

Test Report

Product Name : Bluetooth handsfree speaker

Model No. : BTHF180

FCC ID : TQ6BTHF180

Applicant : Shanghai Flaircomm Technologies

Address : No.5, Bibo Road, Keyuan Building 4F, Zhangjiang
Hi-Tech Park, Shanghai, 201203 P.R.China

Date of Receipt : 2007/07/02

Issued Date : 2007/11/30

Report No. : 077S014-RF-US-P06V01

The test results relate only to the samples tested.

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

This report must not be used to claim product endorsement by CNLA, NVLAP, NIST or any agency of the Government.

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

Test Report Certification

Issued Date : 2007/11/30

Report No. : 077S014-RF-US-P06V01



Product Name : Bluetooth handsfree speaker
 Applicant : Shanghai Flaircomm Technologies
 Address : No.5, Bibo Road, Keyuan Building 4F, Zhangjiang
 Hi-Tech Park, Shanghai, 201203 P.R.China
 Manufacturer : Shanghai Flaircomm Technologies
 Model No. : BTHF180
 FCC ID : TQ6BTHF180
 Rated Voltage : AC 120 V / 60 Hz
 EUT Voltage : DC 3.7V
 Trade Name : Flaircomm
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2007
 ANSI C63.4: 2003
 Test Result : Complied
 Performed Location : SuZhou EMC laboratory
 No.99 Hongye Rd., Suzhou Industrial Park Loufeng
 Hi-Tech Development Zone., SuZhou, China
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
 FCC Registration number: 800392

Documented By : 
 (Mandy Liu)

Reviewed By : 
 (Dream Cao)

Approved By : 
 (Murphy Wang)

Laboratory Information

We , **QuietTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	:	BSMI, DGT, CNLA
Germany	:	TUV Rheinland
Norway	:	Nemko, DNV
USA	:	FCC, NVLAP
Japan	:	VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from QuietTek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>

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

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

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.

TEL:+886-3-592-8858 / FAX:+886-3-592-8859

E-Mail : service@quietek.com



LinKou Testing Laboratory :

No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.

TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789

E-Mail : service@quietek.com



Suzhou Testing Laboratory :

No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China

TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098

E-Mail : service@quietek.com



TABLE OF CONTENTS

Description	Page
1. General Information	6
1.1. EUT Description.....	6
1.2. Mode of Operation	8
1.3. Tested System Details	9
1.4. Configuration of Tested System	10
1.5. EUT Exercise Software	11
2. Technical Test	12
2.1. Summary of Test Result.....	12
2.2. Test Environment	13
3. Conducted Emission	14
3.1. Test Equipment	14
3.2. Test Setup.....	14
3.3. Limit... ..	15
3.4. Test Procedure	15
3.5. Uncertainty	15
3.6. Test Result.....	15
4. Radiated Emission.....	16
4.1. Test Equipment	16
4.2. Test Setup.....	16
4.3. Limit... ..	17
4.4. Test Procedure	18
4.5. Uncertainty	18
4.6. Test Result.....	19
5. Peak Power Output.....	40
5.1. Test Equipment	40
5.2. Test Setup.....	40
5.3. Limit... ..	40
5.4. Test Procedure	41
5.5. Uncertainty	41
5.6. Test Result.....	42
6. Occupied Bandwidth	44
6.1. Test Equipment	44
6.2. Test Setup.....	44
6.3. Limit... ..	44
6.4. Test Procedure	45
6.5. Uncertainty	45

6.6.	Test Result.....	46
7.	Band Edge	48
7.1.	Test Equipment.....	48
7.2.	Test Setup.....	48
7.3.	Limit... ..	49
7.4.	Test Procedure	49
7.5.	Uncertainty	50
7.6.	Test Result.....	51
8.	Channel Number.....	57
8.1.	Test Equipment.....	57
8.2.	Test Setup.....	57
8.3.	Limit... ..	57
8.4.	Test Procedure	58
8.5.	Uncertainty	58
8.6.	Test Result.....	59
9.	Channel Separation	62
9.1.	Test Equipment.....	62
9.2.	Test Setup.....	62
9.3.	Limit... ..	62
9.4.	Test Procedure	63
9.5.	Uncertainty	63
9.6.	Test Result.....	64
10.	Dwell Time.....	66
10.1.	Test Equipment.....	66
10.2.	Test Setup	66
10.3.	Limit... ..	66
10.4.	Test Procedure	67
10.5.	Uncertainty	67
10.6.	Test Result.....	68

1. General Information

1.1. EUT Description

Product Name	Bluetooth handsfree speaker
Trade Name	Flaircomm
Model No.	BTHF180
FCC ID	TQ6BTHF180
Working Voltage	DC 3.7V
Frequency Range	2400 - 2483.5MHz
Channel Number	79
Type of Modulation	Frequency Hopping Spread Spectrum
Channel Control	Auto
Antenna type	Printed PCB
Antenna Gain	0.54dBi

Component	
Vehicular Adapter	Input: DC12~24V Output: DC5V, 500mA

Bluetooth Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	--	--

1.2. Mode of Operation

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

Test Mode
Mode 1: Transmit

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

2. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 077S014-RF-US-P01V02, certified under Declaration of Conformity.

1.3. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A	N/A

1.4. Configuration of Tested System

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

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Connect the EUT to PC via a control board and a RS232 cable.
3	Execute the Blue Test program on the PC.
4	Setup the test channel and the test mode press ok to start the Continue Transmit.

2. Technical Test

2.1. Summary of Test Result

- ☒ No deviations from the test standards
- ☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.207	N/A	N/A
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.209	Yes	No
Peak Power Output	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.247(b)(1)	Yes	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.247(a)(1)	Yes	No
Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.215(c), 15.247(d)	Yes	No
Channel Number	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.247(a)(1)(iii)	Yes	No
Channel Separation	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.247(a)(1)	Yes	No
Dwell Time	FCC CFR Title 47 Part 15 Subpart C: 2007 Section 15.247(a)(1)(iii)	Yes	No

2.2. Test Environment

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

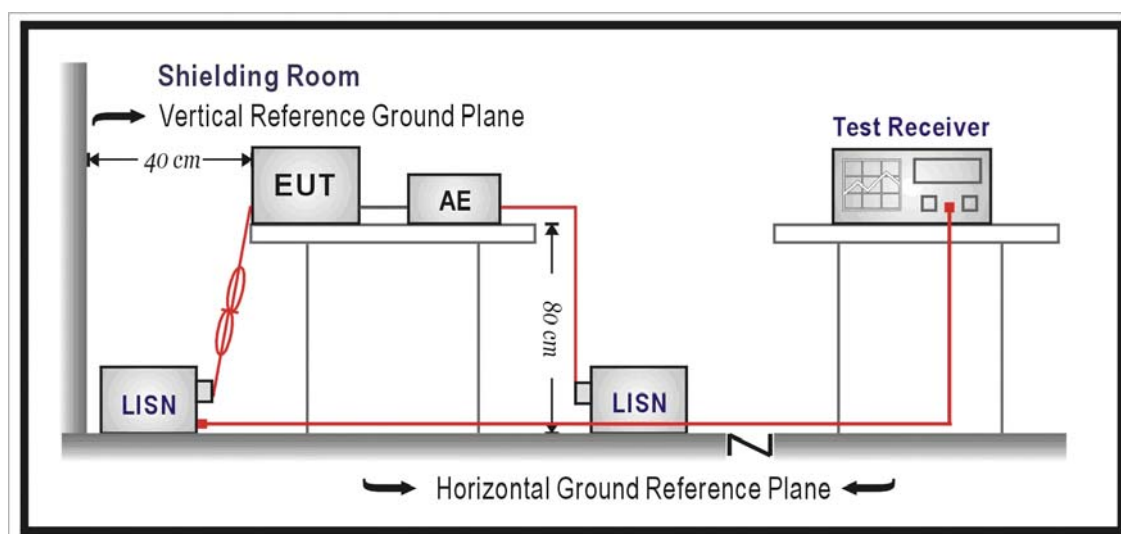
3. Conducted Emission

3.1. Test Equipment

Conducted Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCI	100176	2006/11/22
Two-Line V-Network	R&S	ENV216	100013	2006/11/20
Two-Line V-Network	R&S	ENV216	100014	2006/11/20
50ohm Coaxial Switch	ANRITSU	MP59B	6200464462	2006/11/25
50ohm Termination	SHX	50ohmI	QT-IM001	2007/03/20
Coaxial Cable	Luthi	RG214	519358	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2007/03/31

3.2. Test Setup



3.3. Limit

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

Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

(Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

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

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

EUT is a DC power device, so the test item is not necessary performed.

4. Radiated Emission

4.1. Test Equipment

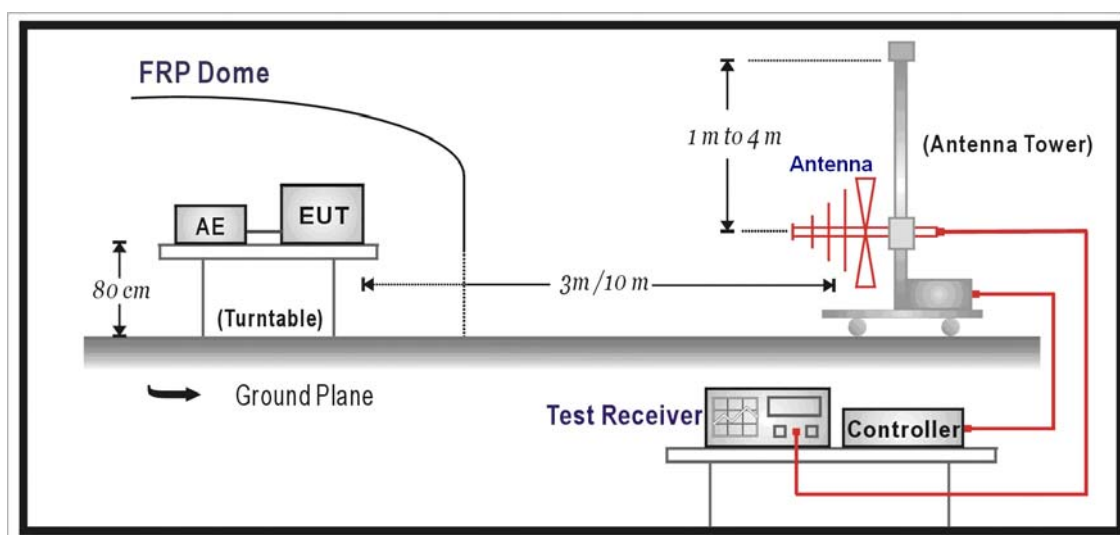
Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2006/11/20
EMI Test Receiver	R&S	ESCI	100573	2007/05/23
Preamplifier	Quietek	AP-025C	QT-AP003	2006/11/25
Preamplifier	Quietek	AP-180C	CHM-0602013	2006/11/25
Bilog Type Antenna	Schaffner	CBL6112B	2932	2006/11/22
*Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2005/11/25
50ohm Coaxial Switch	ANRITSU	MP59B	6200447304	2006/11/25
Coaxial Cable	Huber+Suhner	AC2-C	04	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2007/03/30

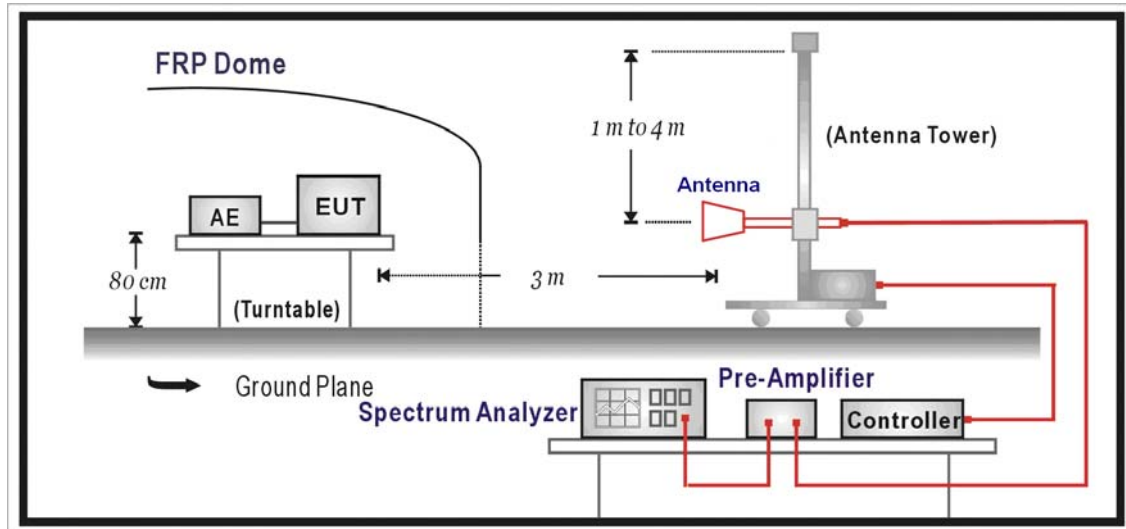
Note: "*" means the test device calibration period for two years.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits (dBuV/m)		
Frequency (MHz)	Distance (m)	dBuV/m
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. $\text{RF Voltage (dBuV/m)} = 20 \log \text{RF Voltage (uV/m)}$

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCI) is 120 kHz and above 1GHz is 1MHz.

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

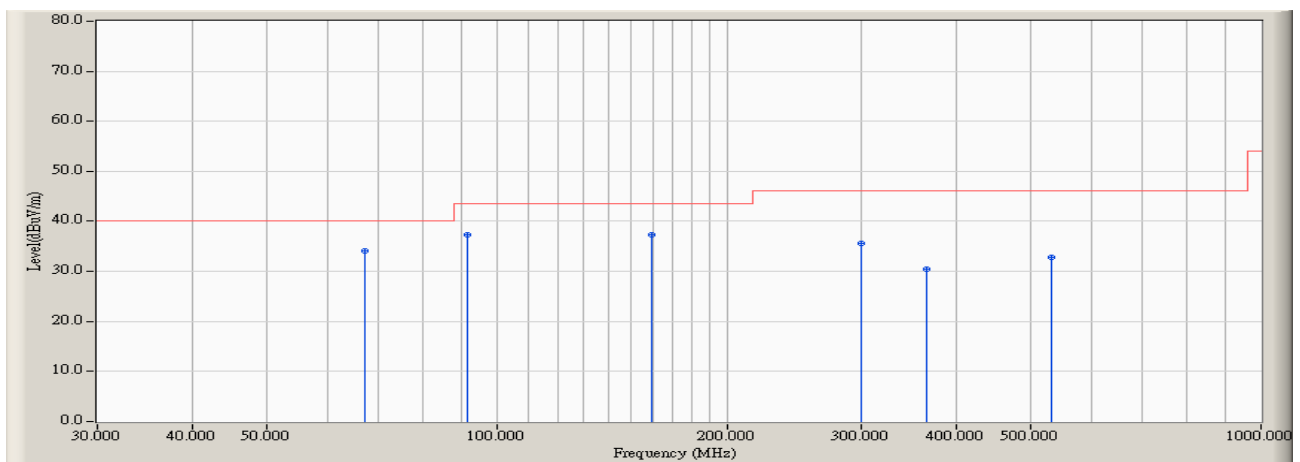
4.5. Uncertainty

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

under 1G is defined as ± 3.8 dB

4.6. Test Result

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:30
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

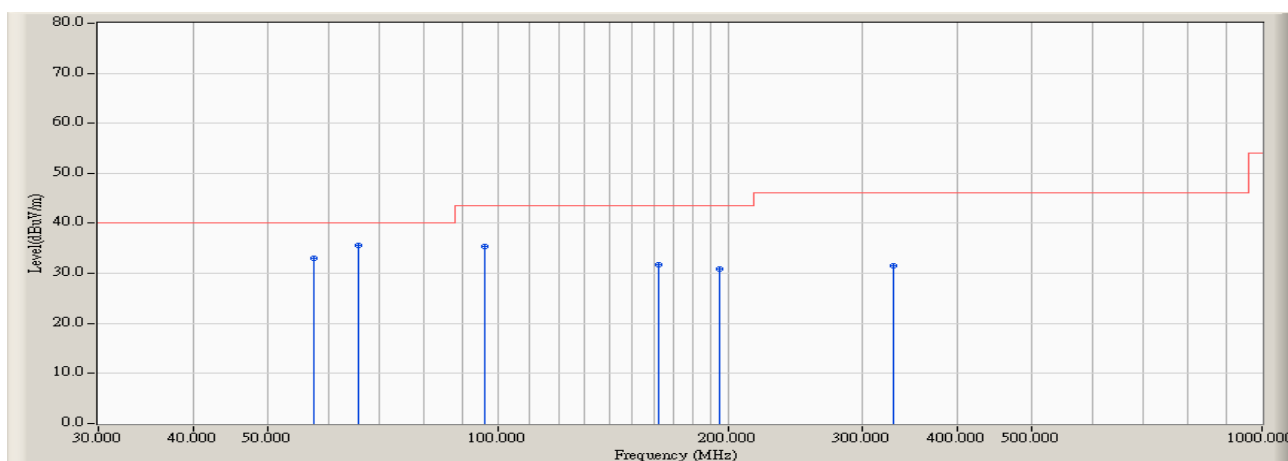


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	67.183	-16.919	51.050	34.131	-5.869	40.000	QUASIPeAK
2		91.433	-15.001	52.239	37.238	-6.282	43.520	QUASIPeAK
3		159.333	-12.239	49.659	37.420	-6.100	43.520	QUASIPeAK
4		299.983	-10.132	45.830	35.698	-10.322	46.020	QUASIPeAK
5		364.650	-8.210	38.643	30.433	-15.587	46.020	QUASIPeAK
6		531.167	-5.328	38.239	32.912	-13.108	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:36
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

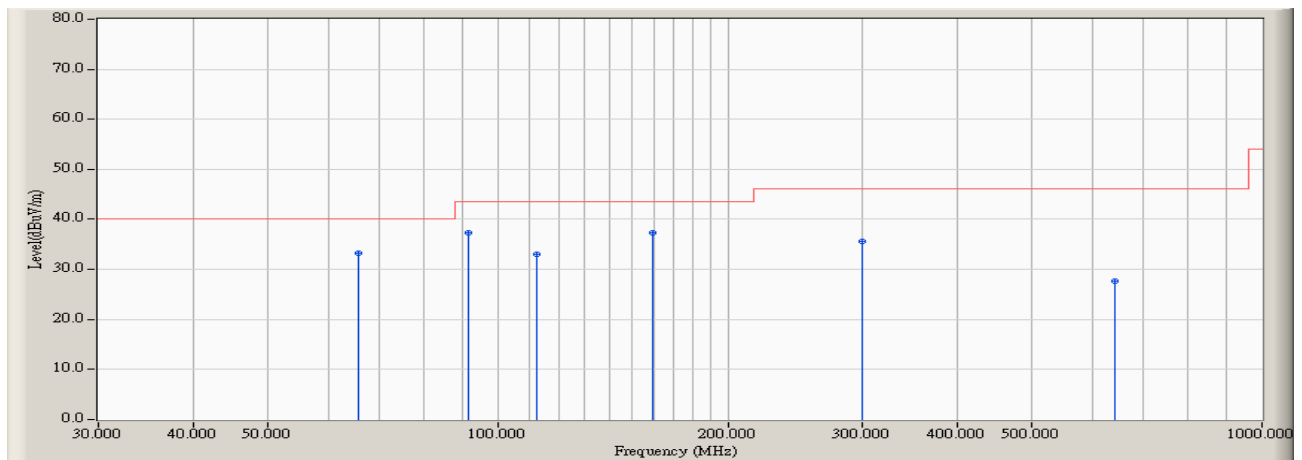


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		57.483	-14.485	47.548	33.064	-6.936	40.000	QUASIPeAK
2	*	65.567	-16.689	52.221	35.531	-4.469	40.000	QUASIPeAK
3		96.283	-14.519	49.876	35.357	-8.163	43.520	QUASIPeAK
4		162.567	-12.487	44.328	31.842	-11.678	43.520	QUASIPeAK
5		194.900	-13.546	44.438	30.892	-12.628	43.520	QUASIPeAK
6		329.083	-8.943	40.413	31.470	-14.550	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:31
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

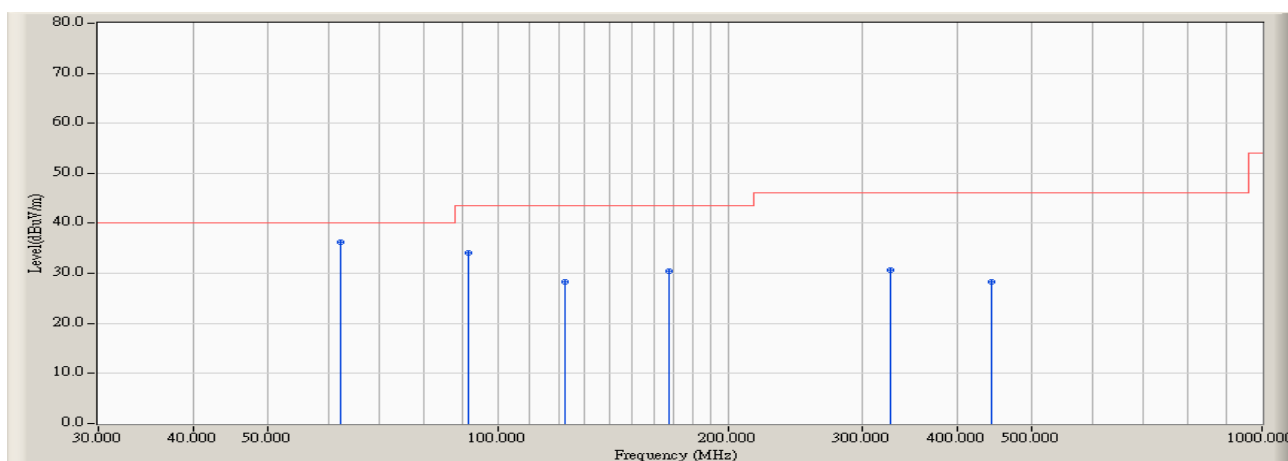


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		65.567	-16.689	50.028	33.338	-6.662	40.000	QUASIPeAK
2		91.433	-15.001	52.239	37.238	-6.282	43.520	QUASIPeAK
3		112.450	-12.995	45.986	32.991	-10.529	43.520	QUASIPeAK
4	*	159.333	-12.239	49.659	37.420	-6.100	43.520	QUASIPeAK
5		299.983	-10.132	45.830	35.698	-10.322	46.020	QUASIPeAK
6		641.100	-2.460	30.123	27.663	-18.357	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:34
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

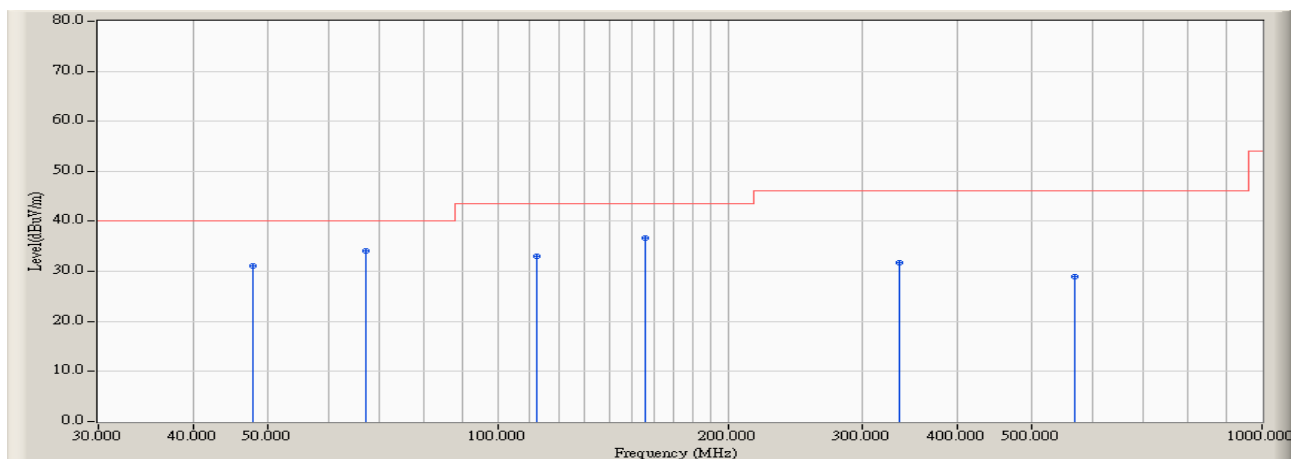


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	62.333	-16.098	52.426	36.328	-3.672	40.000	QUASIPeAK
2		91.433	-15.001	49.150	34.149	-9.371	43.520	QUASIPeAK
3		122.150	-12.390	40.753	28.363	-15.157	43.520	QUASIPeAK
4		167.417	-12.893	43.432	30.539	-12.981	43.520	QUASIPeAK
5		325.850	-9.086	39.789	30.703	-15.317	46.020	QUASIPeAK
6		442.250	-6.819	35.214	28.395	-17.625	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:32
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

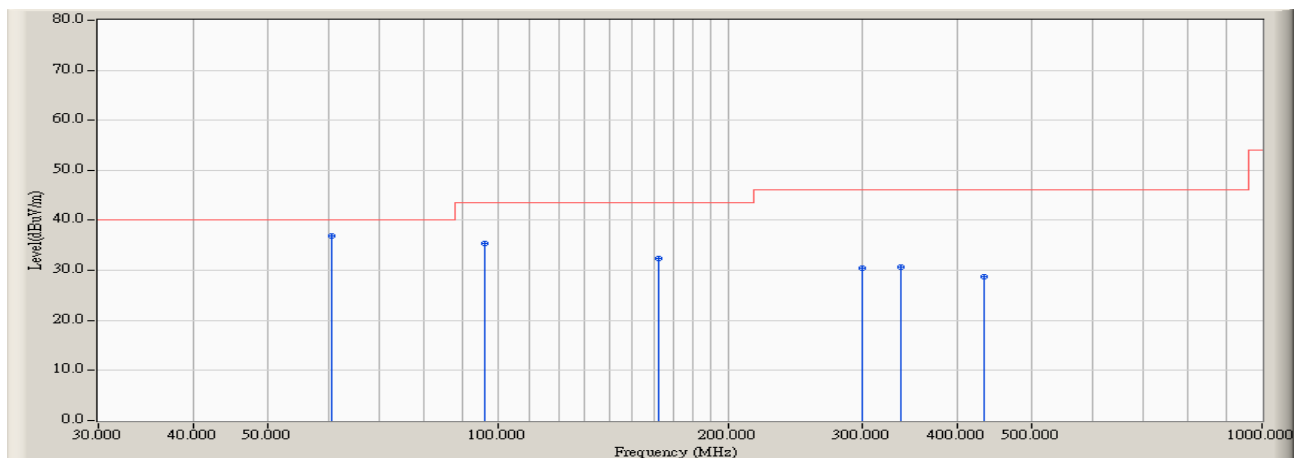


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		47.783	-10.102	41.202	31.100	-8.900	40.000	QUASIPeAK
2	*	67.183	-16.919	51.050	34.131	-5.869	40.000	QUASIPeAK
3		112.450	-12.995	45.986	32.991	-10.529	43.520	QUASIPeAK
4		156.100	-12.091	48.826	36.735	-6.785	43.520	QUASIPeAK
5		335.550	-8.735	40.427	31.692	-14.328	46.020	QUASIPeAK
6		568.350	-3.654	32.531	28.877	-17.143	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/27 - 10:33
Limit : FCC_SpartC_15.109_03M_QP	Margin : 0
EUT : BTHF180	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

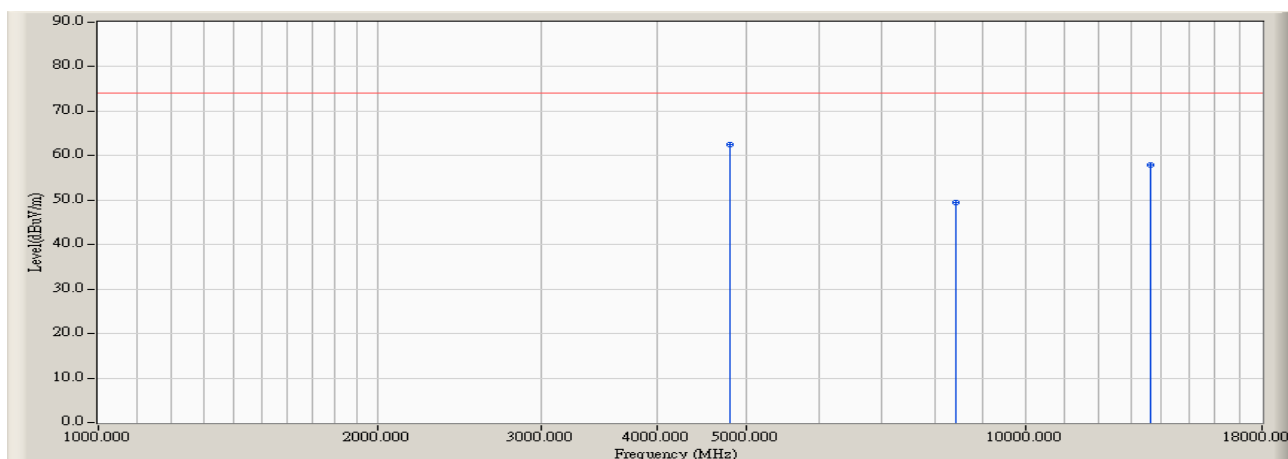


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	60.717	-15.655	52.598	36.942	-3.058	40.000	QUASIPeAK
2		96.283	-14.519	49.802	35.283	-8.237	43.520	QUASIPeAK
3		162.567	-12.487	44.877	32.391	-11.129	43.520	QUASIPeAK
4		299.983	-10.132	40.659	30.527	-15.493	46.020	QUASIPeAK
5		337.167	-8.687	39.374	30.687	-15.333	46.020	QUASIPeAK
6		432.550	-6.920	35.757	28.837	-17.183	46.020	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 15:54
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

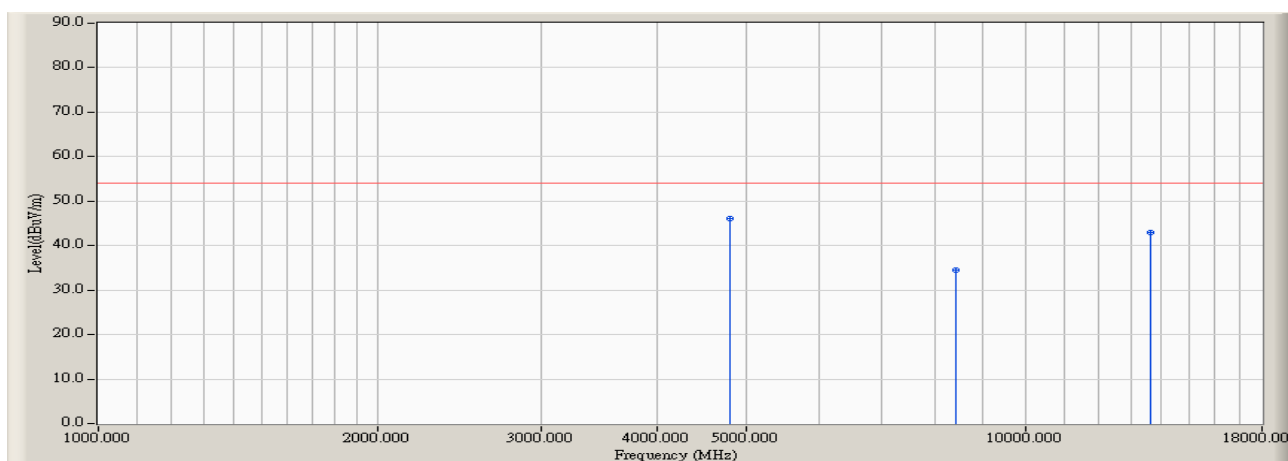


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4796.667	4.834	57.604	62.437	-11.533	73.970	PEAK
2		8423.333	14.297	35.059	49.356	-24.614	73.970	PEAK
3		13665.000	23.470	34.539	58.009	-15.961	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 15:54
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

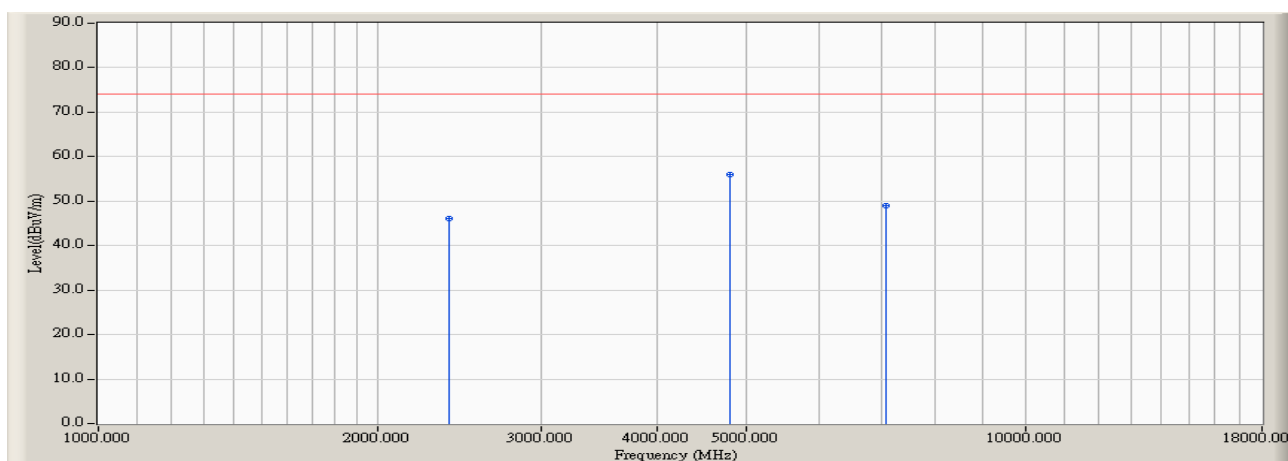


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4796.667	4.834	41.260	46.093	-7.877	53.970	AVERAGE
2		8423.333	14.297	20.180	34.477	-19.493	53.970	AVERAGE
3		13665.000	23.470	19.478	42.948	-11.022	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:00
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

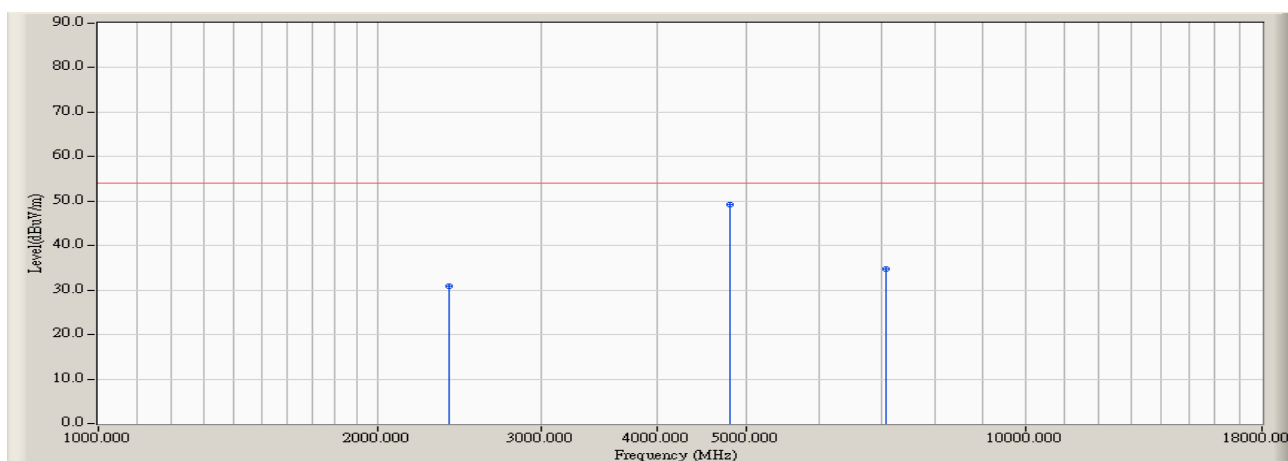


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2388.333	-1.664	47.756	46.093	-27.877	73.970	PEAK
2	*	4796.667	4.834	51.071	55.904	-18.066	73.970	PEAK
3		7063.333	14.896	34.155	49.052	-24.918	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:00
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2402MHz)

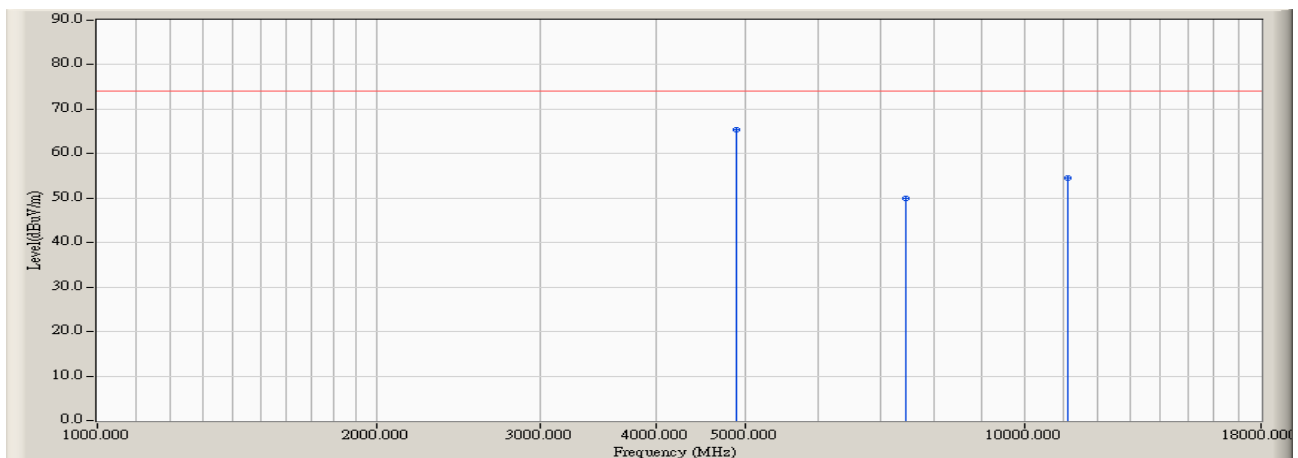


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2388.333	-1.664	32.554	30.891	-23.079	53.970	AVERAGE
2	*	4796.667	4.834	44.286	49.119	-4.851	53.970	AVERAGE
3		7063.333	14.896	19.884	34.781	-19.189	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:11
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

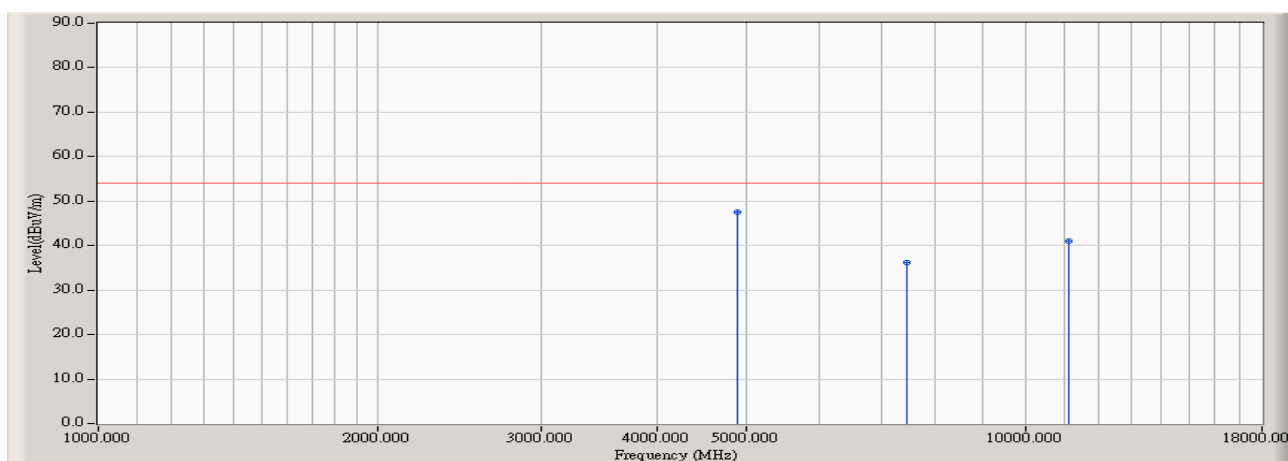


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4881.667	5.034	60.253	65.286	-8.684	73.970	PEAK
2		7460.000	15.090	34.760	49.850	-24.120	73.970	PEAK
3		11143.333	20.044	34.597	54.640	-19.330	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:11
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

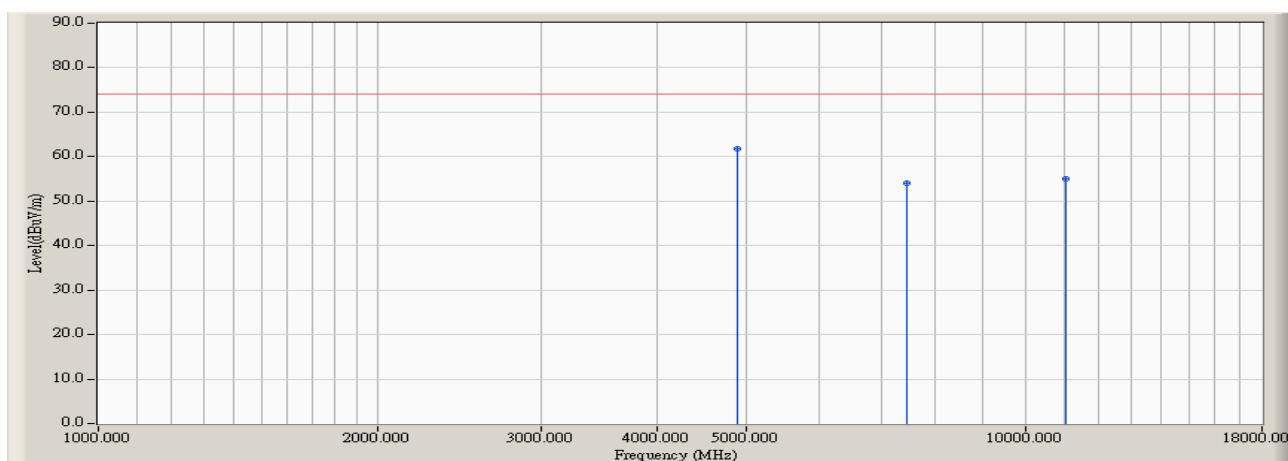


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4881.667	5.034	42.576	47.609	-6.361	53.970	AVERAGE
2		7450.000	15.107	21.166	36.274	-17.696	53.970	AVERAGE
3		11143.333	20.044	21.008	41.051	-12.919	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:17
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

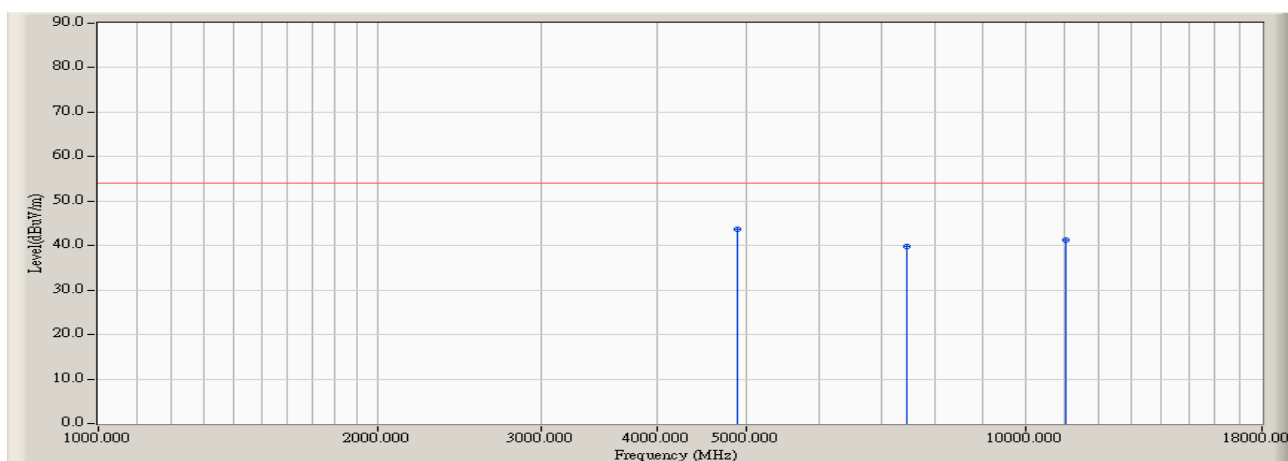


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4881.667	5.034	56.672	61.705	-12.265	73.970	PEAK
2		7460.000	15.090	39.010	54.100	-19.870	73.970	PEAK
3		11058.333	20.170	34.838	55.008	-18.962	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:17
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2441MHz)

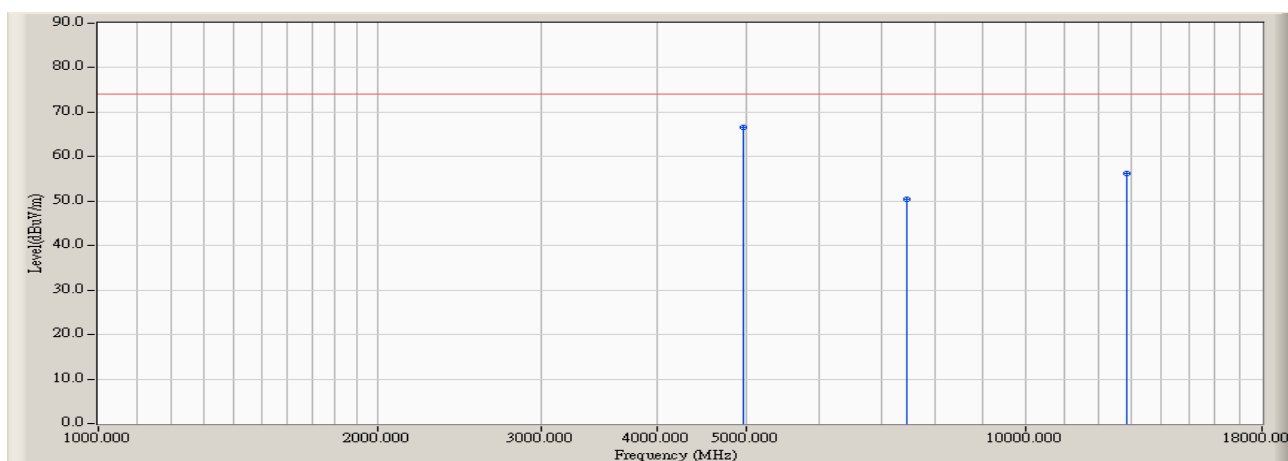


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4881.667	5.034	38.552	43.585	-10.385	53.970	AVERAGE
2		7460.000	15.090	24.785	39.875	-14.095	53.970	AVERAGE
3		11053.333	20.179	21.154	41.333	-12.637	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:23
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

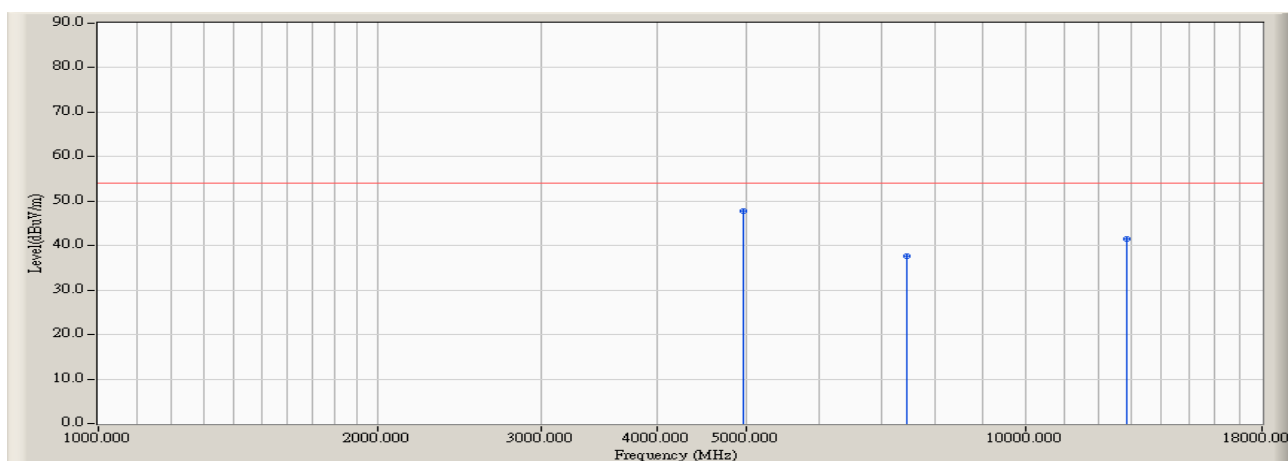


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4966.667	5.234	61.252	66.485	-7.485	73.970	PEAK
2		7460.000	15.090	35.300	50.390	-23.580	73.970	PEAK
3		12871.667	20.834	35.400	56.233	-17.737	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:23
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

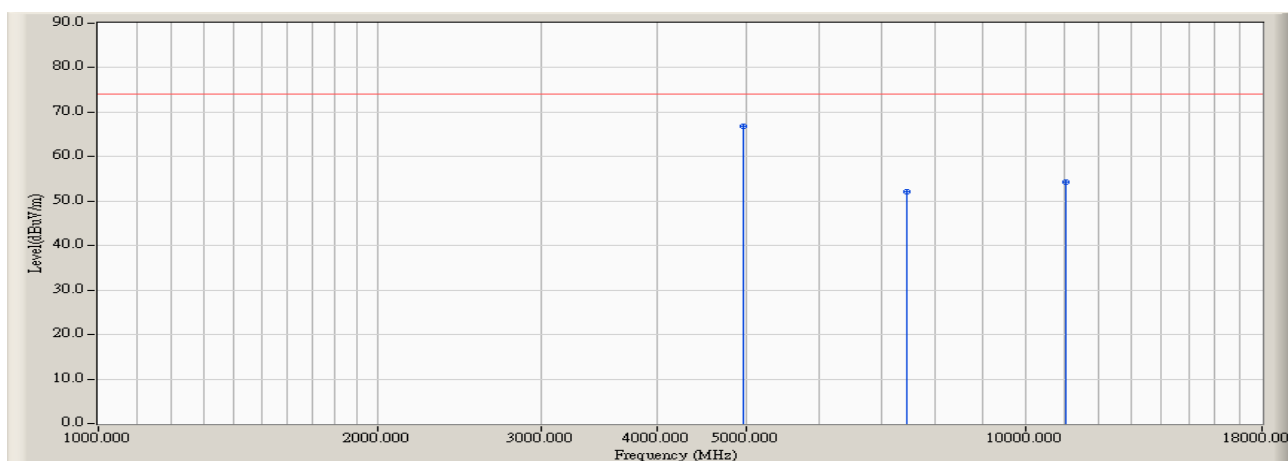


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4966.667	5.234	42.578	47.811	-6.159	53.970	AVERAGE
2		7460.000	15.090	22.547	37.637	-16.333	53.970	AVERAGE
3		12871.667	20.834	20.655	41.488	-12.482	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:26
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

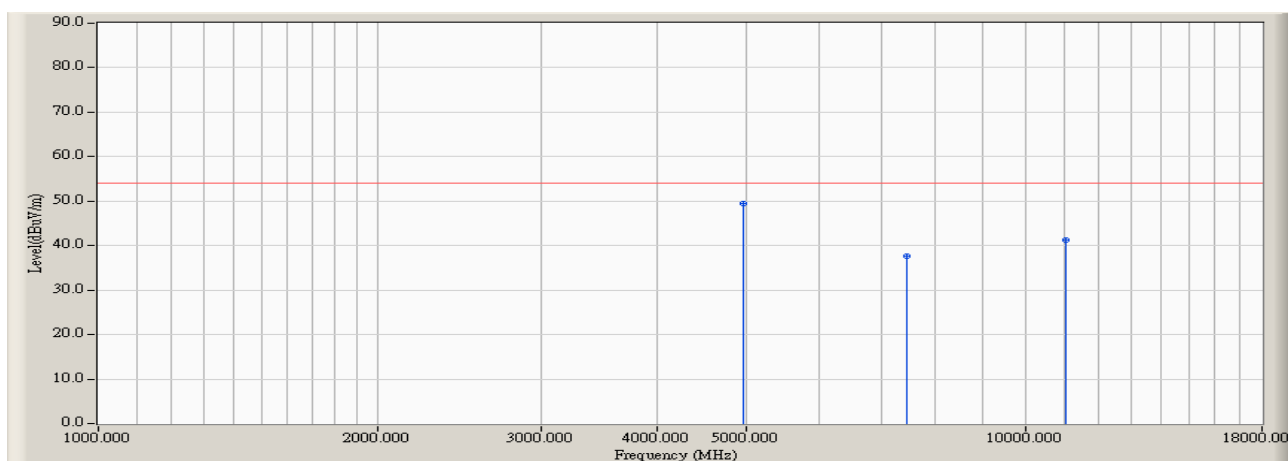


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4966.667	5.234	61.583	66.816	-7.154	73.970	PEAK
2		7460.000	15.090	37.005	52.095	-21.875	73.970	PEAK
3		11058.333	20.170	34.189	54.359	-19.611	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Johnwang	
Site : AC-2	Time : 2007/07/07 - 16:26
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : BTHF180	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 3.7V	Note : Mode 1: Transmit (2480MHz)

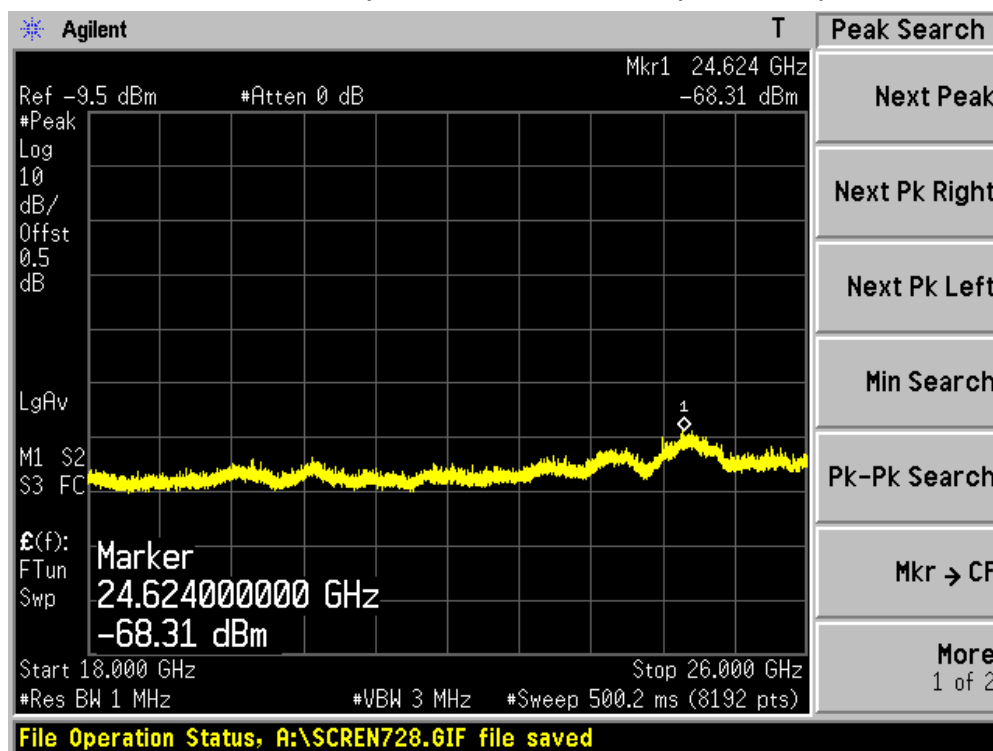


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4966.667	5.234	44.321	49.554	-4.416	53.970	AVERAGE
2		7460.000	15.090	22.587	37.677	-16.293	53.970	AVERAGE
3		11058.333	20.170	21.168	41.338	-12.632	53.970	AVERAGE

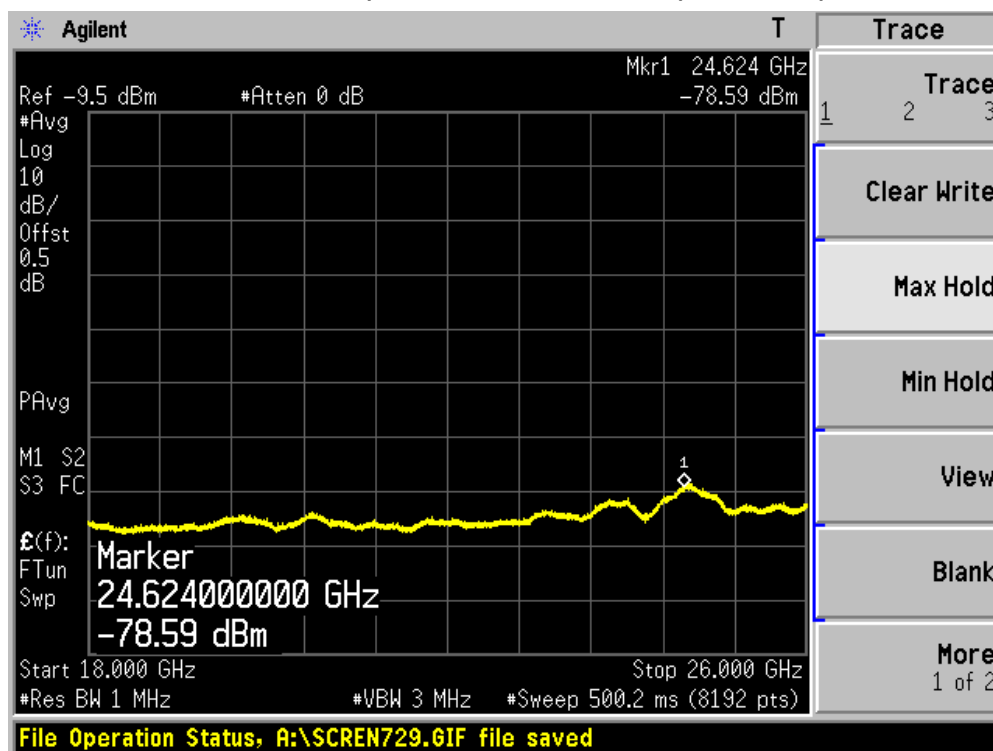
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

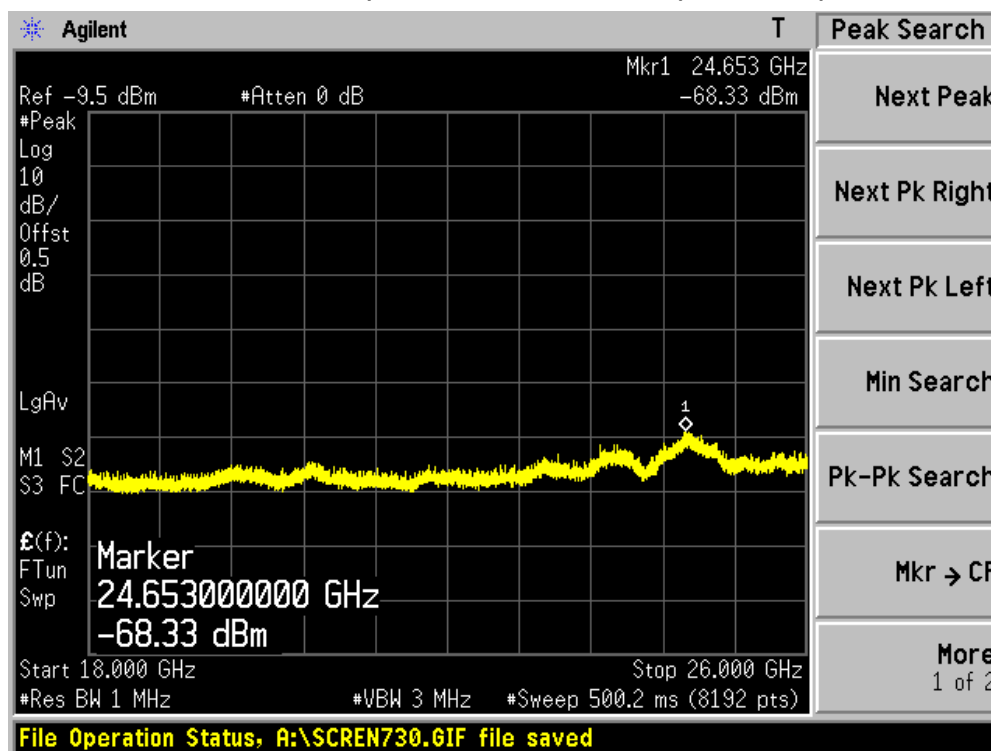
Conducted Spurious - Channel 00 (2402MHz)



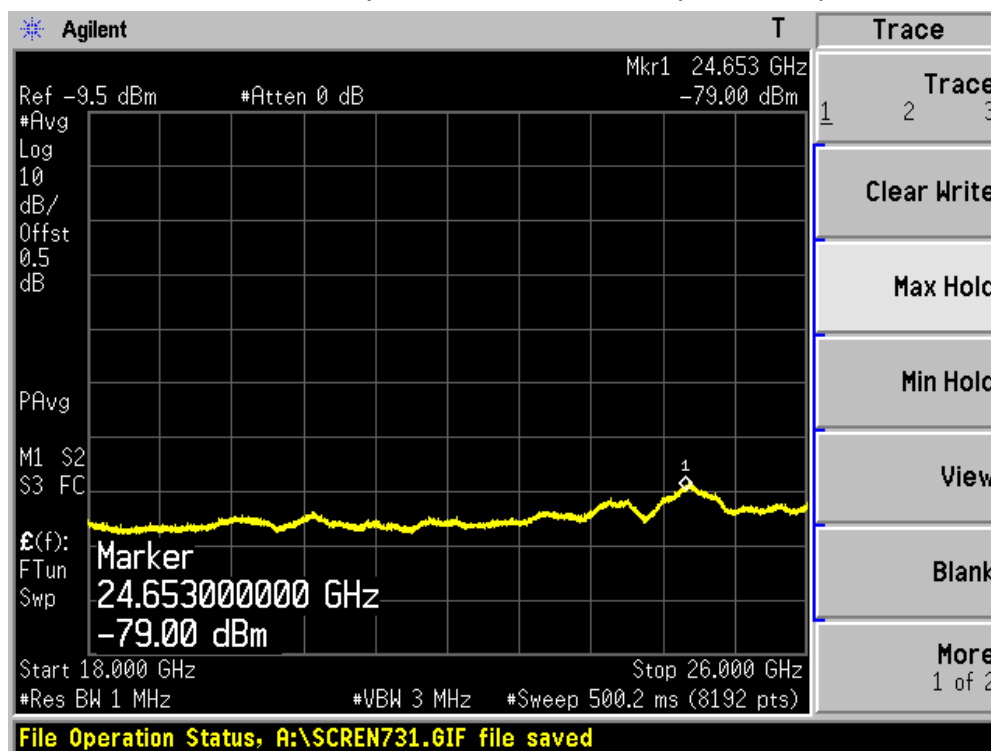
Conducted Spurious - Channel 00 (2402MHz)



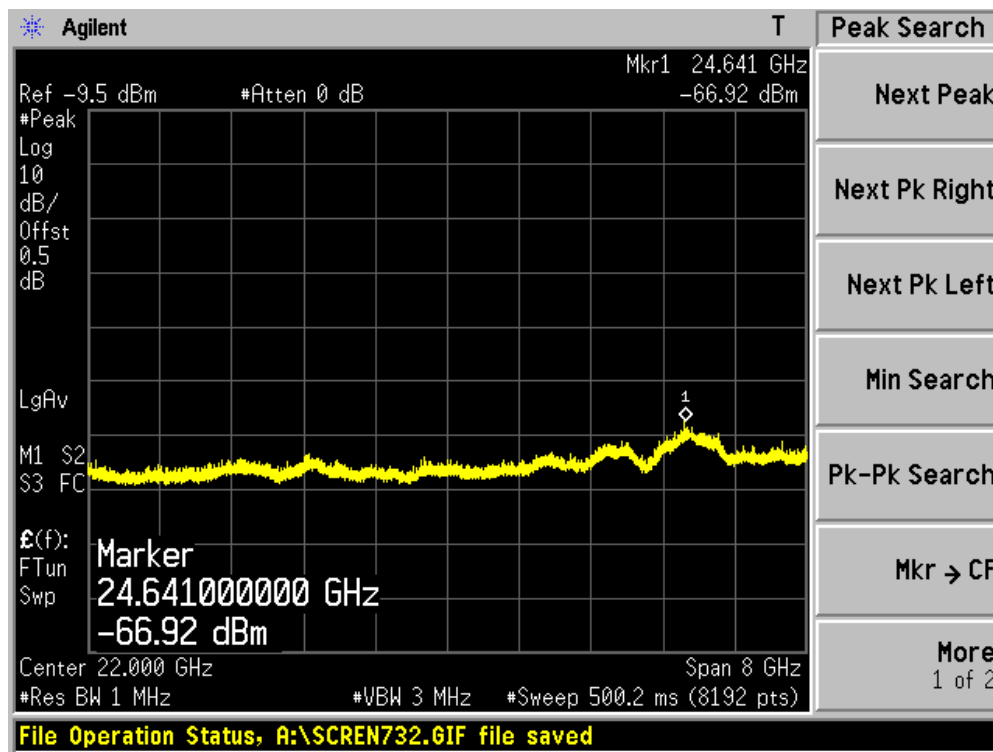
Conducted Spurious - Channel 39 (2441MHz)



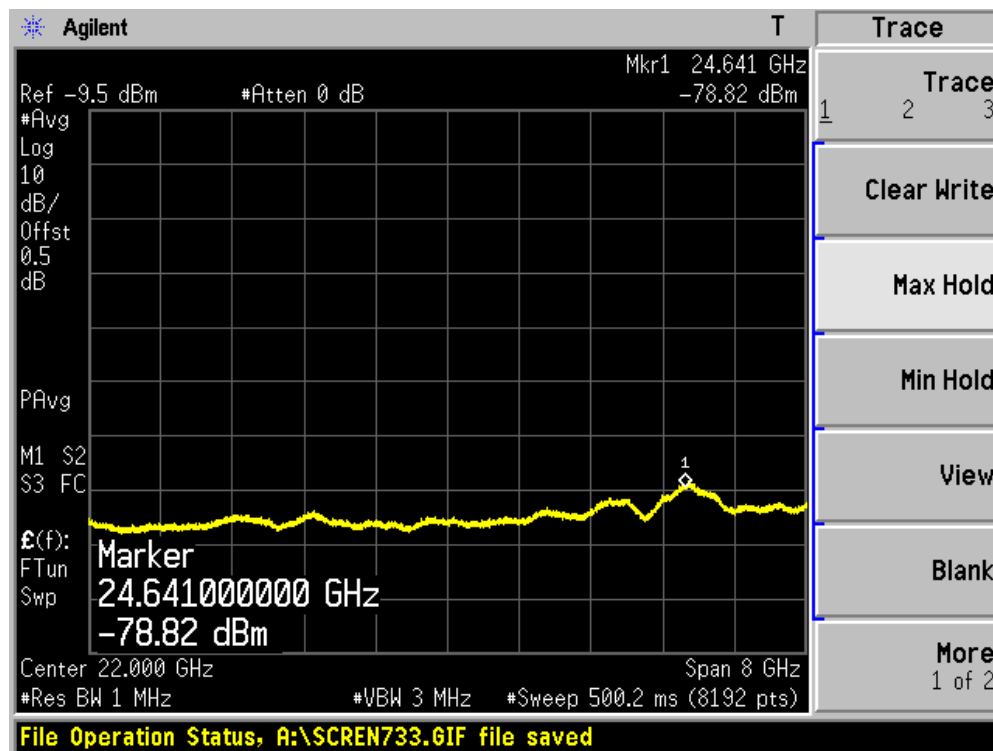
Conducted Spurious - Channel 39 (2441MHz)



Conducted Spurious - Channel 78 (2480MHz)



Conducted Spurious - Channel 78 (2480MHz)



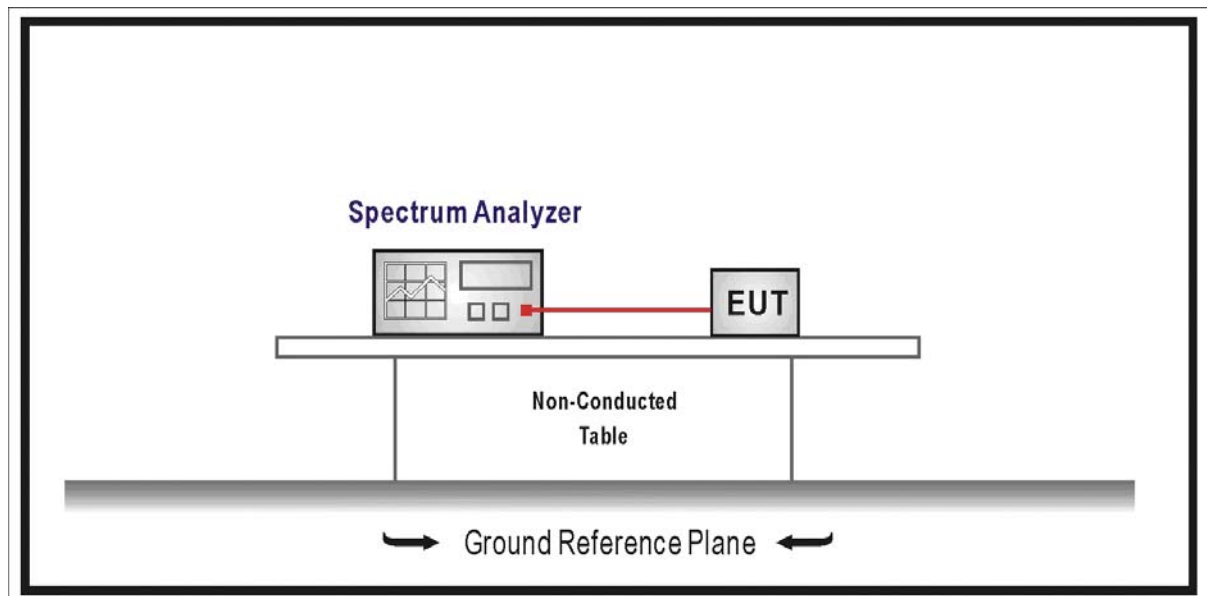
5. Peak Power Output

5.1. Test Equipment

Peak Power Output / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2007/03/31

5.2. Test Setup



5.3. Limit

The maximum peak power shall be less 1Watt (30dBm).

The conducted output power limit is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of standard FCC part 15.247, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, by the amount in dB that the directional gain of the antenna exceeds dBi.

5.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

5.5. Uncertainty

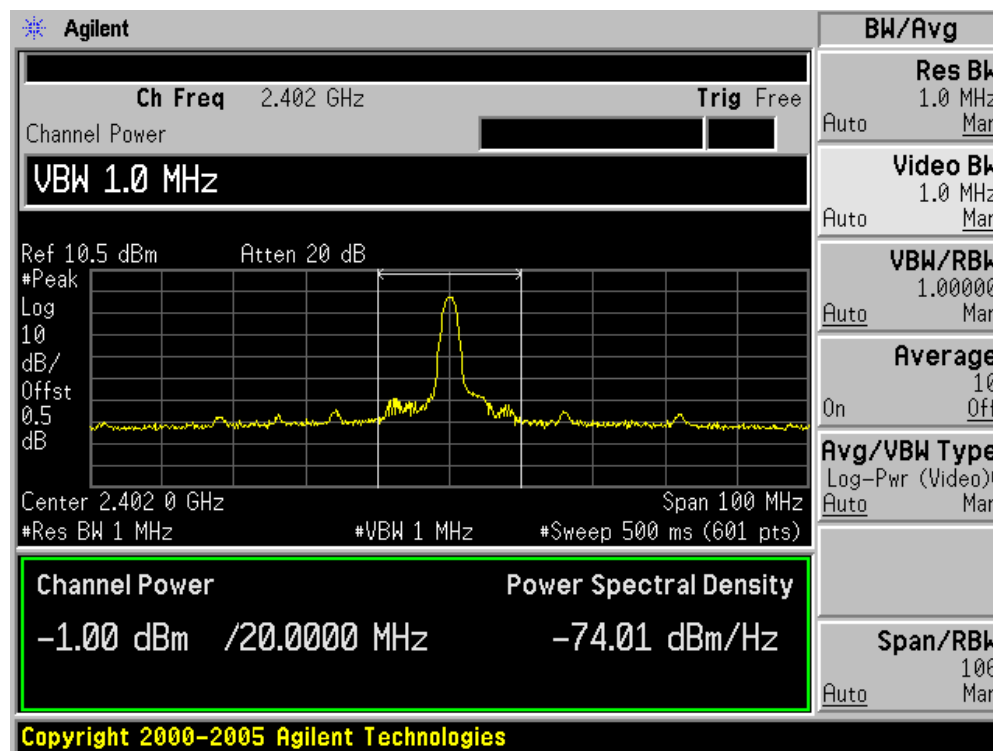
The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

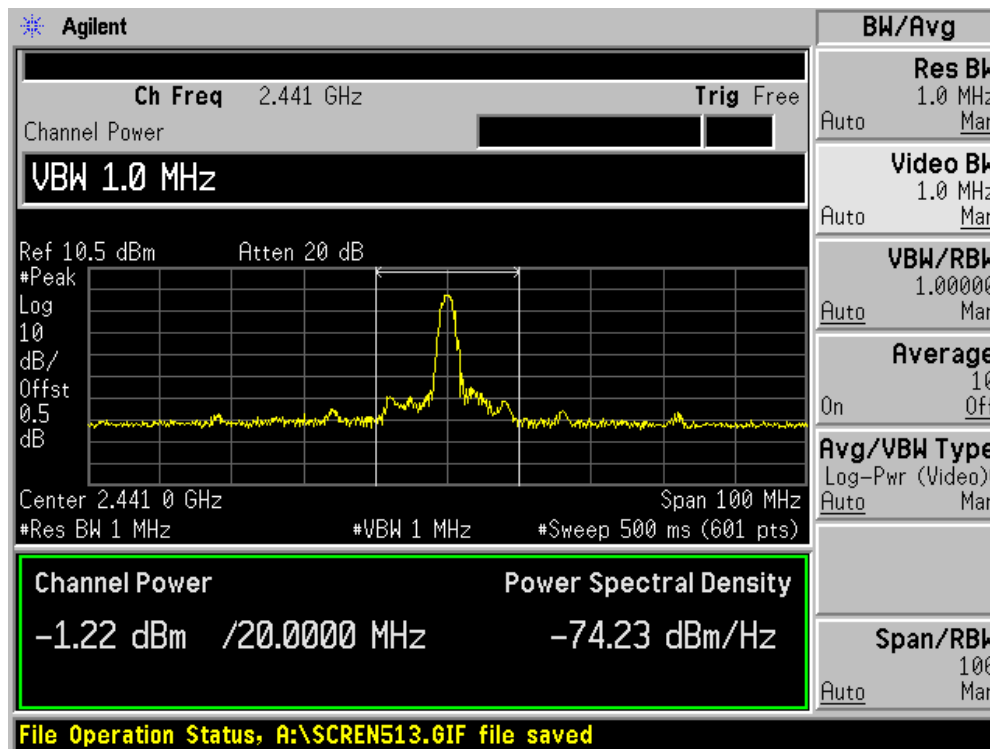
Product	:	Bluetooth handsfree speaker
Test Item	:	Peak Power Output
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit (dBm)	Result
00	2402.00	-1.00	1 Watt= 30 dBm	Pass
39	2441.00	-1.22	1 Watt= 30 dBm	Pass
78	2480.00	-1.14	1 Watt= 30 dBm	Pass

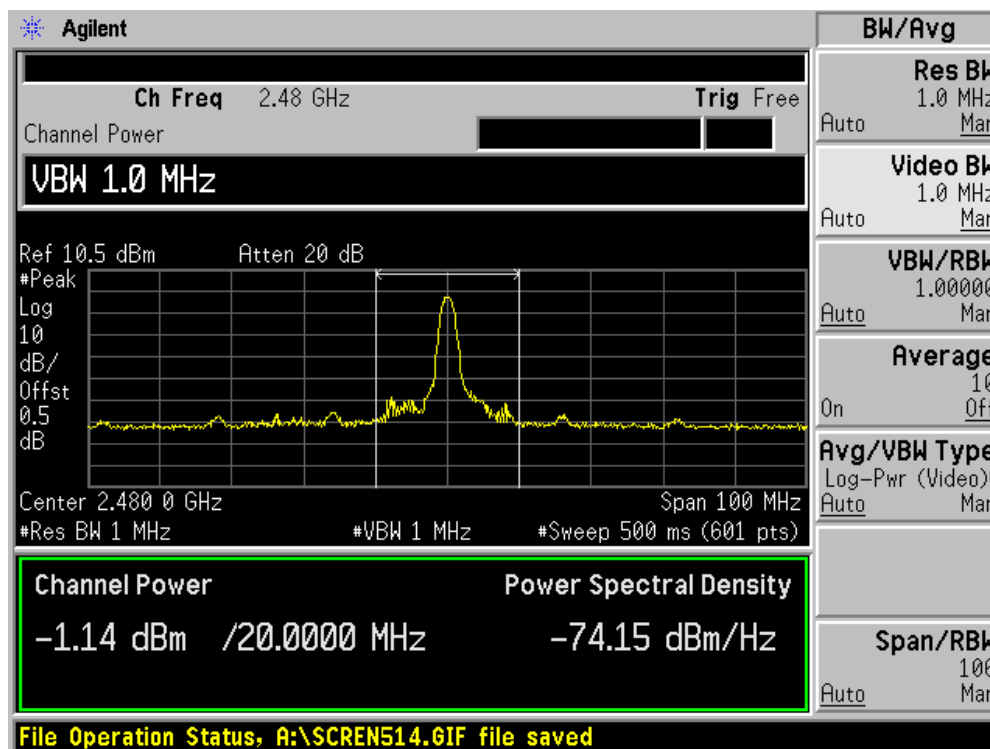
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



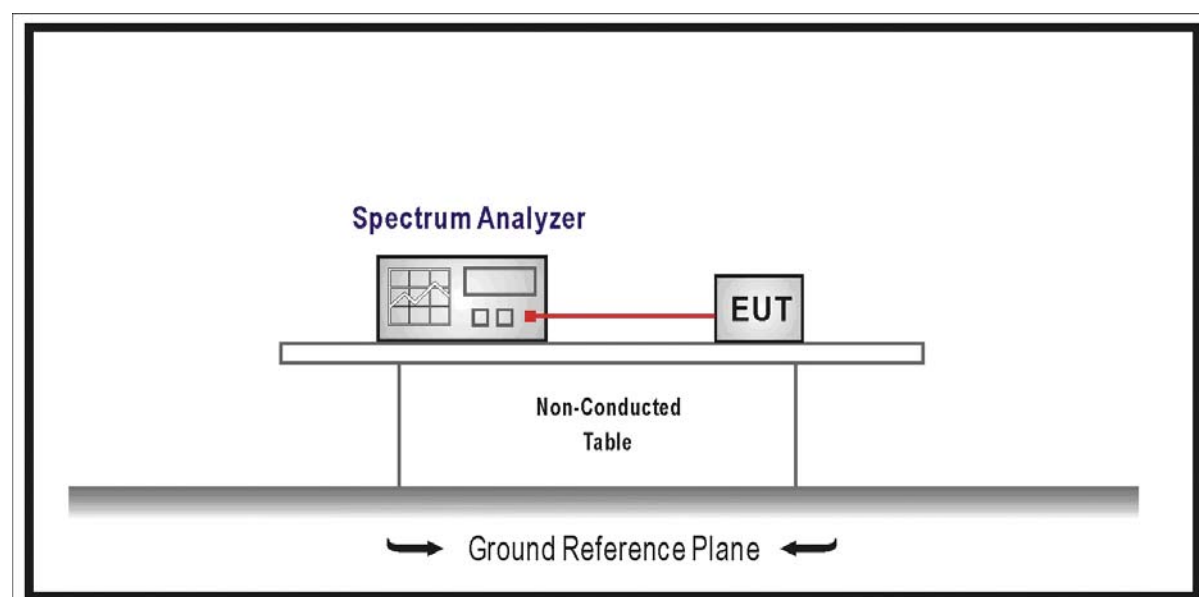
6. Occupied Bandwidth

6.1. Test Equipment

Occupied Bandwidth / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2007/03/31

6.2. Test Setup



6.3. Limit

N/A

6.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

6.5. Uncertainty

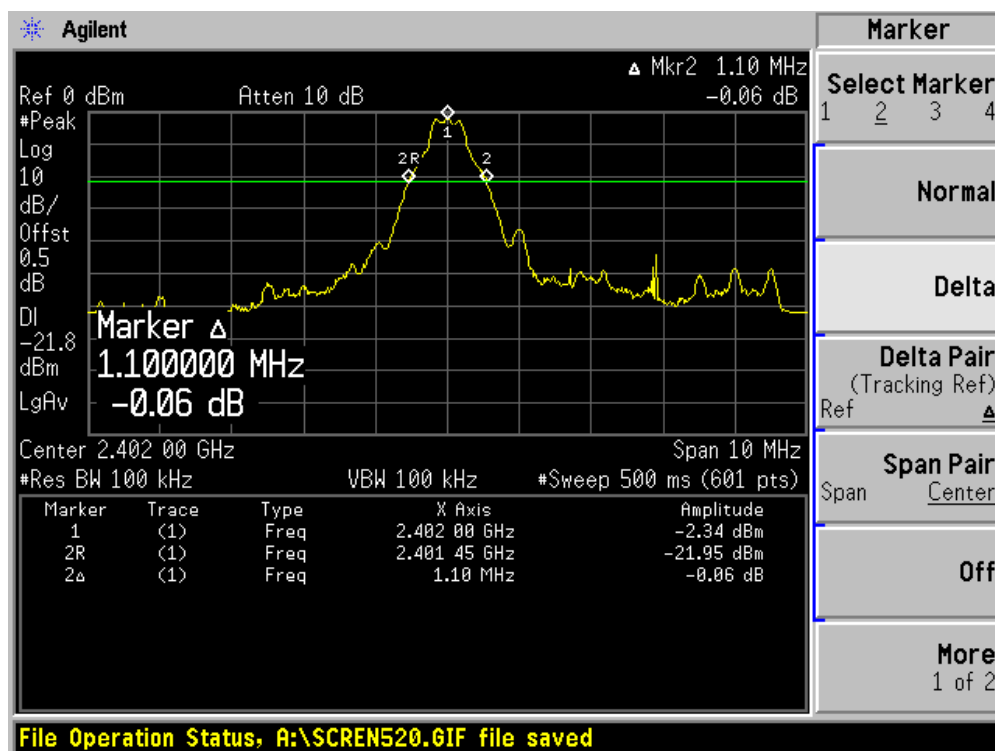
The measurement uncertainty is defined as ± 100 Hz

6.6. Test Result

Product	:	Bluetooth handsfree speaker
Test Item	:	Occupied Bandwidth
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1100	N/A	Pass
39	2441	1120	N/A	Pass
78	2480	1150	N/A	Pass

Channel 00 (2402MHz)



Agilent

Ref 0 dBm Atten 10 dB

Δ Mkr2 1.12 MHz
0.56 dB

#Peak Log dB/ Offst 0.5 dB DI -21.8 dBm LgAv

Marker Δ
1.120000 MHz
0.56 dB

Center 2.441 00 GHz Span 10 MHz
#Res BW 100 kHz VBW 100 kHz #Sweep 500 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.440 98 GHz	-1.79 dBm
2R	(1)	Freq	2.440 43 GHz	-22.01 dBm
2Δ	(1)	Freq	1.12 MHz	0.56 dB

File Operation Status, A:\SCREN518.GIF file saved

Agilent

Ref 0 dBm Atten 10 dB

#Peak Log dB/ Offst 0.5 dB

DI -22.5 dBm LgAv

Marker Δ 1.150000 MHz -2.49 dBm

Center 2.480 00 GHz Span 10 MHz

#Res BW 100 kHz VBW 100 kHz #Sweep 500 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.479 83 GHz	-2.49 dBm
2R	(1)	Freq	2.479 42 GHz	-23.29 dBm
2 Δ	(1)	Freq	1.15 MHz	0.36 dB

File Operation Status, A:\SCREN517.GIF file saved

7. Band Edge

7.1. Test Equipment

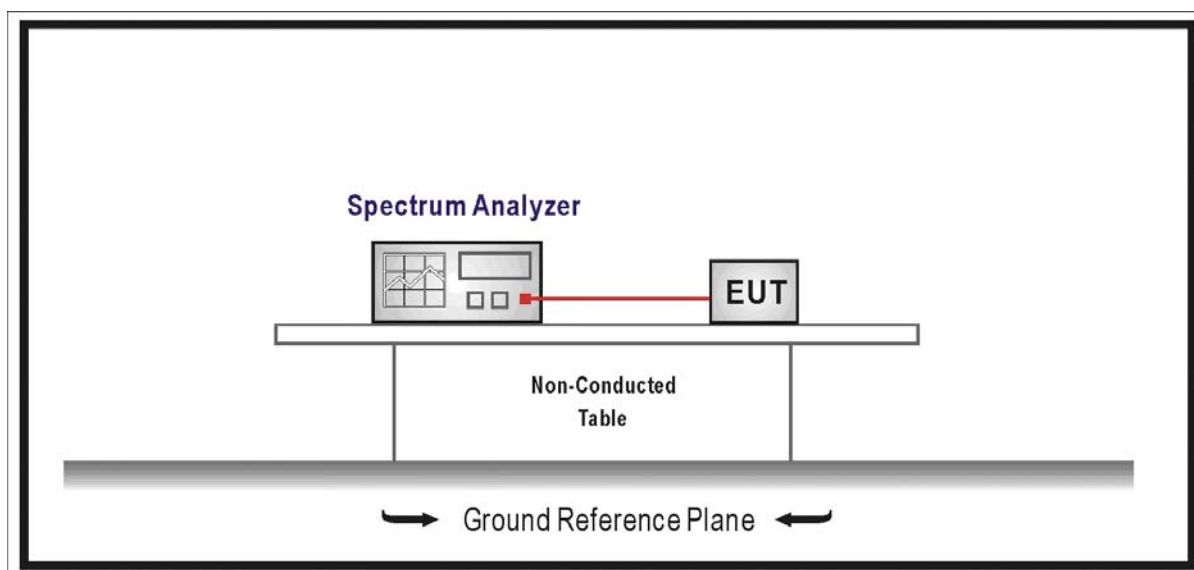
Band Edge / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2006/11/20
Preamplifier	Quietek	AP-180C	CHM-0602013	2006/11/25
Bilog Type Antenna	Schaffner	CBL6112B	2932	2006/11/22
*Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2005/11/25
50ohm Coaxial Switch	ANRITSU	MP59B	6200447304	2006/11/25
Coaxial Cable	Huber+Suhner	AC2-C	04	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2007/03/30

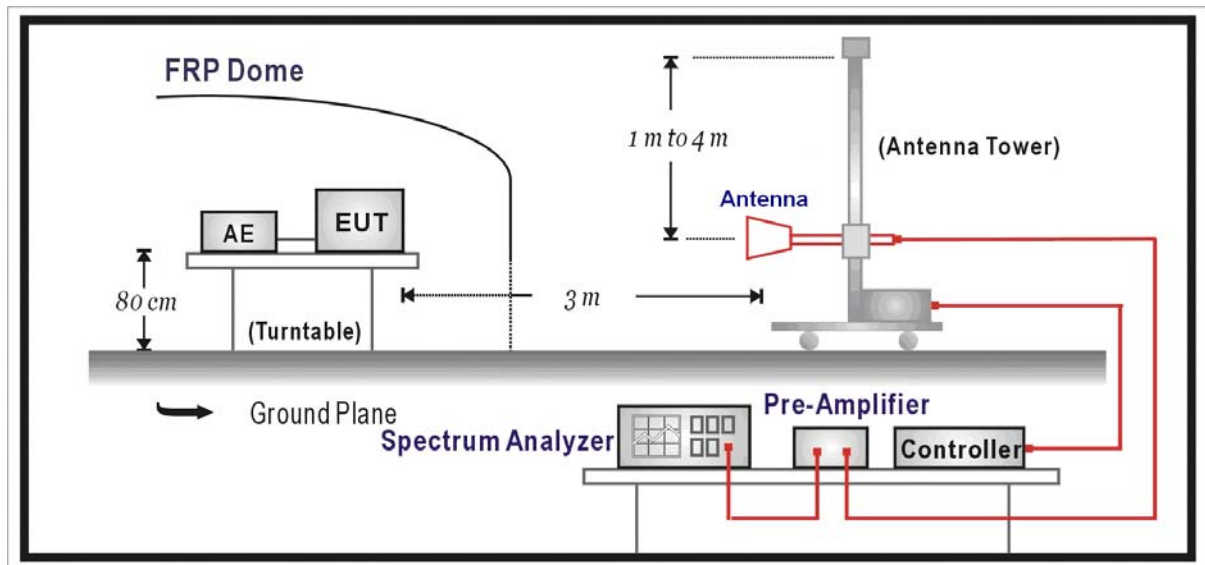
Note: "*" means the test device calibration period for two years.

7.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement



7.3. Limit

For 15.215(C) requirement:

Intentional radiators operating under the alternative provisions to the general emission limits as contained in 15.217 through 15.257 and in Subpart E of FCC part 15, must be designed to ensure that 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

For 15.247(d) requirement:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. 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) (see Section 15.205(c)).

7.4. Test Procedure

For RF Conducted Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer.

c) Add a correction factor to the display, and then test.

For RF Radiated Measurement:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCI) is 120 kHz and above 1GHz is 1MHz.

7.5. Uncertainty

For RF Conducted Measurement:

The measurement uncertainty is defined as ± 1.27 dB

For RF Radiated Measurement:

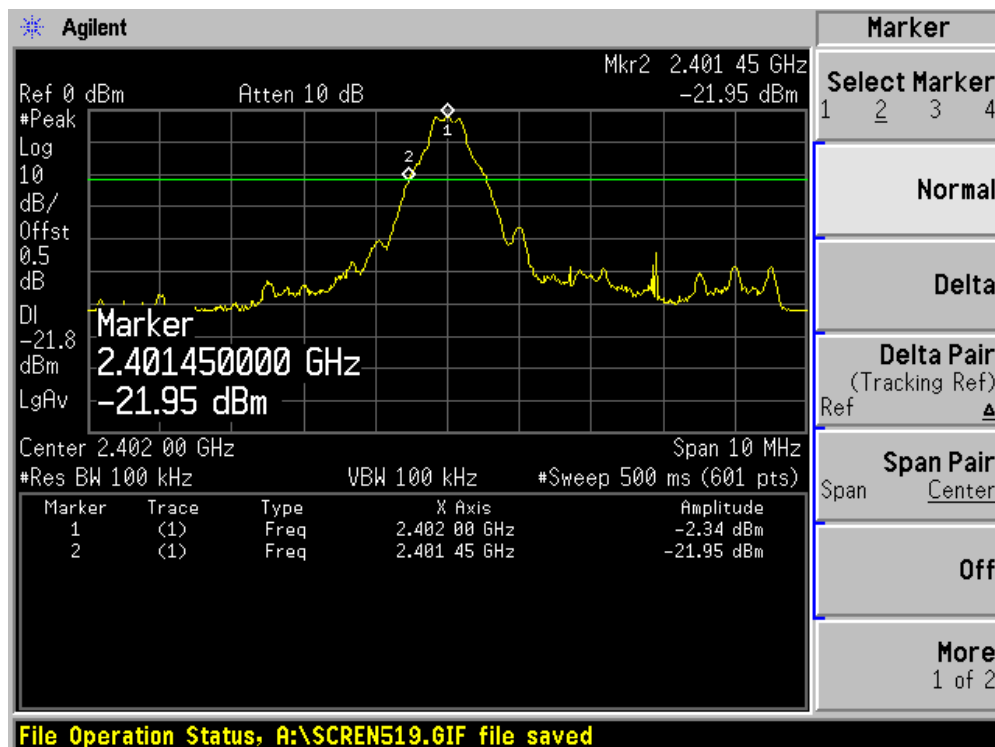
The measurement uncertainty above 1G is defined as ± 3.9 dB

under 1G is defined as ± 3.8 dB

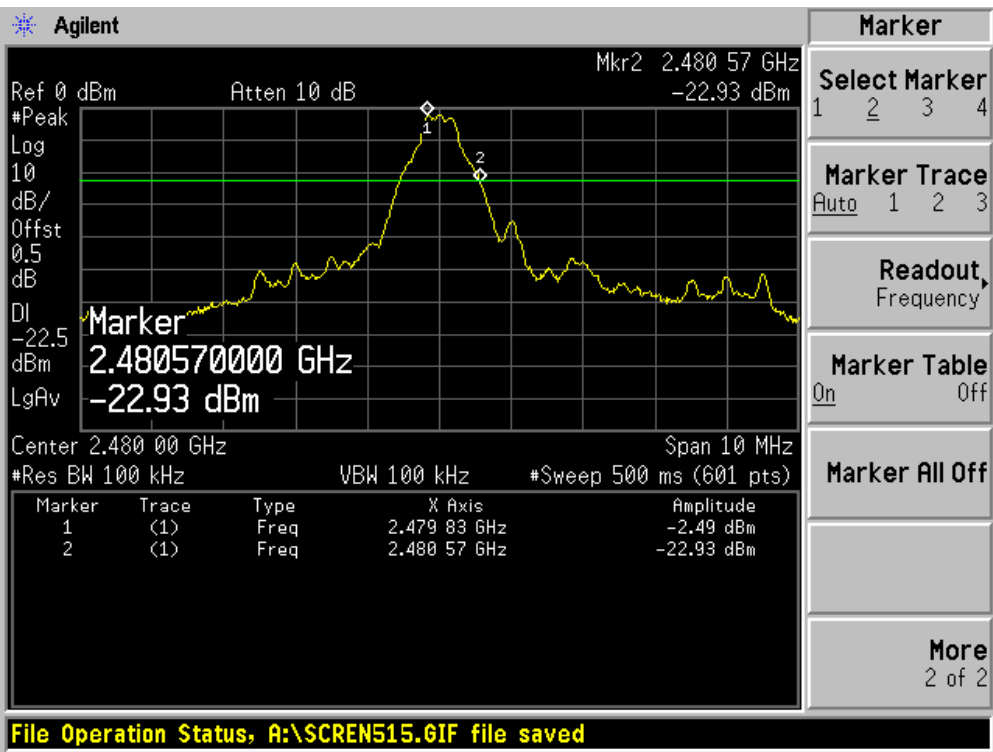
7.6. Test Result

Product	:	Bluetooth handsfree speaker
Test Item	:	Band Edge (20dBc RF Conducted Measurement)
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Channel 00 (2402MHz)



Channel 78 (2480MHz)



Product	:	Bluetooth handsfree speaker
Test Item	:	Band Edge
Test Site	:	AC-2
Test Mode	:	Mode 1: Transmit

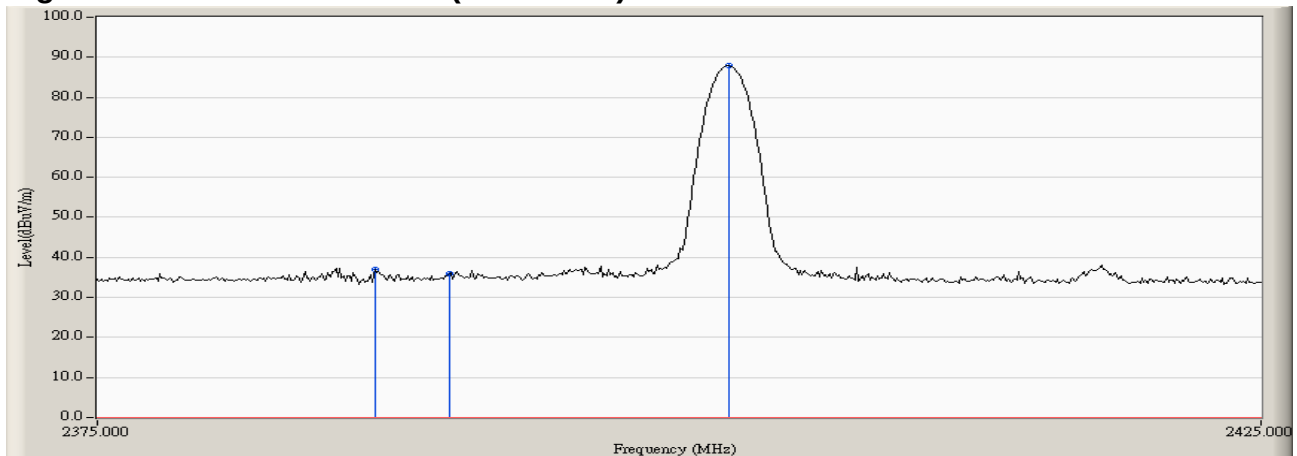
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	39.761	36.020	74.00	N/A	Pass
00 (Average)	N/A	N/A	N/A	74.00	54.00	Pass

Figure Channel 00: 2402MHz (Horizontal)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	:	Bluetooth handsfree speaker
Test Item	:	Band Edge
Test Site	:	AC-2
Test Mode	:	Mode 1: Transmit

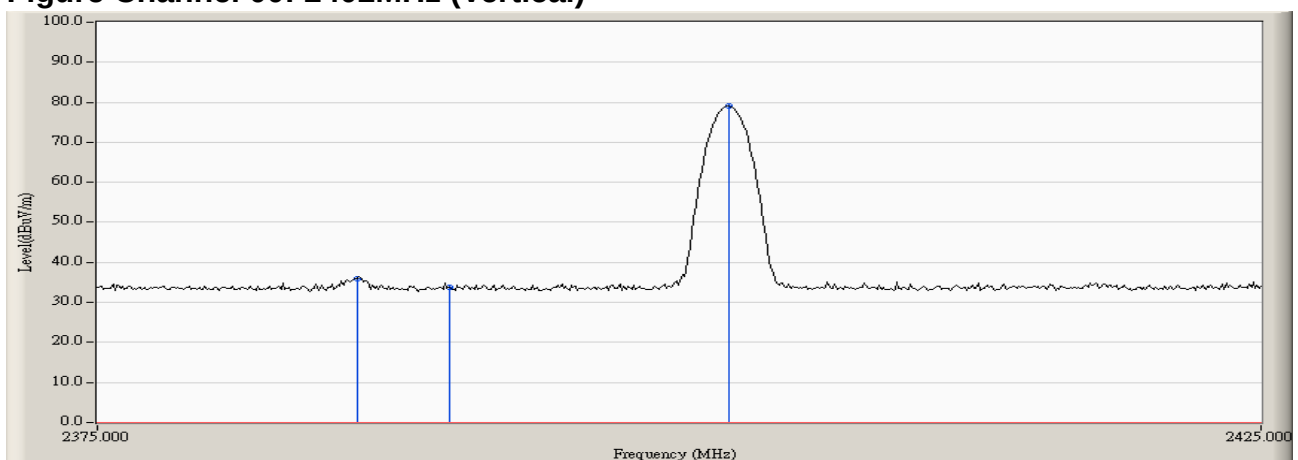
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	37.474	33.733	74.00	N/A	Pass
00 (Average)	N/A	N/A	N/A	N/A	54.00	Pass

Figure Channel 00: 2402MHz (Vertical)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	:	Bluetooth handsfree speaker
Test Item	:	Band Edge
Test Site	:	AC-2
Test Mode	:	Mode 1: Transmit

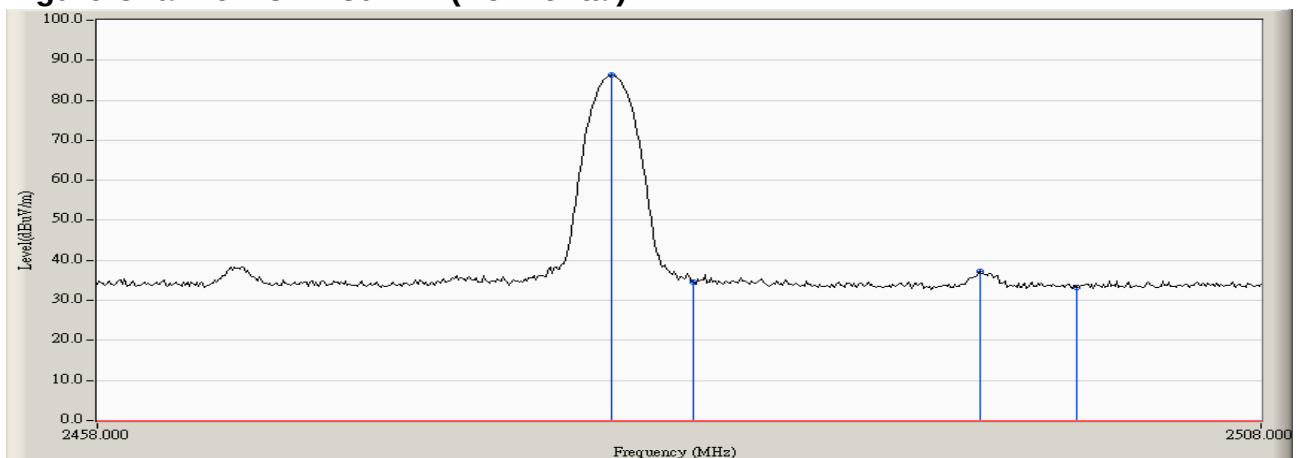
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.500	38.370	34.545	74.00	N/A	Pass
78(Average)	N/A	N/A	N/A	N/A	54.00	Pass

Figure Channel 78: 2480MHz (Horizontal)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	:	Bluetooth handsfree speaker
Test Item	:	Band Edge
Test Site	:	AC-2
Test Mode	:	Mode 1: Transmit

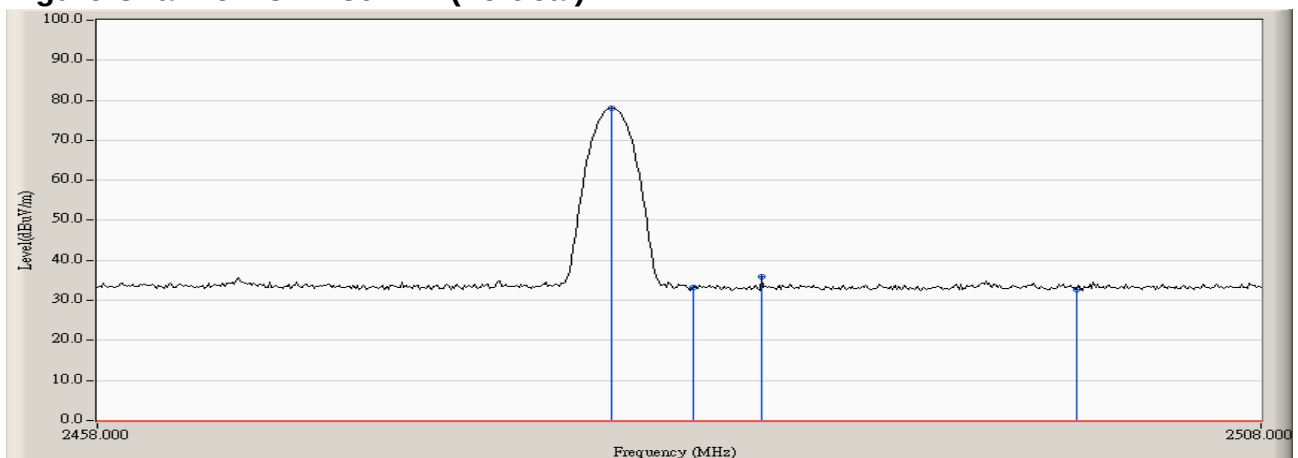
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.500	36.985	33.160	74.00	N/A	Pass
78(Average)	N/A	N/A	N/A	N/A	54.00	Pass

Figure Channel 78: 2480MHz (Vertical)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

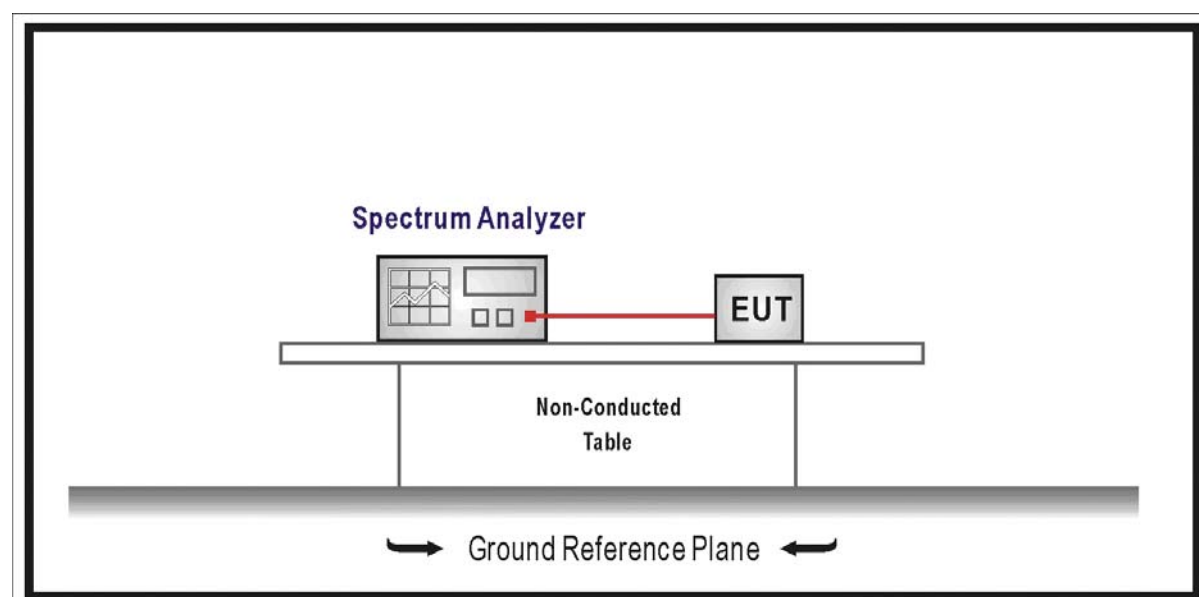
8. Channel Number

8.1. Test Equipment

Channel Number / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2007/03/31

8.2. Test Setup



8.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 15 hopping frequencies.

8.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

8.5. Uncertainty

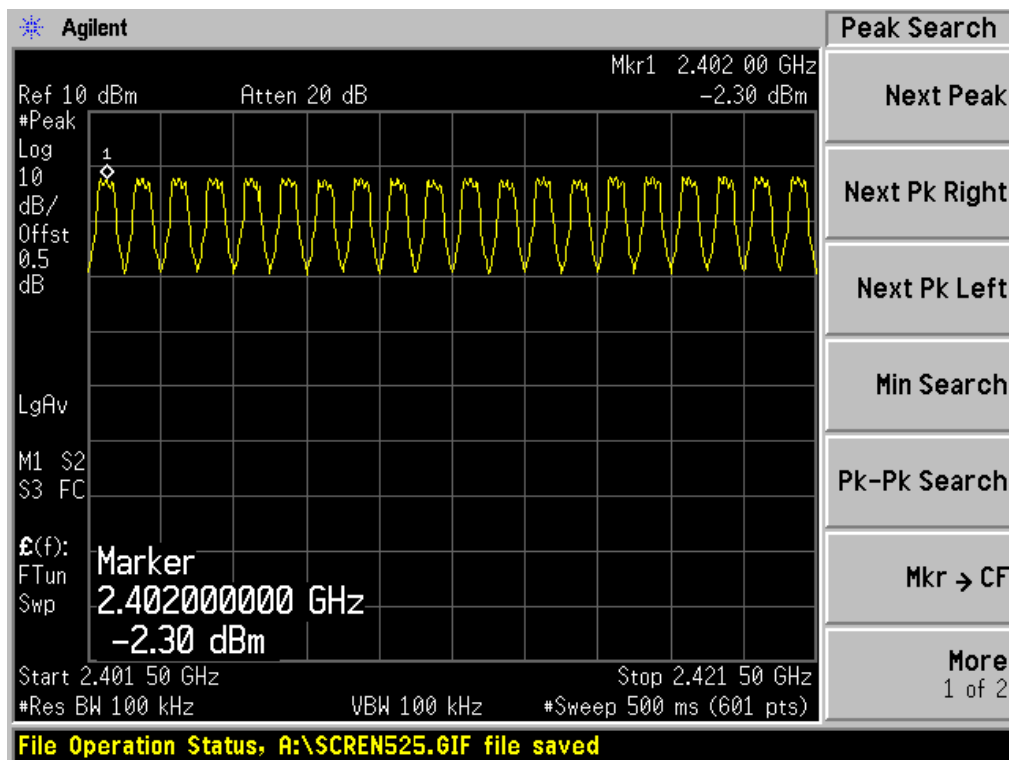
The measurement uncertainty is defined as ± 200 kHz

8.6. Test Result

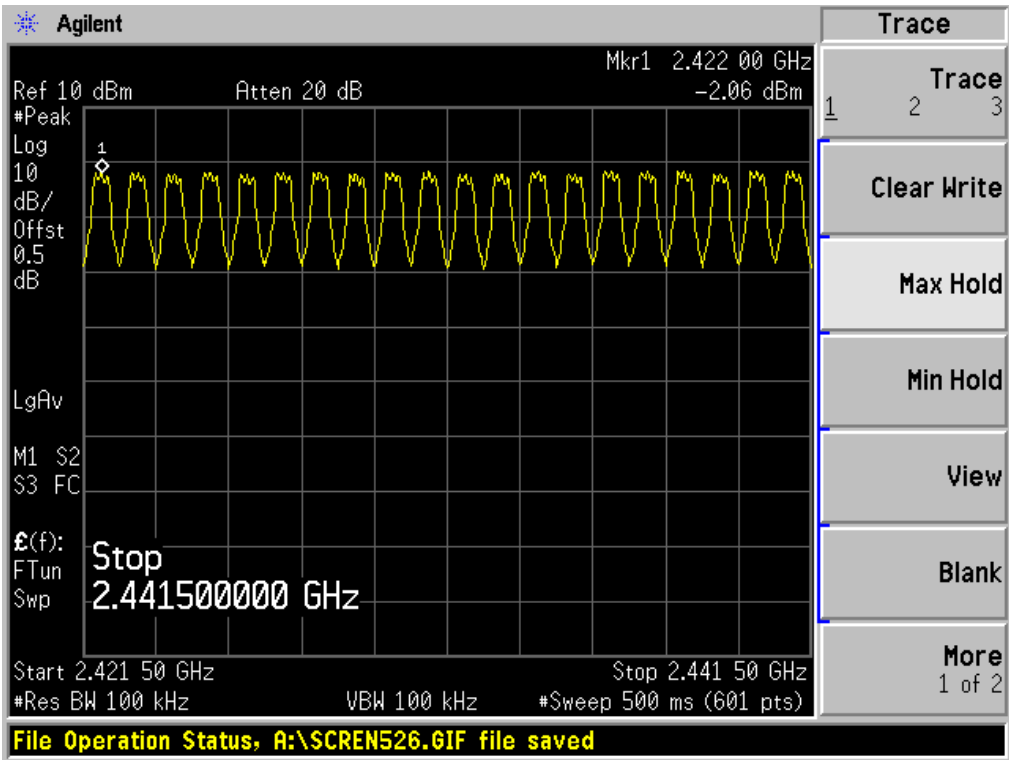
Product	:	Bluetooth handsfree speaker
Test Item	:	Channel Number
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>15	Pass

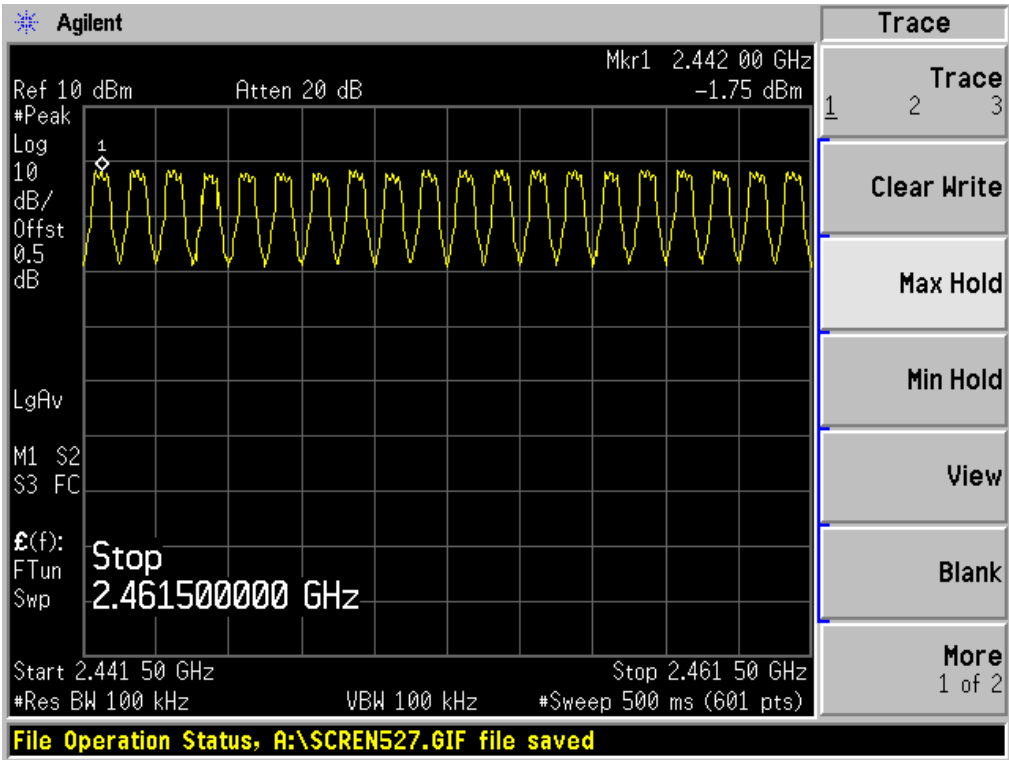
Frequency Range (2402~2421MHz)



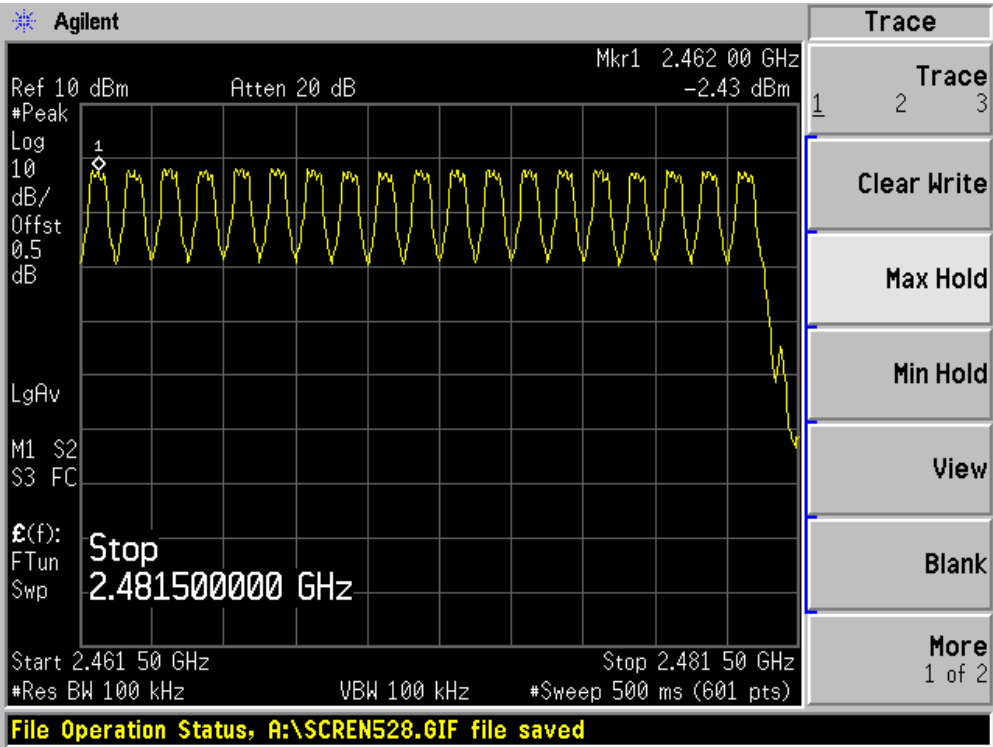
Frequency Range (2422~2441MHz)



Frequency Range (2442~2461MHz)



Frequency Range (2462~2480MHz)



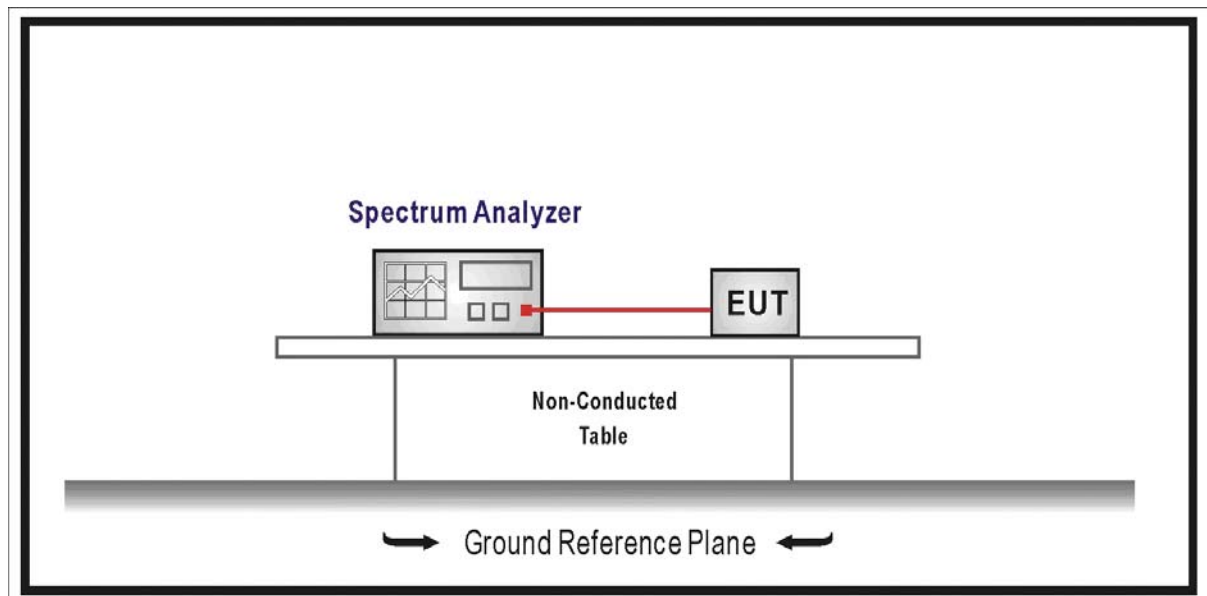
9. Channel Separation

9.1. Test Equipment

Channel Separation / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2007/03/31

9.2. Test Setup



9.3. Limit

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.

9.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

9.5. Uncertainty

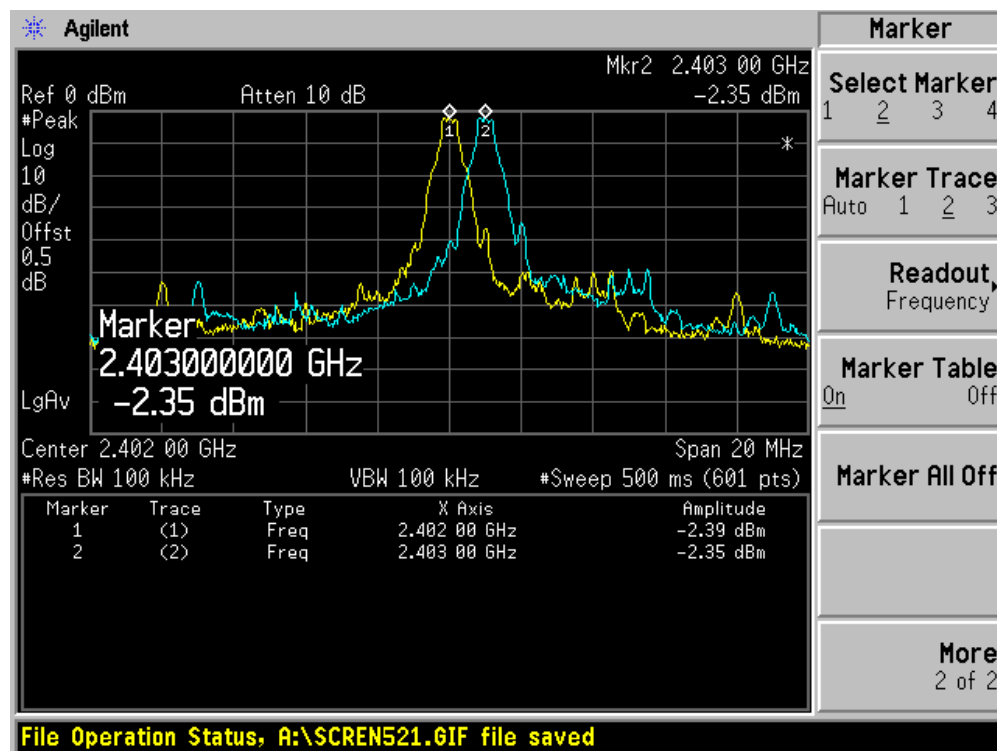
The measurement uncertainty is defined as ± 150 kHz

9.6. Test Result

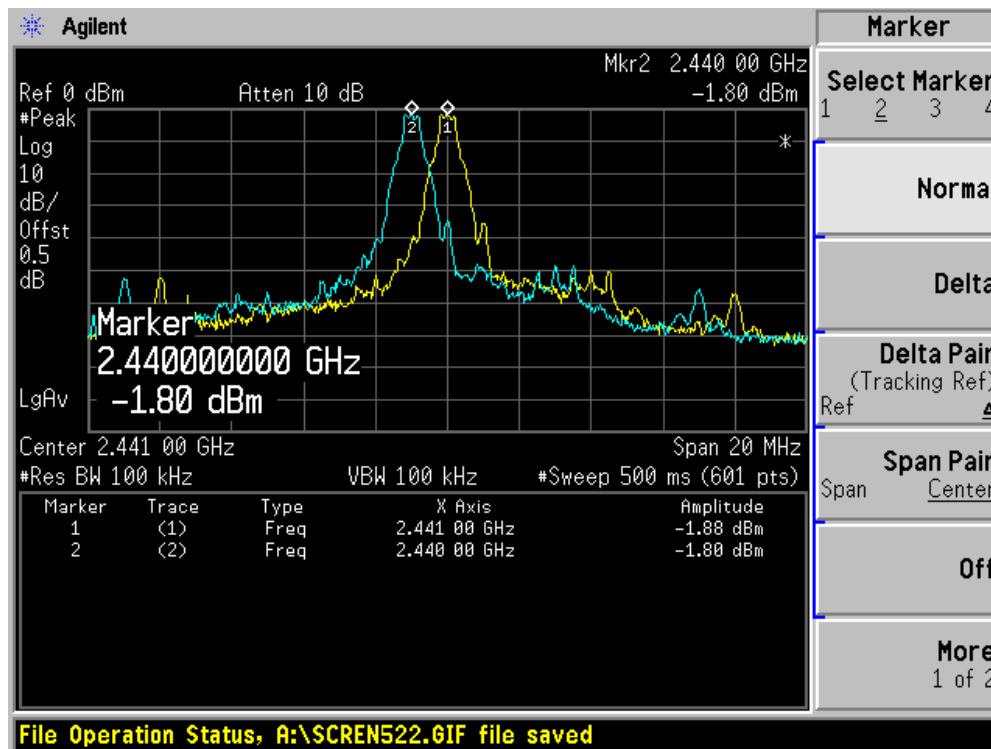
Product	:	Bluetooth handsfree speaker
Test Item	:	Channel Separation
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

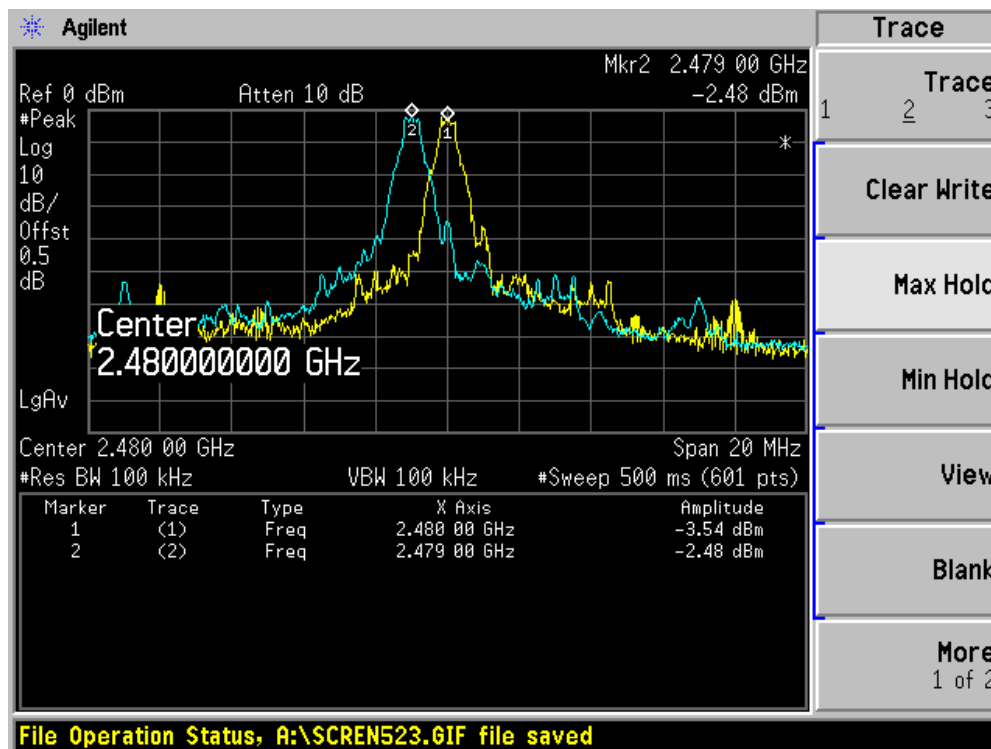
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



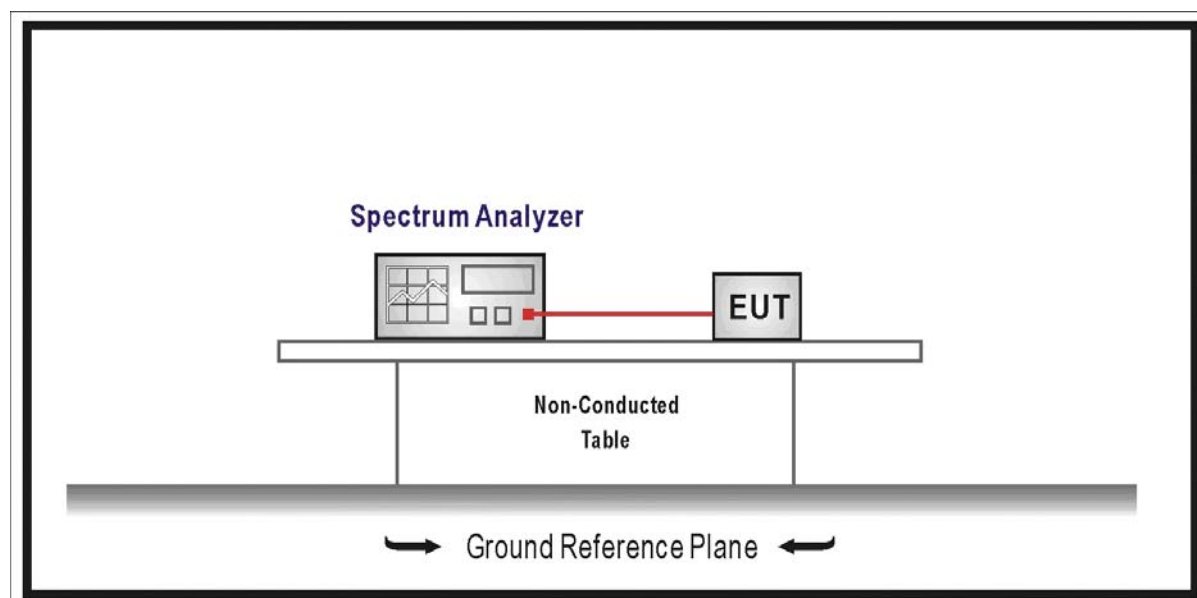
10. Dwell Time

10.1. Test Equipment

Dwell Time / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2007/03/31

10.2. Test Setup



10.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

10.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

10.5. Uncertainty

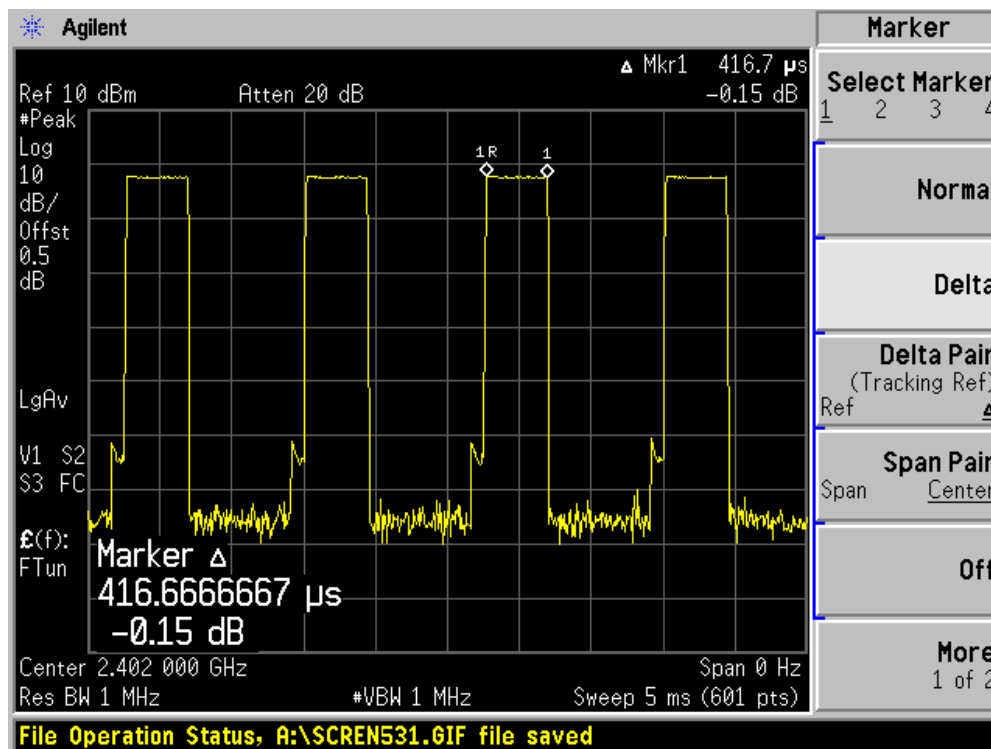
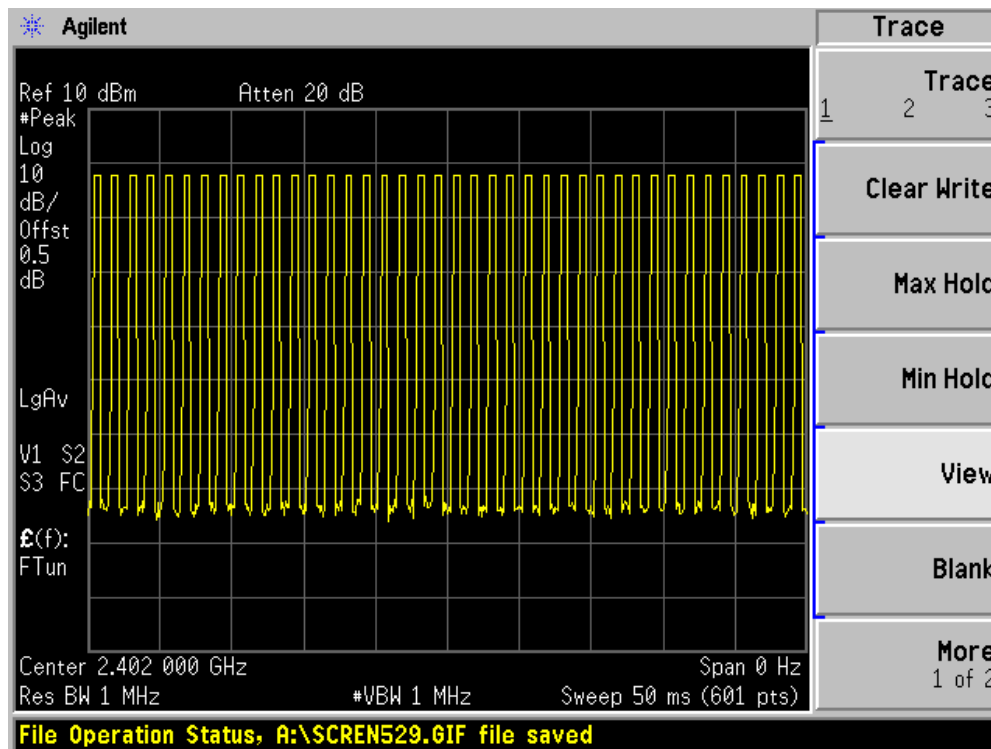
The measurement uncertainty is defined as ± 25 ms

10.6. Test Result

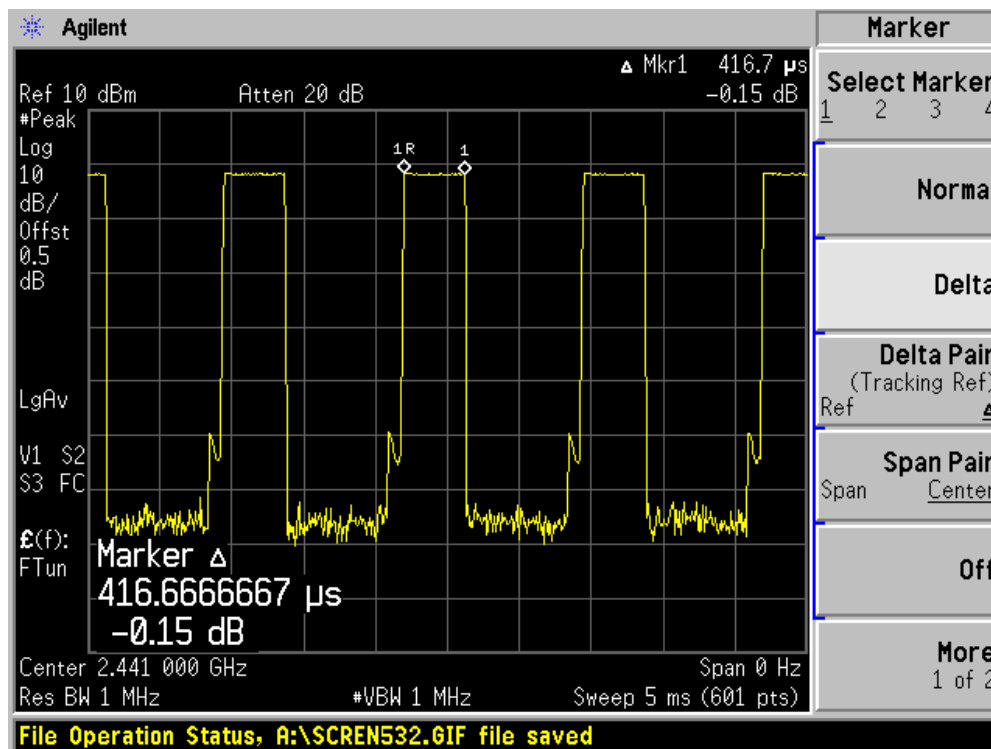
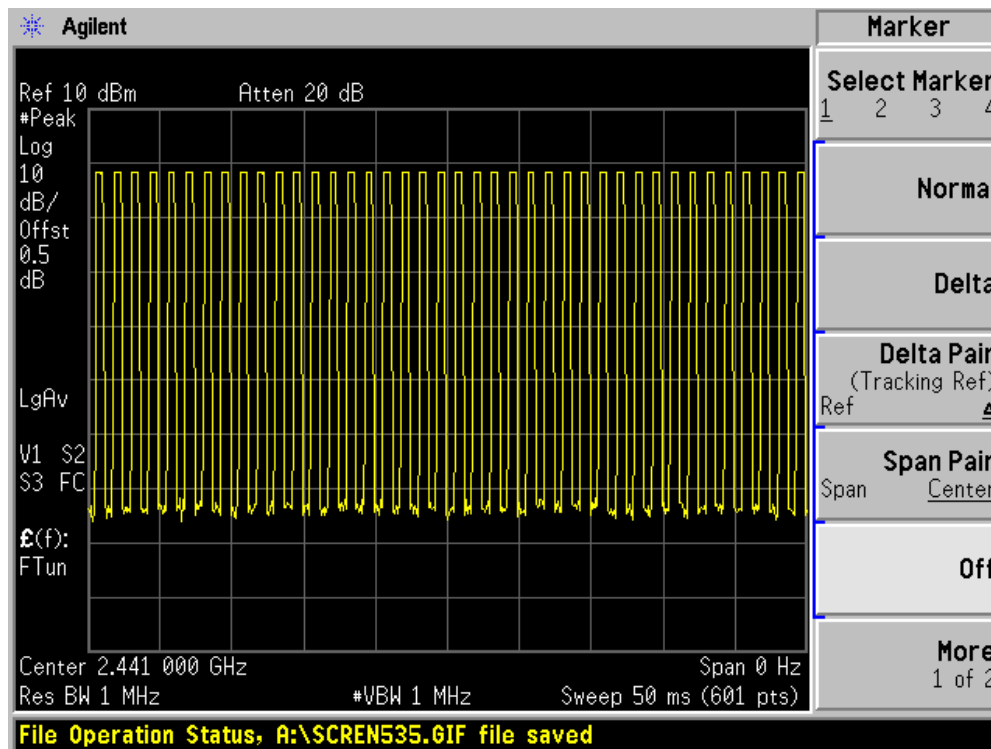
Product	:	Bluetooth handsfree speaker
Test Item	:	Dwell Time
Test Site	:	AC-3
Test Mode	:	Mode 1: Transmit

Frequency (MHz)	Measurement Level (ms)	Required Limit (sec.)	Result
2402	130.656	< 0.4	Pass
2441	133.344	< 0.4	Pass
2480	133.344	< 0.4	Pass

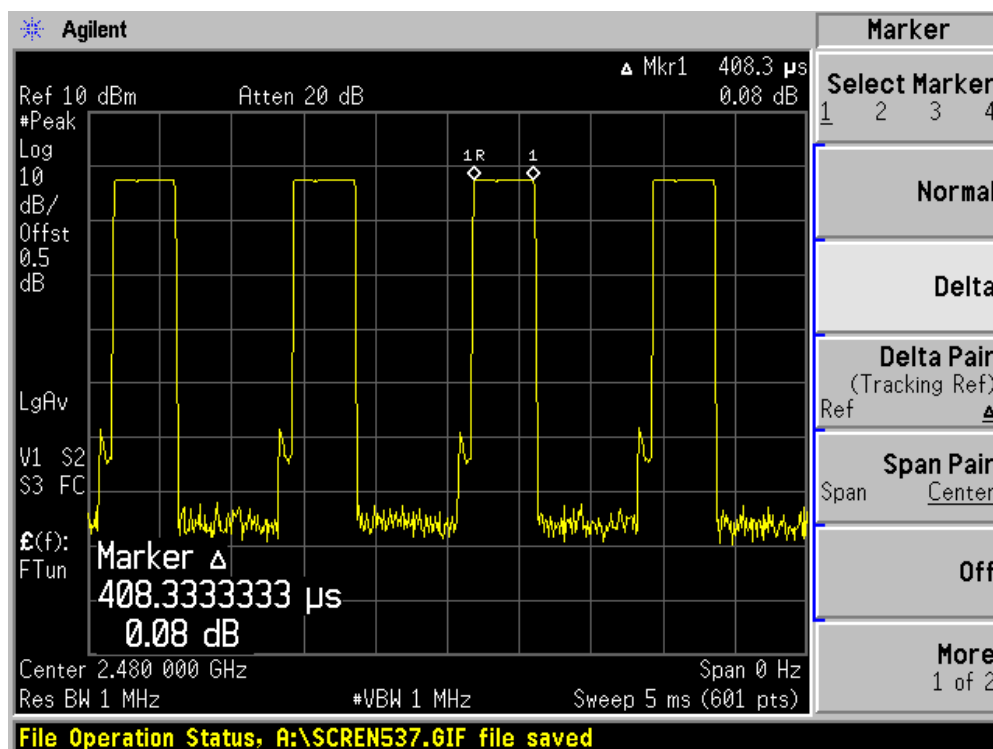
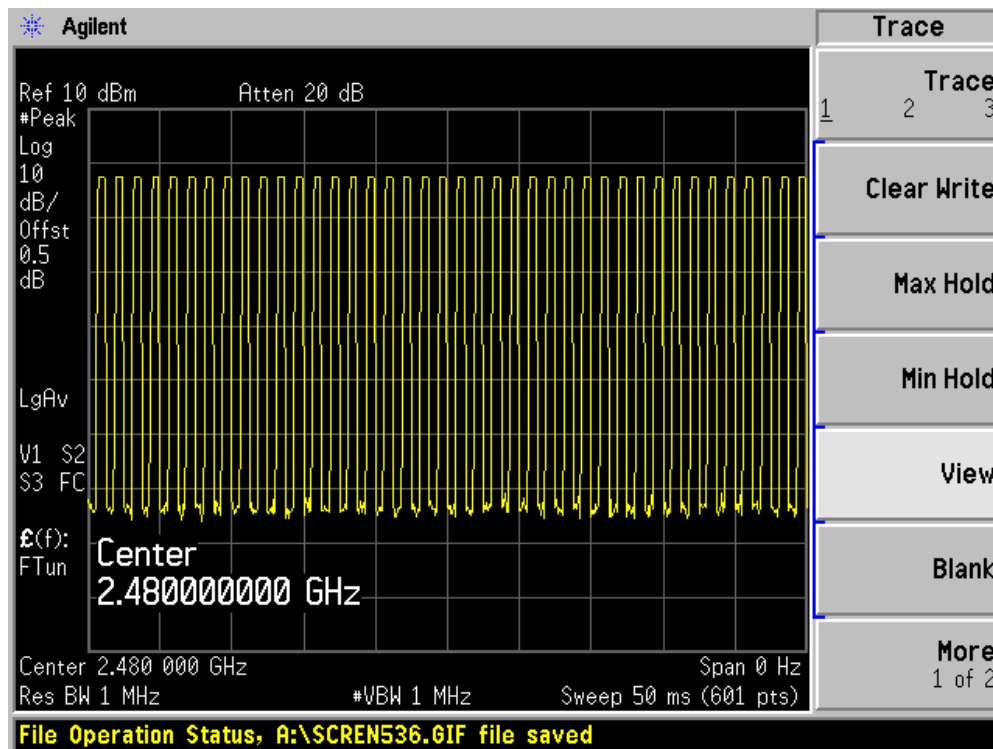
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



Occupancy Time of Frequency Hopping System

Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $40/50\text{msec} = 800\text{ hops/sec}$.

A) 2402MHz The Maximum Occupancy Time Within 31.6sec: $(416.7 \mu\text{s} \times 800) / 79 \times 31.6 = 133.344\text{msec}$

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: $(416.7 \mu\text{s} \times 800) / 79 \times 31.6 = 133.344\text{msec}$

C) 2480MHz The Maximum Occupancy Time Within 31.6sec: $(408.3 \mu\text{s} \times 800) / 79 \times 31.6 = 130.656\text{msec}$

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard

PS: (1) From Bluetooth Specification , It Hops 1640 Times in 1sec • The Average Occupancy Time of Each 79 Channels is $1640/79$ Times , Therefore , We Calculate The Maximum Occupancy Time (worse cars)As Below:

A) 2402Mhz The Occupancy Time of Each Pulse is 0.4msec ,The Maximum Occupancy Time within 31.6sec is $0.4\text{msec} \times 1640 / 79 \times 31.6 = 289.056\text{msec}$

B) 2441MHz The Occupancy Time of Each Pulse is 0.4msec , The Maximum Occupancy Time within 31.6sec is $0.4\text{msec} \times 1640 / 79 \times 31.6 = 289.056\text{msec}$

C) 2480MHz The Occupancy Time of Each Pulse is 0.4msec , The Maximum Occupancy Time within 31.6sec is $0.4\text{msec} \times 1640 / 79 \times 31.6 = 289.056\text{msec}$

Test Result: The Maximum Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard