Test Report

Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8
FCC Part15 Subpart C

Product Name	:	Bluetooth headset
Model No.	:	Voyager Legend
FCC ID	:	AL8-VLGD
IC	:	457A-VLGD

Applicant	:	Plantronics, Inc.
Address	:	345 Encinal Street, Santa Cruz, CA95060 USA

Date of Receipt	:	14/05/2012
Test Date	:	15/05/2012~03/06/2012
Issued Date	:	04/06/2012
Report No.	:	125S032R-RF-US-P06V01
Report Version	:	V 1.0

Test Report Certification

Issued Date : 04/06/2012
Report No. : 125S032R-RF-US-P06V01

QuieTek

Product Name	:	Bluetooth headset
Applicant	:	Plantronics, Inc.
Address	:	345 Encinal Street, Santa Cruz, CA95060 USA
Manufacturer	:	Weifang GoerTek Electronics Co., Ltd
Address	:	Dongfang North Road Hi-tech Industry Development District, Weifang Shandong, China
Model No.	:	Voyager Legend
FCC ID	:	AL8-VLGD
IC	:	457A-VLGD
EUT Voltage	:	DC 3.7V
Brand Name	:	PLANTRONICS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2011 ANSI C63.4: 2009; ANSI C63.10: 2009 Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8
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; IC Lab Code: 4075B

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

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

Approved By : Marlin Chen
(Engineering Manager: Marlin Chen)

Laboratory Information

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

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

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
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TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

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TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

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1. General Information

1.1. EUT Description

Product Name	Bluetooth headset
Brand Name	PLANTRONICS
Model No.	Voyager Legend
Working Voltage	DC 3.7V
Frequency Range	2402 - 2480 MHz
Channel Number	79
Channel Separation	1MHz
Type of Modulation	FHSS
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Channel Control	Auto
Antenna Type	Monopole
Peak Antenna Gain	Reference to Antenna List

Note:

1. Bluetooth headset has four kinds of cable for charging:

   Cable A: EUT charging directly by charging base.

   Cable B: EUT charging by USB cable and connection adapter.

   Cable C: EUT charging by USB adapter cable.

   Cable D: EUT charging by USB cable connected to charger case.

   The four kinds of cable are shown in EUT photo.

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	N/A	N/A

Bluetooth Antenna List

Antenna	Manufacturer	Peak Gain
Monopole Antenna	Goertek	2.4GHz: 2.59dBi

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: Transmitter-1Mbps(GFSK_DH5)
Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)
Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Note:

1. DH5 is for GFSK modulation, and 3DH5 is for 8DPSK.
2. 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.
3. For portable device, radiated spurious emission was verified over X, Y, Z axis, and shown the worst case on this report.
4. This device is a composite device in accordance with Part 15 Subpart B regulations. The report number is 125S032R-RF-US-P01V02.

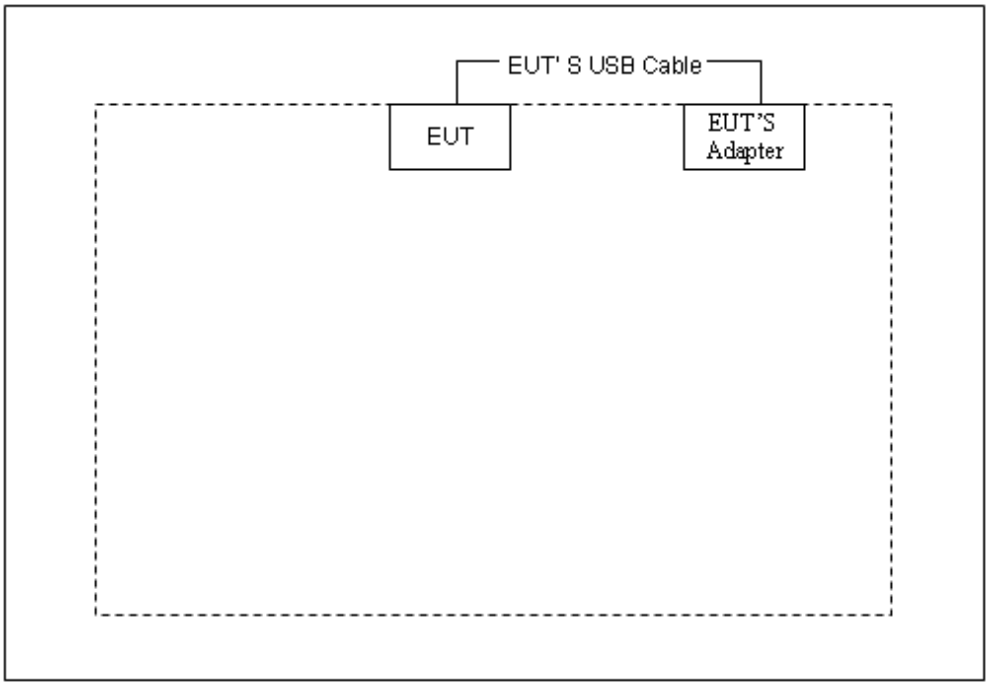
1.3. Tested System Details

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

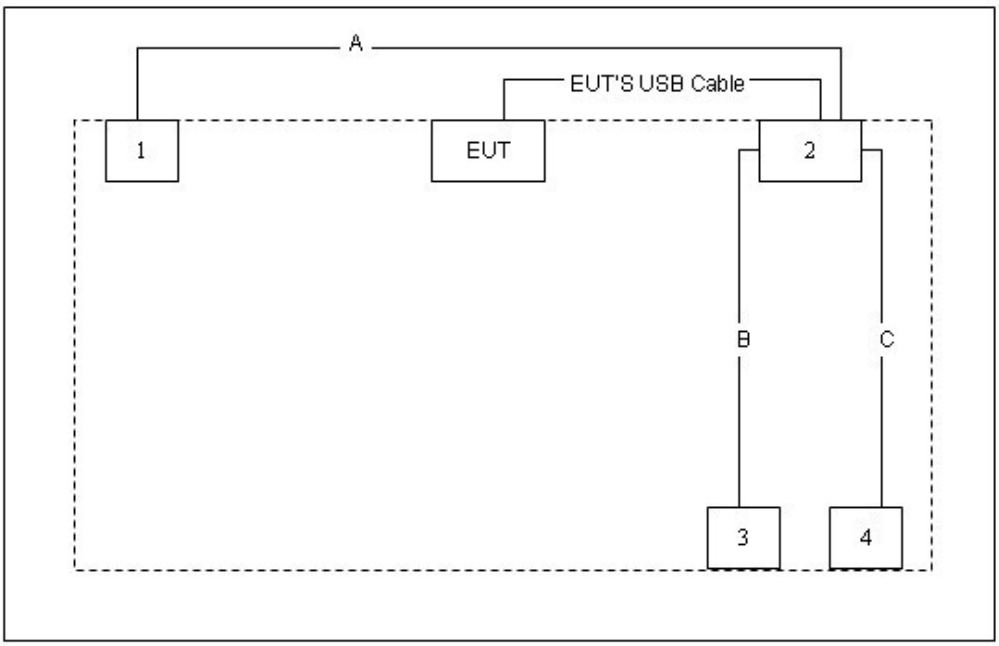
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	LCD Monitor	DELL	U2410f	CN-OJ257M-72872-99E-1KJL	Non-Shielded, 1.8m
2	Laptop PC	Asus	N80V	8BN0AS226971468	Non-Shielded, 1.8m
3	iPod	Apple	A1199	6U715YGEVQ5	Power by PC
4	USB Mouse	DELL	MOC5UO	10D00JJL	Power by PC

1.4. Configuration of Tested System

Connection Diagram



Connection Diagram



Signal Cable Type		Signal cable Description
A	VGA Cable	Shielded, 1.8m, with two ferrite core bonded
B	USB Cable	Shielded, 1.8m
C	USB Cable	Shielded, 1.8m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Run the RF test software “Bluetest”, and set the test mode and channel, then press OK to start 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: 2011 Section 15.207 RSS-Gen Issue 3 December 2010 Section 7.2.2	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.209 RSS-210 Issue 8 December 2010 Section 2.7 Table 2 and Table 3	Yes	No
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(a)(1) RSS-210 Issue 8 December 2010 Section A8.1	Yes	No
99% Occupied Bandwidth	RSS-Gen Issue 3 June 2010 Section 4.6.1	Yes	No
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(a)(1) RSS-210 Issue 8 December 2010 Section A8.1	Yes	No
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(a)(1)(iii) RSS-210 Issue 8 December 2010 Section A8.1	Yes	No
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(a)(1)(iii) RSS-210 Issue 8 December 2010 Section A8.1	Yes	No
Peak Output Power	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(b)(1) RSS-210 Issue 8 December 2010 Section A8.4	Yes	No
Band-edge Compliance of RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.215(c), 15.247(d)	Yes	No
Spurious RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2011 15.247(d) RSS-210 Issue 8 December 2010 Section A8.5	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2011 15.247(d) RSS-210 Issue 8 December 2010 Section A8.5	Yes	No

2.2. Test Environment

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

3. Conducted Emission

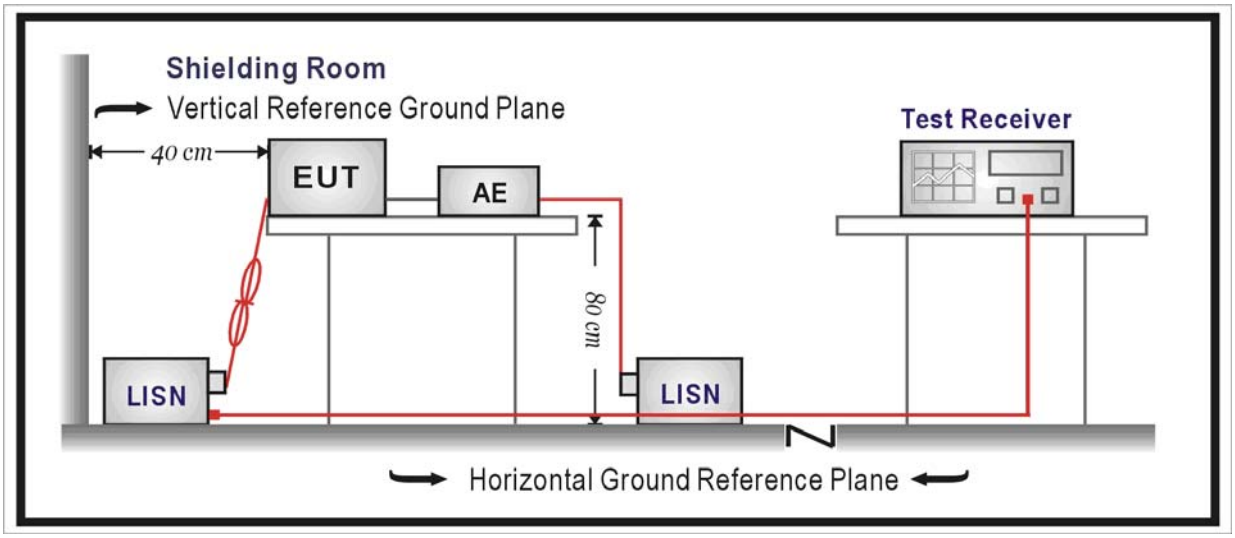
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2013.04.18
Two-Line V-Network	R&S	ENV216	101043	2013.04.18
Two-Line V-Network	R&S	ENV216	101044	2012.09.07
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.05.04
50ohm Termination	SHX	TF2	07081401	2012.09.22
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.10

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

3.2. Test Setup



3.3. Limit

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

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

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

3.4. Test Procedure

According to FCC ANSI C63.4: 2009 & ANSI C63.10: 2009.

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

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

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

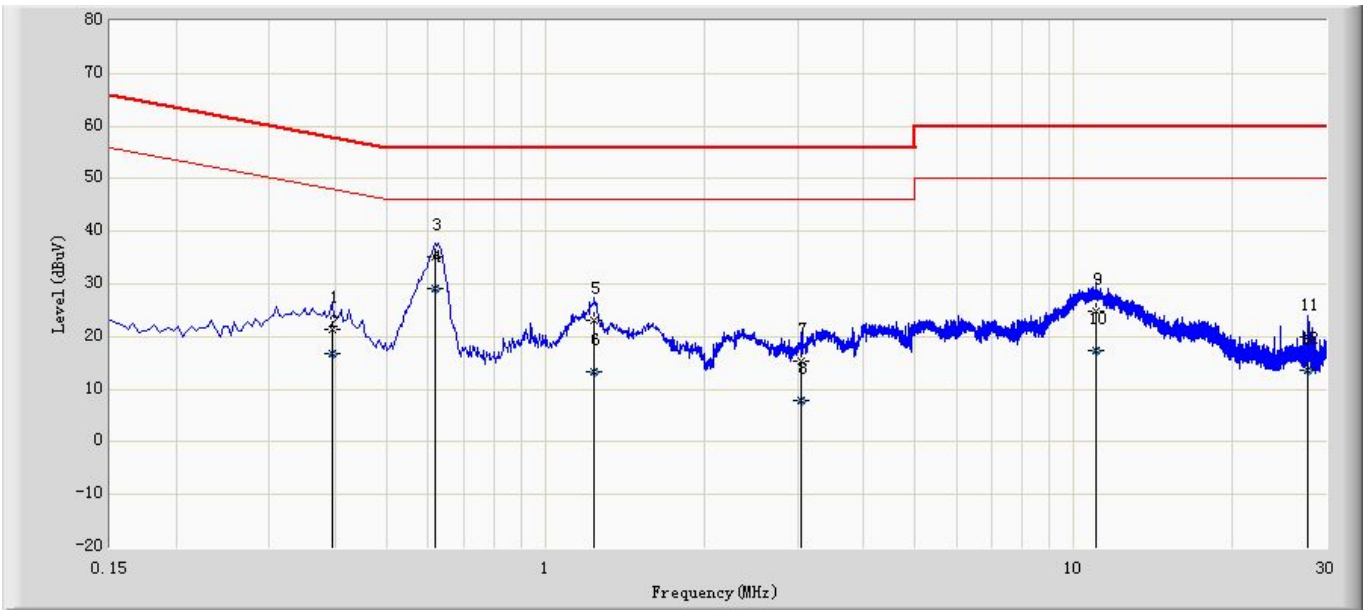
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

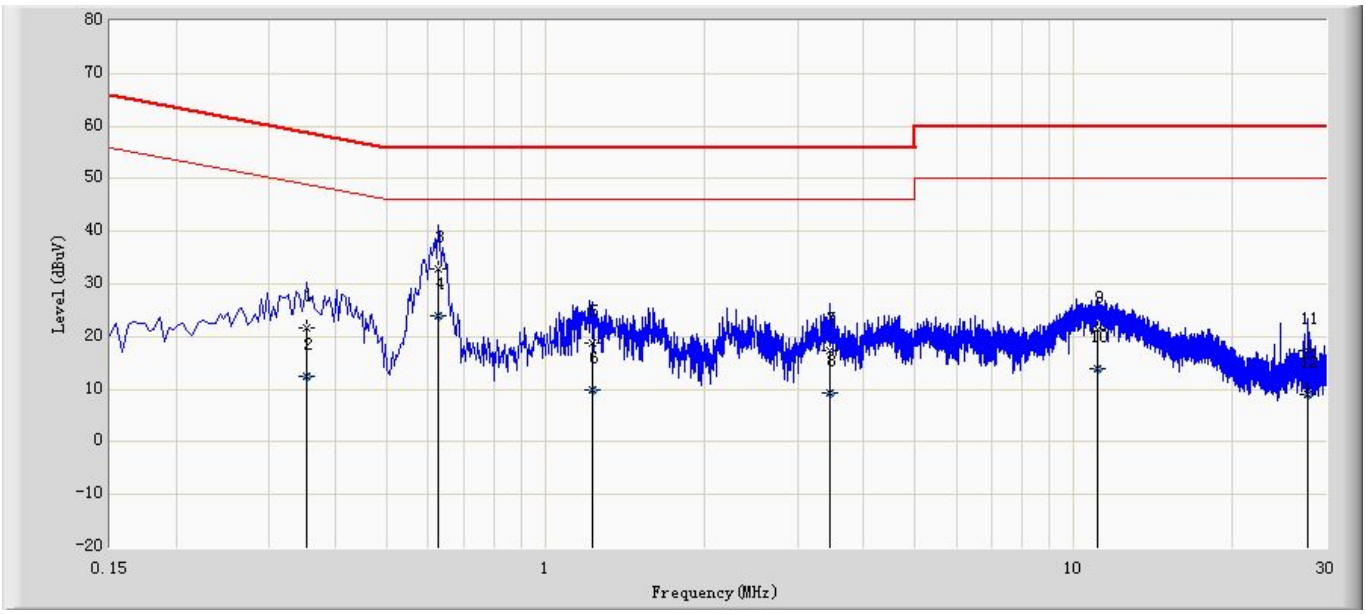
3.6. Test Result

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:08
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable A	



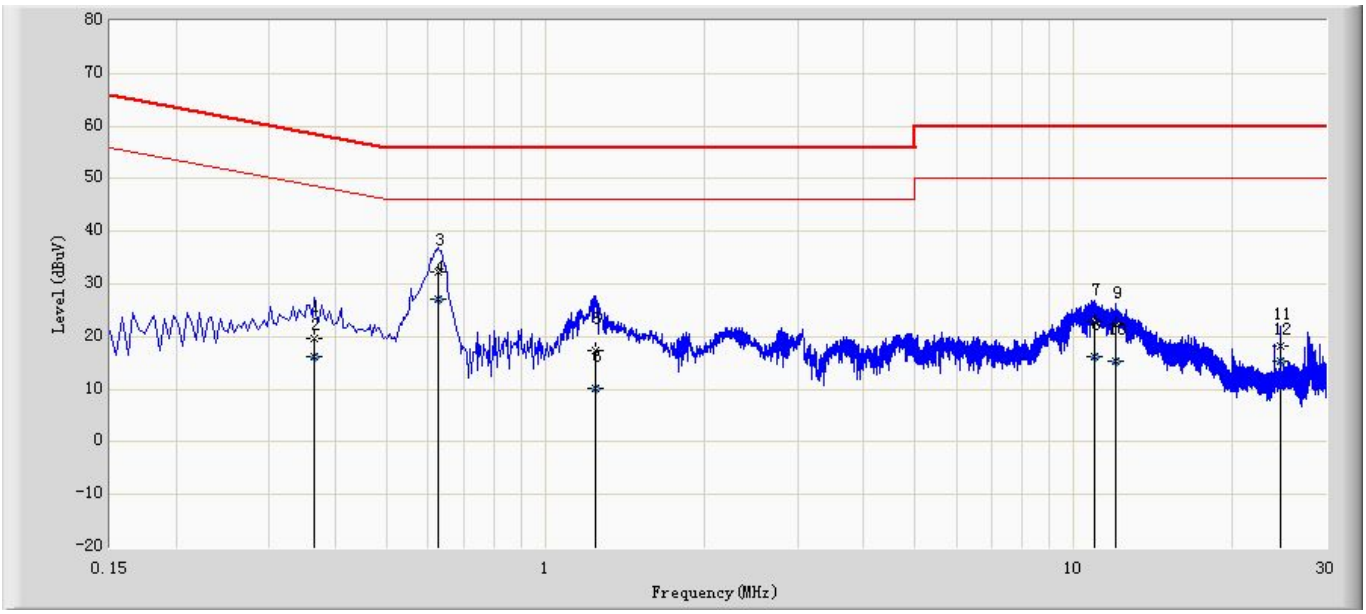
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.394	21.408	11.520	-36.571	57.979	9.888	QP
2		0.394	16.772	6.884	-31.207	47.979	9.888	AV
3		0.618	35.167	25.298	-20.833	56.000	9.869	QP
4	*	0.618	29.024	19.155	-16.976	46.000	9.869	AV
5		1.238	23.053	13.253	-32.947	56.000	9.800	QP
6		1.238	13.225	3.425	-32.775	46.000	9.800	AV
7		3.058	15.353	5.539	-40.647	56.000	9.814	QP
8		3.058	7.931	-1.883	-38.069	46.000	9.814	AV
9		11.034	24.937	14.907	-35.063	60.000	10.030	QP
10		11.034	17.488	7.458	-32.512	50.000	10.030	AV
11		27.650	20.015	9.426	-39.985	60.000	10.589	QP
12		27.650	13.516	2.927	-36.484	50.000	10.589	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:13
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable A	



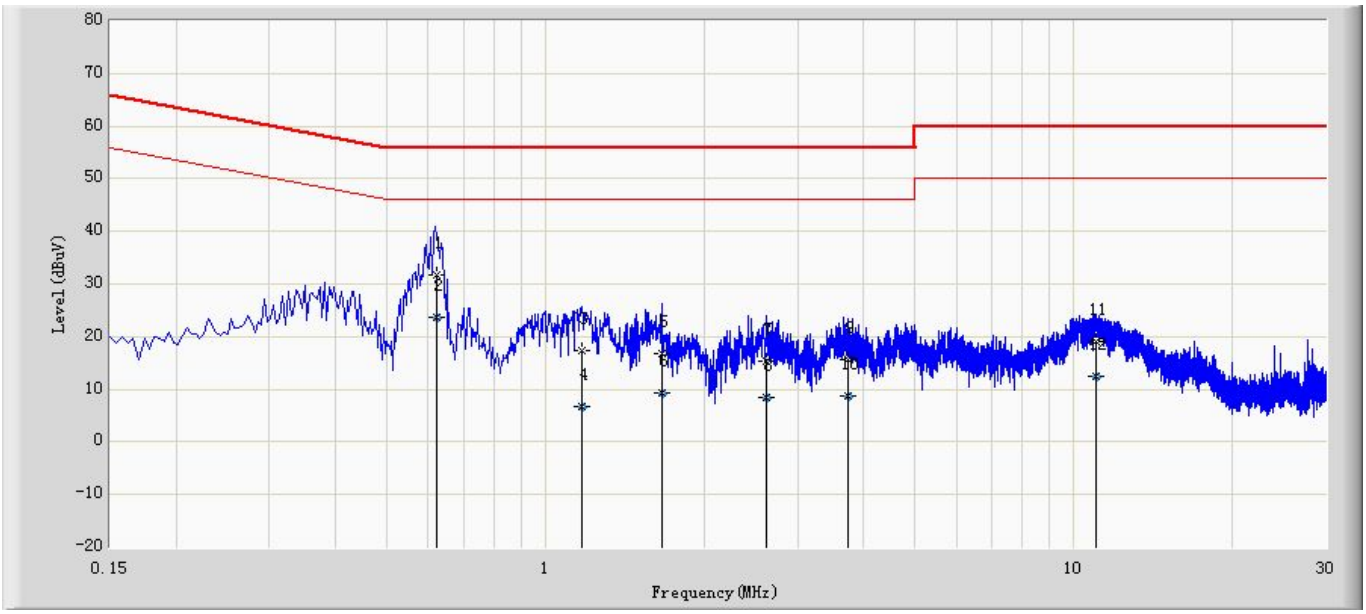
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.354	21.564	11.587	-37.304	58.868	9.977	QP
2		0.354	12.505	2.528	-36.363	48.868	9.977	AV
3		0.626	32.798	22.851	-23.202	56.000	9.947	QP
4	*	0.626	23.962	14.016	-22.038	46.000	9.947	AV
5		1.230	18.760	8.745	-37.240	56.000	10.015	QP
6		1.230	9.952	-0.062	-36.048	46.000	10.015	AV
7		3.462	17.305	7.281	-38.695	56.000	10.024	QP
8		3.462	9.346	-0.678	-36.654	46.000	10.024	AV
9		11.066	21.455	11.112	-38.545	60.000	10.344	QP
10		11.066	13.968	3.624	-36.032	50.000	10.344	AV
11		27.650	17.308	6.829	-42.692	60.000	10.479	QP
12		27.650	9.049	-1.430	-40.951	50.000	10.479	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:16
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable B	



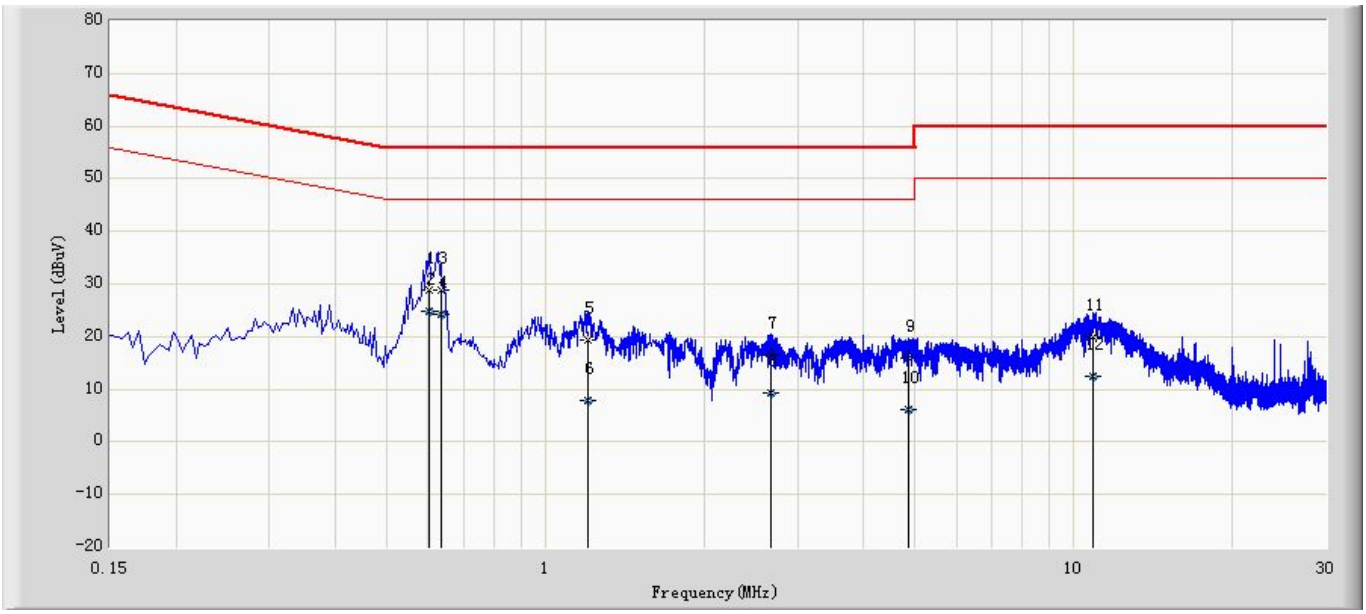
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.366	19.689	9.807	-38.902	58.591	9.883	QP
2		0.366	16.089	6.206	-32.502	48.591	9.883	AV
3		0.626	32.370	22.504	-23.630	56.000	9.866	QP
4	*	0.626	27.180	17.315	-18.820	46.000	9.866	AV
5		1.246	17.490	7.690	-38.510	56.000	9.800	QP
6		1.246	10.108	0.308	-35.892	46.000	9.800	AV
7		10.966	22.930	12.907	-37.070	60.000	10.023	QP
8		10.966	16.179	6.156	-33.821	50.000	10.023	AV
9		12.002	22.149	12.089	-37.851	60.000	10.060	QP
10		12.002	15.414	5.354	-34.586	50.000	10.060	AV
11		24.578	18.361	7.804	-41.639	60.000	10.557	QP
12		24.578	15.301	4.744	-34.699	50.000	10.557	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:19
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable B	



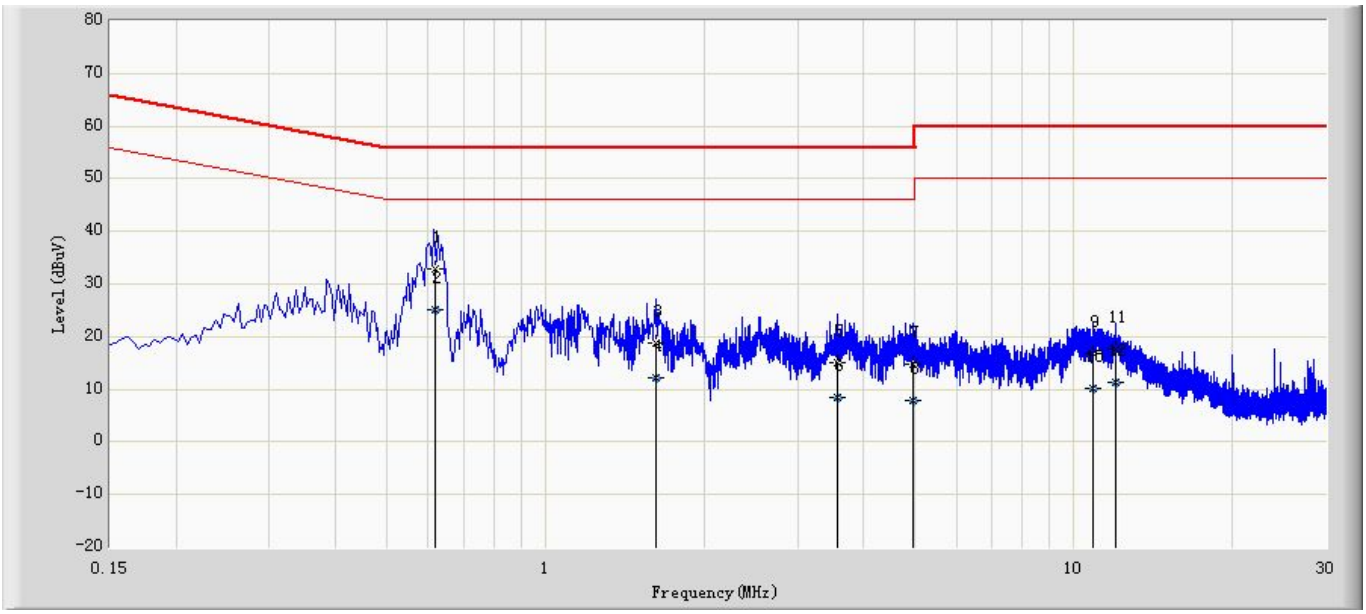
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.624	31.665	21.717	-24.335	56.000	9.948	QP
2	*	0.624	23.561	13.613	-22.439	46.000	9.948	AV
3		1.170	17.218	7.197	-38.782	56.000	10.021	QP
4		1.170	6.621	-3.400	-39.379	46.000	10.021	AV
5		1.658	16.674	6.696	-39.326	56.000	9.978	QP
6		1.658	9.447	-0.531	-36.553	46.000	9.978	AV
7		2.618	15.269	5.290	-40.731	56.000	9.979	QP
8		2.618	8.398	-1.581	-37.602	46.000	9.979	AV
9		3.734	15.661	5.628	-40.339	56.000	10.033	QP
10		3.734	8.732	-1.301	-37.268	46.000	10.033	AV
11		11.002	19.178	8.831	-40.822	60.000	10.348	QP
12		11.002	12.610	2.262	-37.390	50.000	10.348	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:23
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable C	



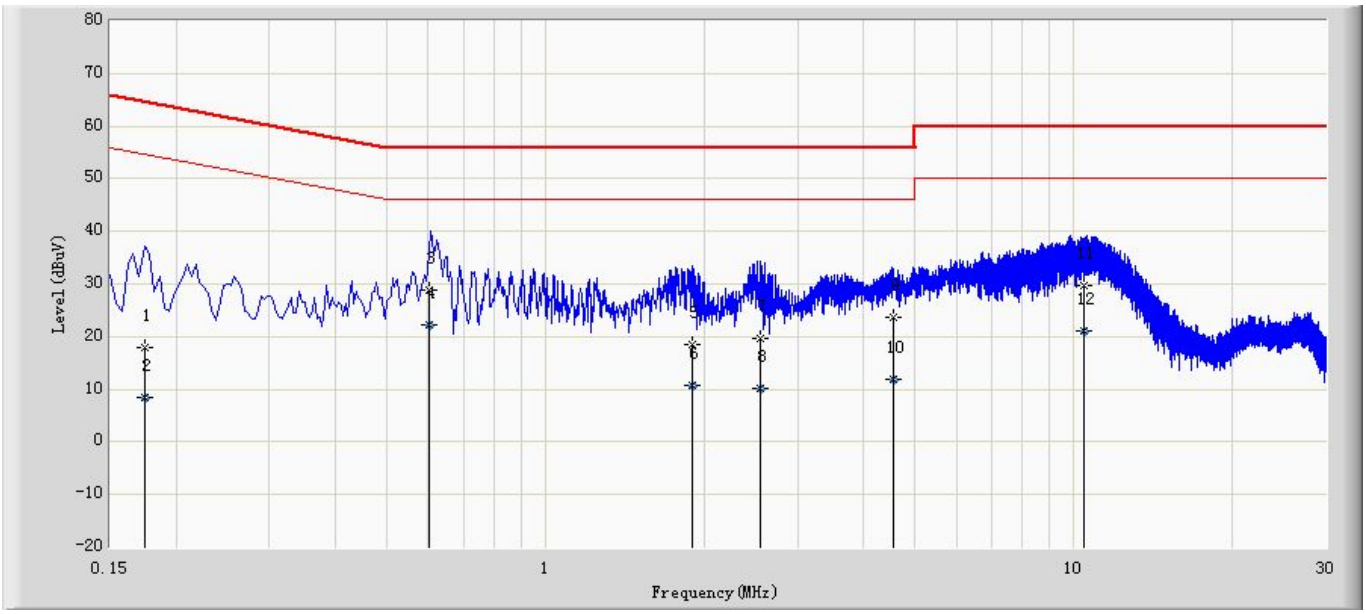
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.604	28.938	19.064	-27.062	56.000	9.874	QP
2	*	0.604	24.693	14.820	-21.307	46.000	9.874	AV
3		0.634	28.738	18.876	-27.262	56.000	9.863	QP
4		0.634	24.115	14.252	-21.885	46.000	9.863	AV
5		1.202	19.225	9.423	-36.775	56.000	9.802	QP
6		1.202	7.963	-1.839	-38.037	46.000	9.802	AV
7		2.666	16.533	6.731	-39.467	56.000	9.802	QP
8		2.666	9.417	-0.385	-36.583	46.000	9.802	AV
9		4.882	15.990	6.130	-40.010	56.000	9.860	QP
10		4.882	6.120	-3.740	-39.880	46.000	9.860	AV
11		10.866	19.818	9.799	-40.182	60.000	10.019	QP
12		10.866	12.604	2.585	-37.396	50.000	10.019	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:31
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable C	



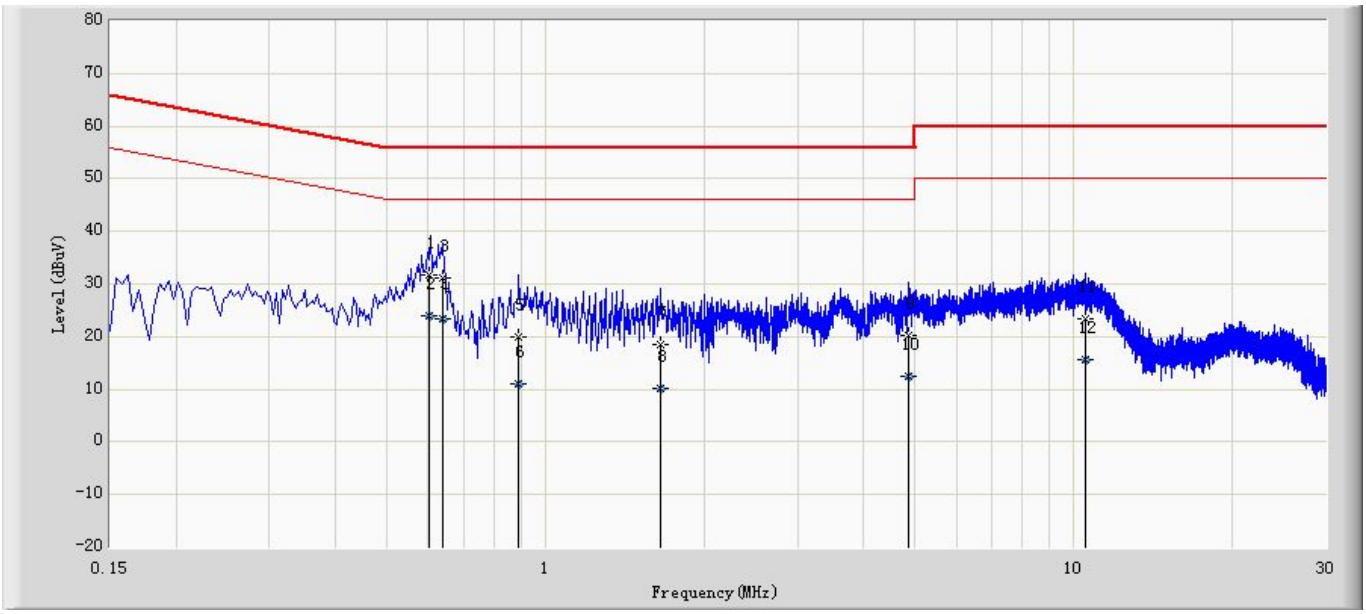
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.619	32.805	22.853	-23.195	56.000	9.953	QP
2	*	0.619	25.041	15.088	-20.959	46.000	9.953	AV
3		1.622	18.701	8.720	-37.299	56.000	9.982	QP
4		1.622	12.172	2.190	-33.828	46.000	9.982	AV
5		3.566	14.944	4.917	-41.056	56.000	10.027	QP
6		3.566	8.423	-1.604	-37.577	46.000	10.027	AV
7		4.962	14.817	4.718	-41.183	56.000	10.099	QP
8		4.962	8.003	-2.097	-37.997	46.000	10.099	AV
9		10.906	16.658	6.314	-43.342	60.000	10.344	QP
10		10.906	10.298	-0.046	-39.702	50.000	10.344	AV
11		11.998	17.777	7.470	-42.223	60.000	10.306	QP
12		11.998	11.308	1.001	-38.692	50.000	10.306	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:35
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable D	



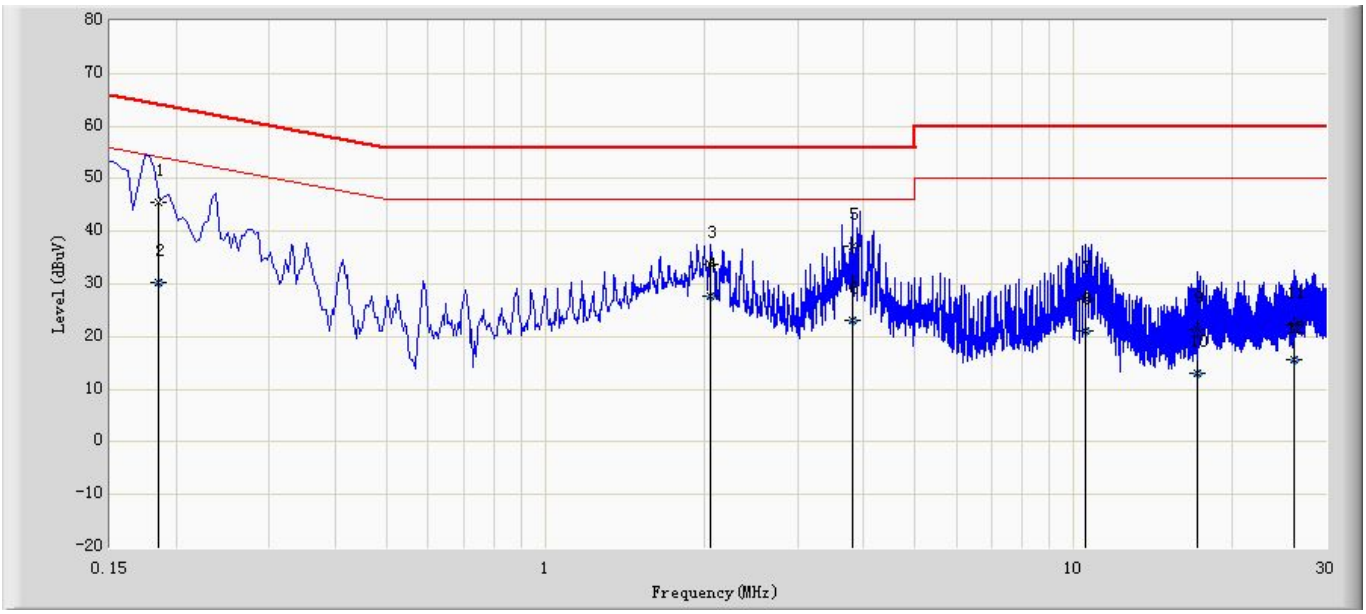
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.174	18.046	8.193	-46.721	64.767	9.853	QP
2		0.174	8.425	-1.428	-46.342	54.767	9.853	AV
3		0.602	28.905	19.030	-27.095	56.000	9.874	QP
4	*	0.602	22.257	12.383	-23.743	46.000	9.874	AV
5		1.898	18.471	8.677	-37.529	56.000	9.794	QP
6		1.898	10.686	0.892	-35.314	46.000	9.794	AV
7		2.554	19.622	9.820	-36.378	56.000	9.802	QP
8		2.554	10.155	0.353	-35.845	46.000	9.802	AV
9		4.562	23.627	13.778	-32.373	56.000	9.849	QP
10		4.562	11.989	2.141	-34.011	46.000	9.849	AV
11		10.430	29.754	19.750	-30.246	60.000	10.004	QP
12		10.430	21.134	11.130	-28.866	50.000	10.004	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:38
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with adapter and cable D	



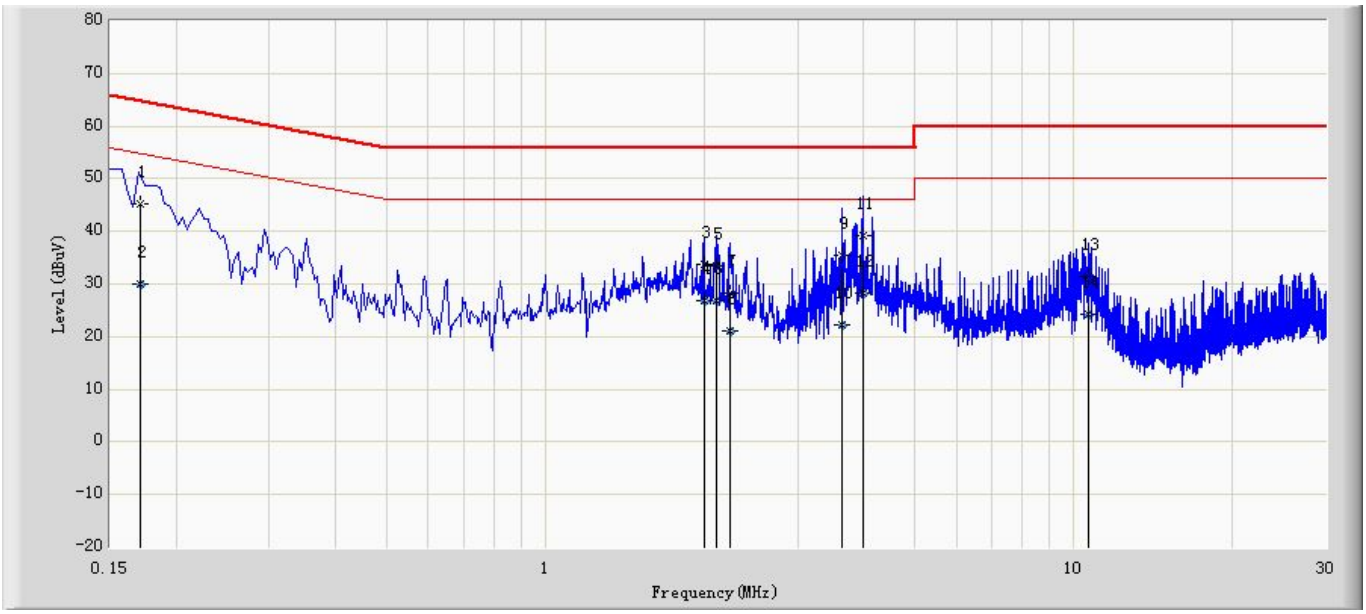
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.604	31.647	21.681	-24.353	56.000	9.966	QP
2	*	0.604	23.927	13.961	-22.073	46.000	9.966	AV
3		0.638	31.221	21.285	-24.779	56.000	9.936	QP
4		0.638	23.437	13.502	-22.563	46.000	9.936	AV
5		0.890	20.041	10.059	-35.959	56.000	9.983	QP
6		0.890	10.927	0.944	-35.073	46.000	9.983	AV
7		1.654	18.613	8.634	-37.387	56.000	9.978	QP
8		1.654	10.218	0.240	-35.782	46.000	9.978	AV
9		4.878	20.269	10.172	-35.731	56.000	10.096	QP
10		4.878	12.445	2.349	-33.555	46.000	10.096	AV
11		10.514	23.282	12.914	-36.718	60.000	10.368	QP
12		10.514	15.737	5.369	-34.263	50.000	10.368	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:46
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable A	



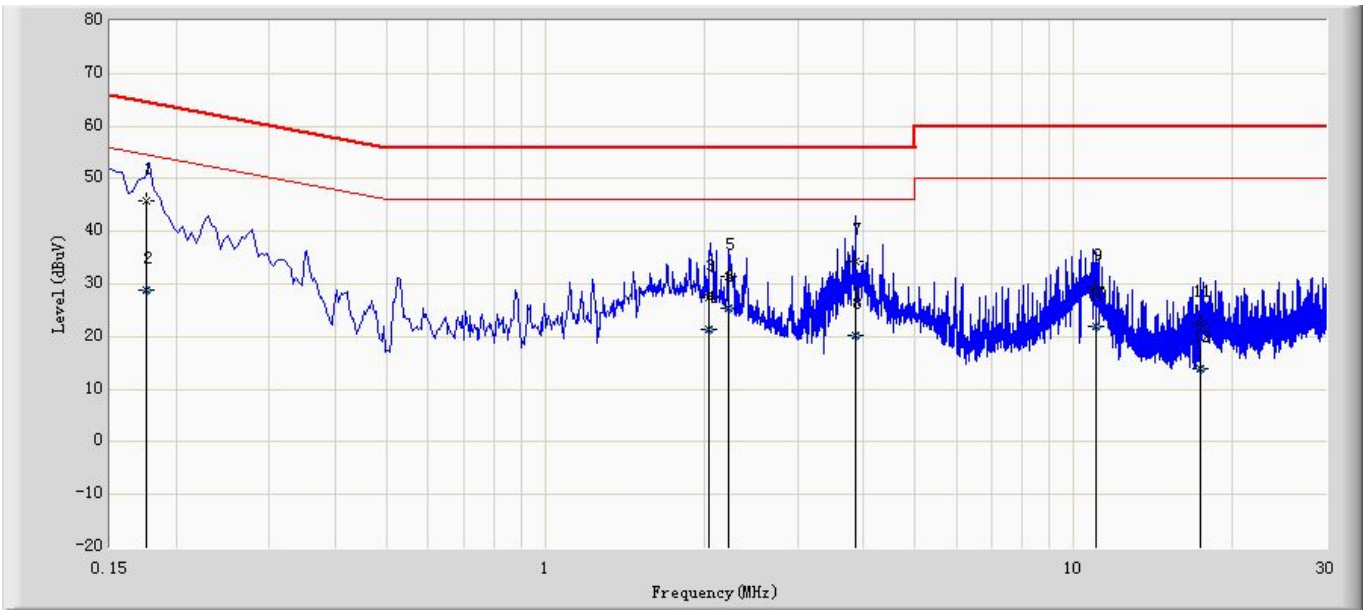
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.185	45.625	35.767	-18.654	64.278	9.857	QP
2		0.185	30.411	20.554	-23.867	54.278	9.857	AV
3		2.054	33.636	23.846	-22.364	56.000	9.790	QP
4	*	2.054	27.788	17.998	-18.212	46.000	9.790	AV
5		3.818	37.249	27.413	-18.751	56.000	9.836	QP
6		3.818	23.041	13.205	-22.959	46.000	9.836	AV
7		10.522	27.081	17.066	-32.919	60.000	10.015	QP
8		10.522	20.974	10.959	-29.026	50.000	10.015	AV
9		17.106	21.368	11.060	-38.632	60.000	10.308	QP
10		17.106	13.176	2.868	-36.824	50.000	10.308	AV
11		26.146	22.210	11.639	-37.790	60.000	10.571	QP
12		26.146	15.768	5.197	-34.232	50.000	10.571	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:50
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable A	



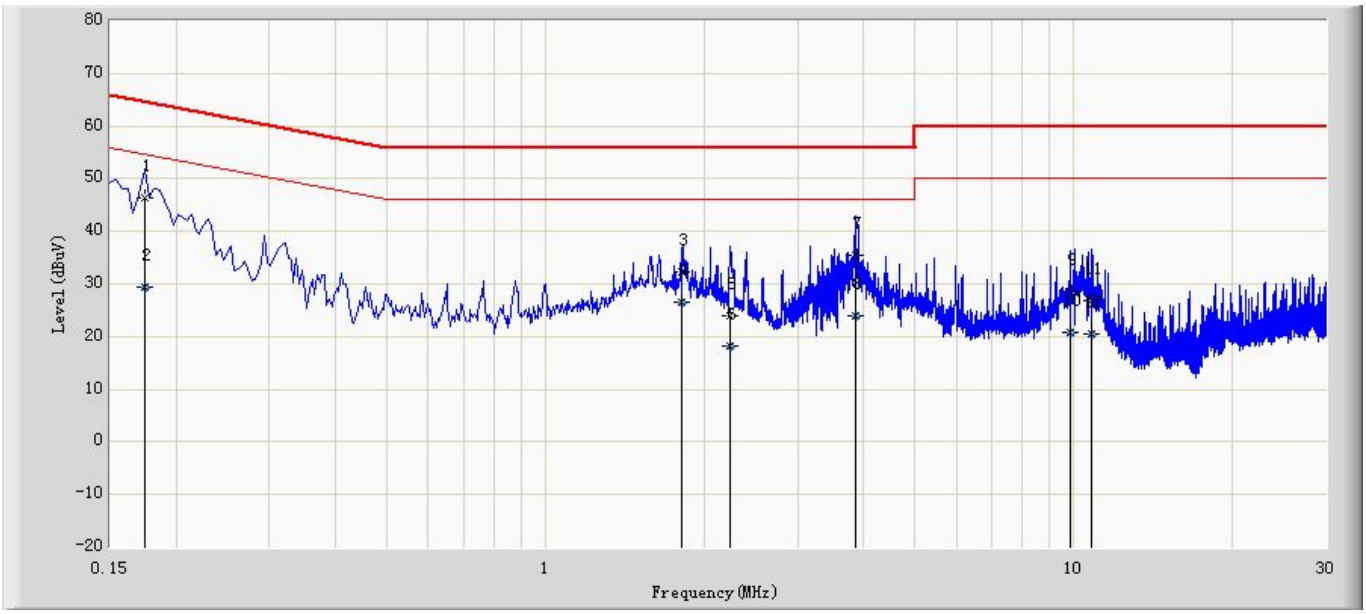
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.171	45.342	35.376	-19.556	64.898	9.966	QP
2		0.171	30.053	20.087	-24.845	54.898	9.966	AV
3		1.994	33.758	23.807	-22.242	56.000	9.951	QP
4		1.994	26.719	16.768	-19.281	46.000	9.951	AV
5		2.110	33.471	23.518	-22.529	56.000	9.953	QP
6		2.110	26.773	16.820	-19.227	46.000	9.953	AV
7		2.234	28.233	18.275	-27.767	56.000	9.957	QP
8		2.234	21.190	11.233	-24.810	46.000	9.957	AV
9		3.638	35.326	25.297	-20.674	56.000	10.029	QP
10		3.638	22.151	12.122	-23.849	46.000	10.029	AV
11	*	3.990	39.096	29.046	-16.904	56.000	10.050	QP
12		3.990	28.228	18.179	-17.772	46.000	10.050	AV
13		10.670	31.580	21.222	-28.420	60.000	10.358	QP
14		10.670	24.196	13.837	-25.804	50.000	10.358	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:54
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable B	



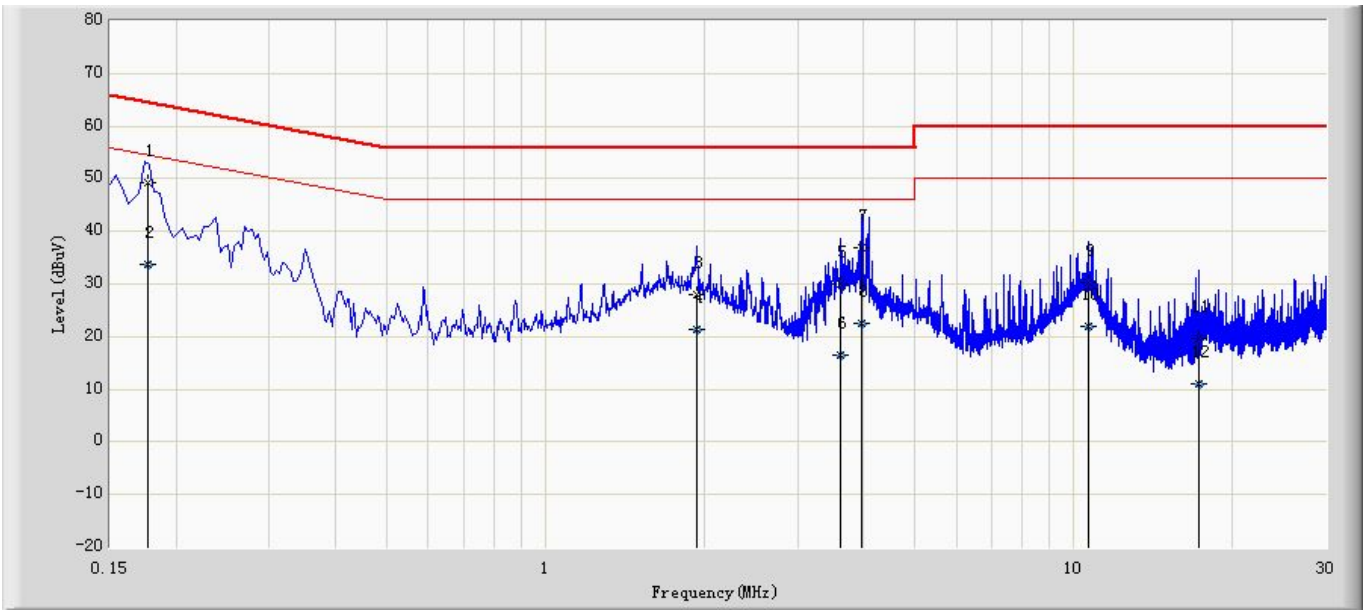
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.176	45.879	36.025	-18.813	64.692	9.854	QP
2		0.176	28.776	18.922	-25.915	54.692	9.854	AV
3		2.042	27.332	17.542	-28.668	56.000	9.790	QP
4		2.042	21.483	11.693	-24.517	46.000	9.790	AV
5		2.226	31.366	21.575	-24.634	56.000	9.791	QP
6		2.226	25.452	15.661	-20.548	46.000	9.791	AV
7		3.866	34.235	24.399	-21.765	56.000	9.836	QP
8		3.866	20.177	10.341	-25.823	46.000	9.836	AV
9		11.014	29.529	19.499	-30.471	60.000	10.030	QP
10		11.014	21.863	11.833	-28.137	50.000	10.030	AV
11		17.394	22.478	12.144	-37.522	60.000	10.334	QP
12		17.394	13.899	3.564	-36.101	50.000	10.334	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 16:58
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable B	



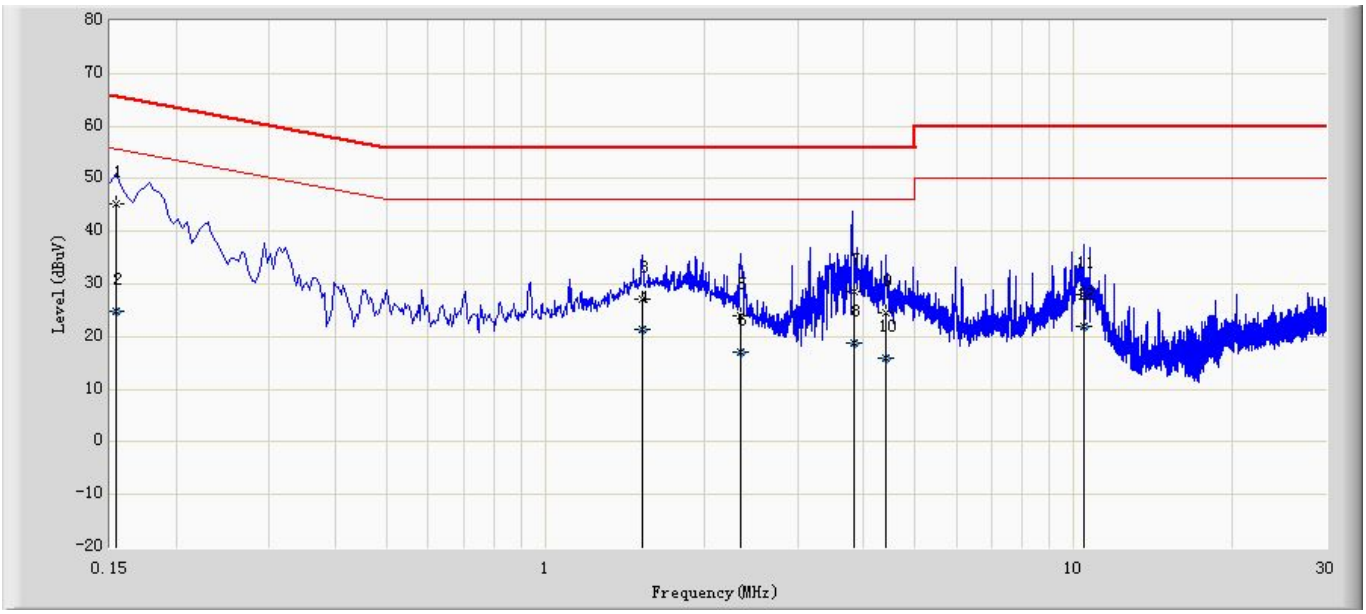
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.174	46.453	36.493	-18.307	64.760	9.961	QP
2		0.174	29.326	19.365	-25.435	54.760	9.961	AV
3		1.814	32.308	22.348	-23.692	56.000	9.960	QP
4		1.814	26.581	16.620	-19.419	46.000	9.960	AV
5		2.230	24.078	14.121	-31.922	56.000	9.957	QP
6		2.230	18.300	8.343	-27.700	46.000	9.957	AV
7		3.862	35.437	25.392	-20.563	56.000	10.045	QP
8		3.862	24.036	13.990	-21.964	46.000	10.045	AV
9		9.838	28.472	18.097	-31.528	60.000	10.375	QP
10		9.838	20.763	10.389	-29.237	50.000	10.375	AV
11		10.826	26.835	16.486	-33.165	60.000	10.349	QP
12		10.826	20.580	10.231	-29.420	50.000	10.349	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 17:01
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable C	



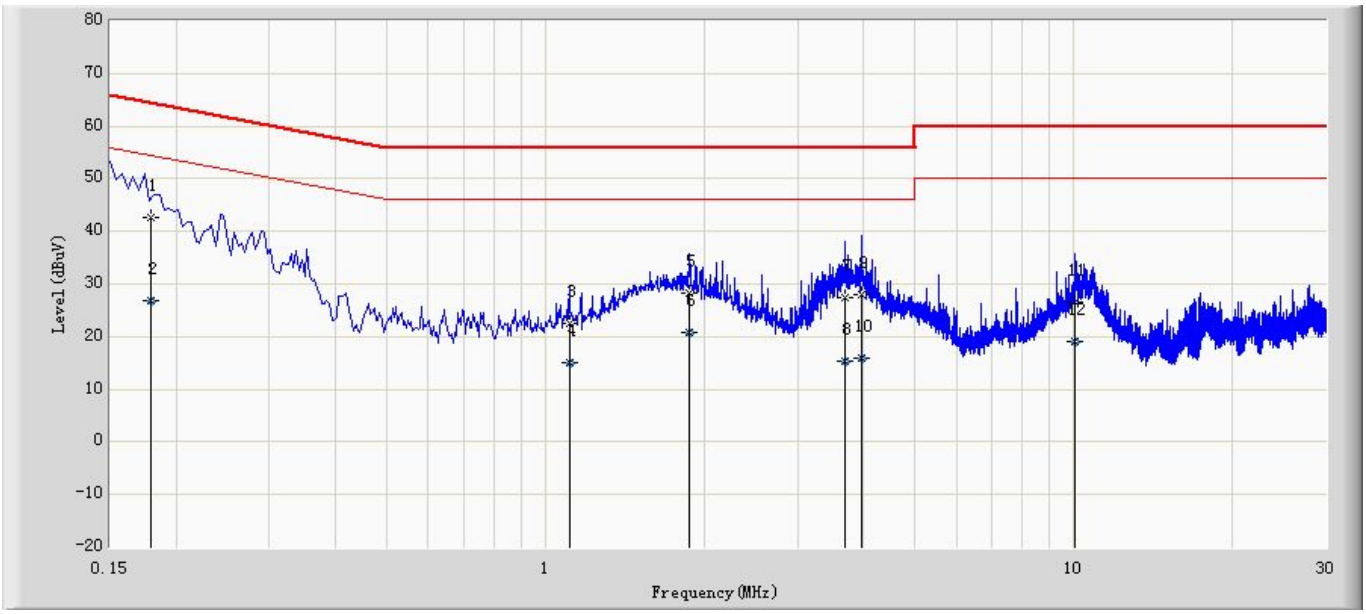
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.177	49.375	39.520	-15.248	64.623	9.855	QP
2		0.177	33.762	23.907	-20.861	54.623	9.855	AV
3		1.930	27.992	18.199	-28.008	56.000	9.793	QP
4		1.930	21.404	11.611	-24.596	46.000	9.793	AV
5		3.626	29.887	20.062	-26.113	56.000	9.825	QP
6		3.626	16.593	6.768	-29.407	46.000	9.825	AV
7		3.978	37.039	27.202	-18.961	56.000	9.837	QP
8		3.978	22.649	12.812	-23.351	46.000	9.837	AV
9		10.654	30.225	20.208	-29.775	60.000	10.017	QP
10		10.654	22.020	12.003	-27.980	50.000	10.017	AV
11		17.202	19.667	9.353	-40.333	60.000	10.314	QP
12		17.202	10.893	0.579	-39.107	50.000	10.314	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 17:05
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable C	



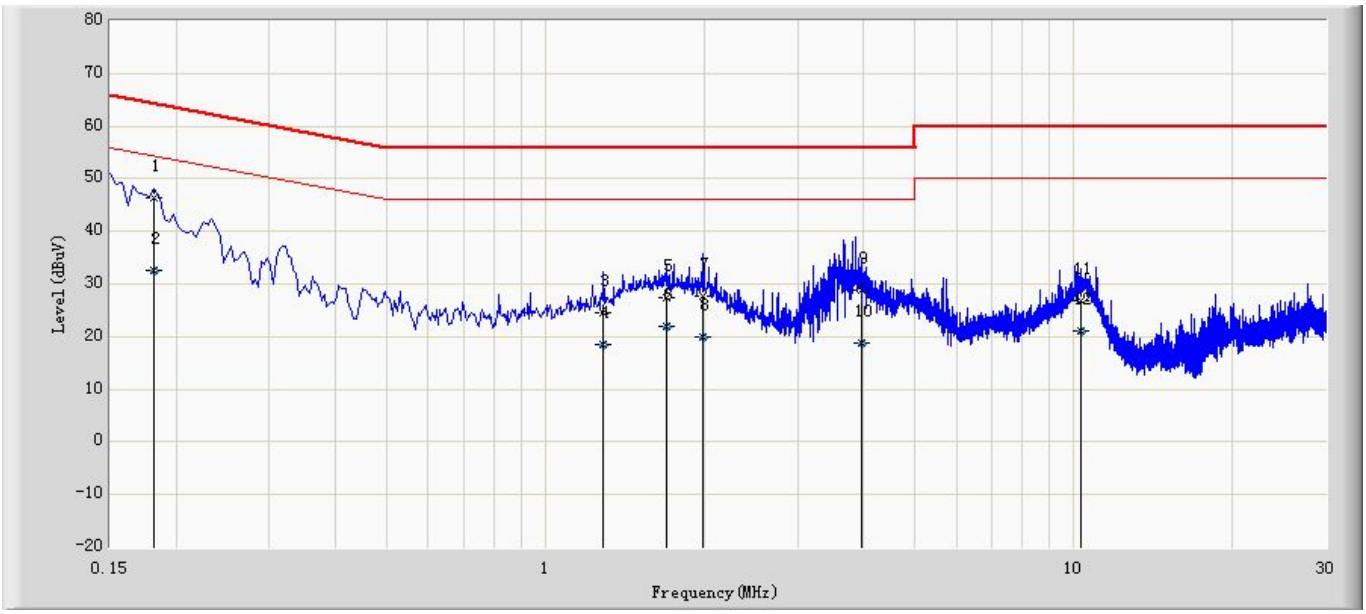
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.154	45.335	35.352	-20.447	65.781	9.982	QP
2		0.154	24.732	14.750	-31.049	55.781	9.982	AV
3		1.522	27.264	17.271	-28.736	56.000	9.993	QP
4		1.522	21.414	11.422	-24.586	46.000	9.993	AV
5		2.342	23.911	13.941	-32.089	56.000	9.970	QP
6		2.342	17.012	7.042	-28.988	46.000	9.970	AV
7		3.838	28.637	18.592	-27.363	56.000	10.045	QP
8		3.838	18.661	8.616	-27.339	46.000	10.045	AV
9		4.422	24.481	14.408	-31.519	56.000	10.073	QP
10		4.422	15.995	5.922	-30.005	46.000	10.073	AV
11		10.474	28.103	17.743	-31.897	60.000	10.360	QP
12		10.474	21.911	11.551	-28.089	50.000	10.360	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 17:08
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable D	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.179	42.702	32.846	-21.852	64.554	9.856	QP
2		0.179	26.899	17.043	-27.655	54.554	9.856	AV
3		1.110	22.532	12.727	-33.468	56.000	9.805	QP
4		1.110	15.172	5.366	-30.828	46.000	9.805	AV
5		1.874	28.133	18.338	-27.867	56.000	9.795	QP
6		1.874	20.824	11.029	-25.176	46.000	9.795	AV
7		3.690	27.415	17.589	-28.585	56.000	9.826	QP
8		3.690	15.374	5.548	-30.626	46.000	9.826	AV
9		3.974	27.855	18.018	-28.145	56.000	9.837	QP
10		3.974	15.842	6.005	-30.158	46.000	9.837	AV
11		10.062	26.474	16.473	-33.526	60.000	10.001	QP
12		10.062	19.071	9.070	-30.929	50.000	10.001	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/18 - 17:13
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz with PC and cable D	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.182	46.272	36.328	-18.122	64.394	9.944	QP
2		0.182	32.684	22.740	-21.710	54.394	9.944	AV
3		1.286	24.581	14.573	-31.419	56.000	10.008	QP
4		1.286	18.420	8.412	-27.580	46.000	10.008	AV
5		1.690	27.449	17.475	-28.551	56.000	9.974	QP
6		1.690	21.921	11.947	-24.079	46.000	9.974	AV
7		1.990	27.683	17.732	-28.317	56.000	9.951	QP
8		1.990	19.928	9.977	-26.072	46.000	9.951	AV
9		3.967	28.817	18.768	-27.183	56.000	10.049	QP
10		3.967	18.706	8.657	-27.294	46.000	10.049	AV
11		10.318	26.715	16.345	-33.285	60.000	10.371	QP
12		10.318	21.178	10.807	-28.822	50.000	10.371	AV

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

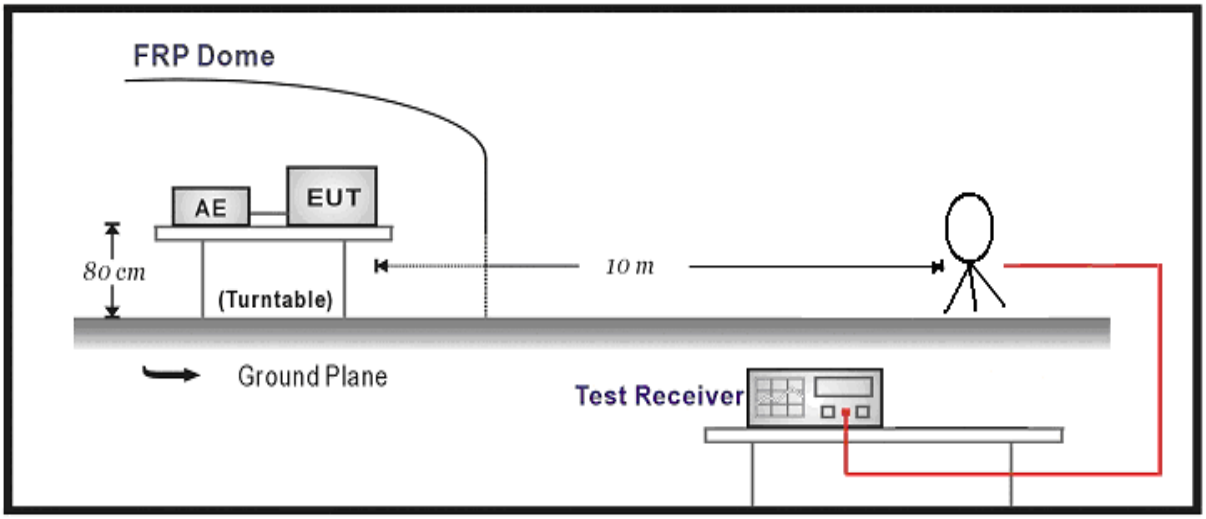
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2012.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2013.03.02
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2012.01.14

Radiated Emission / AC-5

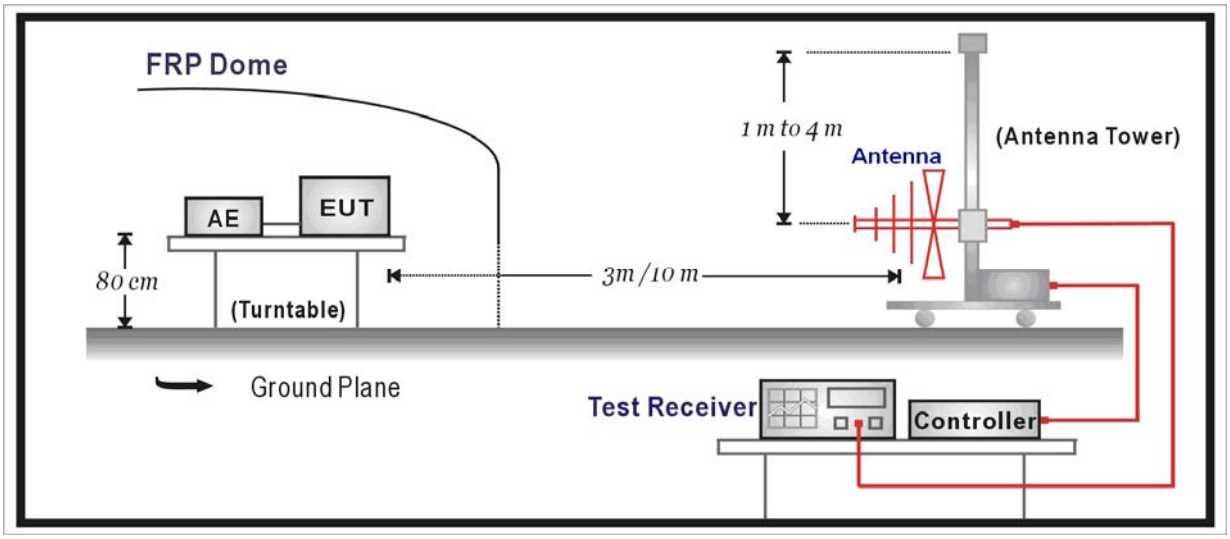
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D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

4.2. Test Setup

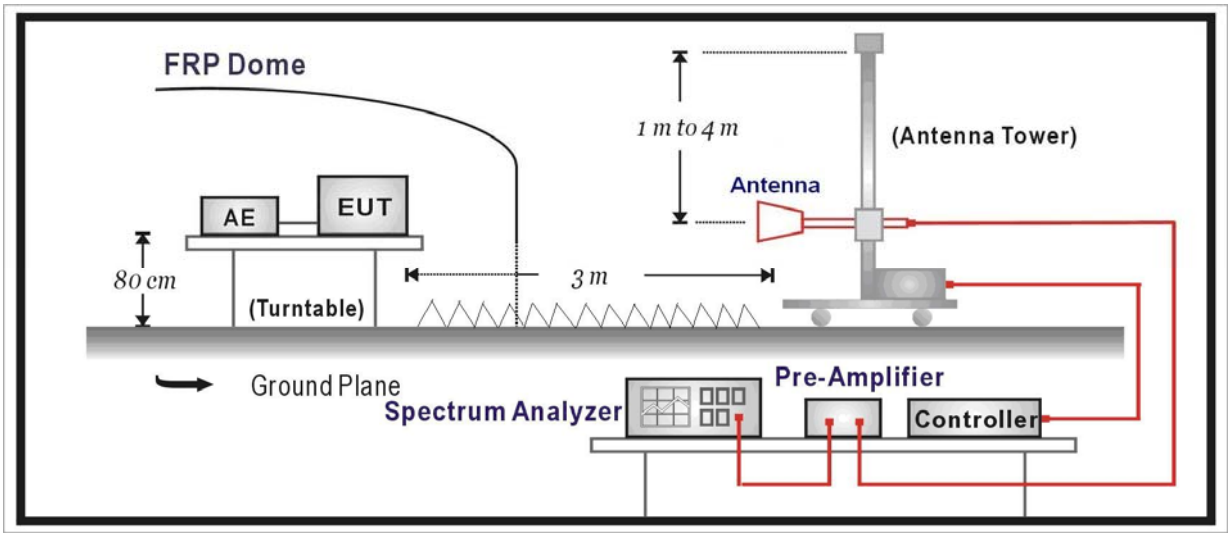
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

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

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

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

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

4.4. Test Procedure

According to ANSI C63.10: 2009.

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

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the

maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

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

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

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

4.5. Uncertainty

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

below 1G is defined as ± 3.8 dB

4.6. Test Result

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

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

Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Measure Level = Reading Level + Cable Loss + Antenna Factor – Preamplifier Gain

Mode 1: Transmitter-1Mbps(GFSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2401.8	71.6	31.2	102.8	Fundamental	/	PK
	H	339.1	4.3	21.7	26.0	46	-20.0	QP
	H	549.8	5.8	26.7	32.5	46	-13.5	QP
	H	3490.5	53.3	-15.5	37.8	54(Note3)	-16.2	PK
	H	4799.5	61.7	-11.9	49.8	54(Note3)	-4.2	PK
	H	7443.0	48.2	-2.5	45.7	54(Note3)	-8.3	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
39	H	2441.0	72.4	31.2	103.6	Fundamental	/	PK
	V	353.0	5.0	22.1	27.1	46	-18.9	QP
	V	510.2	6.9	25.4	32.3	46	-13.7	QP
	V	3499.0	52.2	-15.4	36.8	54(Note3)	-17.2	PK
	H	4884.5	61.3	-11.7	49.6	54(Note3)	-4.4	PK
	V	7324.0	49.0	-3.0	46.0	54(Note3)	-8.0	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
78	H	2479.8	71.2	31.2	102.4	Fundamental	/	PK
	H	349.7	4.8	22.1	26.9	46	-19.1	QP
	V	558.4	5.8	26.7	32.5	46	-13.5	QP
	V	3507.5	52.7	-15.4	37.3	54(Note3)	-16.7	PK
	H	4961.0	63.5	-11.4	52.1	54(Note3)	-1.9	PK
	H	7630.0	48.1	-1.9	46.2	54(Note3)	-7.8	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK

Note: 1. Measure Level = Reading Level + Factor.

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

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2402.0	69.3	31.2	100.5	Fundamental	/	PK
	V	357.1	4.7	22.2	26.9	46	-19.1	QP
	V	554.8	5.4	26.6	32.0	46	-14.0	QP
	H	3448.0	52.4	-15.8	36.6	54(Note3)	-17.4	PK
	H	4799.5	59.6	-11.9	47.7	54(Note3)	-6.3	PK
	V	7332.5	47.1	-3.0	44.1	54(Note3)	-9.9	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
39	H	2441.0	70.8	31.2	102.0	Fundamental	/	PK
	H	374.2	4.8	22.7	27.5	46	-18.5	QP
	H	559.4	5.3	26.7	32.0	46	-14.0	QP
	V	3329.0	54.3	-16.2	38.1	54(Note3)	-15.9	PK
	H	4884.5	61.5	-11.7	49.8	54(Note3)	-4.2	PK
	V	7434.5	49.2	-2.6	46.6	54(Note3)	-7.4	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
78	H	2479.9	68.7	31.2	99.9	Fundamental	/	PK
	V	364.2	5.0	22.4	27.4	46	-18.6	QP
	V	537.7	5.8	26.3	32.1	46	-13.9	QP
	V	3388.5	53.1	-16.1	37.0	54(Note3)	-17.0	PK
	H	4961.0	61.5	-11.4	50.1	54(Note3)	-3.9	PK
	H	7511.0	47.9	-2.4	45.5	54(Note3)	-8.5	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK

Note: 1. Measure Level = Reading Level + Factor.

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

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 3: Transmitter-3Mbps(8DPSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2401.8	65.8	31.2	97.0	Fundamental	/	PK
	H	370.8	5.0	22.5	27.5	46	-18.5	QP
	H	543.0	5.1	26.4	31.5	46	-14.5	QP
	V	3465.0	52.3	-15.7	36.6	54(Note3)	-17.4	PK
	H	4799.5	60.0	-11.9	48.1	54(Note3)	-5.9	PK
	H	7256.0	49.3	-3.3	46.0	54(Note3)	-8.0	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
39	H	2441.0	67.1	31.2	98.3	Fundamental	/	PK
	V	344.9	4.4	21.9	26.3	46	-19.7	QP
	V	577.2	5.0	26.7	31.7	46	-14.3	QP
	V	3329.0	55.5	-16.2	39.3	54(Note3)	-14.7	PK
	H	4884.5	62.2	-11.7	50.5	54(Note3)	-3.5	PK
	H	7451.5	47.6	-2.5	45.1	54(Note3)	-8.9	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
78	H	2480.0	68.9	31.2	100.1	Fundamental	/	PK
	H	347.4	5.6	22.0	27.6	46	-18.4	QP
	H	548.0	5.4	26.6	32.0	46	-14.0	QP
	V	3329.0	52.8	-16.2	36.6	54(Note3)	-17.4	PK
	H	4961.0	62.7	-11.4	51.3	54(Note3)	-2.7	PK
	V	7230.5	49.3	-3.3	46.0	54(Note3)	-8.0	PK
	H	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK

Note: 1. Measure Level = Reading Level + Factor.

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

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

5. 20dB Bandwidth

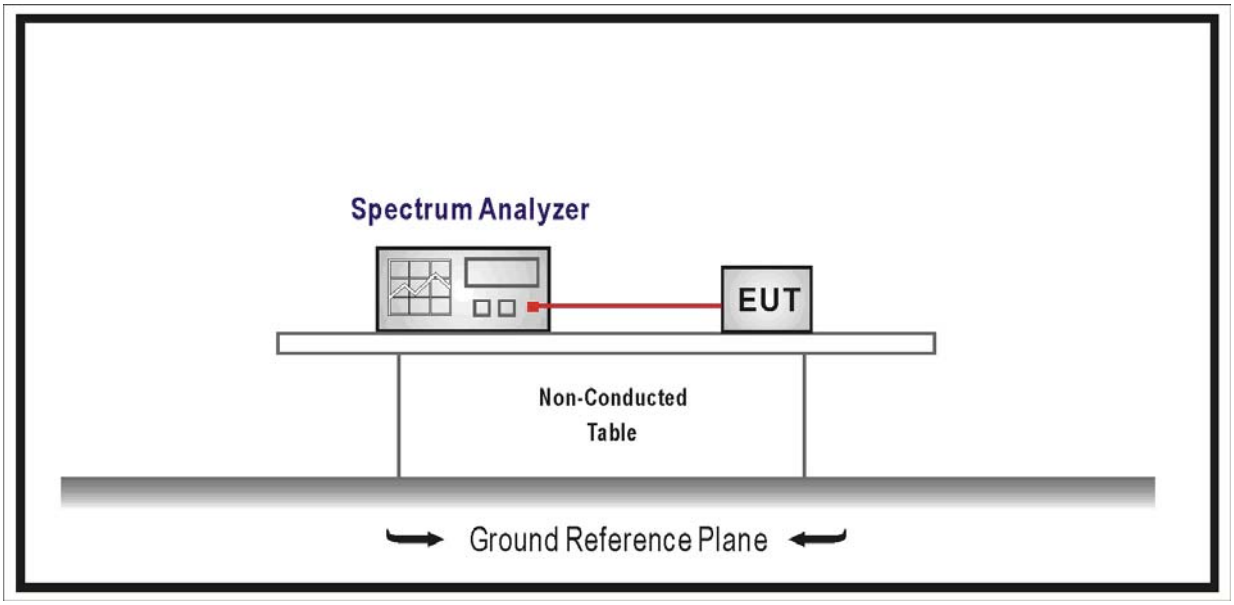
5.1. Test Equipment

20dB Bandwidth / TR8

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

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

5.2. Test Setup



5.3. Limit

- For frequency hopping systems operating in 2400-2483.5 MHz band, no limitation.
- For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
- For frequency hopping systems operating in 5725-5850 MHz band, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.

5.4. Test Procedure

According to ANSI C63.10: 2009.
Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel
RBW ≧ 1% of the 20dB bandwidth
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize.
Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

5.5. Uncertainty

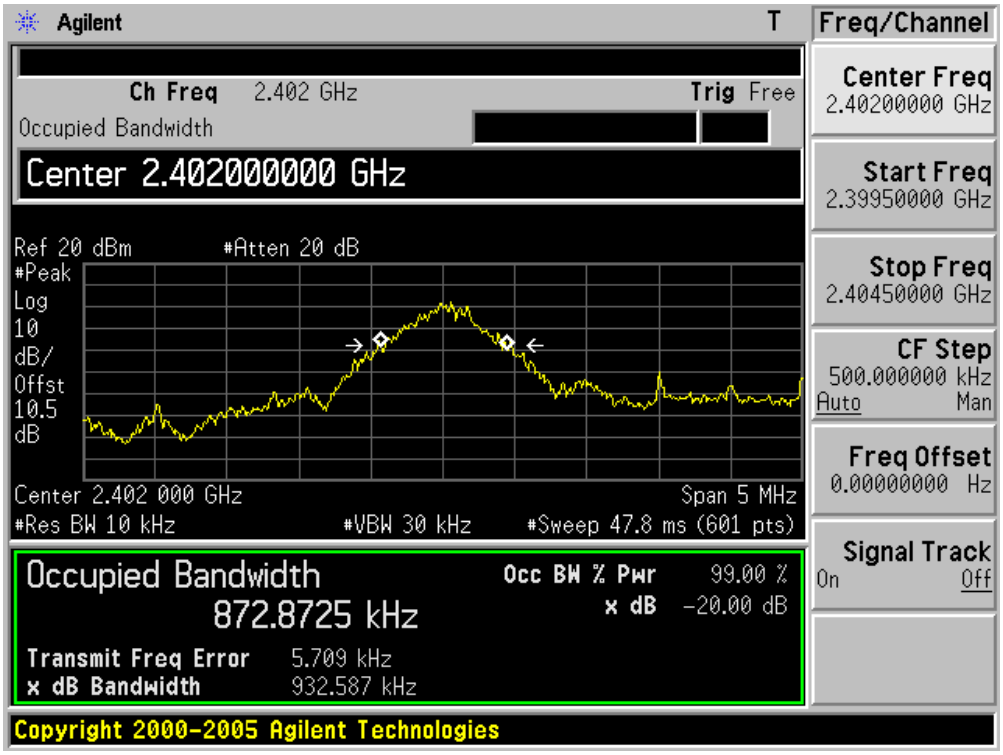
The measurement uncertainty is defined as ± 1 kHz

5.6. Test Result

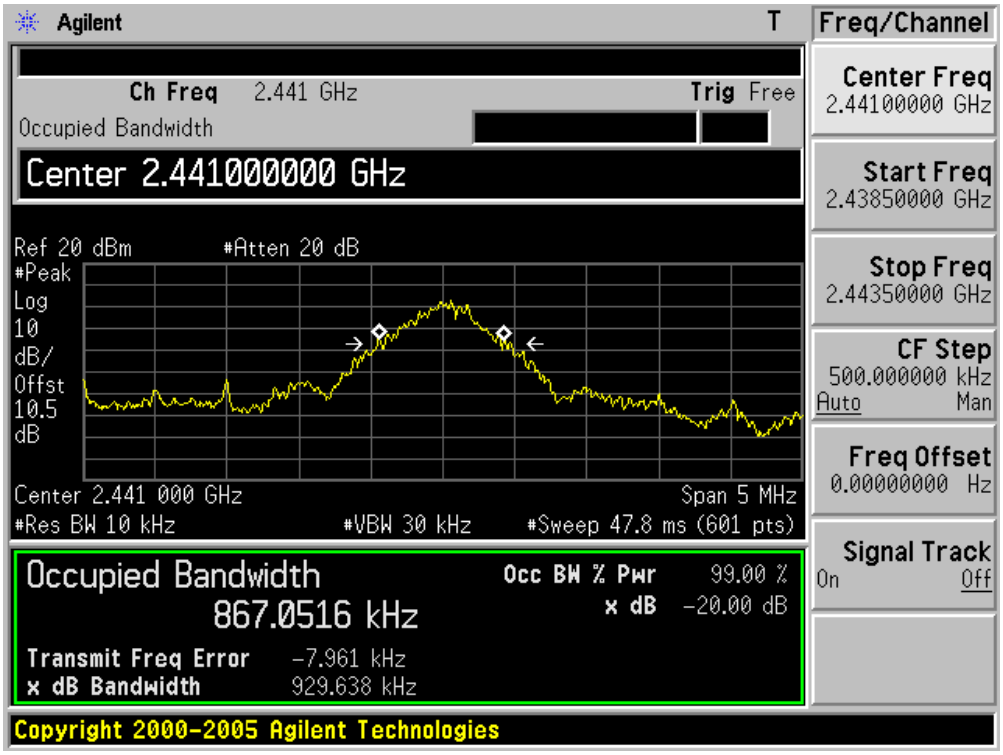
Product	:	Bluetooth headset
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	932.59	872.87
39	2441	929.64	867.05
78	2480	927.71	867.84

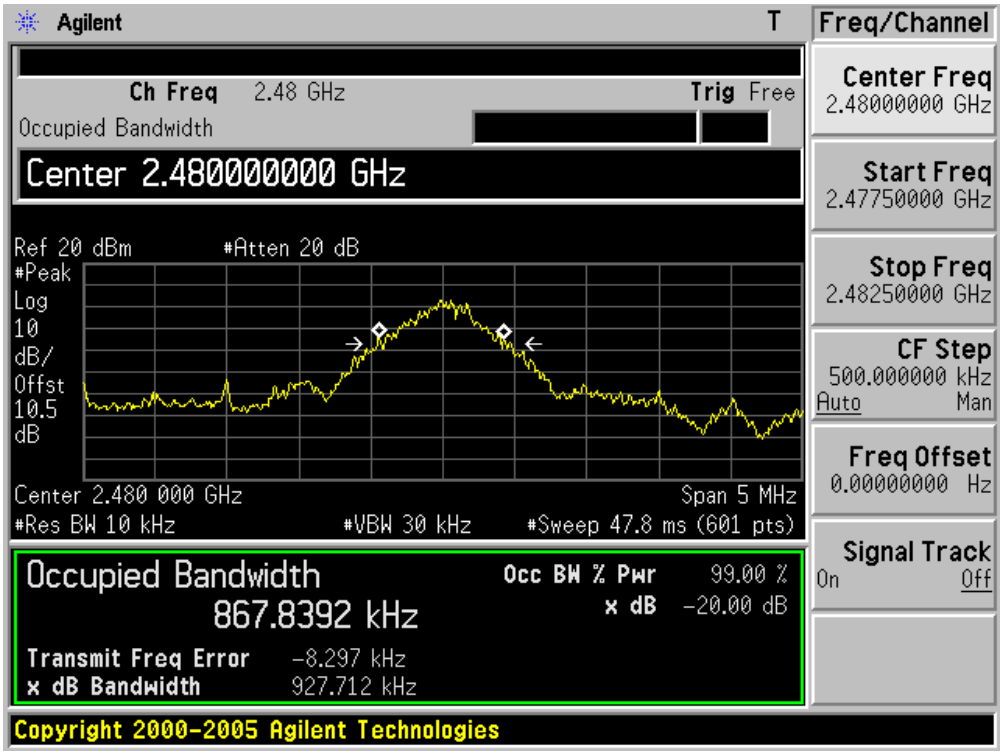
Channel 00 (2402MHz)



Channel 39 (2441MHz)



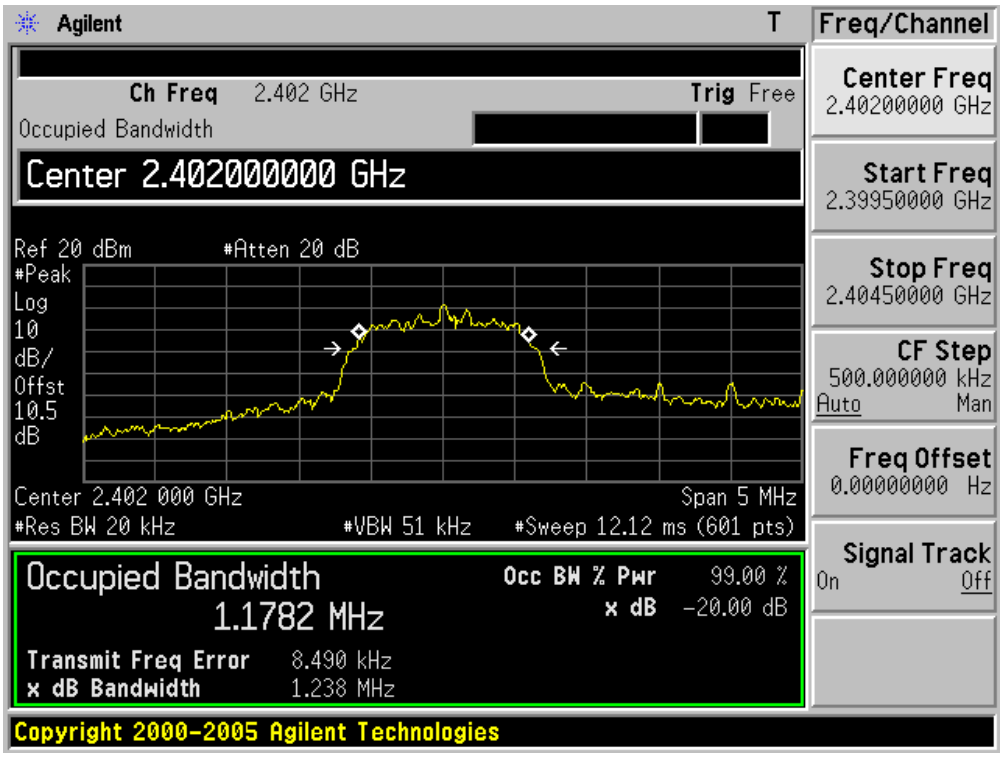
Channel 78 (2480MHz)



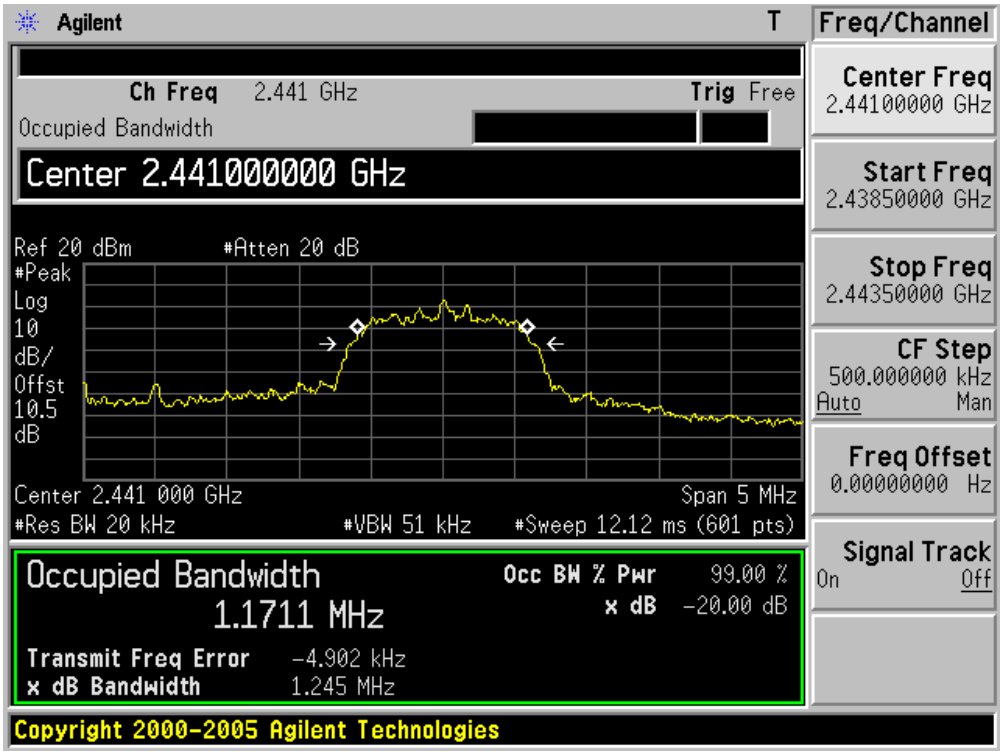
Product	:	Bluetooth headset
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1238.0	1178.2
39	2441	1245.0	1171.1
78	2480	1322.0	1188.1

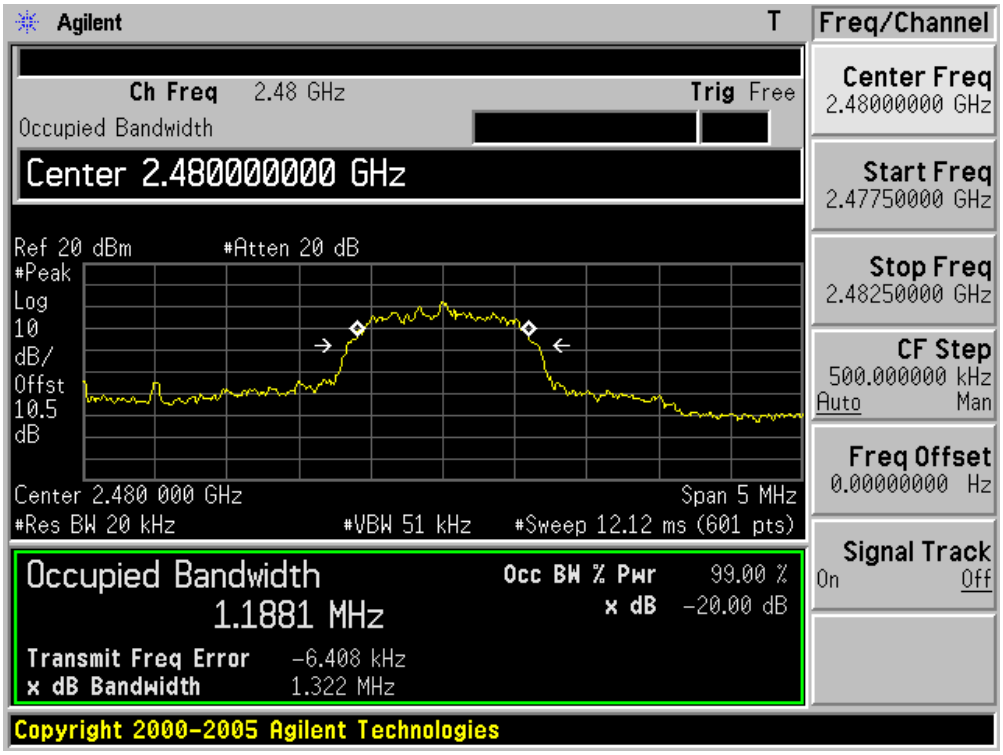
Channel 00 (2402MHz)



Channel 39 (2441MHz)



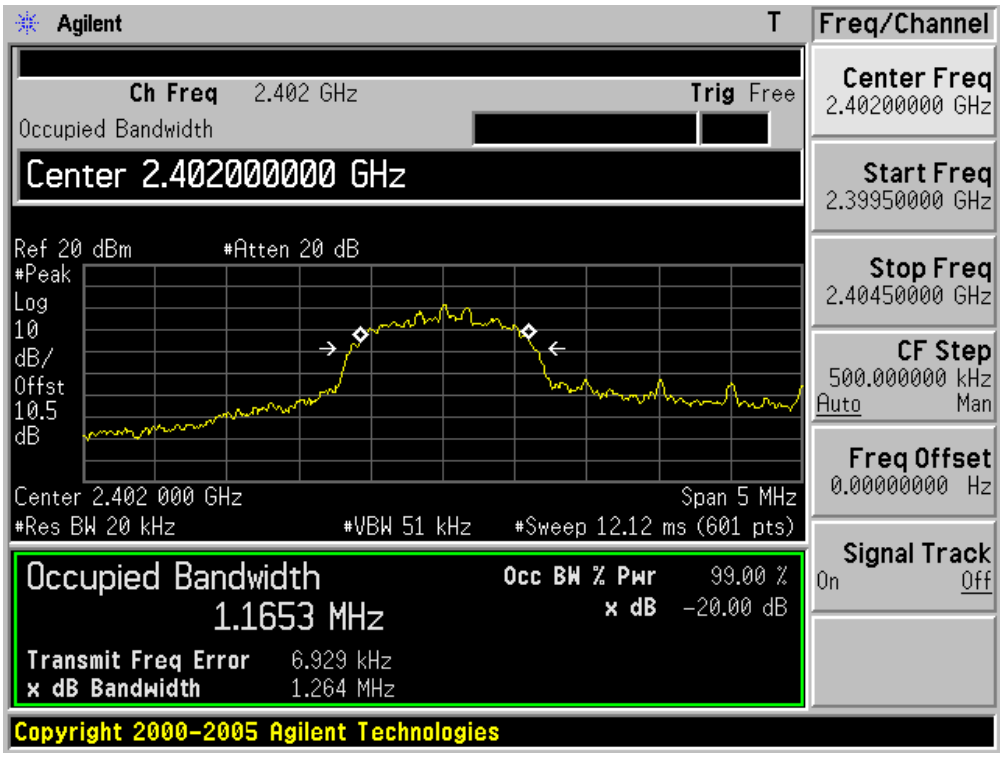
Channel 78 (2480MHz)



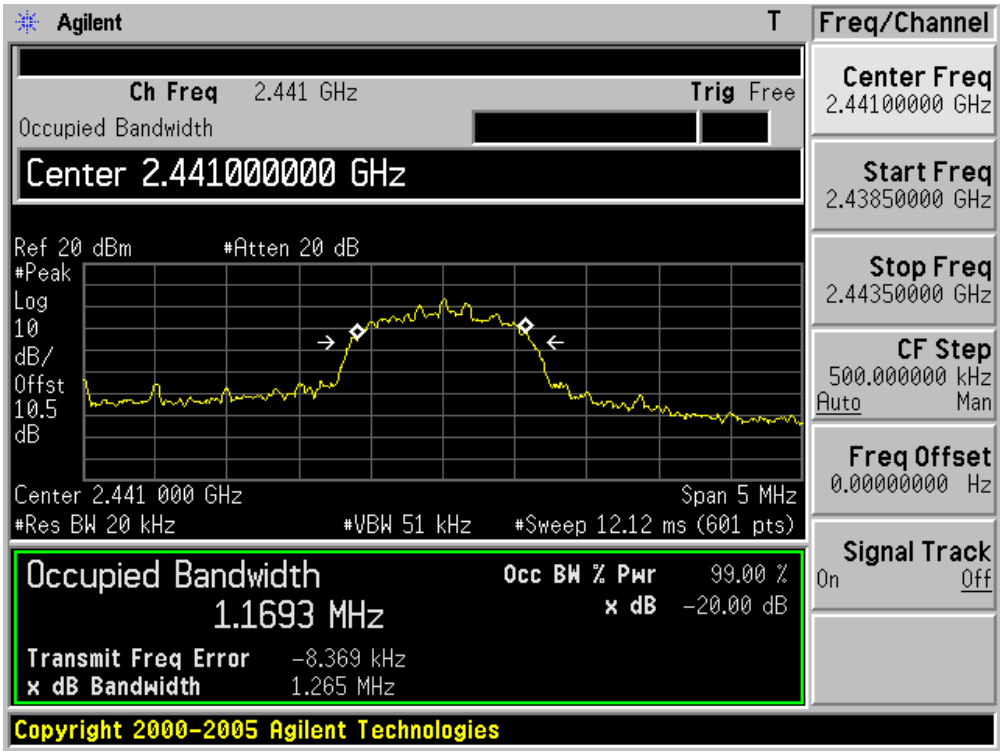
Product	:	Bluetooth headset
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1264.0	1165.3
39	2441	1265.0	1169.3
78	2480	1263.0	1171.6

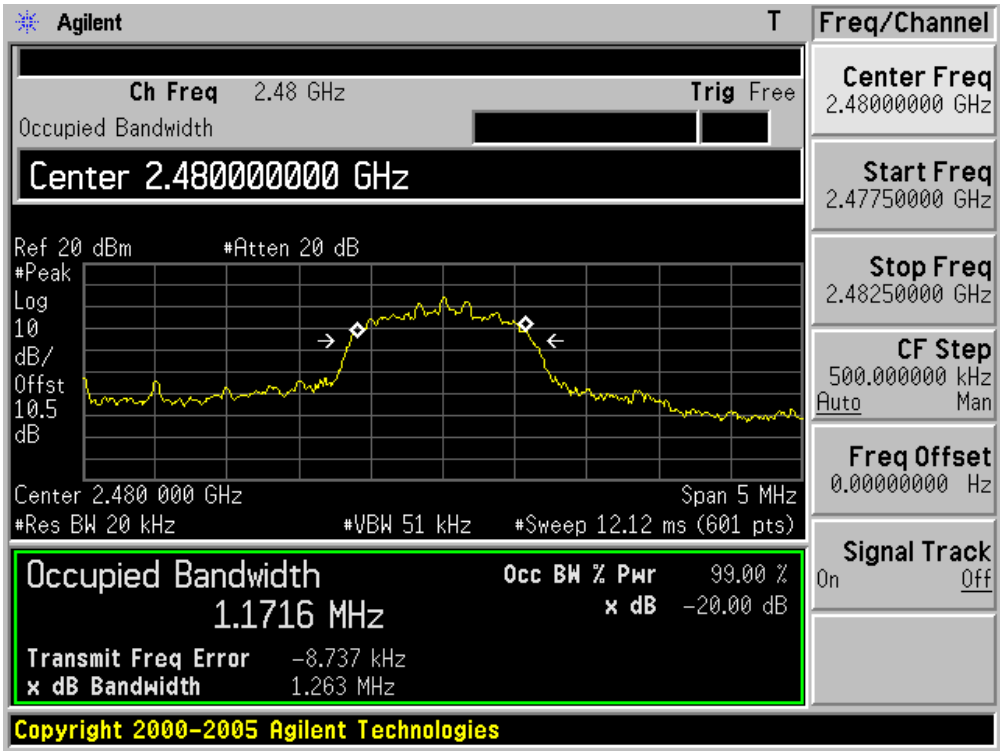
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



6. Carrier Frequency Separation

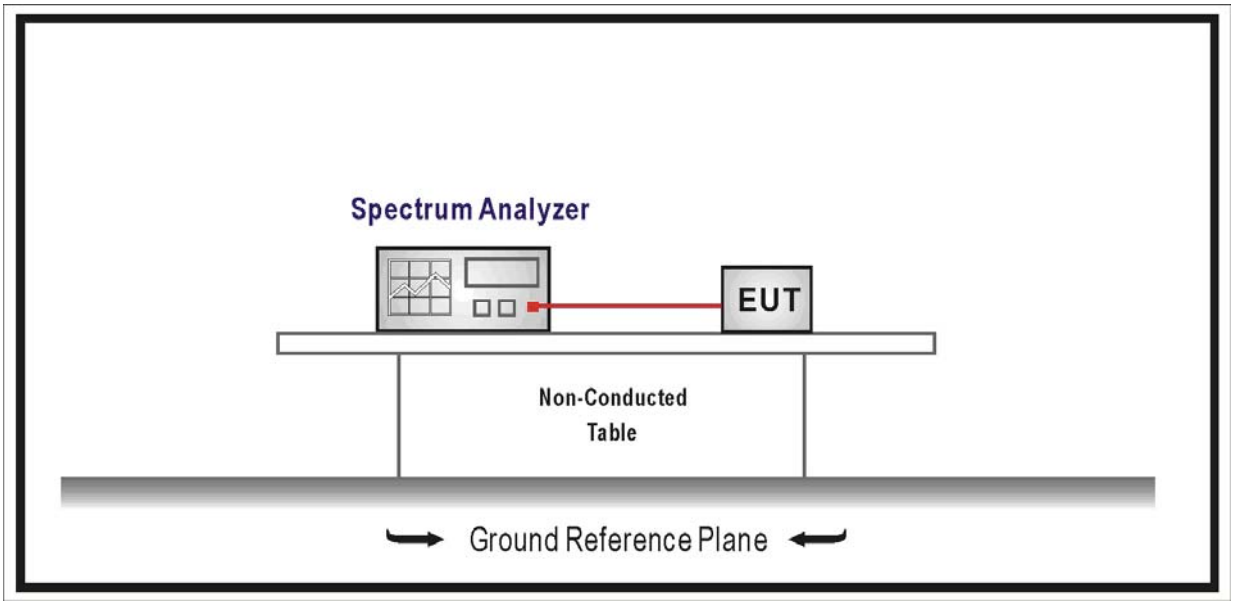
6.1. Test Equipment

Carrier Frequency Separation / TR-8

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

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

6.2. Test Setup



6.3. 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 125mW. 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.

- For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less then 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
- Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

6.4. Test Procedure

According to ANSI C63.10: 2009.
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels
Resolution (or IF) Bandwidth (RBW) ≧ 1% of the span
Video (or Average) Bandwidth VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

6.5. Uncertainty

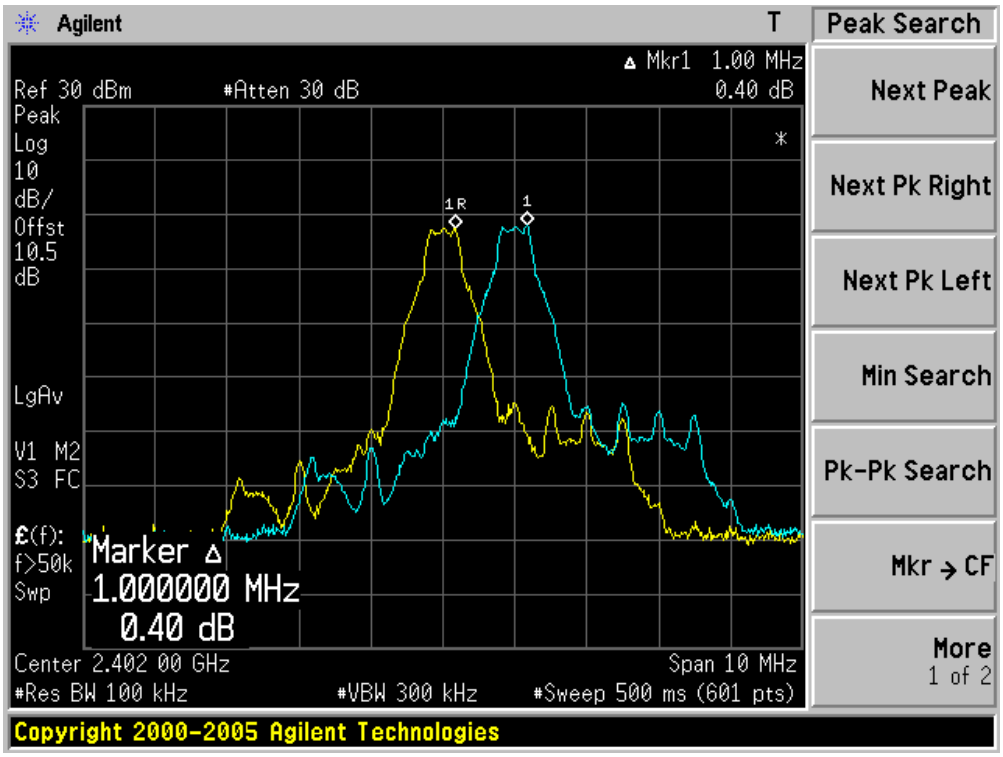
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

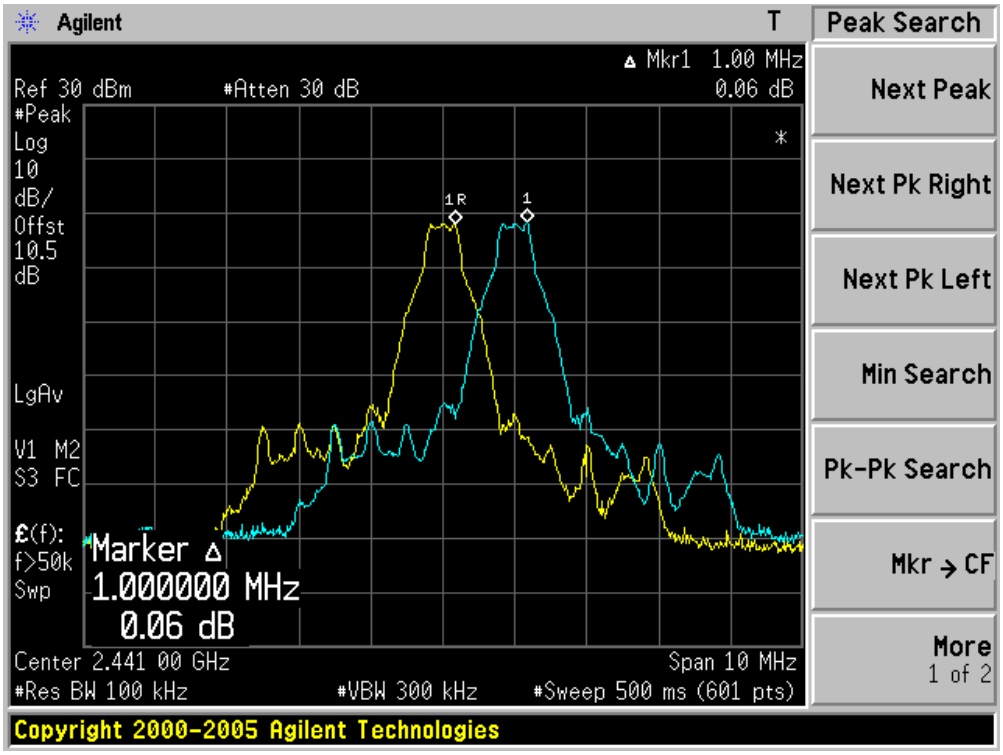
Product	:	Bluetooth headset
Test Item	:	Carrier Frequency Separation
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

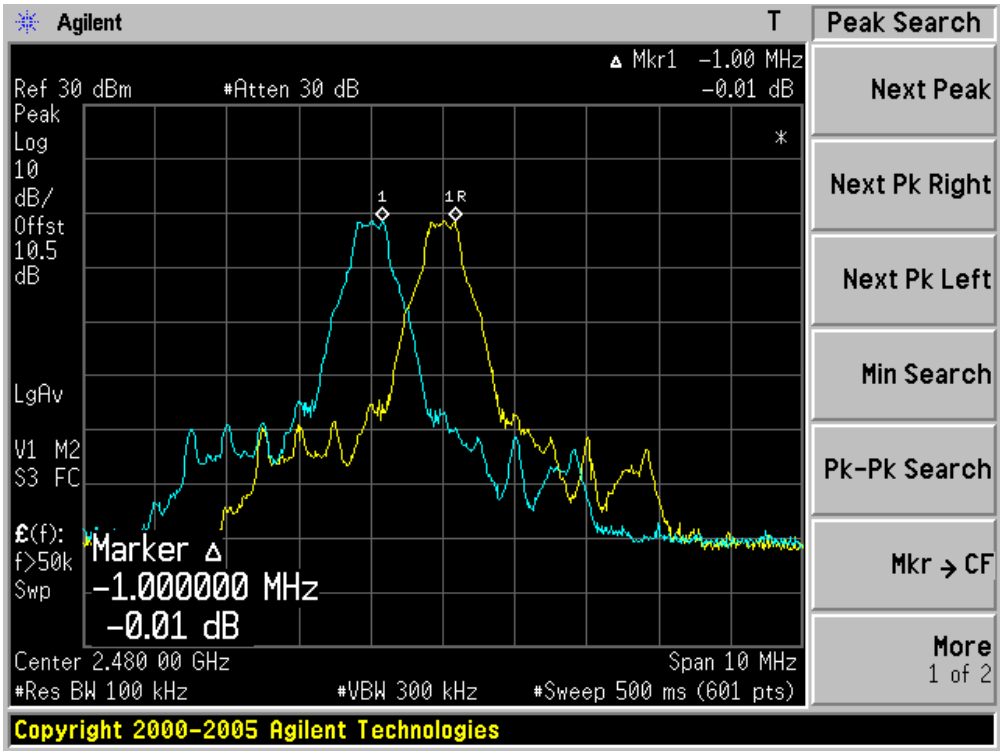
Channel 00 (2402MHz)



Channel 39 (2441MHz)



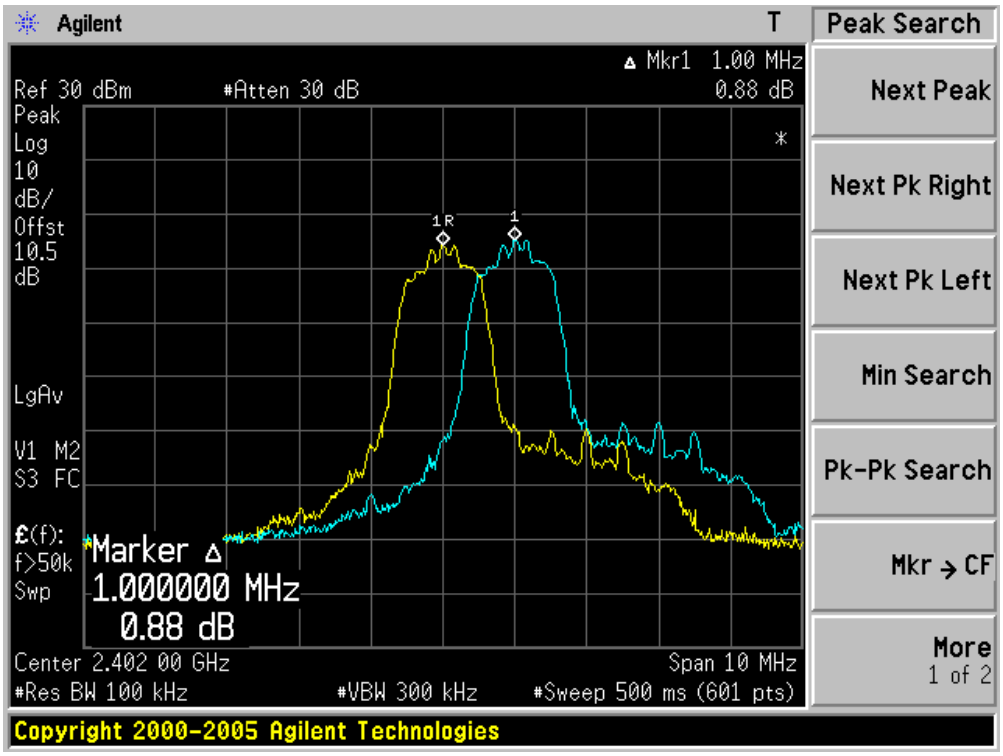
Channel 78 (2480MHz)



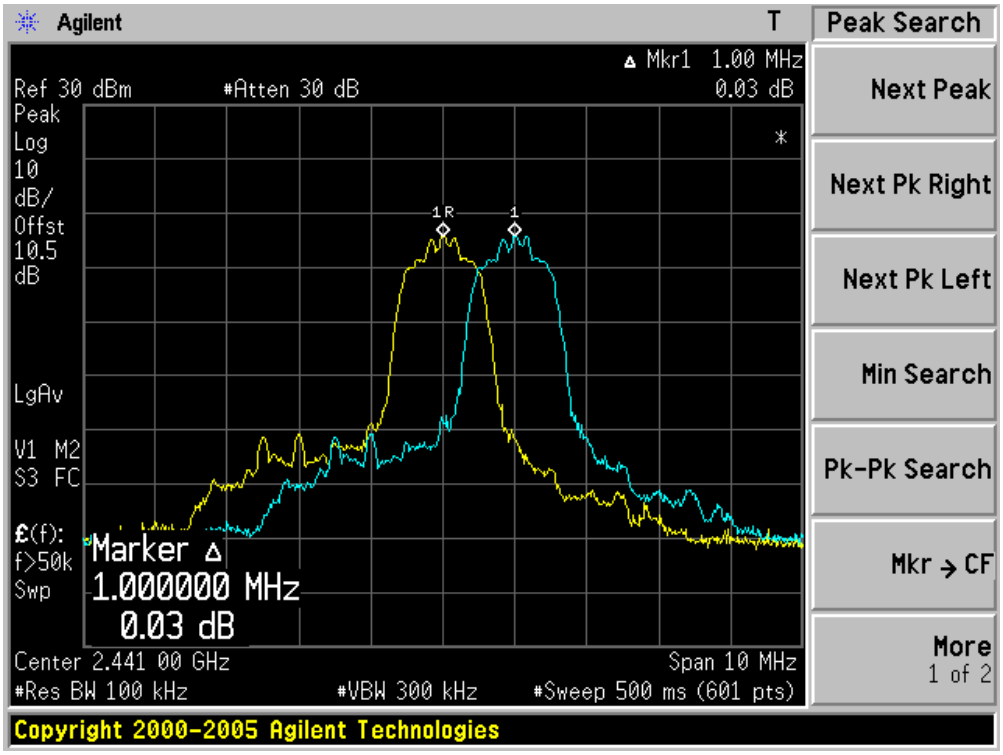
Product	:	Bluetooth headset
Test Item	:	Carrier Frequency Separation
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

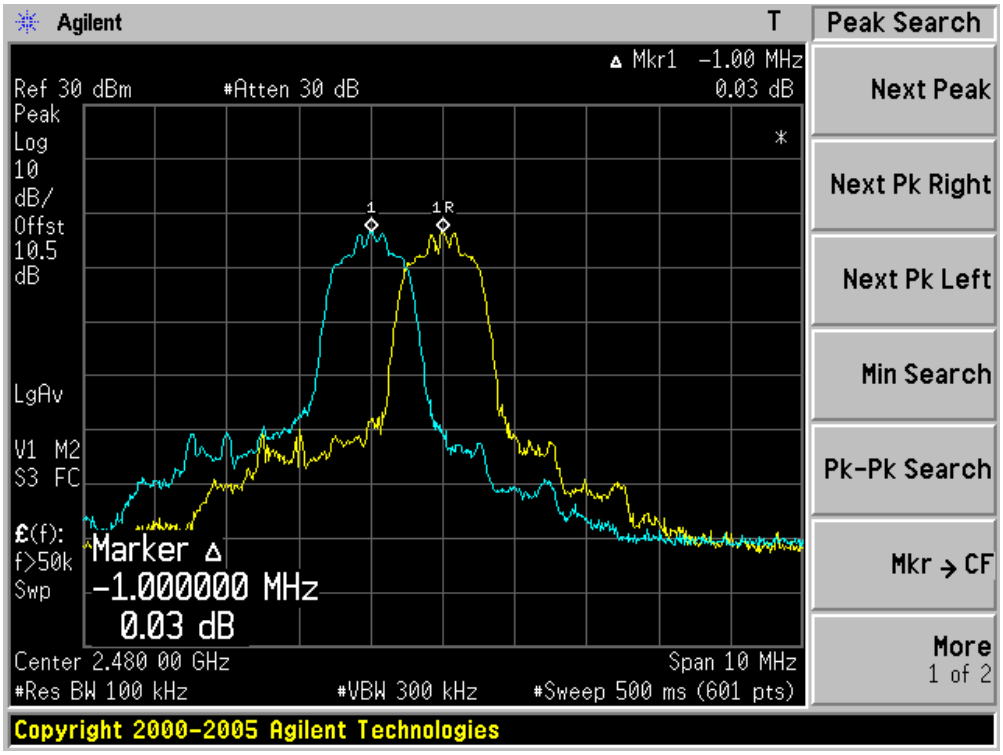
Channel 00 (2402MHz)



Channel 39 (2441MHz)



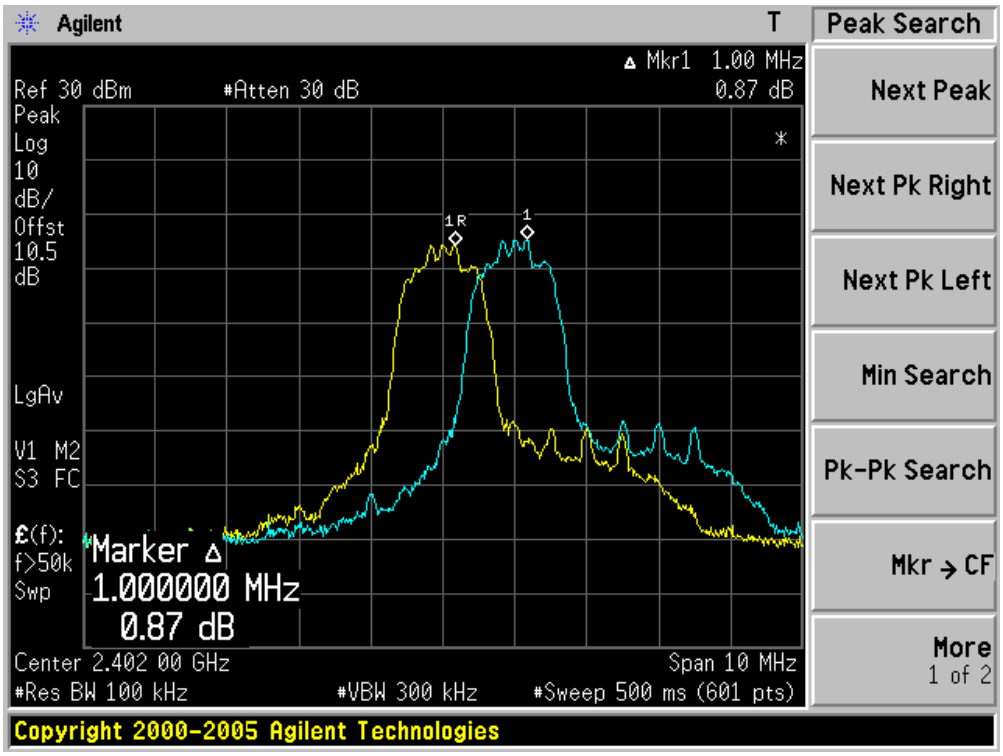
Channel 78 (2480MHz)



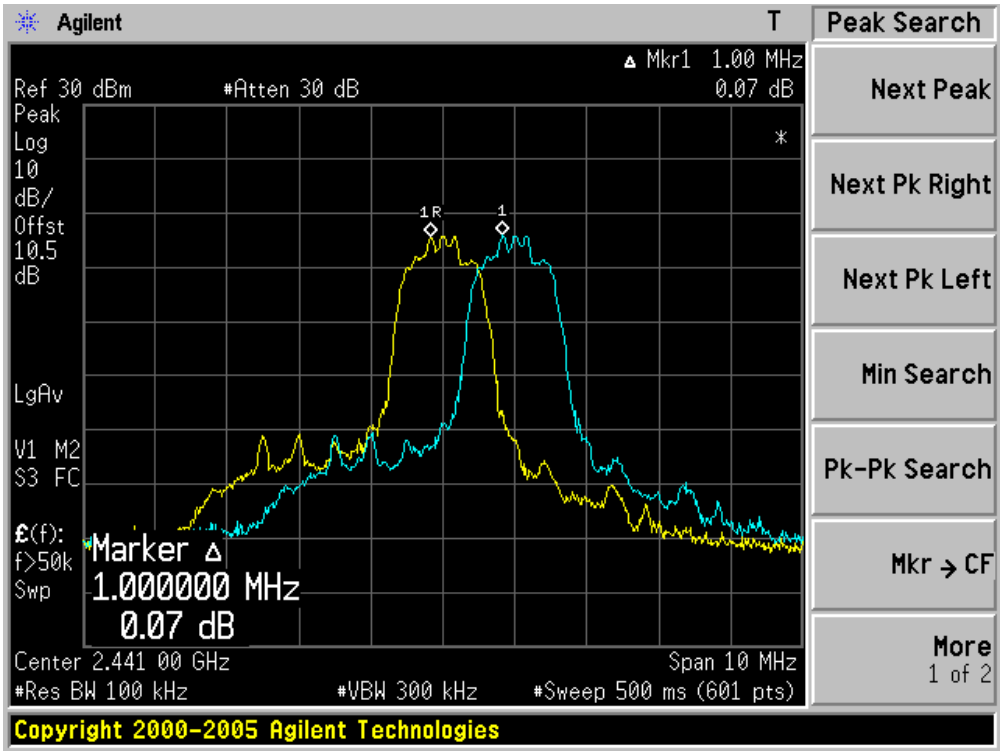
Product	:	Bluetooth headset
Test Item	:	Carrier Frequency Separation
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

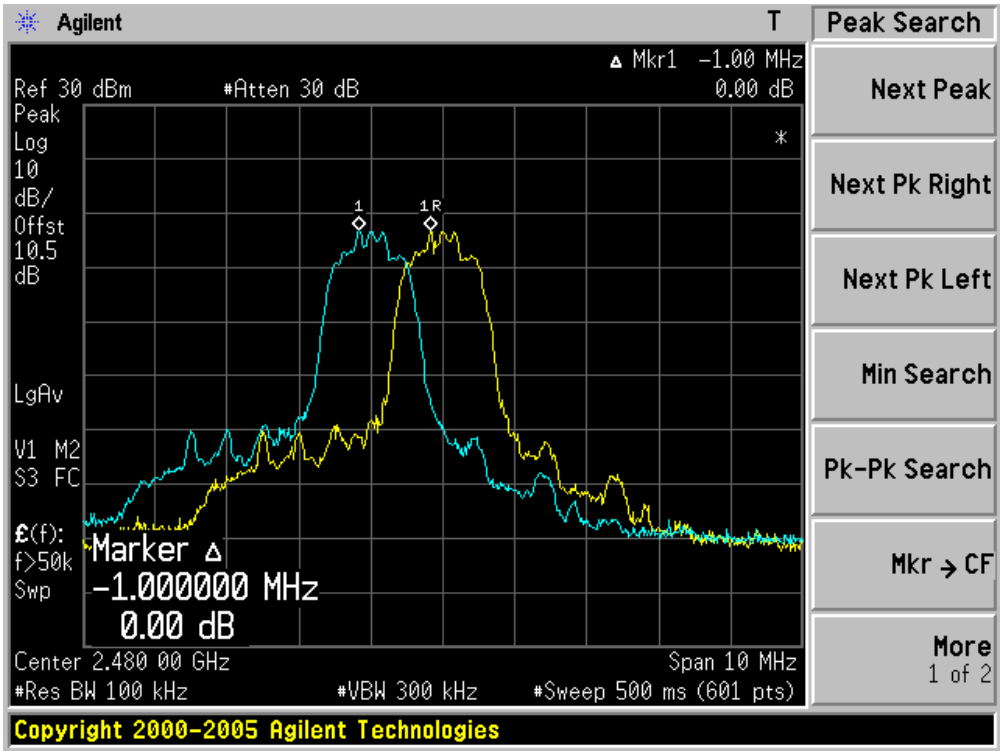
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



7. Number of Hopping Frequencies

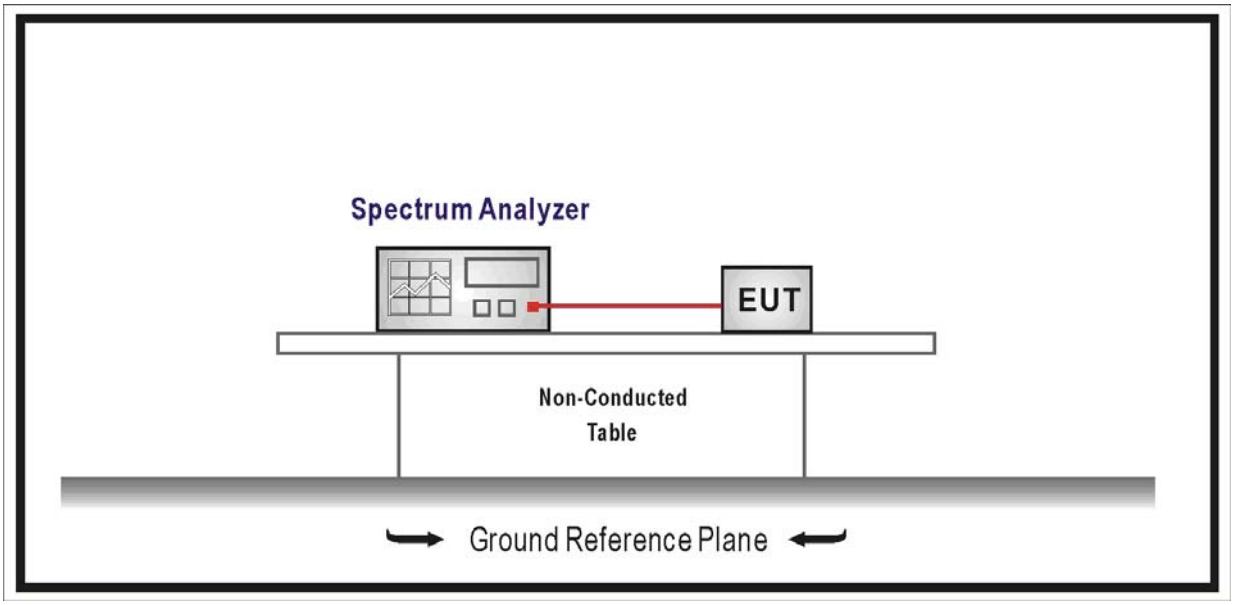
7.1. Test Equipment

Number of Hopping Frequencies / TR-8

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

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

7.2. Test Setup



7.3. Limit

- For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
- For frequency hopping systems operating in 902-928 MHz band shall use at least 50 hopping frequencies.
- For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedure

According to ANSI C63.10: 2009.
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = the frequency band of operation
RBW ≧ 1% of the span
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. It may prove necessary to bread the span up to sections, in order to clearly show all of the hopping frequencies.

7.5. Uncertainty

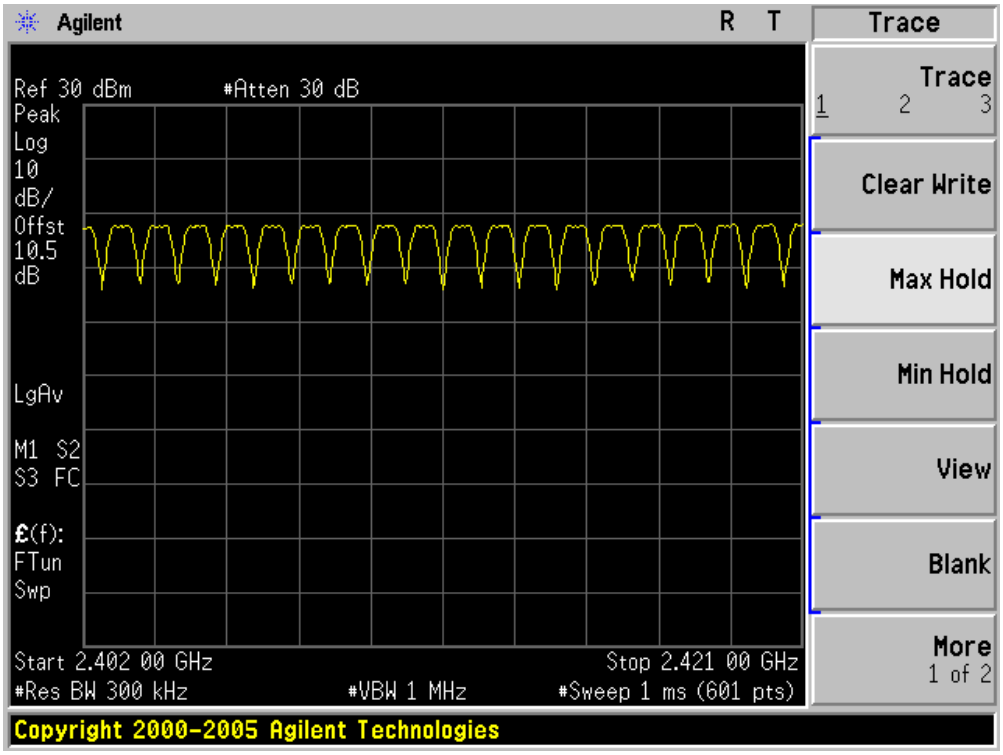
The measurement uncertainty is defined as ± 1 kHz

7.6. Test Result

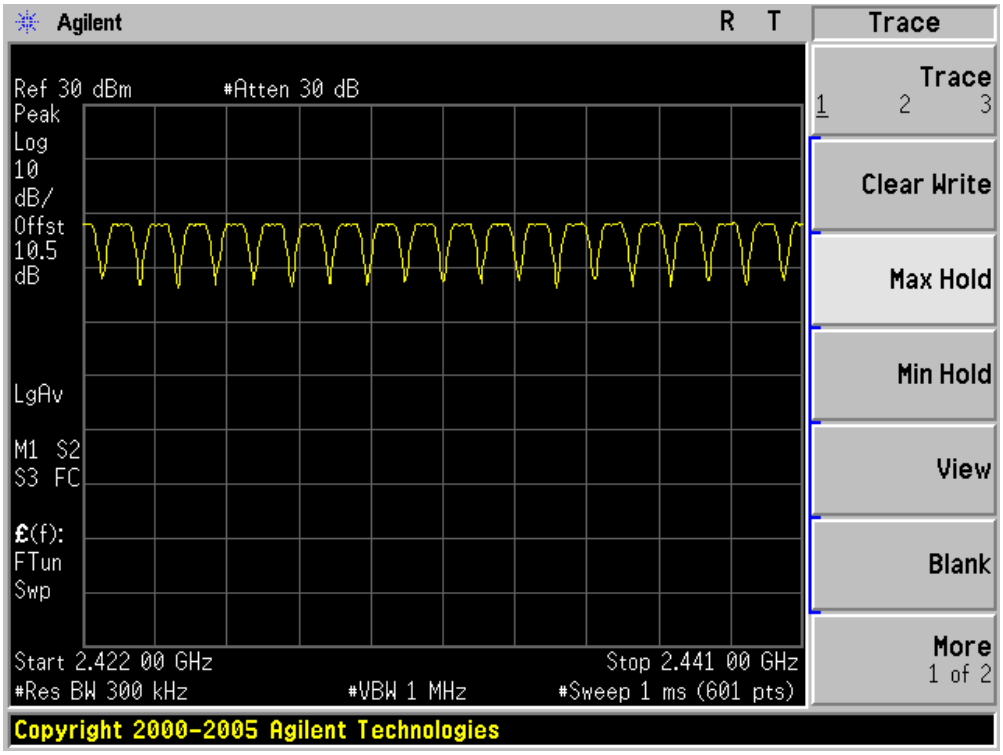
Product	:	Bluetooth headset
Test Item	:	Number of Hopping Frequencies
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

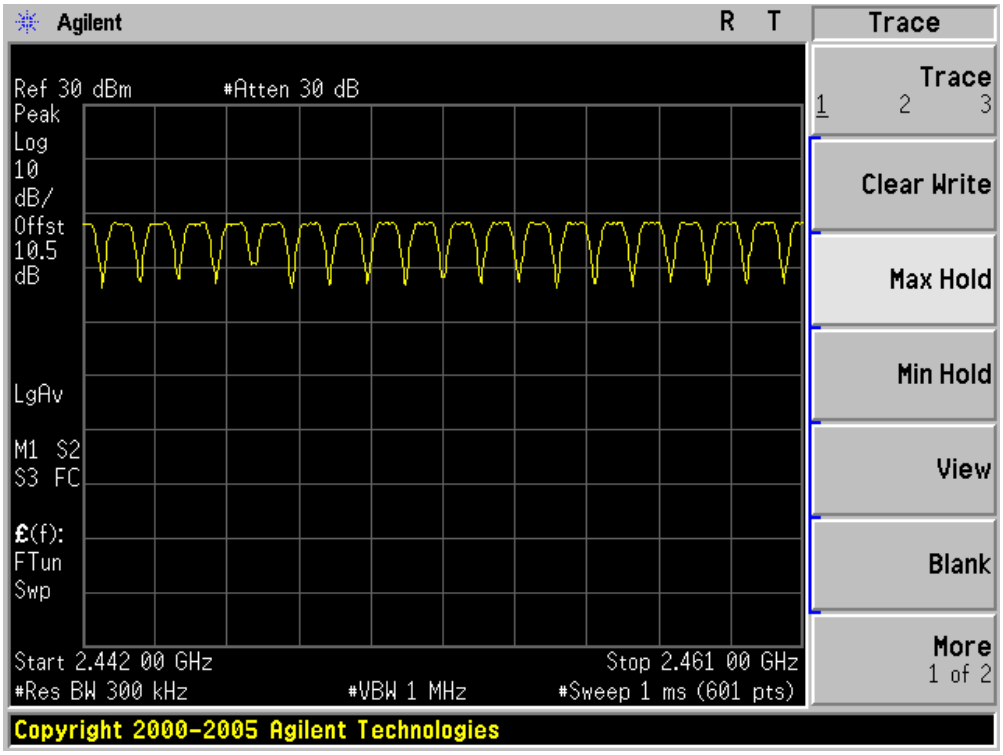
2402 - 2421 MHz



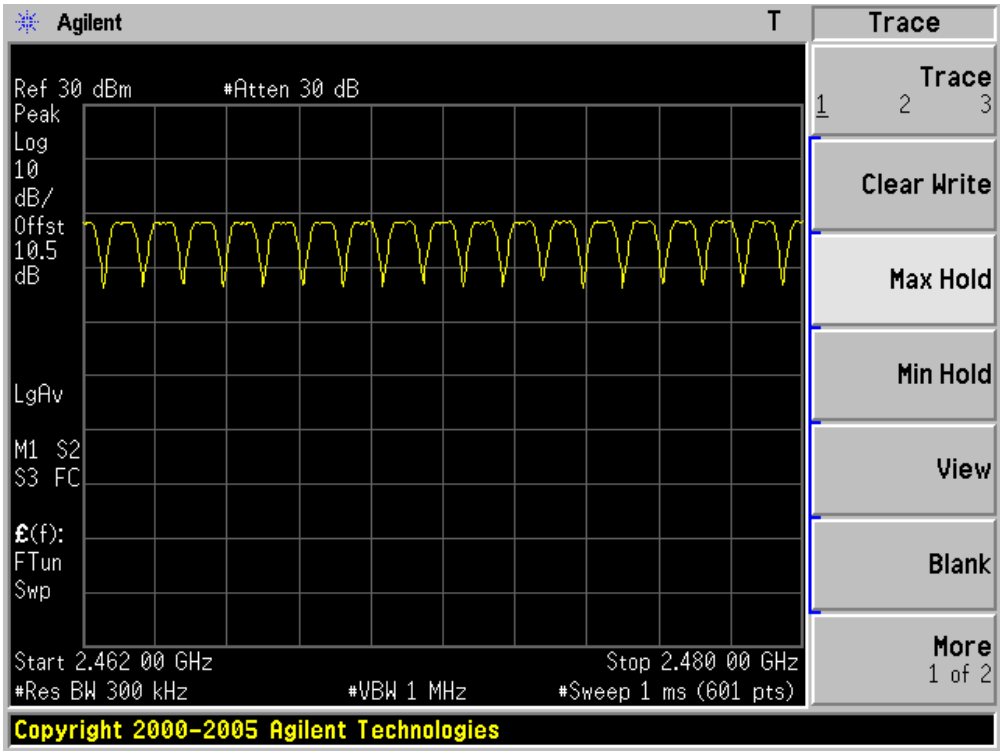
2422 - 2441 MHz



2442 - 2461 MHz



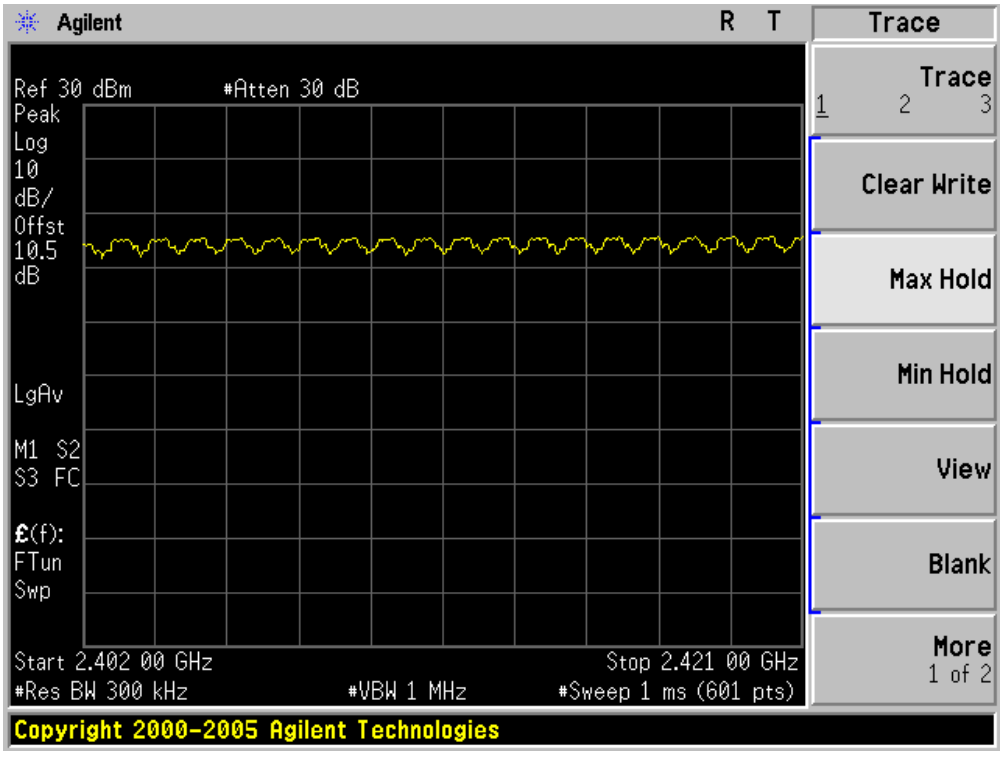
2462 - 2480 MHz



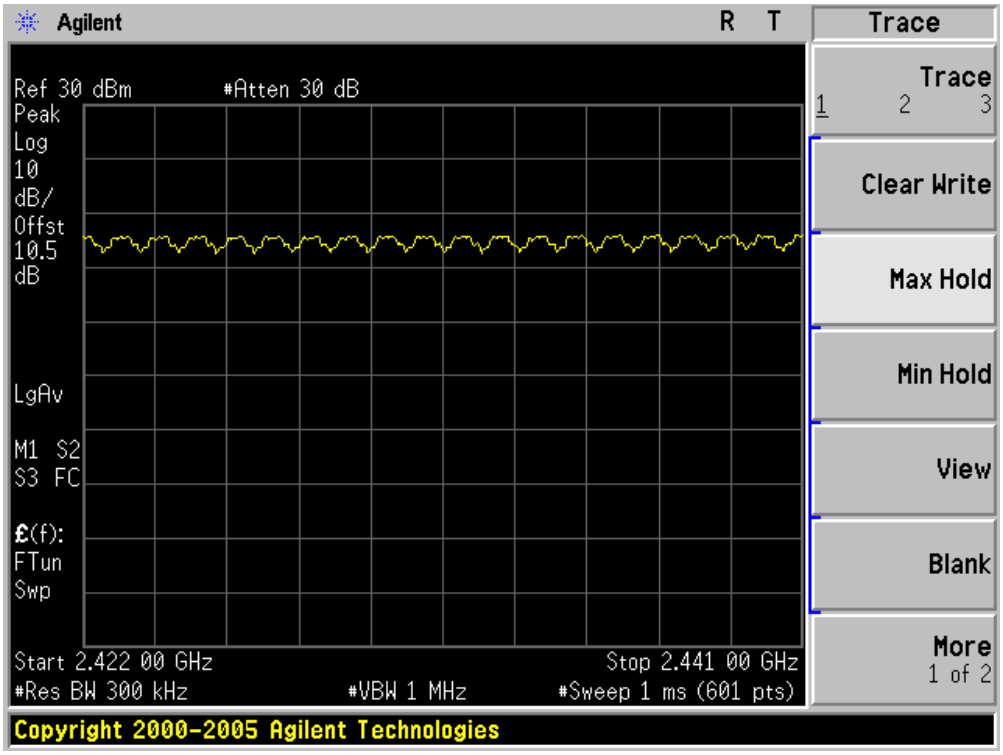
Product	:	Bluetooth headset
Test Item	:	Number of Hopping Frequencies
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

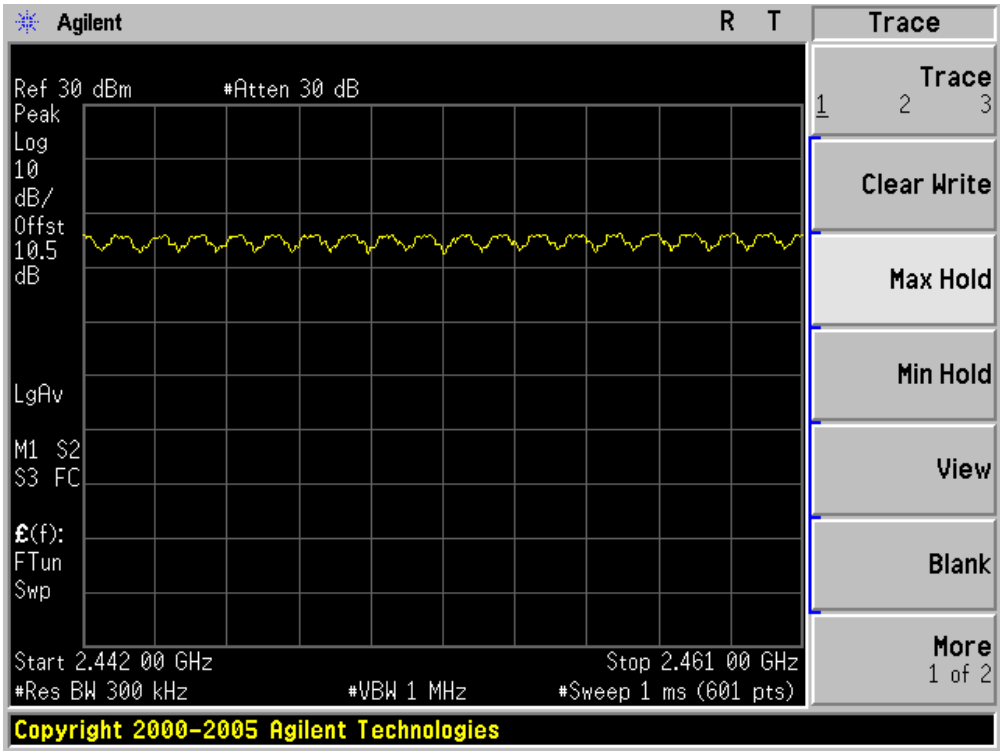
2402 - 2421 MHz



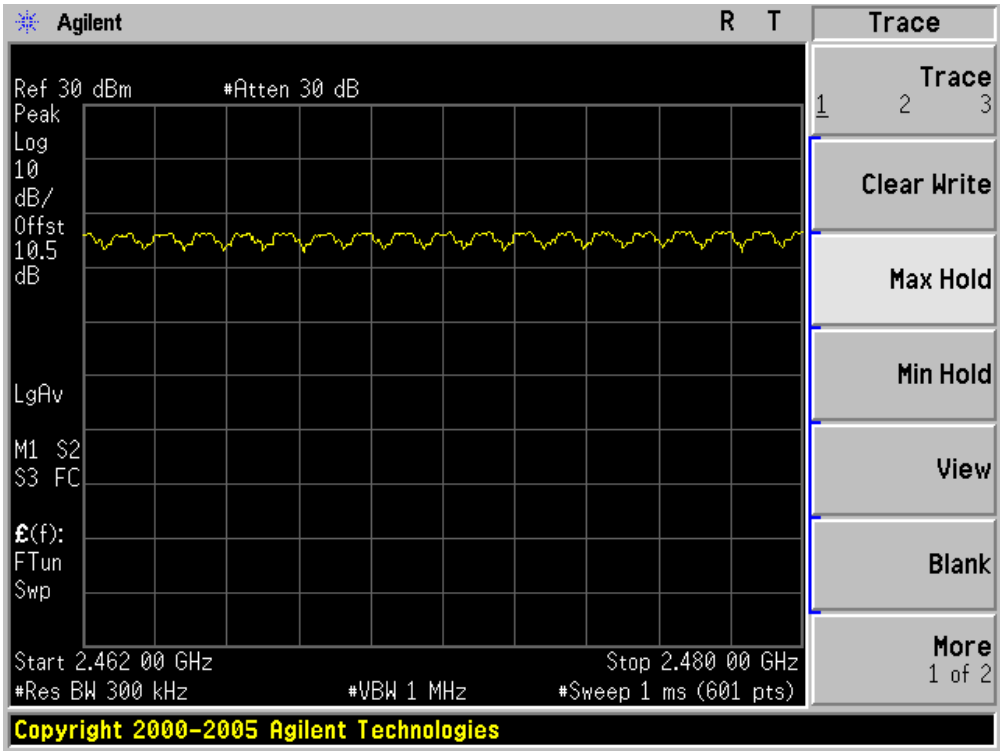
2422 - 2441 MHz



2442 - 2461 MHz



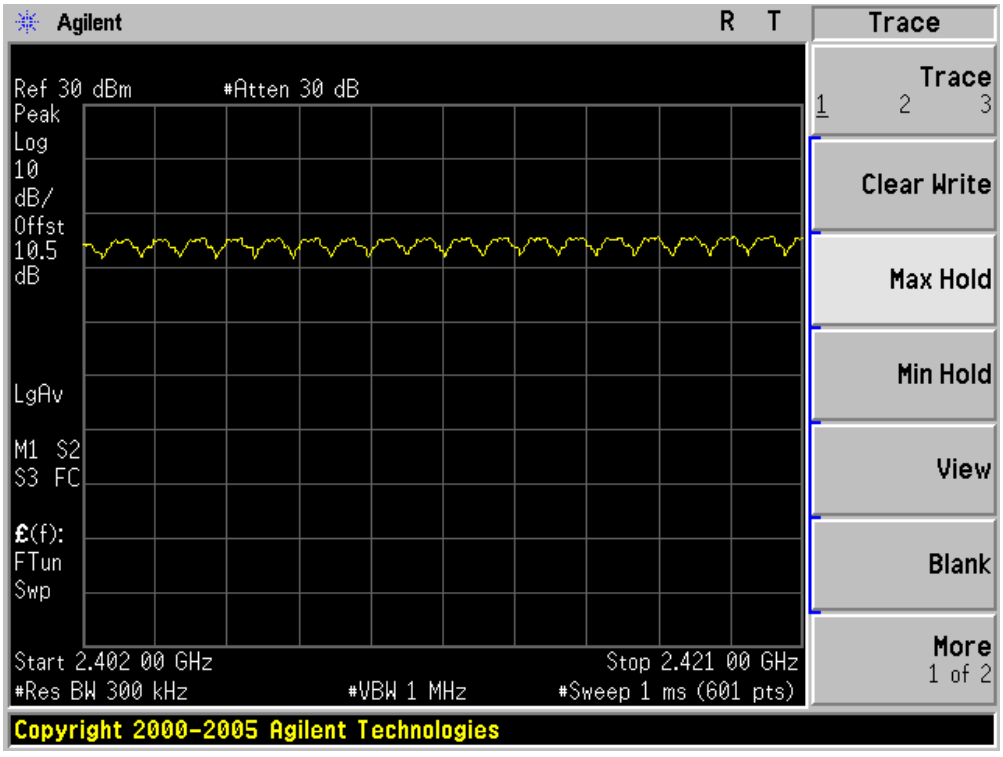
2462 - 2480 MHz



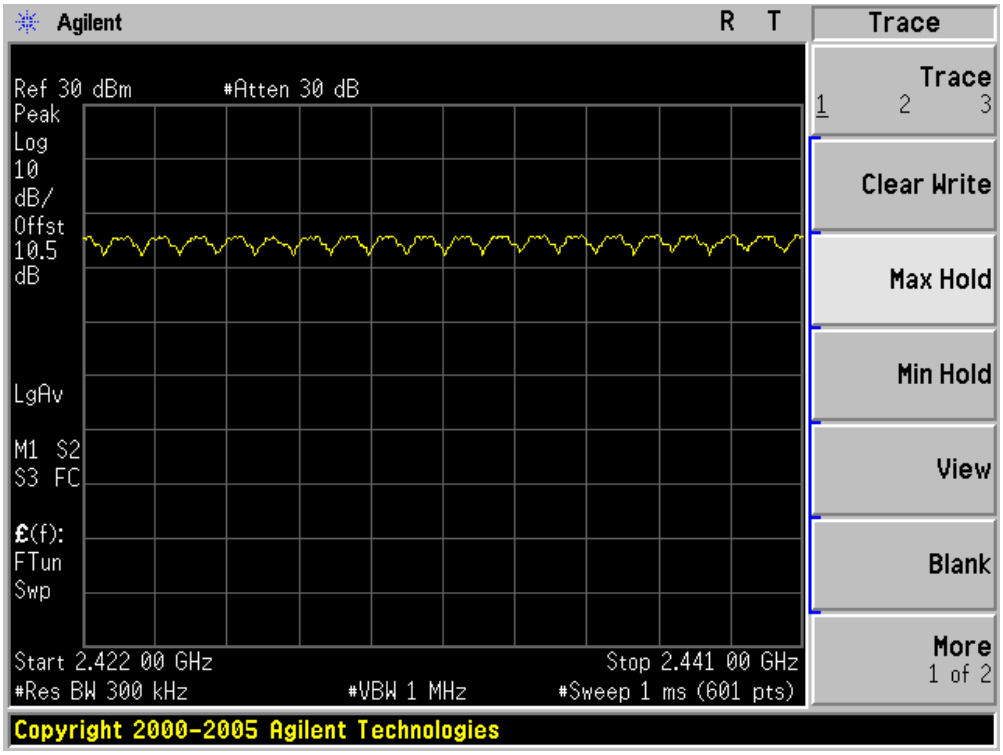
Product	:	Bluetooth headset
Test Item	:	Number of Hopping Frequencies
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

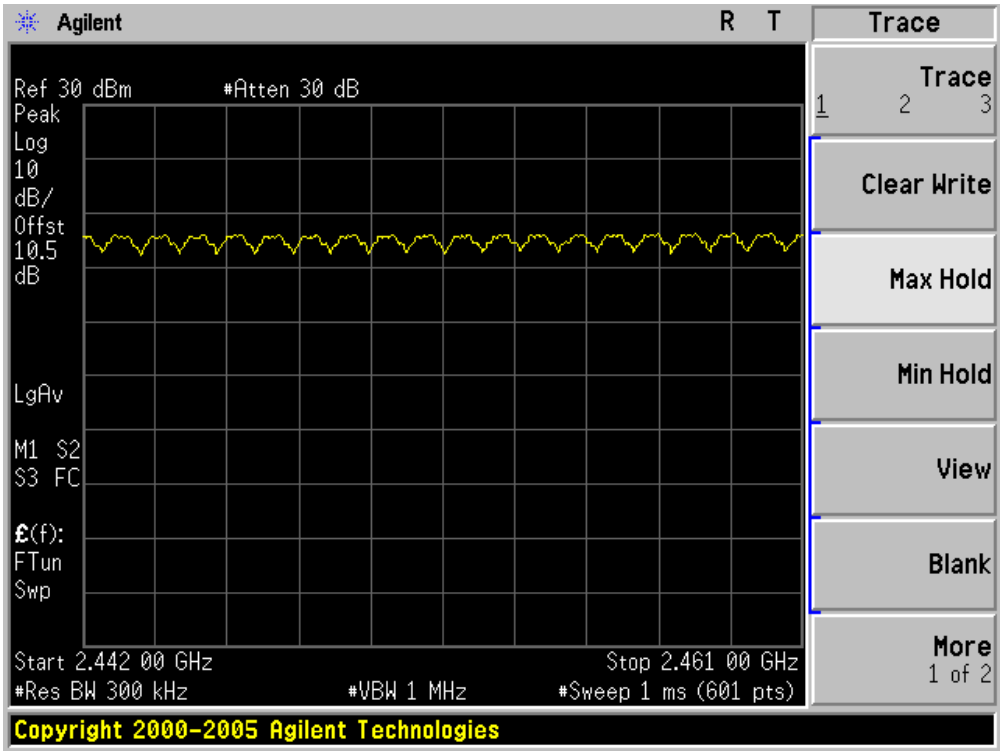
2402 - 2421 MHz



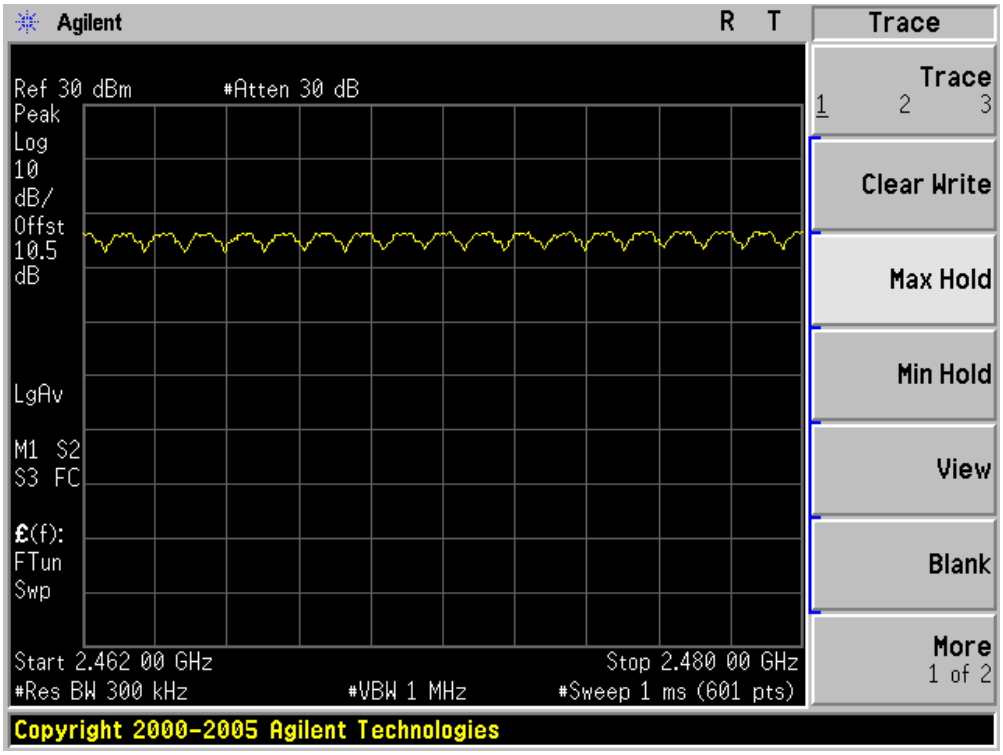
2422 - 2441 MHz



2442 - 2461 MHz



2462 - 2480 MHz



8. Time of Occupancy (Dwell Time)

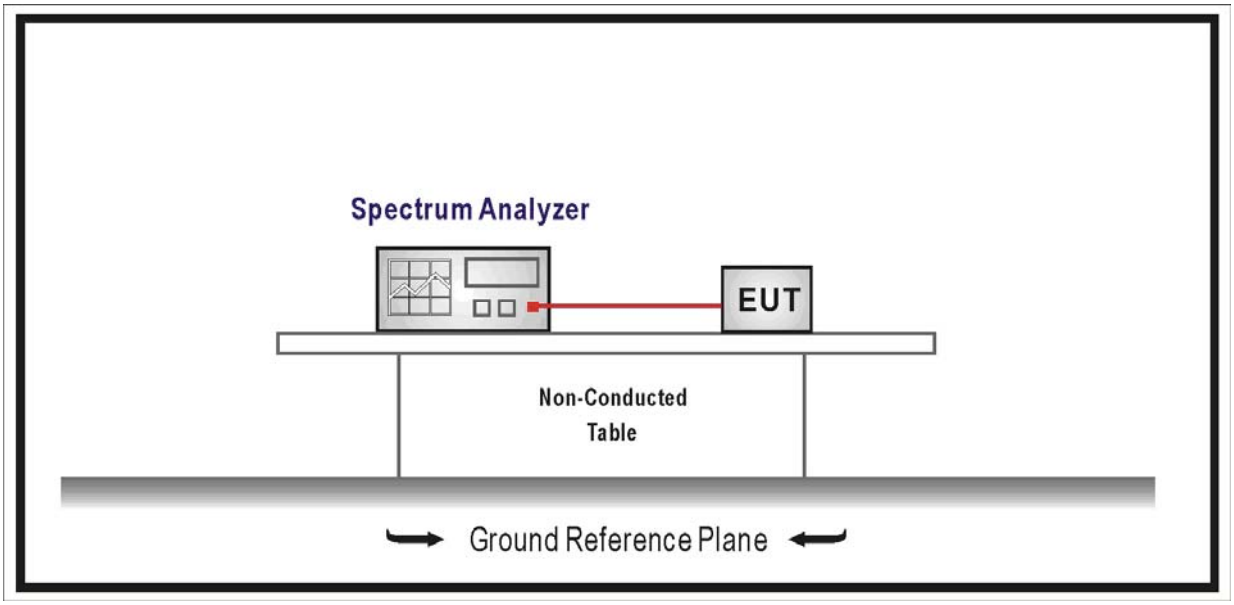
8.1. Test Equipment

Time of Occupancy (Dwell Time) / TR-8

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

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

8.2. Test Setup



8.3. Limit

- For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less then 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
- Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75

hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

- 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 then 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.

8.4. Test Procedure

According to ANSI C63.10: 2009.
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = zero span, centered on a hopping channel
RBW = 1MHz
VBW ≧ RBW
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector function = peak
Trace = max hold
If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

8.5. Uncertainty

The measurement uncertainty is defined as ± 0.1 us

8.6. Test Result

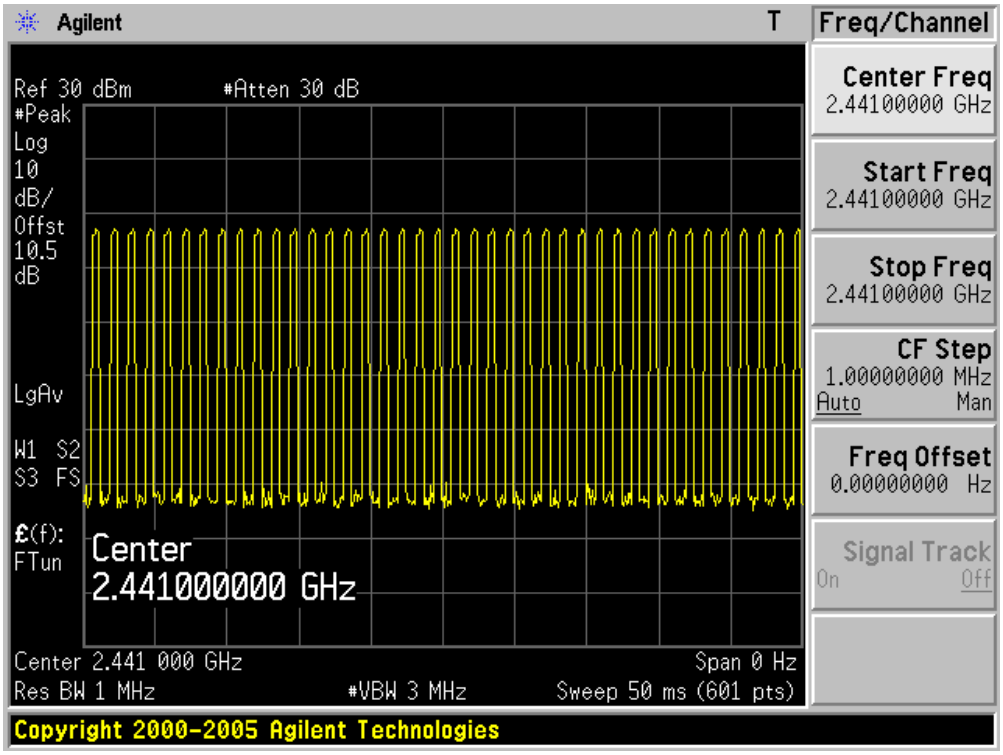
Product	:	Bluetooth headset
Test Item	:	Time of Occupancy (Dwell Time)
Test Site	:	TR-8
Test Mode	:	Transmitter-3Mbps(8DPSK_DH1)

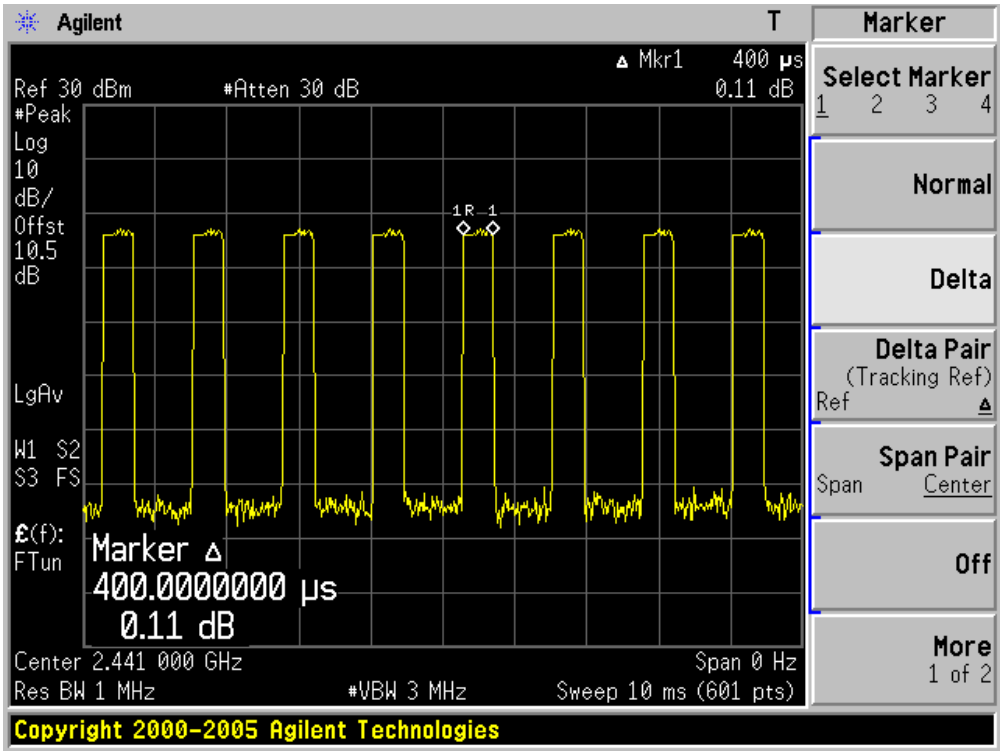
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	128.00	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 40/50msec=800 hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec: [(400 μs*800)/79]*31.6 =128.00msec

Channel 39 (2441MHz)-(3DH1)




Agilent
T
Marker
Mkr1 400 µs
Ref 30 dBm
#Atten 30 dB
0.11 dB
#Peak
Log
10
dB/
Offst
10.5
dB
1R 1
LgAv
W1 S2
S3 FS
£(f):
FTun
Marker Δ
400.0000000 µs
0.11 dB
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 3 MHz
Sweep 10 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Δ
Span Pair
Span Center
Off
More
1 of 2
Copyright 2000-2005 Agilent Technologies

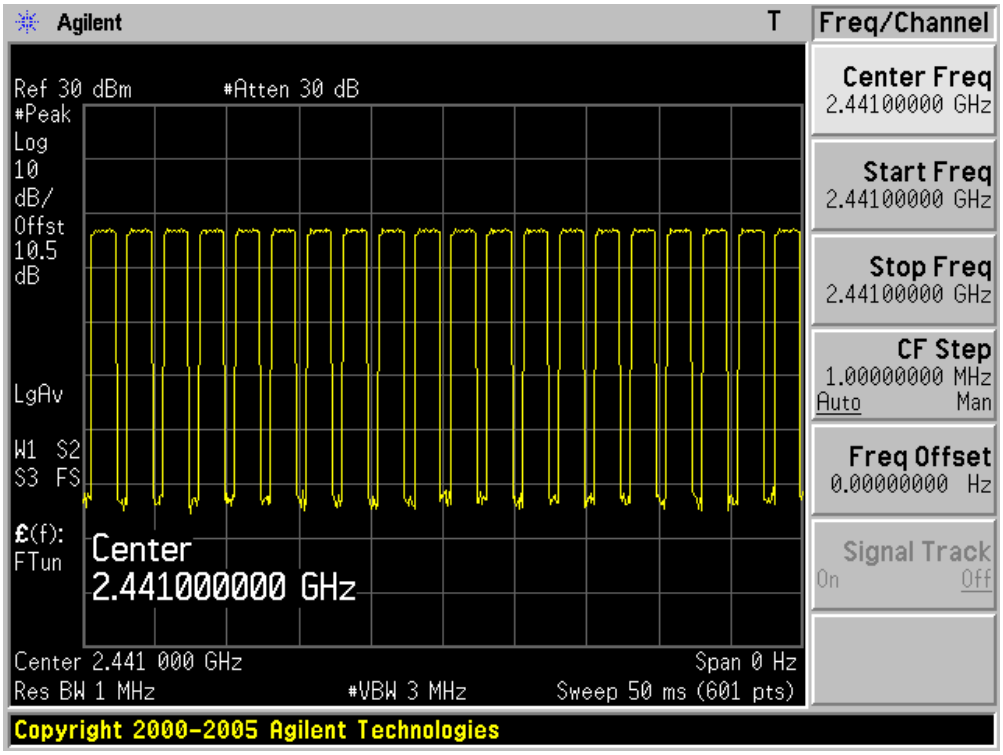
Product	:	Bluetooth headset
Test Item	:	Time of Occupancy (Dwell Time)
Test Site	:	TR-8
Test Mode	:	Transmitter-3Mbps(8DPSK_DH3)

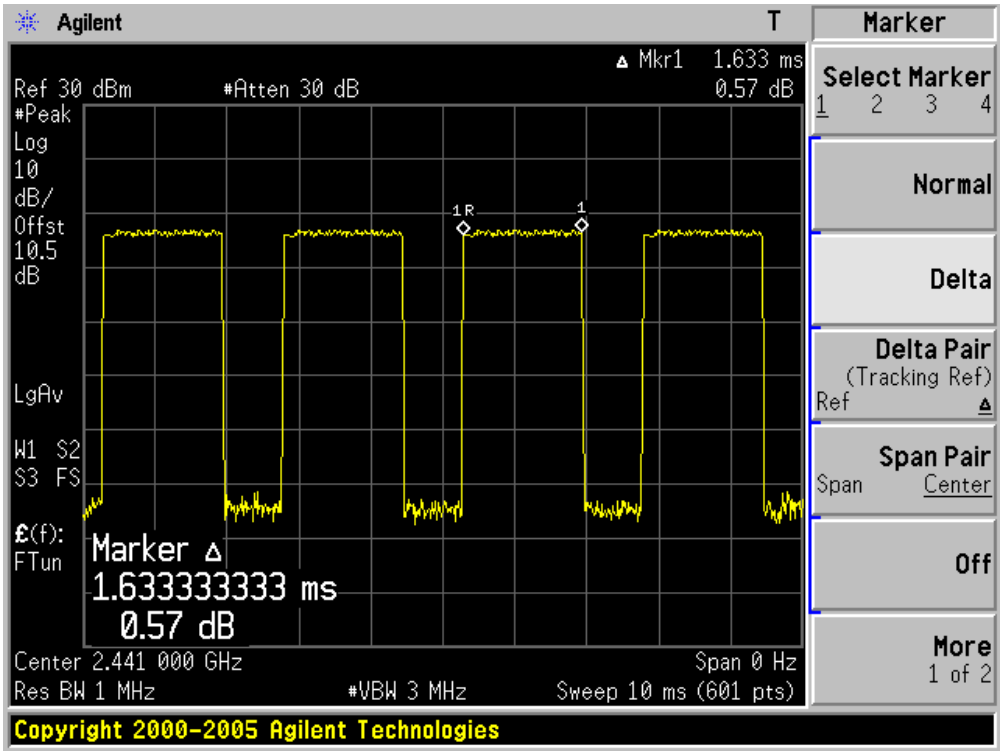
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	261.28	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 20/50msec=400hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec: [(1.633 ms*400)/79]*31.6=261.28msec

Channel 39 (2441MHz) - (3DH3)




Agilent
T
Marker
Mkr1 1.633 ms
Ref 30 dBm
#Atten 30 dB
0.57 dB
#Peak
Log
10
dB/
Offst
10.5
dB
1R
1
LgAv
W1 S2
S3 FS
£(f):
FTun
Marker Δ
1.633333333 ms
0.57 dB
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 3 MHz
Sweep 10 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Δ
Span Pair
Span Center
Off
More
1 of 2
Copyright 2000-2005 Agilent Technologies

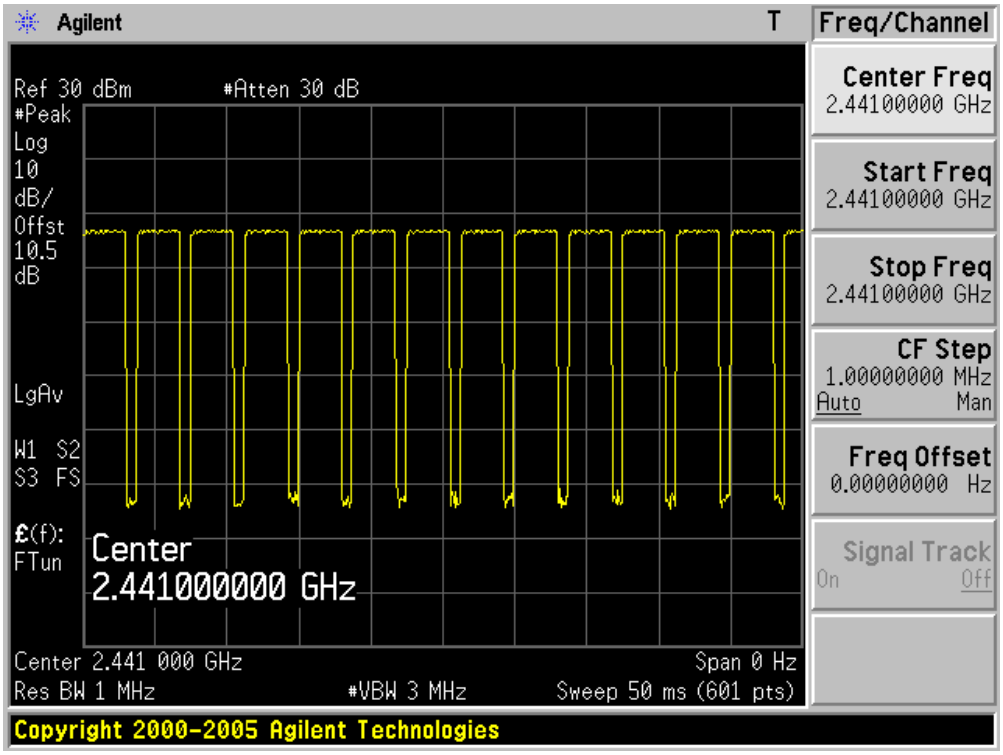
Product	:	Bluetooth headset
Test Item	:	Time of Occupancy (Dwell Time)
Test Site	:	TR-8
Test Mode	:	Transmitter-3Mbps(8DPSK_DH5)

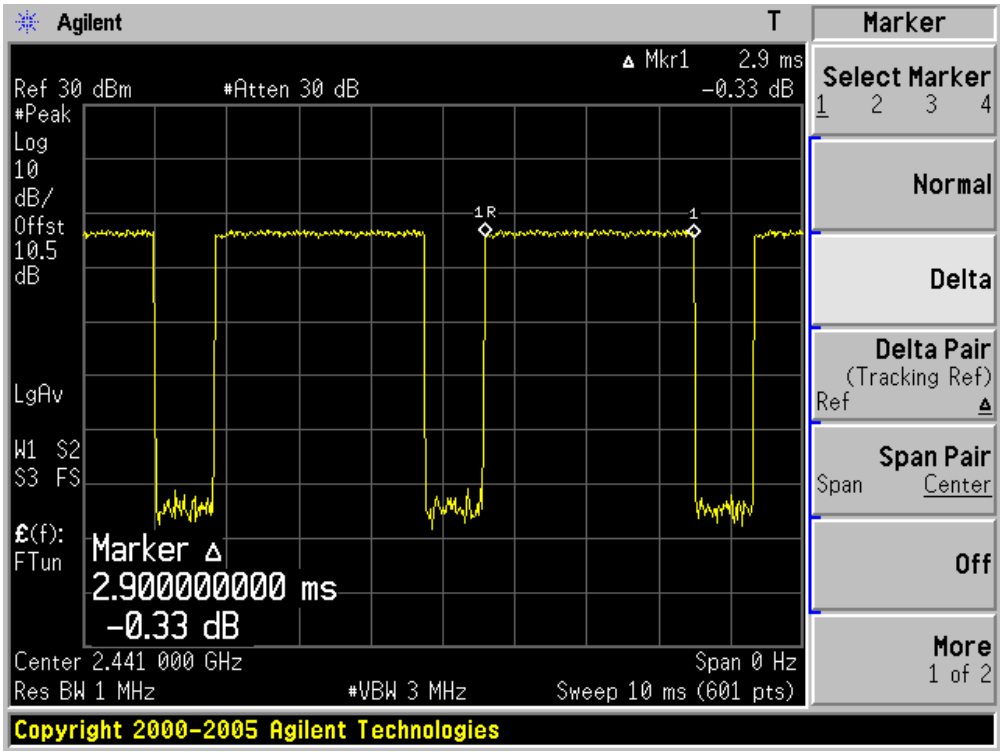
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	301.60	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 13/50msec=260 hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec: [(2.9ms*260)/79]*31.6= 301.60msec

Channel 39 (2441MHz) - (3DH5)




Agilent
T
Marker
Mkr1 2.9 ms
Ref 30 dBm
#Atten 30 dB
-0.33 dB
#Peak
Log
10
dB/
Offst
10.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Marker Δ
2.900000000 ms
-0.33 dB
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 3 MHz
Sweep 10 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Copyright 2000-2005 Agilent Technologies

9. Peak Output Power

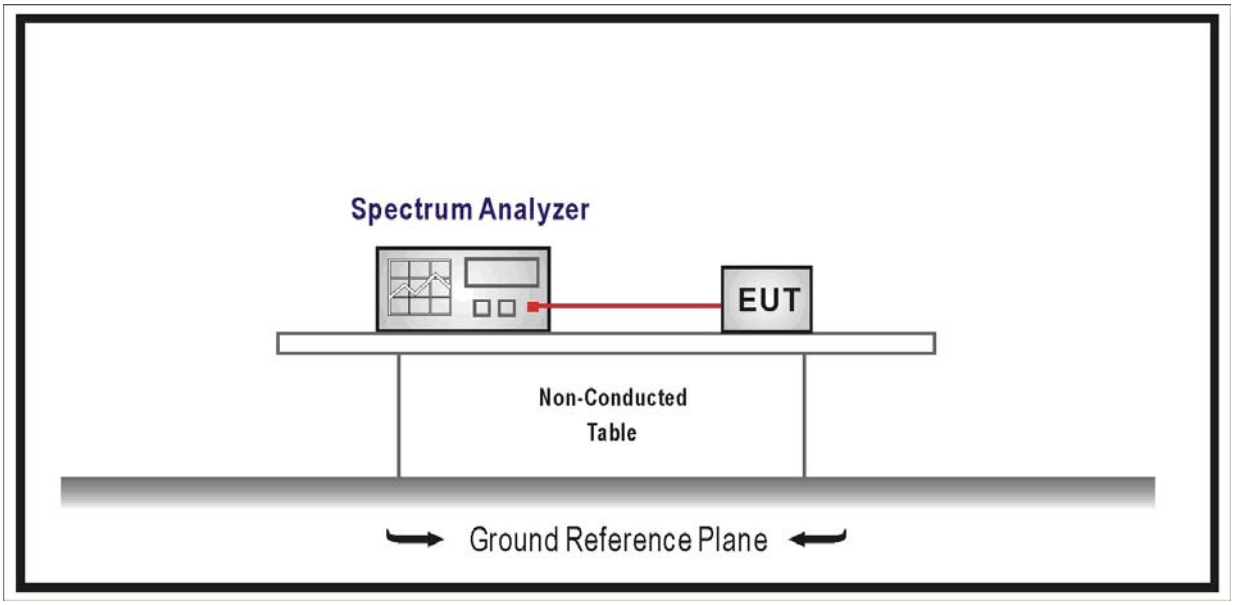
9.1. Test Equipment

Peak Output Power / TR-8

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

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

9.2. Test Setup



9.3. Limit

- 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.
- For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

Note: the conducted output power limit specified above is based on the use the antennas with

directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

9.4. Test Procedure

According to ANSI C63.10: 2009.
Use the following spectrum analyzer settings:
Span = approximately 5 times the 20dB bandwidth, centered on a hopping channel
RBW ＞ the 20 dB bandwidth of the emission being measured.
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (don't forget added the external attenuation and cable loss).

9.5. Uncertainty

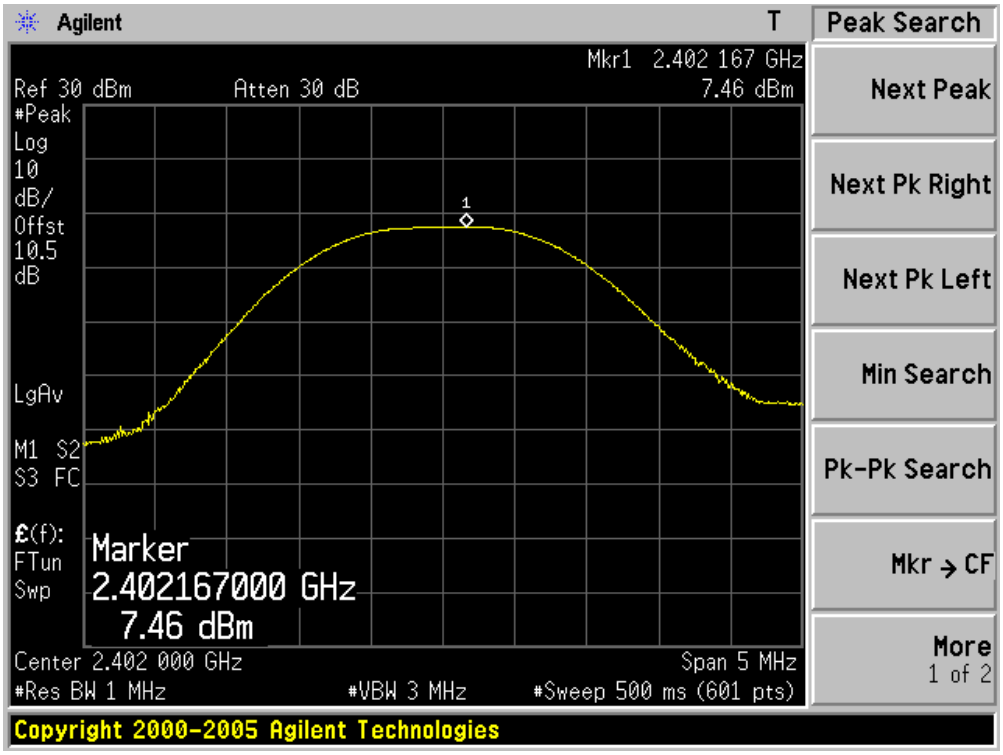
The measurement uncertainty is defined as ± 1.0 dB

9.6. Test Result

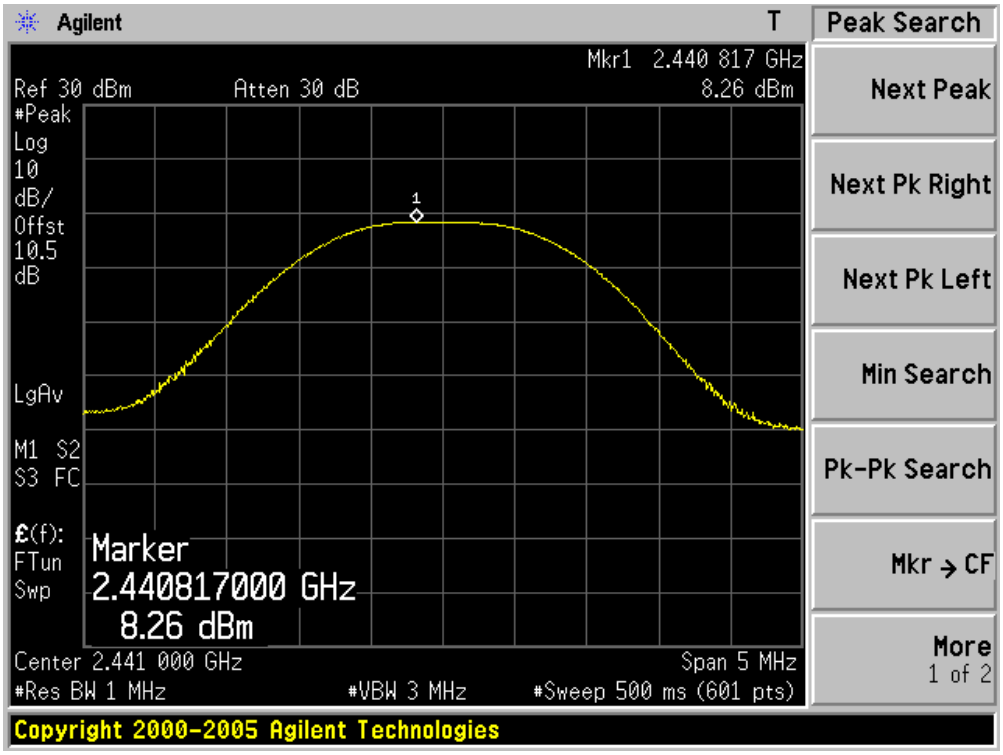
Product	:	Bluetooth headset
Test Item	:	Power Output
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	7.46	30.00	Pass
39	2441	8.26	30.00	Pass
78	2480	8.63	30.00	Pass

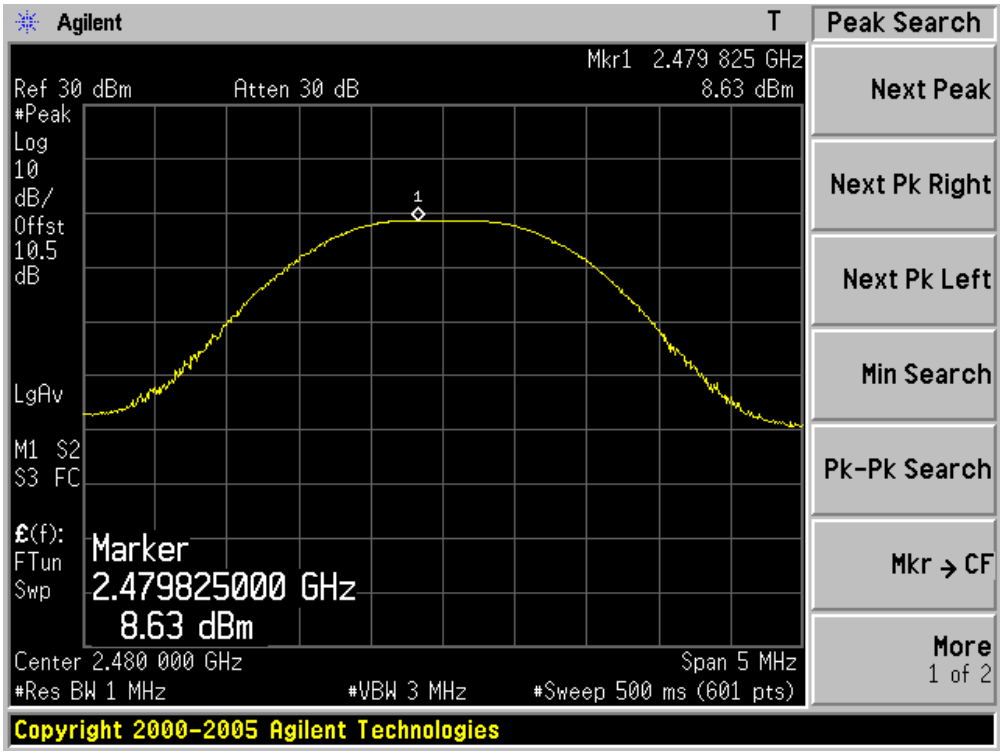
DH5 2402MHz



DH5 2441MHz



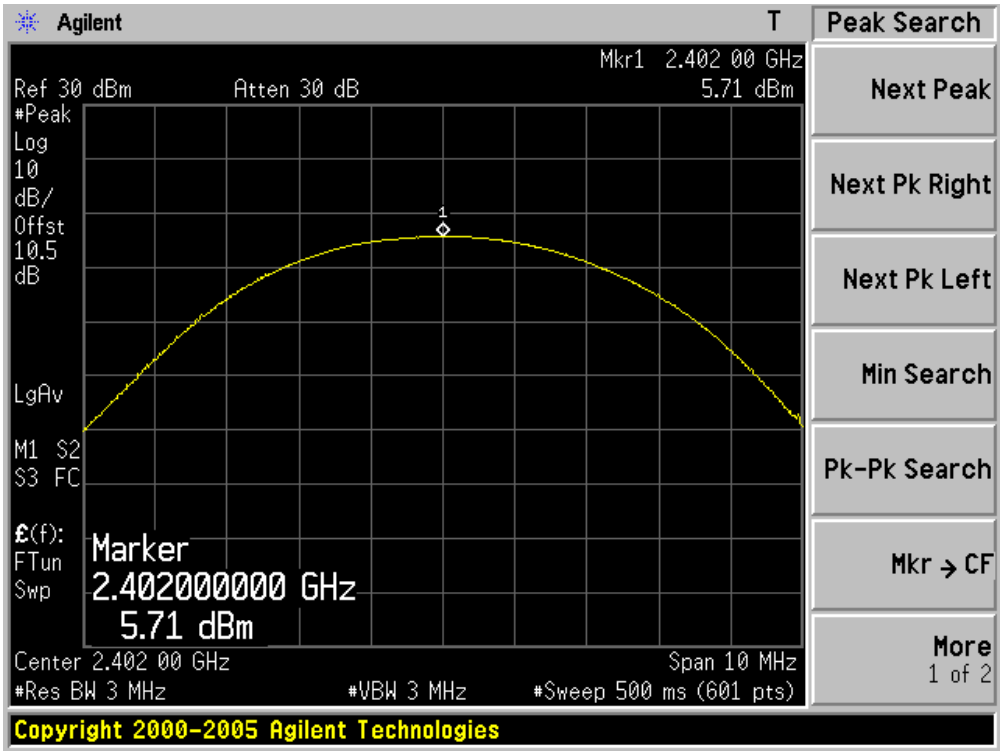
DH5 2480MHz



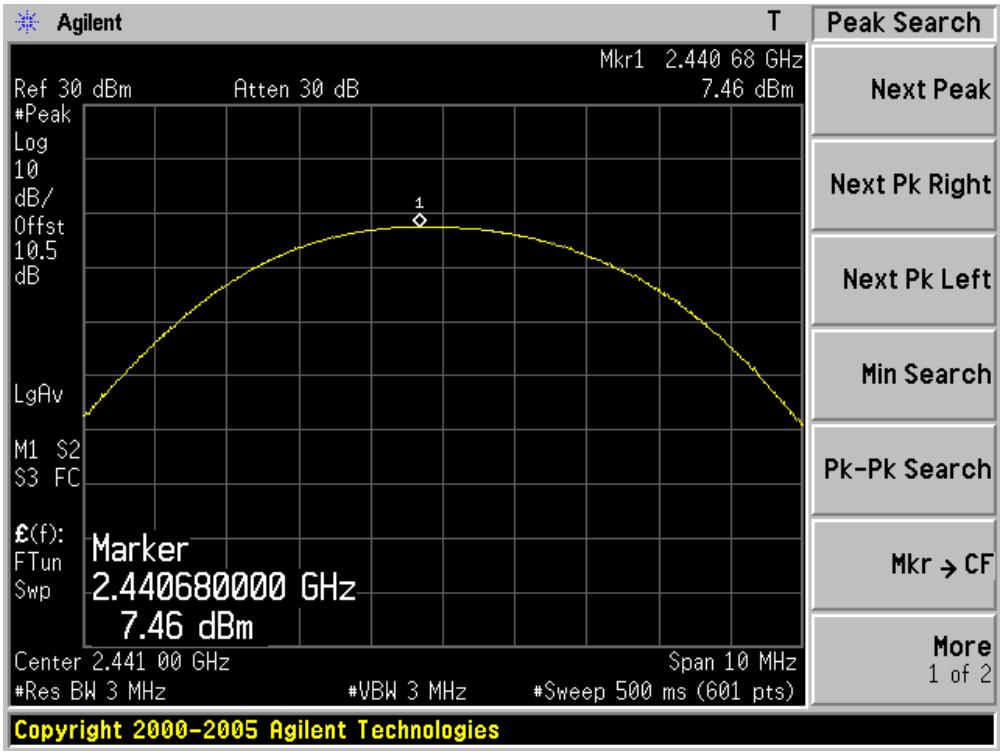
Product	:	Bluetooth headset
Test Item	:	Power Output
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	5.71	30.00	Pass
39	2441	7.46	30.00	Pass
78	2480	7.94	30.00	Pass

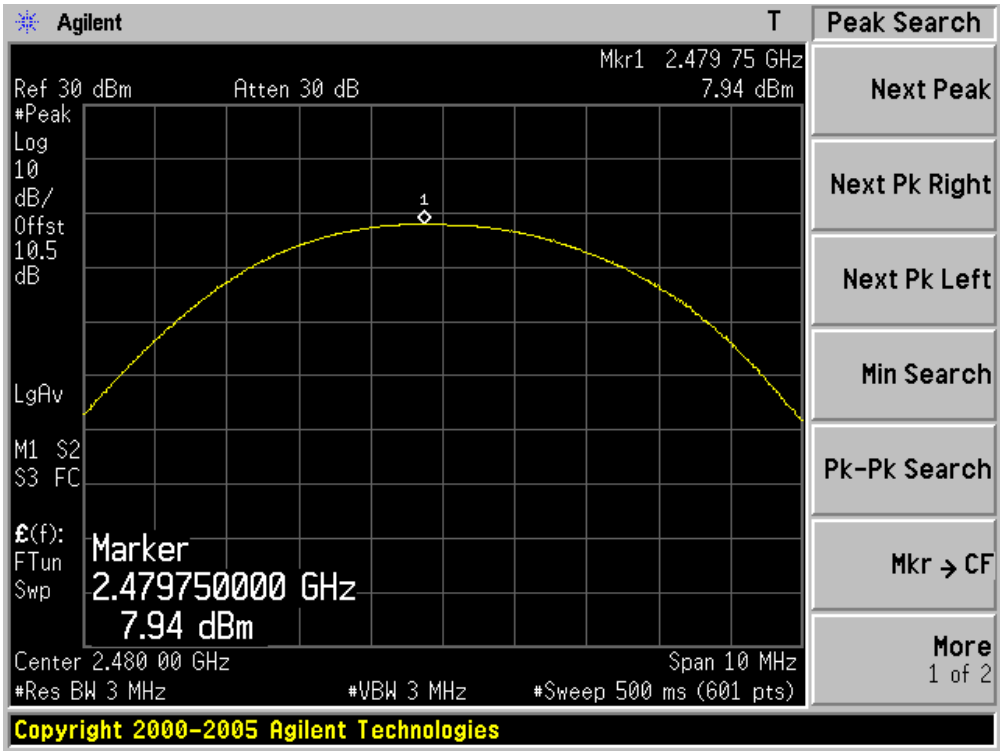
2DH5 2402MHz



2DH5 2441MHz



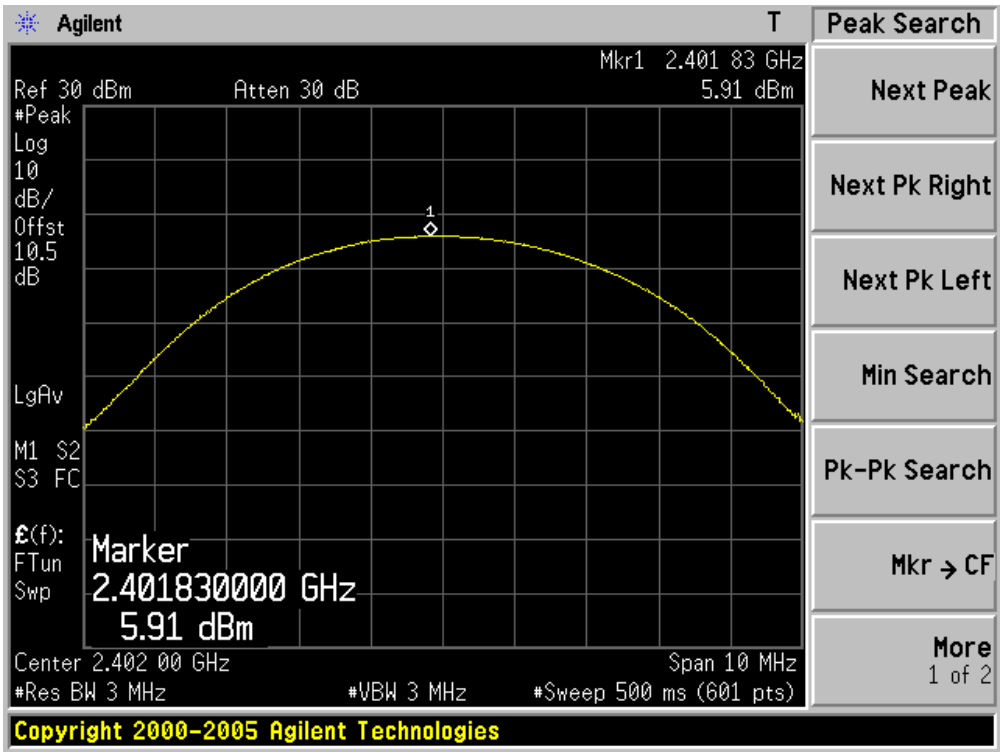
2DH5 2480MHz



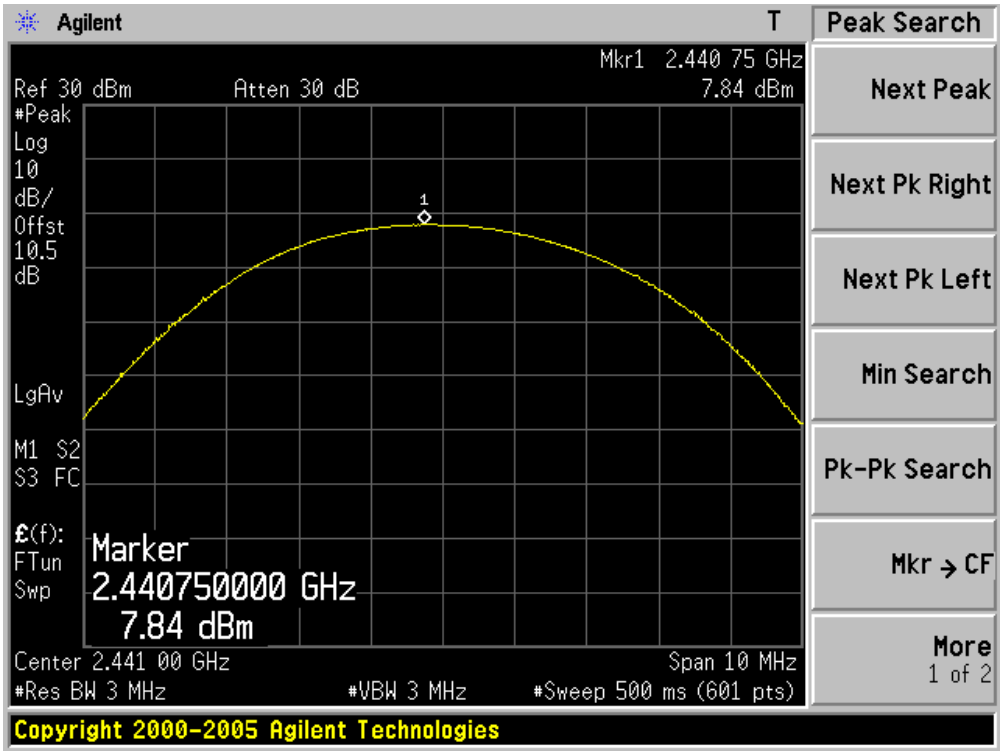
Product	:	Bluetooth headset
Test Item	:	Power Output
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	5.91	30.00	Pass
39	2441	7.84	30.00	Pass
78	2480	8.19	30.00	Pass

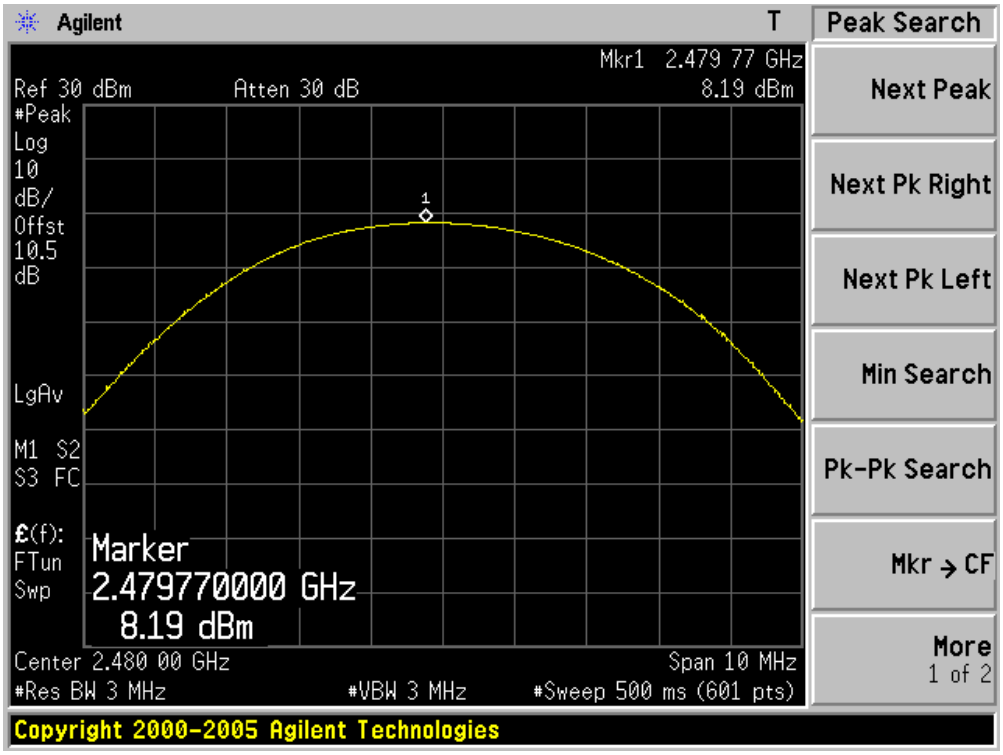
3DH5 2402MHz



3DH5 2441MHz



3DH5 2480MHz



10. Band-edge Compliance of RF Conducted Emissions

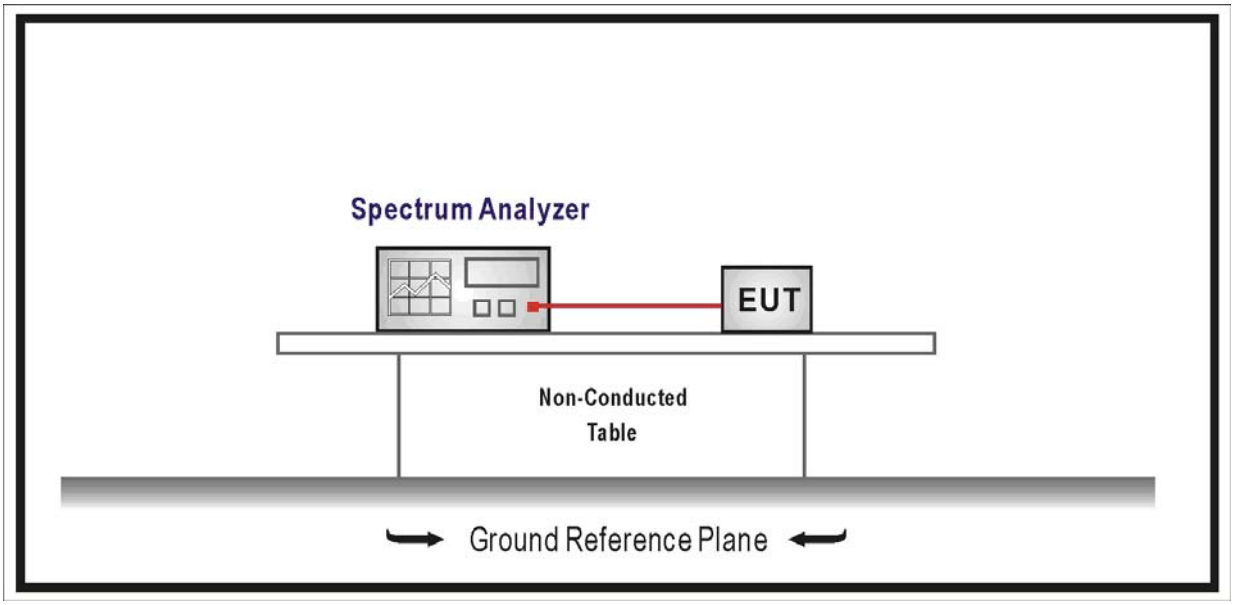
10.1. Test Equipment

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

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

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

10.2. Test Setup



10.3. Limit

- 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.
- 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 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, 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) of FCC part 15 is not required.

10.4. Test Procedure

According to ANSI C63.10: 2009.
Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation.
RBW ≧ 1% of the span
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation prouduct outside of the band, if this level is greater than that at the bandedge.
Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.
Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

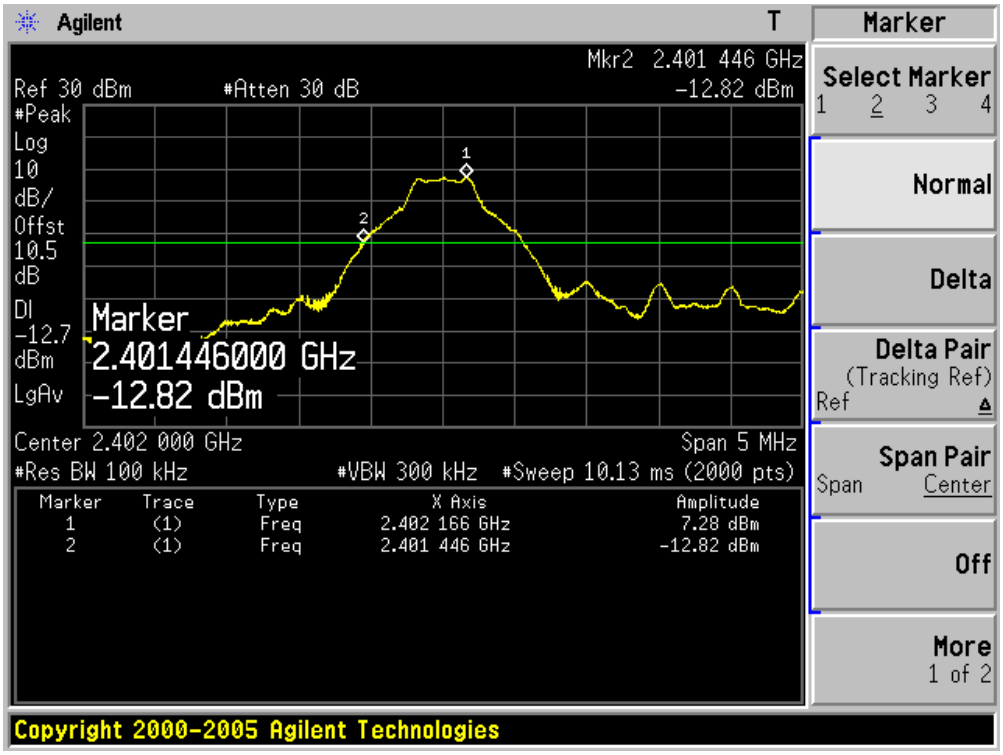
10.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

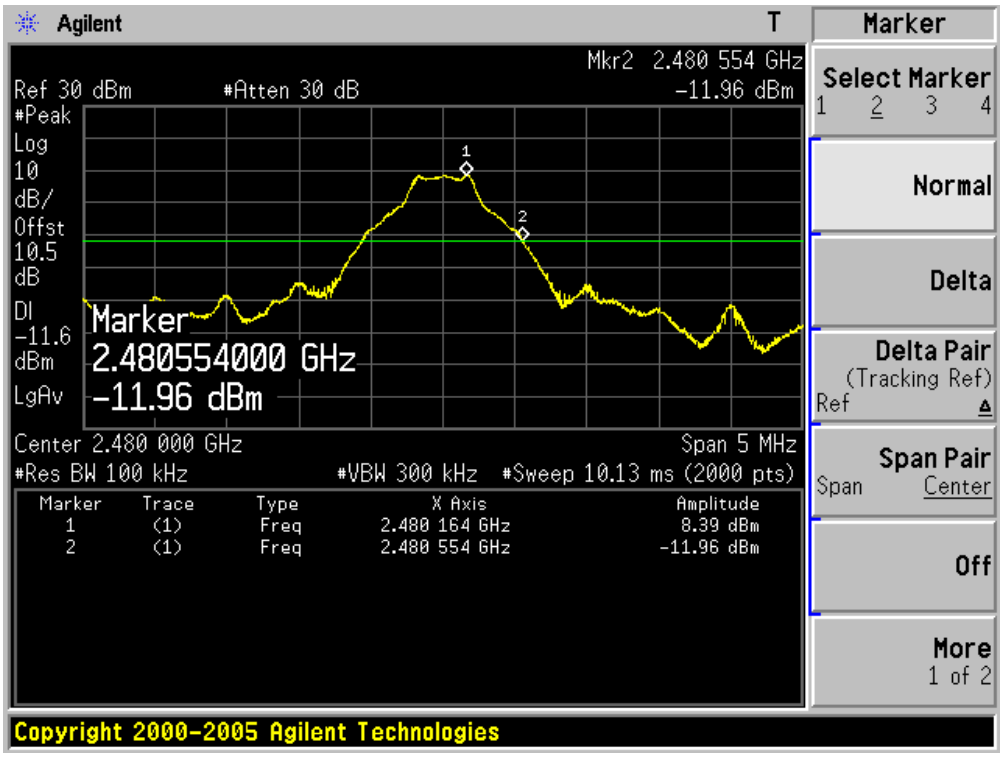
10.6. Test Result

Product	:	Bluetooth headset
Test Item	:	Band-edge Compliance of RF Conducted Emissions
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Channel 00 (2402MHz)

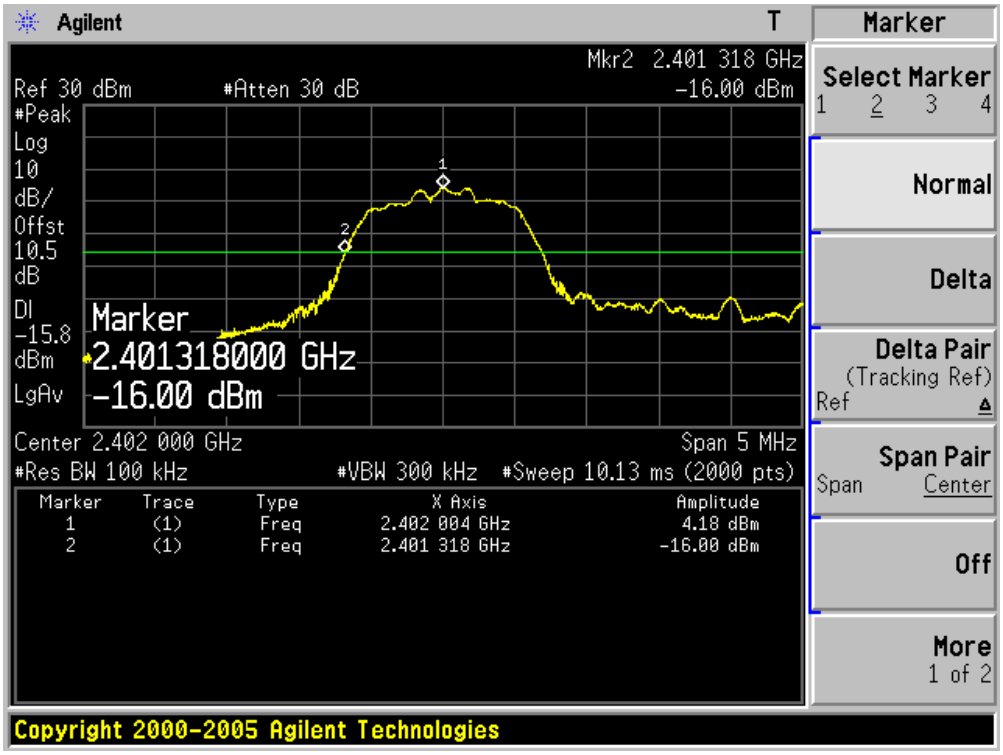


Channel 78 (2480MHz)

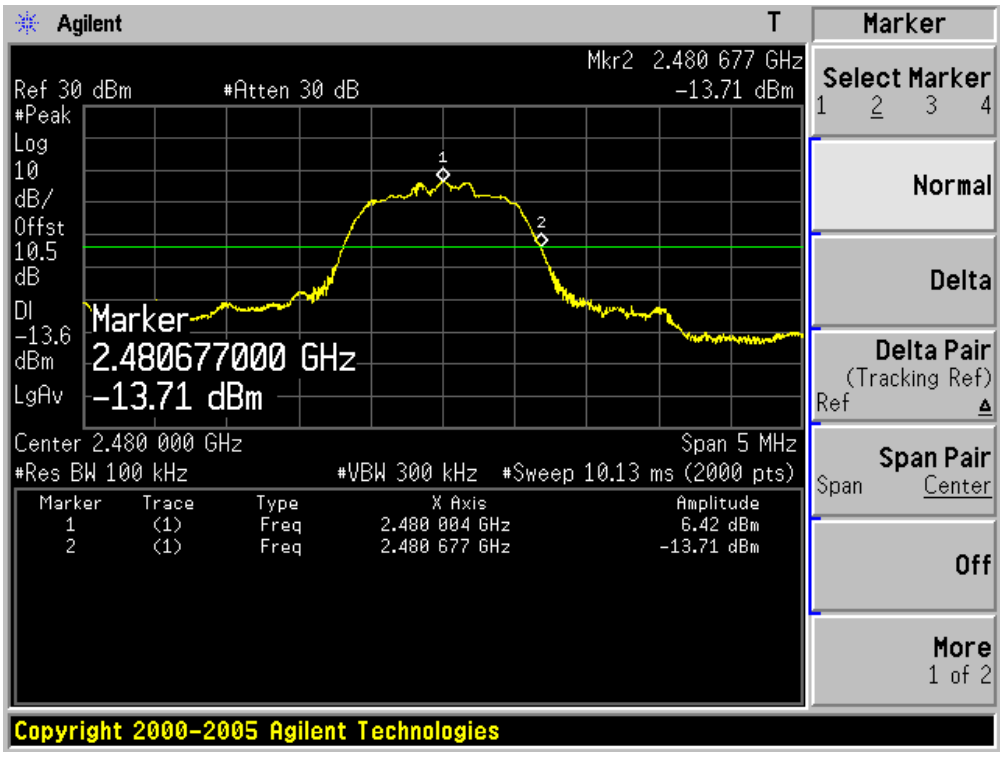


Product	:	Bluetooth headset
Test Item	:	Band-edge Compliance of RF Conducted Emissions
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Channel 00 (2402MHz)

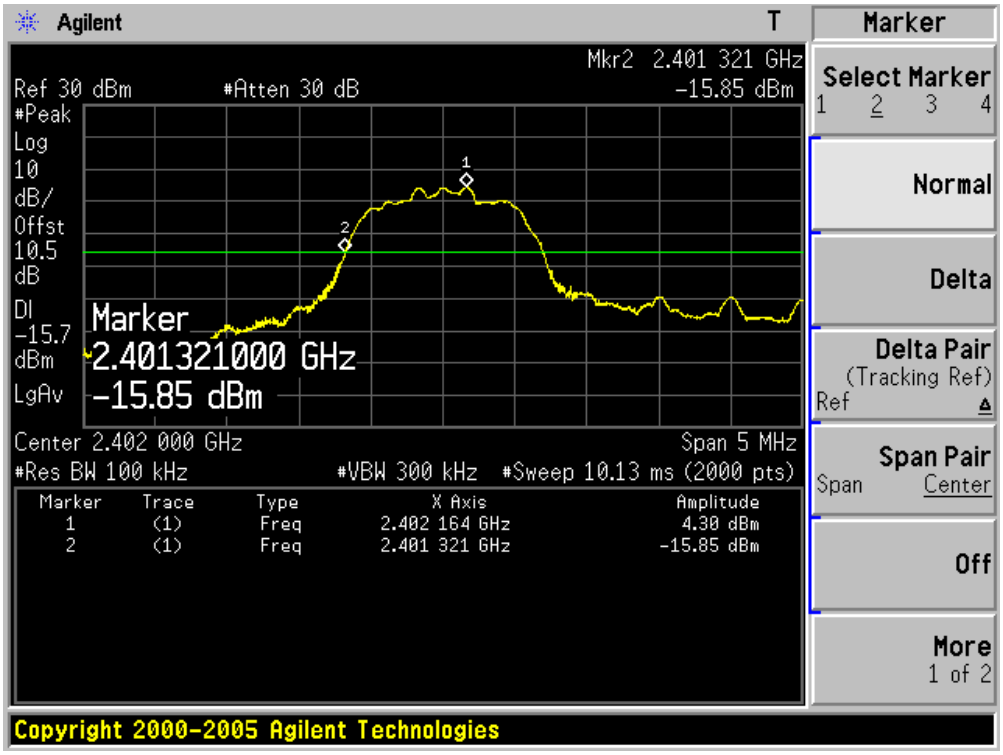


Channel 78 (2480MHz)

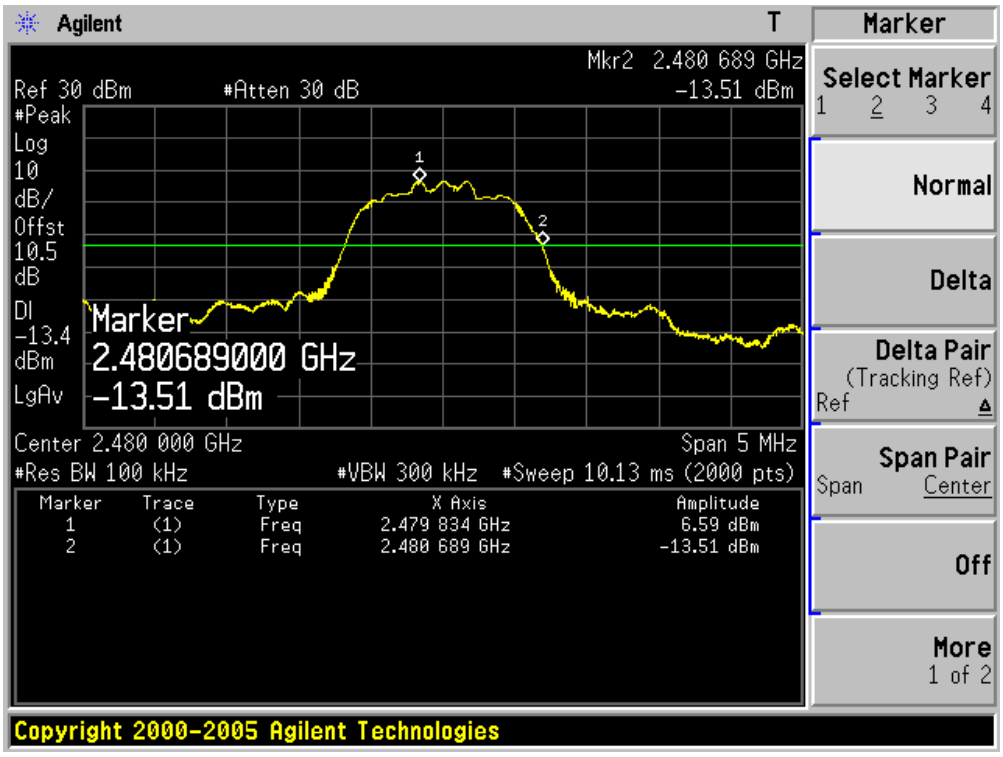


Product	:	Bluetooth headset
Test Item	:	Band-edge Compliance of RF Conducted Emissions
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Channel 00 (2402MHz)

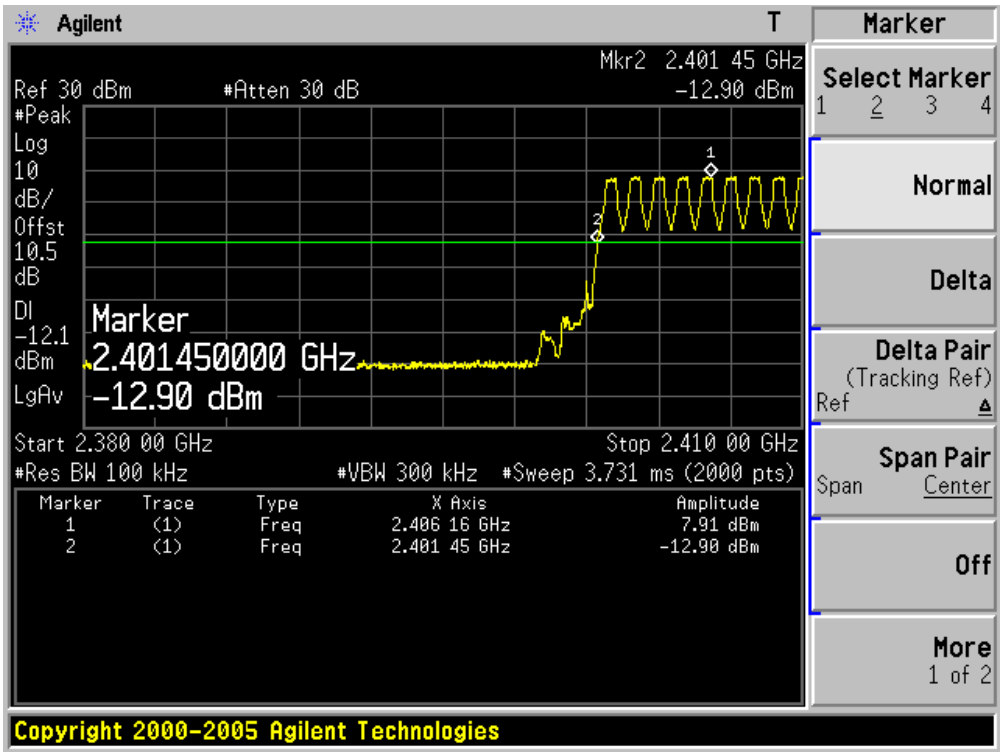


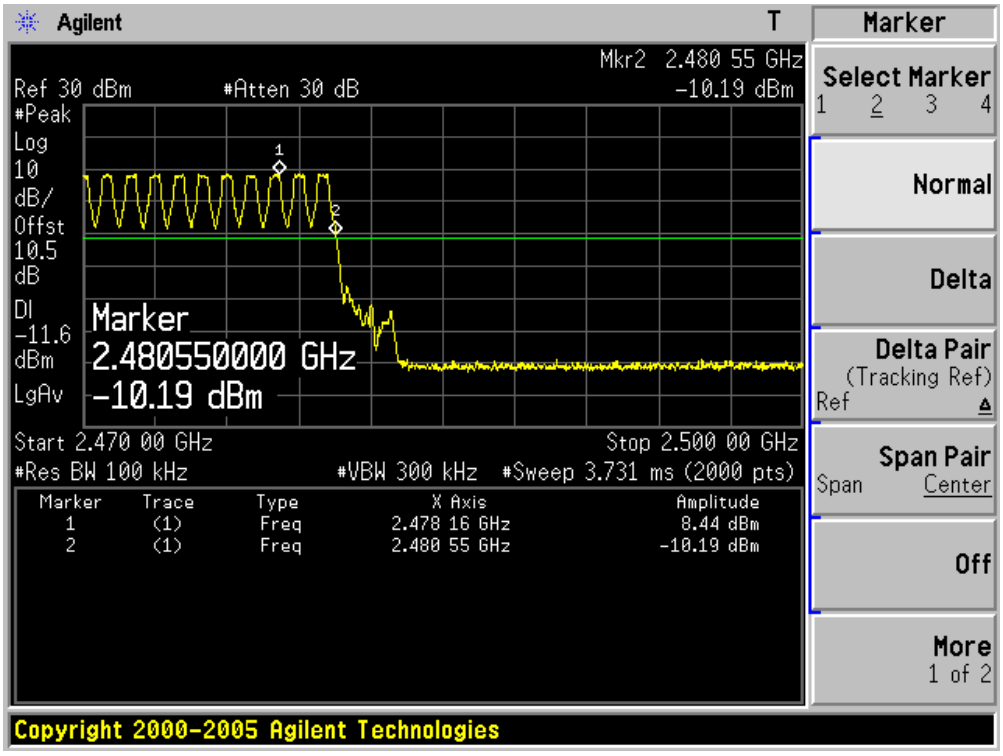
Channel 78 (2480MHz)



Product	:	Bluetooth headset
Test Item	:	Band-edge Compliance of RF Conducted Emissions
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

Hopping Mode





11. Spurious RF Conducted Emissions

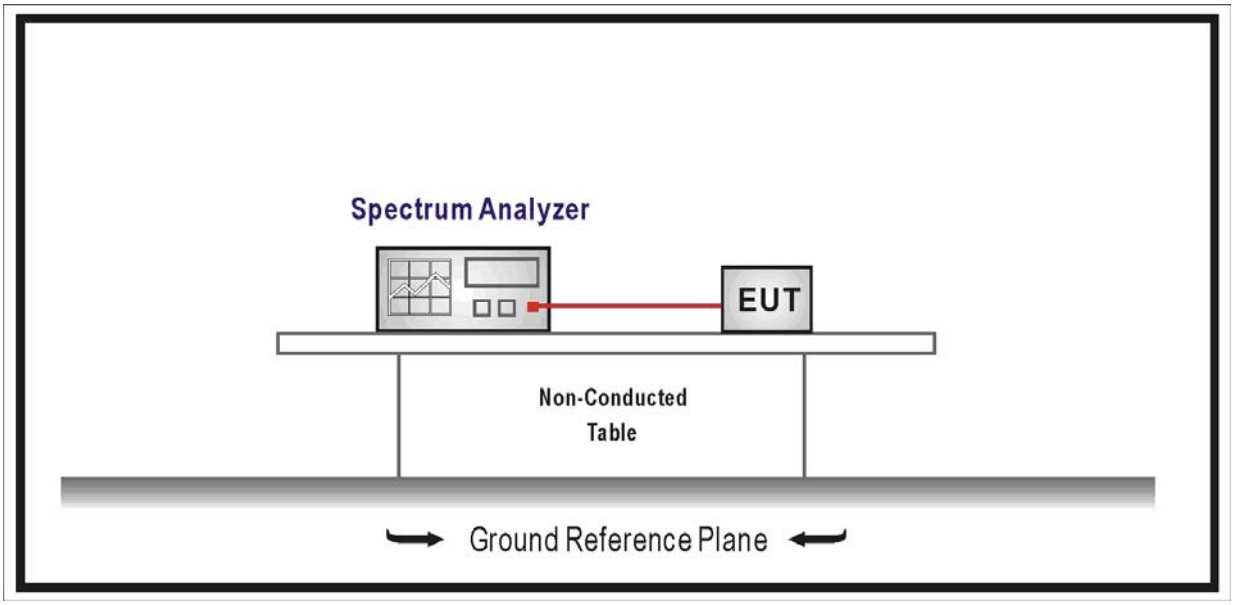
11.1. Test Equipment

Spurious RF Conducted Emissions / TR-8

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

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

11.2. Test Setup



11.3. Limit

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 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, 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) of FCC part 15 is not required.

11.4. Test Procedure

According to ANSI C63.10: 2009.
Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10^{th} harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

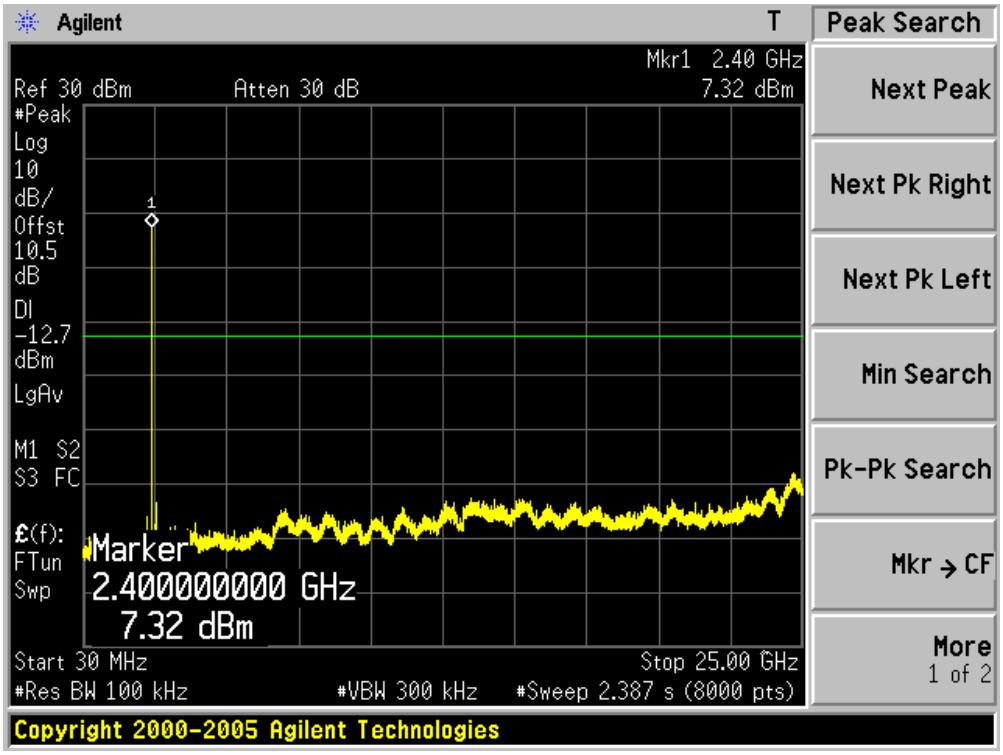
11.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

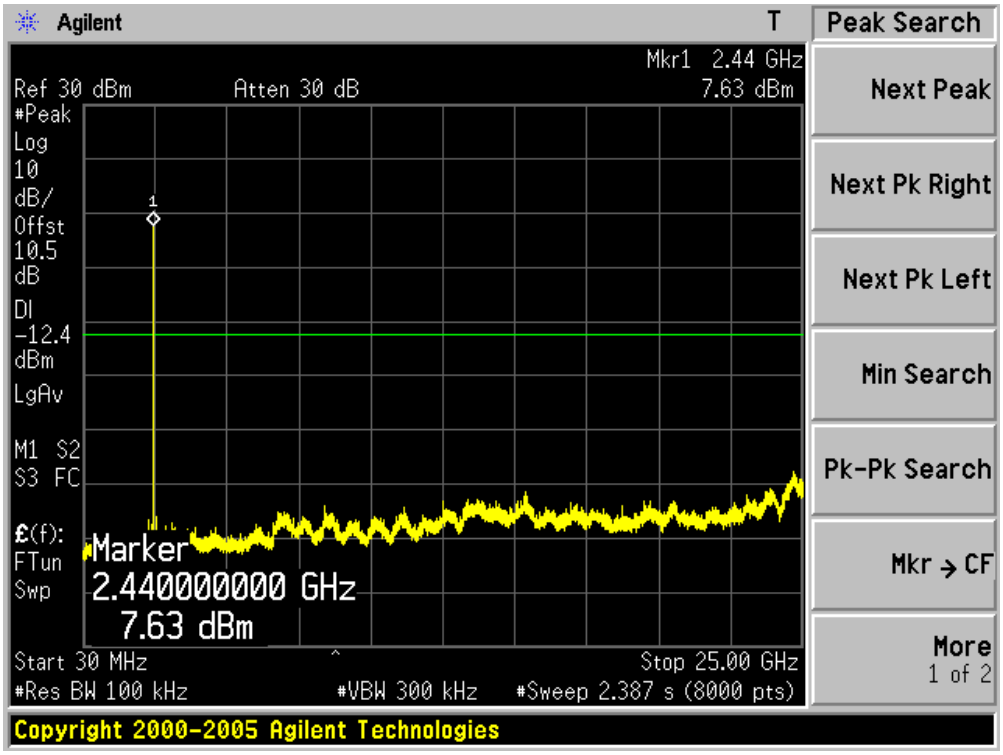
11.6. Test Result

Product	:	Bluetooth headset
Test Item	:	Spurious RF Conducted Emissions
Test Mode	:	Mode 1: Transmitter-1Mbps(GFSK_DH5)

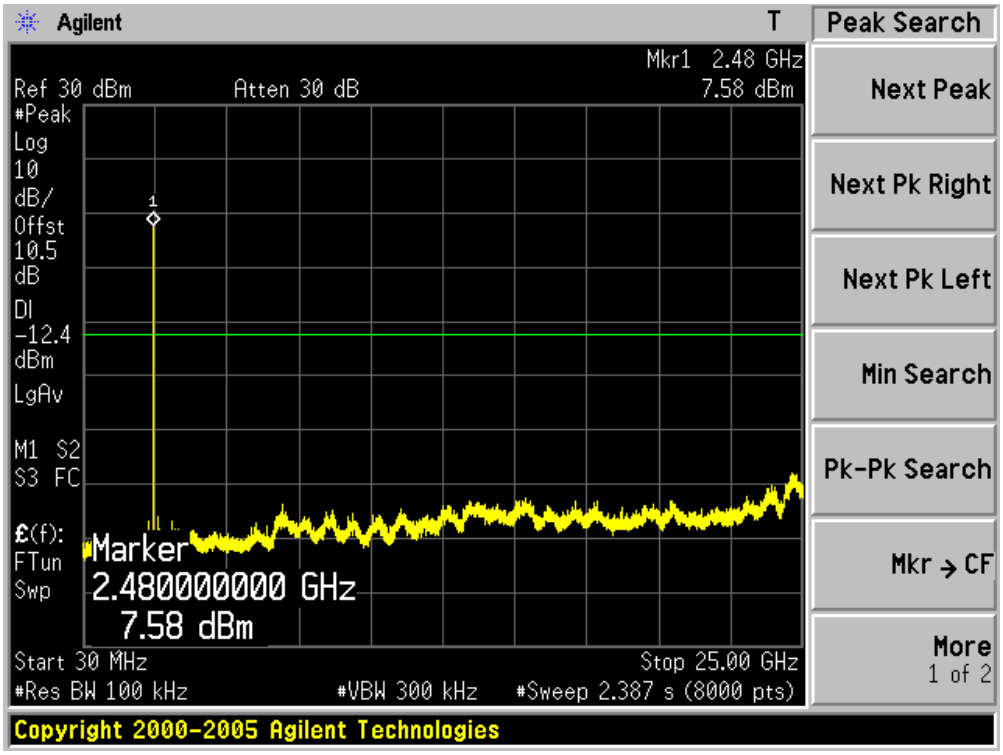
Channel 00 (2402MHz)



Channel 39 (2441MHz)

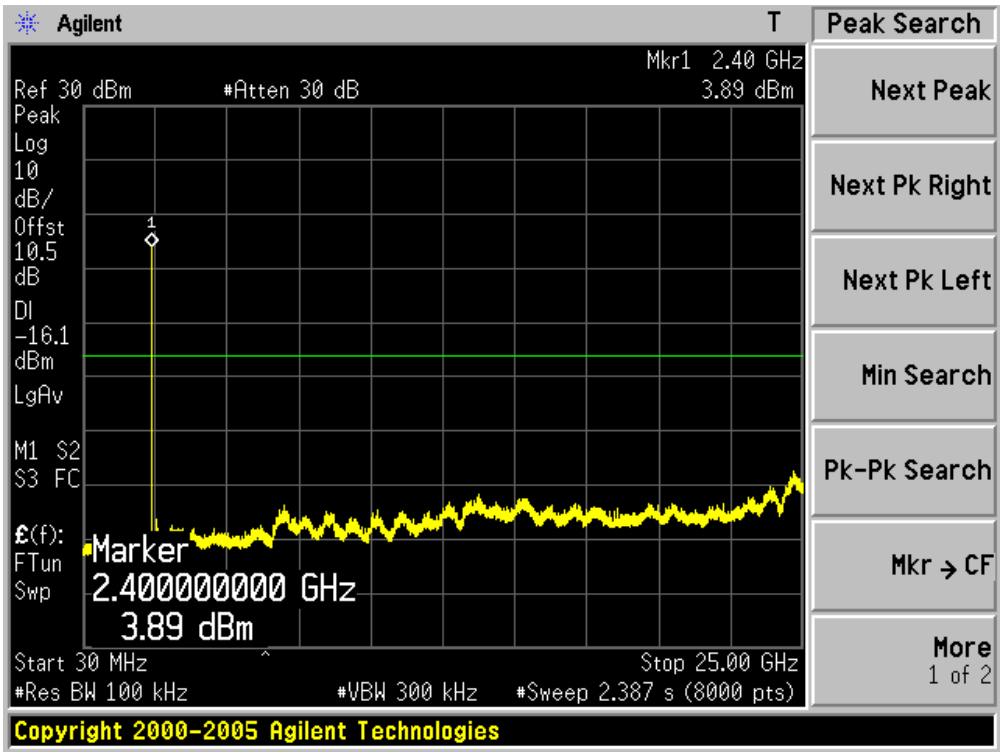


Channel 78 (2480MHz)

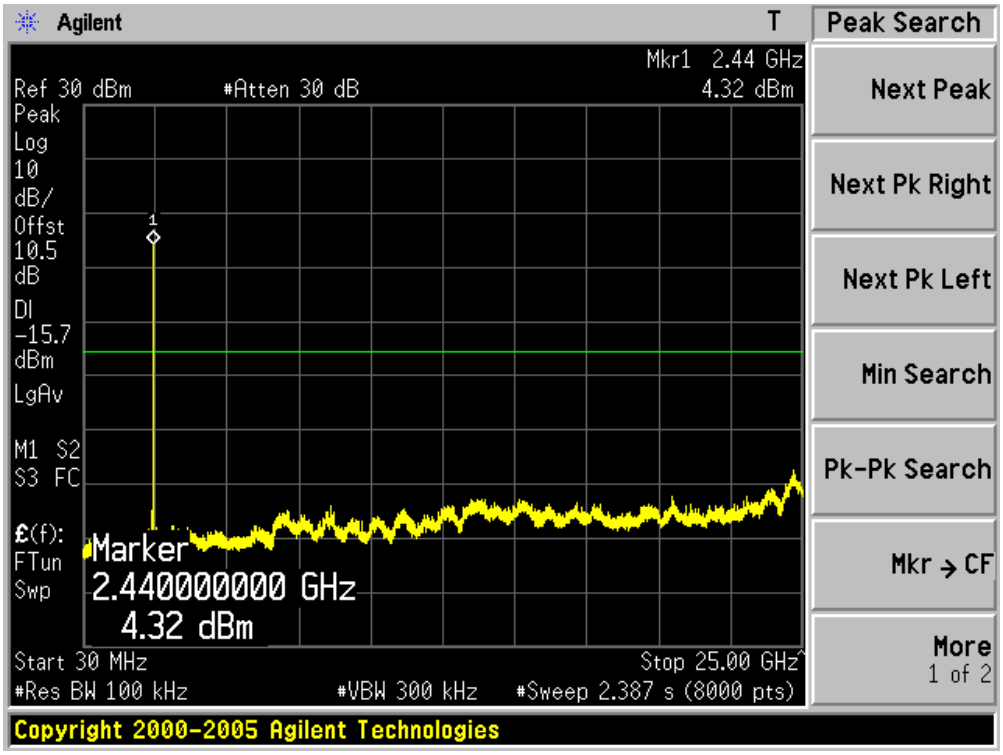


Product	:	Bluetooth headset
Test Item	:	Spurious RF Conducted Emissions
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

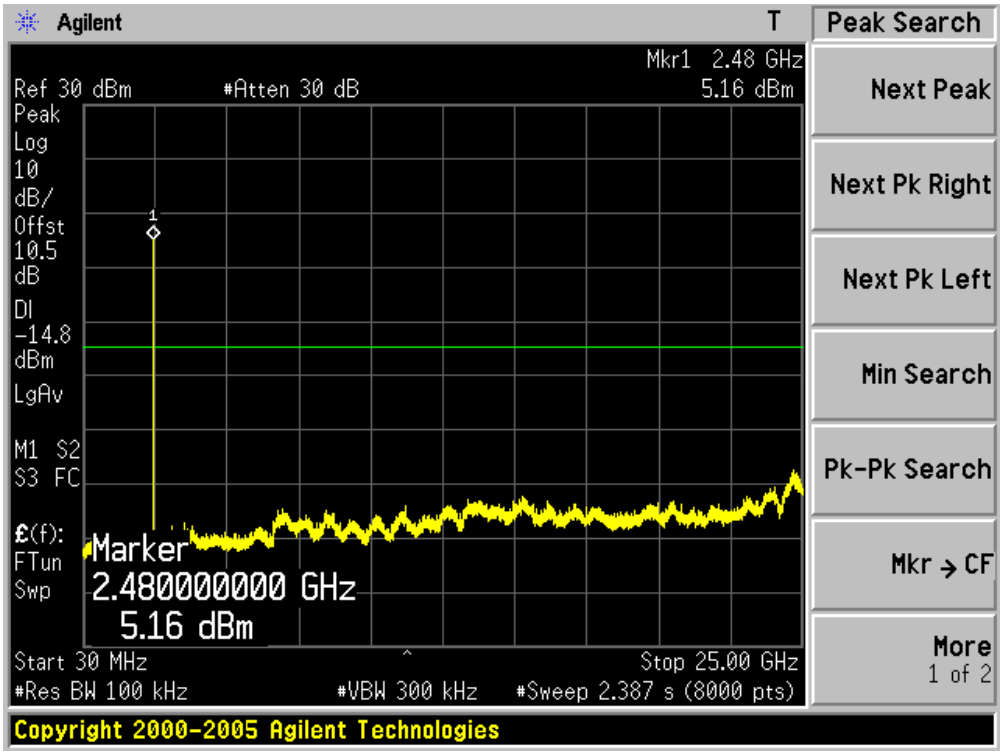
Channel 00 (2402MHz)



Channel 39 (2441MHz)

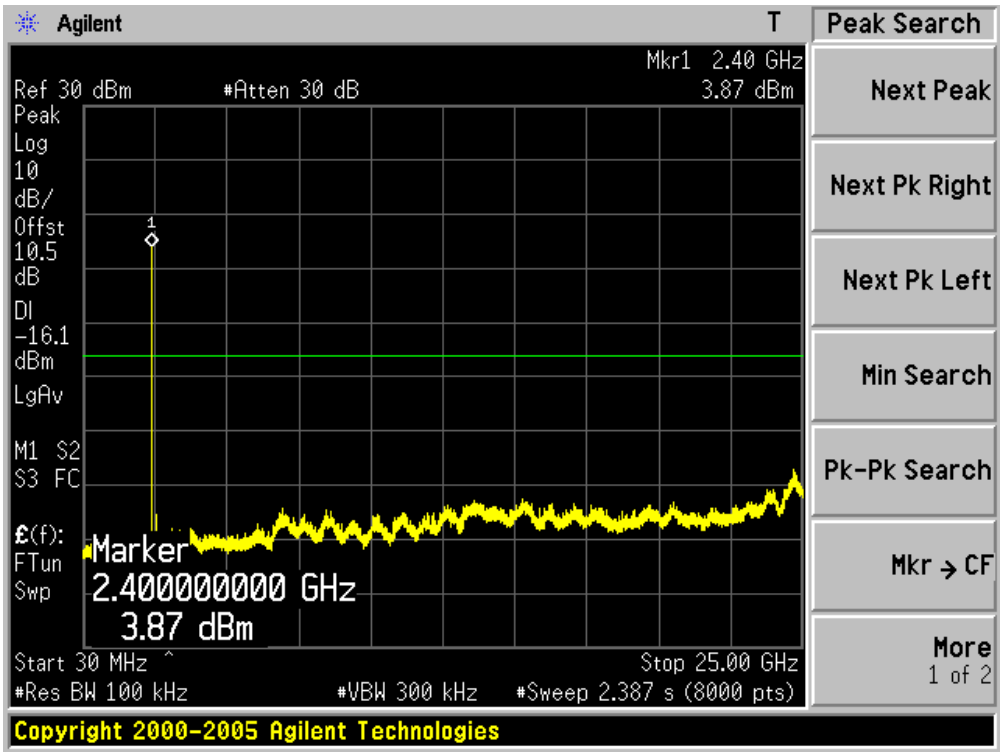


Channel 78 (2480MHz)

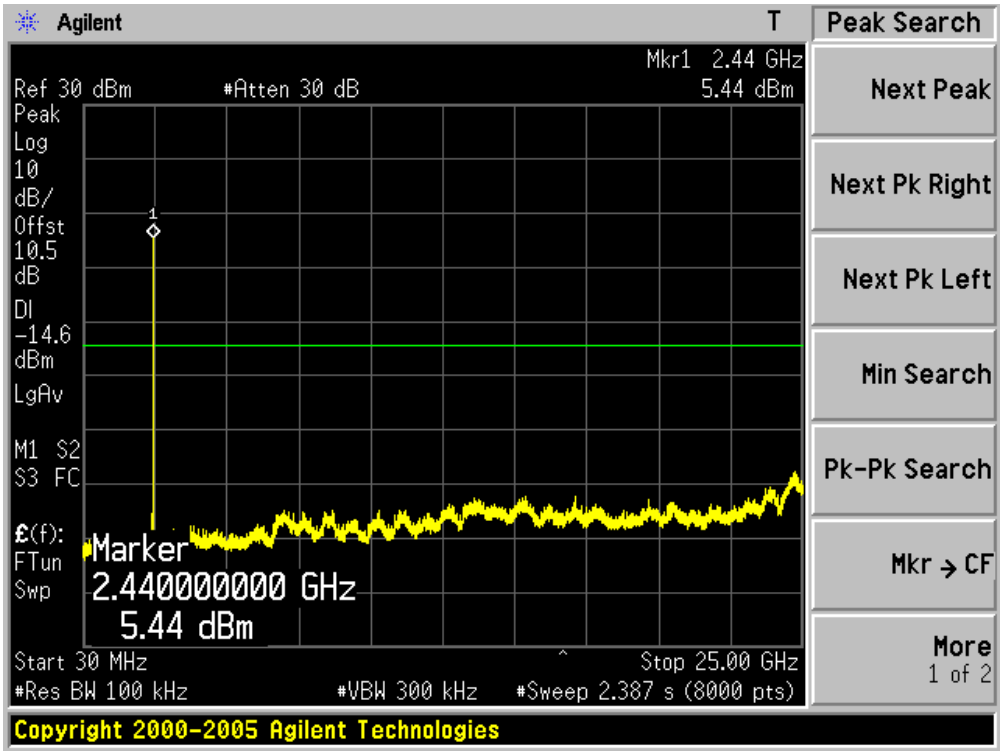


Product	:	Bluetooth headset
Test Item	:	Spurious RF Conducted Emissions
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)

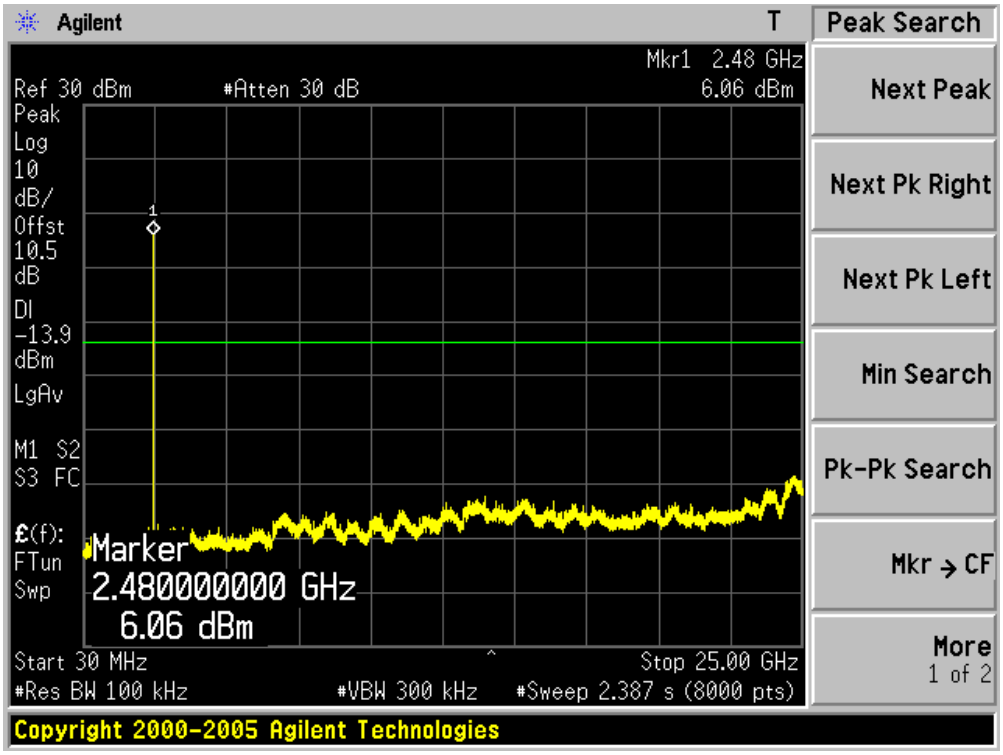
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



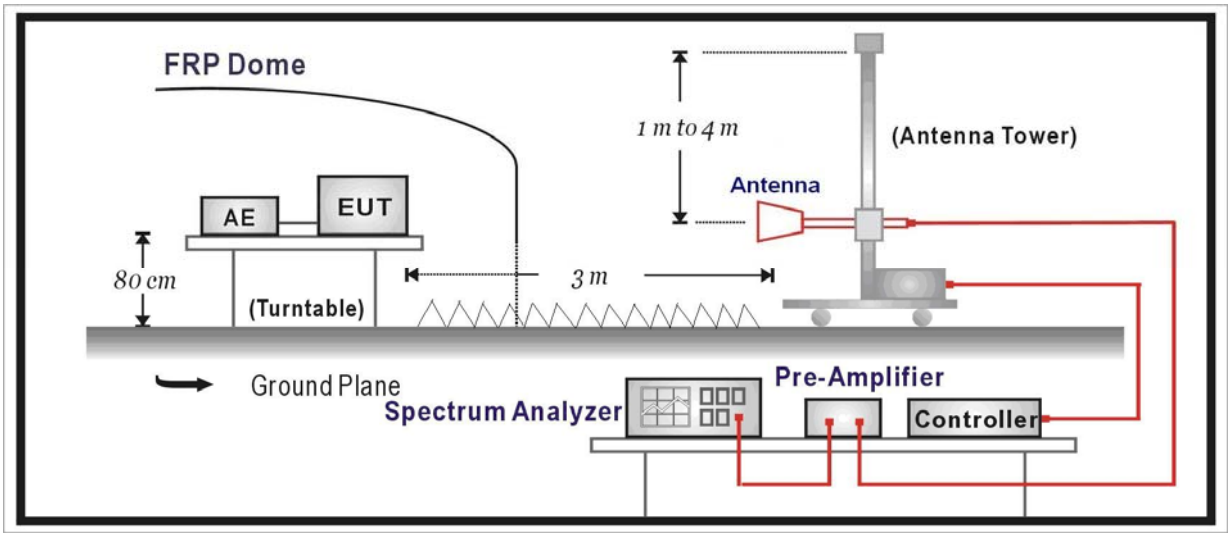
12. Radiated Emission Band Edge

12.1. Test Equipment

☒Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2012.06.11
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2013.01.10

12.2. Test Setup



12.3. Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) of FCC part 15.

12.4. Test Procedure

According to ANSI C63.10: 2009.
This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205 of FCC part 15. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≧ 1 GHz, 100 kHz for f < 1GHz
VBW ≧ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Follow the guidelines in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being

corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b) of FCC part 15.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209 of FCC Part 15. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit of FCC part 15.

If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method may be employed.

12.5. Uncertainty

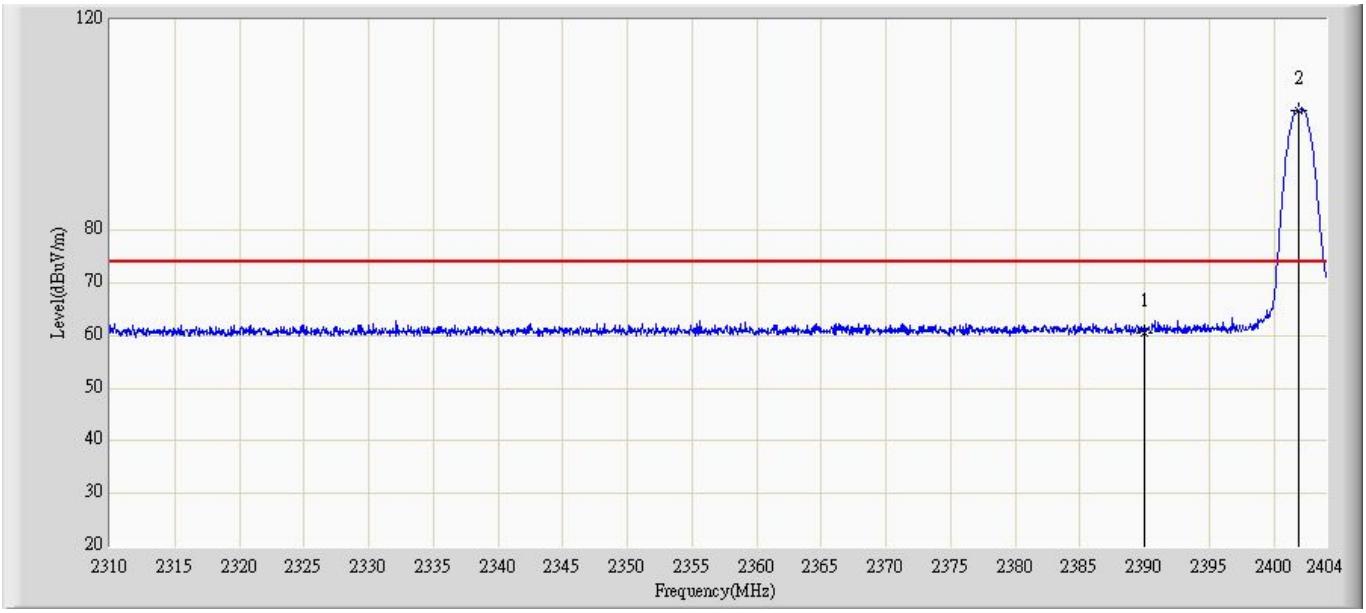
The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

12.6. Test Result

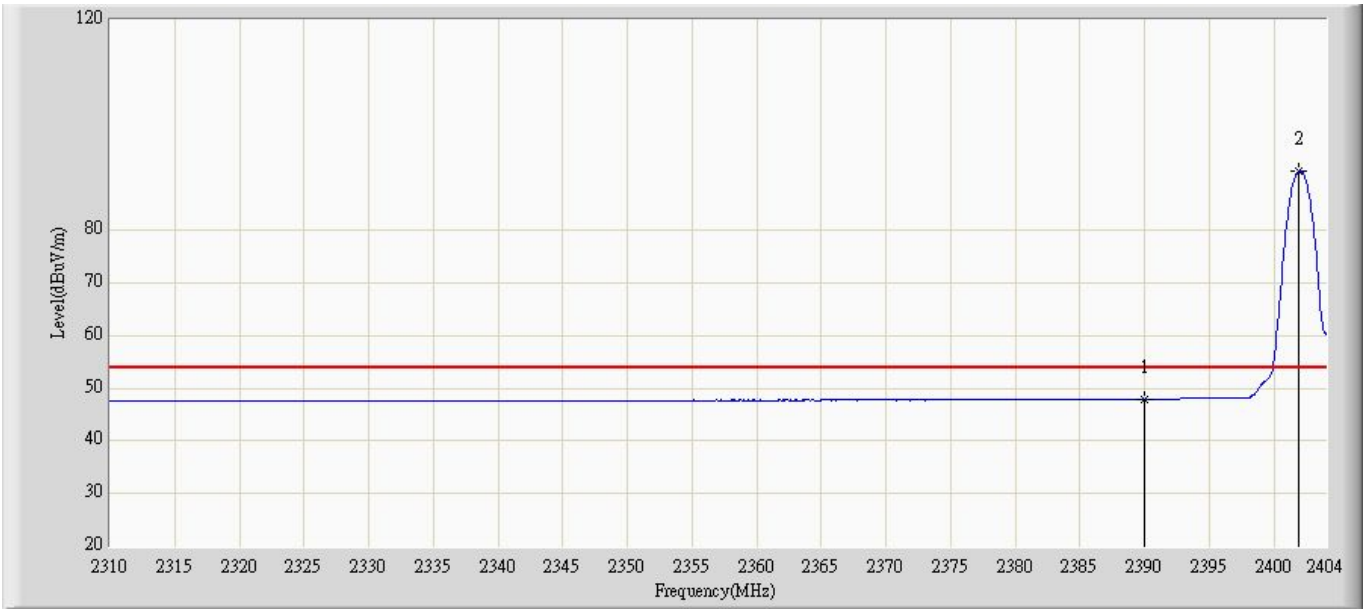
All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Profile: 125S032R	Page No.: 1
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 09:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz by DH5	



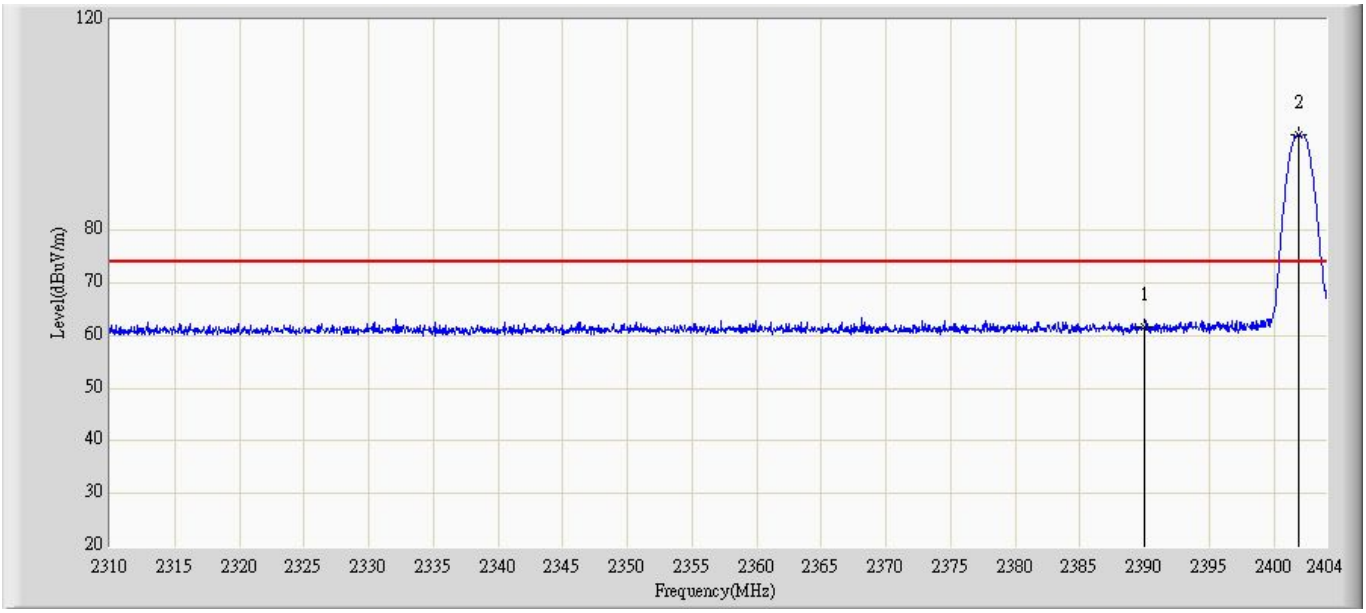
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	60.654	29.469	-13.346	74.000	31.185	PK
2		*	2401.885	102.875	71.695	N/A	N/A	31.180	PK

Profile: 125S032R	Page No.: 2
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 09:52
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz by DH5	



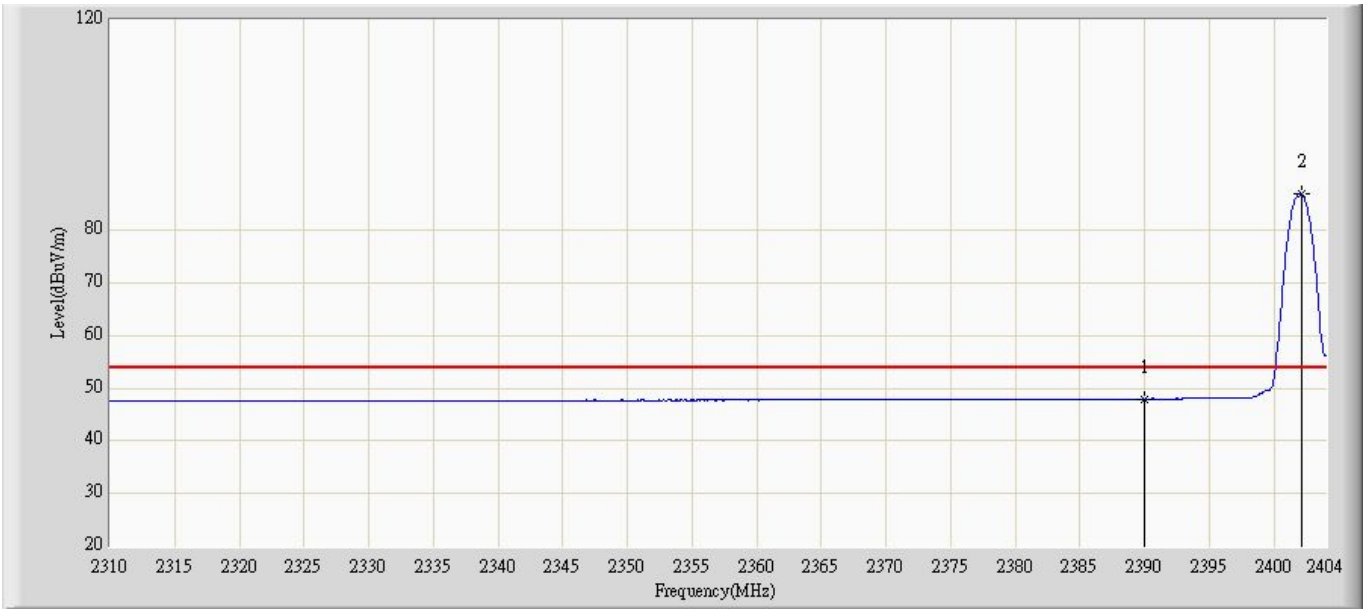
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.922	16.737	-6.078	54.000	31.185	AV
2		*	2401.932	91.277	60.097	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 3
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 09:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz by DH5	



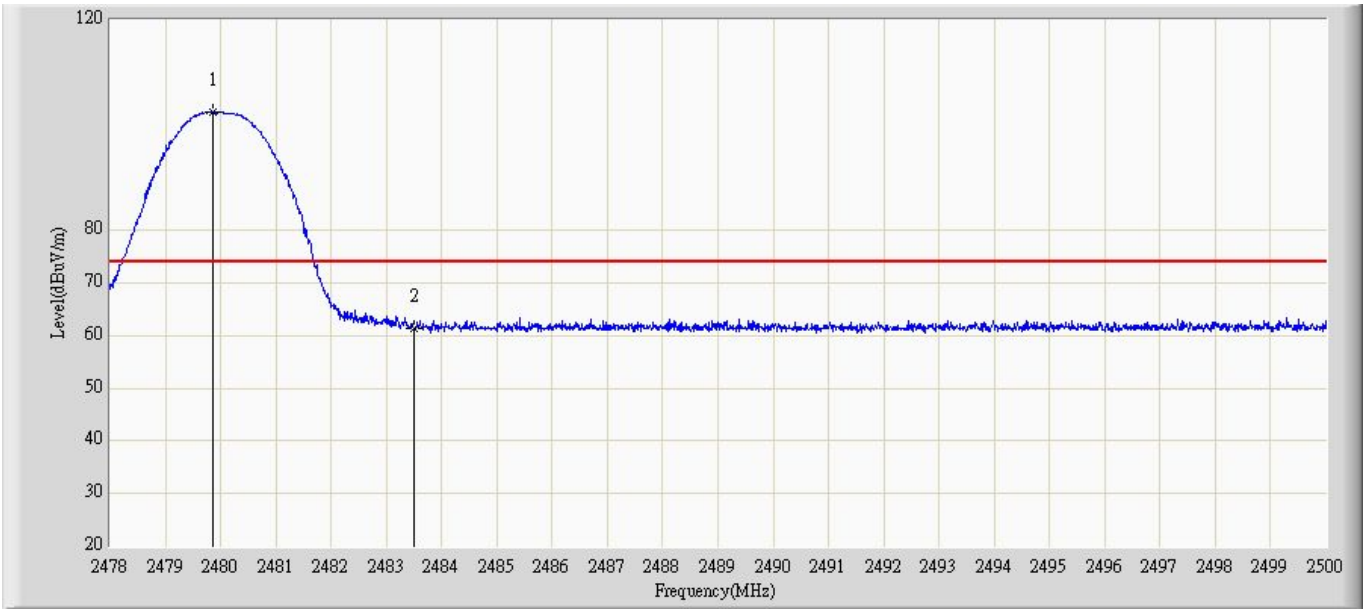
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.534	30.349	-12.466	74.000	31.185	PK
2		*	2401.885	98.187	67.007	N/A	N/A	31.180	PK

Profile: 125S032R	Page No.: 4
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2402MHz by DH5	



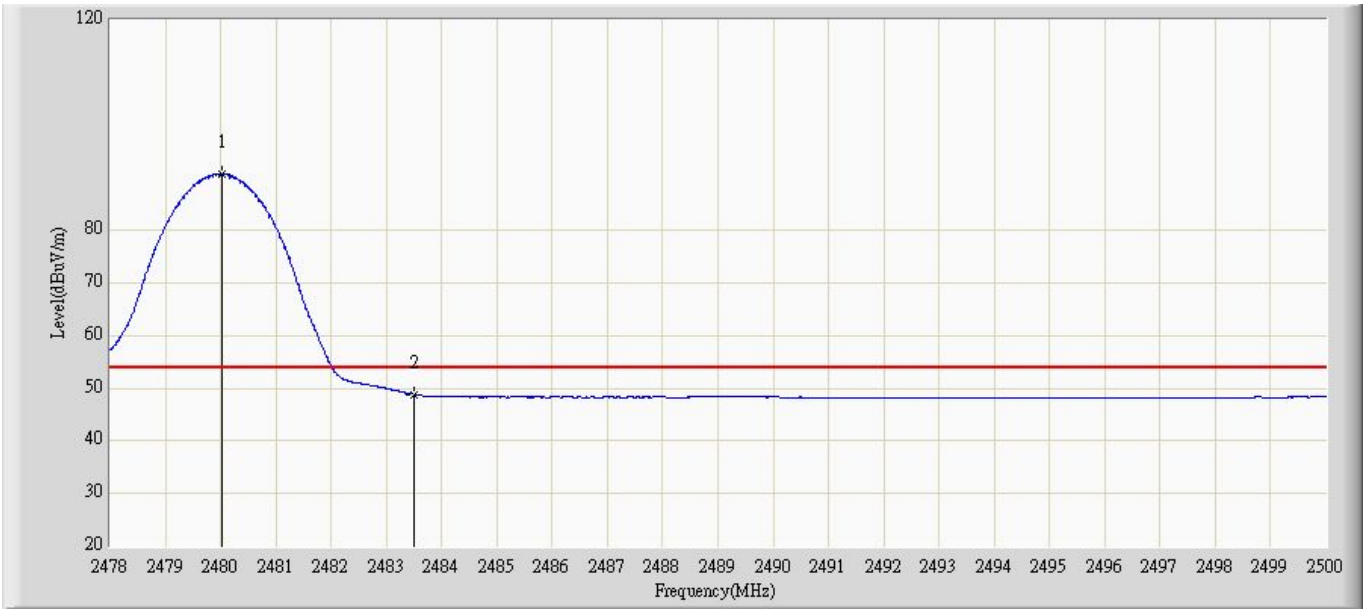
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.966	16.781	-6.034	54.000	31.185	AV
2		*	2402.073	86.979	55.799	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 5
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2480MHz by DH5	



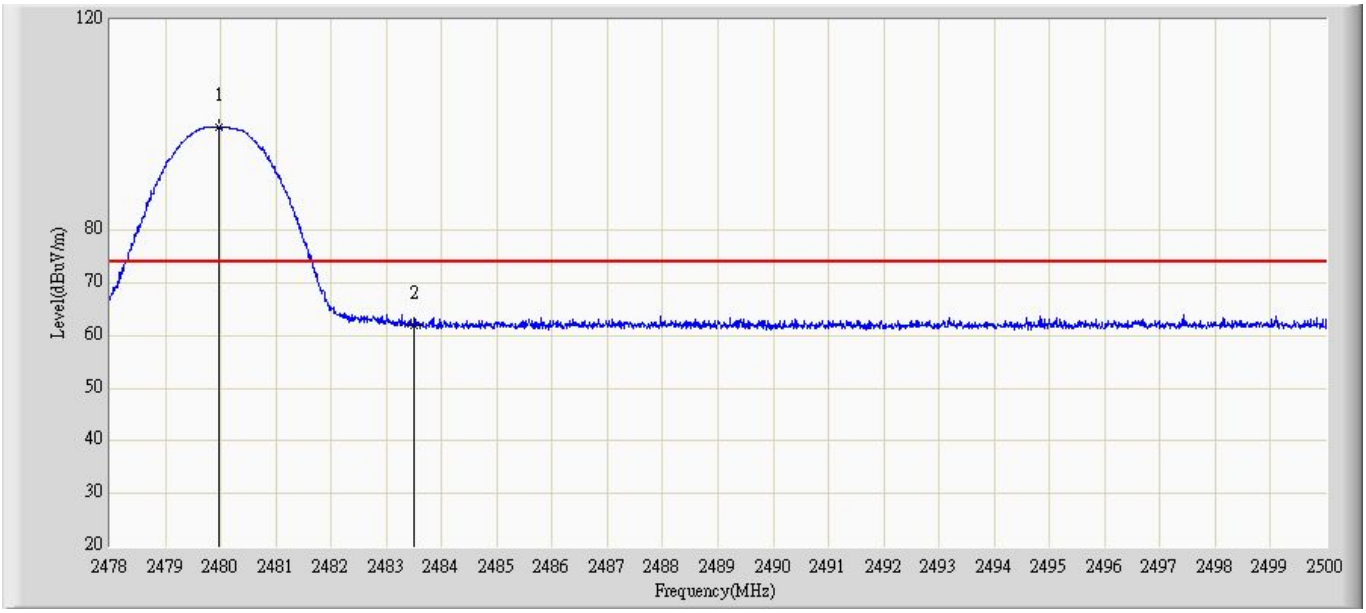
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.870	102.455	71.250	N/A	N/A	31.205	PK
2			2483.500	61.466	30.258	-12.534	74.000	31.208	PK

Profile: 125S032R	Page No.: 6
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2480MHz by DH5	



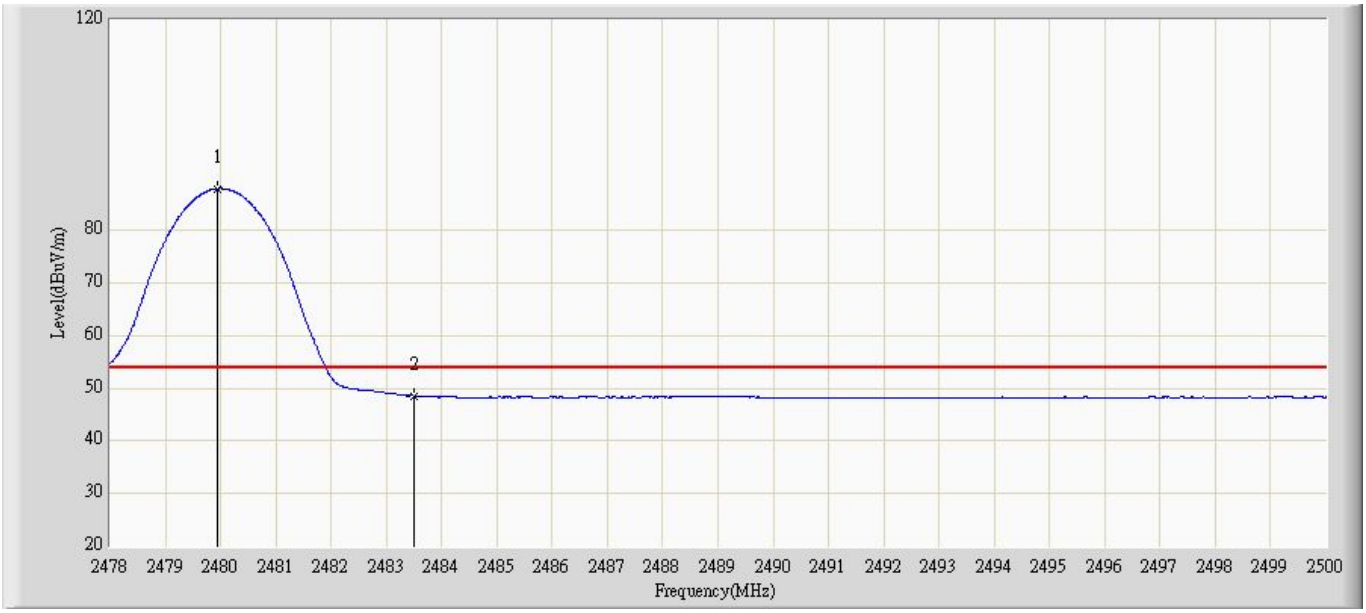
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2480.013	90.726	59.521	N/A	N/A	31.205	AV
2			2483.500	48.807	17.599	-5.193	54.000	31.208	AV

Profile: 125S032R	Page No.: 7
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2480MHz by DH5	



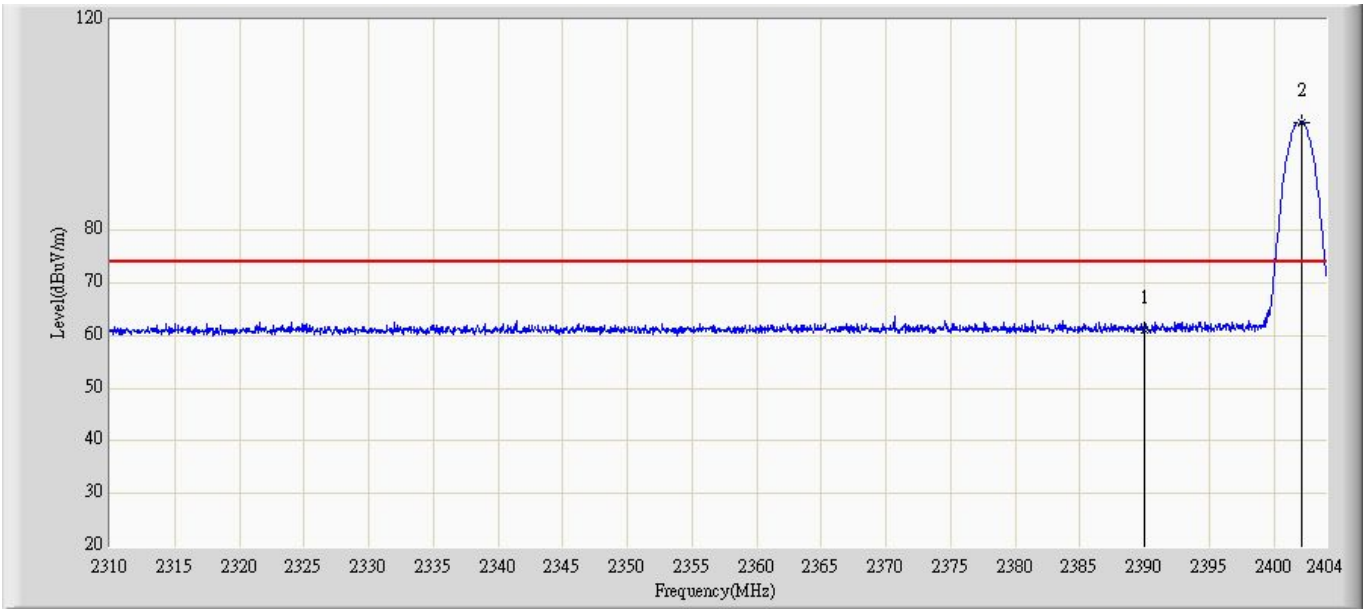
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.969	99.497	68.292	N/A	N/A	31.205	PK
2			2483.500	61.876	30.668	-12.124	74.000	31.208	PK

Profile: 125S032R	Page No.: 8
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2480MHz by DH5	



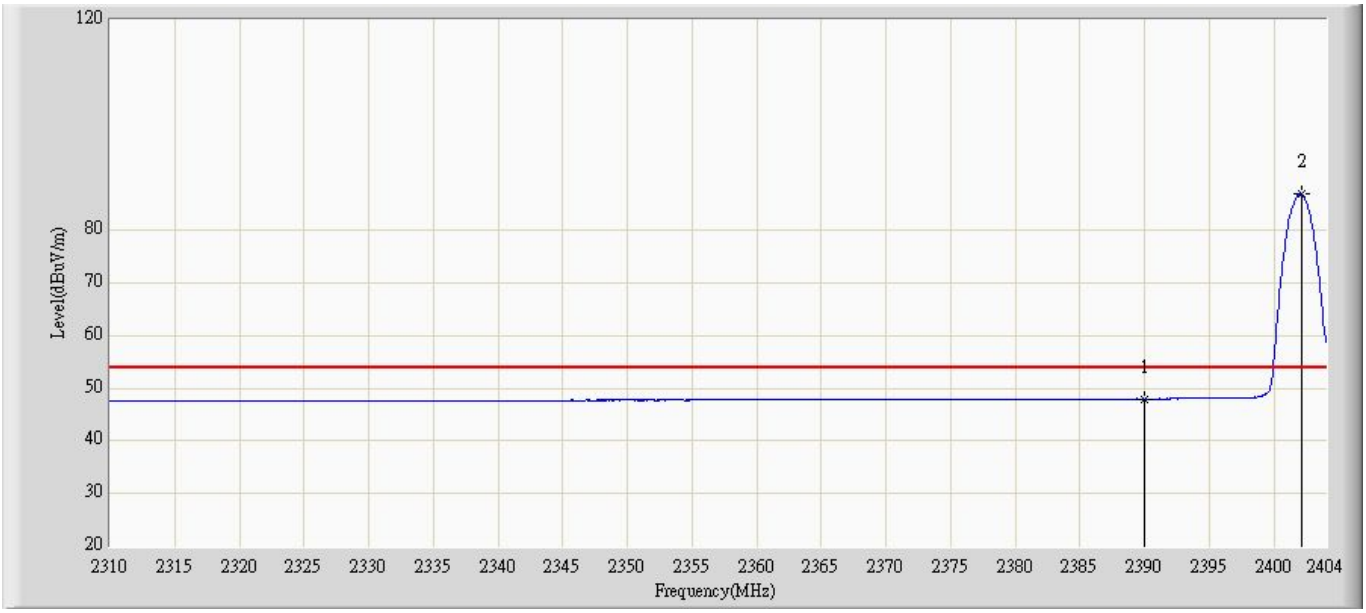
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.936	87.920	56.715	N/A	N/A	31.205	AV
2			2483.500	48.557	17.349	-5.443	54.000	31.208	AV

Profile: 125S032R	Page No.: 9
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2402MHz by 2DH5	



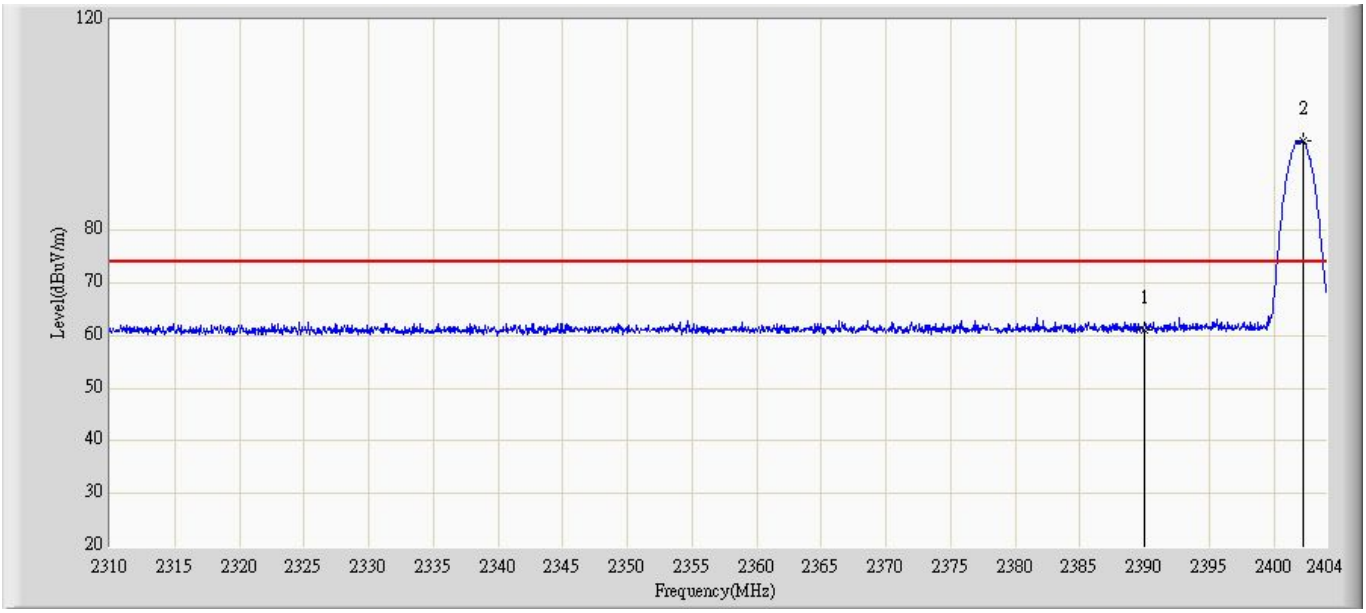
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.081	29.896	-12.919	74.000	31.185	PK
2		*	2402.073	100.560	69.380	N/A	N/A	31.179	PK

Profile: 125S032R	Page No.: 10
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2402MHz by 2DH5	



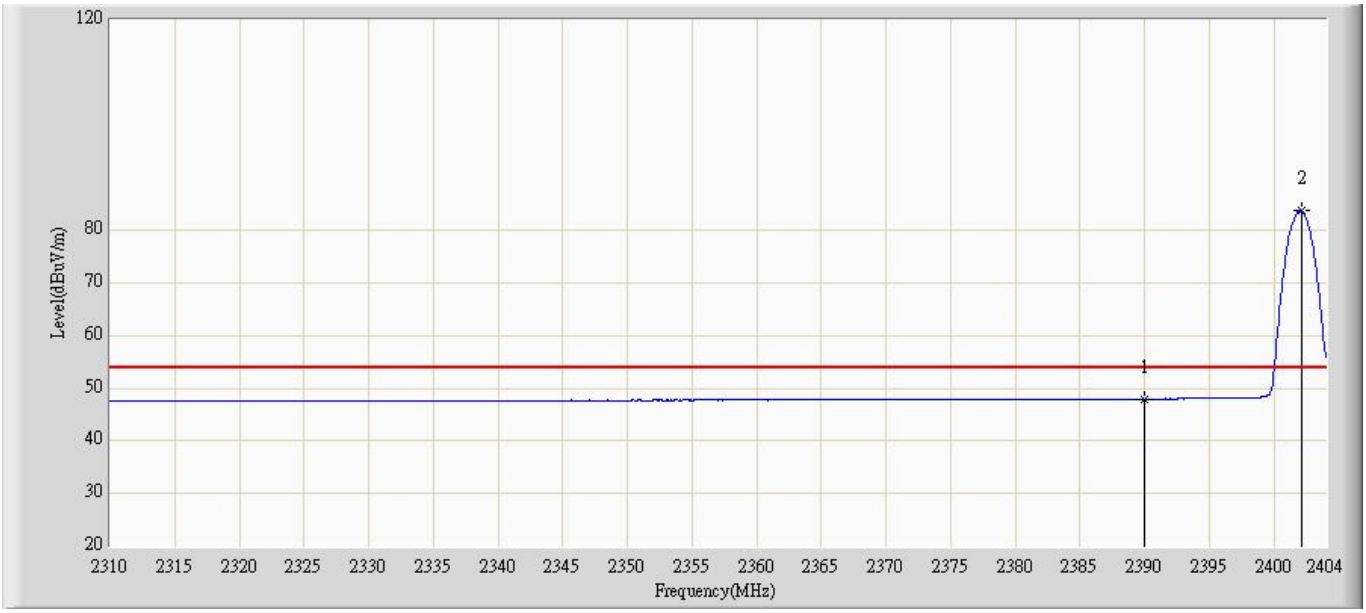
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.970	16.785	-6.030	54.000	31.185	AV
2		*	2402.073	86.906	55.726	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 11
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2402MHz by 2DH5	



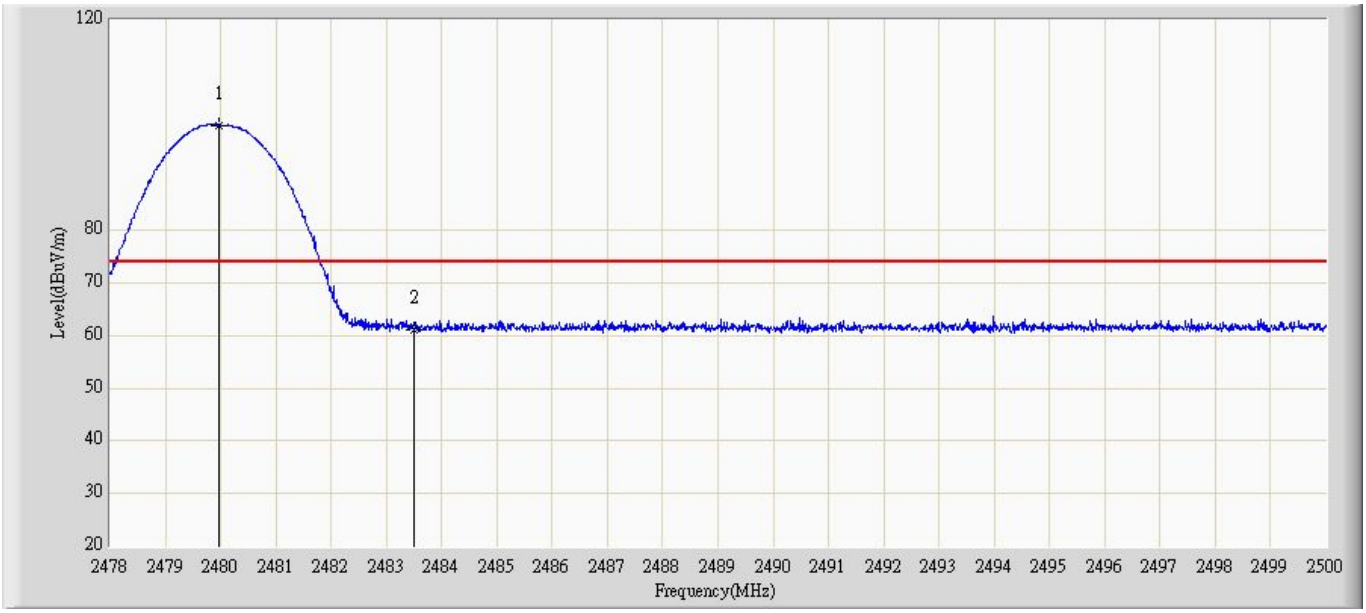
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	60.961	29.776	-13.039	74.000	31.185	PK
2		*	2402.214	97.037	65.857	N/A	N/A	31.179	PK

Profile: 125S032R	Page No.: 12
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2402MHz by 2DH5	



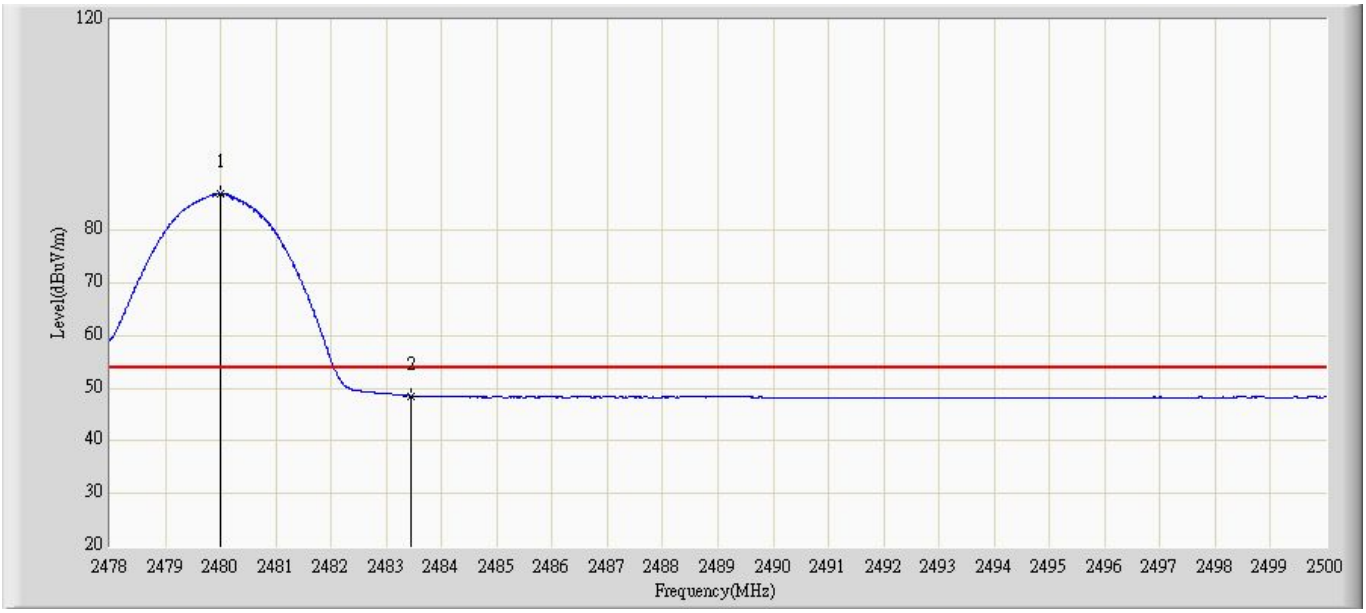
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.967	16.782	-6.033	54.000	31.185	AV
2		*	2402.073	83.726	52.546	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 13
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2480MHz by 2DH5	



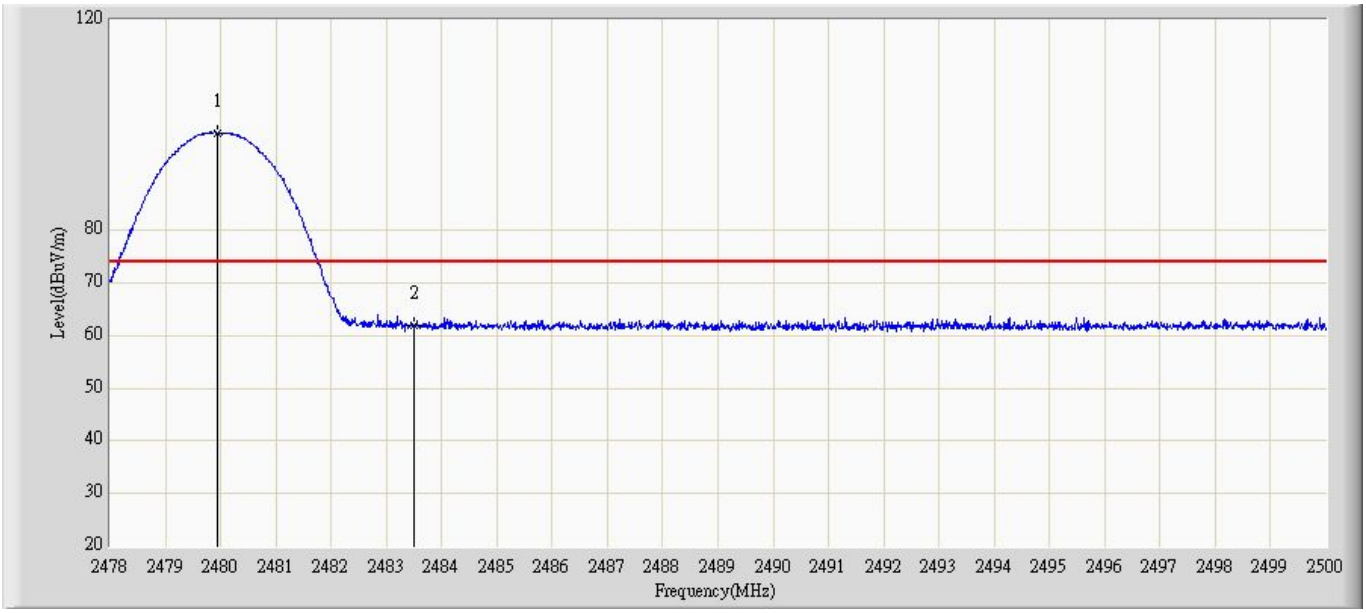
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.969	99.982	68.777	N/A	N/A	31.205	PK
2			2483.500	61.024	29.816	-12.976	74.000	31.208	PK

Profile: 125S032R	Page No.: 14
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2480MHz by 2DH5	



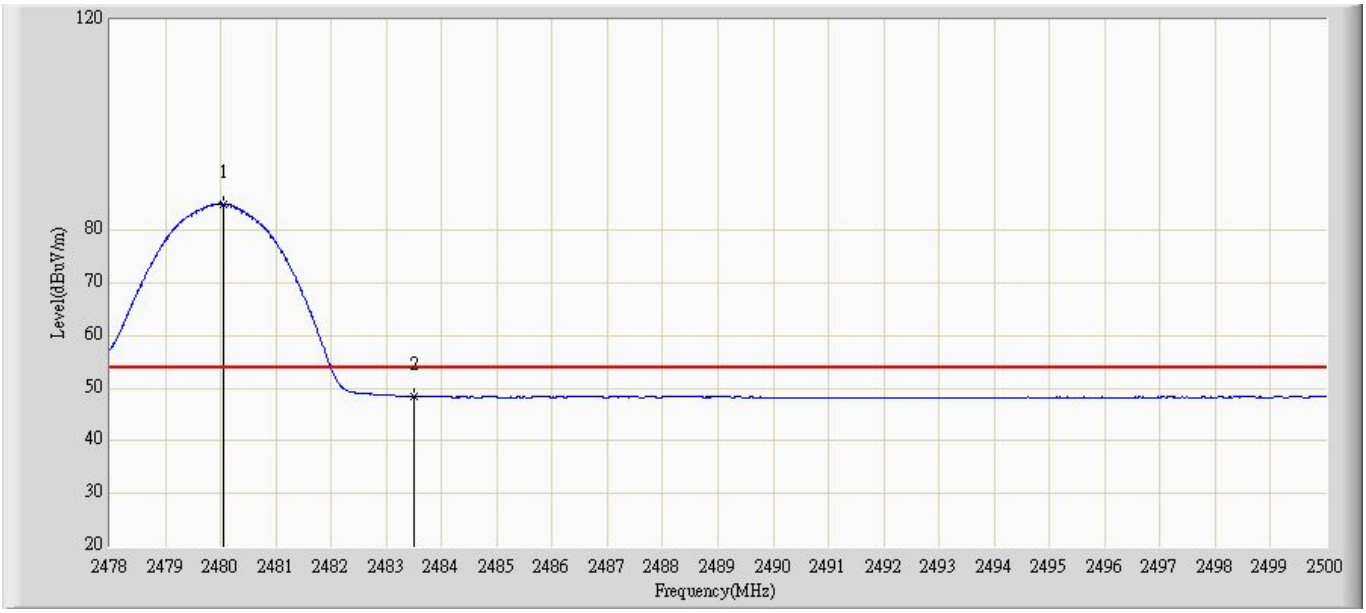
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2480.002	86.881	55.676	N/A	N/A	31.205	AV
2			2483.450	48.561	17.353	-5.439	54.000	31.207	AV

Profile: 125S032R	Page No.: 15
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2480MHz by 2DH5	



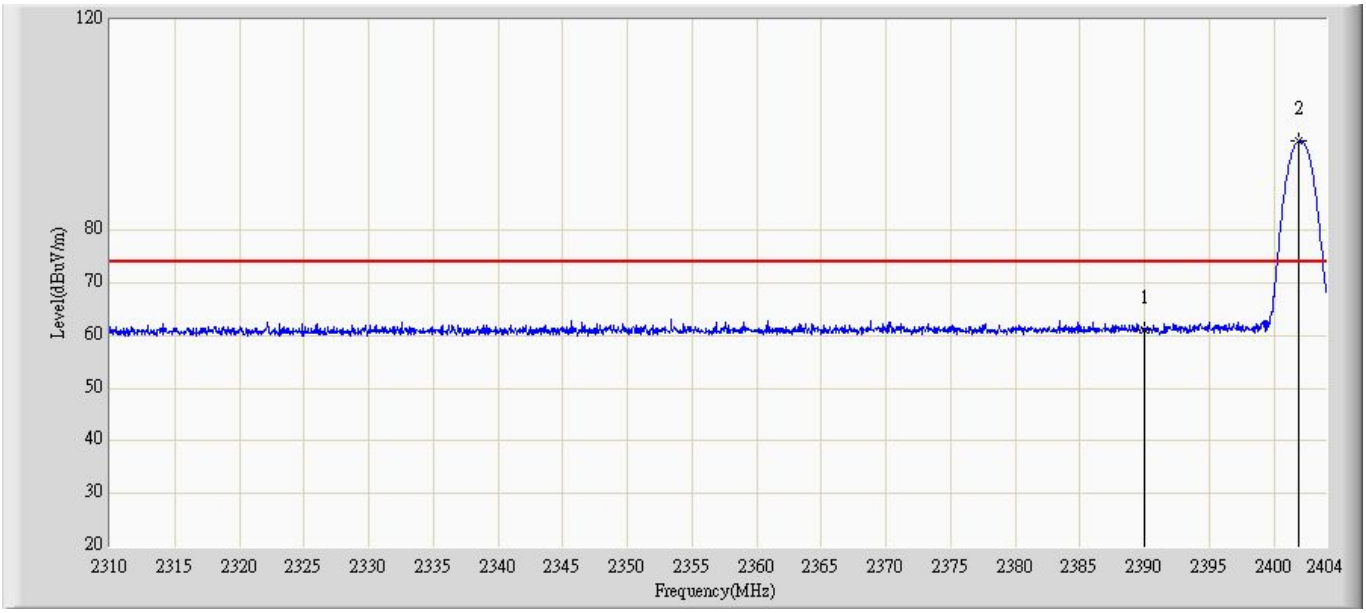
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.936	98.501	67.296	N/A	N/A	31.205	PK
2			2483.500	61.886	30.678	-12.114	74.000	31.208	PK

Profile: 125S032R	Page No.: 16
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 2: Transmit at channel 2480MHz by 2DH5	



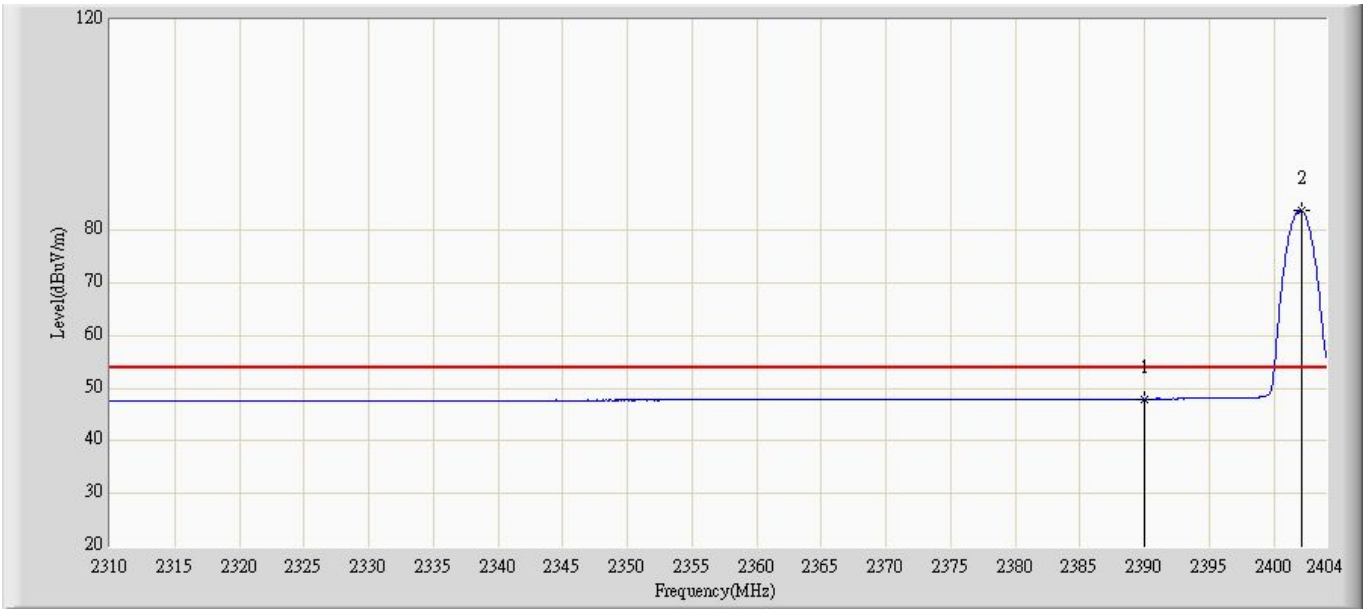
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2480.046	85.082	53.877	N/A	N/A	31.205	AV
2			2483.500	48.418	17.210	-5.582	54.000	31.208	AV

Profile: 125S032R	Page No.: 17
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2402MHz by 3DH5	



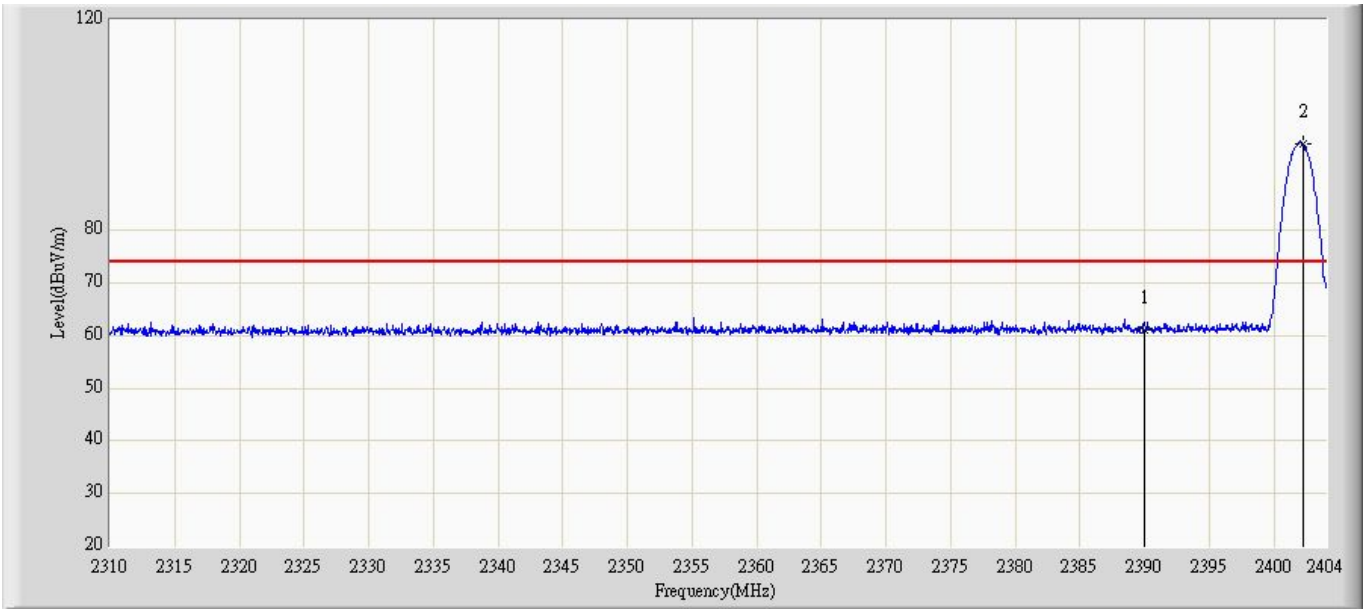
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.104	29.919	-12.896	74.000	31.185	PK
2		*	2401.885	97.029	65.849	N/A	N/A	31.180	PK

Profile: 125S032R	Page No.: 18
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2402MHz by 3DH5	



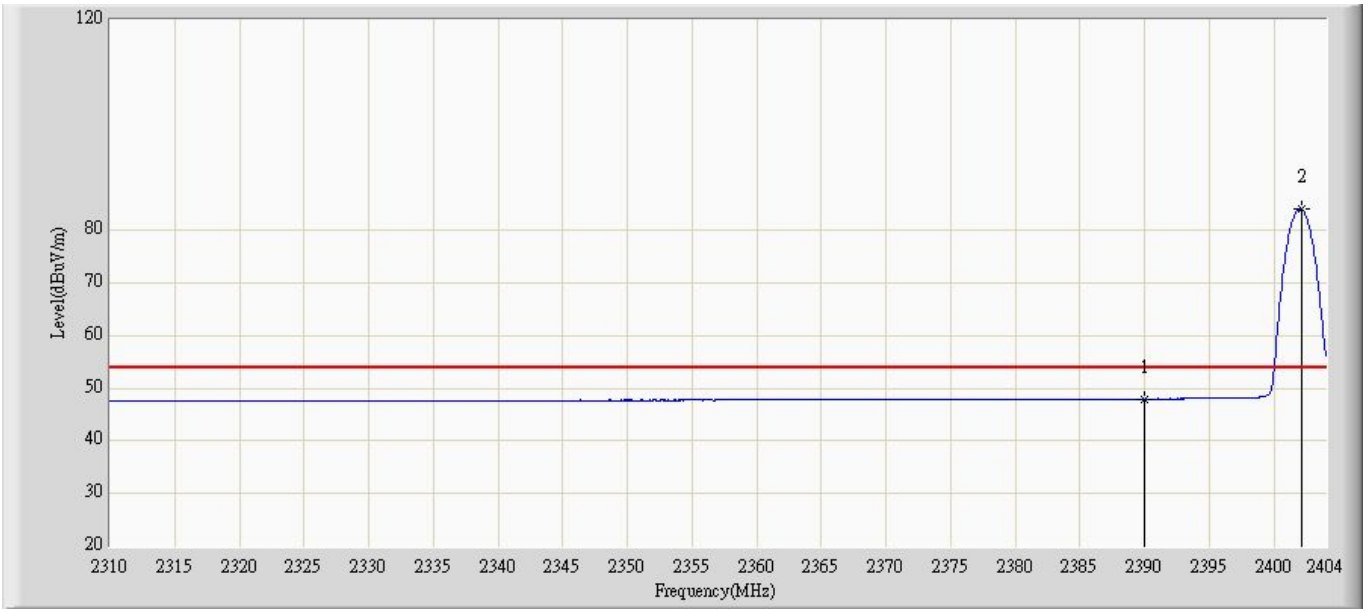
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.958	16.773	-6.042	54.000	31.185	AV
2		*	2402.073	83.757	52.577	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 19
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2402MHz by 3DH5	



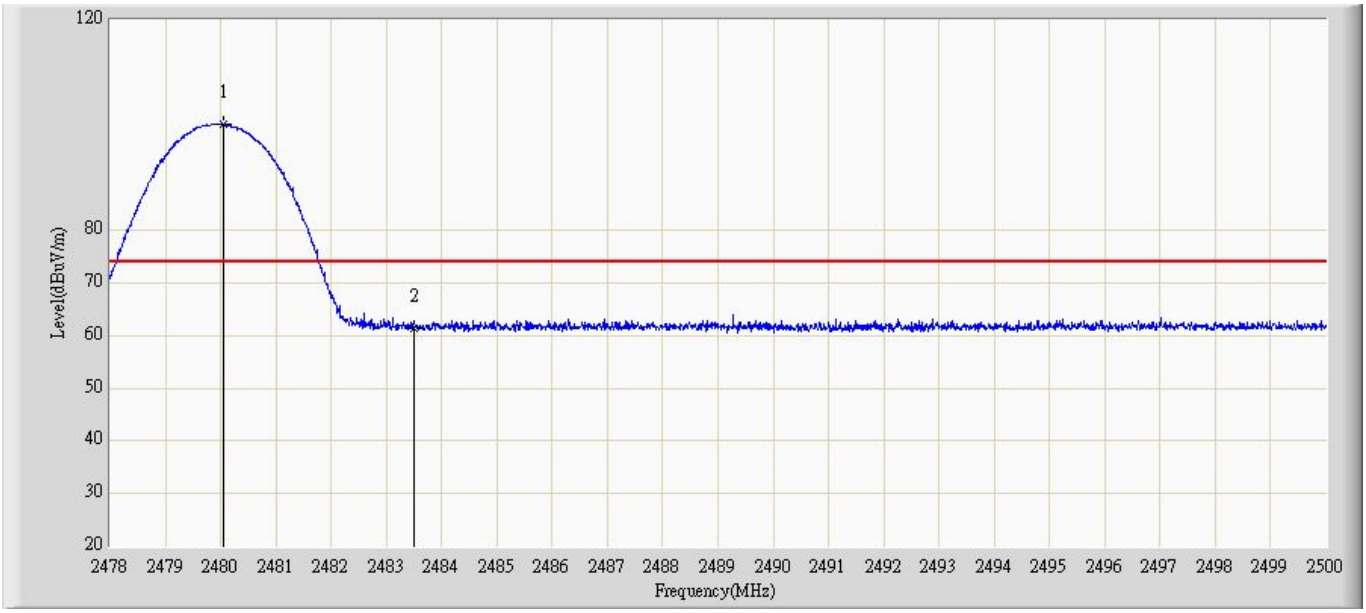
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	61.038	29.853	-12.962	74.000	31.185	PK
2		*	2402.214	96.392	65.212	N/A	N/A	31.179	PK

Profile: 125S032R	Page No.: 20
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2402MHz by 3DH5	



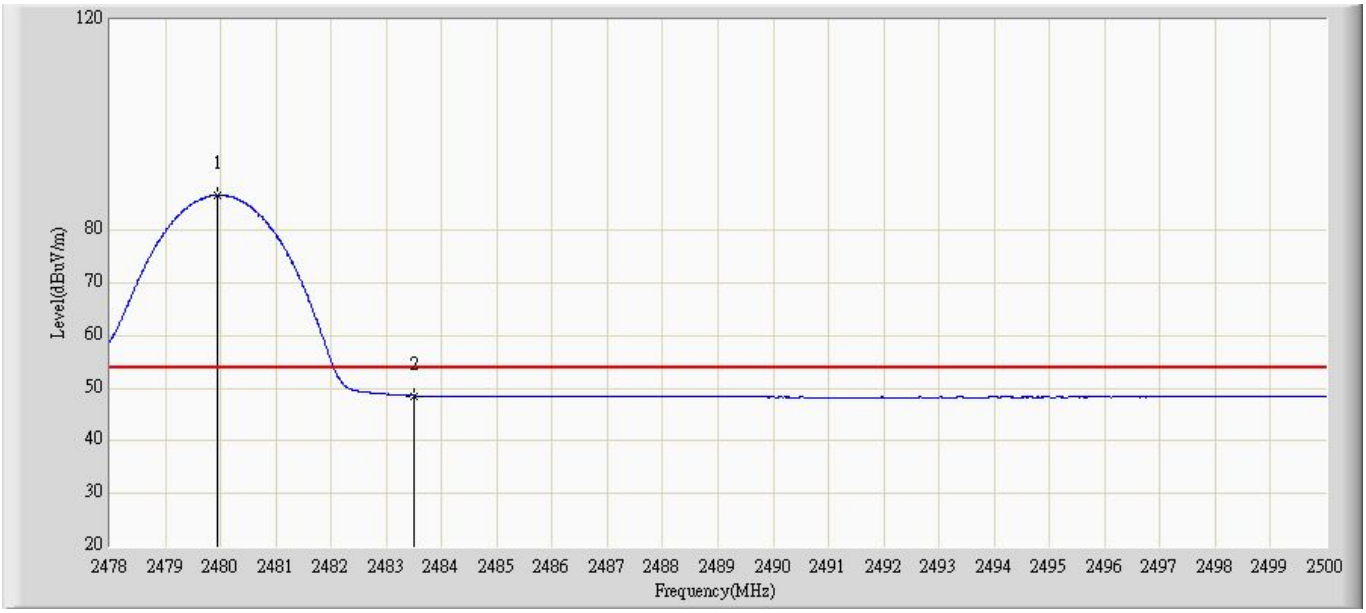
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.988	16.803	-6.012	54.000	31.185	AV
2		*	2402.073	84.043	52.863	N/A	N/A	31.179	AV

Profile: 125S032R	Page No.: 23
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2480MHz by 3DH5	



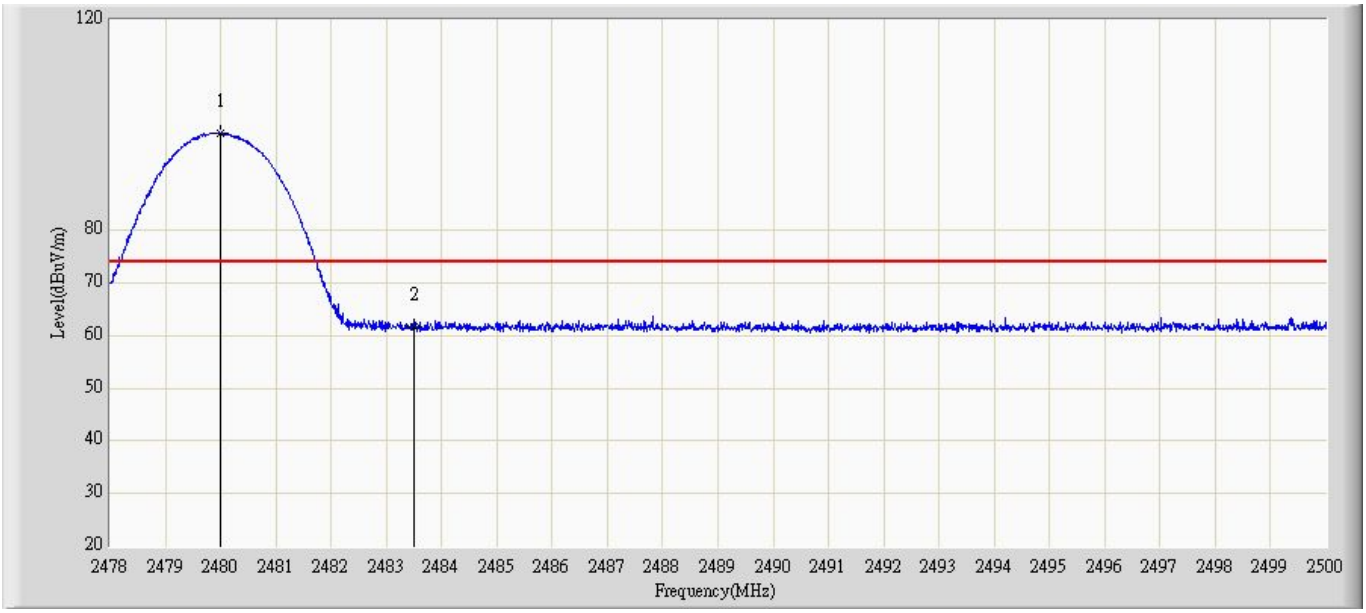
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2480.046	100.145	68.940	N/A	N/A	31.205	PK
2			2483.500	61.311	30.103	-12.689	74.000	31.208	PK

Profile: 125S032R	Page No.: 24
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2480MHz by 3DH5	



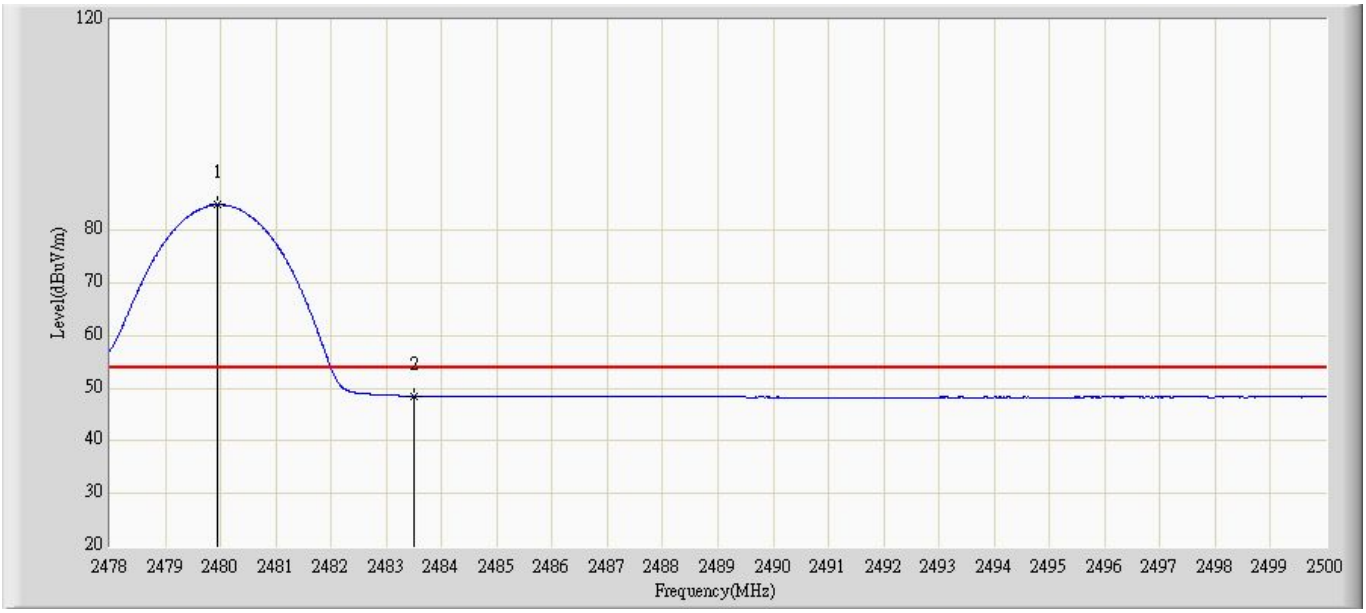
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.936	86.676	55.471	N/A	N/A	31.205	AV
2			2483.500	48.588	17.380	-5.412	54.000	31.208	AV

Profile: 125S032R	Page No.: 21
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2480MHz by 3DH5	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.991	98.398	67.193	N/A	N/A	31.205	PK
2			2483.500	61.576	30.368	-12.424	74.000	31.208	PK

Profile: 125S032R	Page No.: 22
Engineer: Aileen	
Site: AC5	Time: 2012/05/18 - 10:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 3: Transmit at channel 2480MHz by 3DH5	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2479.936	84.855	53.650	N/A	N/A	31.205	AV
2			2483.500	48.494	17.286	-5.506	54.000	31.208	AV

13. Receiver Spurious Emission for Industry Canada RSS-Gen Requirement

13.1. Test Equipment

Radiated Emission / AC-2

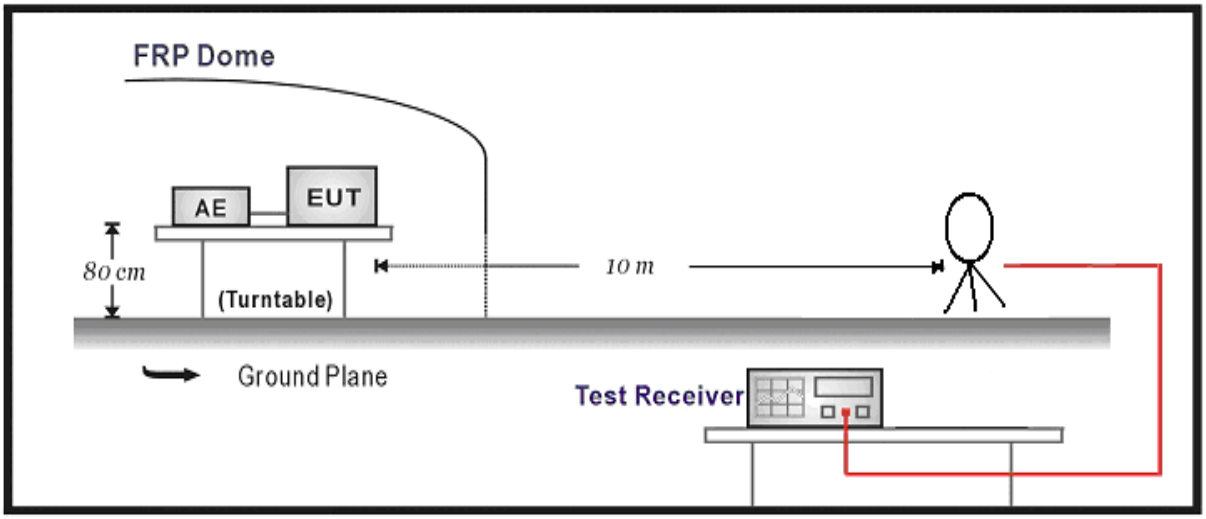
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2012.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2013.03.02
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2012.01.14

Radiated Emission / AC-5

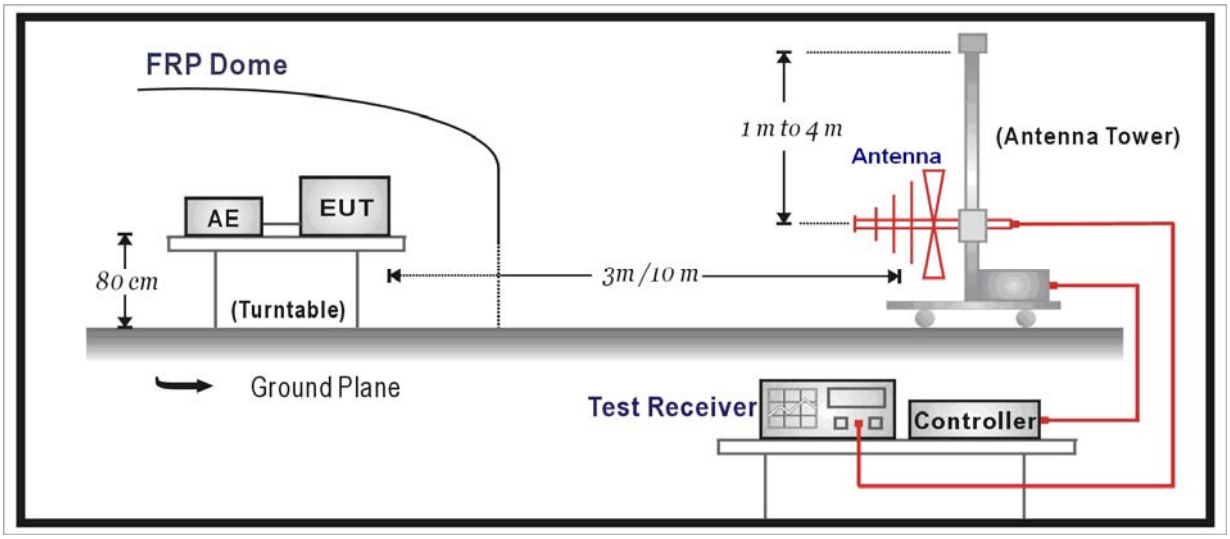
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D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

13.2. Test Setup

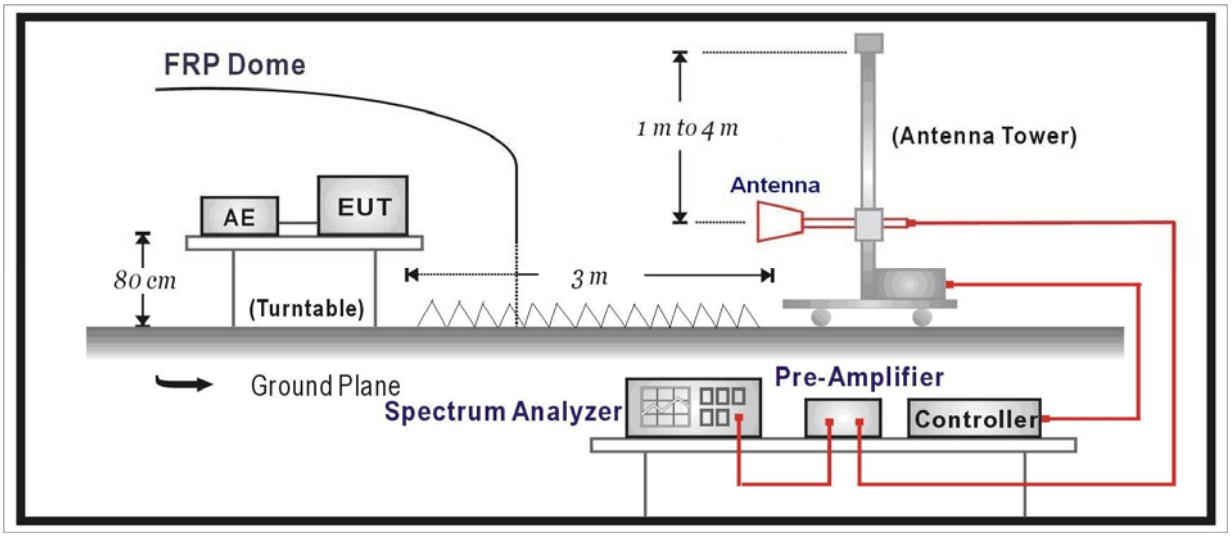
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



13.3. Limit

FCC Part 15 Subpart B Paragraph 15.109		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

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

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

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

13.4. Test Procedure

According to ANSI C63.10: 2009.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
The frequency range from 9kHz to10th harmonic is checked.
Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

13.5. Uncertainty

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

13.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.
Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamplifier Gain

Mode 1: Receive-1Mbps (GFSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	265.0	3.2	20.0	23.2	46	-22.8	QP
	V	265.5	4.7	20.0	24.7	46	-21.3	QP
	H	413.3	3.6	24.3	27.9	46	-18.1	QP
	V	413.3	5.3	24.3	29.6	46	-16.4	QP
	H	3507.0	50.5	-15.4	35.1	54(Note)	-18.9	PK
	V	3507.5	50.9	-15.4	35.5	54(Note)	-18.5	PK
	H	5887.5	49.9	-10.0	39.9	54(Note)	-14.1	PK
	V	5887.5	50.9	-10.0	40.9	54(Note)	-13.1	PK
39	H	252.5	5.4	19.5	24.9	46	-21.1	QP
	V	252.0	2.1	19.5	21.6	46	-24.4	QP
	H	418.8	5.0	24.3	29.3	46	-16.7	QP
	V	418.8	3.4	24.3	27.7	46	-18.3	QP
	H	3269.5	52.2	-16.1	36.1	54(Note)	-17.9	PK
	V	3269.0	50.9	-16.1	34.8	54(Note)	-19.2	PK
	H	5811.0	50.7	-10.2	40.5	54(Note)	-13.5	PK
	V	5811.0	49.7	-10.2	39.5	54(Note)	-14.5	PK
78	H	255.0	3.7	19.7	23.4	46	-22.6	QP
	V	255.0	4.8	19.7	24.5	46	-21.5	QP
	H	422.1	2.7	24.4	27.1	46	-18.9	QP
	V	422.1	4.7	24.4	29.1	46	-16.9	QP
	H	3558.0	50.7	-15.2	35.5	54(Note)	-18.5	PK
	V	3558.5	52.7	-15.2	37.5	54(Note)	-16.5	PK
	H	6253.0	49.6	-8.6	41.0	54(Note)	-13.0	PK
	V	6253.0	50.5	-8.6	41.9	54(Note)	-12.1	PK

Note: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 2: Receive-2Mbps (Pi/4 DQPSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	264.5	5.7	20.0	25.7	46	-20.3	QP
	V	264.0	2.8	20.0	22.8	46	-23.2	QP
	H	422.0	5.1	24.4	29.5	46	-16.5	QP
	V	422.0	2.6	24.4	27.0	46	-19.0	QP
	H	4187.5	54.0	-13.8	40.2	54(Note)	-13.8	PK
	V	4187.0	51.2	-13.8	37.4	54(Note)	-16.6	PK
	H	6338.0	51.5	-8.2	43.3	54(Note)	-10.7	PK
	V	6338.0	49.9	-8.2	41.7	54(Note)	-12.3	PK
39	H	266.0	3.3	20.0	23.3	46	-22.7	QP
	V	266.4	5.8	19.9	25.7	46	-20.3	QP
	H	445.2	3.4	24.2	27.6	46	-18.4	QP
	V	445.2	4.8	24.2	29.0	46	-17.0	QP
	H	3694.0	50.8	-14.9	35.9	54(Note)	-18.1	PK
	V	3694.5	51.6	-14.9	36.7	54(Note)	-17.3	PK
	H	5122.5	49.8	-11.0	38.8	54(Note)	-15.2	PK
	V	5122.5	52.6	-11.0	41.6	54(Note)	-12.4	PK
78	H	280.7	5.6	20.0	25.6	46	-20.4	QP
	V	286.0	2.2	20.0	22.2	46	-23.8	QP
	H	486.9	5.4	25.3	30.7	46	-15.3	QP
	V	486.9	1.8	25.3	27.1	46	-18.9	QP
	H	4179.0	52.2	-13.8	38.4	54(Note)	-15.6	PK
	V	4179.0	51.6	-13.8	37.8	54(Note)	-16.2	PK
	H	6542.0	51.1	-7.3	43.8	54(Note)	-10.2	PK
	V	6542.0	49.8	-7.3	42.5	54(Note)	-11.5	PK

Note: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn’t be performed.

Mode 3: Receive-3Mbps (8DPSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	356.0	3.7	22.2	25.9	46	-20.1	QP
	V	356.3	5.8	22.2	28.0	46	-18.0	QP
	H	562.4	3.4	26.7	30.1	46	-15.9	QP
	V	562.4	5.4	26.7	32.1	46	-13.9	QP
	H	4264.0	50.6	-13.7	36.9	54(Note)	-17.1	PK
	V	4264.0	52.1	-13.7	38.4	54(Note)	-15.6	PK
	H	6465.5	49.3	-7.6	41.7	54(Note)	-12.3	PK
	V	6465.5	51.1	-7.6	43.5	54(Note)	-10.5	PK
39	H	286.8	5.6	20.0	25.6	46	-20.4	QP
	V	286.0	3.5	20.0	23.5	46	-22.5	QP
	H	468.2	6.3	24.8	31.1	46	-14.9	QP
	V	468.2	2.6	24.8	27.4	46	-18.6	QP
	H	4213.0	51.8	-13.8	38.0	54(Note)	-16.0	PK
	V	4213.0	50.3	-13.8	36.5	54(Note)	-17.5	PK
	H	6474.0	49.8	-7.5	42.3	54(Note)	-11.7	PK
	V	6474.0	49.2	-7.5	41.7	54(Note)	-12.3	PK
78	H	261.0	3.4	19.9	23.3	46	-22.7	QP
	V	261.7	5.6	19.9	25.5	46	-20.5	QP
	H	418.0	2.5	24.3	26.8	46	-19.2	QP
	V	418.0	4.6	24.3	28.9	46	-17.1	QP
	H	4094.0	50.7	-14.0	36.7	54(Note)	-17.3	PK
	V	4094.0	51.9	-14.0	37.9	54(Note)	-16.1	PK
	H	6389.0	49.6	-7.9	41.7	54(Note)	-12.3	PK
	V	6389.0	49.6	-7.9	41.7	54(Note)	-12.3	PK

Note: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.