



Product Name : Bluetooth Rearview Mirror HandsFree

Car Kit

Model No. : CK986

FCC ID : UPJCK986

Applicant: Zhenjiang Sapphire Electronic Industry CO., LTD.

Address : The South Side of Weisan Road, Dingmao

Development Zone, Zhenjiang, Jiangsu, CHINA

Date of Receipt : 2006/09/20

Issued Date : 2006/10/17

Report No. : 069S019-RF-US-P06V01

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation. This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

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Test Report Certification

Issued Date: 2006/10/17

Report No.: 069S019-RF-US-P06V01



Product Name : Bluetooth Rearview Mirror HandsFree Car Kit

Applicant : Zhenjiang Sapphire Electronic Industry CO., LTD.

Address : The South Side of Weisan Road, Dingmao Development Zone,

Zhenjiang, Jiangsu, CHINA

Manufacturer : Zhenjiang Sapphire Electronic Industry CO., LTD.

Model No. : CK986

FCC ID : UPJCK986

Rated Voltage : AC 120V/60Hz

Working Voltage : DC 12V

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2005

ANSI C63.4: 2003

CISPR 22: 2005

Test Result : Complied

The Test Results relate only to the samples tested.

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Documented By : (Mandy Liu)

Reviewed By : (Dream Cao)

Approved By : (Gene Zhang)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth Rearview Mirror HandsFree Car Kit
Model No.	CK986
FCC ID	UPJCK986
Working Voltage	DC 12V
Frequency Range	2400 - 2483.5MHz
Channel Number	79
Antenna Gain	1dBi
Type of Modulation	Frequency Hopping Spread Spectrum
Channel Control	Auto
Antenna type	Chip

Frequency of Each Channel:

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

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The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

- 1. This device is a Bluetooth Rearview Mirror HandsFree Car Kit including a 2.4GHz transceiver.
- These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
- 3. Regards to the frequency band operation; the lowest \cdot middle and highest frequency of channel were selected to perform the test, then shown on this report.
- 4. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 069S019-RF-US-P01V02, certified under Declaration of Conformity.
- 5. QuieTek verified among construction and function in typical operation, then shown in this test report.

1.2. Operational Description

The EUT is a Bluetooth Rearview Mirror HandsFree Car Kit with 79 channels.

This device provides wireless technology that revolutionizes personal connectivity. It is the solution for the seamless integration of Bluetooth technology into personal computer enabling short-range wireless connections between desktop/laptop computers, Bluetooth-enabled peripherals, and portable handheld devices.

m	N. 1. 1. W.
Test Mode:	Mode 1: Transmit

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1.3. Tested System Details

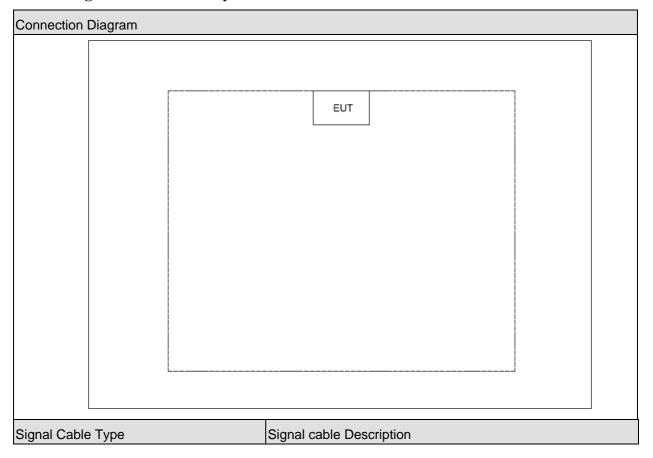
The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Pro	duct	Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A	N/A

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1.4. Configuration of Tested System





1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Connect the EUT to PC via a USB cable.
- (3) Execute the Blue Test program on the PC.
- (4) Setup the test channel and the test mode press ok to start the Continue transmission.

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1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: April 28, 2006 Accreditation on NVLAP

NVLAP Lab Code: 200743-0

Accredited by CNLA Accredited Number: 1596



Site Name: Quietek Corporation

Site Address: No.99 Hongye Rd., Suzhou Industrial Park Loufeng

Hi-Tech Development Zone., SuZhou, China

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

E-Mail: service@quietek.com





2. Conducted Emission

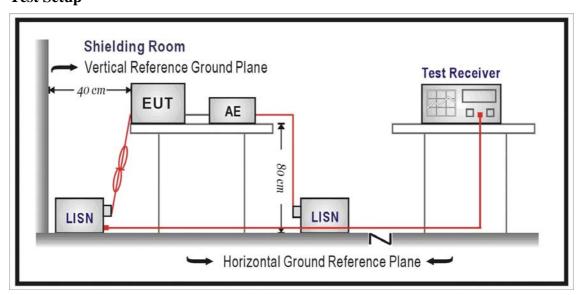
2.1. Test Equipment

Conducted Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCI	100175	2005/11/25
Two-Line V-Network	R&S	ENV216	100013	2005/11/25
Two-Line V-Network	R&S	ENV216	100014	2005/11/25
V-Network	R&S	ESH3-Z6	100248	2005/11/25
V-Network	R&S	ESH3-Z6	100249	2005/11/25
ISN	Schaffner	ISN T400	21648	2005/11/25
Current Probe	R&S	EZ-17	100252	2006/04/18
50ohm Coaxial Switch	ANRITSU	MP59B	6200447305	2005/11/25
50ohm Impedance	SHX	50ohml	QT-IM001	2006/03/20
Matching network	SHX	TZ25	06062901	N/A
Matching network	SHX	TZ25	06062902	N/A
Matching network	SHX	TZ25	06062903	N/A
Combining network	SHX	N-50KKK	N/A	N/A
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2006/03/30

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup





2.3. Limits

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

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

2.4. Test Procedure

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

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

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

2.5. Uncertainty

The measurement uncertainty is defined as \pm 2.02 dB

2.6. Test Result of Conducted Emission

EUT is a DC(12V) power operating device, so the test item is not necessary performed.



3. Peak Power Output

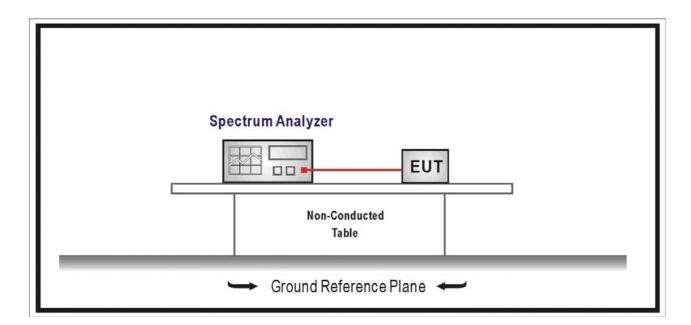
3.1. Test Equipment

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/23

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Uncertainty

The measurement uncertainty is defined as \pm 1.27 dB



3.5. Test Result of Peak Power Output

Product : Bluetooth Rearview Mirror HandsFree Car Kit

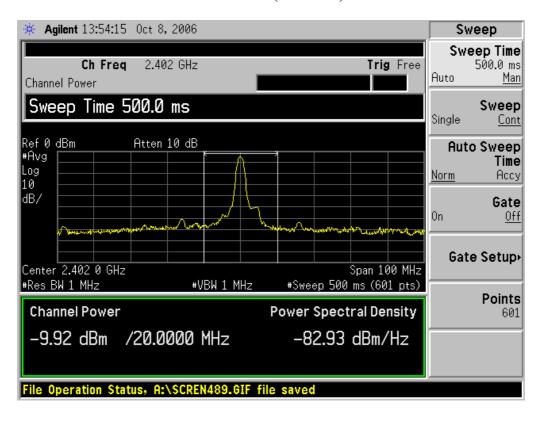
Test Item : Peak Power Output

Test Site : AC-3

Test Mode : Mode 1: Transmitter

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)	(dBm)	
Channel 00	2402.00	-9.92	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-10.60	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-10.93	1 Watt= 30 dBm	Pass

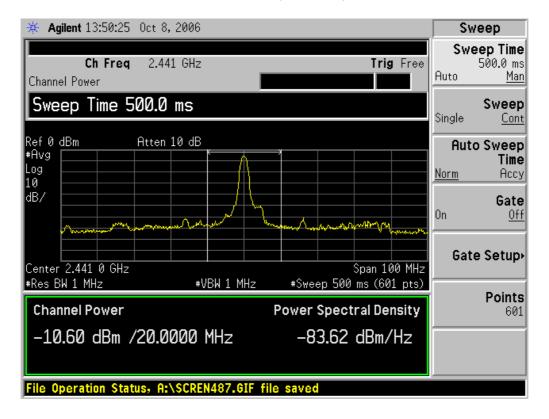
Channel 00 (2402MHz)



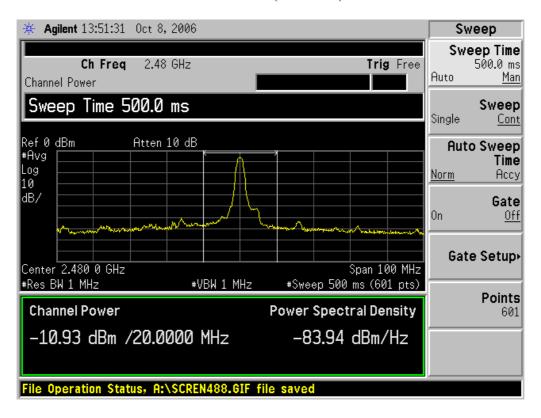
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Channel 39 (2441MHz)



Channel 78 (2480MHz)



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4. Radiated Emission

4.1. Test Equipment

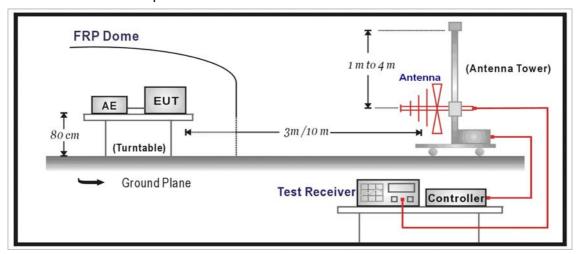
Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11
EMI Test Receiver	R&S	ESCI	100175	2005/11/25
Preamplifier	Quietek	AP-025C	QT-AP003	2005/11/25
Preamplifier	Quietek	AP-180C	CHM-0602013	2006/03/20
Bilog Type Antenna	Schaffner	CBL6112B	2932	2005/10/26
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2005/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2006/03/30

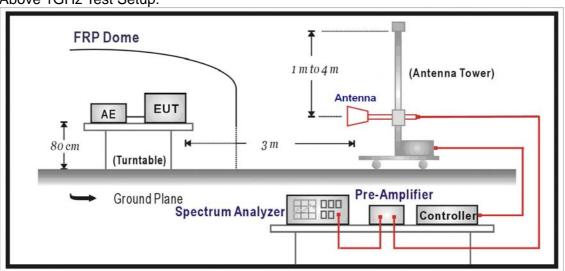
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



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4.3. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits					
Frequency MHz	uV/m @3m	dBuV/m@3m			
30-88	100	40			
88-216	150	43.5			
216-960	200	46			
Above 960	500	54			

Remarks:

- 1. RF Voltage $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

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4.4. Test Procedure

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

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

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

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

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

4.5. Uncertainty

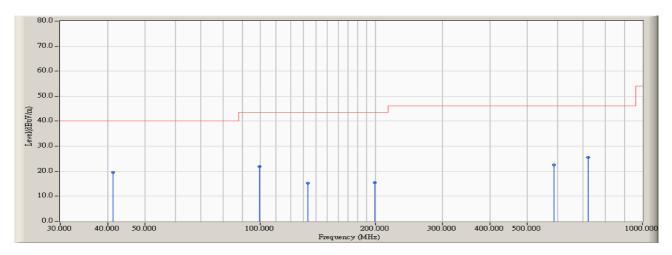
The measurement uncertainty above 1G is defined as \pm 3.9 dB under 1G is defined as \pm 3.8 dB

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4.6. Test Result of Radiated Emission

Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:21
Limit : FCC_SpartC_15.209_03M_QP	Margin: 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

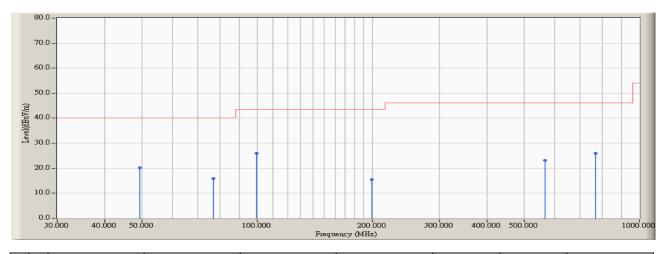


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	41.317	-6.899	26.504	19.605	-20.395	40.000	QUASIPEAK
2		99.517	-14.125	36.082	21.956	-21.564	43.520	QUASIPEAK
3		133.467	-11.905	27.144	15.239	-28.281	43.520	QUASIPEAK
4		199.750	-13.270	28.775	15.505	-28.015	43.520	QUASIPEAK
5		587.750	-3.648	26.229	22.581	-23.439	46.020	QUASIPEAK
6		721.933	-1.097	26.613	25.515	-20.505	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:29
Limit : FCC_SpartC_15.209_03M_QP	Margin: 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

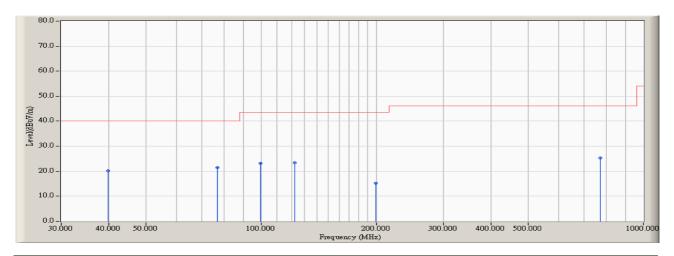


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		49.400	-10.857	30.988	20.131	-19.869	40.000	QUASIPEAK
2		76.883	-16.800	32.708	15.908	-24.092	40.000	QUASIPEAK
3	*	99.517	-14.125	40.093	25.967	-17.553	43.520	QUASIPEAK
4		199.750	-13.270	28.611	15.341	-28.179	43.520	QUASIPEAK
5		565.117	-3.585	26.735	23.150	-22.870	46.020	QUASIPEAK
6		767.200	-0.394	26.272	25.878	-20.142	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:34
Limit : FCC_SpartC_15.209_03M_QP	Margin : 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

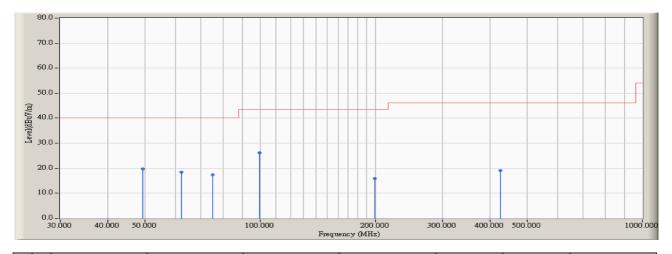


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		39.700	-6.102	26.320	20.218	-19.782	40.000	QUASIPEAK
2	*	76.883	-16.800	38.301	21.501	-18.499	40.000	QUASIPEAK
3		99.517	-14.125	37.367	23.241	-20.279	43.520	QUASIPEAK
4		122.150	-12.390	35.736	23.346	-20.174	43.520	QUASIPEAK
5		199.750	-13.270	28.547	15.277	-28.243	43.520	QUASIPEAK
6		772.050	-0.396	25.766	25.370	-20.650	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:36
Limit : FCC_SpartC_15.209_03M_QP	Margin: 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

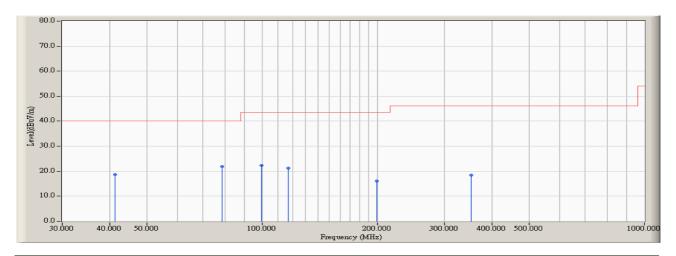


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		49.400	-10.857	30.489	19.632	-20.368	40.000	QUASIPEAK
2		62.333	-16.098	34.520	18.422	-21.578	40.000	QUASIPEAK
3		75.267	-16.919	34.336	17.417	-22.583	40.000	QUASIPEAK
4	*	99.517	-14.125	40.246	26.120	-17.400	43.520	QUASIPEAK
5		199.750	-13.270	29.219	15.949	-27.571	43.520	QUASIPEAK
6		424.467	-6.879	26.057	19.178	-26.842	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:39
Limit : FCC_SpartC_15.209_03M_QP	Margin: 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

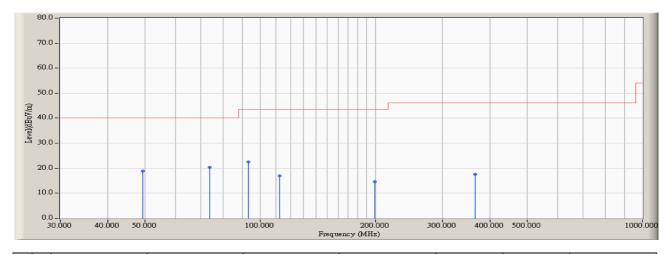


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		41.317	-6.899	25.537	18.638	-21.362	40.000	QUASIPEAK
2	*	78.500	-16.599	38.467	21.868	-18.132	40.000	QUASIPEAK
3		99.517	-14.125	36.387	22.261	-21.259	43.520	QUASIPEAK
4		117.300	-12.751	34.087	21.336	-22.184	43.520	QUASIPEAK
5		199.750	-13.270	29.302	16.032	-27.488	43.520	QUASIPEAK
6		351.717	-8.337	26.721	18.384	-27.636	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 13:42
Limit : FCC_SpartC_15.209_03M_QP	Margin: 0
EUT : CK986	Probe : CBL6141A_4278(30-2000MHz) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

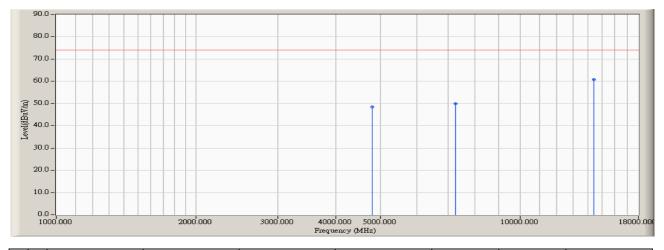


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		49.400	-10.857	29.755	18.898	-21.102	40.000	QUASIPEAK
2	*	73.650	-16.984	37.274	20.290	-19.710	40.000	QUASIPEAK
3		93.050	-14.889	37.313	22.424	-21.096	43.520	QUASIPEAK
4		112.450	-12.995	29.907	16.912	-26.608	43.520	QUASIPEAK
5		199.750	-13.270	27.925	14.655	-28.865	43.520	QUASIPEAK
6		364.650	-8.210	25.840	17.630	-28.390	46.020	QUASIPEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:10
Limit : FCC_SpartC_15.209_03M_PK	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

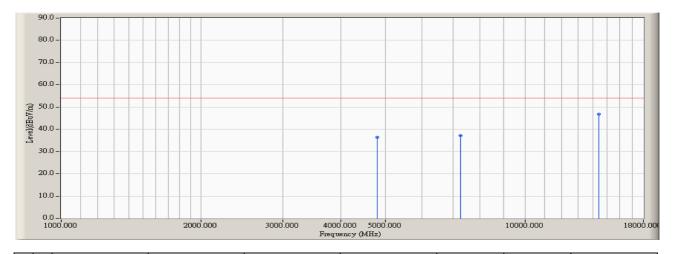


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4796.667	4.834	43.666	48.499	-25.471	73.970	PEAK
2		7261.667	15.374	34.575	49.948	-24.022	73.970	PEAK
3	*	14401.667	25.893	34.799	60.692	-13.278	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:10
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

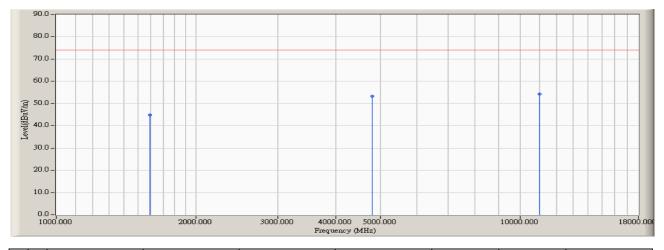


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4796.667	4.834	31.564	36.397	-17.573	53.970	AVERAGE
2		7261.667	15.374	21.665	37.038	-16.932	53.970	AVERAGE
3	*	14401.667	25.893	20.870	46.763	-7.207	53.970	AVERAGE

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:16
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

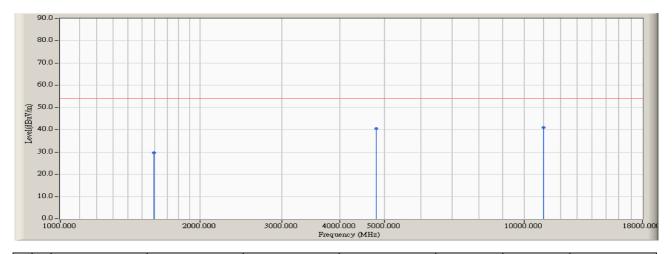


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		1595.000	-5.930	50.777	44.847	-29.123	73.970	PEAK
2		4796.667	4.834	48.448	53.281	-20.689	73.970	PEAK
3	*	11001.667	20.244	34.017	54.260	-19.710	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:17
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2402MHz)

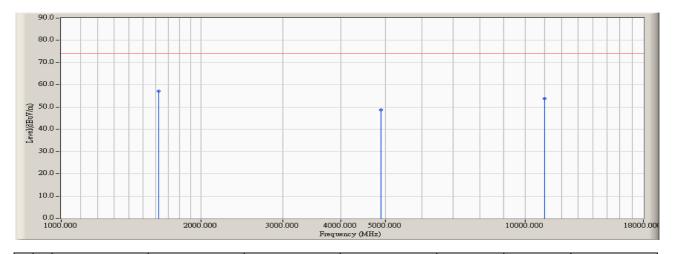


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		1595.000	-5.930	35.668	29.738	-24.232	53.970	AVERAGE
2		4796.667	4.834	35.689	40.522	-13.448	53.970	AVERAGE
3	*	11001.667	20.244	20.854	41.097	-12.873	53.970	AVERAGE

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:27
Limit : FCC_SpartC_15.209_03M_PK	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

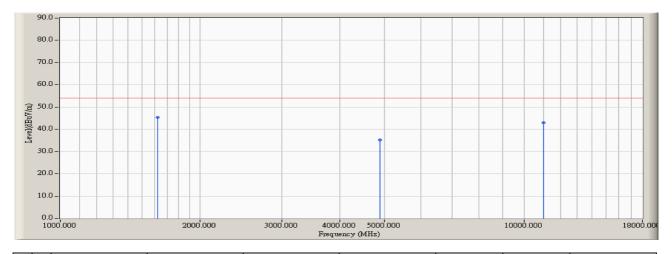


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	1623.333	-5.887	63.028	57.141	-16.829	73.970	PEAK
2		4881.667	5.034	43.626	48.659	-25.311	73.970	PEAK
3		11030.000	20.200	33.714	53.914	-20.056	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:27
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

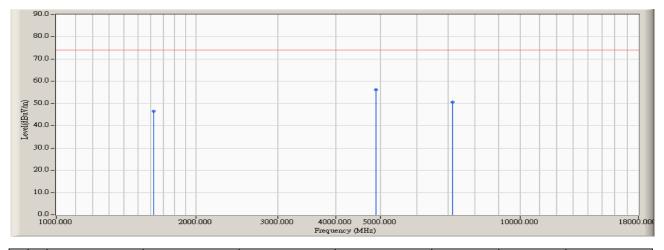


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	1623.333	-5.887	51.336	45.449	-8.521	53.970	AVERAGE
2		4881.667	5.034	30.225	35.258	-18.712	53.970	AVERAGE
3		11000.000	20.246	22.587	42.832	-11.138	53.970	AVERAGE

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:37
Limit : FCC_SpartC_15.209_03M_PK	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

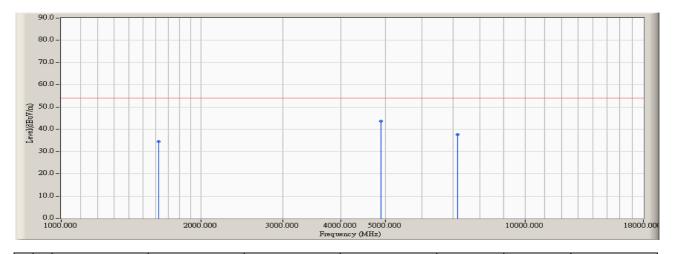


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		1623.333	-5.887	52.443	46.556	-27.414	73.970	PEAK
2	*	4881.667	5.034	51.281	56.314	-17.656	73.970	PEAK
3		7148.333	15.236	35.378	50.615	-23.355	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/14 - 10:37
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2441MHz)

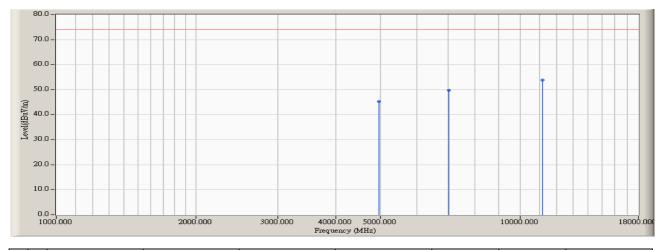


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		1623.333	-5.887	40.285	34.398	-19.572	53.970	AVERAGE
2	*	4881.667	5.034	38.657	43.690	-10.280	53.970	AVERAGE
3		7148.333	15.236	22.365	37.602	-16.368	53.970	AVERAGE

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/13 - 16:58
Limit : FCC_SpartC_15.209_03M_PK	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

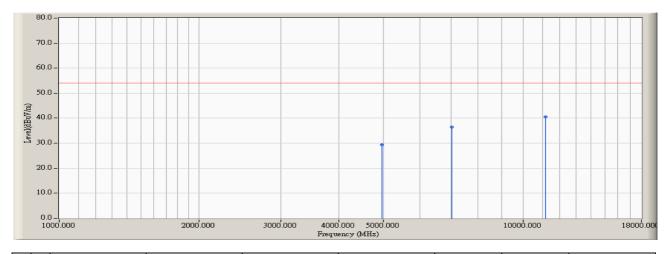


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4966.667	5.234	40.068	45.301	-28.669	73.970	PEAK
2		7035.000	14.790	34.975	49.765	-24.205	73.970	PEAK
3	*	11171.667	20.000	33.890	53.890	-20.080	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/13 - 16:58
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - HORIZONTAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

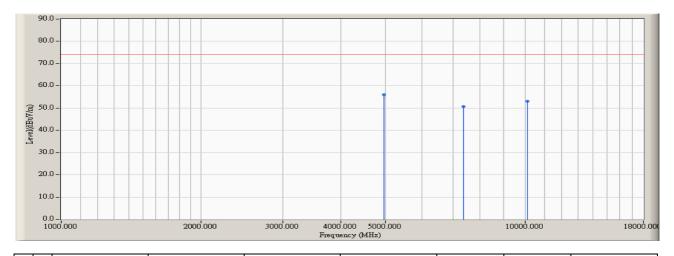


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4966.667	5.234	24.225	29.458	-24.512	53.970	AVERAGE
2		7035.000	14.790	21.570	36.360	-17.610	53.970	AVERAGE
3	*	11171.667	20.000	20.457	40.457	-13.513	53.970	AVERAGE

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/13 - 17:00
Limit : FCC_SpartC_15.209_03M_PK	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

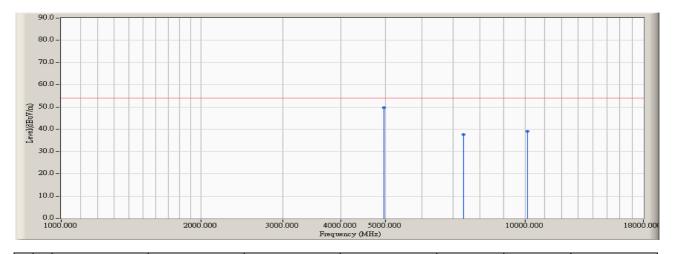


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4966.667	5.234	50.647	55.880	-18.090	73.970	PEAK
2		7375.000	15.250	35.387	50.637	-23.333	73.970	PEAK
3		10123.333	18.363	34.777	53.140	-20.830	73.970	PEAK

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



Engineer : Johnwang	
Site : AC-2	Time : 2006/10/13 - 17:00
Limit : FCC_SpartC_15.209_03M_AV	Margin: 0
EUT : CK986	Probe : 9120D_(1G-18G) - VERTICAL
Power : DC 12V	Note : Mode 1: Transmit (2480MHz)

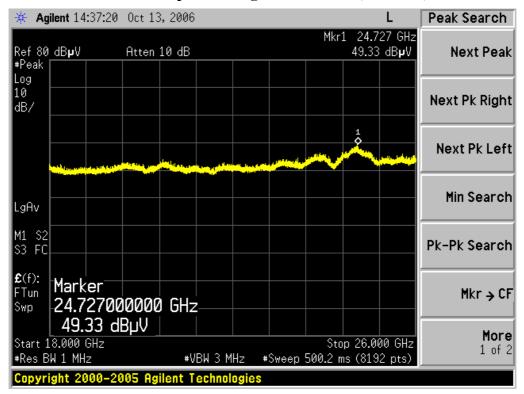


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4966.667	5.234	44.358	49.591	-4.379	53.970	AVERAGE
2		7375.000	15.250	22.486	37.736	-16.234	53.970	AVERAGE
3		10123.333	18.363	20.655	39.018	-14.952	53.970	AVERAGE

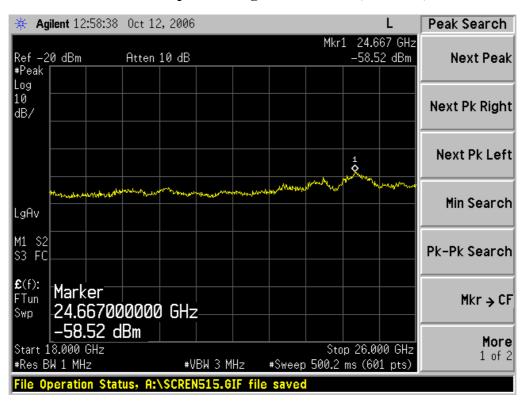
- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Conducted Spurious - Figure Channel 00 (2402MHz)

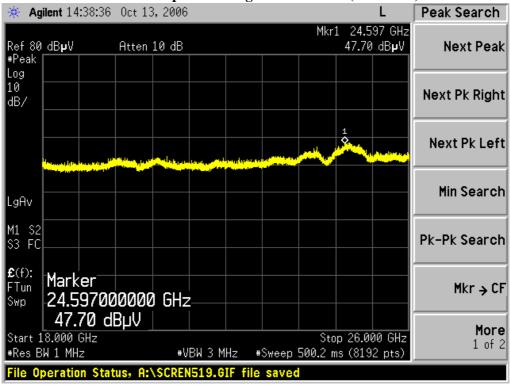


Conducted Spurious - Figure Channel 39 (2441MHz)





Conducted Spurious - Figure Channel78 (2480MHz)





5. Band Edge

5.1. Test Equipment

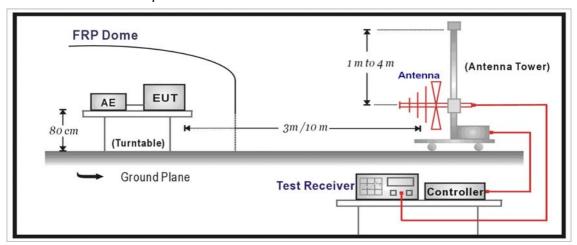
Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11
EMI Test Receiver	R&S	ESCI	100175	2005/11/25
Preamplifier	Quietek	AP-025C	QT-AP003	2005/11/25
Preamplifier	Quietek	AP-180C	CHM-0602013	2006/03/20
Bilog Type Antenna	Schaffner	CBL6112B	2932	2006/10/26
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2005/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2006/03/30

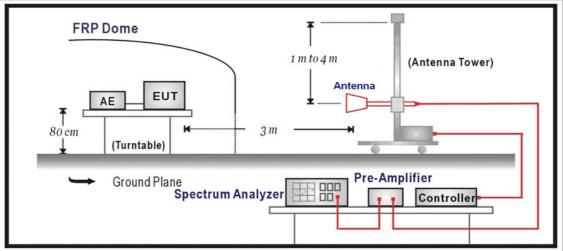
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

5.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



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5.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

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

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

5.5. Uncertainty

The measurement uncertainty above 1G is defined as \pm 3.9 dB under 1G is defined as \pm 3.8 dB



5.6. Test Result of Band Edge

Product : Bluetooth Rearview Mirror HandsFree Car Kit

Test Item : Band Edge Test Site : AC-2

Test Mode : Mode 1: Transmitter (2402MHz)

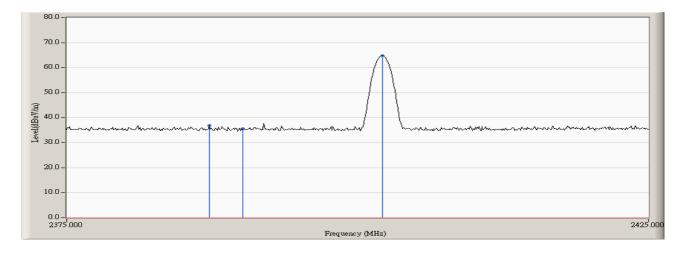
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2387.167	38.636	36.974	74.00	54.00	Pass
00 (Average)				74.00	54.00	Pass

Figure Channel 00: (Horizontal)



Note:

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

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

Version:1.0



Product : Bluetooth Rearview Mirror HandsFree Car Kit

Test Item : Band Edge Test Site : AC-2

Test Mode : Mode 1: Transmitter (2402MHz)

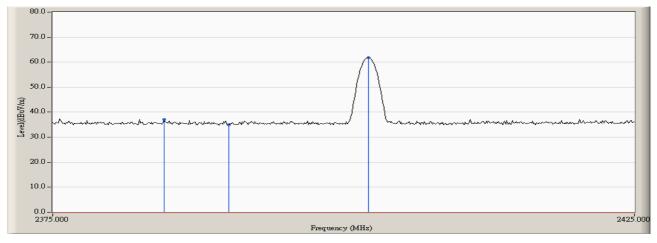
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2384.500	38.726	37.067	74.00	54.00	Pass
00(Average)		-		74.00	54.00	Pass

Figure Channel 00: (Vertical)



Note:

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

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



Product : Bluetooth Rearview Mirror HandsFree Car Kit

Test Item : Band Edge Test Site : AC-2

Test Mode : Mode 1: Transmitter (2480MHz)

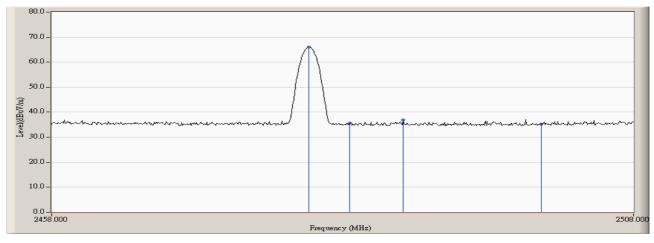
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2488.083	38.573	36.943	74.00	54.00	Pass
78(Average)				74.00	54.00	Pass

Figure Channel 78: (Horizontal)



Note:

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

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



Product : Bluetooth Rearview Mirror HandsFree Car Kit

Test Item : Band Edge Test Site : AC-2

Test Mode : Mode 1: Transmitter (2480MHz)

RF Radiated Measurement:

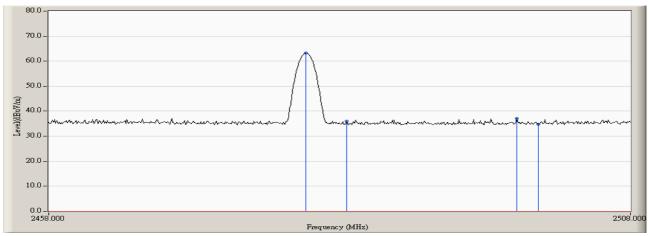
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2498.167	38.626	37.001	74.00	54.00	Pass
78(Average)				74.00	54.00	Pass

Figure Channel 78:





Note:

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

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



6. Channel Number

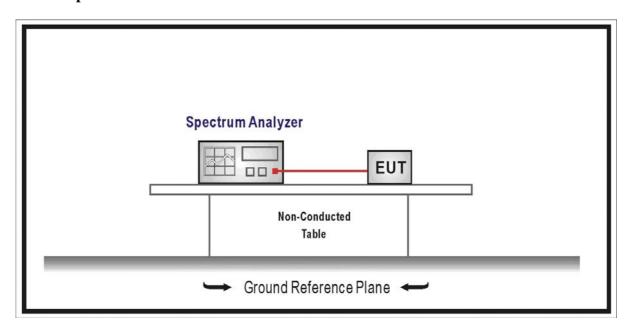
6.1. Test Equipment

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

6.2. Test Setup



6.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

6.4. Uncertainty

The measurement uncertainty is defined as \pm 200kHz



6.5. Test Result of Channel Number

Product : Bluetooth Rearview Mirror HandsFree Car Kit

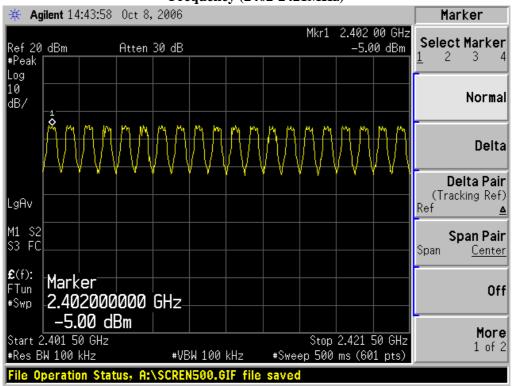
Test Item : Channel Number

Test Site : AC-3

Test Mode : Mode 1: Transmitter

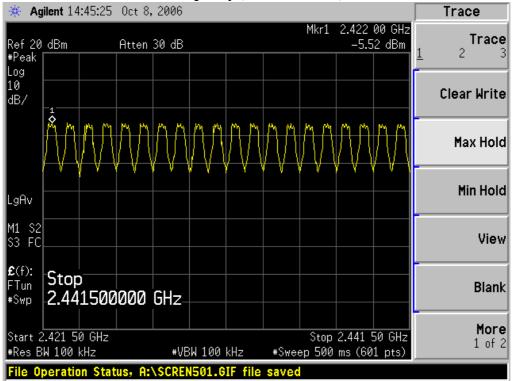
Frequency Range	Measurement	Required Limit	Result	
(MHz)	(Hopping Channel)	(Hopping Channel)		
2402 ~ 2480	2402 ~ 2480 79		Pass	

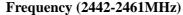
Frequency (2402-2421MHz)

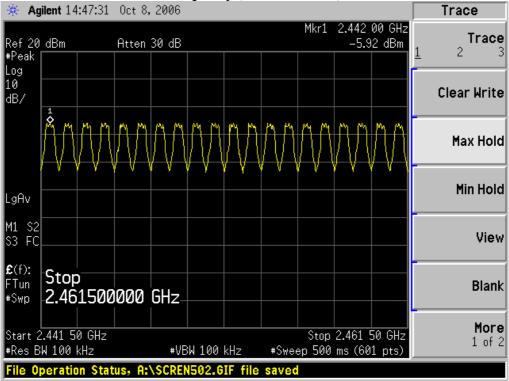




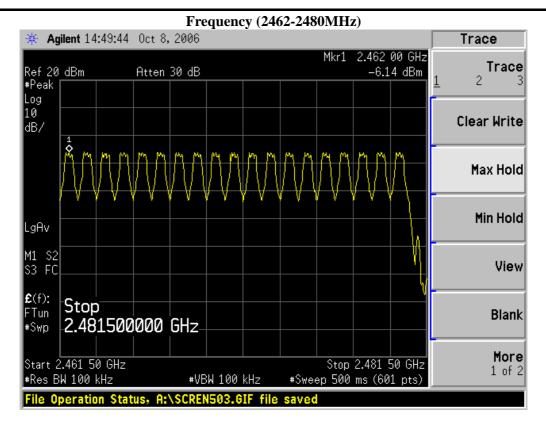
Frequency (2422-2441MHz)













7. Channel Separation

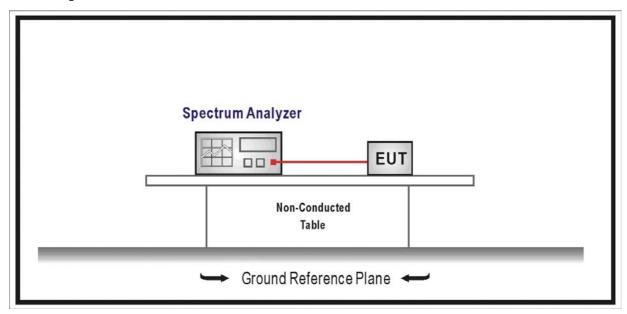
7.1. Test Equipment

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

7.2. Test Setup



7.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

7.4. Uncertainty

The measurement uncertainty is defined as \pm 150Hz



7.5. Test Result of Channel Separation

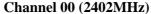
Product : Bluetooth Rearview Mirror HandsFree Car Kit

Test Item : Channel Separation

Test Site : AC-3

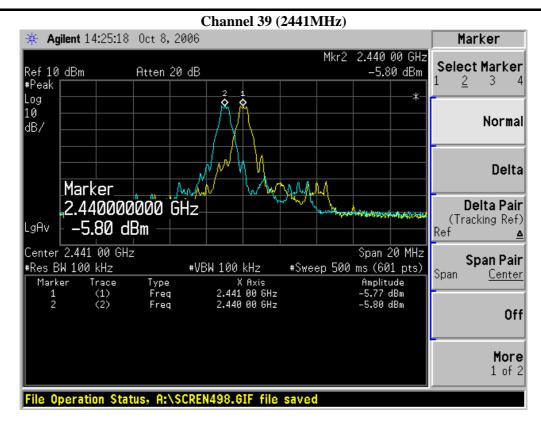
Test Mode : Mode 1: Transmitter

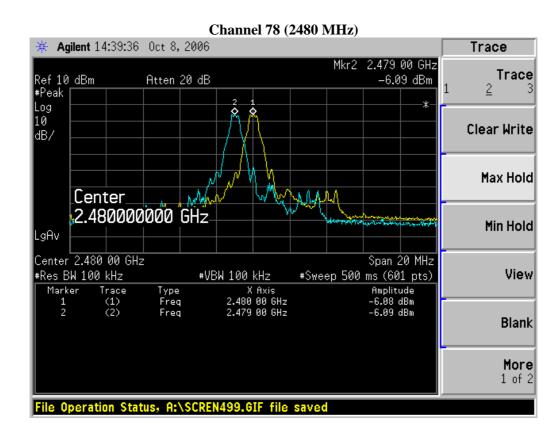
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass













8. Dwell Time

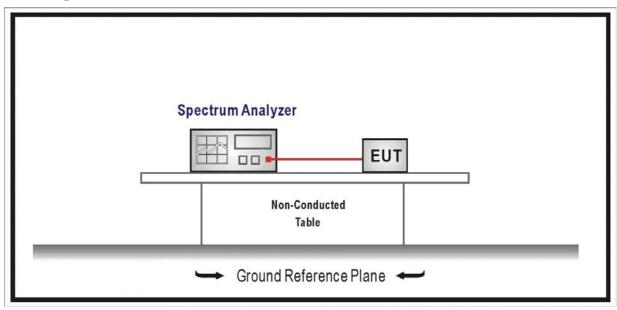
8.1. Test Equipment

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

8.2. Test Setup



8.3. Limit

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

8.4. Uncertainty

The measurement uncertainty is defined as \pm 25msec



8.5. Test Result of Dwell Time

Product : Bluetooth Rearview Mirror HandsFree Car Kit

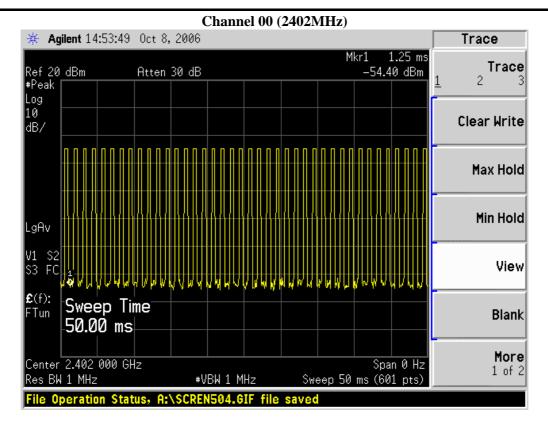
Test Item : Dwell Time

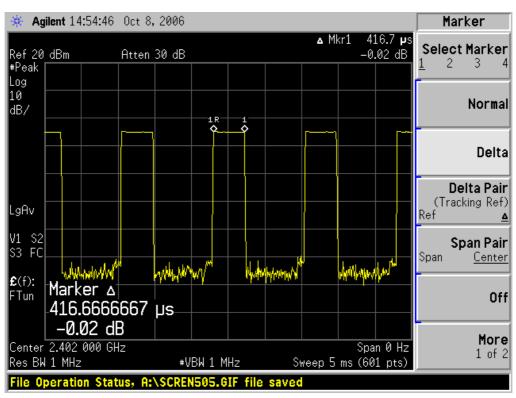
Test Site : AC-3

Test Mode : Mode 1: Transmitter

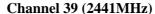
Channel	Measurement Level Required Limit		Result
(MHz)	(ms)	(sec.)	Result
CH 00 (2402)	133.527	< 0.4	Pass
CH 39 (2441)	133.527	< 0.4	Pass
CH 78 (2480)	130.854	< 0.4	Pass

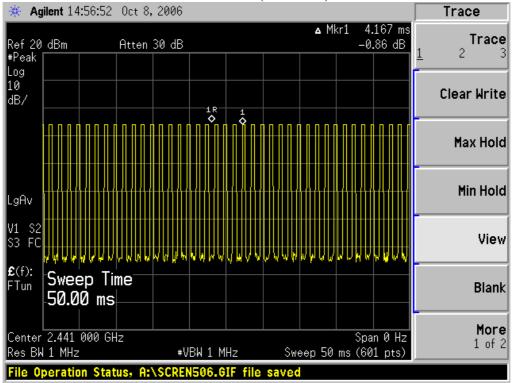


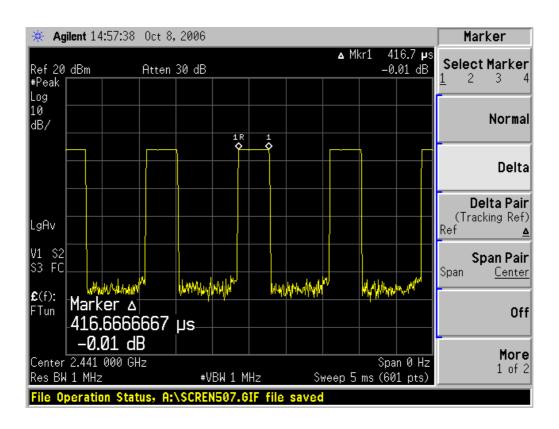




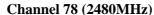


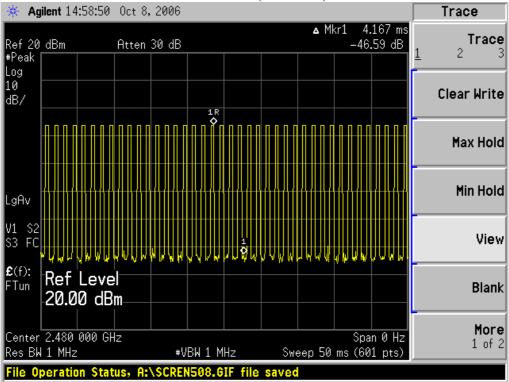


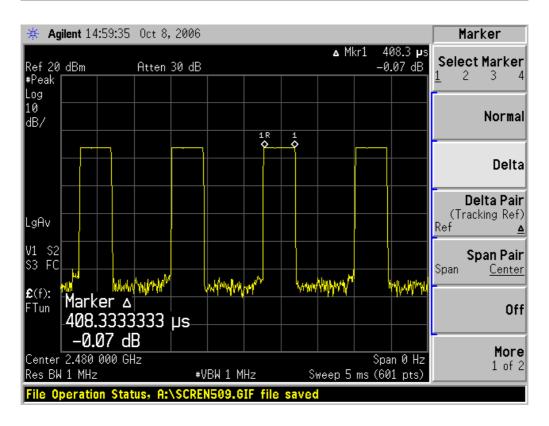














Occupancy Time of Frequency Hopping System

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

- A) 2402MHz The Maximum Occupancy Time Within 31.6sec: $(416.67 \,\mu\,\text{s}*800)/(79*31.6) = 133.527\text{msec}$
- B) 2441MHz The Maximum Occupancy Time Within 31.6sec: (416.67 μ s*800)/(79*31.6)= 133.527msec ∘
- C) 2480MHz The Maximum Occupancy Time Within 31.6sec: (408.33 μ s*800)/(79*31.6)= 130.854msec \circ

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

- PS: (1) From Bluetooth Specification, It Hops 1640 Times in $1\sec$ or The Average Occupancy Time of Each 79 Channels is 1640/79 Times, Therefore, We Calculate The Maximum Occupancy Time (worse cars) As Below:
- A) 2402Mhz The Occupancy Time of Each Pulse is 0.4 msec, The Maximum Occupancy Time within 31.6sec is 0.4 msec*1640/79*31.6=289.056 msec
- B) 2441MHz The Occupancy Time of Each Pulse is 0.4 msec, The Maximum Occupancy Time within 31.6sec is 0.4 msec*1640/79*31.6=289.056 msec
- C) 2480MHz The Occupancy Time of Each Pulse is 0.4 msec, The Maximum Occupancy Time within 31.6sec is 0.4 msec*1640/79*31.6=289.056 msec

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

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9. Occupied Bandwidth

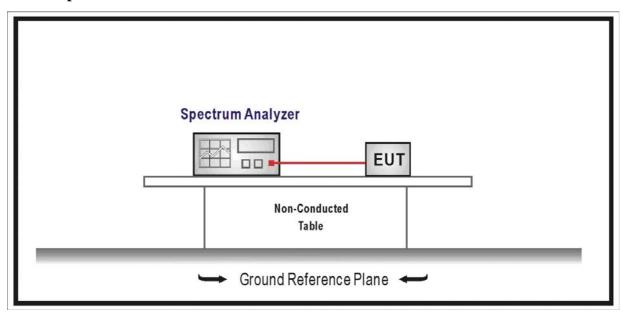
9.1. Test Equipment

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2006/03/11

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

N/A

9.4. Uncertainty

The measurement uncertainty is defined as \pm 1.27 dB



9.5. Test Result of Occupied Bandwidth

Product : Bluetooth Rearview Mirror HandsFree Car Kit

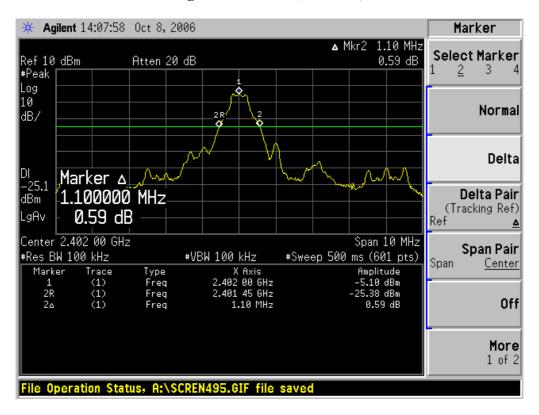
Test Item : Occupied Bandwidth Data

Test Site : AC-3

Test Mode : Mode 1: Transmitter (2402MHz)

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

Figure Channel 00 (2402MHz)



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Figure Channel 39 (2441MHz)





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10. EMI Reduction Method During Compliance Testing

No modification was made during testing.

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