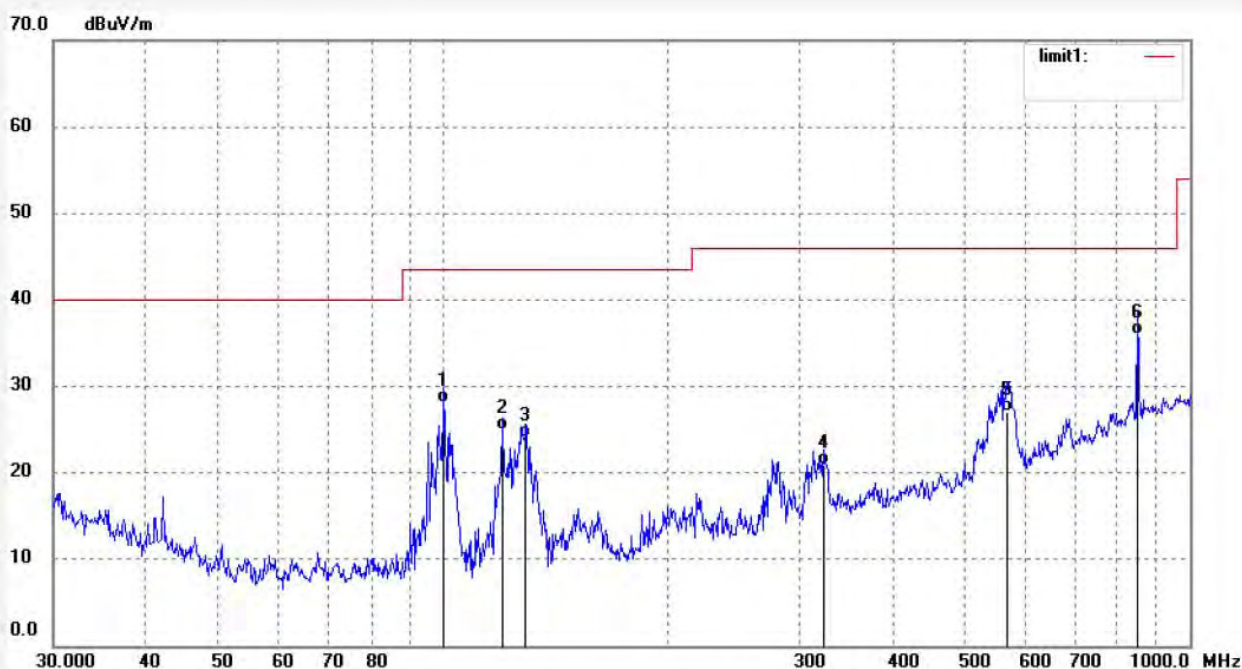
Date: 18/01/13/

Time: 10/29/55

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	56.21	-28.04	28.17	43.50	-15.33	QP	200	49	
2	119.7672	52.31	-27.43	24.88	43.50	-18.62	QP	200	115	
3	128.9385	51.68	-27.69	23.99	43.50	-19.51	QP	200	82	
4	322.5896	41.35	-20.50	20.85	46.00	-25.15	QP	200	321	
5	567.9696	41.50	-14.38	27.12	46.00	-18.88	QP	200	48	
6	850.7603	43.98	-8.01	35.97	46.00	-10.03	QP	200	255	

Job No.: FRANK2018 #168

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

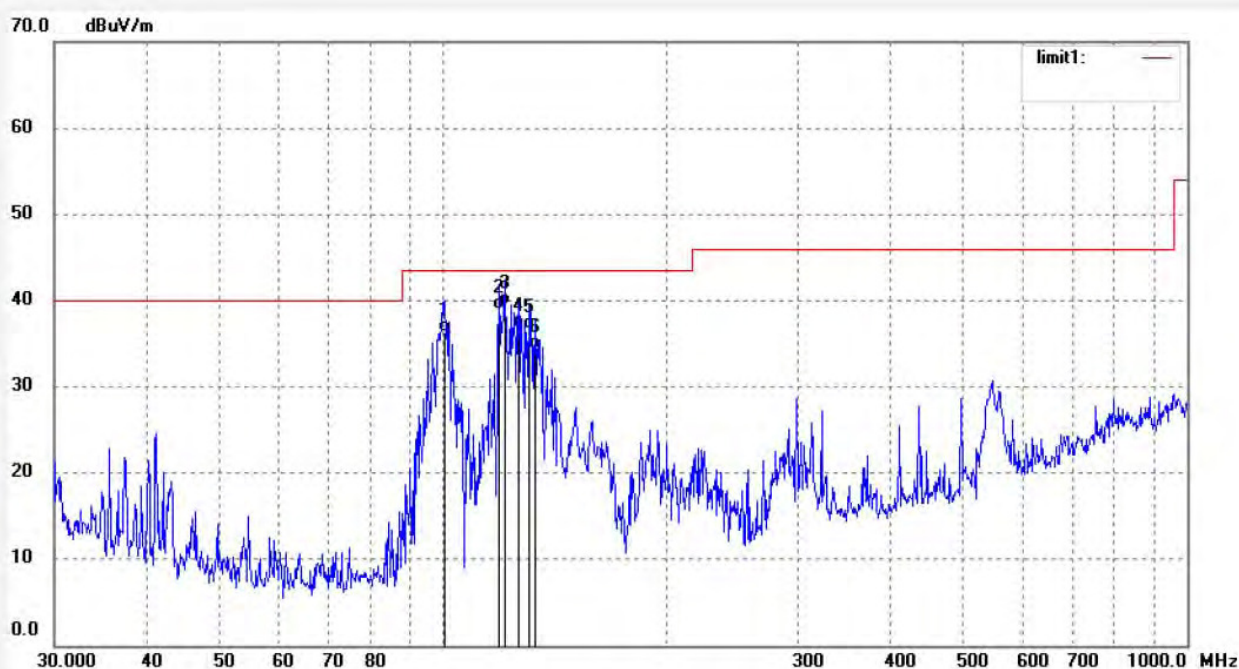
Date: 18/01/13/

Time: 10/30/46

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.4711	64.31	-28.05	36.26	43.50	-7.24	QP	100	99	
2	118.9284	66.35	-27.42	38.93	43.50	-4.57	QP	100	184	
3	121.0362	66.98	-27.46	39.52	43.50	-3.98	QP	100	220	
4	126.2486	64.52	-27.62	36.90	43.50	-6.60	QP	100	163	
5	130.3048	64.39	-27.72	36.67	43.50	-6.83	QP	100	255	
6	133.0809	62.15	-27.78	34.37	43.50	-9.13	QP	100	155	

Job No.: FRANK2018 #170

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

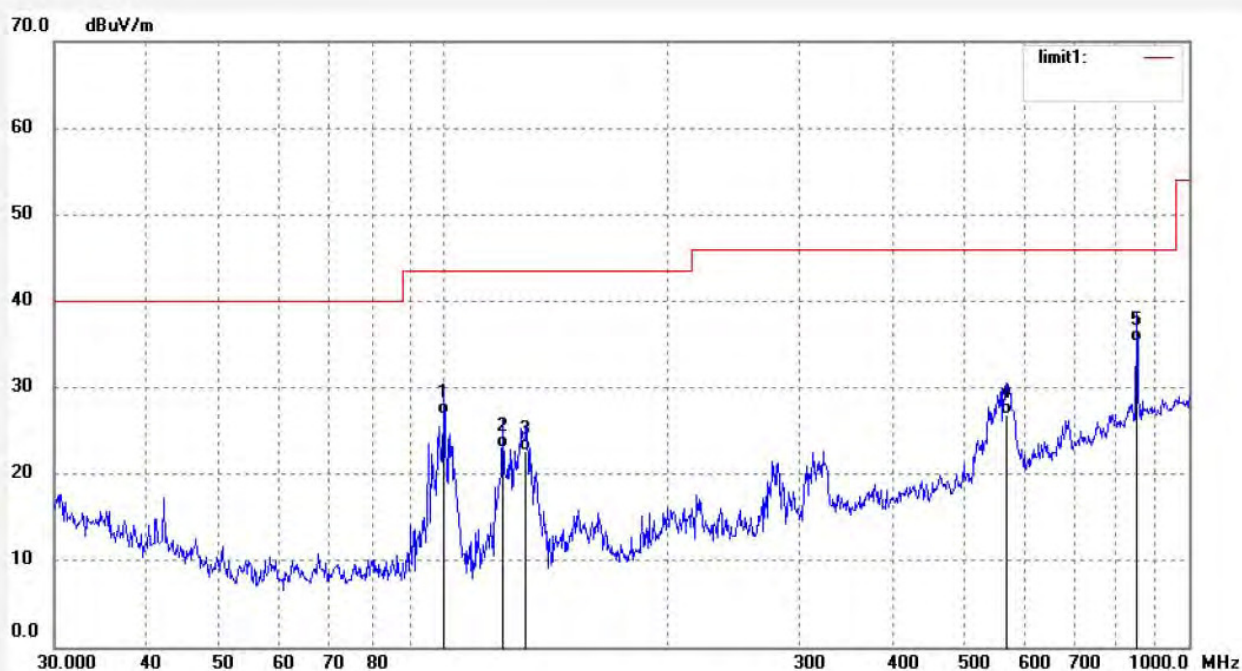
Date: 18/01/13/

Time: 10/29/55

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	54.98	-28.04	26.94	43.50	-16.56	QP	200	139	
2	119.7672	50.39	-27.43	22.96	43.50	-20.54	QP	200	55	
3	128.9385	50.32	-27.69	22.63	43.50	-20.87	QP	200	156	
4	567.9696	41.32	-14.38	26.94	46.00	-19.06	QP	200	45	
5	850.7603	43.26	-8.01	35.25	46.00	-10.75	QP	200	95	

Job No.: FRANK2018 #169

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 18/01/13/

Time: 10/30/46

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.4711	64.32	-28.05	36.27	43.50	-7.23	QP	100	325	
2	118.9284	66.38	-27.42	38.96	43.50	-4.54	QP	100	287	
3	121.0362	66.21	-27.46	38.75	43.50	-4.75	QP	100	91	
4	126.2486	64.38	-27.62	36.76	43.50	-6.74	QP	100	102	
5	130.3048	64.25	-27.72	36.53	43.50	-6.97	QP	100	142	
6	133.0809	62.38	-27.78	34.60	43.50	-8.90	QP	100	112	

Job No.: FRANK2018 #171

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

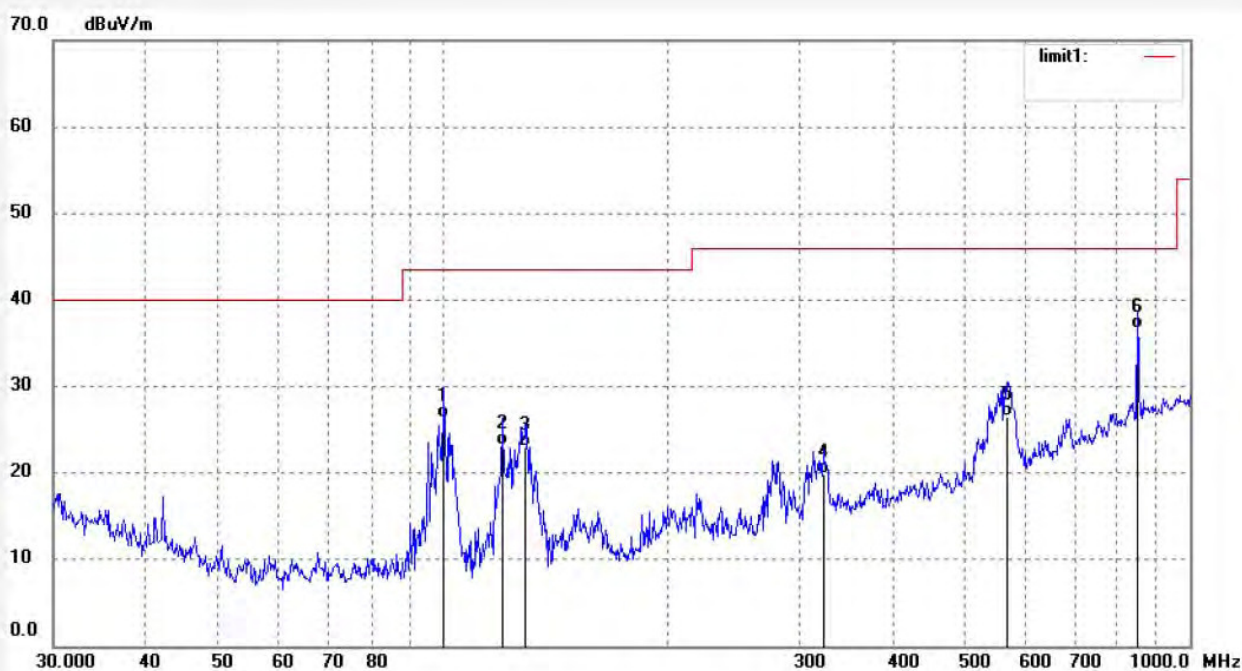
Date: 18/01/13/

Time: 10/29/55

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.1187	54.32	-28.04	26.28	43.50	-17.22	QP	200	168	
2	119.7672	50.70	-27.43	23.27	43.50	-20.23	QP	200	48	
3	128.9385	50.70	-27.69	23.01	43.50	-20.49	QP	200	62	
4	322.5896	40.39	-20.50	19.89	46.00	-26.11	QP	200	132	
5	567.9696	40.95	-14.38	26.57	46.00	-19.43	QP	200	79	
6	850.7603	44.65	-8.01	36.64	46.00	-9.36	QP	200	19	

Job No.: FRANK2018 #172

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 18/01/13/

Time: 10/30/46

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	100.4711	65.32	-28.05	37.27	43.50	-6.23	QP	100	156	
2	118.9283	66.59	-27.42	39.17	43.50	-4.33	QP	100	139	
3	121.0361	66.87	-27.46	39.41	43.50	-4.09	QP	100	45	
4	126.2485	65.49	-27.62	37.87	43.50	-5.63	QP	100	66	
5	130.3048	64.28	-27.72	36.56	43.50	-6.94	QP	100	148	
6	548.3600	42.38	-14.85	27.53	46.00	-18.47	QP	100	126	

Above 1GHz



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Job No.: FRANK2018 #173

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

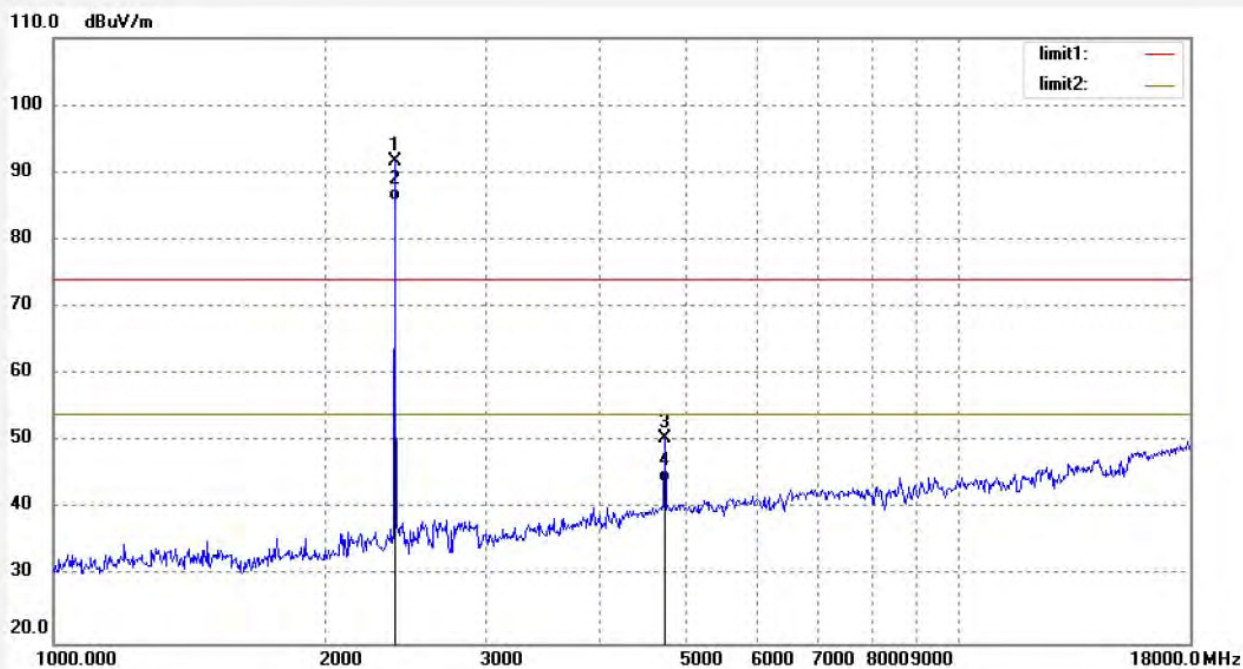
Date: 18/01/13/

Time: 15:08:01

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.119	95.93	-4.37	91.56			peak	200	138	
2	2402.119	90.12	-4.37	85.75			AVG	200	152	
3	4804.257	47.78	2.70	50.48	74.00	-23.52	peak	200	214	
4	4804.257	41.15	2.70	43.85	54.00	-10.15	AVG	200	103	



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Job No.: FRANK2018 #174

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

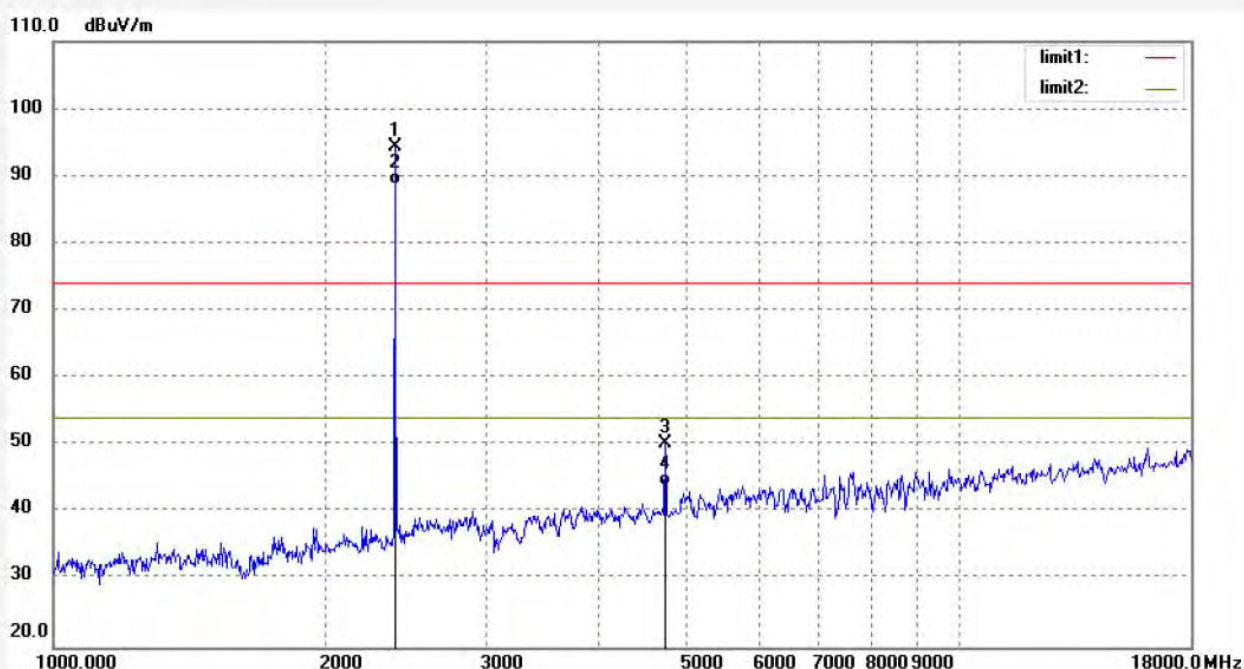
Date: 18/01/13/

Time: 15:09:07

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.119	98.77	-4.37	94.40			peak	250	122	
2	2402.119	93.13	-4.37	88.76			AVG	250	211	
3	4804.257	47.55	2.70	50.25	74.00	-23.75	peak	250	81	
4	4804.257	41.15	2.70	43.85	54.00	-10.15	AVG	250	247	

Job No.: FRANK2018 #176

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

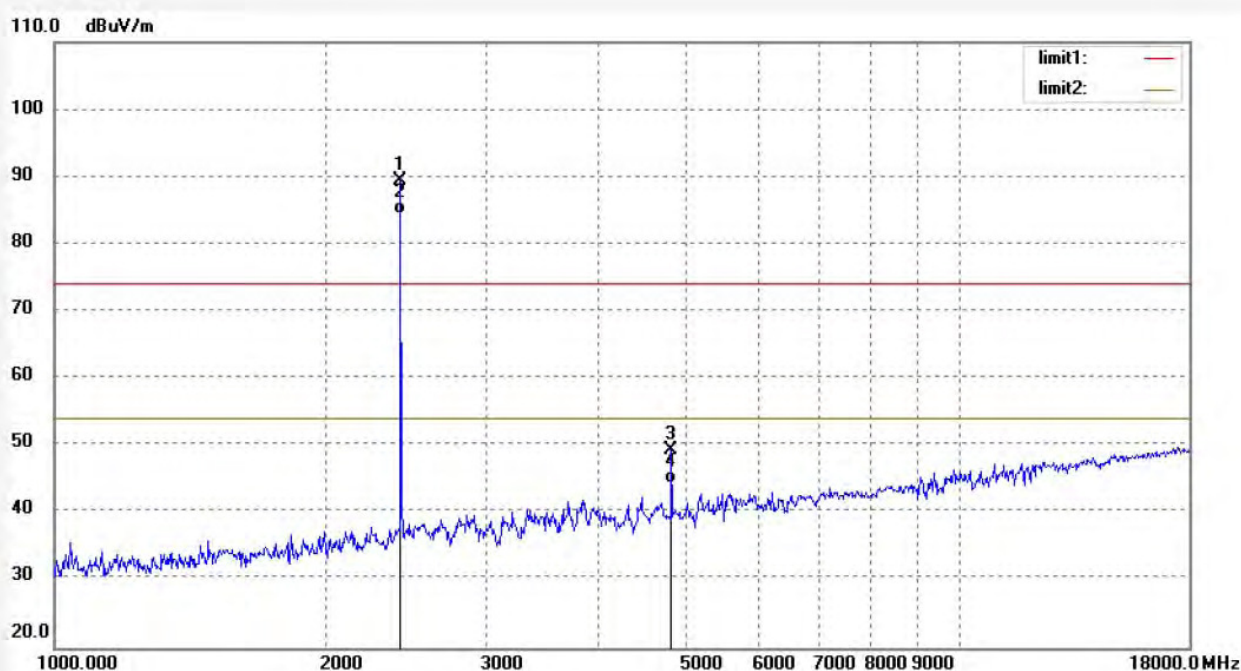
Date: 18/01/13/

Time: 15:11:33

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.121	93.68	-4.20	89.48			peak	200	315	
2	2441.121	88.65	-4.20	84.45			AVG	200	93	
3	4882.324	46.37	3.07	49.44	74.00	-24.56	peak	200	61	
4	4882.324	41.32	3.07	44.39	54.00	-9.61	AVG	250	109	

Job No.: FRANK2018 #175

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

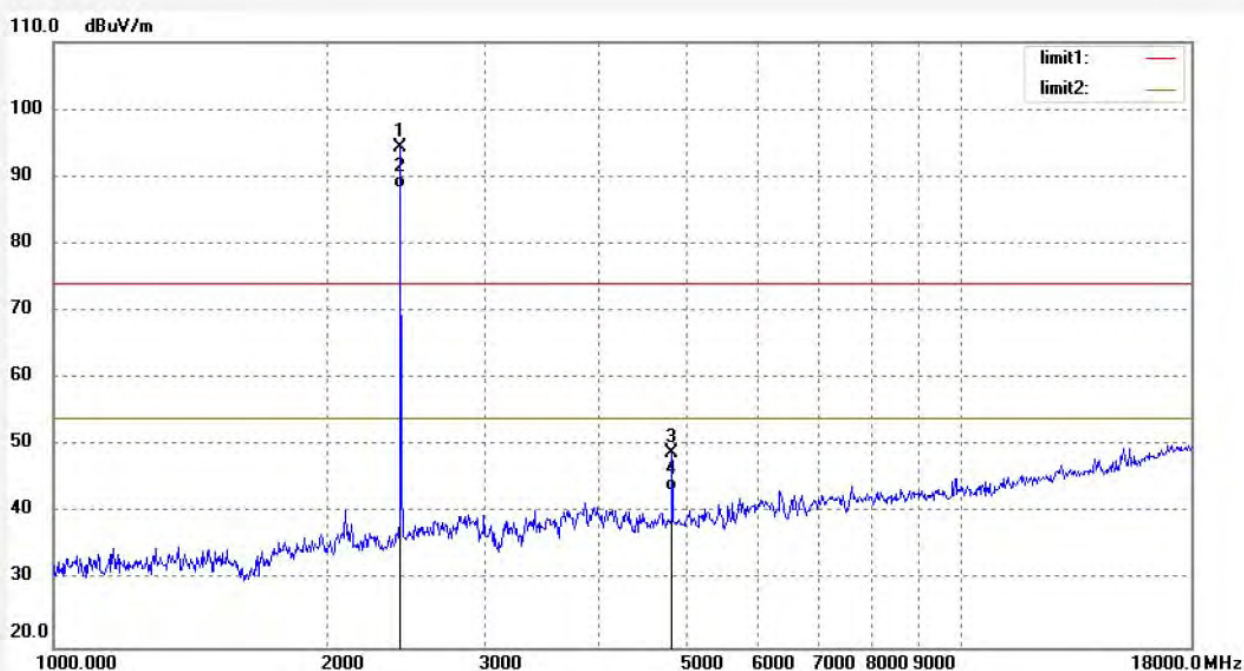
Date: 18/01/13/

Time: 15:10:19

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.121	98.62	-4.20	94.42			peak	250	132	
2	2441.121	92.50	-4.20	88.30			AVG	200	222	
3	4882.324	45.81	3.07	48.88	74.00	-25.12	peak	250	94	
4	4882.324	40.12	3.07	43.19	54.00	-10.81	AVG	200	201	

Job No.: FRANK2018 #177

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

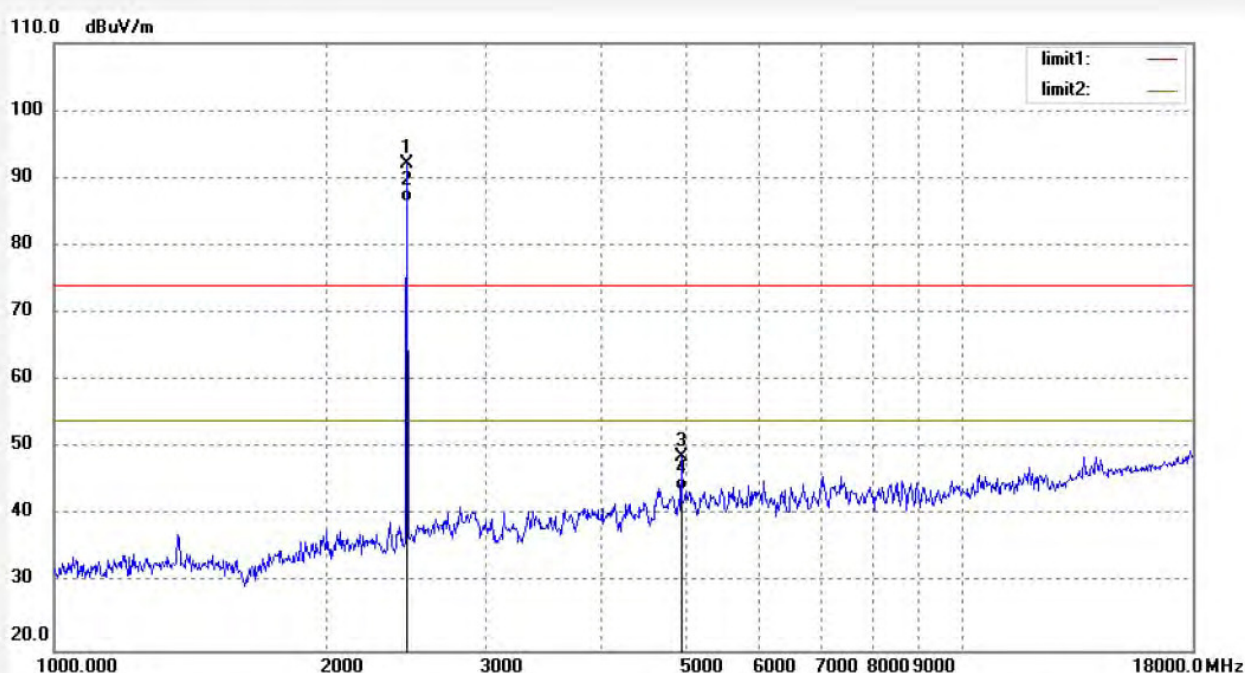
Date: 18/01/13/

Time: 15:16:17

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	96.25	-4.04	92.21			peak	200	130	
2	2480.034	90.50	-4.04	86.46			AVG	200	208	
3	4960.044	45.11	3.50	48.61	74.00	-25.39	peak	250	69	
4	4960.044	40.21	3.50	43.71	54.00	-10.29	AVG	250	341	



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Job No.: FRANK2018 #178

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz(GFSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

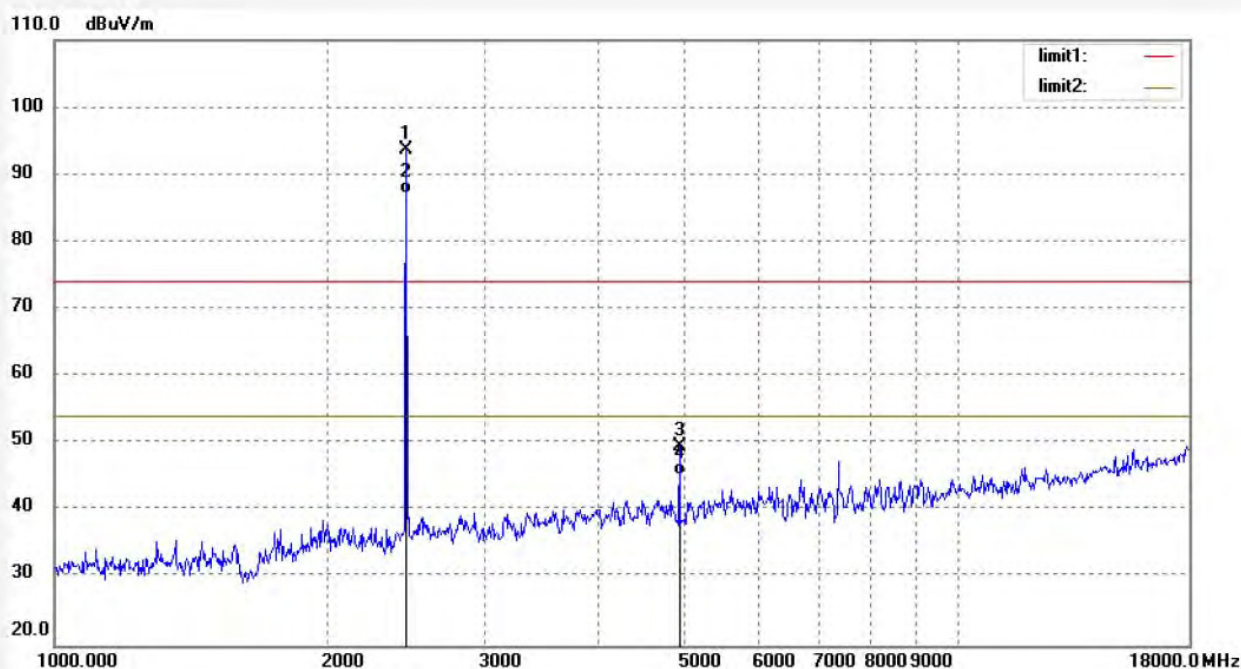
Date: 18/01/13/

Time: 15:17:12

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	97.75	-4.04	93.71			peak	250	197	
2	2480.034	91.15	-4.04	87.11			AVG	250	93	
3	4960.044	46.10	3.50	49.60	74.00	-24.40	peak	150	123	
4	4960.044	41.80	3.50	45.30	54.00	-8.70	AVG	200	48	

Job No.: FRANK2018 #184

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz(Π/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

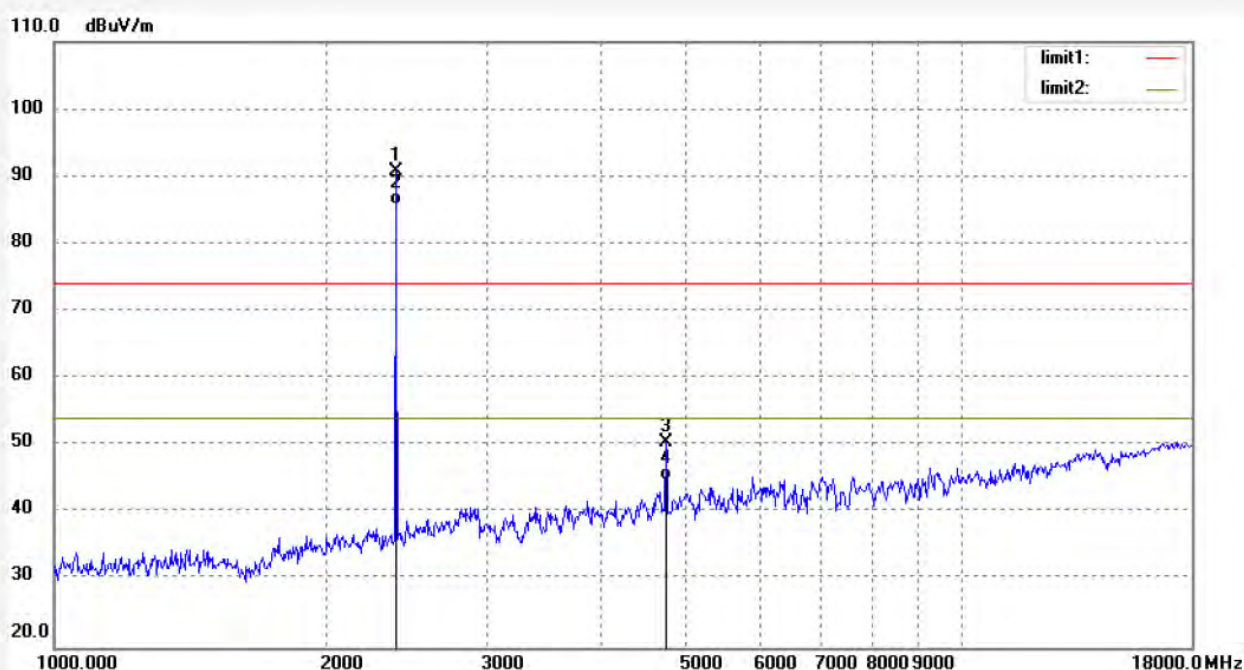
Date: 18/01/13/

Time: 15:24:01

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.119	95.07	-4.37	90.70			peak	250	357	
2	2402.119	90.15	-4.37	85.78			AVG	250	159	
3	4804.257	47.87	2.70	50.57	74.00	-23.43	peak	200	253	
4	4804.257	42.25	2.70	44.95	54.00	-9.05	AVG	250	21	

Job No.: FRANK2018 #183

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz(□/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

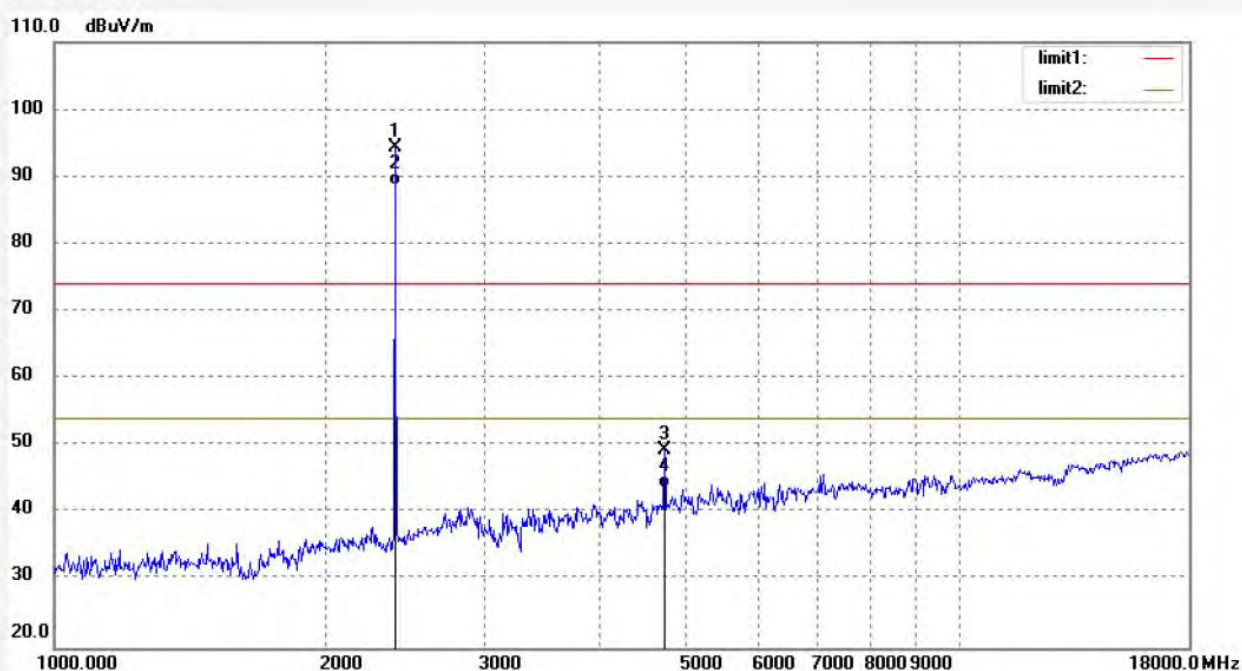
Date: 18/01/13/

Time: 15:23:03

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.119	98.74	-4.37	94.37			peak	250	32	
2	2402.119	93.12	-4.37	88.75			AVG	150	211	
3	4804.257	46.60	2.70	49.30	74.00	-24.70	peak	250	100	
4	4804.257	41.12	2.70	43.82	54.00	-10.18	AVG	200	191	



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Job No.: FRANK2018 #181

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz(□/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

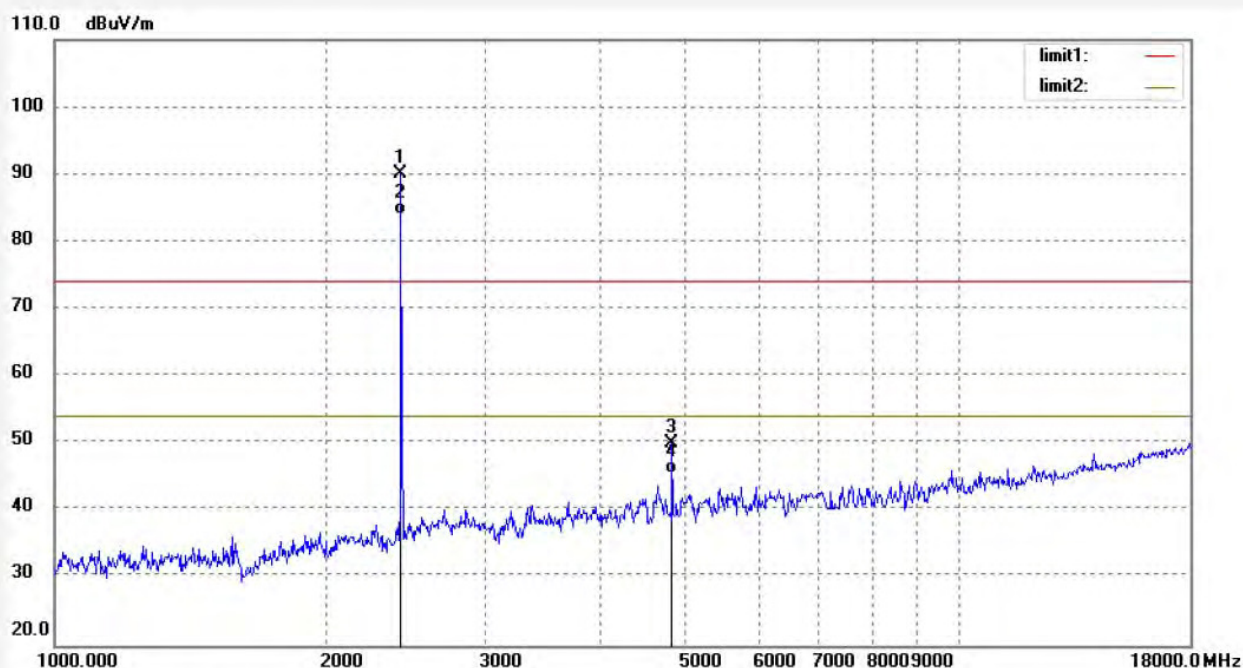
Date: 18/01/13/

Time: 15:21:04

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.121	94.23	-4.20	90.03			peak	250	301	
2	2441.121	88.10	-4.20	83.90			AVG	250	95	
3	4882.324	47.04	3.07	50.11	74.00	-23.89	peak	250	324	
4	4882.324	42.41	3.07	45.48	54.00	-8.52	AVG	250	71	

Job No.: FRANK2018 #182

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2441MHz(□/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

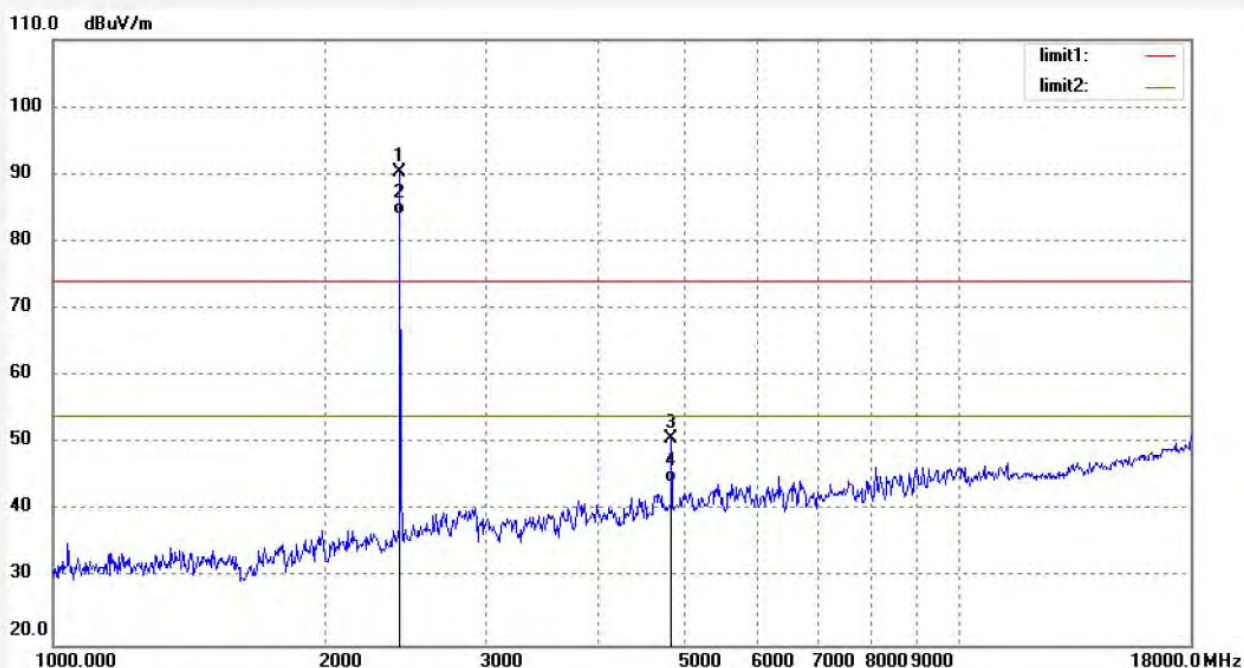
Date: 18/01/13/

Time: 15:21:53

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.121	94.54	-4.20	90.34			peak	250	132	
2	2441.121	88.15	-4.20	83.95			AVG	200	97	
3	4882.324	47.63	3.07	50.70	74.00	-23.30	peak	250	54	
4	4882.324	41.16	3.07	44.23	54.00	-9.77	AVG	250	233	

Job No.: FRANK2018 #180

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz(□/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

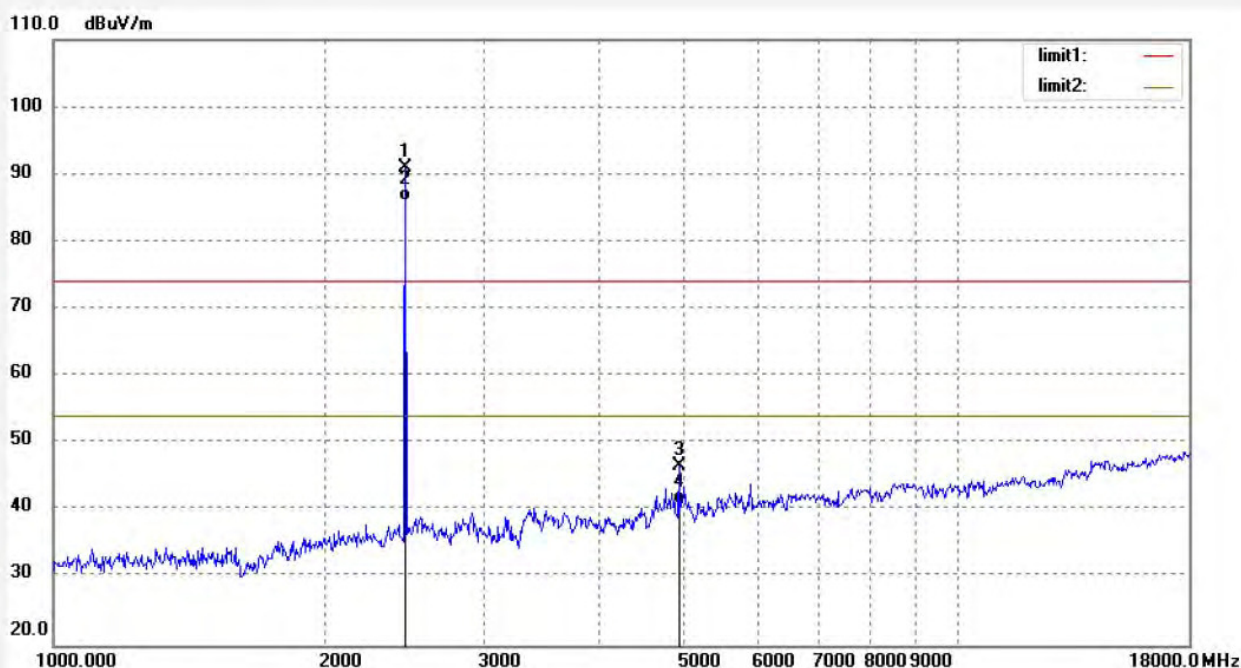
Date: 18/01/13/

Time: 15:20:00

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	95.04	-4.04	91.00			peak	200	121	
2	2480.034	90.15	-4.04	86.11			AVG	200	222	
3	4960.044	43.06	3.50	46.56	74.00	-27.44	peak	200	100	
4	4960.044	37.45	3.50	40.95	54.00	-13.05	AVG	250	238	

Job No.: FRANK2018 #179

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2480MHz(□/4DQPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Vertical

Power Source: AC 120V/60Hz

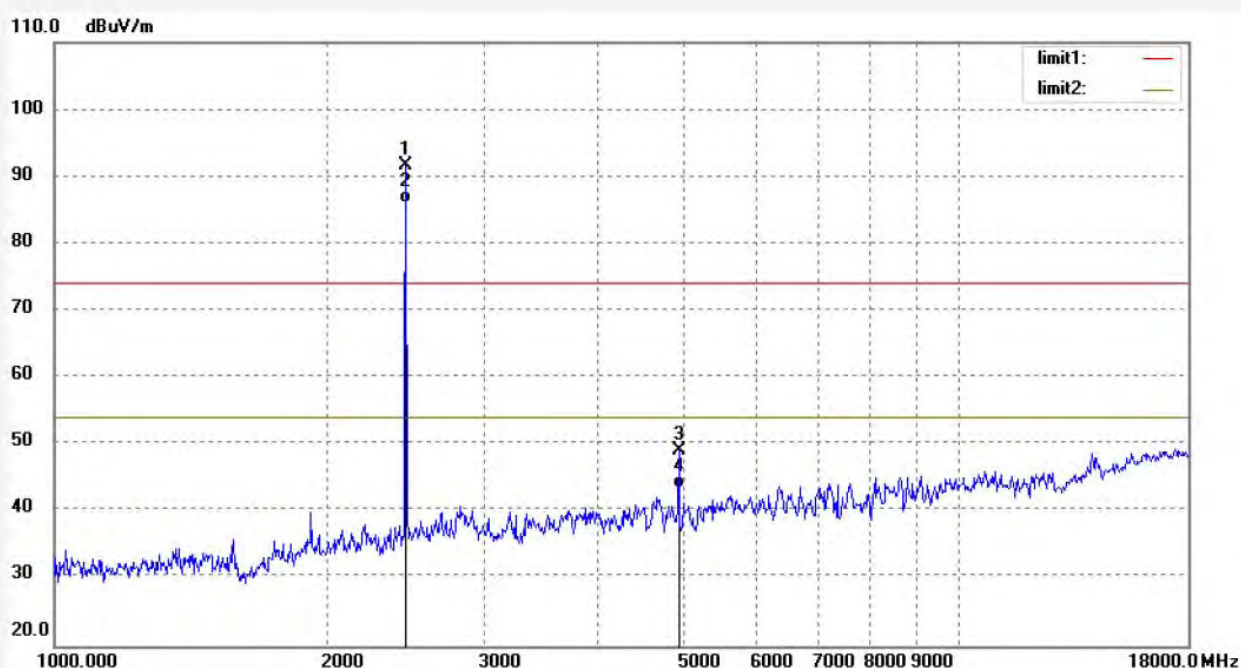
Date: 18/01/13/

Time: 15:18:39

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	95.68	-4.04	91.64			peak	250	312	
2	2480.034	90.15	-4.04	86.11			AVG	200	295	
3	4960.044	45.63	3.50	49.13	74.00	-24.87	peak	250	91	
4	4960.044	40.12	3.50	43.62	54.00	-10.38	AVG	200	321	

Job No.: FRANK2018 #185

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Songbird II Radio

Mode: TX 2402MHz(8DPSK)

Model: CR3034A-BH

Manufacturer: TIMSEN INTERNATIONAL LIMITED

Polarization: Horizontal

Power Source: AC 120V/60Hz

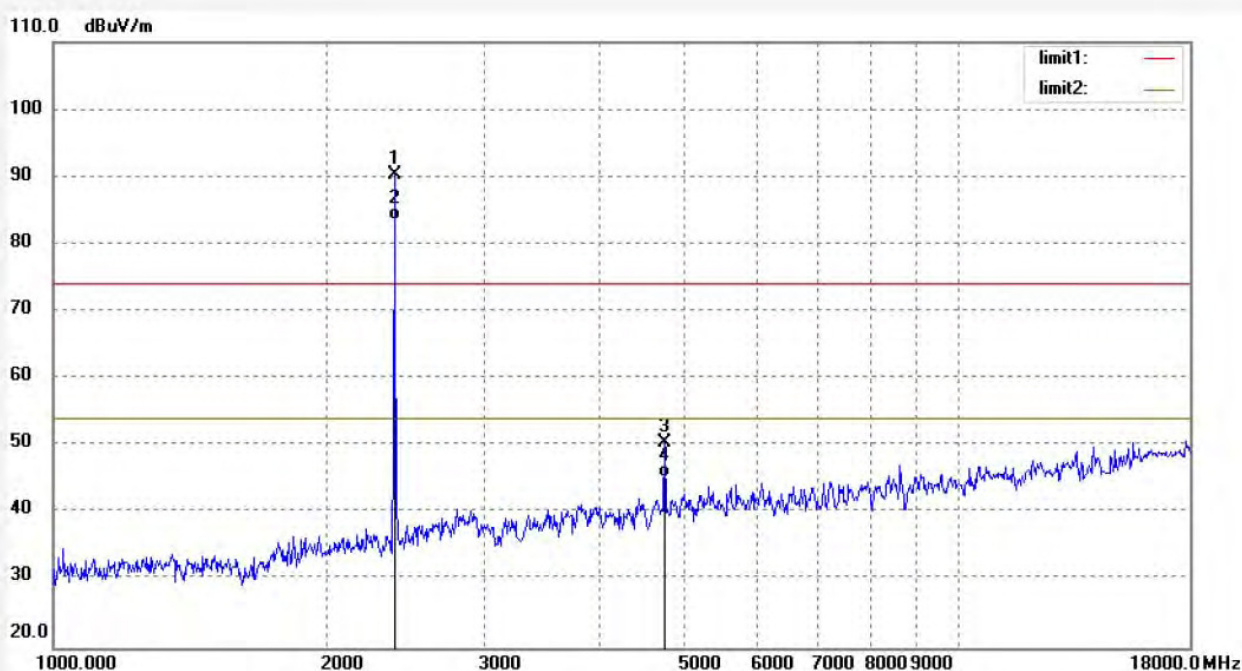
Date: 18/01/13/

Time: 15:25:22

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172583



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.119	94.59	-4.37	90.22			peak	250	124	
2	2402.119	88.00	-4.37	83.63			AVG	200	94	
3	4804.257	47.69	2.70	50.39	74.00	-23.61	peak	200	197	
4	4804.257	42.54	2.70	45.24	54.00	-8.76	AVG	200	52	