

FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Portable Navigator

Model: T940;T940T

Trade Name: AIRIS

Prepared for

Mitac International Corporation 6th Fl., No. 187, Tiding Blvd., Sec. 2, Nei-Hu, Taipei, Taiwan, R.O.C.

Issued by

COMPLIANCE CERTIFICATION SERVICES (KUNSHAN) INC.

10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Lab. Code: 200581-0

Kunshan city JiangSu, (215300) CHINA TEL: 86-512-57355888 FAX: 86-512-57370818

Note: This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document.



TABLE OF CONTENTS

1. Tl	EST RESULT CERTIFICATION	
2. E	UT DESCRIPTION	
3. TI	EST METHODOLOGY	
3.1	EUT CONFIGURATION	5
3.2	EUT EXERCISE	5
3.3	GENERAL TEST PROCEDURES	5
3.4	MODIFICATION	
3.5	FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS	6
3.6	DESCRIPTION OF TEST MODES	6
4. IN	STRUMENT CALIBRATION	7
5. F A	ACILITIES AND ACCREDITATIONS	
5.1	FACILITIES	
5.2	EQUIPMENT	8
5.3	LABORATORY ACCREDITATIONS AND LISTING	8
TAB	LE OF ACCREDITATIONS AND LISTINGS	9
6. SI	ETUP OF EQUIPMENT UNDER TEST	
6.1	SETUP CONFIGURATION OF EUT	
6.2	SUPPORT EQUIPMENT	10
7. FC	CC PART 15.247 REQUIREMENTS	
7.1	PEAK POWER	
7.2	BAND EDGES MEASUREMENT	
7.3	PEAK POWER SPECTRAL DENSITY	
7.4	FREQUENCY SEPARATION	
7.5	NUMBER OF HOPPING FREQUENCY	
7.6	TIME OF OCCUPANCY (DWELL TIME)	
7.7	RADIO FREQUENCY EXPOSURE	
7.8	SPURIOUS EMISSIONS	
7.9	POWERLINE CONDUCTED EMISSIONS	
APPE	NDIX 1 PHOTOGRAPHS OF TEST SETUP	45

1. TEST RESULT CERTIFICATION								
Applicant:	Mitac International Corporation 6 th Fl., No. 187, Tiding Blvd., Sec. 2, Nei-Hu, Taipei, Taiwan, R.O.C.							
Equipment Under Test:	Portable Navigator							
Trade Name:	AIRIS							
Model:	Т940;Т940Т							
Date of Test:	From May 29, 2007 to June 5,2007							
1	A ALLER A LET MAR AND A DISABLE A ALLER AND AN							

APPLICABLE STANDARDS						
STANDARD	TEST RESULT					
FCC 47 CFR Part 15 Subpart C	No non-compliance noted					

We here by certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Miro Chuen Section Manager Compliance Certification Service Inc.

Reviewed by:

Lin Zhang

EMC Supervisor Compliance Certification Service Inc.



2. COMPLIANCE CERTIFICATION SERVICES INC. EUT DESCRIPTION

Product	Portable Navigator
Trade Name	AIRIS
Model Number	T940; T940T
Model Discrepancy	T940:GPS+BT T940T:GPS+BT+TMC
Bluetooth module Model Number	BC41B143A
Bluetooth module Brand name	CSR
Power Supply	For AC adapter: Trade name: PHIHONG Model number: PSAA05R-050 Input: AC 100-240V, 50~60Hz, 0.3A Output: DC 5V, 1A; For DC adapter: Trade name: Atech Model number: PCC609050100-NXC1.0 Input: DC 10-30V Output: DC 5V, 1A;
Frequency Range	2402 ~ 2480 MHz
Transmit Power	1.63 dBm
Modulation Technique	FHSS
Transmit Data Rate	1Mbps
Number of Channels	79 Channels
Antenna Specification	Chip Antenna / Gain: -0.02 dBi

Remark: This submittal(s) (test report) is intended for FCC ID: <u>P4Q-T940X</u> filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

MODIFICATION

N/A



FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

DESCRIPTION OF TEST MODES

The EUT (T940T) has been tested under operating condition. Software used to control the EUT for staying in continuous transmitting mode is programmed. The field strength of spurious radiation emission was measured in the following position:

Mode 1: AC Mode laid in Horizontal

Mode 2: DC Mode laid in Horizontal

Mode 3: PC Mode laid in Horizontal

Mode 4: AC Mode laid in Vertical

Mode 5: DC Mode laid in Vertical

Mode 6: PC Mode laid in Vertical

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only. **Mode 1** Channel Low (2402MHz) \sim Mid (2441MHz) and High (2480MHz) were chosen for full testing.



4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.



5. FACILITIES AND ACCREDITATIONS

FACILITIES

All measurement facilities used to collect the measurement data are located at CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (Registration no: 93105 and 90471).



TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP	EN 55022, EN 61000-3-2,EN 61000-3-3, EN550024, EN 61000-4-2, EN 61000-4-3, EN61000-4-4, EN 61000-4-5, EN 61000-4-6, IEC 61000-4-8, EN 61000-4-11 ANSI C63.4, CISPR16-1, IEC61000-3-2, IEC61000-3-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11	Lab. Code: 200581-0
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	FC 93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707

* No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Monitor	CPD-G22 0	2404411	DoC	SONY	Shielded, 1.8m with a Core	Un-Shielded, 1.5m
2	PC	6010GC	CNG44001HH	DoC	HP	Shielded, 1.5m with a Core	Un-Shielded, 1.4m
3	MODEM	2400SE	044-502501-000 94-364-176269	DK467G SM24 COMPUTER PERIPHER ALS		Shielded, 1.8m	Un-Shielded, 1.0m
4	PRINT	P310B	C11344000HJ02	DoC	EPSON	Shielded, 1.1m	Un-Shielded 1.8m
5	Keyboard	Y-SJ17(ACK260A)	SYU34537898	DoC	Logitech	Shielded, 1.5m	N/A
6	MOUSE	M-BE58	HCA3480162 2	DoC	Logitech	Shielded, 1.8m	N/A
7	DC Power	GPS-3303 C	E903131	DoC	Instek	N/A	Un-Shielded 1.8m

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



7. FCC PART 15.247 REQUIREMENTS

PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

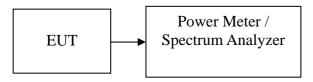
- 1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt.
- 2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer	Agilent	E4446A	MY44020154	11/16/2007	
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	07/29/2007	
EPM-P Series Power Meter	Agilent	E4416A	QB41292714	07/29/2007	

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter.

TEST RESULTS

No non-compliance noted

<u>Test Data</u>

Channel	Frequency (MHz)	Power (dRm)	Factor (dB)	Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	-0.24	1.50	1.26	0.00134		PASS
Mid	2441	-0.07	1.50	1.43	0.00139	1	PASS
High	2480	0.13	1.50	1.63	0.00146		PASS



BAND EDGES MEASUREMENT

LIMIT

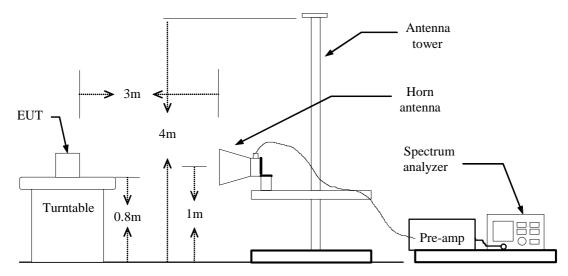
According to \$15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in \$15.205(a), must also comply with the radiated emission limits specified in15.209(a).

977 Chamber (3m)									
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due					
Spectrum Analyzer	Agilent	E4446A	MY44020154	11/16/2007					
Pre-Amplfier	Miteq	NSP4000-NF	870731	01/21/2008					
Horn Antenna	Austriah	BBHA9120D	D267	02/03/2008					
Turn Table	СТ	CT123	4162	N.C.R					
Antenna Tower	СТ	CTERG23	3253	N.C.R					
Controller	СТ	CT100	95635	N.C.R					
Coax Switch	Anitsu	MP 598	M 80094	N/A					
Site NSA	CCS Lab.	N/A	N/A	02/15/2008					

MEASUREMENT EQUIPMENT USED

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

- 1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out



the highest emission.

- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

CH LOW

Freq. (MHz)	Ant. Pol H/V	Peak Reading	AV Reading	CT CF	Actual Fs		Peak Limit	AV Limit	Peak Margin	AV Margin
		(dBuV)	(dBuV)	(dB)	Peak (dBuV/m)	AV (dBuV/m)	, (авил\ш	(dBuV/m)	(dB)	(dB)
2390.10	V	46.30	34.13	4.50	50.8	38.63	74	54	-23.2	-15.37
	V									
										-
2390.10	Н	45.73	34.16	4.50	50.23	38.66	74	54	-23.77	-15.34
	Н									

<u>CH HIGH</u>

Freq. (MHz)	Ant. Pol H/V	Peak Reading	AV Reading	Ant. / CT CF	Actual Fs		Peak Limit	AV Limit	Peak Margin	AV Margin
		(dBuV)	(dBuV)	(dB)	Peak (dBuV/m)	AV (dBuV/m)	(ави v /m `	(dBuV/m)	(dB)	(dB)
2483.50	V	47.70	34.59	4.50	52.20	39.09	74	54	-21.80	-14.91
	V									
2483.50	Н	47.54	35.03	4.50	52.04	39.53	74	54	-21.96	-14.47
	Н									

Refer to attach spectrum analyzer data chart.



Band Edges (CH Low)

Detector mode: Peak Polarity: Vertical

🔆 Agilent 17:01:43 Jun 3, 2007 Marker 2.390 1 GHz Mkr1 Select Marker Ref 108.5 dB**µ**V #Atten 20 dB 50.80 dBµV 2 3 4 #Peak Log 10 Normal dB/ Offst 4.5 dB Delta DI 74.0 Delta Pair (Tracking Ref) Ref dB**µ**V LgAv M1 S2 Span Pair S3 FC Span Center AA **£**(f): FTun Off Swp More Start 2.310 0 GHz Stop 2.420 0 GHz 1 of 2 #Res BW 1 MHz #VBW 1 MHz Sweep 1 ms (601 pts) Copyright 2000-2004 Agilent Technologies

Detector mode: Average Polarity: Vertical

🔆 Ag	ilent 17	:04:40	Jun 3	,2007							Marker
Ref 10	8.5 dB	μV	#Atten	20 dB				Mkr1)1 GHz dB µ V	Select Marker
#Peak Loa											± 2 3 7
Log 10 dB/											Normal
Offst 4.5 dB											Delta
DI 54.0 dBµV											Delta Pair (Tracking Ref)
LgAv									$+\Lambda$		Ref 🛕
M1 S2 S3 FC AA								1 \$	<u>ال</u>		Span Pair Span <u>Center</u>
£ (f): FTun Swp											Off
Start 2 #Res B					'BW 10		Succ.		o 2.420 7 s (60		More 1 of 2
			004 As	;ilent T			3000	VL.0 4	/ 5 (00	1 p(S)	L



Polarity: Horizontal Detector mode: Peak

🔆 Agilent 17:11:	22 Jun 3,	2007						Trace
Ref 108.5 dB µ V #Peak	#Atten :	20 dB			Mkr1		1 GHz dB µ V	Trace 1 <u>2</u> 3
Log 10 dB/ Offst						A		Clear Write
4.5 dB DI 74.0								Max Hold
dBµV LgAv	and and a second second	بيديد برور ورود ورو	to a fame of the state of	marken	1 Q. J	H	handroom	Min Hold
M1 S2 S3 FC AA								View
£(f): FTun Swp								Blank
Start 2.310 0 GHz #Res BW 1 MHz Copyright 2000-		#VBW 1		Sw	Stop Veep 1		0 GHz 1 pts)	

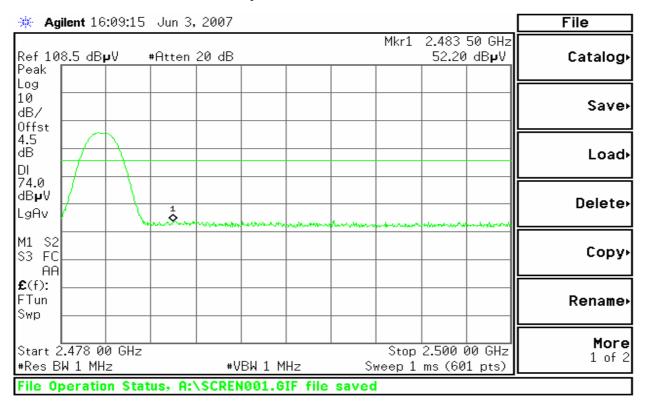
Detector mode: Average Polarity: Horizontal

🔆 Ag	ilent 17	:14:17	Jun 3,	2007							Trace
Ref 10 #Peak	8.5 dB	٧u	#Atten	20 dB		1	1	Mkr1)1 GHz 6 dB µ V	Trace <u>1</u> 2 3
Log 10 dB/ Offst											Clear Write
4.5 dB DI 54.0											Max Hold
⊐4.0 dB µ V LgAv									A		Min Hold
M1 S2 S3 FC AA								1 \$	\mathcal{T}_{h}		View
£(f): F⊤un Swp											Blank
Start 2 #Res B	W 1 MH	z	<u> </u>	- #V	BW 10	l Hz	Swee	Stop 90 8.573		0 GHz 1 pts)	
Unable	e to sa	ve til	e								



Band Edges (CH High)

Detector mode: Peak Polarity: Vertical



Detector mode: Average Polarity: Vertical

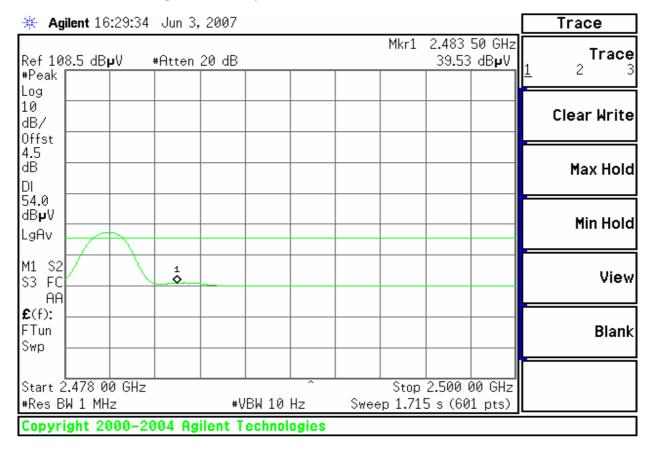
🔆 Agilent 16:	35 : 03 Jun	3,2007				Trace
Ref 108.5 dBµ #Peak	V #Atter	20 dB	Mkr1		50 GHz 0 dB µ V	Trace <u>1</u> 2 3
Log 10 dB/ Offst						Clear Write
4.5 dB DI 54.0						Max Hold
dBµV						Min Hold
M1 S2 S3 FC AA						View
£(f): FTun Swp						Blank
Start 2.478 00 #Res BW 1 MHz Copyright 20	:	#VBW 1	Stop Sweep 1.7	2.500 15 s (60		



Detector mode: Peak Polarity: Horizontal

🔆 Agilent 16:22:06 Jun 3, 2007	Trace
Mkr1 2.483 50 GHz Ref 108.5 dB µ V #Atten 20 dB 52.04 dB µ V 1 Peak	Trace
Log 10 dB/ 0ffst	Clear Write
4.5 dB DI 74.0	Max Hold
/4.0 dBµV LgAv	Min Hold
M1 S2 S3 FC AA	View
£(f):	Blank
Start 2.478 00 GHz Stop 2.500 00 GHz #Res BW 1 MHz #VBW 1 MHz Sweep 1 ms (601 pts) Unable to save file Start 2.478 00 GHz	

Detector mode: Average Polarity: Horizontal



Page 17



PEAK POWER SPECTRAL DENSITY

LIMIT

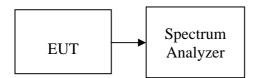
- 1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
- 2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer	Agilent	E4446A	MY44020154	11/16/2007	

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
- 4. Record the max. reading.
- 5. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

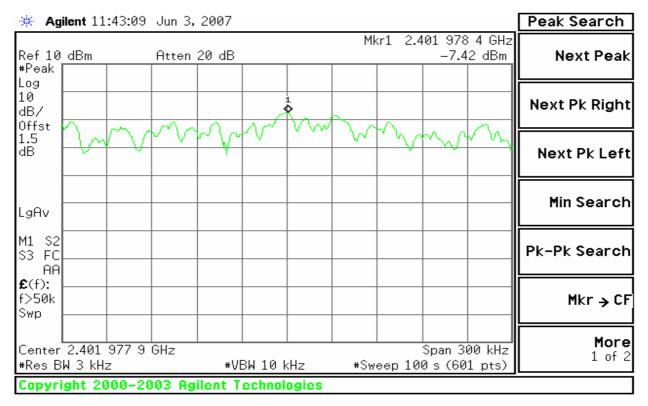
Test Data

Channel	Frequency	Reading (dBm)	Factor (dB)	PPSD (dBm)	Limit (dBm)	Result
Low	2402	-8.92	1.50	-7.42		PASS
M id	2441	-8.51	1.50	-7.01	8.00	PASS
High	2480	-7.82	1.50	-6.32		PASS

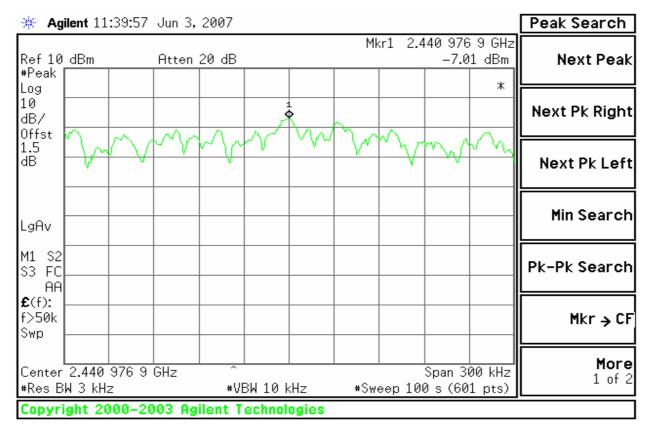


Test Plot

PPSD (CH Low)

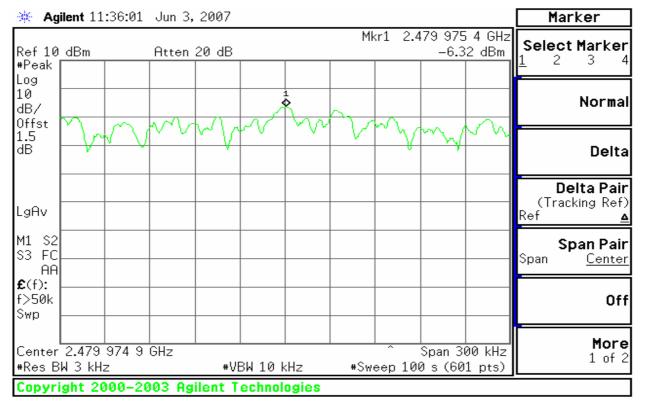


PPSD (CH Mid)





PPSD (CH High)





FREQUENCY SEPARATION

LIMIT

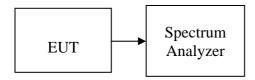
According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	11/16/2007

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set center frequency of spectrum analyzer = middle of hopping channel.
- 4. Set the spectrum analyzer as RBW = 100kHz, VBW = 100kHz, Span = 3MHz, Sweep = auto.
- 5. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

TEST RESULTS

No non-compliance noted

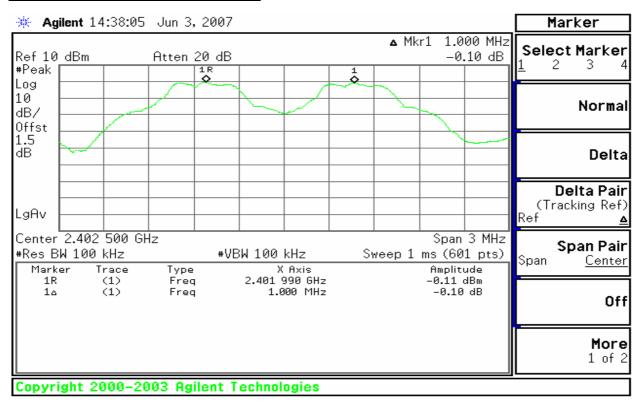
<u>Test Data</u>

Channel Separation	20dB Bandwith	Limit	Result
(MHz)	(kHz)	(kHz)	
1.000	1110	>25	Pass



Test Plot

Measurement of Channel Separation



Measurement of 20dB Bandwidth

🔆 Agil	lent 12:02:38	Jun 3, 2007						Display
Ref 10 #Peak [dBm	Atten 30 dB		Δ	Mkr1		0 MHz .2 dB	Full Screen
Log 10 dB/ Offst		1R						Display Line -19.10 dBm <u>On</u> Off
1.5 dB P DI T								
-19.1 - dBm - LgAv -								Limits
#Res Bk Marke		#V Type	BW 100 kHz X Axis	Sweep	1 ms Am	(601 nplitu	de	Active Fctn Position Center
1R 1∆	(1) (1)	Freq Freq	2.401 423 GHz 1.110 MHz			.38 dH 0.12 (Title
								Preferences
Copyrig	ght 2000-20	03 Agilent	[echnologies					1



NUMBER OF HOPPING FREQUENCY

LIMIT

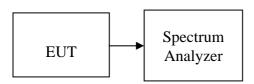
According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 75 hopping frequencies.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer Agilent		E4446A	MY44020154	11/16/2007	

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set spectrum analyzer Start=2400MHz, Stop = 2441.5MHz, Sweep = auto and Start=2441.5MHz, Stop = 2483.5MHz, Sweep = auto.
- 4. Set the spectrum analyzer as RBW, VBW=100kHz.
- 5. Max hold, view and count how many channel in the band.

TEST RESULTS

No non-compliance noted

<u>Test Data</u>

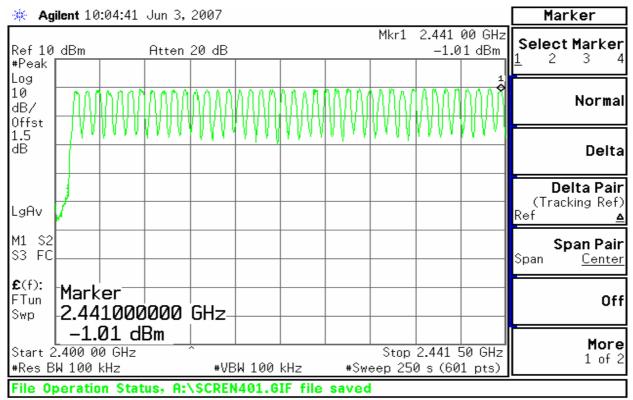
Result (No. of CH)	Limit (No. of CH)	Result
79	>75	PASS



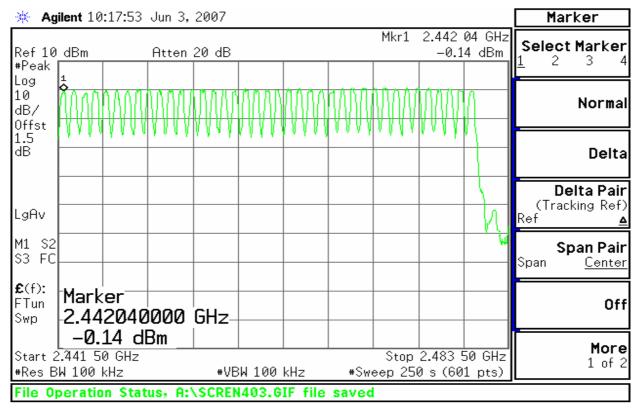
Test Plot

Channel Number

<u>2.4 GHz – 2.4415 GHz</u>



<u>2.4415 GHz – 2.4835 GHz</u>





TIME OF OCCUPANCY (DWELL TIME)

LIMIT

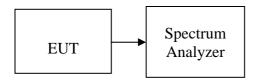
According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer Agilent		E4446A	MY44020154	11/16/2007	

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set center frequency of spectrum analyzer = operating frequency.
- 4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
- 5. Repeat above procedures until all frequency measured were complete.



TEST RESULTS

No non-compliance noted

Test Data

<u>DH 1</u>

0.432 * (1600/2)/79 * 31.6 = 138.24 (ms)

Pulse Time	Total of Dwell	Period Time	Limit	Result
(ms)	(ms)	(s)	(ms)	
0.432	138.24	31.60	400	PASS

<u>DH 3</u>

1.70 * (1600/4)/79 * 31.6 = 272.00 (ms)

Pulse Time	Total of Dwell	Period Time	Limit	Result
(ms)	(ms)	(s)	(ms)	
1.70	272.00	31.60	400	PASS

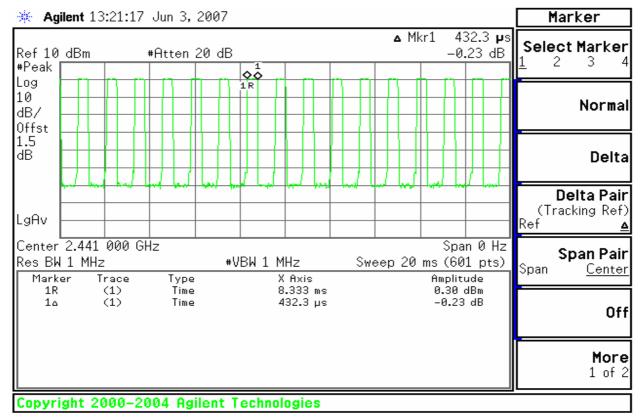
<u>DH 5</u> 2.90<u>2</u>* (1600/6)/79 * 31.6 = 309.55 (ms)

Pulse Time	Total of Dwell	Period Time	Limit	Result
(ms)	(ms)	(s)	(ms)	
2.902	309.55	31.60	400	PASS

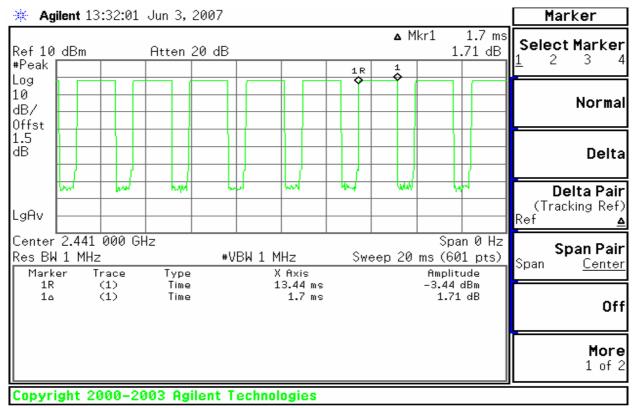


Test Plot

<u>DH 1</u>

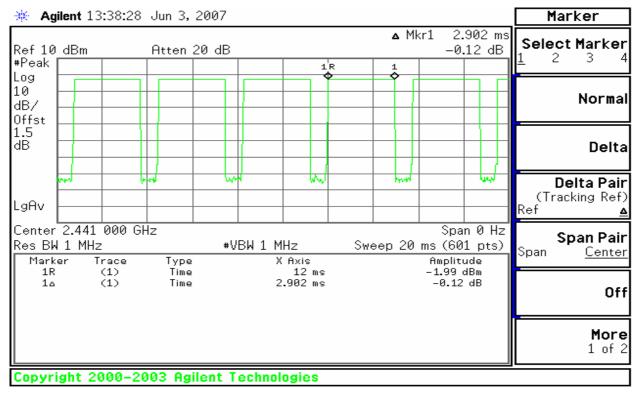


<u>DH 3</u>





<u>DH 5</u>





RADIO FREQUENCY EXPOSURE

LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See 15.247(b)(4) and 1.1307(b)(1) of this chapter.

EUT Specification

EUT	Portable Navigator			
Frequency band (Operating)	 WLAN: 2.412GHz ~ 2.462GHz WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz WLAN: 5.745GHz ~ 5.825GHz ✓ Others: Bluetooth: 2.402GHz ~ 2.480GHz 			
Device category	Portable (<20cm separation) Mobile (>20cm separation) Others			
Exposure classification	Occupational/Controlled exposure ($S = 5mW/cm^2$) General Population/Uncontrolled exposure ($S=1mW/cm^2$)			
Antenna diversity	 Single antenna Multiple antennas Tx diversity Rx diversity Tx/Rx diversity 			
Max. output power	1.63dBm (1.455mW)			
Antenna gain (Max)	-0.02dBi (Numeric gain: 0. 995mW)			
Evaluation applied	 MPE Evaluation SAR Evaluation ⋈/A 			

Remark:

- 1. The maximum output power is <u>1.63dBm (1.455mW) at 2480MHz</u> (with <u>0.995numeric</u> antenna gain.)
- 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
- 3. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.

TEST RESULTS

Non-compliance.



SPURIOUS EMISSIONS

Conducted Measurement

LIMIT

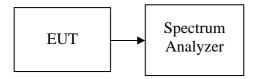
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. 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)).

MEASUREMENT EQUIPMENT USED

Name of Equipment Manufacturer		Model	Serial Number	Calibration Due	
Spectrum Analyzer Agilent		E4446A	MY44020154	11/16/2007	

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 100 KHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

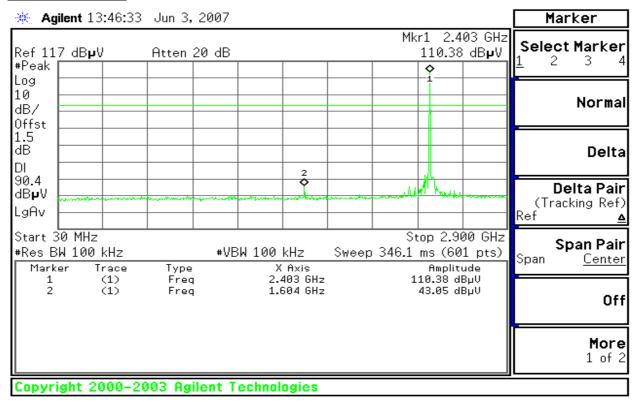
No non-compliance noted



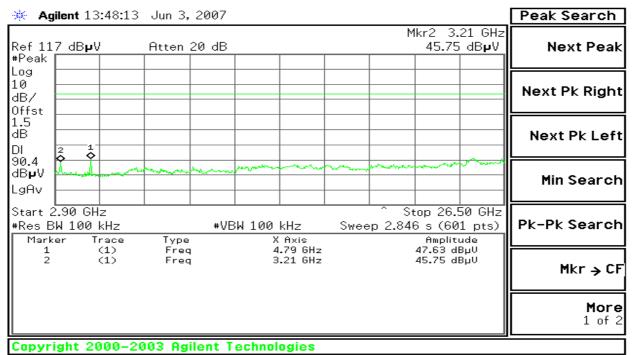
Test Plot

CH Low

<u>30MHz ~ 2.9GHz</u>



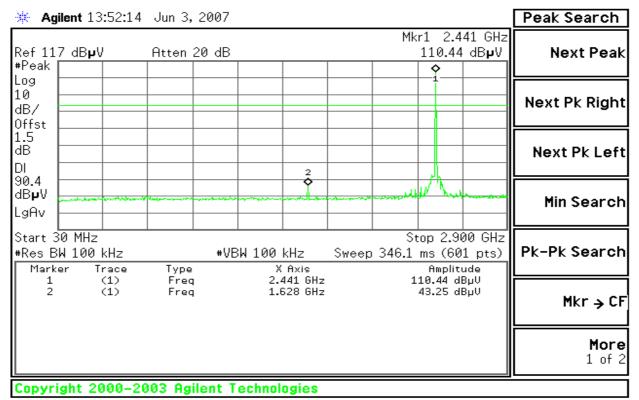
<u>2.9GHz ~ 26.5GHz</u>





CH Mid

<u>30MHz ~ 2.9GHz</u>



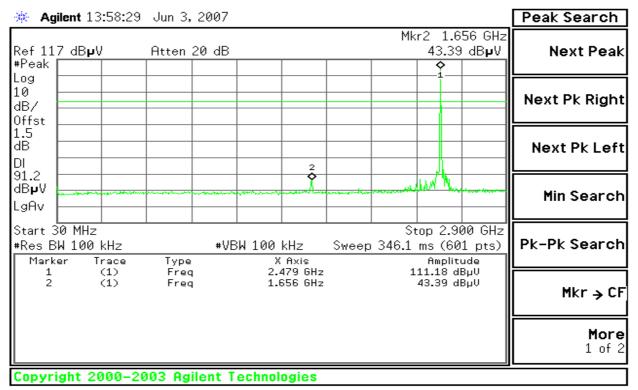
<u>2.9GHz ~ 26.5GHz</u>

🔆 Agilent 13:53:20	Jun 3, 2007			Peak Search
Ref 117 dB µ V #Peak	Atten 20 dB		Mkr2 4.87 GHz 49.33 dB µ V	Next Peak
Log 10 dB/ Offst				Next Pk Right
1.5 dB DI 1 2				Next Pk Left
90.4 dBµV LgAv	the second second			Min Search
Center 14.70 GHz #Res BW 100 kHz Marker Trace	Type	X Axis	Spanî 23.6 GHz veep 2.846 s (601 pts) Amplitude	Pk-Pk Search
$ \begin{array}{c} 1 & (1) \\ 2 & (1) \end{array} $	Freq Freq	3.25 GHz 4.87 GHz	48.15 dBµV 49.33 dBµV	Mkr → CF
				More 1 of 2
Copyright 2000-20	003 Agilent Te	chnologies		



<u>CH High</u>

<u>30MHz ~ 2.9GHz</u>



<u>2.9GHz ~ 26.5GHz</u>

🔆 Agilent 13:59	:26 Jun 3, 2007			Peak Search
ef 117 dB µ V Peak	Atten 20 dB		Mkr1 3.29 GHz 48.81 dBµV	Next Peak
.og .0 JB/				Next Pk Right
1.5 dB DI \$ \$ 91.2				Next Pk Left
J1.2 JBµV JBµV	man have been	and the second sec		Min Search
Start 2.90 GHz Res BW 100 kHz Marker Traci		W 100 kHz : X Axis	Stop 26.50 GHz Sweep 2.846 s (601 pts) Amplitude	Pk-Pk Search
1 (1) 2 (1)	Freq Freq	3.29 GHz 4.95 GHz	48.81 dBµV 50.56 dBµV	Mkr → CF
				More 1 of 2
Copyright 2000	-2003 Agilent To	echnologies		

Page 33



Radiated Emissions

LIMIT

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

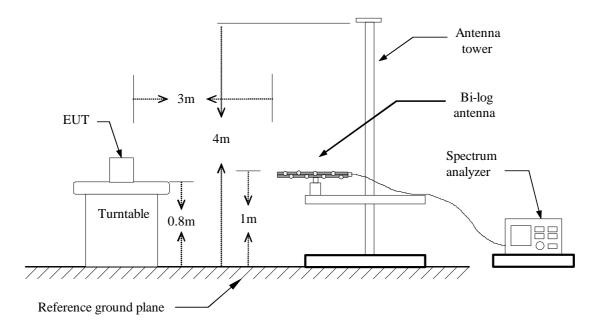
	977 Chamber (3m)							
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due				
Spectrum Analyzer	Agilent	E4446A	MY44020154	11/16/2007				
ESPI3 EMI RECEIVER	R&S	ESPI3	101026	11/10/2007				
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	12/12/2007				
Pre-Amplfier	Miteq	NSP4000-NF	870731	01/21/2008				
Bilog Antenna	Sunol Sciences	JB1	A110204-2	11/09/2007				
Horn Antenna	Austriah	BBHA9120D	D267	09/20/2007				
Turn Table	СТ	CT123	4162	N.C.R				
Antenna Tower	СТ	CTERG23	3253	N.C.R				
Controller	СТ	CT100	95635	N.C.R				
Coax Switch	Anitsu	MP 598	M 80094	N/A				
Site NSA	CCS Lab.	N/A	N/A	02/15/2008				

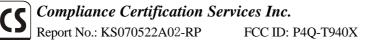
MEASUREMENT EQUIPMENT USED

Remark: Each piece of equipment is scheduled for calibration once a year.

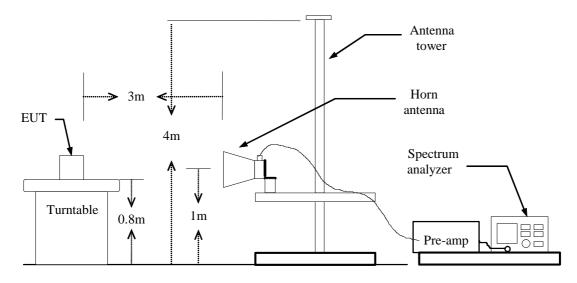
Test Configuration

Below 1 GHz





Above 1 GHz



TEST PROCEDURE

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

```
RBW=100kHz / VBW=300kHz / Sweep=AUTO
```

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

- (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
- 7. Repeat above procedures until the measurements for all frequencies are complete.



TEST RESULTS

Below 1 GHz

Operation I	peration Mode: Normal Link Test Date: Jun 3, 2007					007	
Temperatu	re: 25°C				Tested by	y: healing	
Humidity:45 % RHPolarity:				Ver. / Ho	or.		
Freq.	Ant.Pol.	Detector	Reading	Factor	Actual FS	Limit 3m	Safe Margin
(MHz)	H/V	Mode (PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
35.41	V	Peak	31.57	-5.04	26.53	40.0	-13.5
80.32	V	Peak	41.99	-11.99	30.00	43.5	-13.5
94.93	V	Peak	34.56	-13.76	20.8	43.5	-22.7
175.55	V	Peak	31.23	-10.48	20.75	46.0	-25.25
597.39	V	Peak	24.22	-0.89	23.33	46.0	-22.67
960.71	V	Peak	28.48	4.45	32.93	46.0	-13.07
94.93	Н	Peak	25.38	-3.76	21.62	43.5	-21.88
124.15	Н	Peak	30.79	-8.21	22.58	43.5	-20.92
206.93	Н	Peak	32.61	-10.15	22.46	46.0	-23.54
227.59	Н	Peak	34.4	-9.98	24.42	46.0	-21.58
311.22	Н	Peak	29.65	-7.29	22.36	46.0	-23.64
960.72	Н	Peak	27.12	4.45	31.57	46.0	-14.43

Notes:

- 1. Measuring frequencies from 30 MHz to the 1GHz.
- 2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
- 3. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Above 1 GHz

Operation Mode:	TX/ CH Low	Test Date:	Jun 3, 2007
Temperature:	26°C	Tested by:	healing
Humidity:	46 % RH	Polarity:	Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading	AV Reading	Ant. / CT CF	Actu	Actual Fs		AV Limit	Margin (dB)	Domonia
		(dBuV)	(dBuV)	(dB)	Peak	AV) (авиу/т	(dBuV/m)		Remark
					(dBuV/m)	(dBuV/m)				
4804.33	V	33.57	20.68	10.94	44.51	31.62	74	54	-22.38	Avg
7208.33	V	34.32	21.14	18.31	52.63	39.45	74	54	-14.55	Avg
4805.52	Н	36.39	20.97	10.95	47.34	31.92	74	54	-22.08	Avg
7211.67	Н	31.78	18.76	18.33	50.11	37.09	74	54	-16.91	Avg

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - *a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
 - *b.* AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



Operation Mode: TX/ CH Mid

Temperature: 26°C

Humidity: 46 % RH

Test Date:Jun 3, 2007Tested by:healingPolarity:Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading	AV Reading	Ant. / CT CF	Actu	Actual Fs		AV Limit	Margin (dB)	Demosile
		(dBuV)	(dBuV)	(dB)	Peak	AV	, (ави v /m	(dBuV/m)		Remark
					(dBuV/m)	(dBuV/m)				
4884.33	V	34.13	25.06	11.29	45.42	36.35	74	54	-17.65	Avg
7318.34	V	34.1	23.25	19.03	53.13	42.28	74	54	-11.72	Avg
4885.02	Н	37.78	26.15	11.29	49.07	37.44	74	54	-16.56	Avg
7326.67	Н	33.88	21.84	19.04	52.92	40.88	74	54	-13.12	Avg

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - *a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
 - *b.* AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



Operation Mode: TX/ CH High

Temperature: 26°C

Humidity: 46 % RH

Test Date:Jun 2, 2007Tested by:healingPolarity:Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V			AV Reading	Ant. / CT CF	Actu	Actual Fs		AV Limit	Margin (dB)	Remark
		(dBuV)	(dBuV)	(dB)	Peak	AV	(авиу/т `	(dBuV/m)		кешагк	
					(dBuV/m)	(dBuV/m)					
4958.12	V	36.83	24.52	11.52	48.35	36.04	74	54	-17.96	Avg	
7443.35	V	32.85	22.44	19.42	52.27	41.86	74	54	-12.14	Avg	
4961.67	Н	39.49	27.45	11.53	51.02	38.98	74	54	-15.02	Avg	
7446.68	Н	35.79	23.61	19.42	55.21	43.03	74	54	-10.97	Avg	

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - *a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
 - *b.* AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBµV)					
Trequency Range (WIIIZ)	Quasi-peak	Average				
0.15 to 0.50	66 to 56	56 to 46				
0.50 to 5	56	46				
5 to 30	60	50				

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

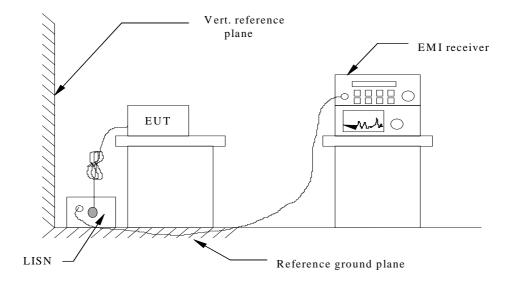
MEASUREMENT EQUIPMENT USED

Conducted Emission Test Site A (10m chamber)									
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due					
EMI Test Receiver	R&S	ESI26	100068	02/11/2008					
EMC Analyzer	Agilent	E7402A	US41160329	02/11/2008					
LISN	FCC	FCC-LISN-50-50-2-M	01067	02/11/2008					
LISN (EUT)	FCC	FCC-LISN-50-50-2-M	01068	02/11/2008					
TRANSIENT LIMITER SCHAFFNER		CFL9206	1710	03/15/2008					
EMI Monitor control box	FCC	0-SVDC	N/A	N/A					

Remark: Each piece of equipment is scheduled for calibration once a year.



Test Configuration



See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

- 1. The EUT was placed on a table, which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all frequency measured were complete.



TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

<u>Test Data</u>

Model: T940T

Temperature: 26°C

Test Mode: Normal Link

Humidity: 46% RH

Tested by: healing

Test Results: Pass

Freq. (MHz)	Q.P. Raw reading (dBuV)	AVG Raw reading (dBuV)	Correction factor(dB)	_	AVG Amptd. (dBuV)		AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	Line/Neutral
0.270	16.25	17.73	10.30	26.55	28.03	62.56	52.56	-36.01	-24.53	Line
0.397	13.87	14.08	10.20	24.07	24.28	58.93	48.93	-34.86	-24.65	Line
0.670	11.47	11.43	10.12	21.59	21.55	56.00	46.00	-34.41	-24.45	Line
0.804	10.88	12.39	10.14	21.02	22.53	56.00	46.00	-34.98	-23.47	Line
1.863	9.56	8.62	10.39	19.95	19.01	56.00	46.00	-36.05	-26.99	Line
2.654	10.48	9.72	10.36	20.84	20.08	56.00	46.00	-35.16	-25.92	Line
0.334	19.81	19.75	10.24	30.05	29.99	60.75	50.75	-30.70	-20.76	Neutral
0.466	23.88	23.18	10.25	34.13	33.43	56.96	46.96	-22.83	-13.53	Neutral
0.810	15.24	12.73	10.18	25.42	22.91	56.00	46.00	-30.58	-23.09	Neutral
0.934	14.94	14.24	10.15	25.09	24.39	56.00	46.00	-30.91	-21.61	Neutral
1.329	12.97	11.46	10.24	23.21	21.70	56.00	46.00	-32.79	-24.30	Neutral
1.969	13.36	13.40	10.42	23.78	23.82	56.00	46.00	-32.22	-22.18	Neutral

Remark:

- 1. The measuring frequencies range between 0.15 MHz and 30 MHz.
- 2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
- *3. "---" denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.*
- 4. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

Note:

Freq. = Emission frequency in KHz

Factor (dB) = cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER (The TRANSIENT LIMITER included 10 dB ATTENUATION)



Amptd dBuV = Uncorrected Analyzer/Receiver reading + cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER,

if it $> 0.5 \, dB$

Limit dBuV = *Limit stated in standard*

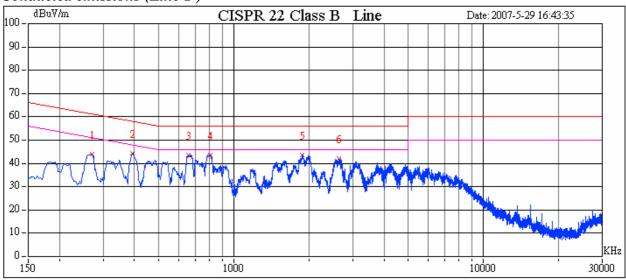
Margin dB = *Reading in reference to limit*

Calculation Formula

Margin (dB) = Amptd (dBuV) - Limit (dBuV)

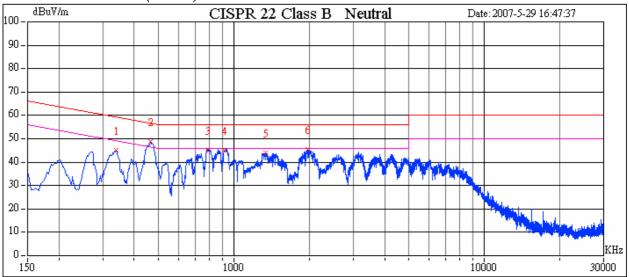
Test Plot

Conducted emissions (Line 1)



Test Plot

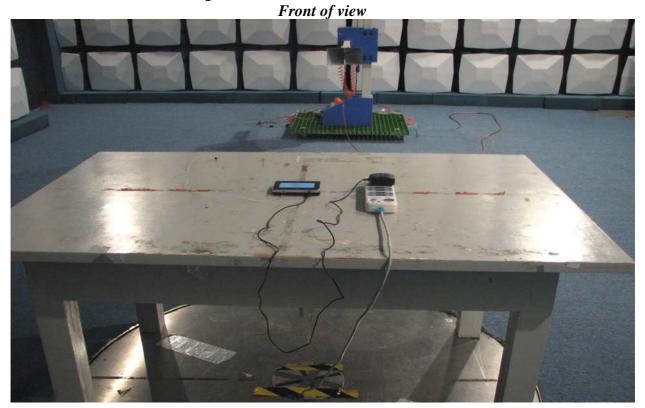
Conducted emissions (Line 2)



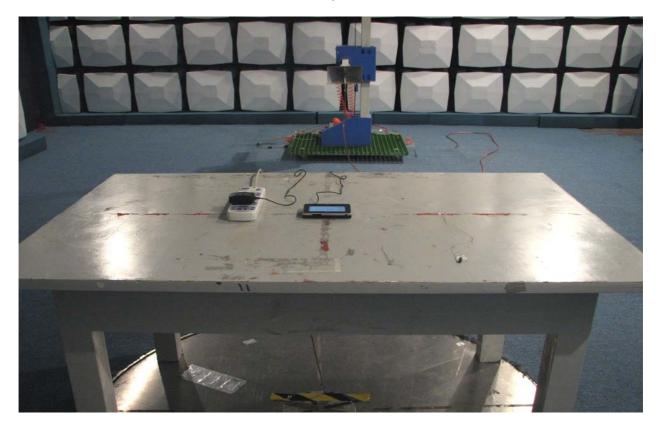


APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Radiated Emission Set up Photos



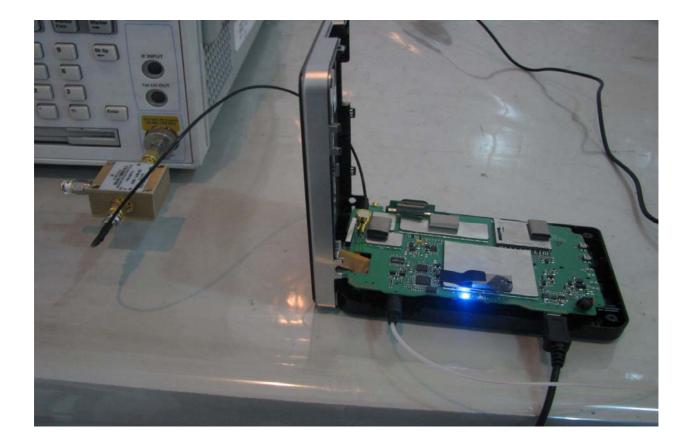
Back of view





Conducted Measurement Set Up Photos







Conducted Emission Set Up Photos



