Test Report

Product Name ： Personal Navigation Device (PND)

Model No. ： 70/71 Plus, 70/71 Premium, 70/71 Premium Car

FCC ID. ： VIL-70-1

Applicant ： NAVIGON AG

Address ： Schottmuellerstrasse 20a, Hamburg, 20251, Germany

Date of Receipt ： 2010/04/29

Issued Date ： 2010/05/27

Report No. ： 105089R-RFUSP43V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2010/05/27
Report No. : 105089R-RFUSP43V01

QuieTek

Product Name	:	Personal Navigation Device (PND)
Applicant	:	NAVIGON AG
Address	:	Schottmuellerstrasse 20a, Hamburg, 20251, Germany
Manufacturer	:	MAINTEK COMPUTER (SUZHOU) CO.,LTD
Model No.	:	70/71 Plus, 70/71 Premium, 70/71 Premium Car
FCC ID.	:	VIL-70-1
EUT Voltage	:	DC 10-24V
Trade Name	:	NAVIGON
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2009
Test Result	:	Complied

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.

Documented By : Sandy Chuang

(Sandy Chuang / Engineering Adm. Assistant)

Reviewed By : Lucia Lu

(Lucia Lu / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

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1. General Information

1.1. EUT Description

Product Name	Personal Navigation Device (PND)
Trade Name	NAVIGON
Model No.	70/71 Plus, 70/71 Premium, 70/71 Premium Car
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	FHSS
Channel Control	Auto
Antenna Type	Chip Antenna
Antenna Gain	2dBi

Component	
Car Charger	JPC, JP-01 I/P: 100-24V⎓ / max 0.85A O/P: 5V⎓ / 1.2A Cable Out: Shielded, 1.5m, one ferrite core bonded.

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

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 hop sets 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 Personal Navigation Device (PND) including a 2.4GHz receiving function, and transmitting function.
2. The different of the each model is shown as below:

Variant	Housing Type	RAM Size	Flash Size	BT	Proxim. Detect.	FM Chip	Electr. Dock. IF
70/71 Plus	Plus	64MB	4GB	No	Yes	4703	No
70/71 Premium	Plus	128MB	4GB	Yes	Yes	4703	No
70/71 Premium Car	Auto	128MB	4GB	Yes	Yes	4706	Yes

3. These test results on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
4. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 105089R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

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

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
EMI	Mode 1: Transmit

Emission	Mode 1
Conducted Emission	No
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

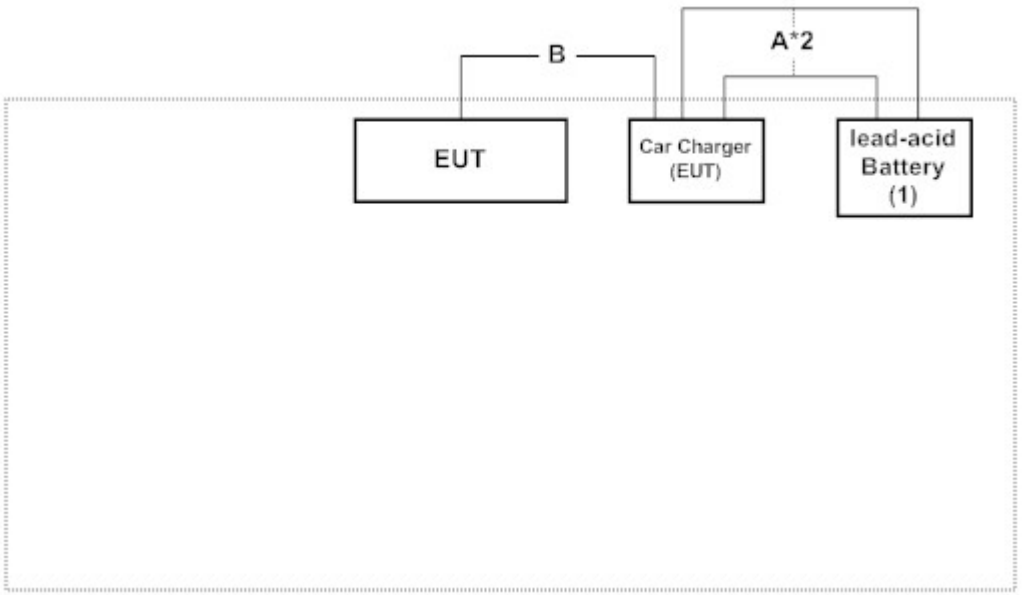
1.4. Tested System Details

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.	FCC ID	Power Cord
1	lead-acid Battery	YUASA	ST-CLN126	N/A	DoC	--

1.5. Configuration of tested System

Connection Diagram



	Signal Cable Type	Signal cable Description
A	Power Line	Non-Shielded, 1.0m, 2PCS
B	Power Line	Shielded, 1.5m, one ferrite core bonded.

1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.5.
2	Turn on the power of all equipment.
3	The EUT will continue transmit RF signals.
4	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	24
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520

Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010

Testing Laboratory
1313

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2009

NVLAP Lab Code : 200347-0

Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Peak Power Output

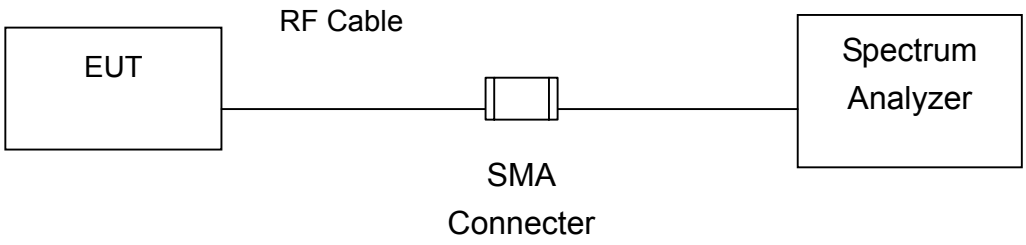
2.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R&S	FSP / 100561	Oct., 2010
2	No.1 OATS			Sep., 2010

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

2.2. Test Setup



2.3. Test procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

2.4. Limits

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.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

2.5. Test Specification

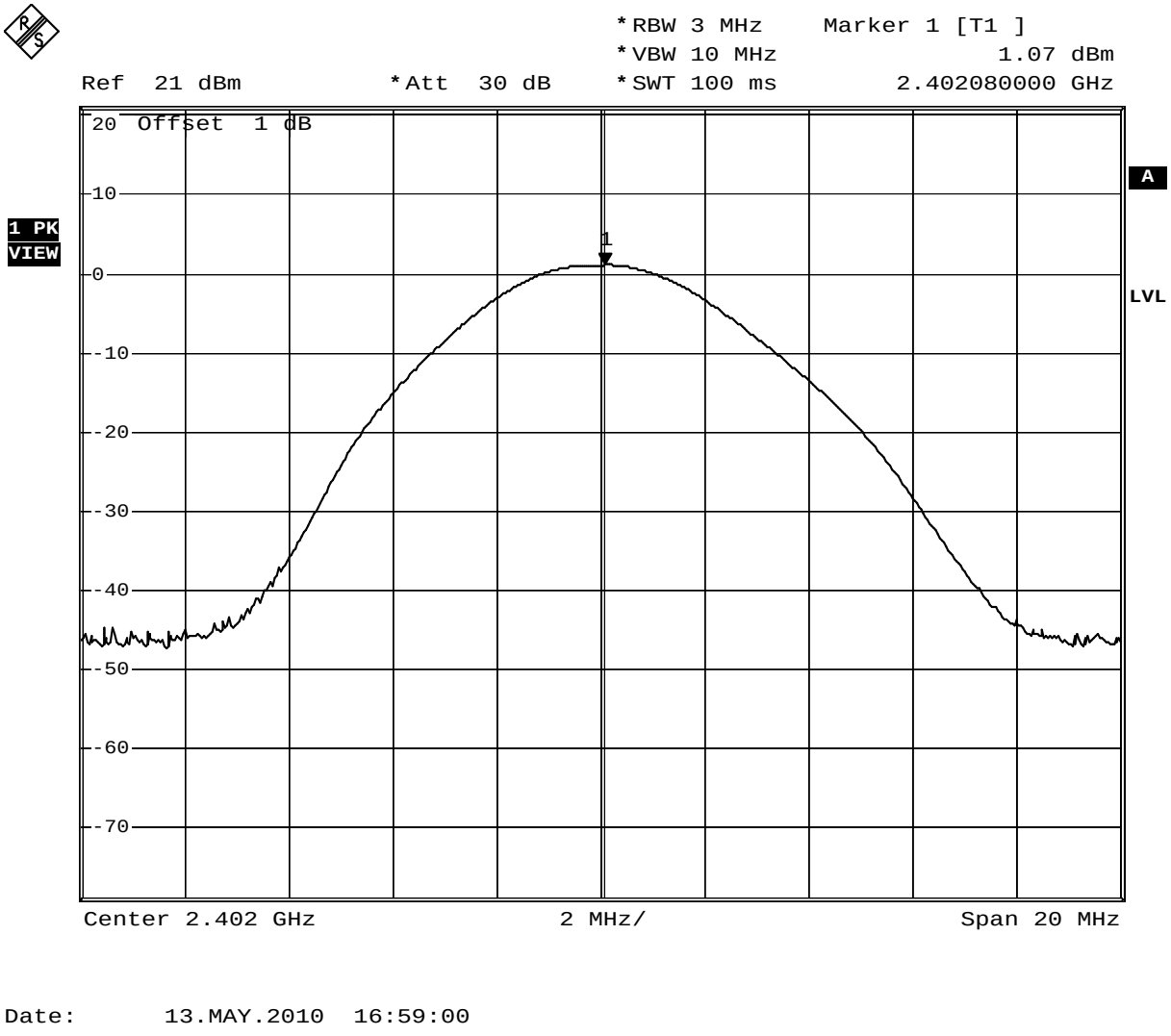
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

2.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	1.07	1Watt= 30 dBm	Pass

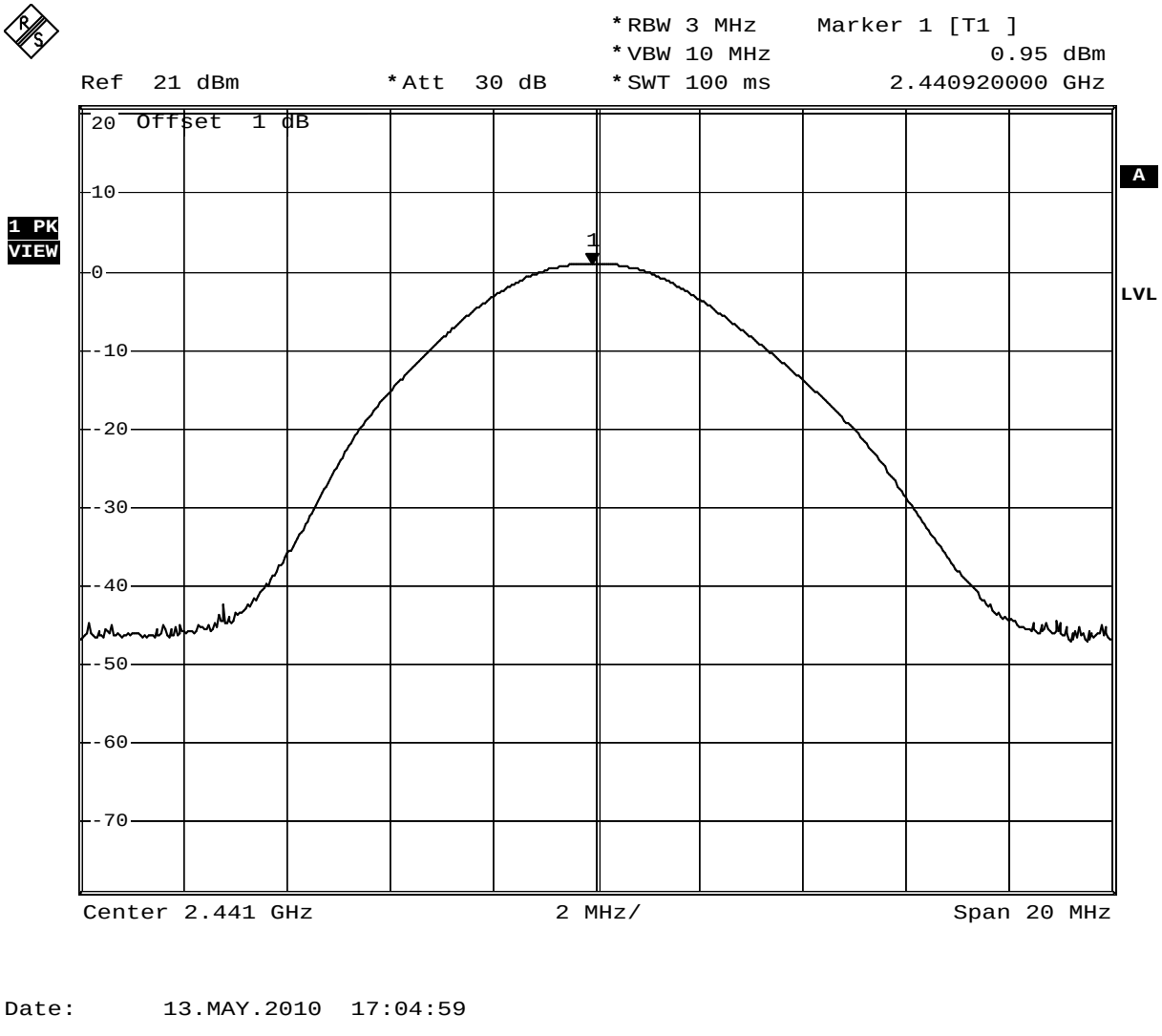
Channel 00



Product	Personal Navigation Device (PND)		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	0.95	1Watt= 30 dBm	Pass

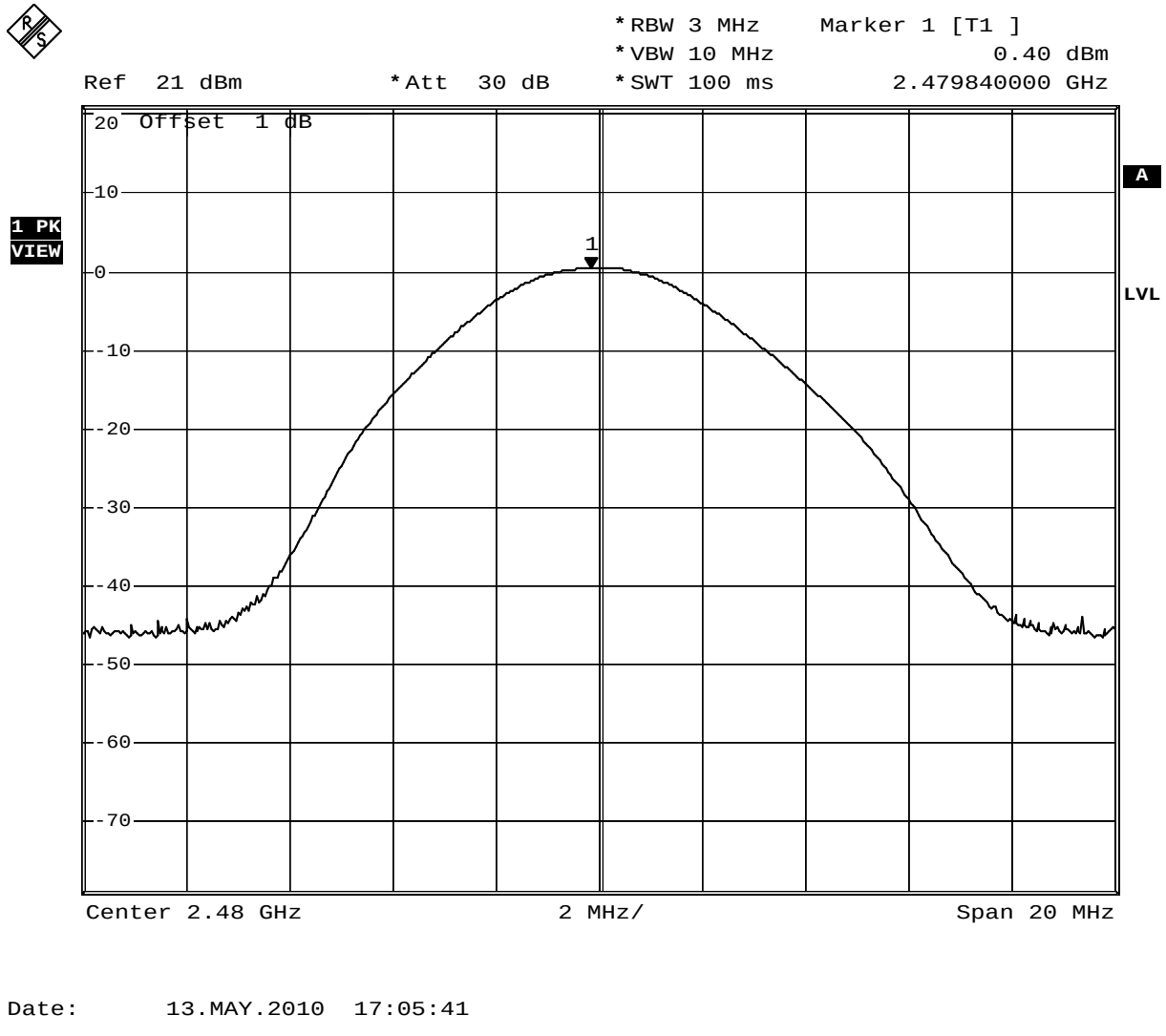
Channel 39



Product	Personal Navigation Device (PND)		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	0.40	1Watt= 30 dBm	Pass

Channel 78



3. Radiated Emission

3.1. Test Equipment

The following test equipment are used during the test:

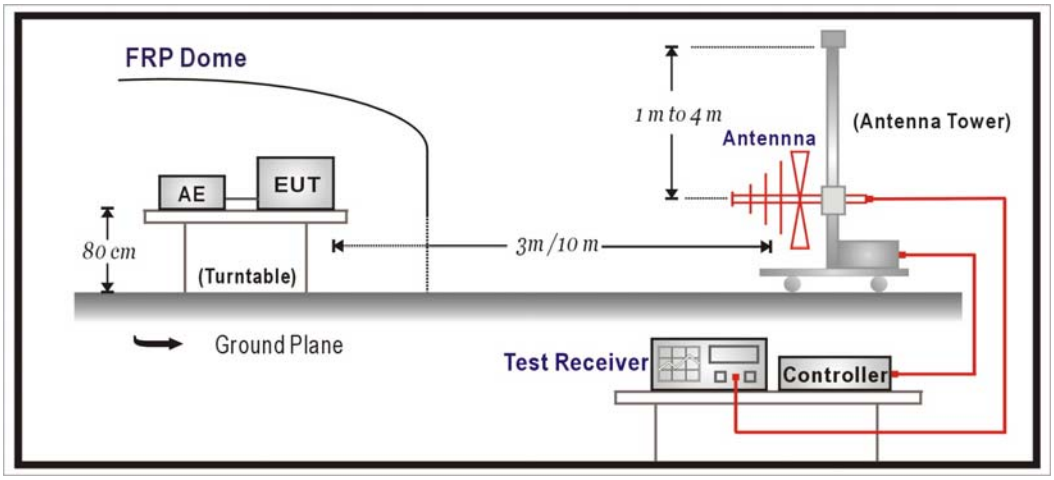
Spurious Emissions / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/15
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2010/08/15
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2010/12/04
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2011/03/26
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/15
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

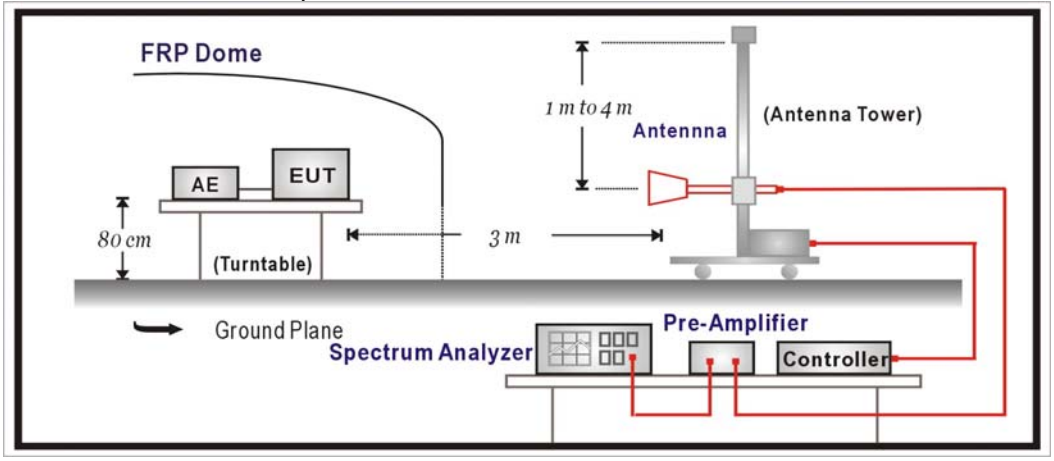
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. “N/A” Ca1.Date is used to Pre-test, not final test.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. 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	dBuV/m
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 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.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

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 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.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

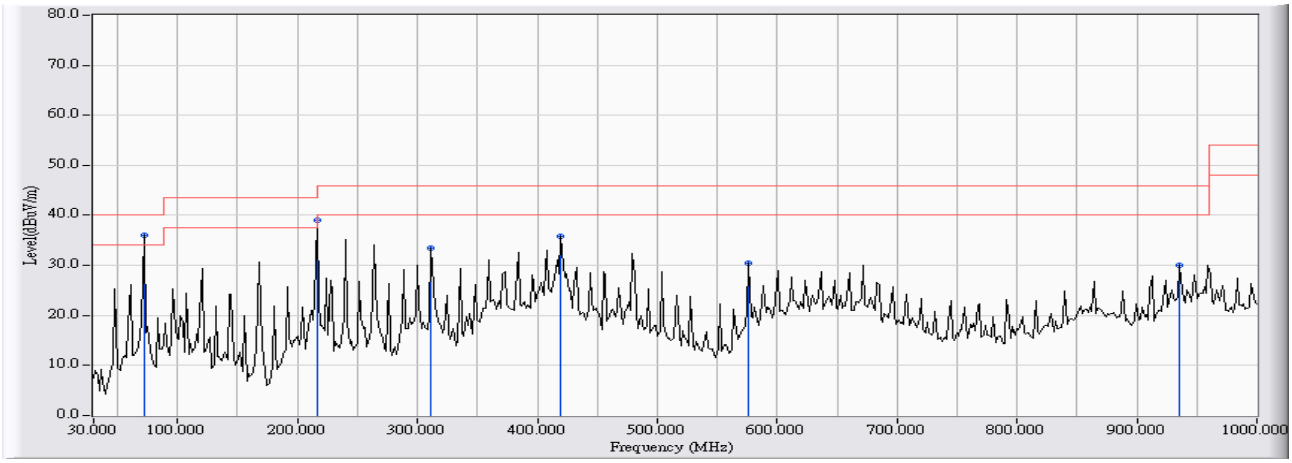
3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

3.6. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2010/05/04 - 11:52
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX

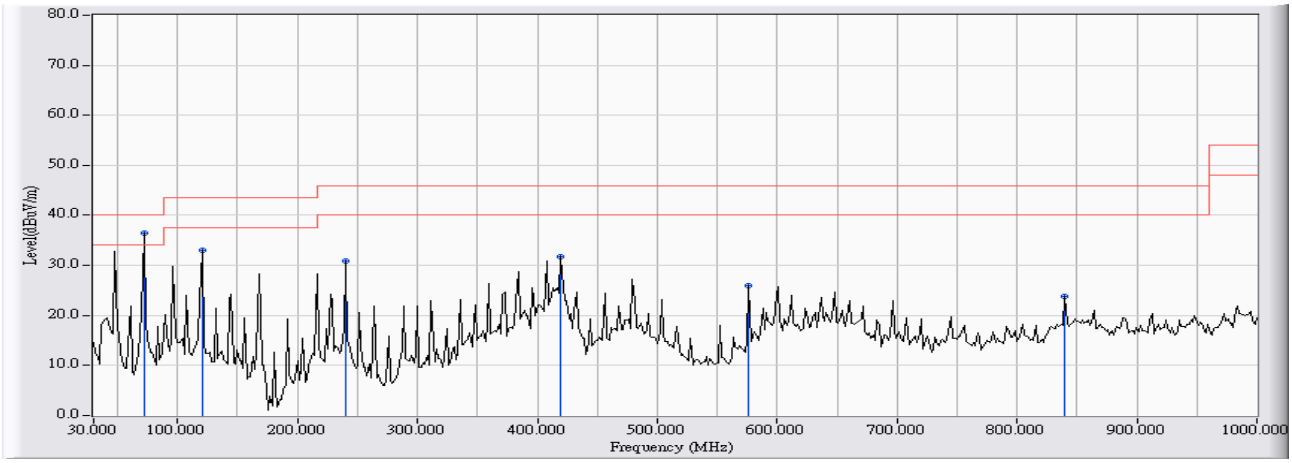


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	72.033	-15.385	51.392	36.007	-3.993	40.000	QUASIPEAK
2		215.917	-14.423	53.485	39.061	-4.439	43.500	QUASIPEAK
3		311.300	-8.992	42.373	33.382	-12.618	46.000	QUASIPEAK
4		419.617	-4.560	40.297	35.737	-10.263	46.000	QUASIPEAK
5		576.433	-6.759	37.269	30.510	-15.490	46.000	QUASIPEAK
6		935.333	0.515	29.605	30.120	-15.880	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	Time : 2010/05/04 - 11:55
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX



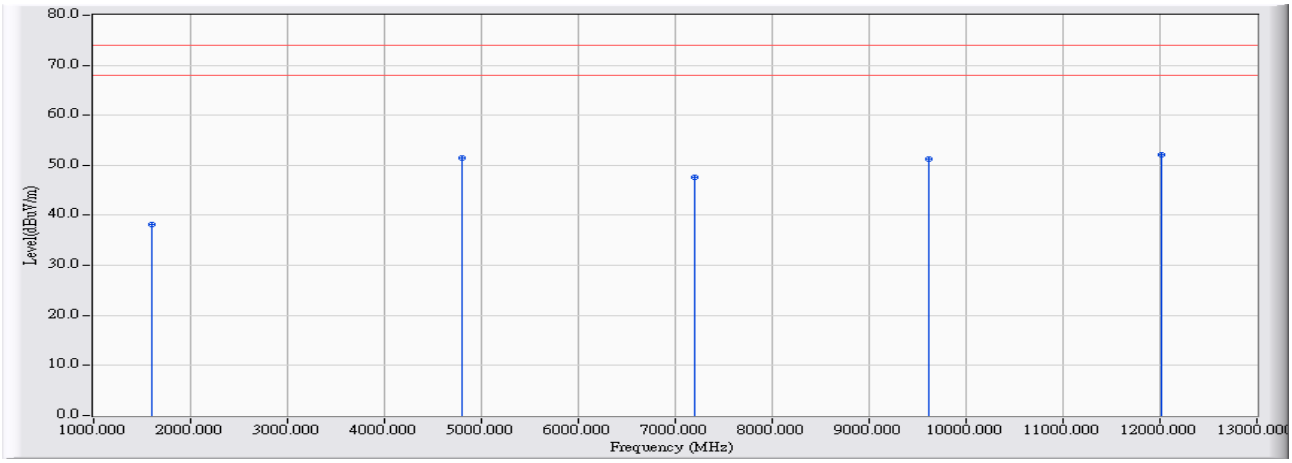
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	72.033	-15.507	51.865	36.358	-3.642	40.000	QUASIPEAK
2		120.533	-11.463	44.475	33.011	-10.489	43.500	QUASIPEAK
3		240.167	-13.591	44.520	30.929	-15.071	46.000	QUASIPEAK
4		419.617	-5.114	36.918	31.804	-14.196	46.000	QUASIPEAK
5		576.433	-7.973	33.994	26.021	-19.979	46.000	QUASIPEAK
6		839.950	-2.536	26.422	23.886	-22.114	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Harmonic & Spurious:

Site : CB1	Time : 2010/04/29 - 19:11
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

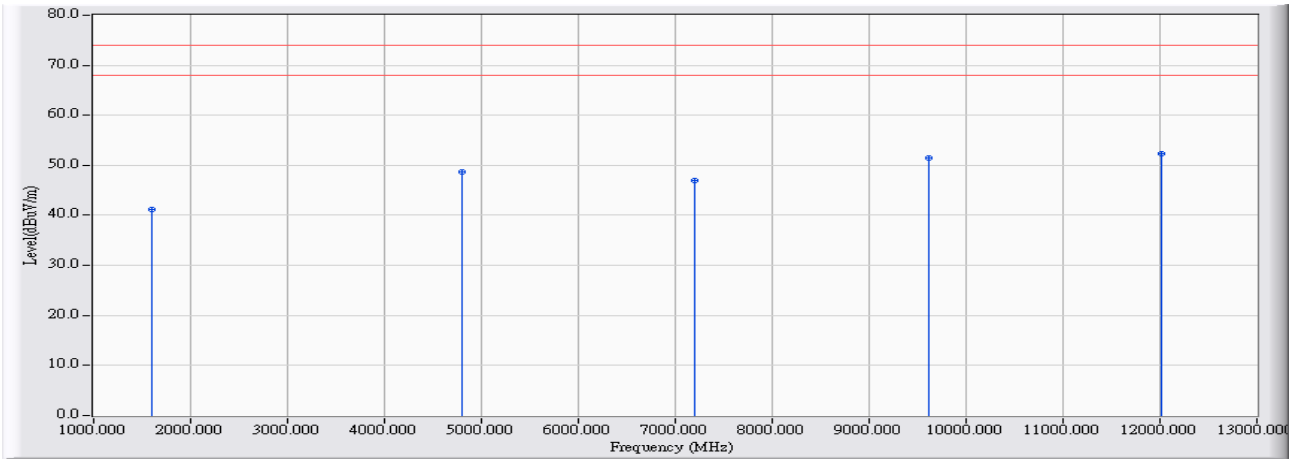


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		1602.040	-6.897	45.010	38.114	-35.886	74.000	54.000	PEAK
2		4804.100	3.343	48.150	51.493	-22.507	74.000	54.000	PEAK
3		7205.920	9.745	37.950	47.695	-26.305	74.000	54.000	PEAK
4		9608.040	13.653	37.620	51.273	-22.727	74.000	54.000	PEAK
5	*	12010.080	18.805	33.400	52.205	-21.795	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/04/29 - 19:17
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

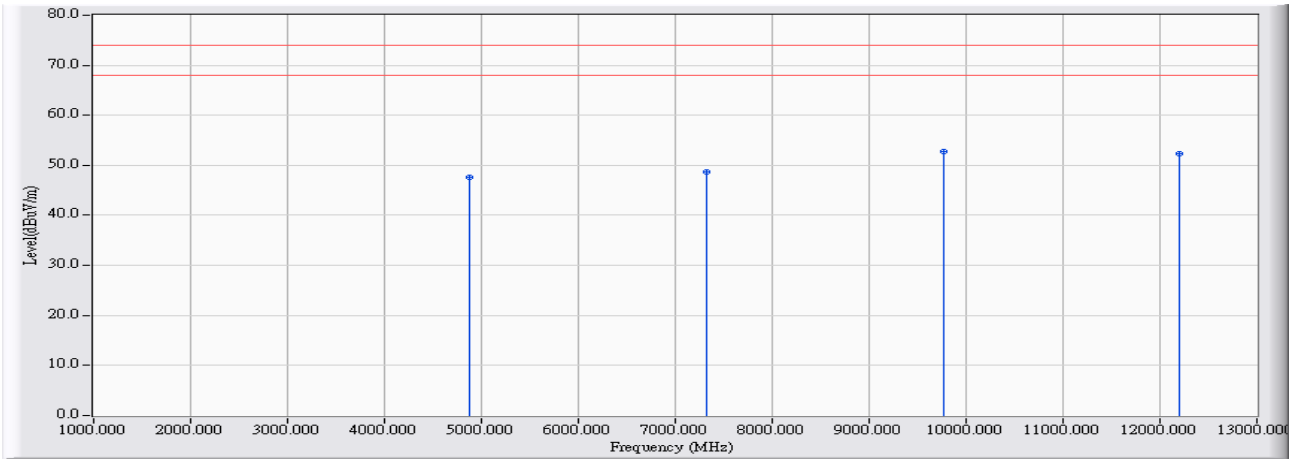


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		1601.340	-4.354	45.580	41.226	-32.774	74.000	54.000	PEAK
2		4804.060	5.532	43.120	48.652	-25.348	74.000	54.000	PEAK
3		7205.960	9.400	37.540	46.940	-27.060	74.000	54.000	PEAK
4		9608.000	13.716	37.720	51.435	-22.565	74.000	54.000	PEAK
5	*	12010.120	17.434	34.930	52.364	-21.636	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/04/29 - 19:25
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2441

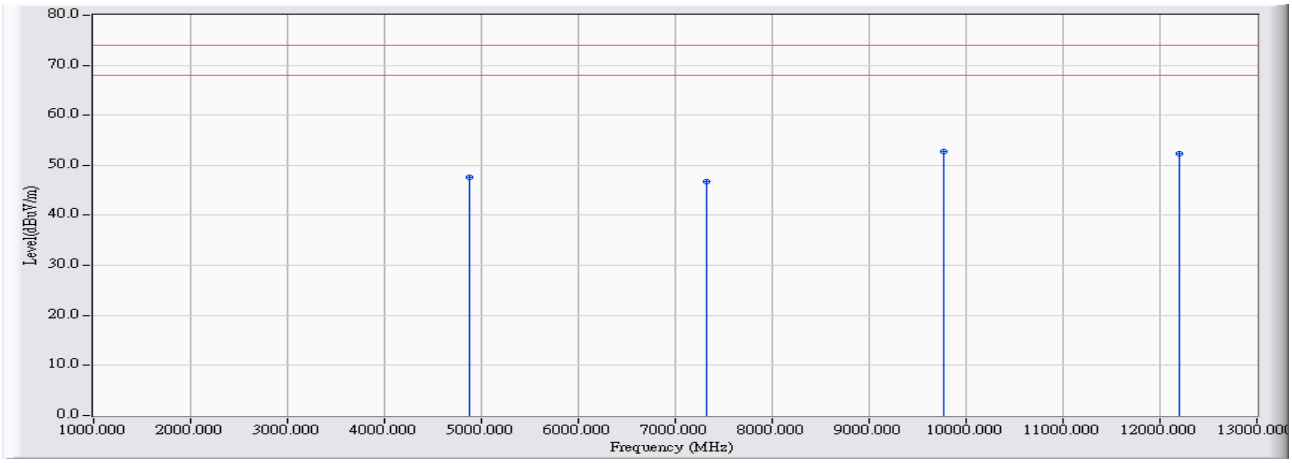


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4881.960	3.553	44.150	47.703	-26.297	74.000	54.000	PEAK
2		7322.870	10.282	38.470	48.752	-25.248	74.000	54.000	PEAK
3	*	9764.030	14.282	38.520	52.802	-21.198	74.000	54.000	PEAK
4		12204.880	18.043	34.390	52.433	-21.567	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/04/29 - 19:36
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2441

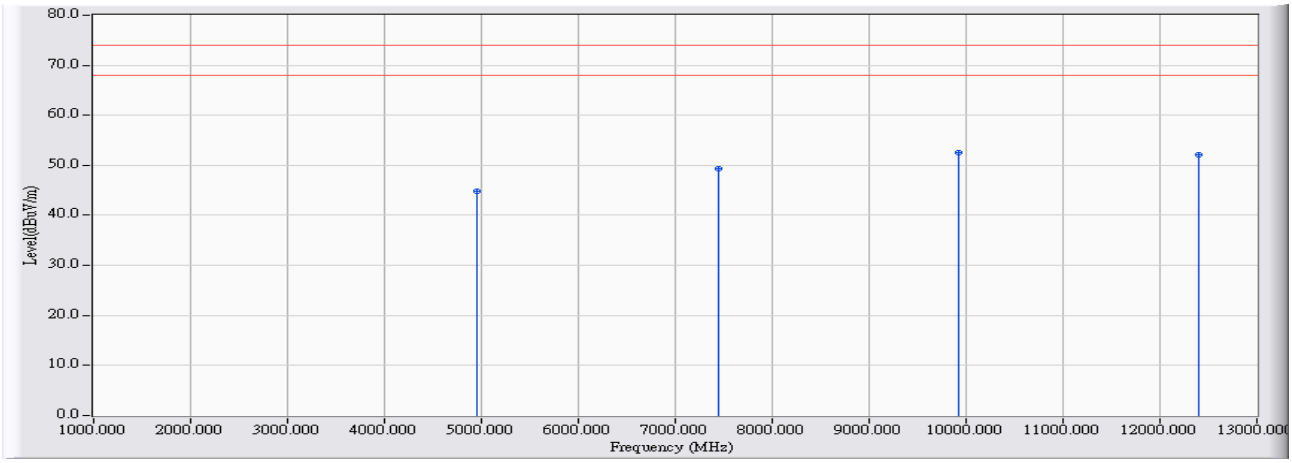


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4881.890	5.580	42.050	47.631	-26.369	74.000	54.000	PEAK
2		7322.920	9.627	37.220	46.847	-27.153	74.000	54.000	PEAK
3	*	9763.900	14.496	38.210	52.706	-21.294	74.000	54.000	PEAK
4		12205.030	17.086	35.180	52.266	-21.734	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/04/29 - 19:48
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480

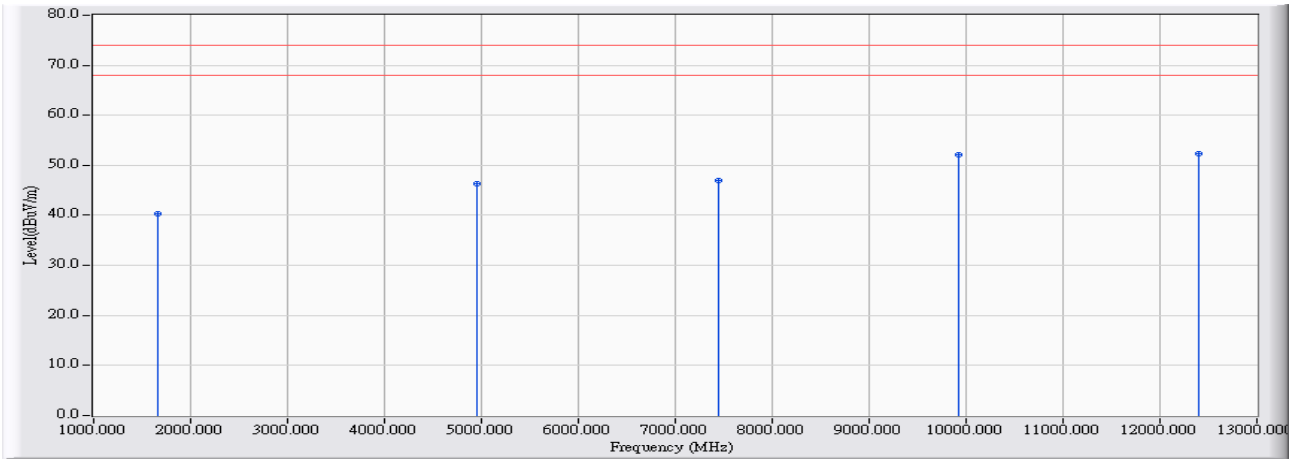


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4960.090	3.772	40.980	44.753	-29.247	74.000	54.000	PEAK
2		7439.930	10.829	38.490	49.319	-24.681	74.000	54.000	PEAK
3	*	9919.910	14.908	37.660	52.568	-21.432	74.000	54.000	PEAK
4		12400.340	17.269	34.910	52.179	-21.821	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/04/29 - 19:58
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		1653.860	-4.454	44.670	40.216	-33.784	74.000	54.000	PEAK
2		4960.120	5.629	40.660	46.289	-27.711	74.000	54.000	PEAK
3		7439.930	9.864	37.120	46.985	-27.015	74.000	54.000	PEAK
4		9916.960	15.264	36.890	52.154	-21.846	74.000	54.000	PEAK
5	*	12400.220	16.724	35.690	52.414	-21.586	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

4. RF antenna conducted test

4.1. Test Equipment

The following test equipments are used during the test:

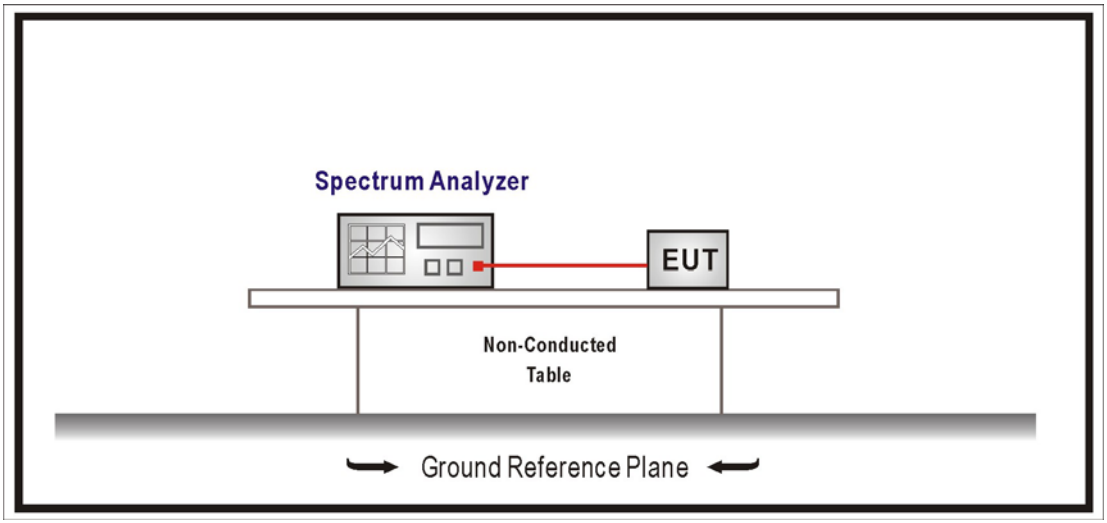
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2011
2	No.1 OATS			Sep., 2010

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2. Mark “X” test instruments are used to measure the final test results.

4.2. Test Setup

RF Conducted Measurement:



4.3. Limits

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 an RF conducted or 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)).

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

4.5. Test Specification

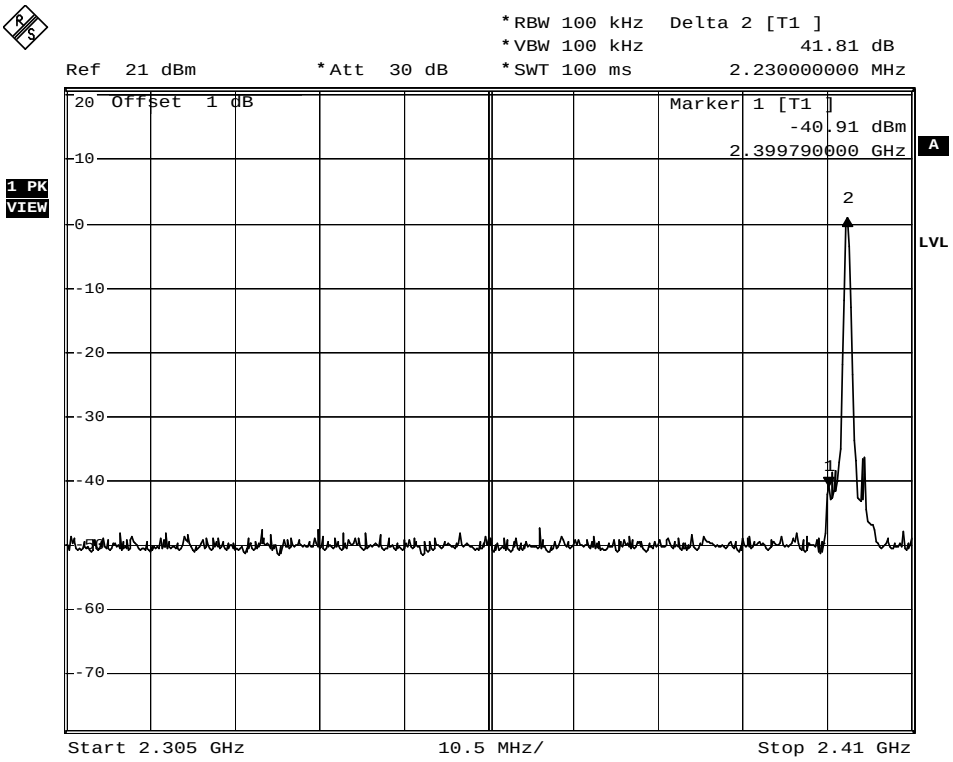
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

4.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

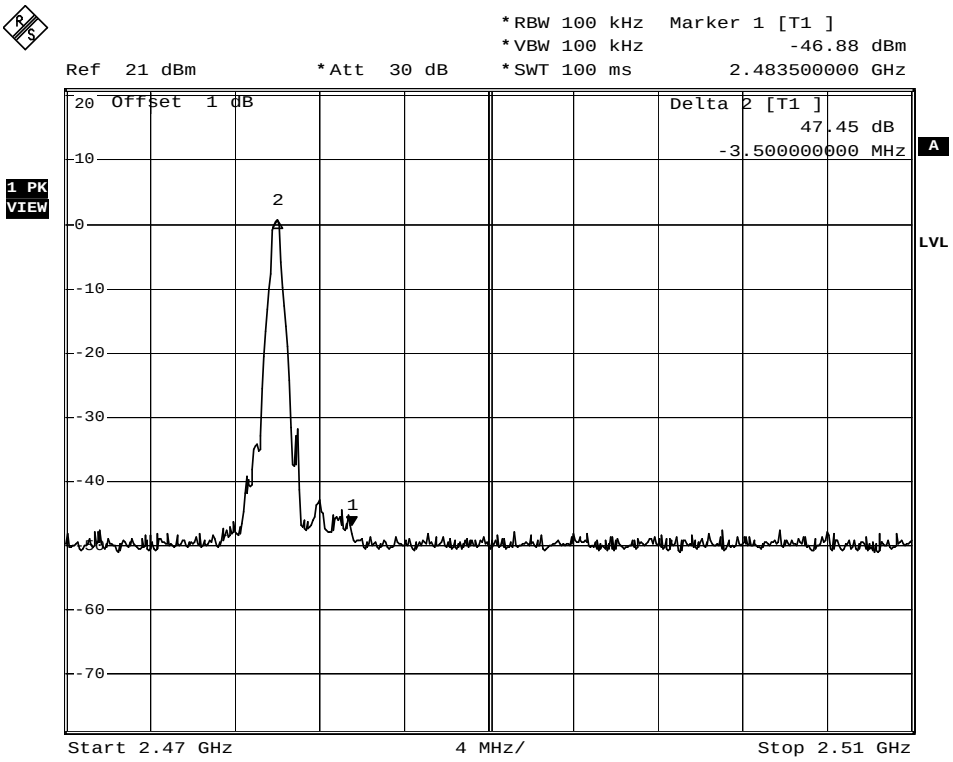
Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	41.81	≧20	Pass
78	2480	47.45	≧20	Pass

Channel 00



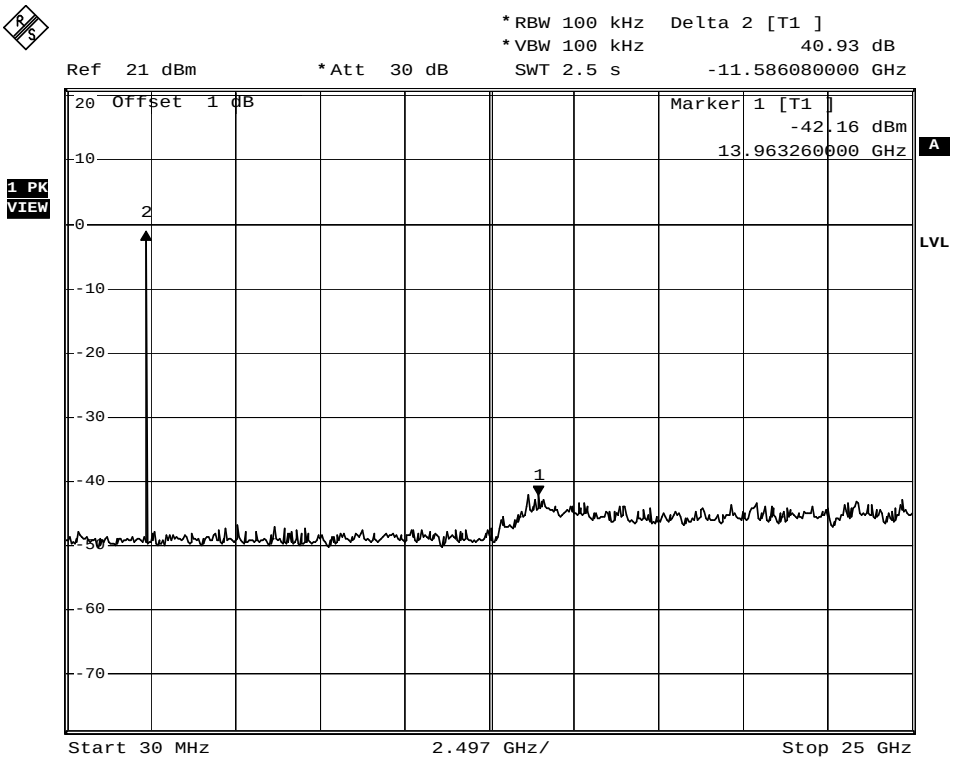
Date: 13.MAY.2010 17:14:50

Channel 78



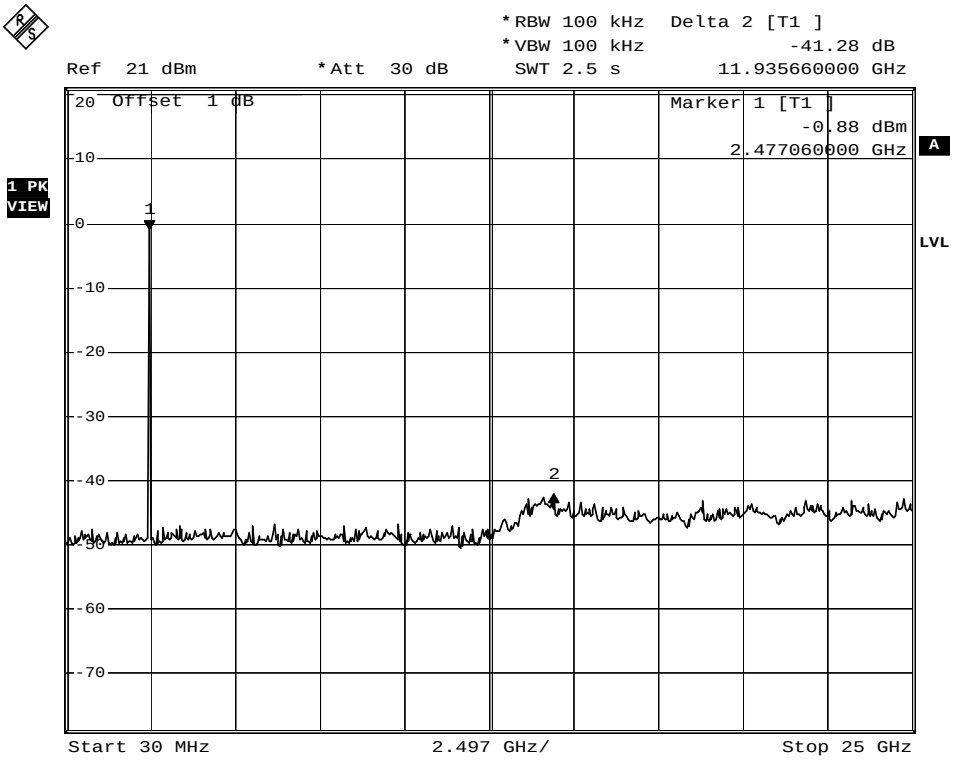
Date: 13.MAY.2010 17:38:20

Channel 00 (30MHz-25GHz)



Date: 13.MAY.2010 17:35:19

Channel 78 (30MHz~25GHz)



Date: 13.MAY.2010 17:36:29

5. Band Edge

5.1. Test Equipment

The following test equipments are used during the test:

Band Edge / CB1

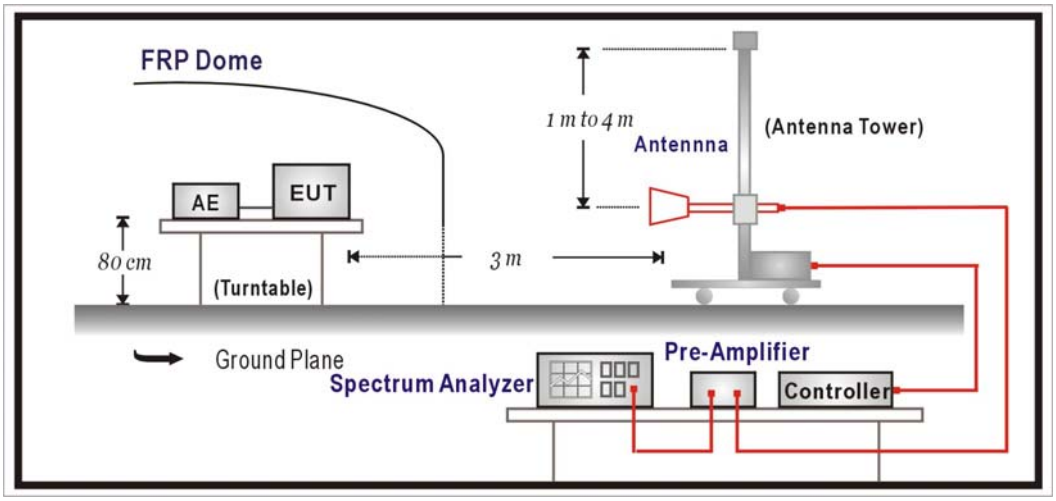
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/15
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2010/12/04
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/15
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2. Mark “X” test instruments are used to measure the final test results.

5.2. Test Setup

RF Radiated Measurement:



5.3. 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.

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

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.

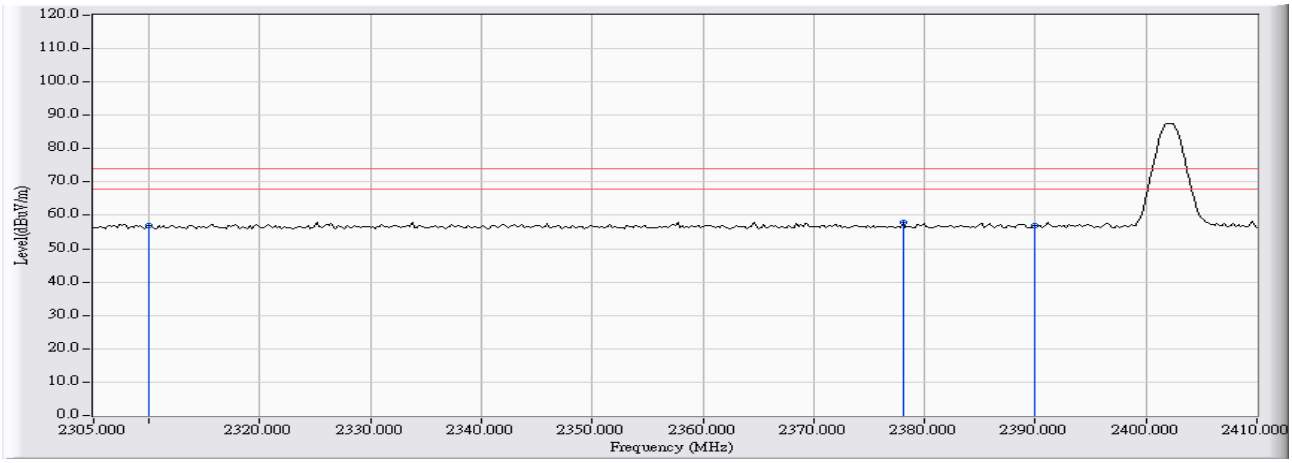
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

5.6. Test Result

Site : CB1	Time : 2010/04/29 - 20:16
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

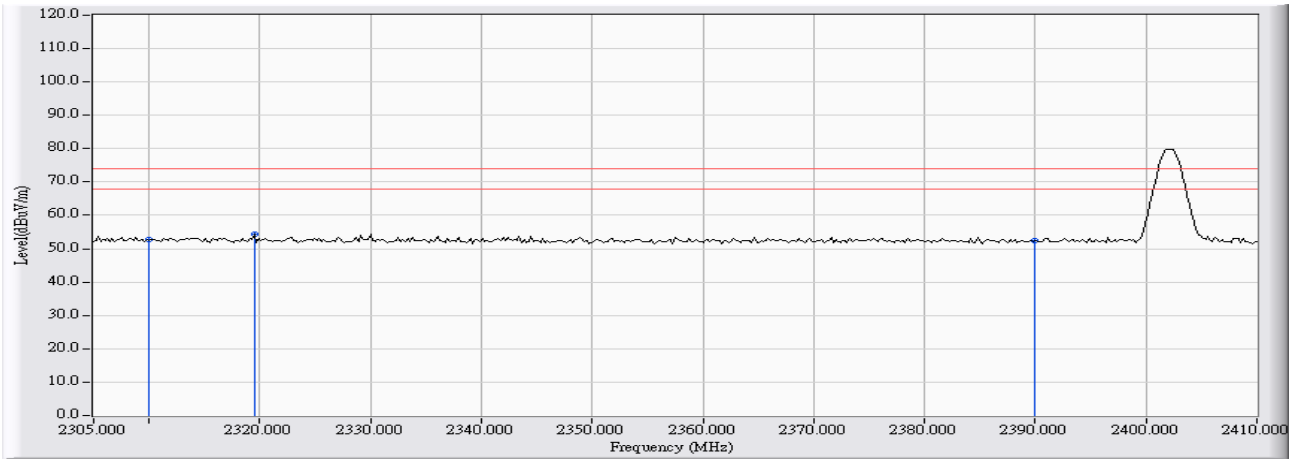


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	31.658	25.259	56.916	-17.084	74.000	54.000	PEAK
2	*	2378.080	31.978	26.031	58.009	-15.991	74.000	54.000	PEAK
3		2390.000	32.036	24.962	56.998	-17.002	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:26
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

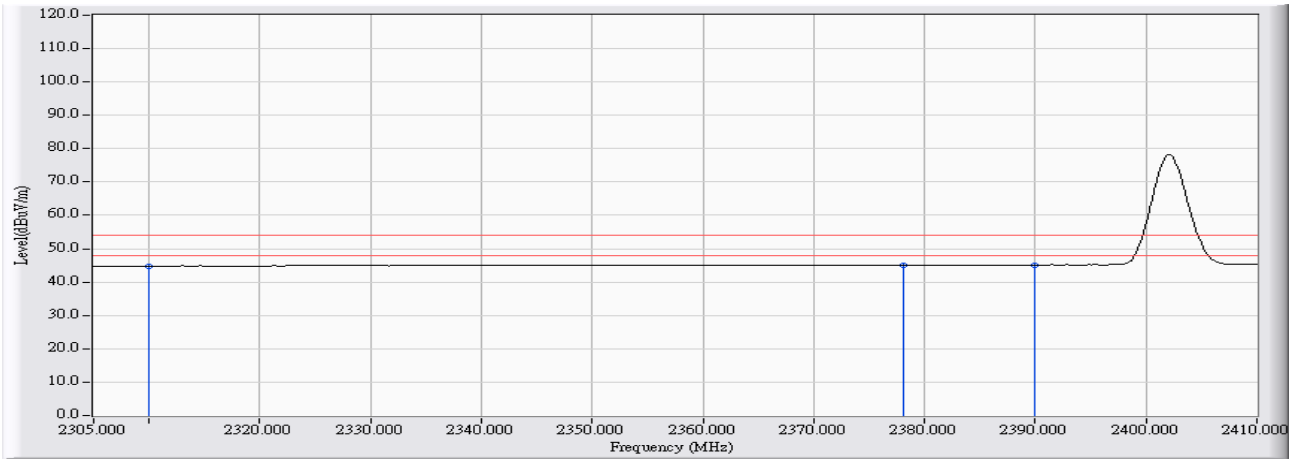


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	28.738	23.882	52.619	-21.381	74.000	54.000	PEAK
2	*	2319.490	28.701	25.526	54.227	-19.773	74.000	54.000	PEAK
3		2390.000	28.470	23.960	52.430	-21.570	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:17
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

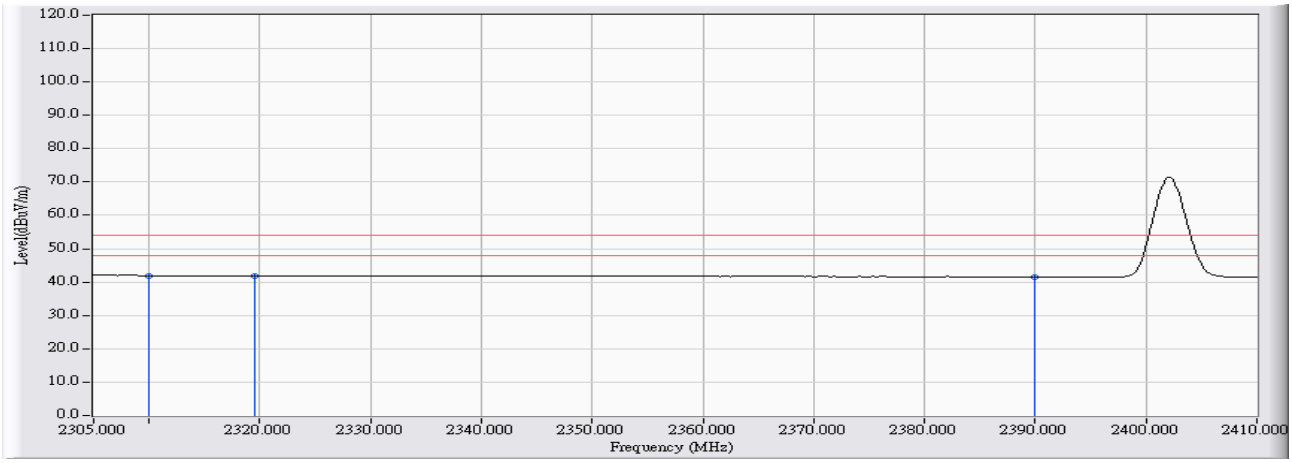


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	31.658	13.196	44.853	-9.147	74.000	54.000	AVERAGE
2		2378.080	31.978	13.089	45.067	-8.933	74.000	54.000	AVERAGE
3	*	2390.000	32.036	13.127	45.163	-8.837	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:28
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2402

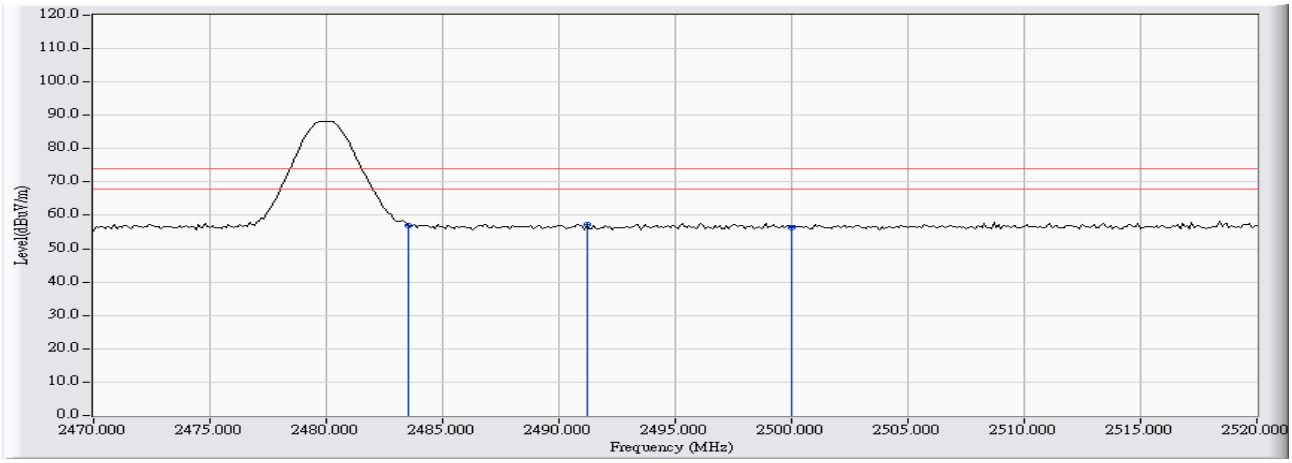


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2310.000	28.738	13.215	41.952	-12.048	74.000	54.000	AVERAGE
2		2319.490	28.701	13.172	41.873	-12.127	74.000	54.000	AVERAGE
3		2390.000	28.470	13.166	41.636	-12.364	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480

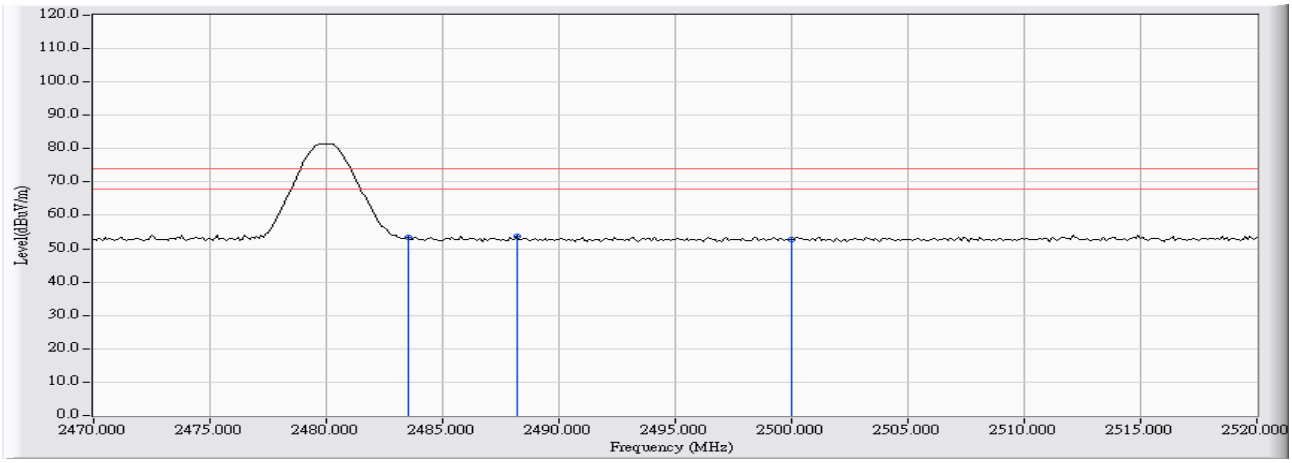


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2483.500	32.480	24.558	57.038	-16.962	74.000	54.000	PEAK
2	*	2491.200	32.517	24.803	57.320	-16.680	74.000	54.000	PEAK
3		2500.000	32.557	23.872	56.430	-17.570	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:24
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480

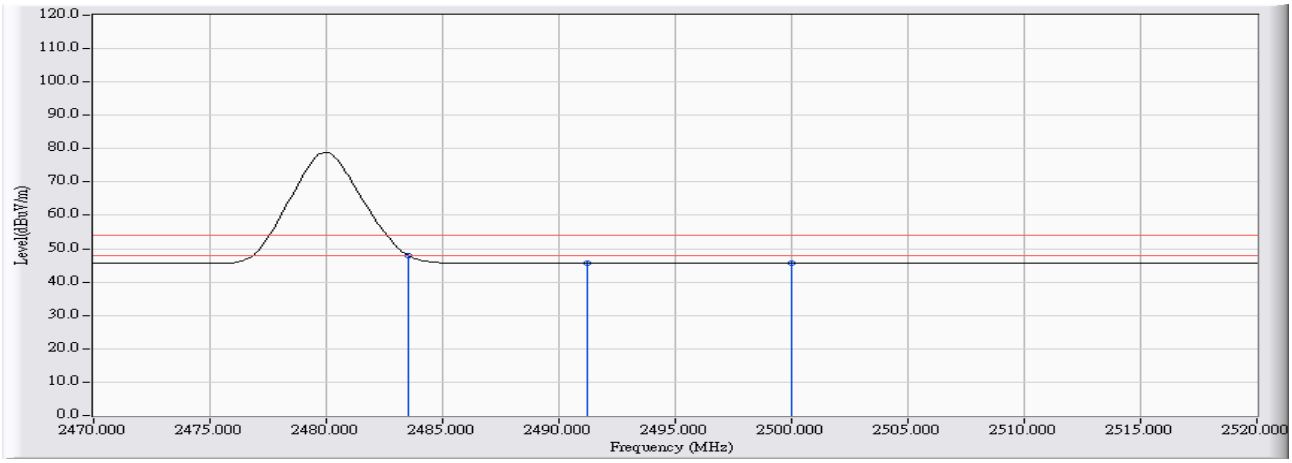


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2483.500	28.156	25.392	53.547	-20.453	74.000	54.000	PEAK
2	*	2488.200	28.137	25.650	53.787	-20.213	74.000	54.000	PEAK
3		2500.000	28.142	24.494	52.636	-21.364	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:20
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480

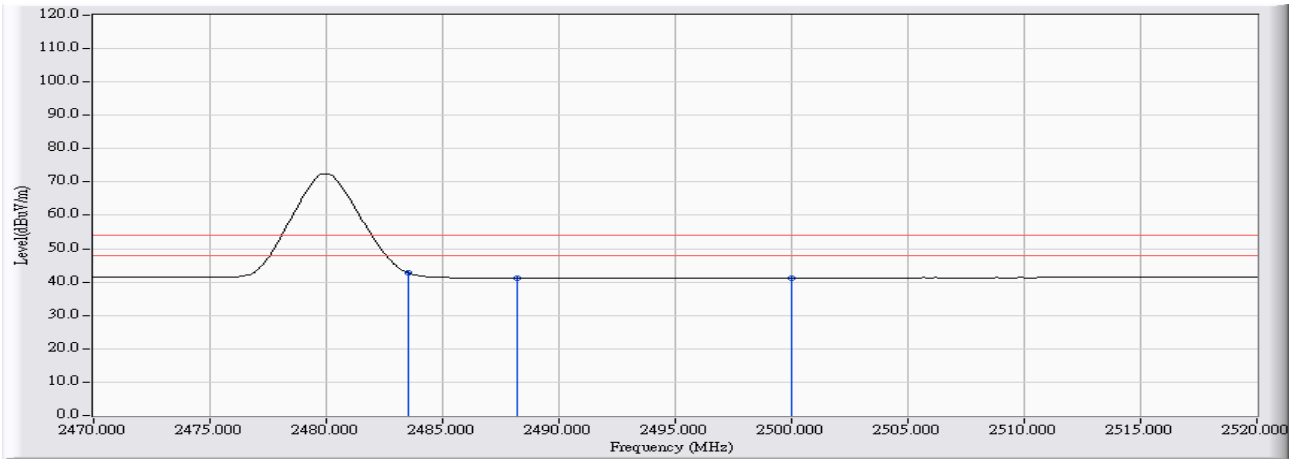


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2483.500	32.480	15.556	48.036	-5.964	74.000	54.000	AVERAGE
2		2491.200	32.517	13.147	45.664	-8.336	74.000	54.000	AVERAGE
3		2500.000	32.557	13.106	45.664	-8.336	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

Site : CB1	Time : 2010/04/29 - 20:25
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : DC 12V
EUT :Personal Navigation Device (PND)	Note : TX-2480



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2483.500	28.156	14.568	42.723	-11.277	74.000	54.000	AVERAGE
2		2488.200	28.137	13.143	41.280	-12.720	74.000	54.000	AVERAGE
3		2500.000	28.142	13.136	41.278	-12.722	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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. Number of hopping frequency

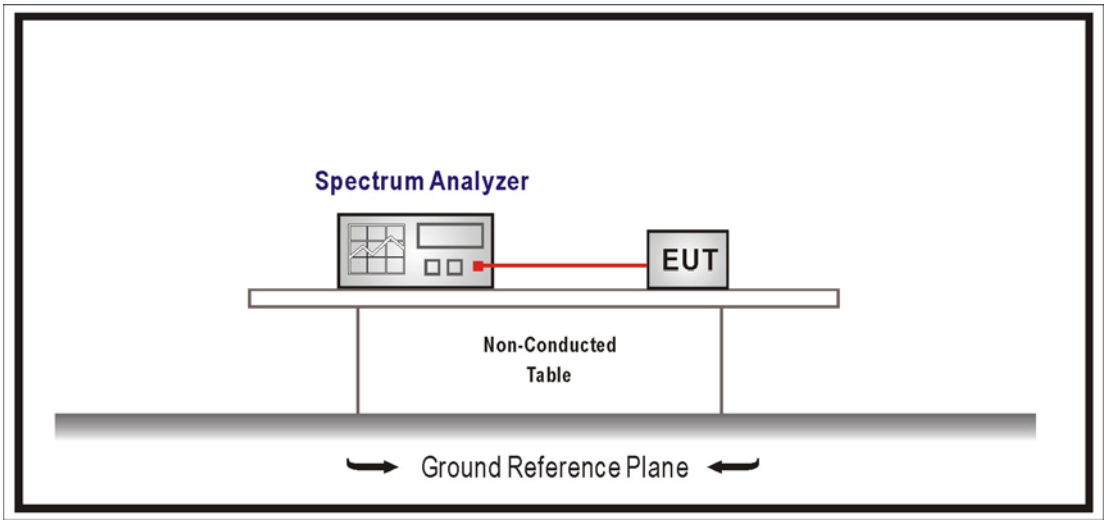
6.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2011
2	No.1 OATS			Sep., 2010

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 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.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

6.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

RBW ≥ 1% of the span， VBW ≥ RBW

Sweep = auto, Detector function = peak, Trace = max hold

6.5. Test Specification

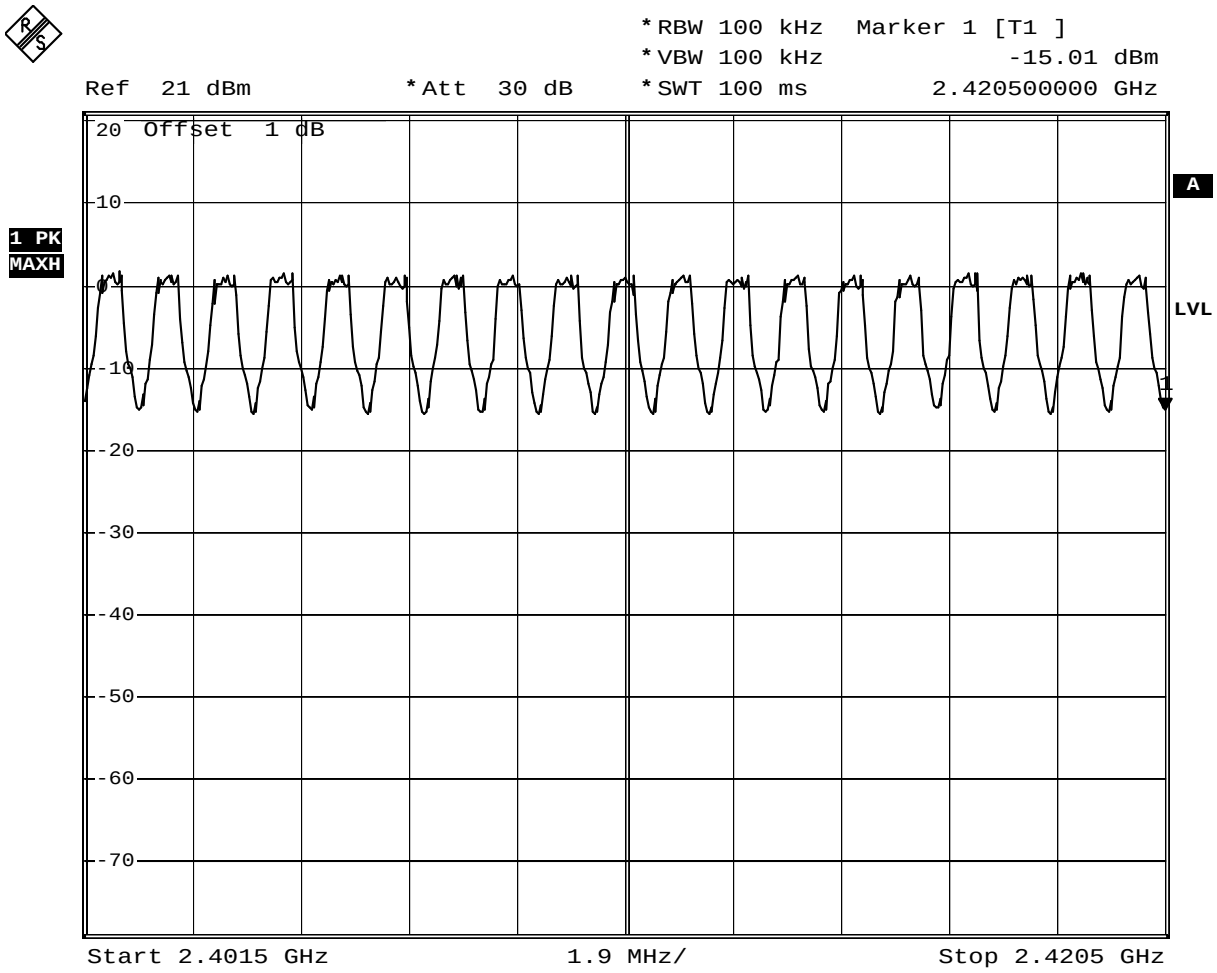
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

6.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

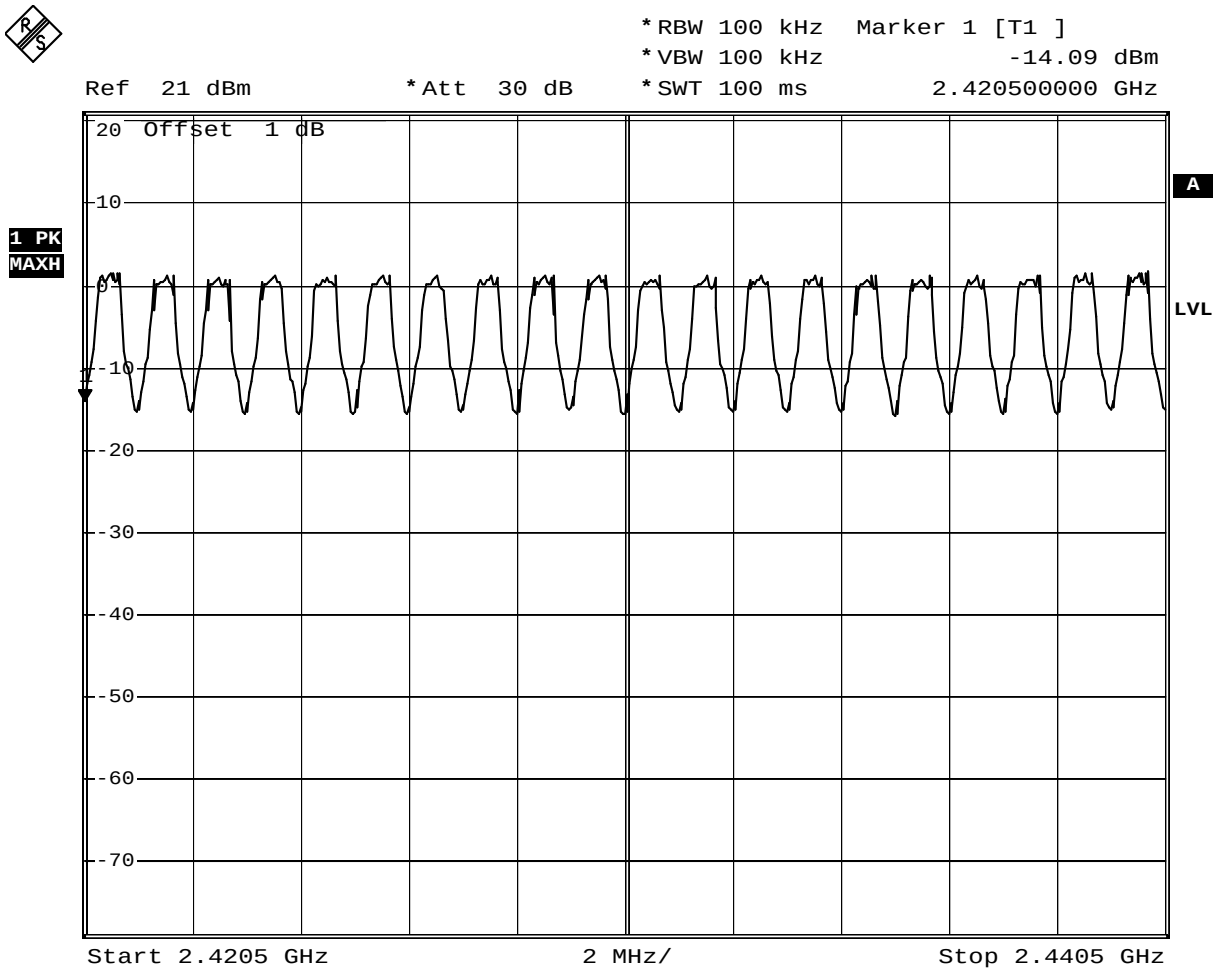
Frequency Range (MHz)	Measure Level (Channels)	Limit (Channels)	Result
2402 ~ 2480	79	>75	Pass

2401.5-2420.5MHz



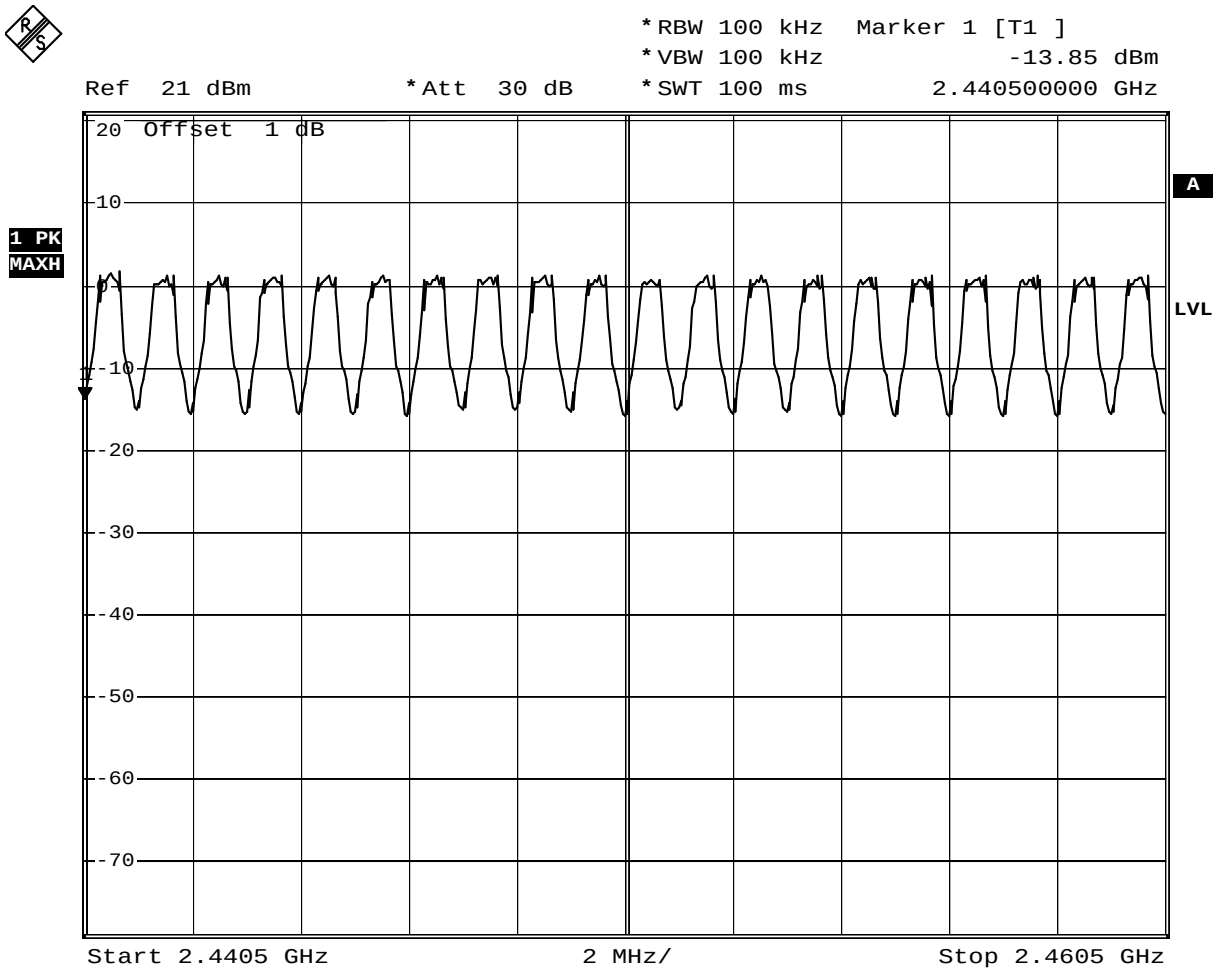
Date: 13.MAY.2010 18:55:39

2420.5-2440.5MHz



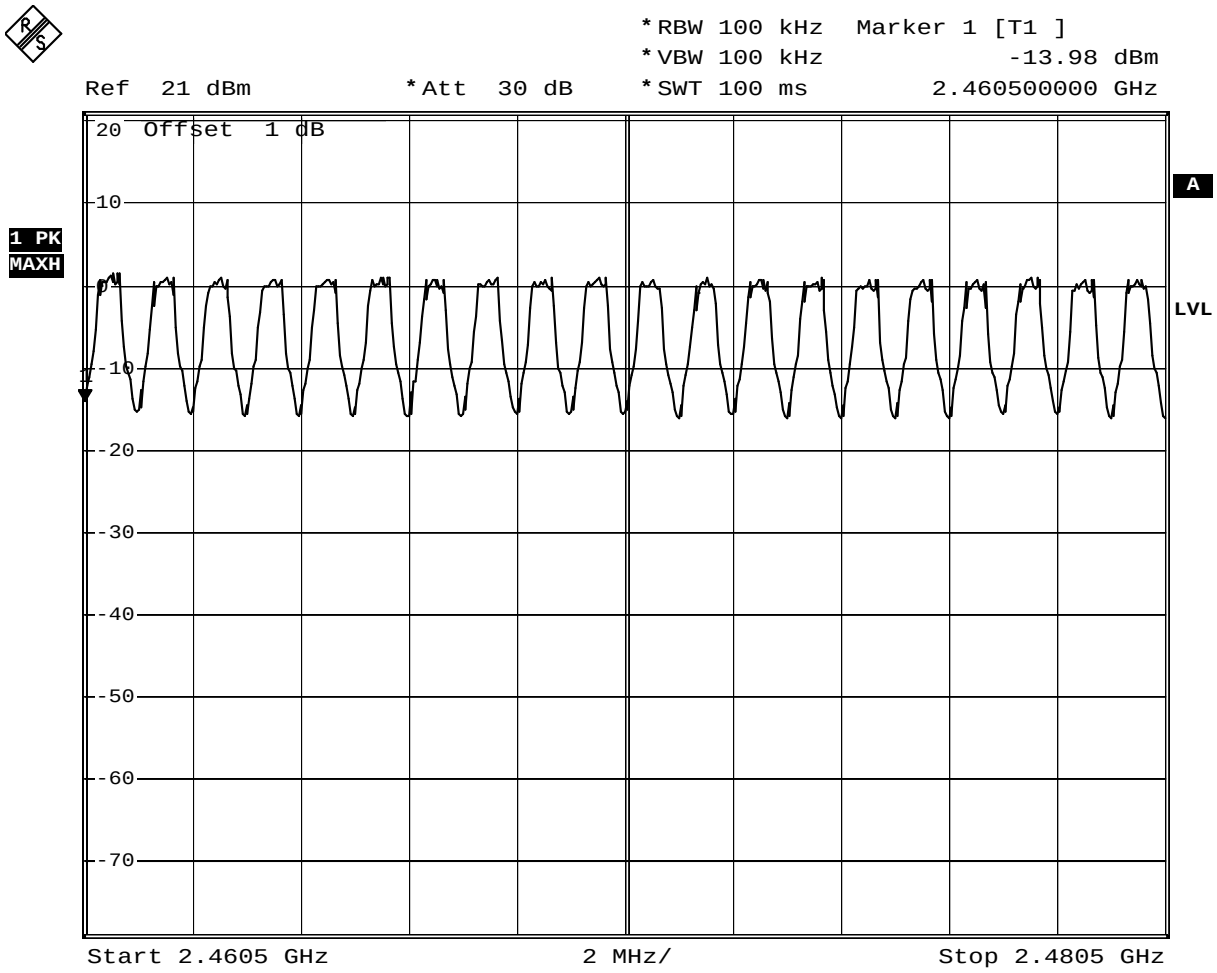
Date: 13.MAY.2010 18:59:10

2440.5-2460.5MHz



Date: 13.MAY.2010 19:01:06

2460.5-2480.5MHz



Date: 13.MAY.2010 19:02:47

7. Carrier Frequency Separation

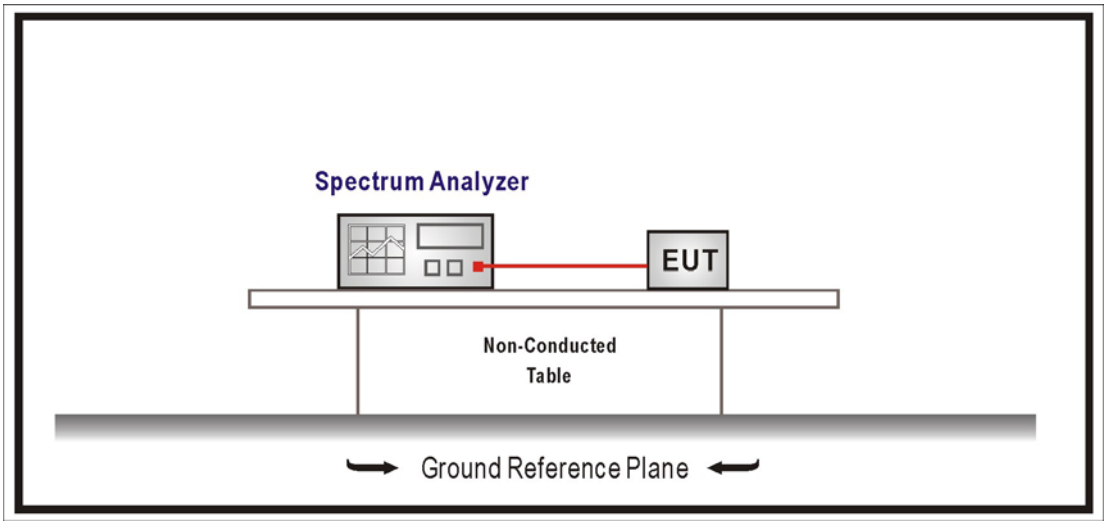
7.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2011
2	No.1 OATS			Sep., 2010

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW) ≥ 1% of the span, VBW ≥ RBW

Sweep = auto, Detector function = peak, Trace = max hold

7.5. Test Specification

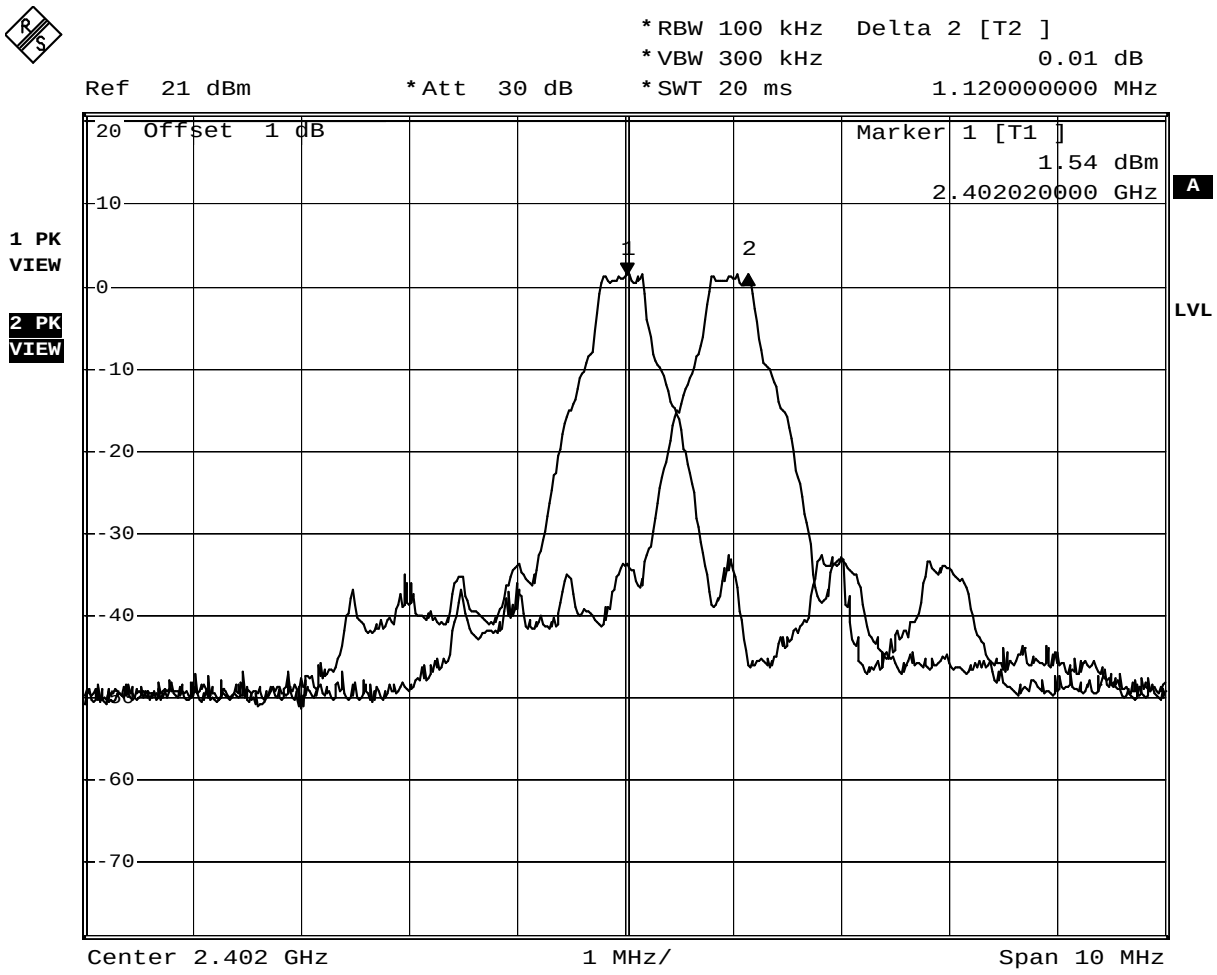
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

7.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2402.00	1120	>760	Pass

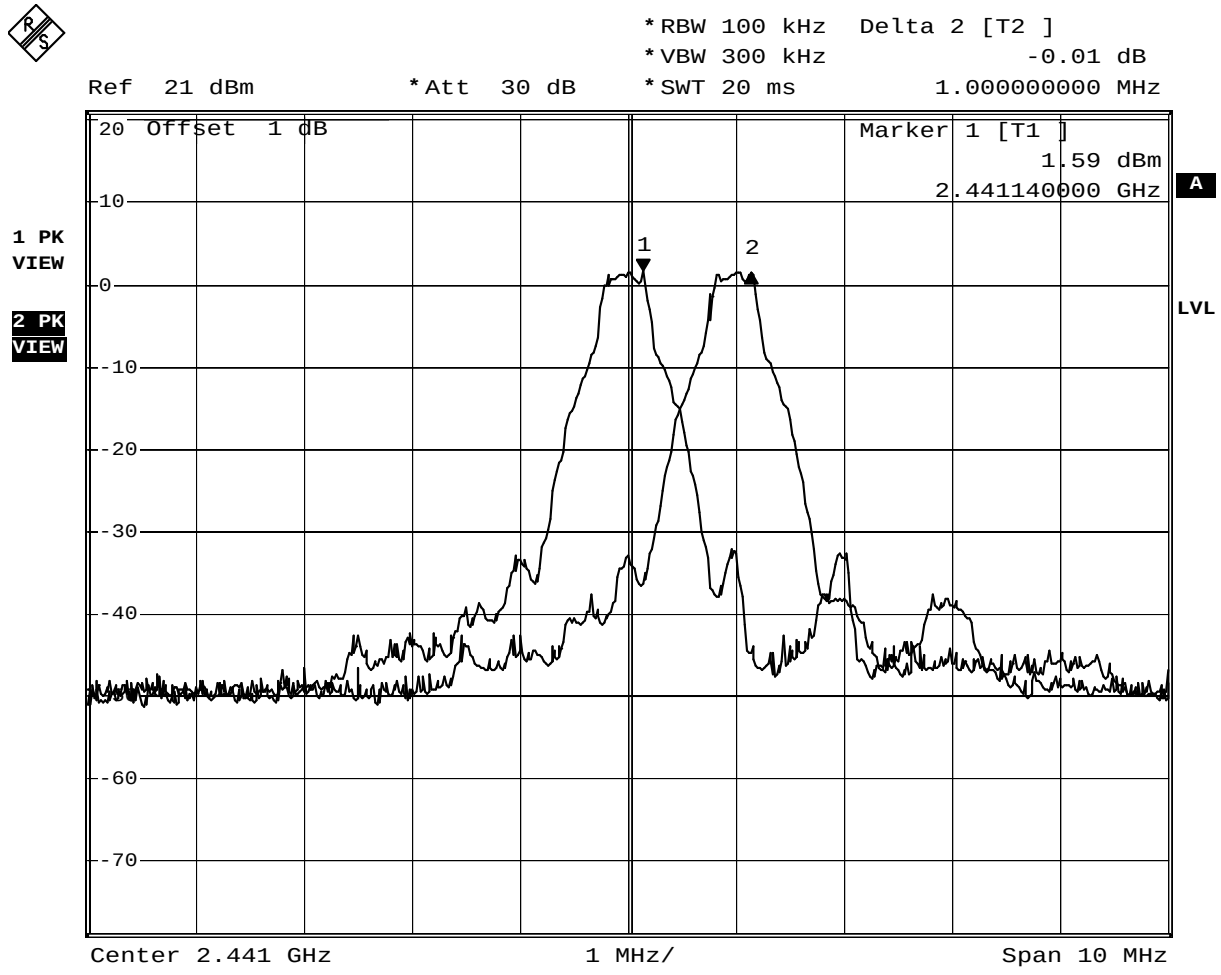
Channel 00



Product	Personal Navigation Device (PND)		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
39	2441.00	1000	>747	Pass

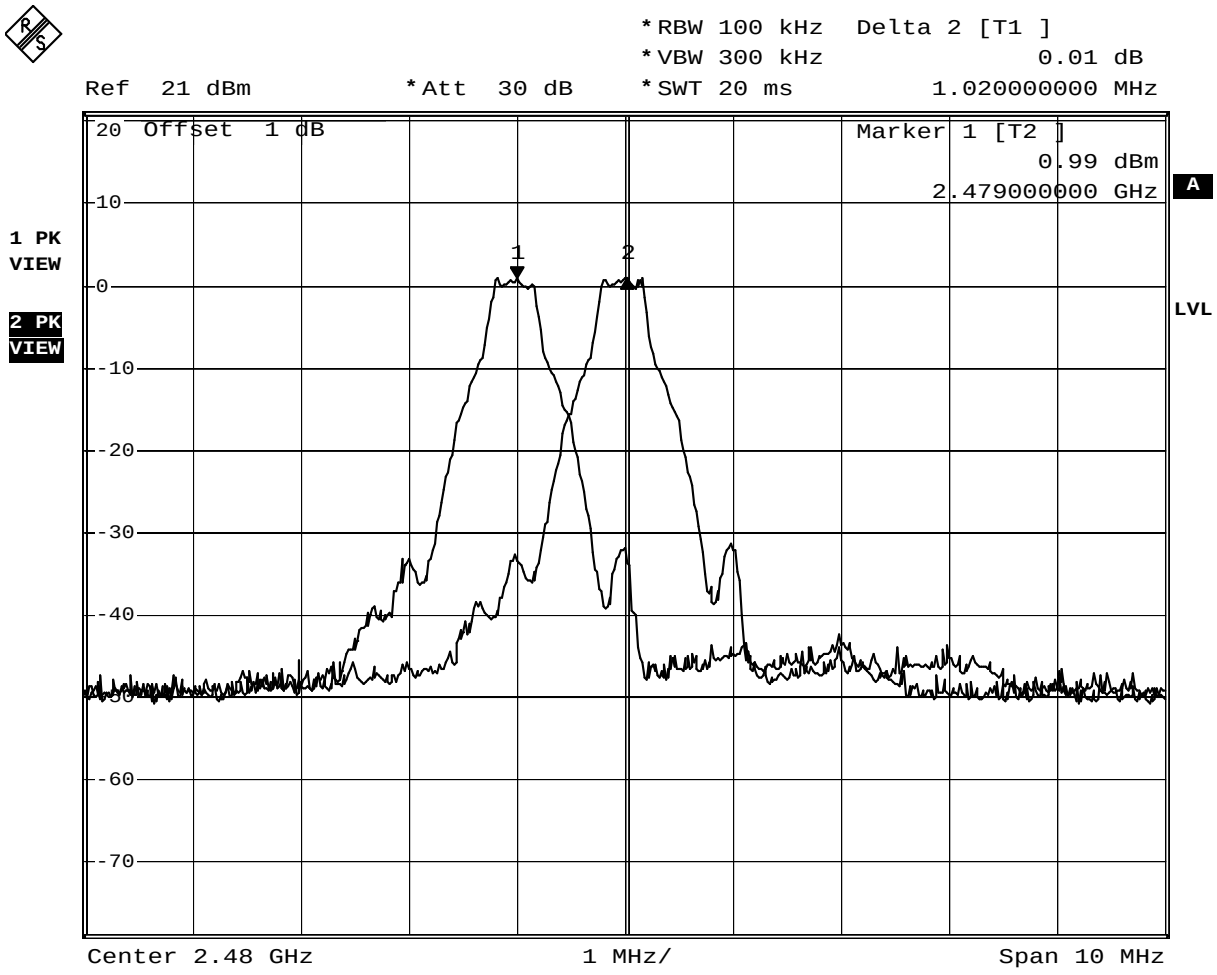
Channel 39



Product	Personal Navigation Device (PND)		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
78	2480.00	1020	>760	Pass

Channel 78



Date: 13.MAY.2010 19:14:47

8. Occupied Bandwidth

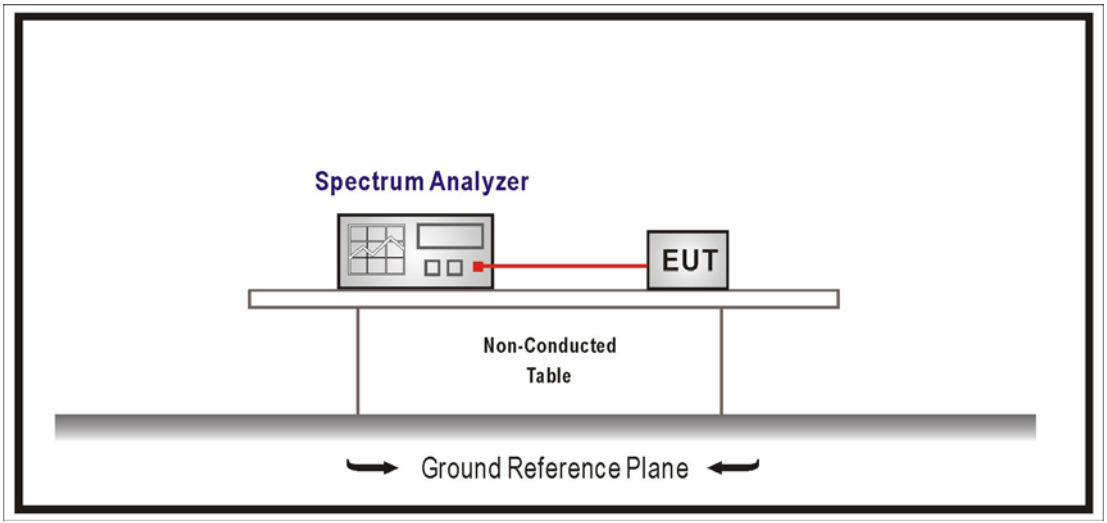
8.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2011
2	No.1 OATS			Sep., 2010

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 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.
For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.
For 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.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
Sweep = auto, Detector function = peak, Trace = max hold
The EUT should be transmitting at its maximum data rate.

8.5. Test Specification

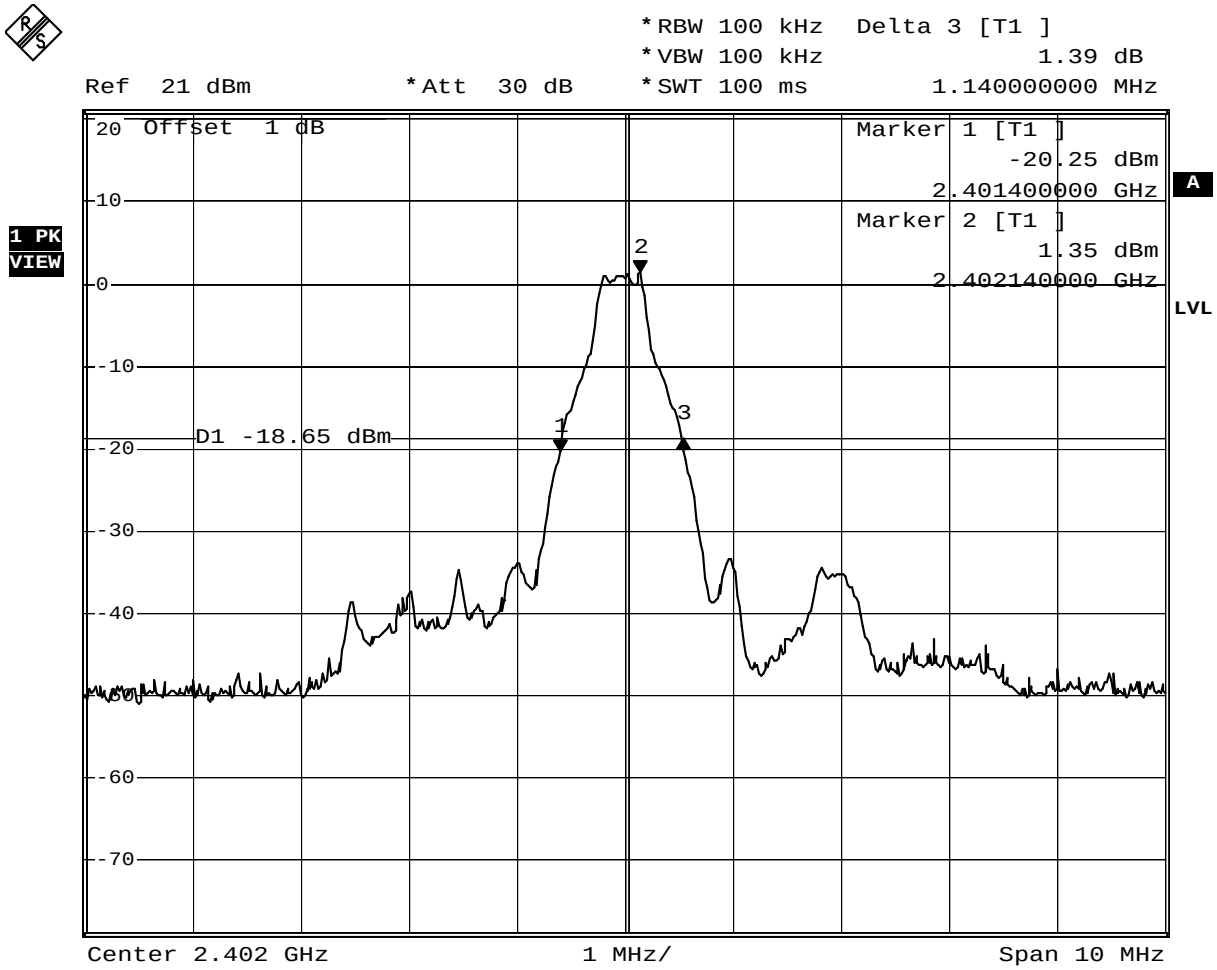
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

8.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2402.00	1140	--	Pass

Channel 00

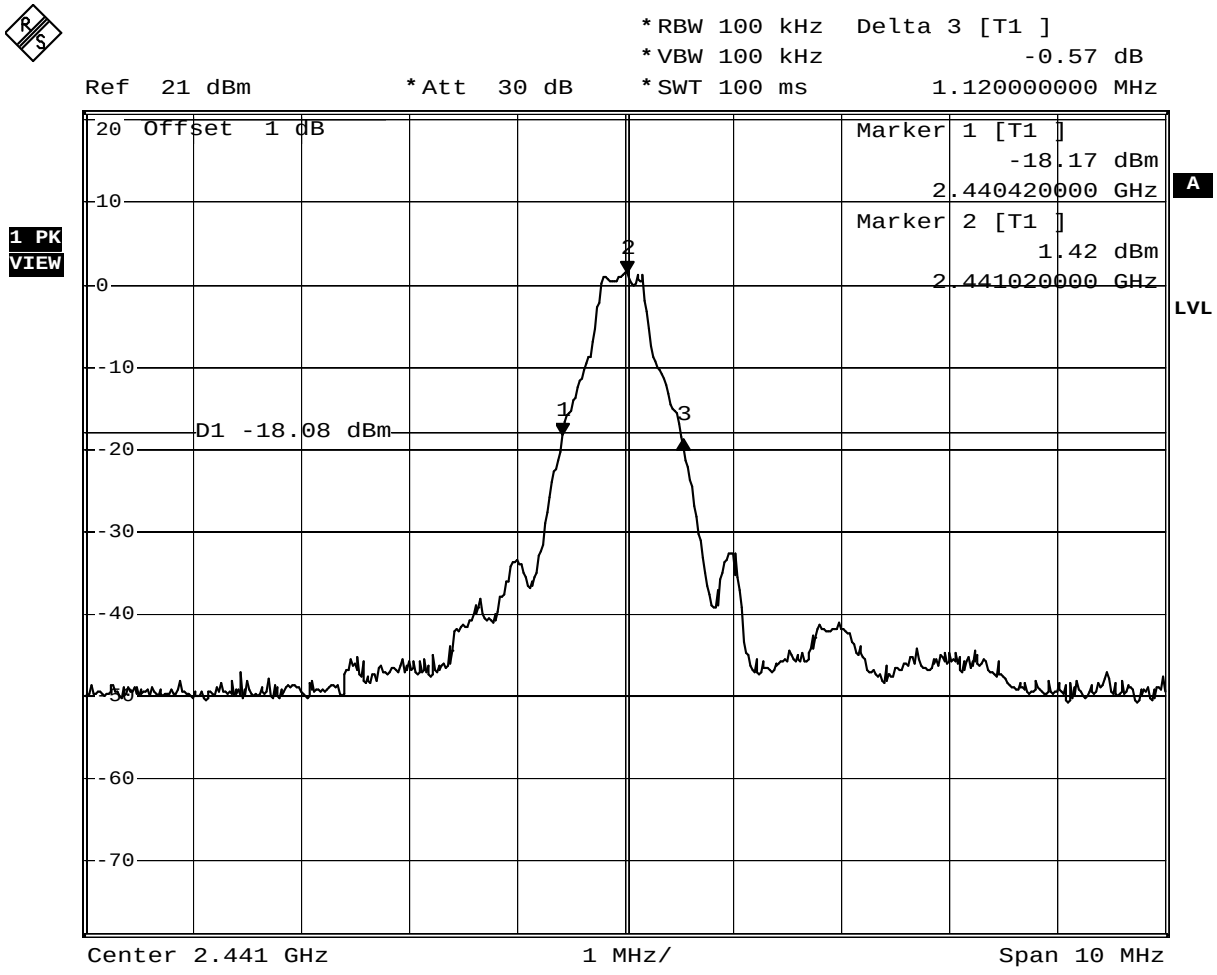


Date: 13.MAY.2010 18:35:45

Product	Personal Navigation Device (PND)		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
39	2441.00	1120	--	Pass

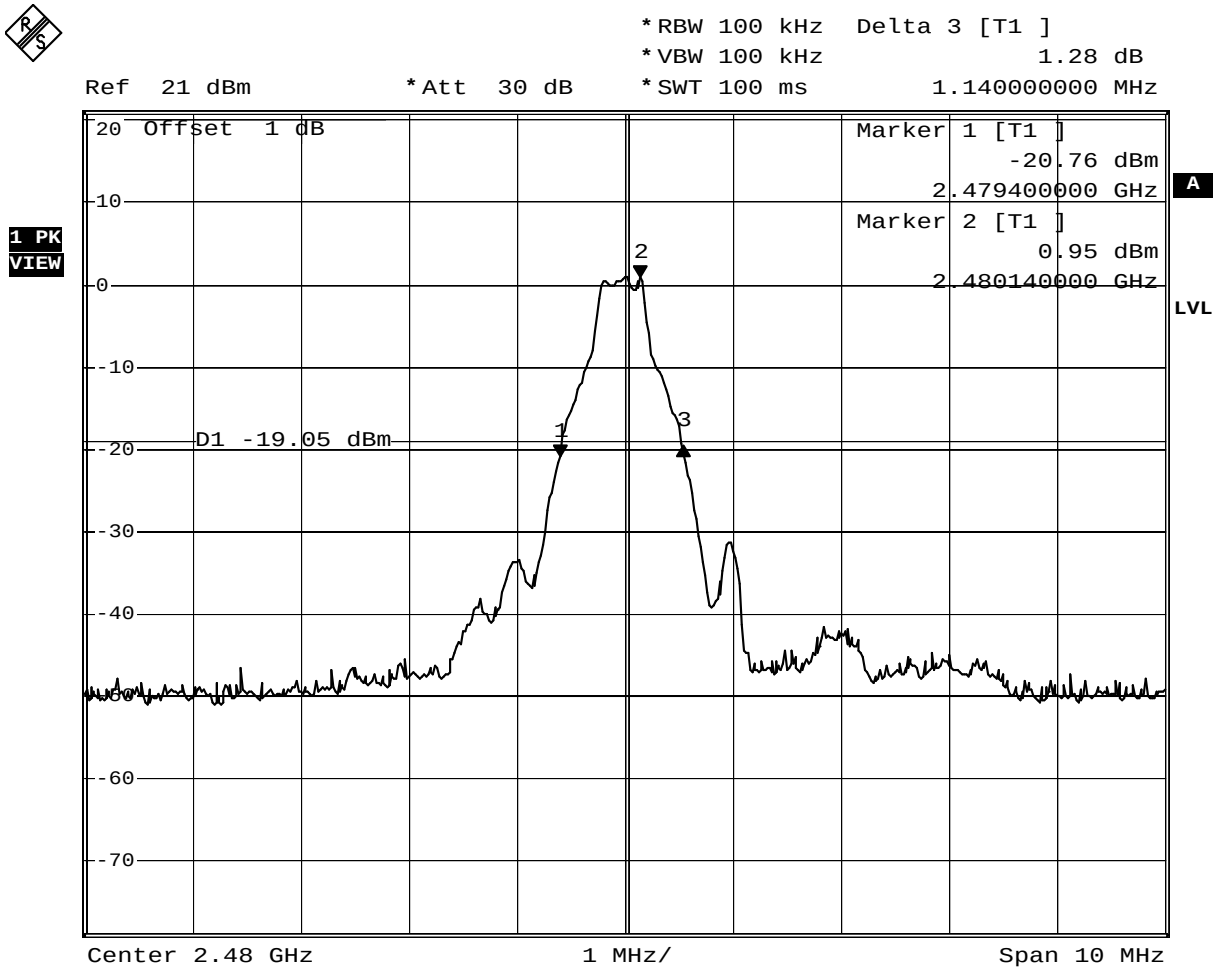
Channel 39



Product	Personal Navigation Device (PND)		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
78	2480.00	1120	--	Pass

Channel 78



Date: 13.MAY.2010 18:49:43

9. Dwell Time

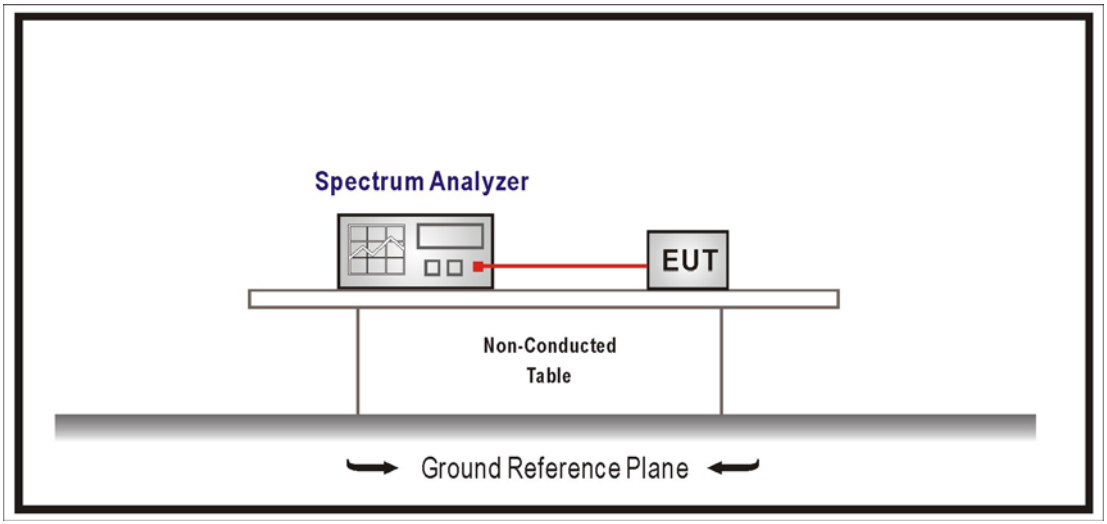
9.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Next Cal. Date
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2011
2	No.1 OATS			Sep., 2010

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 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.
For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel
RBW = 1 MHz, VBW ≥ RBW
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector function = peak, Trace = max hold

9.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

9.6. Test Result

Product	Personal Navigation Device (PND)		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2010/05/13	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System

A) 2402MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5.5/20msec=275 /sec

The Maximum Occupancy Time Within 31.6sec: 0.00312*(275/79)*31.6=0.3432sec。

B) 2441MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5.5/20msec=275 /sec

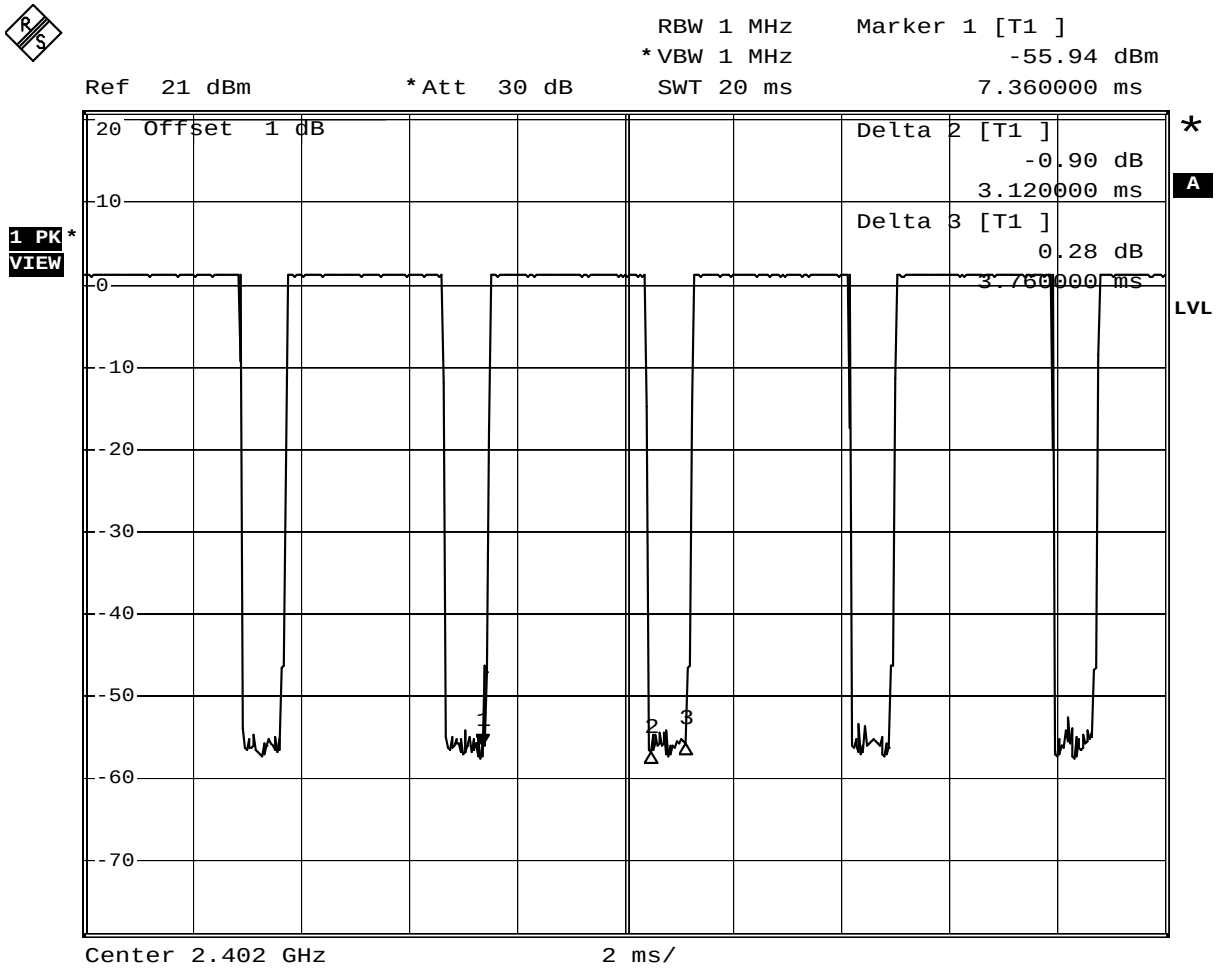
The Maximum Occupancy Time Within 31.6sec: 0.00312*(275/79)*31.6=0.3432sec。

C) 2480MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5.5/20msec=275 /sec

The Maximum Occupancy Time Within 31.6sec: 0.00312*(275/79)*31.6=0.3432sec。

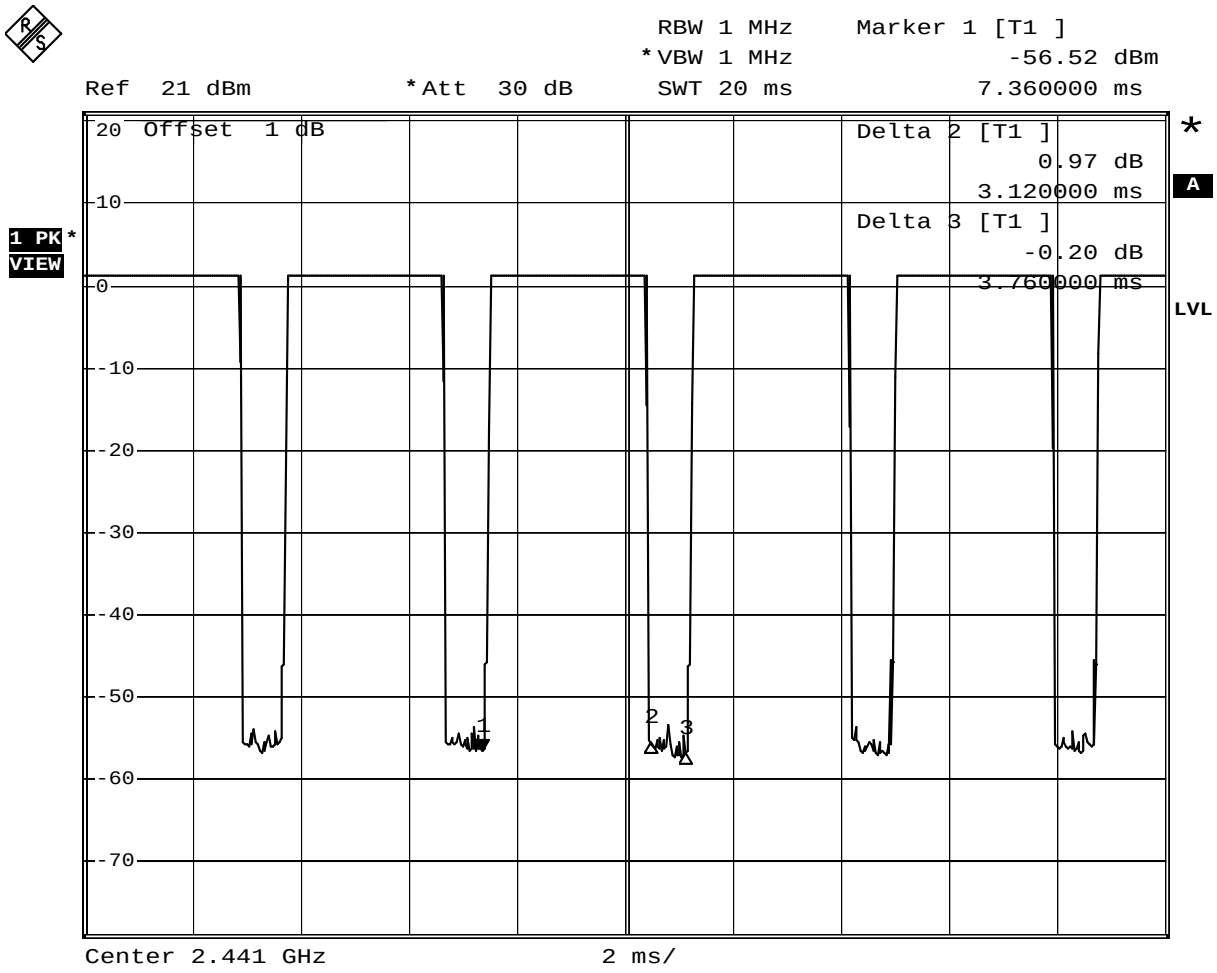
Test Result: The Average Occupancy Time of Each Highest，Middle and Lowest Channel Is Less Than 0.4sec，And Corresponds to The Standard。

Hop rate-2402MHz



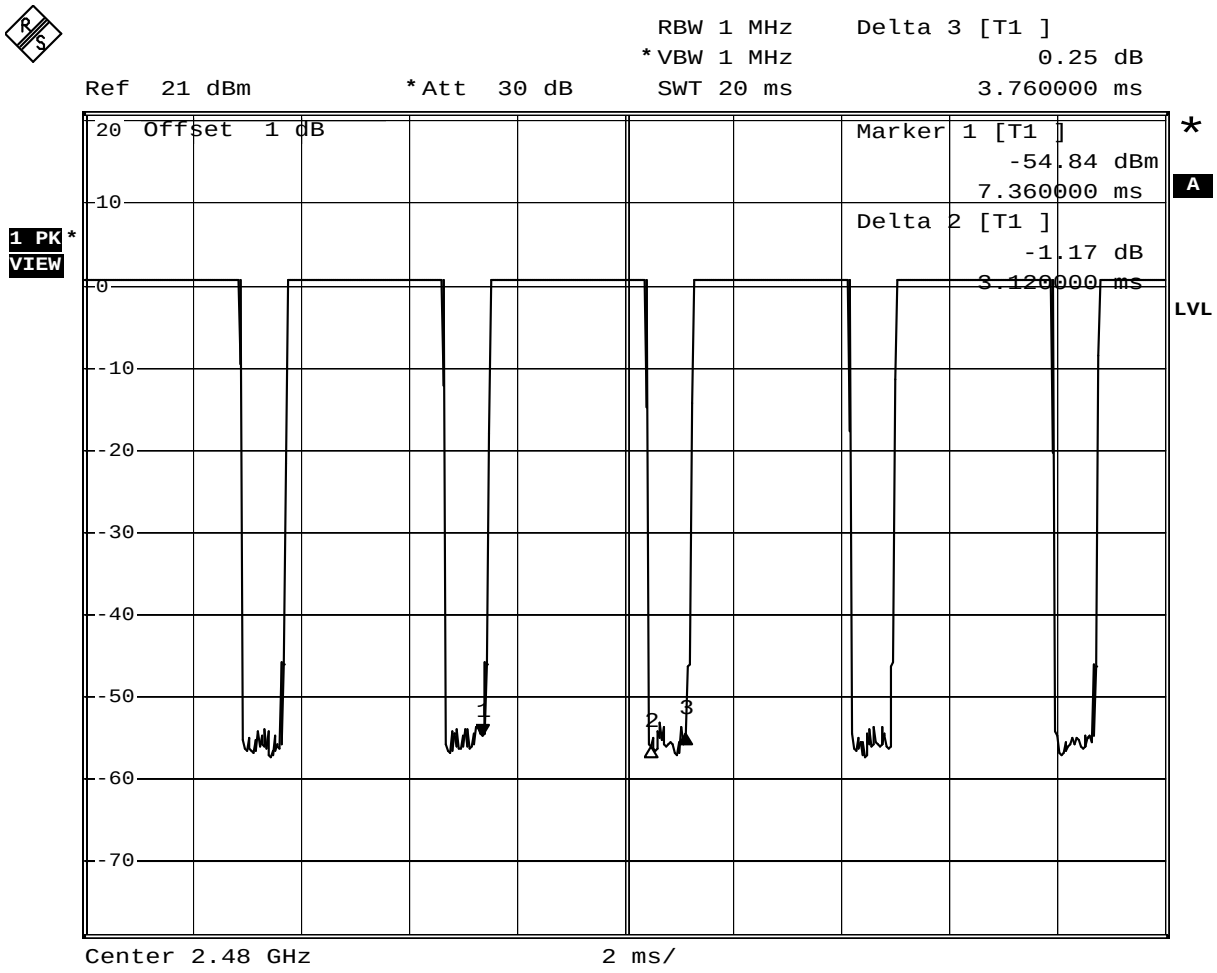
Date: 13.MAY.2010 19:07:13

Hop rate-2441MHz



Date: 13.MAY.2010 19:06:25

Hop rate-2480MHz



Date: 13.MAY.2010 19:05:06

Note: Dwell time＝time slot length * hop rate / number of hopping channels * period