



**ADDENDUM TO MICROSOFT® CORPORATION
TEST REPORT FC05-016**

FOR THE

**MICROSOFT® WIRELESS PHOTO KEYBOARD
MICROSOFT® WIRELESS COMFORT KEYBOARD, 1045
MICROSOFT® MODEL 1045**

**FCC PART 15 SUBPART C SECTIONS 15.207, 15.209, 15.227
AND RSS-210**

COMPLIANCE

DATE OF ISSUE: MAY 26, 2005

PREPARED FOR:

Microsoft Corporation
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P.O. No.: PQ20765
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Date of test: March 22 - April 6, 2005

Report No.: FC05-016A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: March 22 - April 6, 2005

DATE OF RECEIPT: March 22, 2005

MANUFACTURER: NMB/ Minebea Thai LTD
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Tambon Chiang Rak Noi, Amphoe Bang Pa-In
Ayutthaya Province 13180
Thailand

Shanghai Shunding Technologies Ltd.
No. 1290 Zhongchun Road
Zhuanqiao Town
Minhang District, Shanghai
China 201109

REPRESENTATIVE: Jamin Pandana

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92621

TEST METHOD: ANSI C63.4 (2003) and RSS-212

PURPOSE OF TEST: To demonstrate the compliance of the Microsoft® Wireless Photo Keyboard, Microsoft® Wireless Comfort Keyboard, 1045, Microsoft® Model 1045 with the requirements for FCC Part 15 Subpart C Section 15.207, 15.209 and 15.227 and RSS-210 devices.
Addendum A is to add bandedge plots, revise the test method and the bandwidth settings.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 210	6.2.1	47CFR	15.209	General Radiated Emissions Requirement
RSS 210	6.3	47CFR	15.205	Restricted Bands of Operation
RSS 210	6.6	47CFR	15.207	AC Mains Conducted Emissions Requirement
RSS 210	5.9.1	NA	NA	99% Emissions Bandwidth Requirement
RSS 210	5.9.2	NA	NA	Emissions Designator
RSS 210	8.6.1	47CFR	15.227(a)	Carrier Output Limitation
RSS 210	8.6.1	47CFR	15.227(b)	Spurious Emissions Limitation
	IC 3172-D		100638	File Site No.

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:



Eddie Wong, EMC Engineer



Stuart Yamamoto, EMC Engineer

FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted Emissions: 150 kHz – 30 MHz

15.209/15.227 Radiated Emissions: 9 kHz – 4 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	40 GHz	1 MHz

FCC 15.203 Antenna Requirements

The EUT utilizes a loop antenna that is entirely enclosed within the EUT. It is not accessible to the user and additionally uses a non-standard antenna jack to the radiating loop antenna.

Therefore the EUT complies with Section 15.203 of the FCC rules.

FCC 15.205 Restricted Bands

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

Eut Operating Frequency

The EUT was operating on two channels: 27.095 MHz and 27.195 MHz.

Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit. The EUT is a Wireless RF 27MHz Desktop Keyboard.

EQUIPMENT UNDER TEST

Microsoft® Wireless Photo Keyboard

Microsoft® Wireless Comfort Keyboard

Microsoft® Model 1045

Manuf: NMB Technologies Inc.
Model: 1045
Serial: 1, 48 and 77
FCC ID: C3K1045 (pending)

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Computer

Manuf: Dell Corporation
Model: Optiplex GX260
Serial: C4HVL11

Printer

Manuf: Lexmark
Model: Z53
Serial: 03230287625

Monitor

Manuf: Dell
Model: P793
Serial: KR-04D025-47602-23Q-D9ZX

Wireless Optical Desktop Receiver 3.0A

Manuf: Microsoft Corporation
Model: 1029
Serial: MS POC 078

Mouse

Manuf: Logitech
Model: M-SAW34
Serial: LZB21670338

Modem

Manuf: Hayes
Model: Smart Modem 1200
Serial: A32800153892

Wireless IntelliMouse Explorer 2.0

Manuf: Microsoft Corporation
Model: 1007
Serial: 10422

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V	SPEC LIMIT dB μ V	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB					
28.869420	41.0	1.1	0.2	0.5		42.8	50.0	-7.2	W
29.164060	40.4	1.3	0.2	0.5		42.4	50.0	-7.6	B
29.602580	41.1	1.2	0.2	0.5		43.0	50.0	-7.0	W
29.650550	41.2	1.2	0.2	0.5		43.1	50.0	-6.9	W
29.719070	41.3	1.2	0.2	0.5		43.2	50.0	-6.8	W
29.952040	40.5	1.2	0.2	0.5		42.4	50.0	-7.6	W

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Sections 15.207

NOTES: B = Black Lead
W = White Lead

COMMENTS: The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the support computer placed on the table. a Parallel printer and a serial modem are connected to the support computer. The receiver is connected to a USB and Keyboard port of the computer. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. Receiver MS POC 065, Mouse 00345. Bandwidths used: For the range of 150 kHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequency range tested: 150 kHz to 30 MHz.

Table 2: FCC 15.227(a) Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN DB	NOTES
		Ant dB		Cable dB					
27.095	42.9	8.9		1.2		53.0	80.0	-27.0	L
27.095	42.9	8.9		1.2		53.0	80.0	-27.0	L
27.095	42.8	8.9		1.2		52.9	80.0	-27.1	L
27.195	42.8	8.9		1.2		52.9	80.0	-27.1	L
27.195	42.8	8.9		1.2		52.9	80.0	-27.1	L
27.195	42.7	8.9		1.2		52.8	80.0	-27.2	L

Test Method: ANSI C63.4 (2003)
 Spec Limit: FCC Part 15 Subpart C Sections 15.227(a)
 Test Distance: 3 Meters

NOTES: L = Loop Antenna

COMMENTS: The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the table top. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each channel. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 50%, Pressure: 100kPa. Bandwidths used: For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequencies tested: 27.095 MHz and 27.195 MHz.

Table 3: FCC 15.209/15.227(b) Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN DB	NOTES
		Ant dB	Amp dB	Cable dB					
54.189	43.3	7.8	-27.2	1.6		25.5	40.0	-14.5	V
54.194	43.1	7.8	-27.2	1.6		25.3	40.0	-14.7	V
54.390	43.2	7.7	-27.2	1.7		25.4	40.0	-14.6	V
54.391	43.3	7.7	-27.2	1.7		25.5	40.0	-14.5	V
54.392	43.6	7.7	-27.2	1.7		25.8	40.0	-14.2	V
240.023	43.7	10.5	-26.5	3.8		31.5	46.0	-14.5	V

Test Method: ANSI C63.4 (2003)

Spec Limit: FCC Part 15 Subpart C Section 15.209 and 15.227(b)

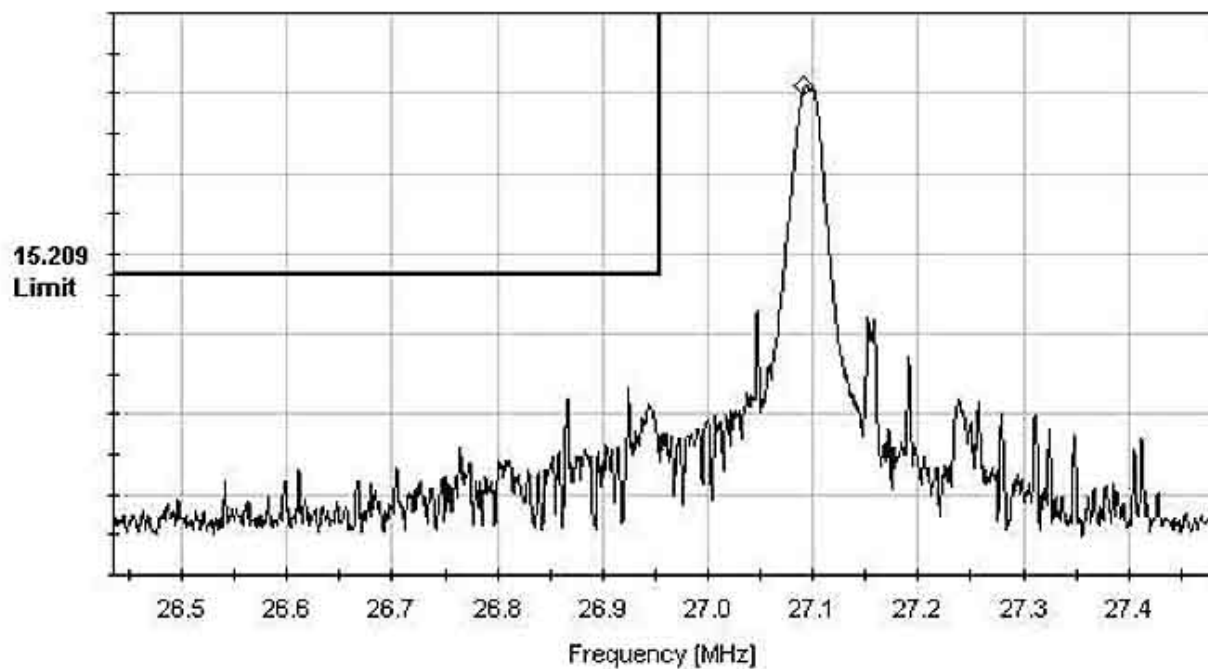
Test Distance: 3 Meters

NOTES: V = Vertical Polarization

COMMENTS: The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each of the two channels. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. This data sheet represents maximized emissions from a radiated emissions test from 4 MHz to 4 GHz. For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. For the range of 30 MHz to 1000 MHz, spectrum analyzer bandwidth=1 MHz, QPA bandwidth=120 kHz. For the range of 1000 MHz to 4000 MHz, the spectrum analyzer bandwidth=1 MHz, QPA bypassed.

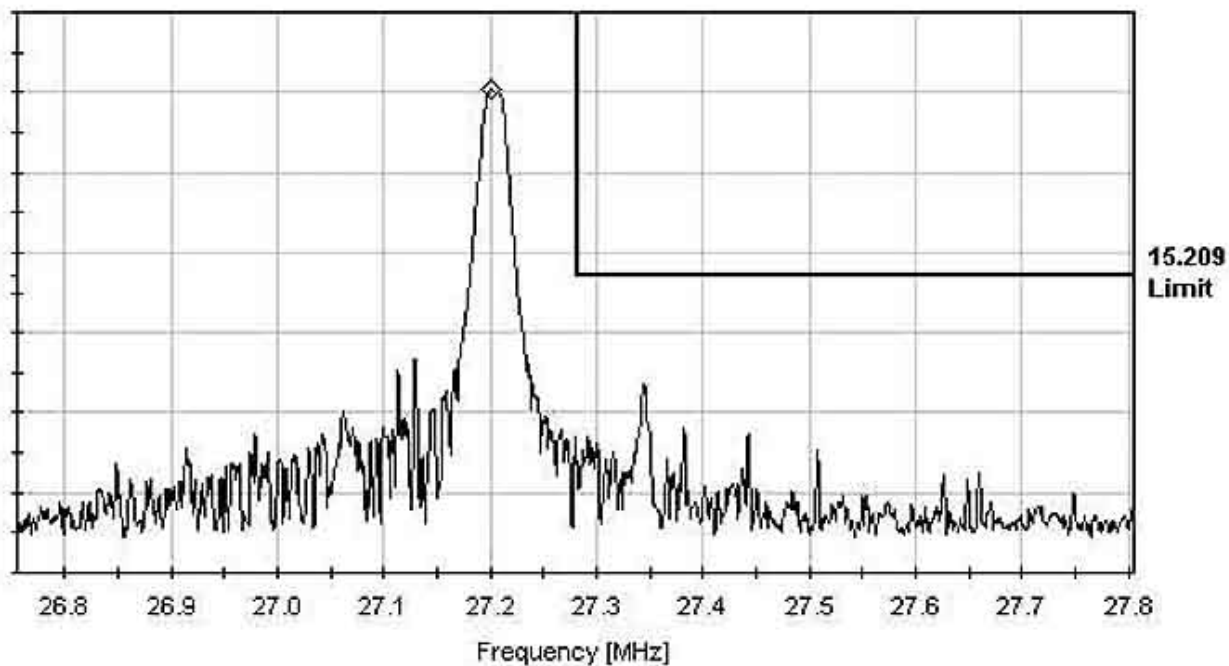
FCC 15.227(b) BAND EDGE PLOT SN 01

FCC 15.227(b) Band Edge Plot. 27.095 MHz. SN 01
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.092MHz 70.9dB μ V



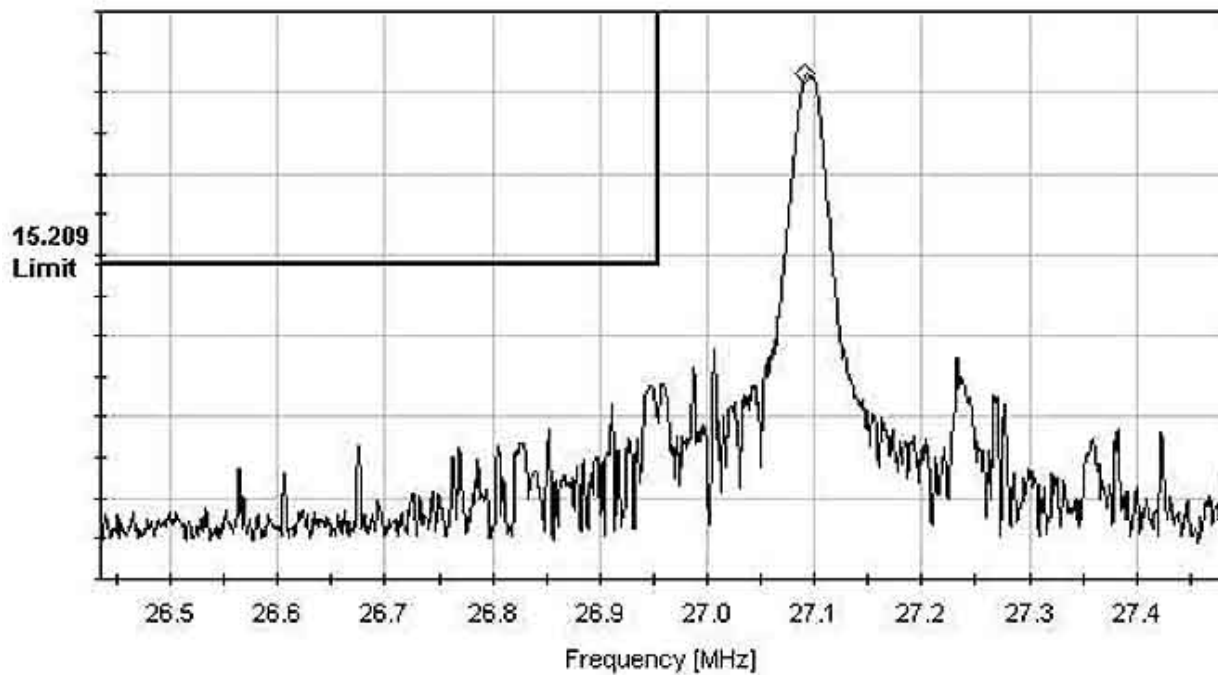
FCC 15.227(b) BAND EDGE PLOT SN 01

FCC 15.227(b) Band Edge Plot. 27.195 MHz. SN 01
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.201MHz 70.4dB μ V



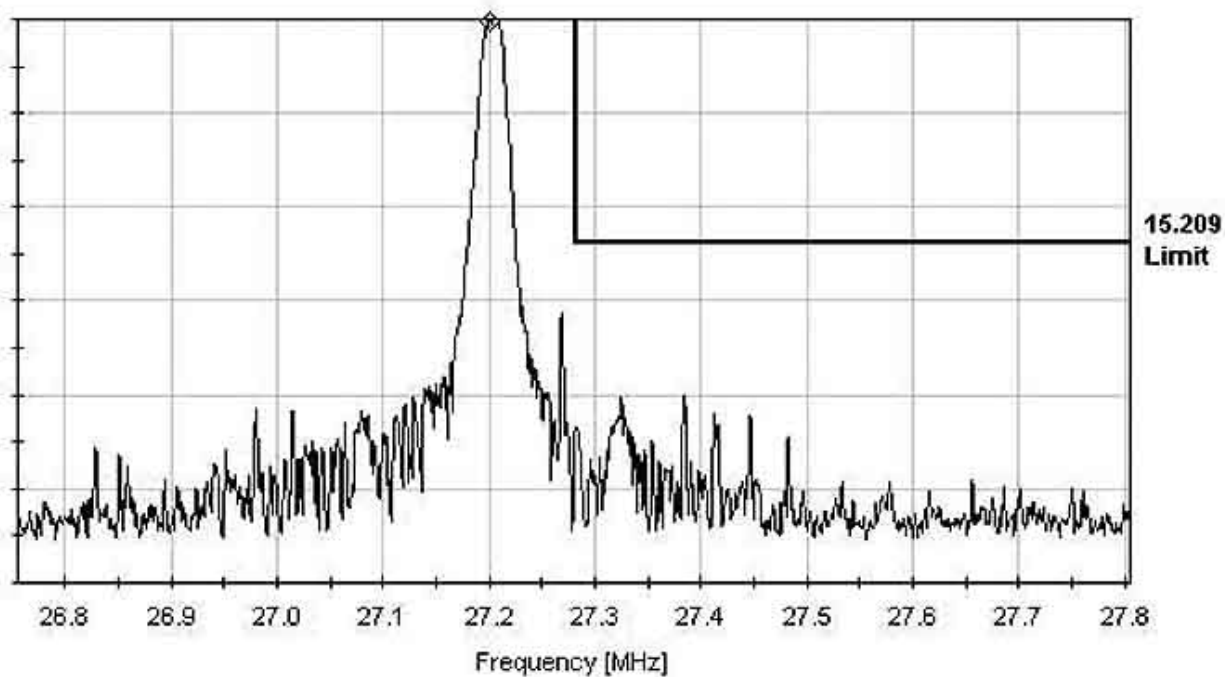
FCC 15.227(b) BAND EDGE PLOT SN 48

FCC 15.227(b) Band Edge Plot. 27.095 MHz. SN 48
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.092MHz 72.3dB μ V



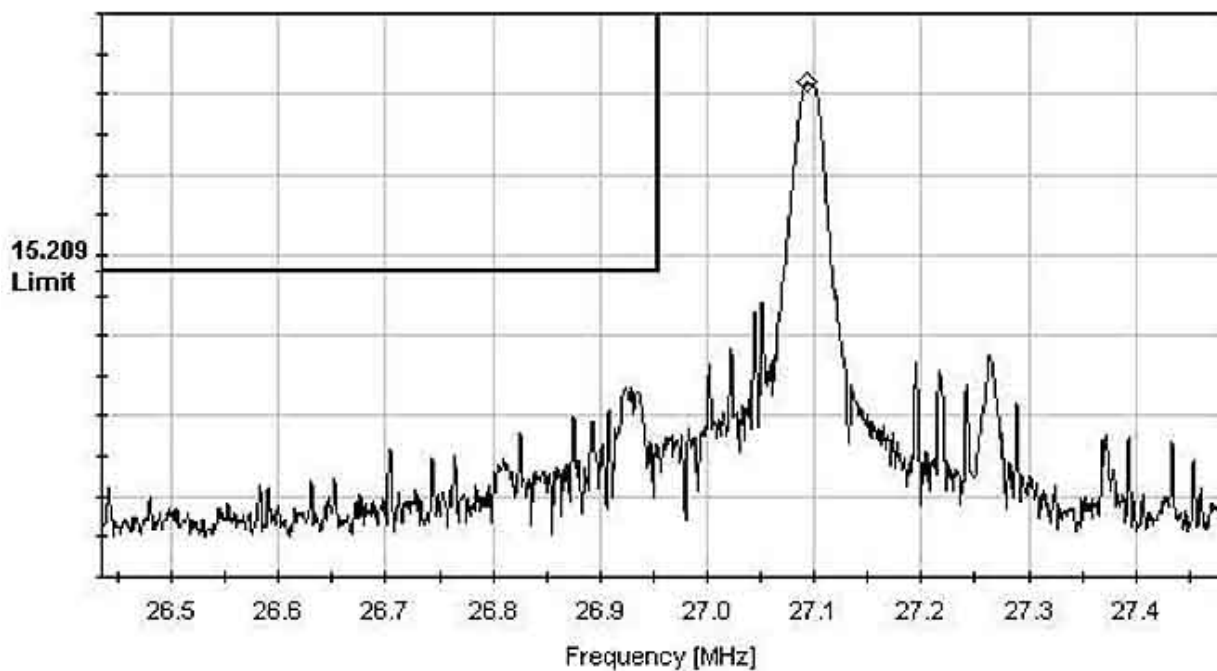
FCC 15.227(b) BAND EDGE PLOT SN 48

FCC 15.227(b) Band Edge Plot. 27.195 MHz. SN 48
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.2MHz 69.8dB μ V



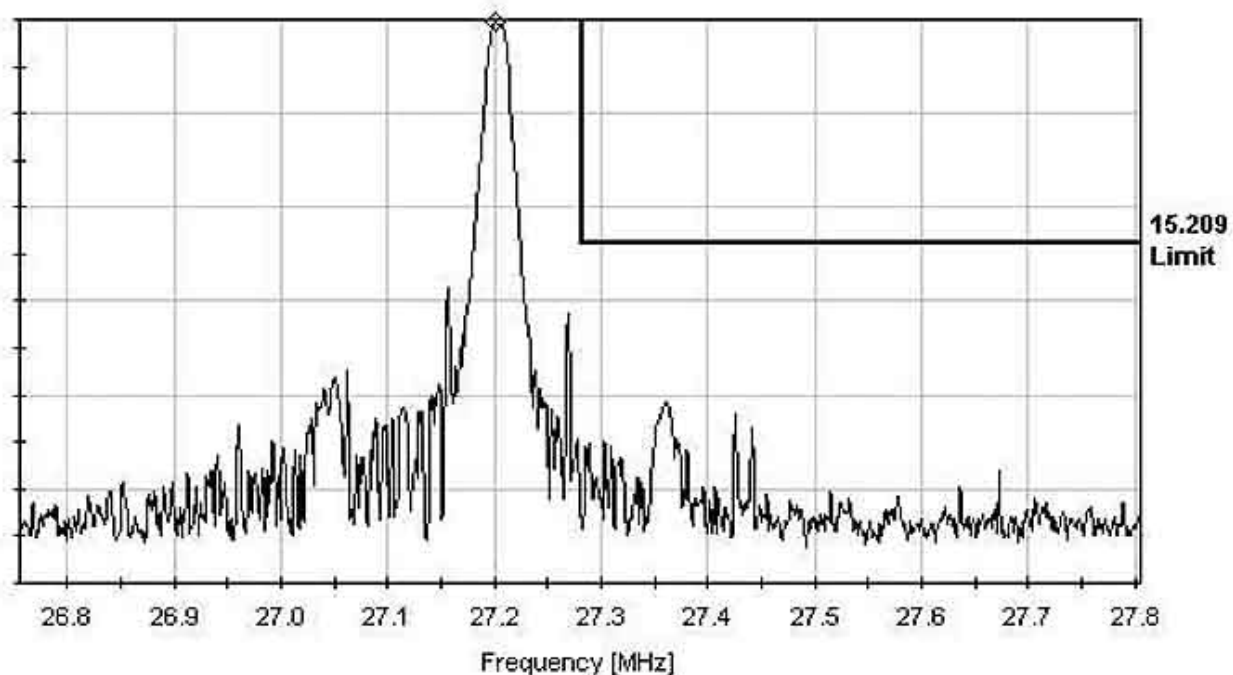
FCC 15.227(b) BAND EDGE PLOT SN 77

FCC 15.227(b) Band Edge Plot. 27.095 MHz. SN 77
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.093MHz 71.4dB μ V



FCC 15.227(b) BAND EDGE PLOT SN 77

FCC 15.227(b) Band Edge Plot. 27.195 MHz. SN 77
Ref Level 107 dB μ V ATTEN 10 dB
RES BW: 10.0kHz VID BW: 10.0kHz SWP: 30.0msec
Marker: 27.2MHz 69.8dB μ V



FCC 2.1055(a) FREQUENCY STABILITY and FCC 2.1055(d) VOLTAGE VARIATION

Test Conditions: The EUT was placed in the temperature chamber. The EUT RF signal is monitored by a coupling antenna. A spectrum analyzer is employed to measure the frequency stability of the EUT. Spectrum Analyzer Bandwidth=100kHz, 30kHz, and 10kHz. Frequencies tested: 27.095 MHz and 27.195 MHz.

Customer: NMB Technologies Corporation
WO#: 83332
Date: 30-Mar-05
Test Engineer: S. Yamamoto

Device Model #: 1045 (Leica)
Operating Voltage: 3.0 Vdc

Frequency Limit: 5.50E+01 PPM

Temperature Variations

		Channel 0 (MHz)	Dev (ppm)	Channel 1 (MHz)	Dev (ppm)
Channel Frequency:		27.095000000		27.195000000	
Temp (C)	Voltage				
-30	3.0	27.095060000	2.214431	27.195060000	2.206288
-20	3.0	27.095060000	2.214431	27.195060000	2.206288
-10	3.0	27.095060000	2.214431	27.195090000	3.309432
0	3.0	27.095000000	0.000000	27.195060000	2.206288
10	3.0	27.095040000	1.476287	27.195000000	0.000000
20	3.0	27.095000000	0.000000	27.195000000	0.000000
30	3.0	27.095030000	1.107215	27.195060000	2.206288
40	3.0	27.095020000	0.738144	27.195030000	1.103144
50	3.0	27.095000000	0.000000	27.195030000	1.103144

Voltage Variation

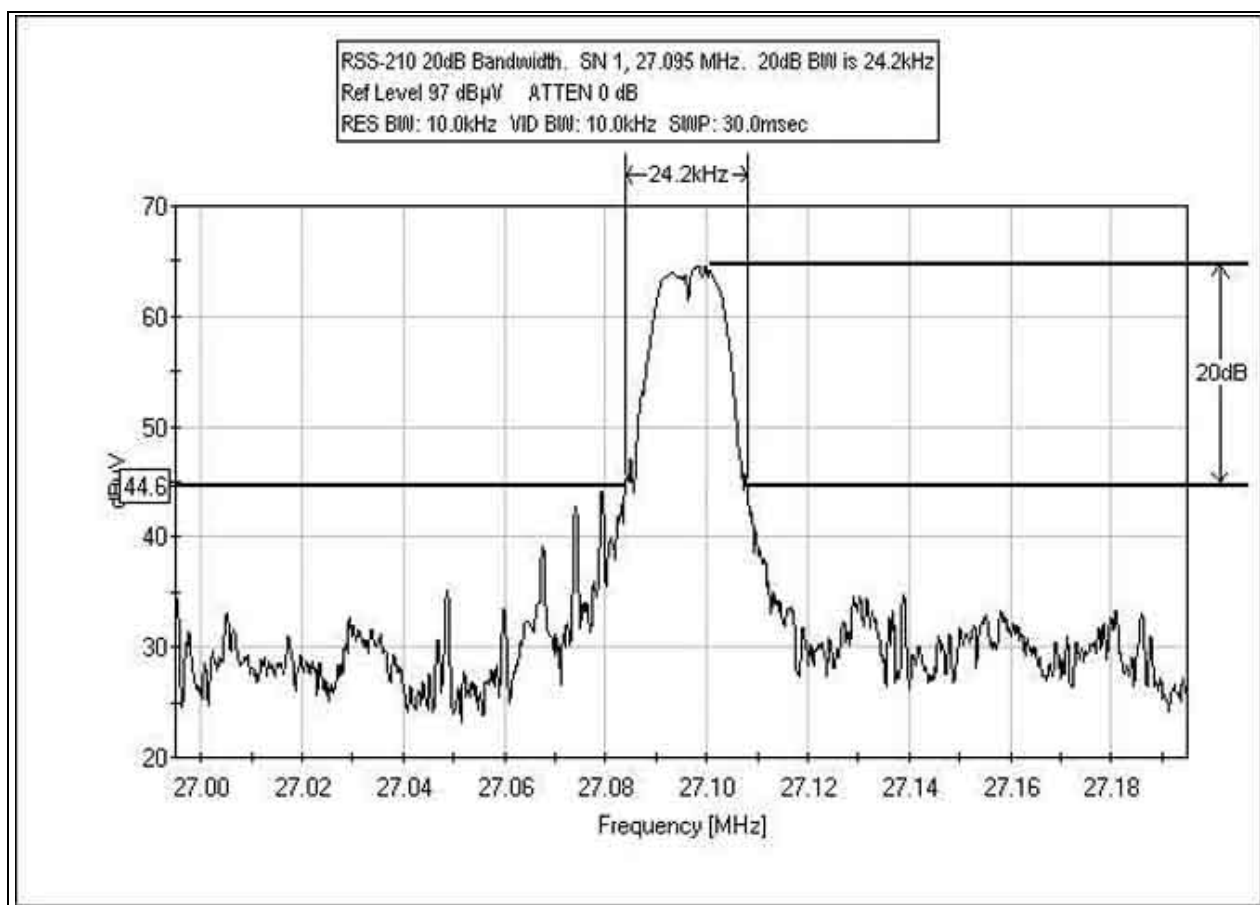
Temp (C)	Voltage	Channel 0 (MHz)	Dev. (ppm)	Channel 1 (MHz)	Dev. (ppm)
20	2.0	27.095090000	3.321646	27.195090000	3.309432
20	3.0	27.095000000	0.000000	27.195000000	0.000000
20	3.0	27.095000000	0.000000	27.195000000	0.000000

Max Deviation (ppm)	+	3.32165
Max Deviation (ppm)	-	0.00000
PASS		

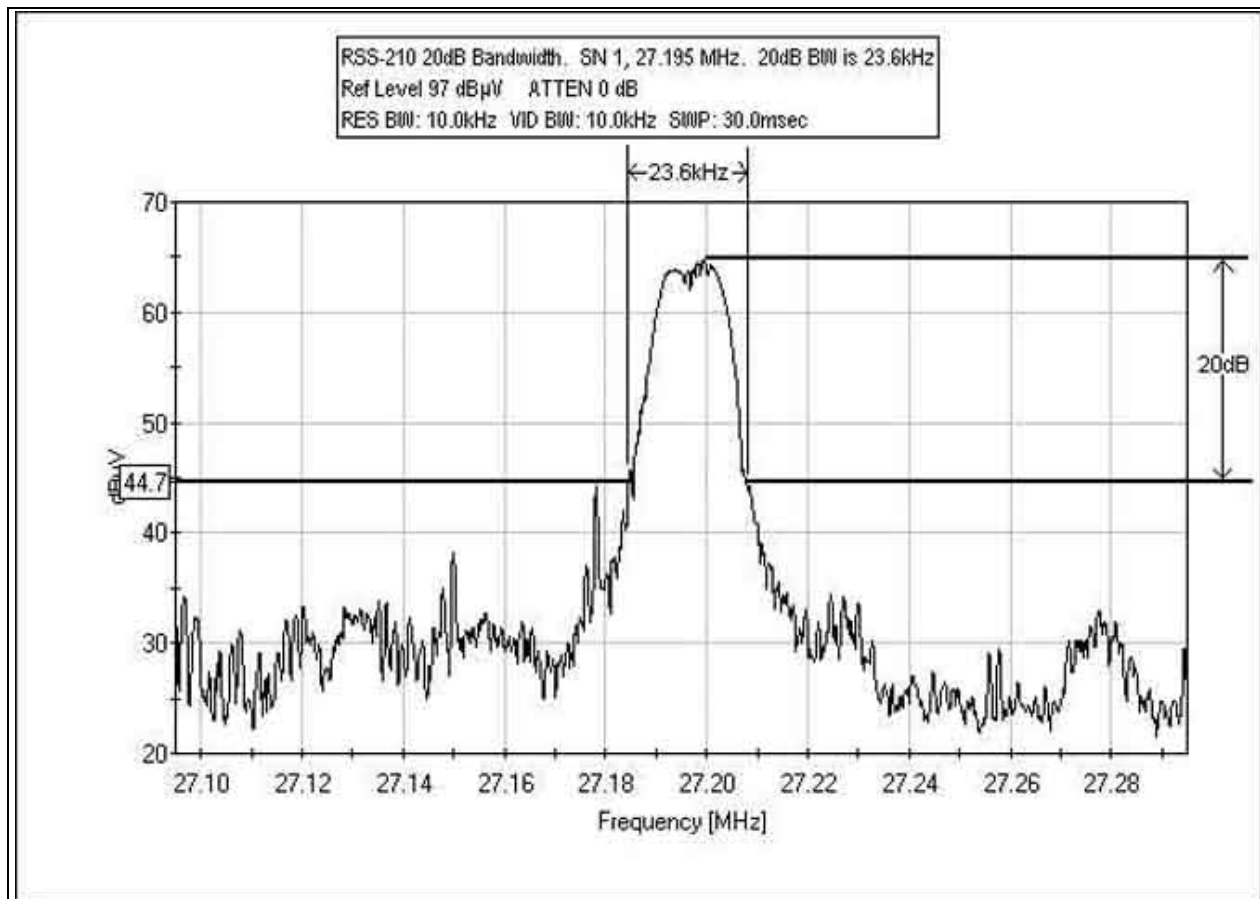
	+	3.30943
	-	0.00000
PASS		

RSS-210 20dB BANDWIDTH CHANNEL 0 SN 1

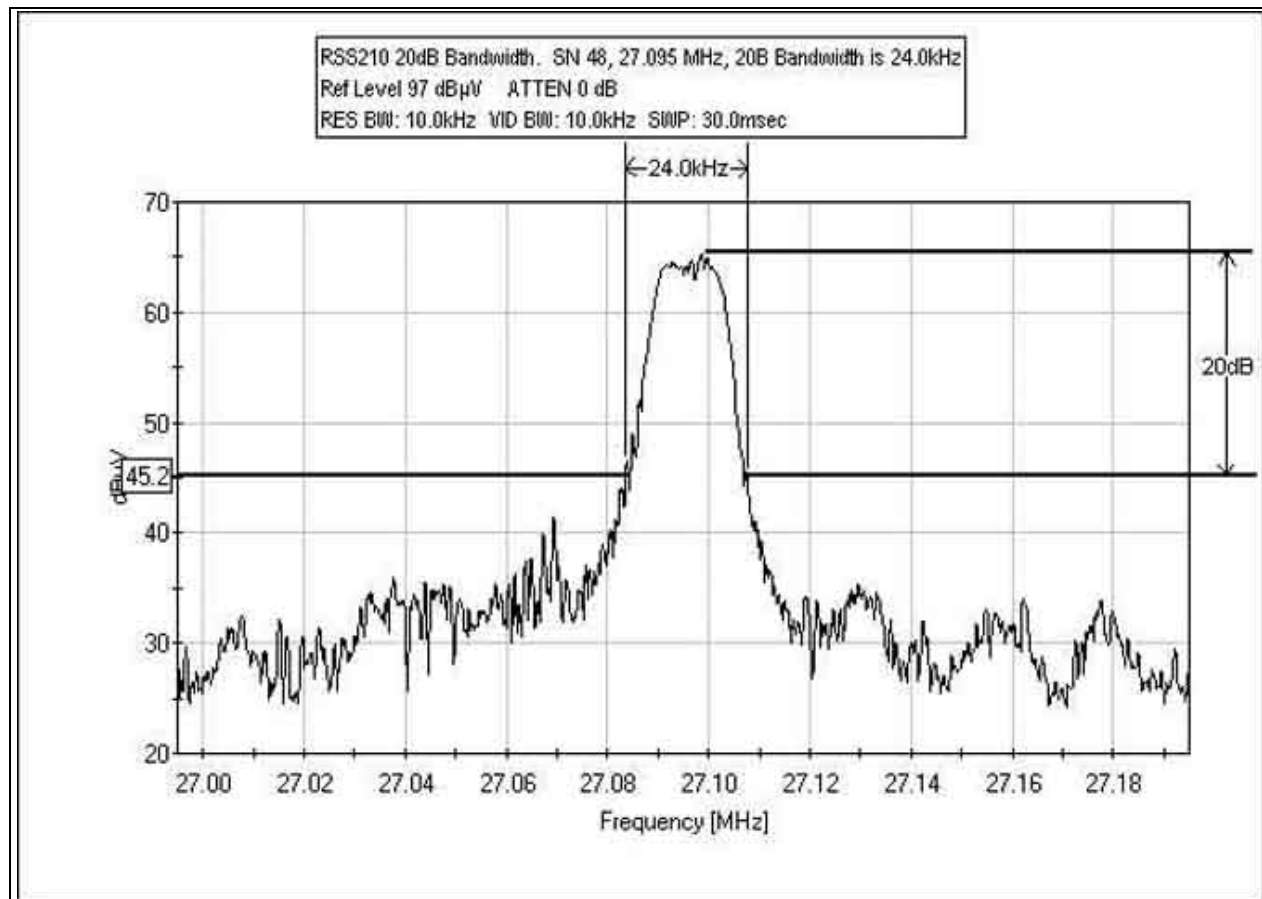
Test Conditions: The EUT was placed on the wooden tabletop. The EUT was transmitting continuously so that the plots could be captured. The EUT was tested for both Ch. 0 (27.095 MHz) and Ch. 1 (27.195 MHz).



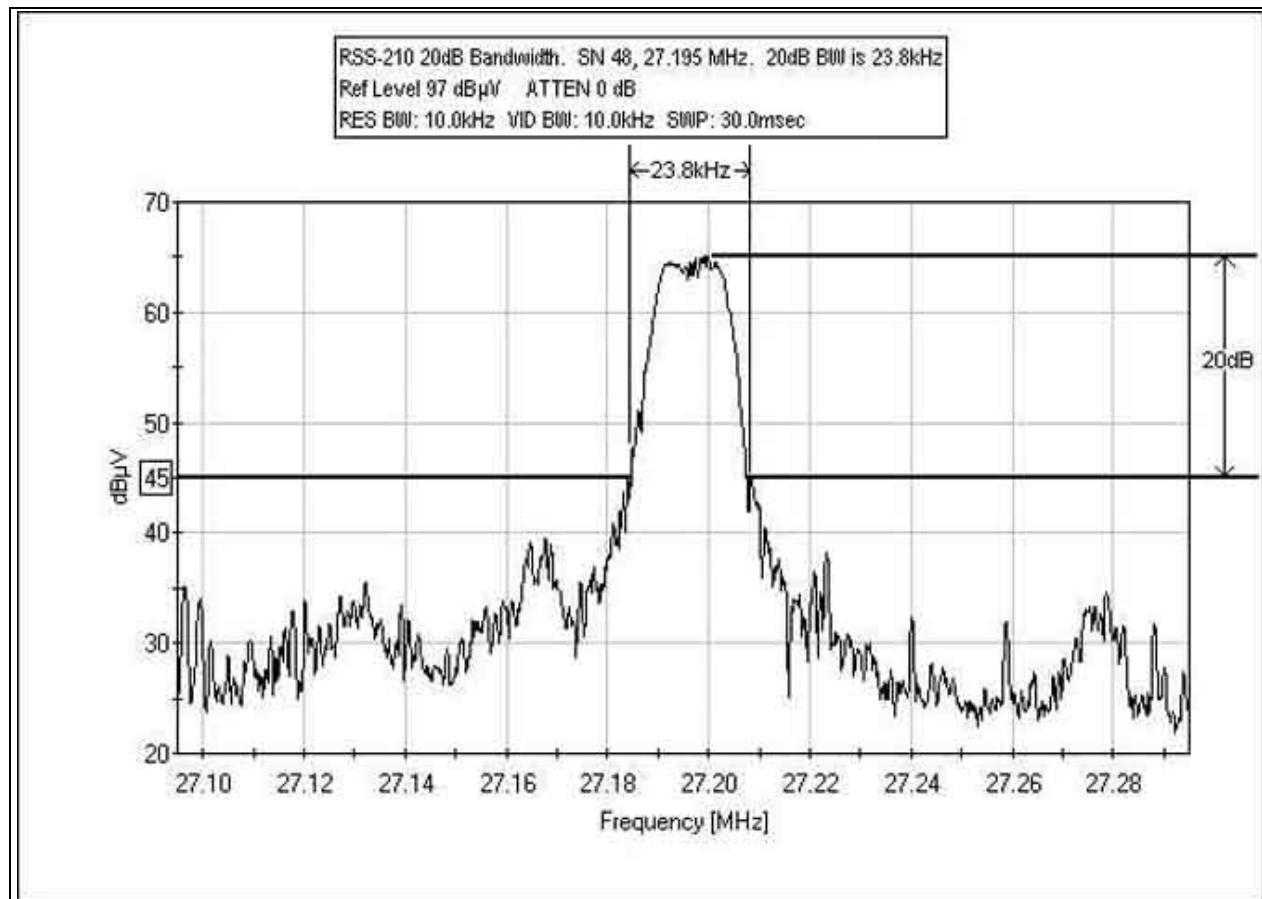
RSS-210 20dB BANDWIDTH CHANNEL 1 SN 1



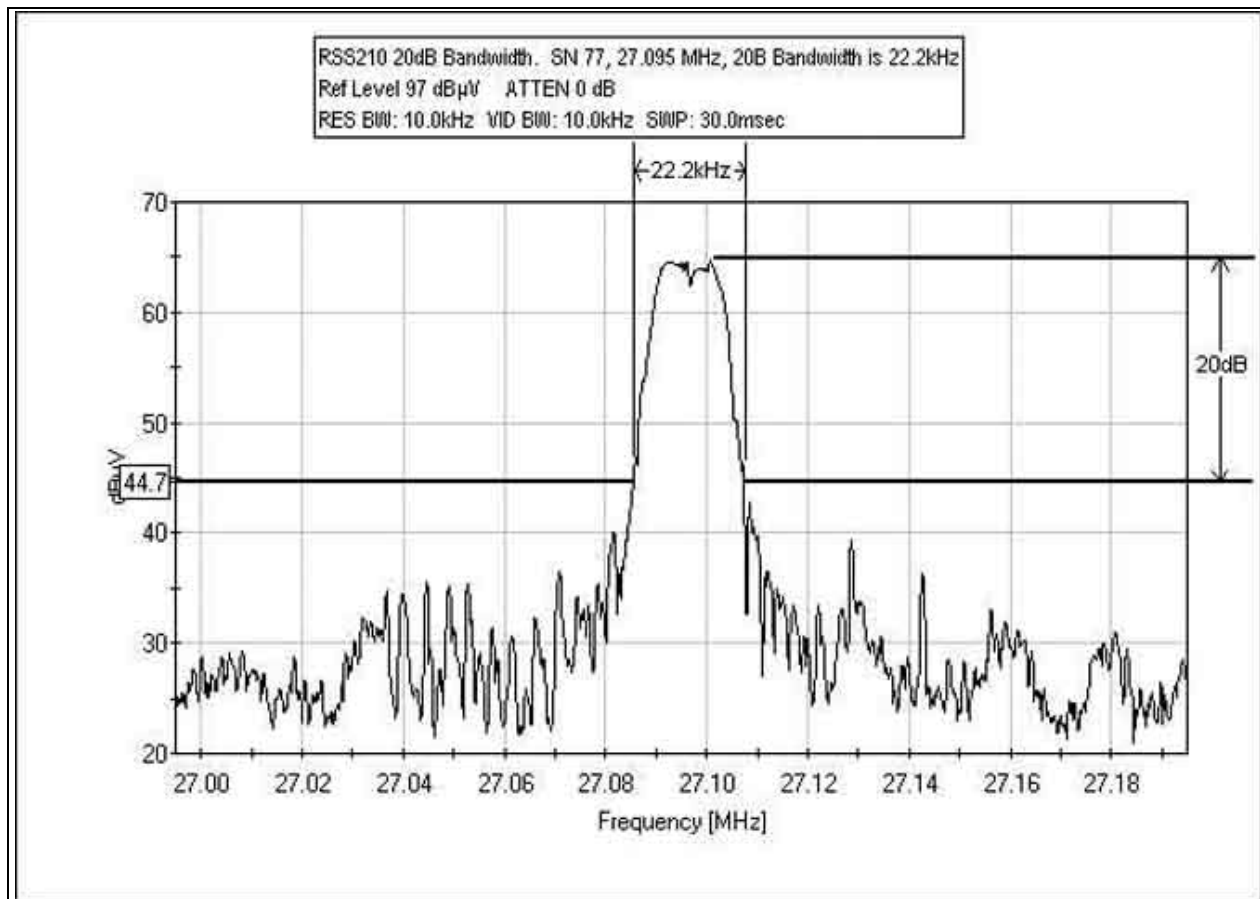
RSS-210 20dB BANDWIDTH CHANNEL 0 SN 48



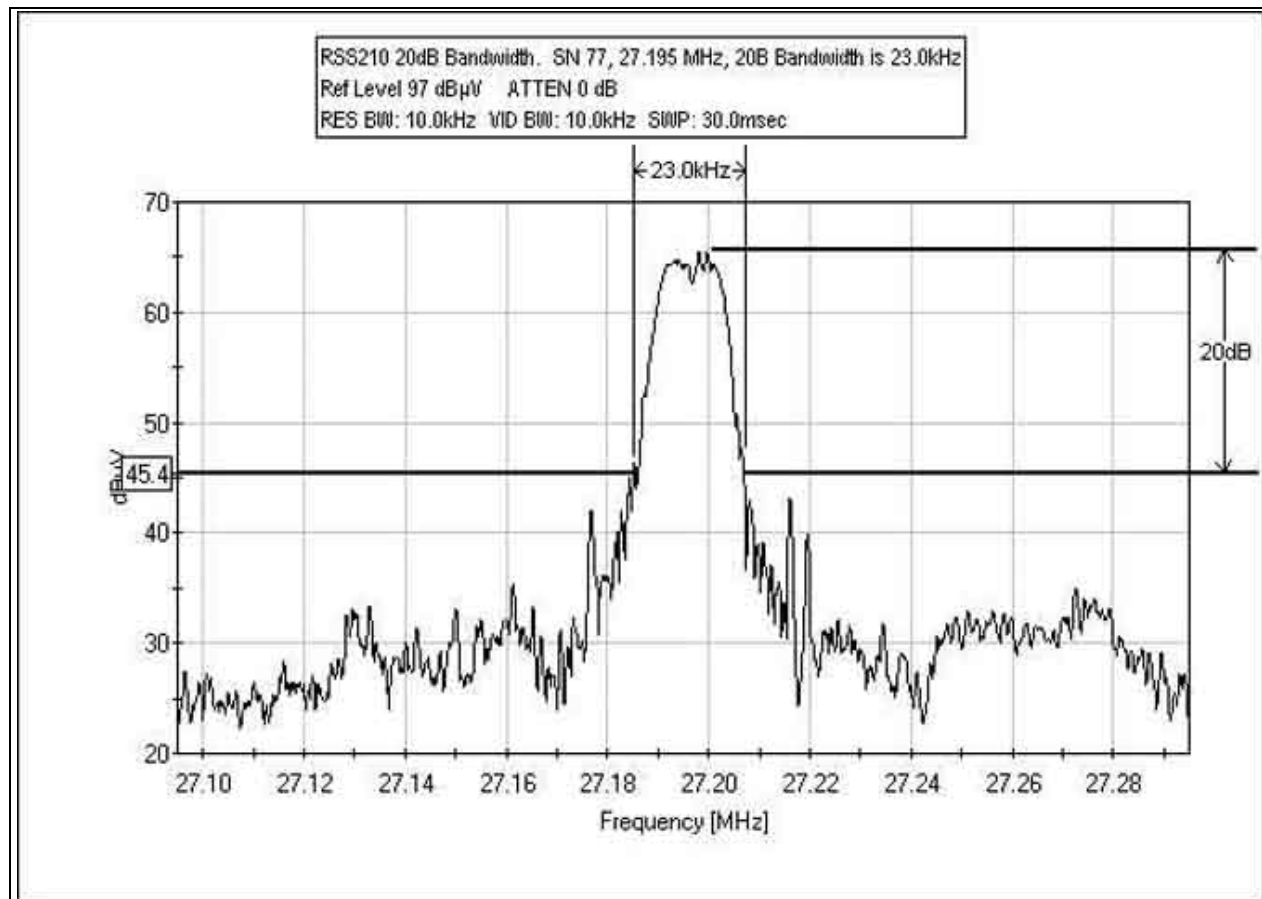
RSS-210 20dB BANDWIDTH CHANNEL 1 SN 48



RSS-210 20dB BANDWIDTH CHANNEL 0 SN 77



RSS-210 20dB BANDWIDTH CHANNEL 1 SN 77



EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 μ H/+50 ohms. Above 150 kHz, a 0.15 μ F series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable and raising and lowering the antenna from one to four meters as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Back View

PHOTOGRAPH SHOWING TEMPERATURE TESTING



PHOTOGRAPH SHOWING FUNDAMENTAL EMISSIONS



Fundamental Emissions - Front View

PHOTOGRAPH SHOWING FUNDAMENTAL EMISSIONS



Fundamental Emissions - Back View

PHOTOGRAPH SHOWING SPURIOUS EMISSIONS



Spurious Emissions - Front View

PHOTOGRAPH SHOWING SPURIOUS EMISSIONS



Spurious Emissions - Back View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

RSS-210 20dB BANDWIDTH



APPENDIX B

TEST EQUIPMENT LIST

Conducted Emissions

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	02462	HP	8568B	2928A04874	100804	100806
Spectrum Analyzer Display Section	02472	HP	85662A	3001A18430	100804	100806
QP Adapter	01437	HP	85650A	3303A01884	100804	100806
Conducted Cable	NA	Harbour Ind	RG142	Cable # 21	070204	070205
150kHz HPF	02610	TTE	HB9615- 150k-50-720	07766	041604	041605
LISN	00847	EMCO	3816/2NM	1104	120804	120806
LISN	00276, 00277, 00278	Solar	8028-50-TS- 24BNC	B2	101403	101405

Radiated Emissions

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Bilog Antenna	00851	Schaffner- Chase EMC	CBL6111C	2629	031604	031606
Antenna cable (10 meter site D)	NA	Andrew	LDF1-50	Cable#17	100204	100205
Antenna cable from bulkhead to antenna	N/A	Pasternack	RG-214/U	Cable #33	041005	041007
Preamp to SA Cable (3 feet)	NA	Pasternack	E100316-I	Cable #22	080904	080905
Pre-amp	00010	HP	8447D	2727A05392	070204	070206
Antenna cable (Helix)	NA	Andrew	LDF1-50	Cable#19	101303	101305
Horn Antenna	01646	EMCO	3115	9603-4683	042503	042505
Microwave Pre-amp	00787	HP	83017A	3123A00282	042303	042305
Magnetic Loop Antenna	00314	Emco	6502	2014	072804	072806
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032205	032207
Spectrum Analyzer	00783	HP	8596E	3346A00225	071604	071606

Frequency Stability

Instrument	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00042	HP	8568B	2415A00481	061804	061806
Spectrum Analyzer Display Section	00043	HP	85662A	2403A07316	061804	061806
Quasi Peak Adapter	00090	HP	85650A	2043A00231	061804	061806
Temperature Chamber	01878	Thermotron	S1.2 Mini	7470	071904	071906
Digital Multimeter	01830	Fluke	45	6949042	012405	012406
DC Power Supply	01438	Topward	6306D	688614	NCR	NCR

NCR = No Calibration Required

Bandwidth Plots

Instrument	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00042	HP	8568B	2415A00481	061804	061806
Spectrum Analyzer Display Section	00043	HP	85662A	2403A07316	061804	061806
Quasi Peak Adapter	00090	HP	85650A	2043A00231	061804	061806
Loop Antenna	00314	EMCO	6502	2014	062804	062806
Antenna cable	NA	NA	RG214	Cable#15	010305	010306
Pre-amp to SA cable	NA	Pasternack	RG223/U	Cable#10	051304	051305

APPENDIX C:
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories Inc. • 180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.207 COND [AVE]**

Work Order #: **83332**

Date: 04/05/2005

Test Type: **Conducted Emissions**

Time: 8:45:53 AM

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 40

Manufacturer: NMB Technologies Corporation

Tested By: Eddie Wong

Model: 1045

110V 60Hz

S/N: 48

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	48

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 078
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	10422
Modem	Hayes	Smart Modem 1200	A32800153892

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the support computer placed on the table. A Parallel printer and a serial modem are connected to the support computer. The receiver is connected to a USB and Keyboard port of the computer. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. Receiver MS POC 065 Mouse 00345. Bandwidths used: For the range of 150 kHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequency range tested: 150 kHz to 30 MHz.

Transducer Legend:

T1=150kHz HPF 041605	T2=Cable #21 Conducted Site A 070205
T3=(L1) Insertion Loss 00847 EMCO 3816/2NM	

Measurement Data:

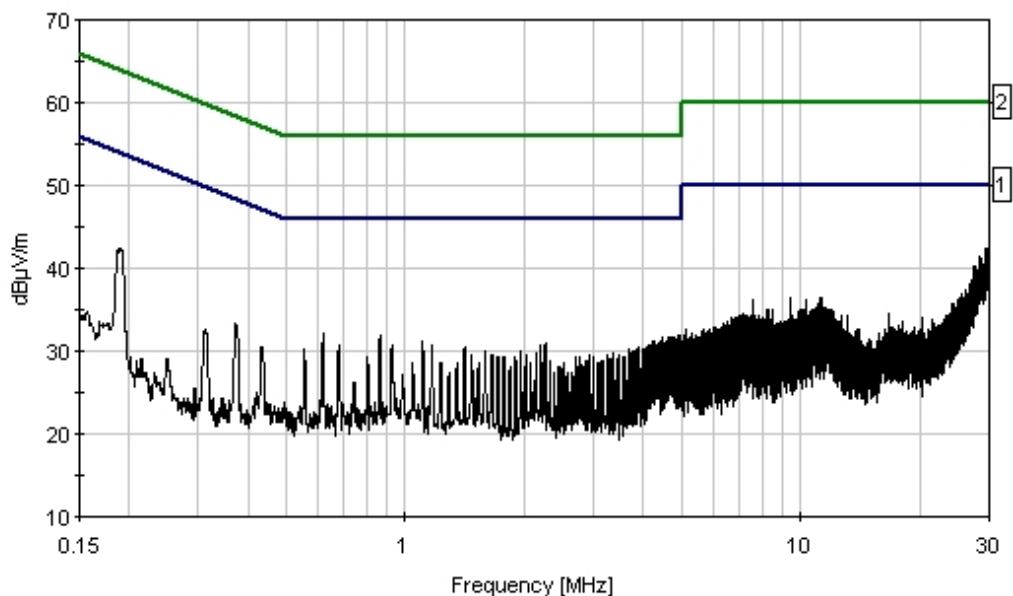
Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	29.164M	40.4	+0.2	+0.5	+1.3	+0.0	42.4	50.0	-7.6	Black
2	29.705M	40.3	+0.2	+0.5	+1.3	+0.0	42.3	50.0	-7.7	Black
3	28.417M	39.5	+0.2	+0.5	+1.2	+0.0	41.4	50.0	-8.6	Black
4	28.623M	39.4	+0.2	+0.5	+1.2	+0.0	41.3	50.0	-8.7	Black

5	29.287M	38.6	+0.2	+0.5	+1.3	+0.0	40.6	50.0	-9.4	Black
6	28.561M	38.6	+0.2	+0.5	+1.2	+0.0	40.5	50.0	-9.5	Black
7	28.657M	38.6	+0.2	+0.5	+1.2	+0.0	40.5	50.0	-9.5	Black
8	29.027M	38.5	+0.2	+0.5	+1.2	+0.0	40.4	50.0	-9.6	Black
9	27.705M	38.4	+0.2	+0.5	+1.2	+0.0	40.3	50.0	-9.7	Black
10	27.328M	38.6	+0.2	+0.4	+1.1	+0.0	40.3	50.0	-9.7	Black
11	28.075M	37.8	+0.2	+0.5	+1.2	+0.0	39.7	50.0	-10.3	Black
12	28.177M	37.2	+0.2	+0.5	+1.2	+0.0	39.1	50.0	-10.9	Black
13	27.088M	36.8	+0.2	+0.4	+1.1	+0.0	38.5	50.0	-11.5	Black
14	27.869M	36.6	+0.2	+0.5	+1.2	+0.0	38.5	50.0	-11.5	Black
15	188.542k	41.7	+0.8	+0.0	+0.0	+0.0	42.5	54.1	-11.6	Black

CKC Laboratories Inc. Date: 04/05/2005 Time: 8:45:53 AM NMB Technologies Corporation WVO#: 83332
 FCC 15.207 COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 40



— Sweep Data — 1 - FCC 15.207 COND [AVE] — 2 - FCC 15.207 COND [QP]

Test Location: CKC Laboratories Inc. • 180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.207 COND [AVE]**

Work Order #: **83332**

Date: 04/05/2005

Test Type: **Conducted Emissions**

Time: 8:51:15 AM

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 41

Manufacturer: NMB Technologies Corporation

Tested By: Eddie Wong

Model: 1045

110V 60Hz

S/N: 48

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	48

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 078
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	10422
Modem	Hayes	Smart Modem 1200	A32800153892

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the support computer placed on the table. a Parallel printer and a serial modem are connected to the support computer. The receiver is connected to a USB and Keyboard port of the computer. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. Receiver MS POC 065 Mouse 00345. Bandwidths used: For the range of 150 kHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequency range tested: 150 kHz to 30 MHz.

Transducer Legend:

T1=150kHz HPF 041605	T2=Cable #21 Conducted Site A 070205
T3=(L2) Insertion Loss 00847 EMCO 3816/2NM	

Measurement Data:

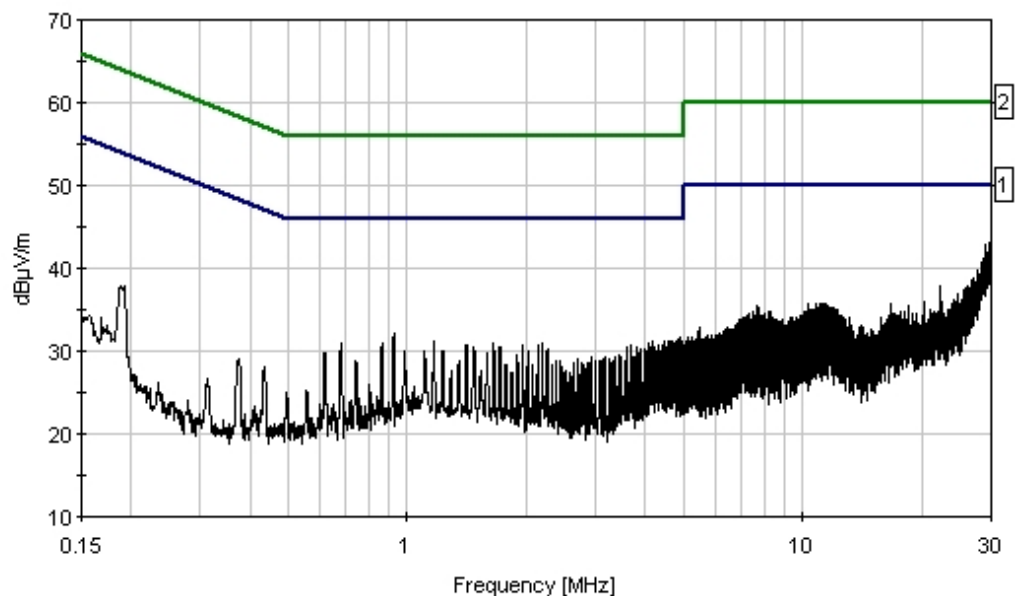
Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	29.719M	41.3	+0.2	+0.5	+1.2	+0.0	43.2	50.0	-6.8	White
2	29.651M	41.2	+0.2	+0.5	+1.2	+0.0	43.1	50.0	-6.9	White
3	29.603M	41.1	+0.2	+0.5	+1.2	+0.0	43.0	50.0	-7.0	White
4	28.869M	41.0	+0.2	+0.5	+1.1	+0.0	42.8	50.0	-7.2	White

5	29.952M	40.5	+0.2	+0.5	+1.2	+0.0	42.4	50.0	-7.6	White
6	28.260M	38.8	+0.2	+0.5	+1.1	+0.0	40.6	50.0	-9.4	White
7	28.342M	38.2	+0.2	+0.5	+1.1	+0.0	40.0	50.0	-10.0	White
8	27.650M	38.0	+0.2	+0.5	+1.1	+0.0	39.8	50.0	-10.2	White
9	27.102M	37.1	+0.2	+0.4	+1.0	+0.0	38.7	50.0	-11.3	White
10	26.725M	37.0	+0.2	+0.4	+1.0	+0.0	38.6	50.0	-11.4	White
11	27.547M	36.7	+0.2	+0.5	+1.1	+0.0	38.5	50.0	-11.5	White
12	27.410M	36.6	+0.2	+0.5	+1.1	+0.0	38.4	50.0	-11.6	White
13	26.793M	36.4	+0.2	+0.4	+1.0	+0.0	38.0	50.0	-12.0	White
14	26.183M	36.3	+0.2	+0.4	+1.0	+0.0	37.9	50.0	-12.1	White
15	27.136M	36.3	+0.2	+0.4	+1.0	+0.0	37.9	50.0	-12.1	White

CKC Laboratories Inc. Date: 04/05/2005 Time: 8:51:15 AM NMB Technologies Corporation WVO#: 83332
 FCC 15.207 COND [AVE] Test Lead: White 110V 60Hz Sequence#: 41



— Sweep Data — 1 - FCC 15.207 COND [AVE] — 2 - FCC 15.207 COND [QP]

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(a)**

Work Order #: **83332**

Date: 03/22/2005

Test Type: **Maximized Emissions**

Time: 14:55:02

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 1

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 1

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	1

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	00352
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 066

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the table top. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each channel. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 50%, Pressure: 100kPa. Bandwidths used: For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequencies tested: 27.095 MHz and 27.195 MHz.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=6502 Active Loop Antenna_062806

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	27.095M	42.8	+0.1	+0.5	+0.6	+8.9	+0.0	52.9	80.0	-27.1	Loop
2	27.195M	42.7	+0.1	+0.5	+0.6	+8.9	+0.0	52.8	80.0	-27.2	Loop
3	27.094M	41.2	+0.1	+0.5	+0.6	+8.9	+0.0	51.3	80.0	-28.7	Loop
4	27.195M	39.7	+0.1	+0.5	+0.6	+8.9	+0.0	49.8	80.0	-30.2	Loop

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(a)**

Work Order #: **83332**

Date: 03/22/2005

Test Type: **Maximized Emissions**

Time: 15:39:11

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 2

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 48

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	48

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	00345
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 065

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the table top. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each channel. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 50%, Pressure: 100kPa. Bandwidths used: For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequencies tested: 27.095 MHz and 27.195 MHz.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=6502 Active Loop Antenna_062806

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	27.095M	42.9	+0.1	+0.5	+0.6	+8.9	+0.0	53.0	80.0	-27.0	Loop
2	27.195M	42.8	+0.1	+0.5	+0.6	+8.9	+0.0	52.9	80.0	-27.1	Loop
3	27.095M	40.9	+0.1	+0.5	+0.6	+8.9	+0.0	51.0	80.0	-29.0	Loop
4	27.195M	40.7	+0.1	+0.5	+0.6	+8.9	+0.0	50.8	80.0	-29.2	Loop

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(a)**

Work Order #: **83332**

Date: 03/22/2005

Test Type: **Maximized Emissions**

Time: 16:03:30

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 3

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 77

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	77

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	10422
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 078

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the table top. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each channel. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 50%, Pressure: 100kPa. Bandwidths used: For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. Frequencies tested: 27.095 MHz and 27.195 MHz.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=6502 Active Loop Antenna_062806

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	27.095M	42.9	+0.1	+0.5	+0.6	+8.9	+0.0	53.0	80.0	-27.0	Loop
2	27.195M	42.8	+0.1	+0.5	+0.6	+8.9	+0.0	52.9	80.0	-27.1	Loop
3	27.195M	36.9	+0.1	+0.5	+0.6	+8.9	+0.0	47.0	80.0	-33.0	Loop
4	27.095M	36.3	+0.1	+0.5	+0.6	+8.9	+0.0	46.4	80.0	-33.6	Loop

Test Location: CKC Laboratories Inc. • 180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(b) / 15.209**

Work Order #: **83332**

Date: 03/23/2005

Test Type: **Maximized Emissions**

Time: 15:20:31

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 4

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 1

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	1

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	00352
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 066

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each of the two channels. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. This data sheet represents maximized emissions from a radiated emissions test from 4 MHz to 4 GHz. For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. For the range of 30 MHz to 1000 MHz, spectrum analyzer bandwidth=1 MHz, QPA bandwidth=120 kHz. For the range of 1000 MHz to 4000 MHz, the spectrum analyzer bandwidth=1 MHz, QPA bypassed.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=Preamp 8447D Asset 00010
T5=Chase bilog a/n 00851, s/n 2629	

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dB μ V	T5	dB	dB	dB	Table	dB μ V/m	dB μ V/m	dB	Ant
1	54.189M	43.3	+0.1	+0.6	+0.9	-27.2	+0.0	25.5	40.0	-14.5	Vert
			+7.8								
2	54.390M	43.2	+0.1	+0.7	+0.9	-27.2	+0.0	25.4	40.0	-14.6	Vert
			+7.7								
3	240.036M	43.2	+0.3	+1.7	+1.8	-26.5	+0.0	31.0	46.0	-15.0	Vert
			+10.5								

4	54.395M	42.8	+0.1 +7.7	+0.7	+0.9	-27.2	+0.0	25.0	40.0	-15.0	Horiz
5	54.195M	42.5	+0.1 +7.8	+0.6	+0.9	-27.2	+0.0	24.7	40.0	-15.3	Horiz
6	240.017M	42.1	+0.3 +10.5	+1.7	+1.8	-26.5	+0.0	29.9	46.0	-16.1	Horiz
7	244.752M	41.0	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	29.0	46.0	-17.0	Horiz
8	271.948M	40.0	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	28.2	46.0	-17.8	Horiz
9	270.949M	39.5	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	27.7	46.0	-18.3	Horiz
10	81.285M	38.5	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	21.4	40.0	-18.6	Horiz
11	81.576M	38.0	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	20.9	40.0	-19.1	Horiz
12	190.353M	37.2	+0.2 +10.5	+1.5	+1.6	-26.6	+0.0	24.4	43.5	-19.1	Vert
13	287.773M	37.4	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	25.9	46.0	-20.1	Horiz
14	81.586M	36.7	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	19.6	40.0	-20.4	Vert
15	81.284M	36.2	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	19.1	40.0	-20.9	Vert
16	271.759M	36.6	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	24.8	46.0	-21.2	Horiz
17	189.665M	35.2	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	22.3	43.5	-21.2	Horiz
18	189.666M	35.2	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	22.3	43.5	-21.2	Vert
19	298.043M	35.2	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	23.7	46.0	-22.3	Horiz
20	299.108M	34.7	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	23.2	46.0	-22.8	Horiz
21	271.914M	35.0	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	23.2	46.0	-22.8	Vert
22	270.949M	34.7	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	22.9	46.0	-23.1	Vert
23	216.794M	34.6	+0.3 +10.2	+1.6	+1.7	-26.6	+0.0	21.8	46.0	-24.2	Horiz
24	108.380M	33.0	+0.1 +10.7	+1.0	+1.2	-26.9	+0.0	19.1	43.5	-24.4	Vert
25	243.866M	33.2	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	21.2	46.0	-24.8	Horiz
26	244.681M	32.3	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	20.3	46.0	-25.7	Vert
27	108.780M	31.4	+0.1 +10.7	+1.0	+1.2	-26.9	+0.0	17.5	43.5	-26.0	Vert
28	243.856M	31.4	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	19.4	46.0	-26.6	Vert

Test Location: CKC Laboratories Inc. • 180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(b) / 15.209**

Work Order #: **83332**

Date: 03/23/2005

Test Type: **Maximized Emissions**

Time: 16:42:49

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 5

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 48

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	48

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 065
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	00345

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each of the two channels. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. This data sheet represents maximized emissions from a radiated emissions test from 4 MHz to 4 GHz. For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. For the range of 30 MHz to 1000 MHz, spectrum analyzer bandwidth=1 MHz, QPA bandwidth=120 kHz. For the range of 1000 MHz to 4000 MHz, the spectrum analyzer bandwidth=1 MHz, QPA bypassed.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=Preamp 8447D Asset 00010
T5=Chase bilog a/n 00851, s/n 2629	

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	54.392M	43.6	+0.1	+0.7	+0.9	-27.2	+0.0	25.8	40.0	-14.2	Vert
			+7.7								
2	54.194M	43.1	+0.1	+0.6	+0.9	-27.2	+0.0	25.3	40.0	-14.7	Vert
			+7.8								

3	54.391M	42.9	+0.1 +7.7	+0.7	+0.9	-27.2	+0.0	25.1	40.0	-14.9	Horiz
4	240.078M	43.1	+0.3 +10.5	+1.7	+1.8	-26.5	+0.0	30.9	46.0	-15.1	Horiz
5	240.023M	42.9	+0.3 +10.5	+1.7	+1.8	-26.5	+0.0	30.7	46.0	-15.3	Vert
6	54.198M	41.9	+0.1 +7.8	+0.6	+0.9	-27.2	+0.0	24.1	40.0	-15.9	Horiz
7	244.789M	40.8	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	28.8	46.0	-17.2	Horiz
8	271.939M	40.0	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	28.2	46.0	-17.8	Horiz
9	81.286M	37.8	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	20.7	40.0	-19.3	Horiz
10	81.586M	37.7	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	20.6	40.0	-19.4	Horiz
11	270.939M	38.1	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	26.3	46.0	-19.7	Horiz
12	81.586M	36.8	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	19.7	40.0	-20.3	Vert
13	189.660M	35.8	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	22.9	43.5	-20.6	Horiz
14	190.368M	35.3	+0.2 +10.5	+1.5	+1.6	-26.6	+0.0	22.5	43.5	-21.0	Vert
15	189.663M	34.7	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	21.8	43.5	-21.7	Vert
16	216.011M	36.7	+0.3 +10.1	+1.6	+1.7	-26.6	+0.0	23.8	46.0	-22.2	Vert
17	190.360M	33.9	+0.2 +10.5	+1.5	+1.6	-26.6	+0.0	21.1	43.5	-22.4	Horiz
18	271.939M	34.5	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	22.7	46.0	-23.3	Vert
19	299.075M	33.8	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	22.3	46.0	-23.7	Horiz
20	270.943M	34.0	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	22.2	46.0	-23.8	Vert
21	297.988M	33.4	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	21.9	46.0	-24.1	Horiz
22	216.672M	34.1	+0.3 +10.2	+1.6	+1.7	-26.6	+0.0	21.3	46.0	-24.7	Horiz
23	244.766M	32.8	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	20.8	46.0	-25.2	Vert

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **NMB Technologies Corporation**

Specification: **FCC 15.227(b) / 15.209**

Work Order #: **83332**

Date: 03/23/2005

Test Type: **Maximized Emissions**

Time: 17:33:07

Equipment: **27 MHz Wireless Keyboard**

Sequence#: 6

Manufacturer: NMB Technologies Corporation

Tested By: Stuart Yamamoto

Model: 1045

S/N: 77

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
27 MHz Wireless Keyboard*	NMB Technologies Corporation	1045	77

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Dell Corporation	Optiplex GX260	C4HVL11
Monitor	Dell	P793	KR-04D025-47602-23Q-D9ZX
USB Zip Drive	ZIP Disk	Z100USB	PSA009A07M
Printer	Lexmark	Z53	03230287625
Mouse	Logitech	M-SAW34	LZB21670338
Wireless Optical Desktop Receiver 3.0A	Microsoft Corporation	1029	MS POC 078
Wireless IntelliMouse Explorer 2.0	Microsoft Corporation	1007	10422

Test Conditions / Notes:

The equipment under test (EUT) is a 27 MHz wireless keyboard. The EUT is stand alone on the tabletop. The EUT is continuously sending the letter "H" to the computer located adjacent to the table. The data represented is for the EUT transmitting on each of the two channels. Power for the EUT is supplied by two new AA batteries. Temperature: 18°C, Humidity: 45%, Pressure: 100kPa. This data sheet represents maximized emissions from a radiated emissions test from 4 MHz to 4 GHz. For the range of 4 MHz to 30 MHz, spectrum analyzer bandwidth=100 kHz, QPA bandwidth=9 kHz. For the range of 30 MHz to 1000 MHz, spectrum analyzer bandwidth=1 MHz, QPA bandwidth=120 kHz. For the range of 1000 MHz to 4000 MHz, the spectrum analyzer bandwidth=1 MHz, QPA bypassed.

Transducer Legend:

T1=Cable #22 080905	T2=Cable #33 44ft. RG-214/U
T3=Cable Heliac #17 84ft(10 meter) 100205	T4=Preamp 8447D Asset 00010
T5=Chase bilog a/n 00851, s/n 2629	

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	240.023M	43.7	+0.3	+1.7	+1.8	-26.5	+0.0	31.5	46.0	-14.5	Vert
			+10.5								
2	54.391M	43.3	+0.1	+0.7	+0.9	-27.2	+0.0	25.5	40.0	-14.5	Vert
			+7.7								

3	240.025M	43.4	+0.3 +10.5	+1.7	+1.8	-26.5	+0.0	31.2	46.0	-14.8	Horiz
4	54.190M	42.9	+0.1 +7.8	+0.6	+0.9	-27.2	+0.0	25.1	40.0	-14.9	Vert
5	54.394M	42.8	+0.1 +7.7	+0.7	+0.9	-27.2	+0.0	25.0	40.0	-15.0	Horiz
6	54.190M	42.2	+0.1 +7.8	+0.6	+0.9	-27.2	+0.0	24.4	40.0	-15.6	Horiz
7	244.748M	40.0	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	28.0	46.0	-18.0	Horiz
8	215.995M	38.1	+0.3 +10.1	+1.6	+1.7	-26.6	+0.0	25.2	43.5	-18.3	Vert
9	271.949M	39.4	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	27.6	46.0	-18.4	Horiz
10	270.898M	38.8	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	27.0	46.0	-19.0	Horiz
11	81.586M	37.6	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	20.5	40.0	-19.5	Horiz
12	81.586M	37.2	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	20.1	40.0	-19.9	Vert
13	81.286M	36.2	+0.1 +7.8	+0.9	+1.1	-27.0	+0.0	19.1	40.0	-20.9	Horiz
14	108.787M	36.0	+0.1 +10.7	+1.0	+1.2	-26.9	+0.0	22.1	43.5	-21.4	Vert
15	243.904M	36.4	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	24.4	46.0	-21.6	Horiz
16	189.663M	34.7	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	21.8	43.5	-21.7	Horiz
17	189.666M	34.6	+0.2 +10.5	+1.4	+1.6	-26.6	+0.0	21.7	43.5	-21.8	Vert
18	190.371M	34.3	+0.2 +10.5	+1.5	+1.6	-26.6	+0.0	21.5	43.5	-22.0	Vert
19	162.569M	33.1	+0.2 +12.0	+1.3	+1.5	-26.7	+0.0	21.4	43.5	-22.1	Horiz
20	272.005M	34.9	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	23.1	46.0	-22.9	Vert
21	190.367M	33.3	+0.2 +10.5	+1.5	+1.6	-26.6	+0.0	20.5	43.5	-23.0	Horiz
22	298.034M	33.5	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	22.0	46.0	-24.0	Horiz
23	299.102M	33.4	+0.3 +10.7	+1.9	+2.0	-26.4	+0.0	21.9	46.0	-24.1	Horiz
24	217.556M	34.4	+0.3 +10.2	+1.6	+1.7	-26.6	+0.0	21.6	46.0	-24.4	Horiz
25	270.927M	33.0	+0.3 +10.6	+1.8	+2.0	-26.5	+0.0	21.2	46.0	-24.8	Vert
26	216.760M	33.4	+0.3 +10.2	+1.6	+1.7	-26.6	+0.0	20.6	46.0	-25.4	Horiz
27	244.738M	31.4	+0.3 +10.5	+1.8	+1.9	-26.5	+0.0	19.4	46.0	-26.6	Vert