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Electromagnetic Emissions Test Report and Application for Grant of Equipment Authorization pursuant to FCC Part 15, Subpart C (15.247) DTS Specifications and Industry Canada RSS 210 Issue 5 for an Intentional Radiator on the OQO Model 01

FCC ID:	SHD-A4YWFS
GRANTEE:	OQO 1800 Illinois Steet San Francisco, CA. 94124
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Avenue Sunnyvale, CA 94086
AND:	Elliott Laboratories, Inc. 41039 Boyce Road Fremont, CA. 94538
REPORT DATE:	October 21, 2004
FINAL TEST DATE:	October 12, October 16, October 19 and October 20, 2004
AUTHORIZED SIGNATORY:	Mark Briggs Vice President of Engineering

ACCREDITED

DECLARATIONS OF COMPLIANCE

Equipment Name and Model:

Ultra Personal Computer Model 01

Manufacturer:

OQO
1800 Illinois Steet
San Francisco, CA. 94124

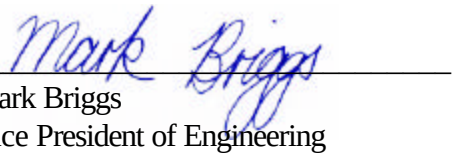
Tested to applicable standards:

RSS-210, Issue 5, November 2001 (Low Power License-Exempt Radiocommunication Devices)
FCC Part 15.247 (DTS, FHSS)

Measurement Facility Description Filed With Department of Industry:

Departmental Acknowledgement Number: IC4549-3 **Fremont Chamber 3**
Departmental Acknowledgement Number: IC4549-5 **Fremont Chamber 5**

I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned departmental standards (through the use of ANSI C63.4 as detailed in section 5.3 of RSS-210, Issue 5); and that the equipment performed in accordance with the data submitted in this report.

Signature	
Name	Mark Briggs
Title	Vice President of Engineering
Company	Elliott Laboratories Inc.
Address	684 W. Maude Ave Sunnyvale, CA 94086 USA
Date:	October 21, 2004

Maintenance of compliance with the above standards is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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SCOPE

An electromagnetic emissions test has been performed on the OQO Model 01 pursuant to Subpart C of Part 15 of FCC Rules for intentional radiators and RSS-210 Issue 5 for licence-exempt low power devices. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4-1992 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the OQO Model 01 and therefore apply only to the tested sample. The sample was selected and prepared by David Seniawski of OQO.

OBJECTIVE

The primary objective of the manufacturer is compliance with Subpart C of Part 15 of FCC Rules and RSS-210 Issue 5 for license-exempt low power devices for the radiated and conducted emissions of intentional radiators. Certification of these devices is required as a prerequisite to marketing as defined in Part 2 the FCC Rules.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to the FCC. The FCC issues a grant of equipment authorization upon successful completion of their review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units which are subsequently manufactured.

SUMMARY OF RESULTS (DTS)

FCC Part 15 Section	RSS 210 Section	Description	Measured Value	Comments	Result
15.247(a)	6.2.2(o)(b)	Digital Modulation	Systems uses DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	6.2.2(o)(b)	6dB Bandwidth	12.2 MHz	Minimum allowed is 500kHz	Complies
	RSP 100	99% Bandwidth	16.4 MHz	For information only	Complies
15.247 (b) (3)	6.2.2(o)(b)	Output Power, 2400 - 2483.5 MHz	13.4 dBm (0.022 Watts) EIRP = 0.022 W	Multi-point applications: Maximum permitted is 1Watt, with EIRP limited to 4 Watts.	Complies
15.247(d)	6.2.2(o)(b)	Power Spectral Density	-15.3 dBm / MHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	6.2.2(o)(e1)	Antenna Port Spurious Emissions	N/A	Antenna port not accessible	N/A
15.247(c) / 15.209		Radiated Spurious Emissions – 30MHz – 26GHz	-1.3dB @ 2439.0MHz (52.7dBuV/m, 431.5uV/m @3m)	Emissions in restricted bands must meet the radiated emissions limits detailed in 15.207. All others must be < -20dBc	Complies
15.207		AC Conducted Emissions	52.5 dBuV @ 0.876 MHz (-3.5 dB)		Complies
	6.6	AC Conducted Emissions	N/A	Canadian certification not required at this time	Complies
15.247 (b) (5)		RF Exposure Requirements	Portable device, SAR evaluation preformed	Refer to SAR report for 802.11b transceiver which includes SAR data with Bluetooth and 802.11b transmitting simultaneously	Complies
15.203		RF Connector	Antenna is integral to the device	Unique antenna connection required for user-installed applications.	Complies

EIRP and power calculated directly from the field strength measurement.

SUMMARY OF RESULTS (FHSS)

FCC Part 15 Section	RSS 210 Section	Description	Measured Value	Comments	Result
15.247	6.2.2(o)(a)	20dB Bandwidth	825 kHz	The channel spacing shall be greater than the 20dB bandwidth	Complies
15.247	6.2.2(o)(a)	Channel Separation	1000		Complies
15.247 (a) (1)	6.2.2(o)(a)	Number of Channels	79 (Data shows 75 channels being used)	**2400- 2483.5 MHz**: The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.	Complies
15.247 (a) (1) (iii)	6.2.2(o)(a)	Channel Dwell Time	0.4 seconds per 75 seconds		Complies
15.247 (a) (1)	6.2.2(o)(a)	Channel Utilization	All channels are used equally	The system uses the Bluetooth algorithm and, therefore, meets all requirements for channel utilization.	Complies
15.247 (b) (3)	6.2.2(o)(a)	Output Power, 2400 - 2483.5 MHz	-12.5 dBm (0.0006 Watts) EIRP = 0.0006 W	**2400 – 2483.5 MHz** Maximum permitted is 1Watt, with EIRP limited to 4 Watts	Complies
15.247(c)	6.2.2(o)(e1)	Spurious Emissions – 30MHz – 25GHz	N/A	Antenna port not accessible	N/A
15.247(c) / 15.209		Radiated Spurious Emissions 30MHz – 25GHz	-22.0dB @ 1123.5 MHz (32dBuV/m, 39.8uV/m @3m)	Emissions in restricted bands must meet the radiated emissions limits detailed in 15.207. All others must be < -20dBc	Complies
15.207		AC Conducted Emissions	52.5 dBuV @ 0.876 MHz (-3.5 dB)		Complies
	6.6	AC Conducted Emissions	N/A	Canadian certification not required at this time	Complies
15.247 (b) (5)		RF Exposure Requirements	Device is below threshold for SAR	Refer to SAR report for 802.11b transceiver which includes SAR data with Bluetooth and 802.11b transmitting simultaneously	Complies
15.203		RF Connector	Antenna is integral to the device	Unique antenna connection required for user-installed applications.	Complies

EIRP and power calculated directly from the field strength measurement.

MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.6

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The OQO Model 01 is an Ultra Personal Computer. Normally, the EUT would be placed on a tabletop during operation. The EUT was, therefore, treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, 0.5 Amps

One sample was received on October 12, 2004 and tested for power and radiated spurious emissions on October 12, October 16, October 19 and October 20, 2004:

Manufacturer	Model	Description	Serial Number	FCC ID
OQO	01	Ultra Personal Computer	Not serialized (Power, Radiated spurious emissions)	SHD-A4YWFS
OQO	None	Docking Cable		None
OQO	None	Power Supply	20204360015	None

A different sample was provided for AC conducted emissions testing and digital device emissions below 1GHz. This sample was received and tested on 15 July 2004.

Manufacturer	Model	Description	Serial Number	FCC ID
OQO	01	Ultra Personal Computer	4260005 (AC conducted emissions)	SHD-A4YWFS
OQO	None	Power Supply	20234230156	None

OTHER EUT DETAILS

The EUT contains two transceiver modules operating in the 2.4GHz unlicensed band. The first is a Bluetooth transceiver that uses FHSS. The second is an 802.11b wireless networking device. The 802.11b devices has two antennas (for spatial diversity), both of which are integrated into the device. Whichever of these antennas is not being used by the 802.11b transceiver is used by the Bluetooth transceiver. Selection between antennas is made via a diversity switch on the 802.11b transceiver board.

The antennas are not accessible to the end user and meet the requirements of 15.203.

ENCLOSURE

The EUT(Model 01 Ultra Personal Computer) enclosure is primarily constructed of magnesium. It measures approximately 10 cm wide by 7 cm deep by 2 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with the emission specifications.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for radiated spurious emissions testing:

Manufacturer/Model/Description	Serial Number	FCC ID Number
Epson Printer		
Netgear DS104 Hub	DS1413CDB107562	DoC

The following equipment was used as local support equipment for ac conducted emissions testing:

Manufacturer	Model	Description	Serial Number
Sony (x2)	MDR-V300	Headset	None
Intelligent Stick	20	512MB USB Storage	None
Apple	iPOD A1019	Firewire Hard drive	U22325TEMMC
Netgear	DS104	Ethernet Hub	DS1413CDB107562
Samsung	171N	LCD Monitor	NB17HCJWB02528M
Attaché	D64MB	USB Storage	511-040203002

EUT INTERFACE PORTS

The I/O cabling configuration during radiated spurious emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
USB	Printer	Multiwire	Shielded	1
DC Power	AC-DC Adpater DC out		unshielded	1.5
AC In	AC power	2-wire	unshielded	1.5
ethernet	Hub	Cat 5	unshielded	4

The I/O cabling configuration during AC conducted emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
USB #1	Intelligent Stick USB Storage Device	None	Shielded Port (Direct Connection, No Cable)	N/A
Headset	Headset (MDRV300)	Audio Wire w/ Clamp-On Ferrite	Unshielded	3.0
Firewire #1	iPOD	Firewire w/ Integral Ferrites	Shielded	1.0
Firewire #2	Unterminated	Firewire w/ Integral Ferrites	Shielded	1.5
USB #2	Attaché Model D64MB USB Storage Device	None	Shielded Port (Direct Connection, No Cable)	N/A
Line Out	Headset (MDRV300)	Audio Wire w/ Clamp-On Ferrite	Unshielded	3.0
Ethernet	Netgear	Cat 5 w/ Integral Ferrites	Shielded	3.0
VGA	Monitor	VGA Cable	Shielded	2.5
DC Power	Power Supply	Power Cable (5 Wire)	Unshielded	2.0

EUT OPERATION DURING TESTING

EUT was transmitting at maximum nominal power for both Bluetooth (power setting in Bluetest control software was 63) and 802.11b (default setting in the HWLAN software tool), on low, middle, and high channels.

For transmitter spurious emissions and power measurements the EUT was continuously transmitting on either (or both) transceivers. Preliminary scans showed that no additional signals were observed with both devices transmitting simultaneously. For receiver spurious emissions measurements the EUT was in receive mode on both transceivers

For channel occupancy tests on the Bluetooth transceiver it was configured to operate in hopping mode across all available channels.

For AC conducted emissions measurements the EUT was transmitting link beacons (i.e. periodically) on both transceivers.

Preliminary measurements with the screen in the down position (covering the keyboard) and open position (keyboard exposed) demonstrated that both fundamental signal level and spurious emissions were slightly higher (1-4dB) with the screen open. All measurements were made with the screen open.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on October 12, October 16, October 19 and October 20, 2004at the Elliott Laboratories Open Area Test Site #2 located at 684 West Maude Avenue, Sunnyvale, California and Chamber #5 located at 41039 Boyce Road, Fremont, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Federal Communications Commission. In accordance with Industry Canada rules detailed in RSS 210 Issue 5 and RSS-212, construction, calibration, and equipment data for the test sites have been filed with the Federal Communications Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4-1992. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde and Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

POWER METER

A power meter and peak power sensor are used for all direct output power measurements from transmitters as they provide a broadband indication of the power output.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The FCC requires that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth which results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions which have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements are performed with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.

Measurement bandwidths (video and resolution) are set in accordance with FCC procedures for the type of radio being tested.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions from the AC power port are given in units of microvolts, the limits for radiated electric field emissions are given in units of microvolts per meter at a specified test distance and the output power limits are given in temrs of Watts, milliwatts or dBm. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp) the following formula is used to determine the field strength limit in terms of microvolts per meter at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \text{ v } 30\ P}{3} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

For reference, converting the voltage and electric field strength specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. Conversion of power specification limits from linear units (in milliwatts) to decibel form (in dBm) is accomplished by taking the base ten logarithm, then multiplying by 10.

FCC 15.407 (a)and RSS 210 (o) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

DTS

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watts (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watts (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watts (30 dBm)	8 dBm/3kHz

FHSS

Operating Frequency (MHz)	Number Of Channels	Output Power
902 – 928	>=50	1 W (30 dBm)
902 – 928	< 50	0.25 W (24 dBm)
2400 – 2483.5	>= 75	1 W (30 dBm)
2400 – 2483.5	< 75	0.125 W (21 dBm)
5725 – 5850	>=75	1 W (30 dBm)

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

RSS 210 (o) AND FCC 15.247 SPURIOUS RADIATED EMISSIONS LIMITS

T limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands detailed in Part 15.205 and for all spurious emissions from the receiver are:

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level.

FCC 15.205 AC POWER PORT CONDUCTED EMISSIONS LIMITS

The table below shows the limits for emissions on the AC power line as detailed in FCC Part 15.205.

Frequency (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

RSS-210 SECTION 6.6 AC POWER PORT CONDUCTED EMISSIONS LIMITS

The table below shows the limits for emissions on the AC power line as detailed in Industry Canada RSS-210 section 6.6.

Frequency Range (MHz)	Limit (uV)	Limit (dBuV)
0.450 to 30.000	250	48

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - B = C$$

and

$$C - S = M$$

where:

R_r = Receiver Reading in dBuV

B = Broadband Correction Factor*

C = Corrected Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

* Broadband Level - Per ANSI C63.4, 13 dB may be subtracted from the quasi-peak level if it is determined that the emission is broadband in nature. If the signal level in the average mode is six dB or more below the signal level in the peak mode, the emission is classified as broadband.

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

EXHIBIT 1: Test Equipment Calibration Data

2 Pages

Power, PSD, and Radiated Emissions, 1000 - 26,500 MHz, 16-Oct-04
Engineer: Juan Martinez

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	08-Jan-05
Hewlett Packard	EMC Spectrum Analyzer 9KHz-26.5GHz, non programmable	8563E	284	15-Mar-05
EMCO	Horn Antenna, D. Ridge 1-18GHz	3115	868	20-Apr-06
Rohde & Schwarz	Peak Power Sensor 100uW - 2 Watts	NRV-Z32	1536	22-Apr-05

Radiated Emissions, 1000 - 26,500 MHz, 19-Oct-04
Engineer: Juan Martinez

Manufacturer	Description	Model #	Asset #	Cal Due
Narda West	High Pass Filter 4.0 GHz,	HXF370	247	19-Apr-05
EMCO	Horn Antenna, D. Ridge 1-18GHz	3115	487	13-May-06
Hewlett Packard	EMC Spectrum Analyzer 9kHz - 6.5GHz	8595EM	787	10-Dec-04
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	12-Jan-05
Filtek	High Pass Filter, 1GHz	HP12/1000-5BA	955	12-Apr-05

Radiated Emissions, 30 - 1,000 MHz, 20-Oct-04
Engineer: Mark Briggs

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	EMC Spectrum Analyzer 9kHz - 6.5GHz	8595EM	780	26-Feb-05

Radiated Emissions, 30 - 1,000 MHz, 02-Jul-04
Engineer: Ed Pavlu

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20Hz-7GHz	ESIB7	1538	26-May-05
Sunol Sciences	Biconilog, 30-3000MHz	JB3	1548	29-Mar-05
Com-Power	Pre Amplifier , 30-1000MHz	PA-103	1633	27-Jan-05

Conducted Emissions - Ethernet Ports, 02-Jul-04
Engineer: Ed Pavlu

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	Test Receiver, 0.009-30 MHz	ESH3	215	09-Sep-04
EMCO	LISN, 10kHz-100MHz	3825/2	1292	25-Jun-05
EMCO	LISN, 10kHz-100MHz	3825/2	1293	25-Jun-05
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1401	27-Feb-05

Conducted Emissions - AC Power , 02-Jul-04
Engineer: Ed Pavlu

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	Test Receiver, 0.009-30 MHz	ESH3	215	09-Sep-04
EMCO	LISN, 10kHz-100MHz	3825/2	1292	25-Jun-05
EMCO	LISN, 10kHz-100MHz	3825/2	1293	25-Jun-05
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1401	27-Feb-05

Radiated Emissions, 30 - 5000 MHz, 13-Jul-04
Engineer: Vishal Narayan

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Horn Antenna, D. Ridge 1-18GHz	3115	868	20-Apr-06
Miteq	Preamplifier, 1-18GHz	AFS44	1540	05-May-05
Com-Power	Pre Amplifier, 30-1000MHz	PA-103	1543	26-Nov-04
Rohde & Schwarz	EMI Test Receiver, 20Hz-7GHz	ESIB7	1630	05-Jan-05
Sunol Sciences	Biconilog, 30-3000MHz	JB3	1657	24-Feb-05

Conducted Emissions - AC Power Ports, 15-Jul-04
Engineer: Elijah Garcia

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	LISN, 10kHz-100MHz	3825/2	1292	25-Jun-05
Fischer Custom Comm.	LISN, 25A	FCC-LISN-50/250-25-2-01	1575	22-Jan-05
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1594	04-May-05
Rohde & Schwarz	EMI Test Receiver, 20Hz-7GHz	ESIB7	1630	05-Jan-05

EXHIBIT 2: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T57502 (Transmitter Measurements)	37Pages
T56232 (AC Conducted Emissions)	17Pages

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	
Contact:	Bob H, Massood		
Emissions Spec:	FCC Part 15.247, RSS 210	Class:	-
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

OQO

Model

Model 01

Date of Last Test: 11/5/2004

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	
Contact:	Bob H, Massood		
Emissions Spec:	FCC Part 15.247, RSS 210	Class:	-
Immunity Spec:	-	Environment:	-

EUT INFORMATION

General Description

The EUT is an Ultra Personal Computer. Normally, the EUT would be placed on a tabletop during operation. The EUT was, therefore, treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, 0.5 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
OQO	01	Ultra Personal Computer	Not serialized	SHD-A4YWFS
OQO	None	Docking Cable		None
OQO	None	Power Supply	20204360015	None

Other EUT Details

The EUT contains two transceivers operating in the 2.4GHz unlicensed band. The first is a Bluetooth transceiver that uses FHSS and has an antenna incorporated into the EUT. The second is an 802.11b wireless networking device. The 802.11b devices has two antennas (for spatial diversity), both of which are integrated into the device. the antennas are not accessible to the end user and meet the requirements of 15.203.

EUT Enclosure

The EUT(Model 01 Ultra Personal Computer) enclosure is primarily constructed of magnesium. It measures approximately 10 cm wide by 7 cm deep by 2 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	-

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	
Contact:	Bob H, Massood		
Emissions Spec:	FCC Part 15.247, RSS 210	Class:	-
Immunity Spec:	-	Environment:	-

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Epson		Printer		
Netgear		Hub		

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Interface Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
USB	Printer	Multiwire	Shielded	1
DC Power	AC-DC Adpater DC out		unshielded	1.5
AC In	AC power	2-wire	unshielded	1.5
ethernet	Hub	Cat 5	unshielded	4

The configuration was such that the minimum system configuration requirements of ANSI C63.4 for a PC were met.

EUT Operation During Emissions

EUT was transmitting at maximum power, for both bluetooth(power setting in Bluetest was 63) and 802.11b (default setting in the HWLAN software tool), on low, middle, and high channels. For spurious emissions and power measurements the EUT was continuously transmitting on either (or both) transceivers. For channel occupancy tests on the Bluetooth transceiver it was configured to operate in hopping mode across all available channels.

Preliminary measurements with the screen in the down position (covering the keyboard) and open position (keyboard exposed) demonstrated that both fundamental signal level and spurious emissions were slightly higher (1-4dB) with the screen open. All measurements were made with the screen open.

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 10/16/2004
Test Engineer: Juan Martinez
Test Location: Fremont Chamber #5

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located underneat table.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Radiated method was used to measure the power, 6-dB BW, and PSD.

Ambient Conditions:

Temperature: 16 °C
Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-1.4dB @ 2390.0MHz
2	6dB Bandwidth	15.247(a)	Pass	12.2 MHz
3	Output Power	15.247(b)	Pass	13 dBm
4	Power Spectral Density (PSD)	15.247(d)	Pass	-15.9 dBm/3kHz

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25000 MHz. Low Channel @ 2412 MHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2412.000	78.2	V	-	-	AVG	268	1.1	Side, Note 2
2412.000	85.2	V	-	-	PK	268	1.1	Side, Note 2
2412.000	70.0	H	-	-	AVG	263	1.0	Side, Note 2
2412.000	77.9	H	-	-	PK	263	1.0	Side, Note 2
2412.000	78.2	H	-	-	AVG	157	1.1	Upright, Note 2
2412.000	85.2	H	-	-	PK	157	1.1	Upright, Note 2
2412.000	84.4	V	-	-	AVG	81	1.3	Upright, Note 2
2412.000	91.3	V	-	-	PK	81	1.3	Upright, Note 2
2412.000	86.6	H	-	-	AVG	43	1.8	Laying Flat, Note 2
2412.000	93.4	H	-	-	PK	43	1.8	Laying Flat, Note 2
2412.000	77.6	V	-	-	AVG	216	1.0	Laying Flat, Note 2
2412.000	84.6	V	-	-	PK	216	1.0	Laying Flat, Note 2

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	52.6	V	54.0	-1.4	AVG	216	1.0	Bandedge. Laying Flat (Note 2)
2390.000	52.5	H	54.0	-1.5	AVG	43	1.8	Bandedge. Laying Flat (Note 2)
2390.000	65.5	V	74.0	-8.5	PK	216	1.0	Bandedge. Laying Flat (Note 2)
2390.000	64.5	H	74.0	-9.5	PK	43	1.8	Bandedge. Laying Flat (Note 2)

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20 dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.
Note 3:	All spurious at same or lower level compared to antenna #2.

Run #1b: Radiated Spurious Emissions, 30 - 25000 MHz. Center Channel @ 2437 MHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2437.000	84.7	V	-	-	PK	270	1.1	Side, Note 2
2437.000	77.3	H	-	-	PK	264	1.3	Side, Note 2
2437.000	82.3	H	-	-	PK	118	1.7	Upright, Note 2
2437.000	89.2	V	-	-	PK	84	1.3	Upright, Note 2
2437.000	82.5	V	-	-	PK	198	1.0	Laying Flat, Note 2
2437.000	89.9	H	-	-	PK	82	1.7	Laying Flat, Note 2

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.
Note 3:	All spurious at same or lower level compared to antenna #2.

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25000 MHz. High Channel @ 2462 MHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2462.000	77.9	V	-	-	AVG	270	1.1	Side, Note 2
2462.000	84.9	V	-	-	PK	270	1.1	Side, Note 2
2462.000	69.6	H	-	-	AVG	263	1.3	Side, Note 2
2462.000	77.5	H	-	-	PK	263	1.3	Side, Note 2
2462.000	81.2	V	-	-	AVG	82	1.6	Upright, Note 2
2462.000	88.1	V	-	-	PK	82	1.6	Upright, Note 2
2462.000	75.8	H	-	-	AVG	157	1.7	Upright, Note 2
2462.000	83.0	H	-	-	PK	157	1.7	Upright, Note 2
2462.000	74.3	V	-	-	AVG	210	1.0	Laying Flat, Note 2
2462.000	81.6	V	-	-	PK	210	1.0	Laying Flat, Note 2
2462.000	81.5	H	-	-	AVG	82	1.4	Laying Flat, Note 2
2462.000	88.4	H	-	-	PK	82	1.4	Laying Flat, Note 2

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	51.7	H	54.0	-2.3	AVG	82	1.4	Bandedge. Laying Flat (Note 2)
2483.500	51.7	V	54.0	-2.3	AVG	210	1.0	Bandedge. Laying Flat (Note 2)
2483.500	64.7	H	74.0	-9.3	PK	82	1.4	Bandedge. Laying Flat (Note 2)
2483.500	64.4	V	74.0	-9.6	PK	210	1.0	Bandedge. Laying Flat (Note 2)

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.
Note 3:	All spurious at same or lower level compared to antenna #2.

Run #2: Signal Bandwidth

Channel	Frequency (MHz)	Resolution Bandwidth	6dB Signal Bandwidth (MHz)	99% BW (MHz)	Comment
Low	2412	100 kHz	12.1	16.1	Laying Flat
Mid	2437	100 kHz	12.2	16.2	Laying Flat
High	2462	100 kHz	12.1	16.4	Laying Flat

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #3: Output Power

Channel	Frequency (MHz)	Field Strength at 3m (dBuV/m)	Antenna Pol. (H/V)	Res BW	Output Power (EIRP, dBm)
Laying Flat					
Low	2412	108.3	H	Note 1	**13.0**
Mid	2437	104.8	H	Note 1	**9.5**
High	2462	102.8	H	Note 1	**7.5**
Side					
Low	2412	100.0	V	Note 1	4.7
Mid	2437	98.8	V	Note 1	3.5
High	2462	99.2	V	Note 1	3.9
Upright					
Low	2412	105.9	V	Note 1	10.6
Mid	2437	103.7	V	Note 1	8.4
High	2462	102.8	V	Note 1	7.5

Power calculation using highest EIRP from the table above

EIRP	Gain	Conducted Power	
(dBm)	(dBi)	dBm	W
13.0	-3	16.0	0.040

Note 1:	Output power calculated from radiated field strength measured at a 3m distance. Field strength was measured using RBW=VBW=10MHz (i.e. a peak power measurement). 6-dB BW of the signal was about 12 MHz wide. Further correction was made from a RBW =10MHz to a 12MHz Bandwidth by using 10 * log (6-dB BW / Instruments RBW). Measured only the highest level from each polarization. All data is recorded in run# 1

Run #4: Power Spectral Density

Channel	Frequency (MHz)	Res BW	P.S.D. per 3kHz (averaged over 1		Comment
			dBuV/m at 3m	dBm/3kHz	
Low	2412	3 kHz	79.4	-15.9	Laying Flat
Mid	2437	3 kHz	75.1	-20.2	Laying Flat
High	2462	3 kHz	73.0	-22.3	Laying Flat

Note 1:	PSD measured using RB=VB=3kHz, span = 300kHz, sweep time = 100 s [(span/3kHz) seconds]

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 10/16/2004
Test Engineer: Juan Martinez
Test Location: Fremont Chamber #5

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located underneat table.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Radiated method was used to measure the power, 6-dB BW, and PSD.

Ambient Conditions:

Temperature: 16 °C
Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-1.3dB @ 2390 MHz (52.7dBuV/m, 431.5uV/m @3m))
2	6dB Bandwidth	15.247(a)	Pass	12.1 MHz
3	Output Power	15.247(b)	Pass	13.4 dBm
4	Power Spectral Density (PSD)	15.247(d)	Pass	-15.3 dBm/3kHz

Modifications Made During Testing:

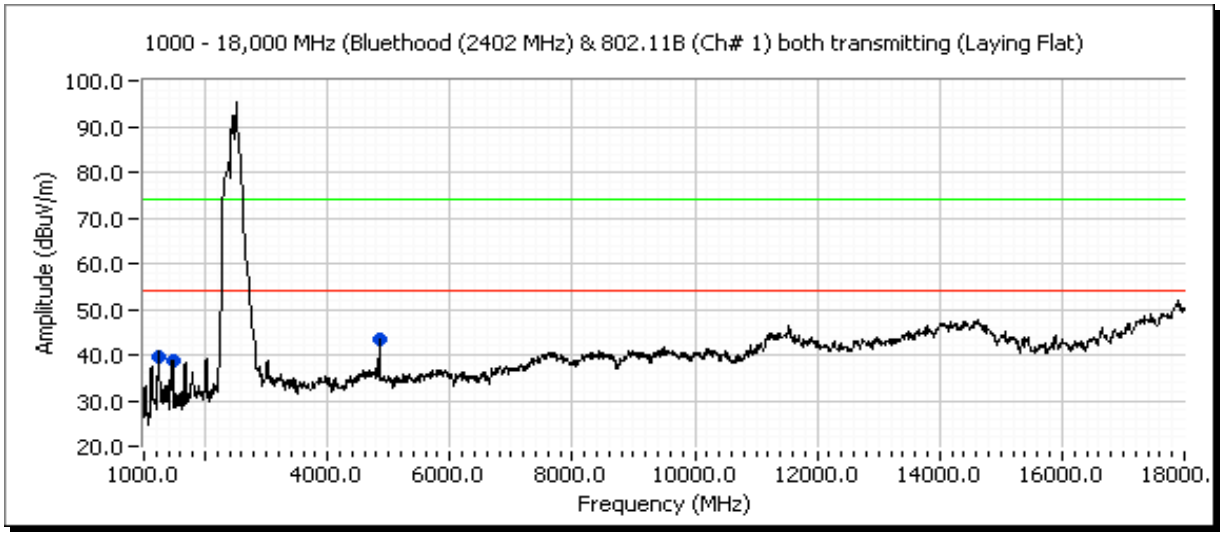
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25000 MHz. Low Channel @ 2412 MHz



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2412.000	78.5	V	-	-	AVG	268	1.1	Side, Note 2
2412.000	85.7	V	-	-	PK	268	1.1	Side, Note 2
2412.000	70.4	H	-	-	AVG	263	1.0	Side, Note 2
2412.000	78.2	H	-	-	PK	263	1.0	Side, Note 2
2412.000	78.4	H	-	-	AVG	157	1.1	Upright, Note 2
2412.000	85.8	H	-	-	PK	157	1.1	Upright, Note 2
2412.000	84.7	V	-	-	AVG	81	1.3	Upright, Note 2
2412.000	91.6	V	-	-	PK	81	1.3	Upright, Note 2
2412.000	77.6	V	-	-	AVG	216	1.0	Laying Flat, Note 2
2412.000	84.6	V	-	-	PK	216	1.0	Laying Flat, Note 2
2412.000	86.9	H	-	-	AVG	43	1.8	Laying Flat, Note 2
2412.000	**93.6**	H	-	-	PK	43	1.8	Laying Flat, Note 2

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	52.7	V	54.0	-1.3	AVG	215	1.0	Bandedge. Laying Flat (Note 2)
2390.000	52.6	H	54.0	-1.4	AVG	44	1.8	Bandedge. Laying Flat (Note 2)
1221.479	47.0	H	74.0	-7.0	PK	211	1.4	Both transmitters on, Laying Flat
2390.000	65.6	V	74.0	-8.4	PK	215	1.0	Bandedge. Laying Flat (Note 2)
2390.000	64.4	H	74.0	-9.6	PK	44	1.8	Bandedge. Laying Flat (Note 2)

Continued on next page...

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1442.700	42.3	H	54.0	-11.7	AVG	250	1.0	Both transmitters on, Side
4823.878	41.5	H	54.0	-12.5	AVG	57	1.4	Both transmitters on, Laying Flat
4822.500	41.4	H	54.0	-12.6	AVG	228	1.0	Both transmitters on, Side
4824.525	41.4	V	54.0	-12.6	AVG	128	1.0	Both transmitters on, Upright
4824.338	41.3	V	54.0	-12.7	AVG	199	1.0	Both transmitters on, Side
4824.615	41.2	H	54.0	-12.8	AVG	77	1.0	Both transmitters on, Upright
1221.500	34.2	H	54.0	-19.8	AVG	187	1.0	Both transmitters on, Side
1221.500	33.2	H	54.0	-20.8	AVG	200	1.0	Both transmitters on, Upright
4824.338	53.2	V	74.0	-20.8	PK	199	1.0	Both transmitters on, Side
1221.479	32.5	H	54.0	-21.5	AVG	211	1.4	Both transmitters on, Laying Flat
4824.525	52.5	V	74.0	-21.5	PK	128	1.0	Both transmitters on, Upright
1442.700	32.4	H	54.0	-21.6	AVG	189	1.0	Both transmitters on, Upright
4824.615	52.2	H	74.0	-21.8	PK	77	1.0	Both transmitters on, Upright
4822.500	52.1	H	74.0	-21.9	PK	228	1.0	Both transmitters on, Side
1442.509	31.1	H	54.0	-22.9	AVG	227	1.8	Both transmitters on, Laying Flat
1442.700	49.5	H	74.0	-24.5	PK	250	1.0	Both transmitters on, Side
4823.878	47.5	H	74.0	-26.5	PK	57	1.4	Both transmitters on, Laying Flat
1221.500	47.4	H	74.0	-26.6	PK	200	1.0	Both transmitters on, Upright
1442.700	47.2	H	74.0	-26.8	PK	189	1.0	Both transmitters on, Upright
1442.509	46.2	H	74.0	-27.9	PK	227	1.8	Both transmitters on, Laying Flat
1221.500	41.4	H	74.0	-32.6	PK	187	1.0	Both transmitters on, Side

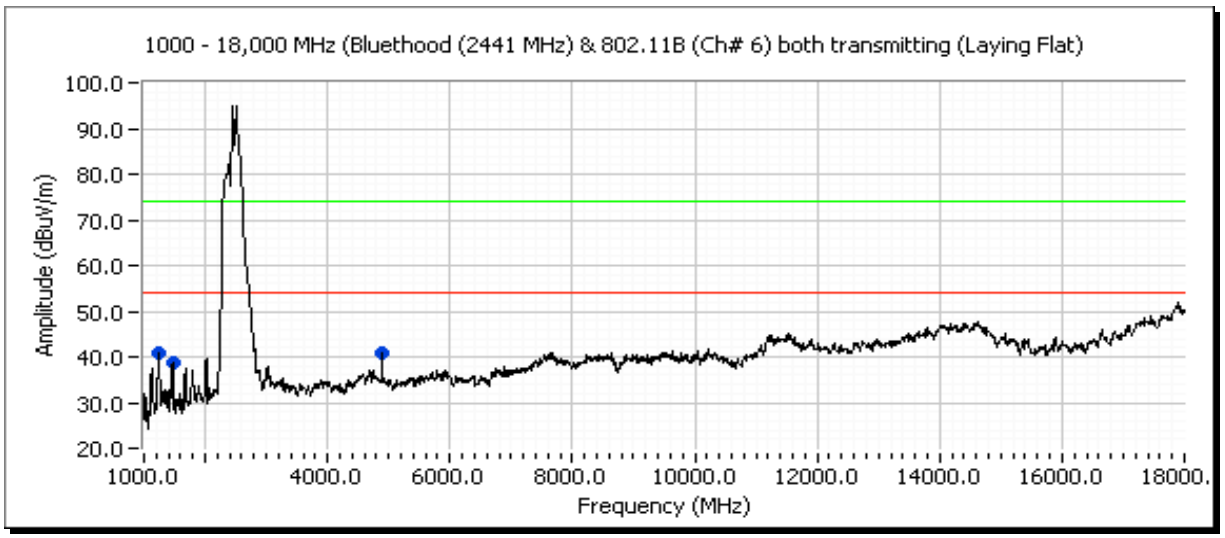
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20 dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1b: Radiated Spurious Emissions, 30 - 25000 MHz. Center Channel @ 2437 MHz



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2437.000	84.9	V	-	-	PK	270	1.1	Side, Note 2
2437.000	77.6	H	-	-	PK	264	1.3	Side, Note 2
2437.000	82.5	H	-	-	PK	118	1.7	Upright, Note 2
2437.000	89.8	V	-	-	PK	84	1.3	Upright, Note 2
2437.000	82.3	V	-	-	PK	198	1.0	Laying Flat, Note 2
2437.000	90.0	H	-	-	PK	82	1.7	Laying Flat, Note 2

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.960	41.5	H	54.0	-12.5	AVG	145	1.0	Both transmitters on, Side
4873.883	41.3	V	54.0	-12.7	AVG	330	1.0	Both transmitters on, Upright
4873.883	41.0	V	54.0	-13.0	AVG	323	1.0	Both transmitters on, Side
4874.960	40.2	H	54.0	-13.8	AVG	140	1.0	Both transmitters on, Upright
4880.048	40.1	V	54.0	-13.9	AVG	60	1.2	Both transmitters on, Laying Flat
1221.827	33.2	H	54.0	-20.8	AVG	215	2.0	Both transmitters on, Laying Flat
4873.883	52.4	V	74.0	-21.6	PK	330	1.0	Both transmitters on, Upright
4874.960	52.2	H	74.0	-21.8	PK	140	1.0	Both transmitters on, Upright
4873.883	52.2	V	74.0	-21.8	PK	323	1.0	Both transmitters on, Side
4874.960	52.1	H	74.0	-21.9	PK	145	1.0	Both transmitters on, Side
1443.378	30.8	H	54.0	-23.2	AVG	206	1.8	Both transmitters on, Laying Flat
1221.827	47.9	H	74.0	-26.1	PK	215	2.0	Both transmitters on, Laying Flat
4880.048	46.9	V	74.0	-27.1	PK	60	1.2	Both transmitters on, Laying Flat
1443.378	45.8	H	74.0	-28.2	PK	206	1.8	Both transmitters on, Laying Flat

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

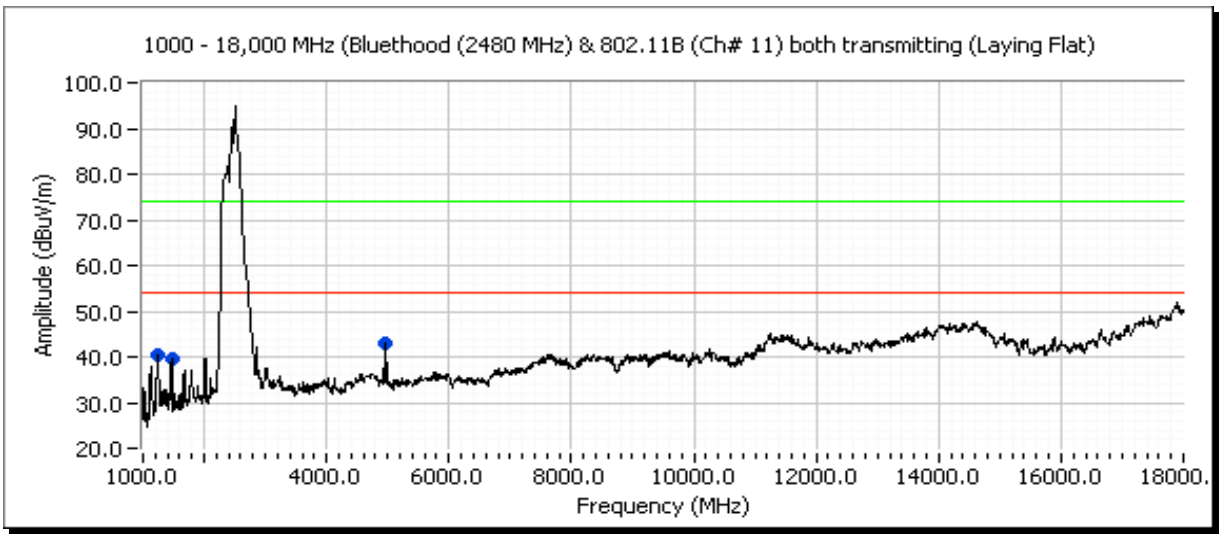
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25000 MHz. High Channel @ 2462 MHz



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2462.000	78.2	V	-	-	AVG	270	1.1	Side, Note 2
2462.000	85.1	V	-	-	PK	270	1.1	Side, Note 2
2462.000	69.9	H	-	-	AVG	263	1.3	Side, Note 2
2462.000	77.7	H	-	-	PK	263	1.3	Side, Note 2
2462.000	81.5	V	-	-	AVG	82	1.6	Upright, Note 2
2462.000	88.2	V	-	-	PK	82	1.6	Upright, Note 2
2462.000	76.0	H	-	-	AVG	157	1.7	Upright, Note 2
2462.000	83.5	H	-	-	PK	157	1.7	Upright, Note 2
2462.000	74.8	V	-	-	AVG	211	1.1	Laying Flat, Note 2
2462.000	82.2	V	-	-	PK	211	1.1	Laying Flat, Note 2
2462.000	81.7	H	-	-	AVG	83	1.4	Laying Flat, Note 2
2462.000	88.6	H	-	-	PK	83	1.4	Laying Flat, Note 2

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.

Spurious emissions data on the following page…

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	51.9	H	54.0	-2.1	AVG	84	1.4	Bandedge. Laying Flat (Note 2)
2483.500	51.8	V	54.0	-2.2	AVG	211	1.1	Bandedge. Laying Flat (Note 2)
2483.500	64.8	H	74.0	-9.2	PK	84	1.4	Bandedge. Laying Flat (Note 2)
2483.500	64.4	V	74.0	-9.6	PK	211	1.1	Bandedge. Laying Flat (Note 2)
4957.985	44.1	V	54.0	-10.0	AVG	55	1.2	Both transmitters on, Laying Flat
4924.000	41.7	H	54.0	-12.3	AVG	180	1.0	Both transmitters on, Upright
4924.000	41.7	H	54.0	-12.3	AVG	180	1.0	Both transmitters on, Side
4924.000	41.5	V	54.0	-12.5	AVG	100	1.0	Both transmitters on, Upright
4924.000	41.5	V	54.0	-12.5	AVG	100	1.0	Both transmitters on, Side
1222.008	33.3	H	54.0	-20.7	AVG	215	2.0	Both transmitters on, Laying Flat
4924.000	52.4	V	74.0	-21.6	PK	100	1.0	Both transmitters on, Upright
4924.000	52.4	V	74.0	-21.6	PK	100	1.0	Both transmitters on, Side
4924.000	52.1	H	74.0	-21.9	PK	180	1.0	Both transmitters on, Upright
4924.000	52.1	H	74.0	-21.9	PK	180	1.0	Both transmitters on, Side
1445.221	31.0	H	54.0	-23.0	AVG	203	1.6	Both transmitters on, Laying Flat
1222.008	48.1	H	74.0	-25.9	PK	215	2.0	Both transmitters on, Laying Flat
4957.985	47.9	V	74.0	-26.1	PK	55	1.2	Both transmitters on, Laying Flat
1445.221	46.4	H	74.0	-27.6	PK	203	1.6	Both transmitters on, Laying Flat

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	Peak measured with RBW=VBW=1MHz. Average measured with RBW = 1MHz, VBW = 10Hz.

Run #2: Signal Bandwidth

Channel	Frequency (MHz)	Resolution Bandwidth	6dB Signal Bandwidth (MHz)	99% BW (MHz)
Low	2412	100 kHz	12.0	16.1
Mid	2437	100 kHz	12.0	16.3
High	2462	100 kHz	12.1	16.4

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #3: Output Power

Channel	Frequency (MHz)	Field Strength at 3m (dBuV/m)	Antenna Pol. (H/V)	Res BW	Output Power (dBm)
Laying Flat					
Low	2412	**108.7**	H	Note 1	**13.4**
Mid	2437	**105.3**	H	Note 1	**10.0**
High	2462	103.4	H	Note 1	8.1
Side					
Low	2412	101.0	V	Note 1	5.7
Mid	2437	99.5	V	Note 1	4.2
High	2462	100.0	V	Note 1	4.7
Upright					
Low	2412	106.5	V	Note 1	11.2
Mid	2437	104.0	V	Note 1	8.7
High	2462	**103.5**	V	Note 1	**8.2**

Power calculation using highest EIRP from the table above

EIRP	Gain	Conducted Power	
(dBm)	(dBi)	dBm	W
13.4	-3	16.4	0.044

Note 1:	Output power calculated from radiated field strength measured at a 3m distance. Field strength was measured using RBW=VBW=10MHz (i.e. a peak power measurement). Recorded only the highest level for each polarization. All data is recorded in run# 1. The 10MHz bandwidth measurement was corrected by 1dB to obtain the peak power across the complete signal bandwidth based on intergrating power over 10MHz and over 20MHz (see data attached) that demonstrated a 1dB difference between the power intergrated over 10MHz versus that intergrated over 20MHz.

Run #4: Power Spectral Density

Channel	Frequency (MHz)	Res BW	P.S.D. per 3kHz (averaged over 1		Comment
			dBuV/m at 3m	dBm/3kHz	
Low	2412	3 kHz	79.9	-15.4	Laying Flat
Mid	2437	3 kHz	75.3	-20.0	Laying Flat
High	2462	3 kHz	73.3	-22.1	Laying Flat

Note 1:	PSD measured using RB=VB=3kHz, span = 300kHz, sweep time = 100 s [(span/3kHz) seconds]

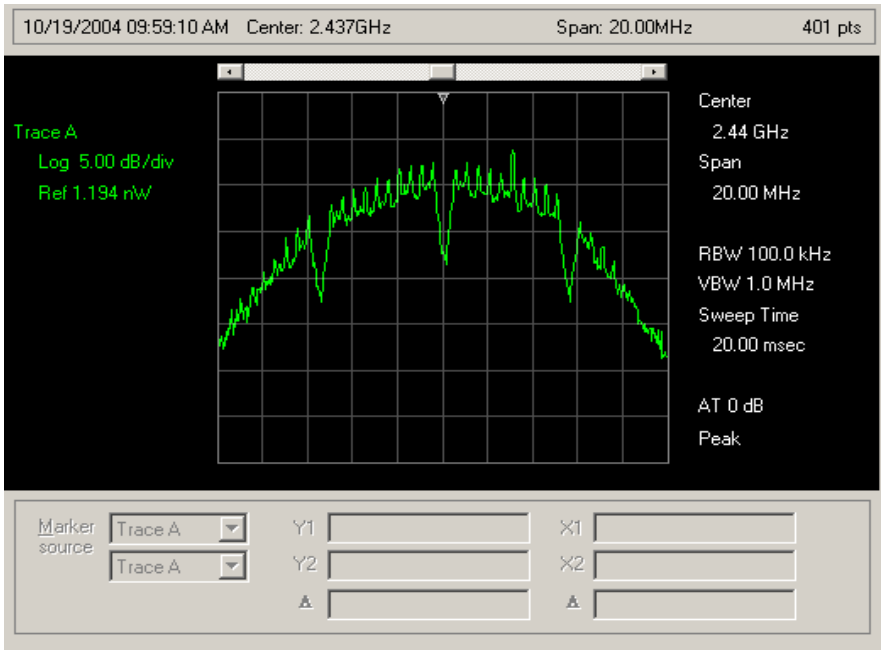
Integration of Power Calculation to Determine Correction Factor For Converting Power in 10MHz to Total Power

Difference in power between 10MHz and 20MHz integration bandwidths was 1dB. Field strength measured at 3m using 10MHz bandwidth. Correction to determine total power is, therefore, 1dB, after accounting for path loss to convert field strength (dBuV/m) to eirp (dBm).

Data in the tables taken using an antenna, 1m from the device under test. Antenna location and EUT orientation was unchanged for the two measurements.

Power Integration over 20 MHz: Power = -49.5 dBm

Frequency (MHz)	Power (mW)
2427.0	2.22E-09
2427.1	2.18E-09
2427.2	2.69E-09
2427.3	2.95E-09
2427.4	2.96E-09
2427.5	4.32E-09
2427.6	3.18E-09
2427.7	4.20E-09
2427.8	3.81E-09
2427.9	5.50E-09
2428.0	6.92E-09
2428.1	4.45E-09
2428.2	6.19E-09
2428.3	5.00E-09
2428.4	5.55E-09
2428.5	9.02E-09
2428.6	8.73E-09
2428.7	7.74E-09
2428.8	7.94E-09
2428.9	1.02E-08
2429.0	1.33E-08
2429.1	9.84E-09
2429.2	9.44E-09
2429.3	1.00E-08
2429.4	1.14E-08
2429.5	1.82E-08
2429.6	1.50E-08
2429.7	1.64E-08
2429.8	1.72E-08
2429.9	1.81E-08
2430.0	2.69E-08
2430.1	2.42E-08
2430.2	1.66E-08
2430.3	1.84E-08
2430.4	1.69E-08
2430.5	3.25E-08
2430.6	3.17E-08
2430.7	2.59E-08
2430.8	3.04E-08
2430.9	2.96E-08
2431.0	4.13E-08
2431.1	4.78E-08
2431.2	2.19E-08
2431.3	1.78E-08
2431.4	1.17E-08
2431.5	7.67E-09
2431.6	6.71E-09
2431.7	1.18E-08
2431.8	1.86E-08
2431.9	3.43E-08
2432.0	5.83E-08



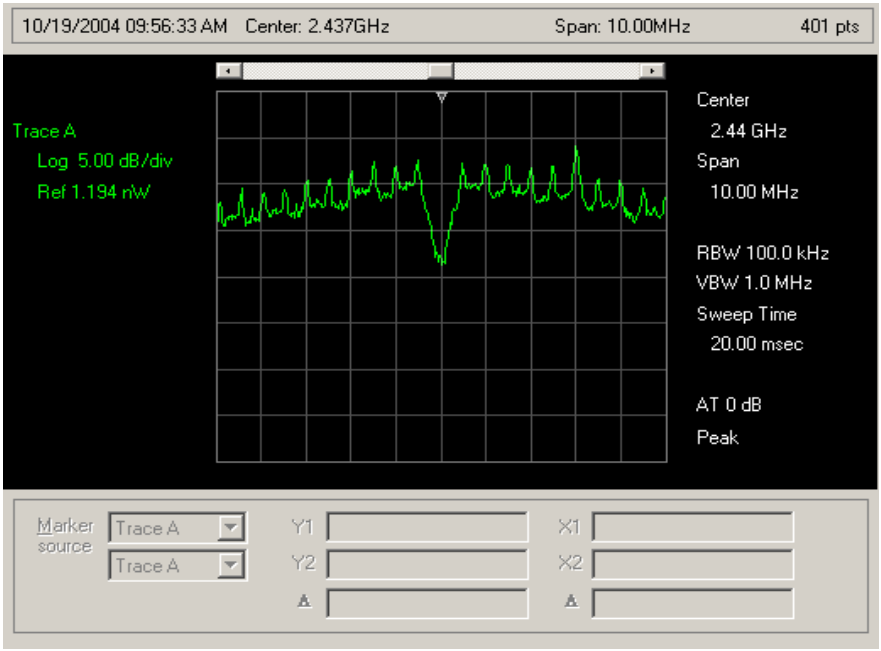
2432.1	6.31E-08
2432.2	4.92E-08
2432.3	5.58E-08
2432.4	5.43E-08
2432.5	6.90E-08
2432.6	8.69E-08
2432.7	4.57E-08
2432.8	5.43E-08
2432.9	4.85E-08
2433.0	7.98E-08
2433.1	1.08E-07
2433.2	6.18E-08
2433.3	7.00E-08
2433.4	6.18E-08
2433.5	7.53E-08
2433.6	1.07E-07
2433.7	6.10E-08
2433.8	5.78E-08
2433.9	6.28E-08
2434.0	8.83E-08
2434.1	1.32E-07
2434.2	7.28E-08
2434.3	8.34E-08
2434.4	7.89E-08
2434.5	9.04E-08
2434.6	1.39E-07
2434.7	7.13E-08
2434.8	7.82E-08
2434.9	7.43E-08
2435.0	9.84E-08
2435.1	1.67E-07
2435.2	1.01E-07
2435.3	1.03E-07
2435.4	1.03E-07
2435.5	1.11E-07
2435.6	2.13E-07
2435.7	9.25E-08
2435.8	1.02E-07
2435.9	8.11E-08
2436.0	1.03E-07
2436.1	1.82E-07
2436.2	1.17E-07
2436.3	1.14E-07
2436.4	1.17E-07
2436.5	1.15E-07
2436.6	1.99E-07
2436.7	8.36E-08
2436.8	5.52E-08
2436.9	3.74E-08
2437.0	2.03E-08
2437.1	2.13E-08
2437.2	2.42E-08
2437.3	4.27E-08
2437.4	5.75E-08
2437.5	9.33E-08
2437.6	1.95E-07
2437.7	1.06E-07
2437.8	1.22E-07
2437.9	1.17E-07
2438.0	1.21E-07
2438.1	2.09E-07
2438.2	1.04E-07
2438.3	9.38E-08
2438.4	9.91E-08

2438.5	1.01E-07
2438.6	2.07E-07
2438.7	1.02E-07
2438.8	1.08E-07
2438.9	1.01E-07
2439.0	1.04E-07
2439.1	1.73E-07
2439.2	8.41E-08
2439.3	7.74E-08
2439.4	8.26E-08
2439.5	9.53E-08
2439.6	1.88E-07
2439.7	1.01E-07
2439.8	8.85E-08
2439.9	9.33E-08
2440.0	1.13E-07
2440.1	2.86E-07
2440.2	1.82E-07
2440.3	8.07E-08
2440.4	6.47E-08
2440.5	7.82E-08
2440.6	1.41E-07
2440.7	7.48E-08
2440.8	7.94E-08
2440.9	7.48E-08
2441.0	7.00E-08
2441.1	1.44E-07
2441.2	6.59E-08
2441.3	5.64E-08
2441.4	5.78E-08
2441.5	5.87E-08
2441.6	1.27E-07
2441.7	6.38E-08
2441.8	6.03E-08
2441.9	5.77E-08
2442.0	5.47E-08
2442.1	8.85E-08
2442.2	4.60E-08
2442.3	2.84E-08
2442.4	1.94E-08
2442.5	9.73E-09
2442.6	1.07E-08
2442.7	9.29E-09
2442.8	1.30E-08
2442.9	1.83E-08
2443.0	2.79E-08
2443.1	5.37E-08
2443.2	3.17E-08
2443.3	3.02E-08
2443.4	2.49E-08
2443.5	2.52E-08
2443.6	3.56E-08
2443.7	1.96E-08
2443.8	1.72E-08
2443.9	1.61E-08
2444.0	1.63E-08
2444.1	3.00E-08
2444.2	1.55E-08
2444.3	1.53E-08
2444.4	1.41E-08
2444.5	1.32E-08
2444.6	1.69E-08
2444.7	9.40E-09
2444.8	8.43E-09

2444.9	7.18E-09	
2445.0	7.57E-09	
2445.1	1.38E-08	
2445.2	1.05E-08	
2445.3	6.24E-09	
2445.4	6.07E-09	
2445.5	4.85E-09	
2445.6	6.34E-09	
2445.7	3.92E-09	
2445.8	3.92E-09	
2445.9	3.53E-09	
2446.0	3.24E-09	
2446.1	4.00E-09	
2446.2	3.85E-09	
2446.3	3.10E-09	
2446.4	2.92E-09	
2446.5	2.73E-09	
2446.6	2.86E-09	
2446.7	2.45E-09	
2446.8	2.07E-09	
2446.9	1.75E-09	
Total (mW)	1.11E-05	
Total (dBm)	**-49.5**	Power integrated over 20MHz

Power Integration over 10 MHz: Power = -50.5 dBm

Frequency (MHz)	Power (mW)
2432.0	4.37E-08
2432.1	6.38E-08
2432.2	4.61E-08
2432.3	5.32E-08
2432.4	5.01E-08
2432.5	7.08E-08
2432.6	6.14E-08
2432.7	4.65E-08
2432.8	5.46E-08
2432.9	4.93E-08
2433.0	8.41E-08
2433.1	6.71E-08
2433.2	5.36E-08
2433.3	6.38E-08
2433.4	5.97E-08
2433.5	1.00E-07
2433.6	5.71E-08
2433.7	5.62E-08
2433.8	5.25E-08
2433.9	5.87E-08
2434.0	1.20E-07
2434.1	6.68E-08
2434.2	6.58E-08
2434.3	7.10E-08
2434.4	7.05E-08
2434.5	1.26E-07
2434.6	7.36E-08
2434.7	6.37E-08
2434.8	6.08E-08
2434.9	6.75E-08
2435.0	1.62E-07
2435.1	8.49E-08
2435.2	9.35E-08
2435.3	1.02E-07
2435.4	1.07E-07
2435.5	2.07E-07
2435.6	9.68E-08
2435.7	8.26E-08
2435.8	9.27E-08
2435.9	1.03E-07
2436.0	1.82E-07
2436.1	1.12E-07
2436.2	1.04E-07
2436.3	1.14E-07
2436.4	1.26E-07
2436.5	1.79E-07
2436.6	7.89E-08
2436.7	5.52E-08
2436.8	3.31E-08
2436.9	2.11E-08
2437.0	1.83E-08
2437.1	2.02E-08
2437.2	4.43E-08
2437.3	6.15E-08
2437.4	8.36E-08
2437.5	1.58E-07
2437.6	1.16E-07
2437.7	1.14E-07
2437.8	1.07E-07
2437.9	1.19E-07
2438.0	1.90E-07
2438.1	9.33E-08



2438.2	8.67E-08	
2438.3	9.29E-08	
2438.4	1.04E-07	
2438.5	1.85E-07	
2438.6	9.31E-08	
2438.7	9.95E-08	
2438.8	9.59E-08	
2438.9	9.79E-08	
2439.0	1.75E-07	
2439.1	7.48E-08	
2439.2	7.71E-08	
2439.3	8.77E-08	
2439.4	9.10E-08	
2439.5	1.83E-07	
2439.6	8.91E-08	
2439.7	8.77E-08	
2439.8	8.95E-08	
2439.9	1.04E-07	
2440.0	3.08E-07	
2440.1	1.45E-07	
2440.2	7.16E-08	
2440.3	6.04E-08	
2440.4	7.16E-08	
2440.5	1.36E-07	
2440.6	6.58E-08	
2440.7	7.21E-08	
2440.8	6.50E-08	
2440.9	7.05E-08	
2441.0	1.19E-07	
2441.1	6.32E-08	
2441.2	5.73E-08	
2441.3	4.57E-08	
2441.4	5.92E-08	
2441.5	1.02E-07	
2441.6	6.08E-08	
2441.7	6.00E-08	
2441.8	5.37E-08	
2441.9	5.50E-08	
Total (mW)	8.90E-06	
Total (dBm)	**-50.5**	Power integrated over 10MHz

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Radiated Emissions, Power and Bandwidth
Bluetooth Transceiver

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 10/12/2004, Config. Used: 1
Test Engineer: Mark Briggs Config Change: None
Test Location: EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located underneat table.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions:

Temperature: 15 °C
Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin/Comment
1	RE, 30 - 25000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-22.0dB @ 1123.5 MHz (32dBuV/m, 39.8uV/m @3m)
2	20dB Bandwidth	15.247(a)	Pass	825kHz
3	Output Power	15.247(b)	Pass	-12.5 dBm
4	Channel Occupancy / Separation	15.247(a)	Pass	1MHz channel spacing, occupancy = 0.4s per (N * 0.4)s
4	Number of Channels	15.247(a)	Pass	79 channels, 75 used

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

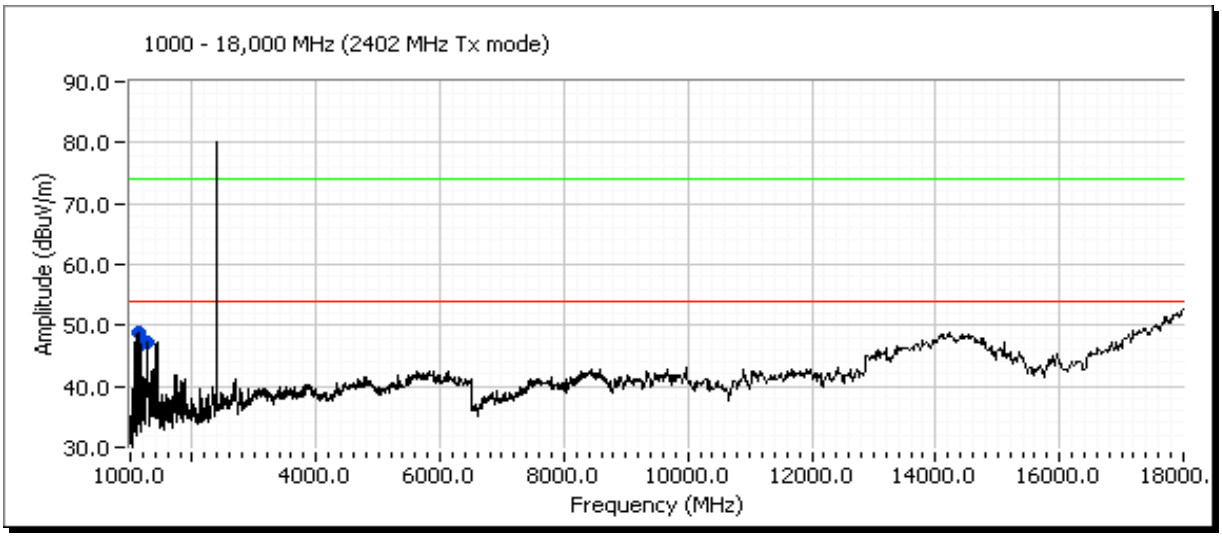
No deviations were made from the requirements of the standard.

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25000 MHz. Low Channel @ 2402 MHz

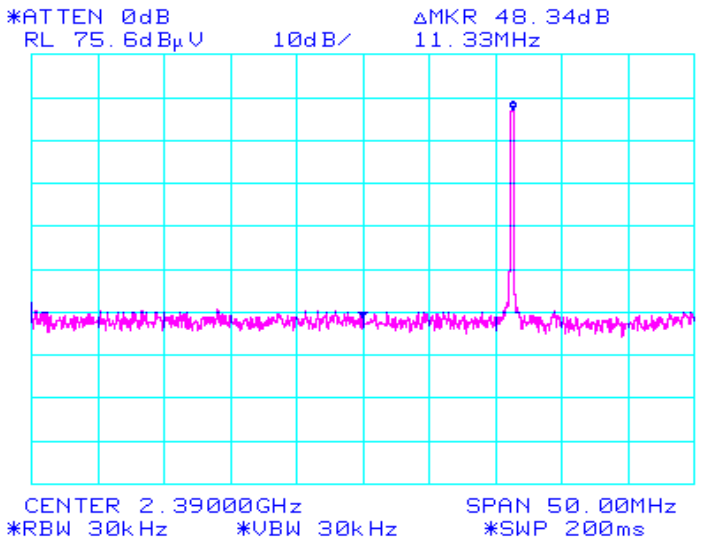
	H	V	
Fundamental emission level @ 3m in 1MHz RBW:	82.8	80.8	Peak Measurement (RBW=VBW = 1MHz)
Fundamental emission level @ 3m in 1MHz RBW:	81.6	79.1	Average Measurement (RBW=VBW = 10Hz)
Delta Marker - Peak	48.34 dB		
Delta Marker - Average	48.34 dB		
Calculated Band-Edge Measurement:	34.46 dBuV/m		Peak Measurement (RBW=VBW = 1MHz)
Calculated Band-Edge Measurement:	33.26 dBuV/m		Average Measurement (RBW=VBW = 10Hz)



EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Bandedge Delta



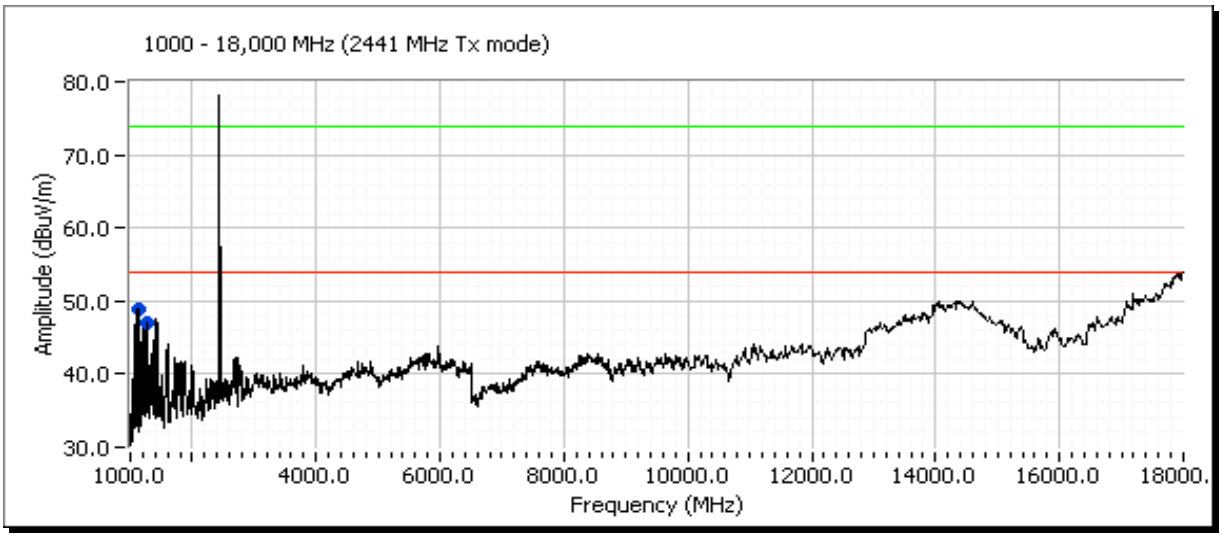
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2401.016	79.1	V	-	-	AVG	68	1.7	Laying Flat
2401.016	80.8	V	-	-	PK	68	1.7	Laying Flat
2401.039	78.8	H	-	-	AVG	220	1.0	Laying Flat
2401.039	80.5	H	-	-	PK	220	1.0	Laying Flat
2400.922	77.0	V	-	-	AVG	259	1.4	Upright
2400.922	78.6	V	-	-	PK	259	1.4	Upright
2400.922	78.5	H	-	-	AVG	124	1.5	Upright
2400.922	79.8	H	-	-	PK	124	1.5	Upright
2400.922	79.6	V	-	-	AVG	82	1.3	Side
2400.922	80.7	V	-	-	PK	82	1.3	Side
2400.922	81.6	H	-	-	AVG	25	1.1	Side
2400.922	82.8	H	-	-	PK	25	1.1	Side
1123.523	32.0	H	54.0	-22.0	AVG	183	1.6	Side
1271.488	31.1	H	54.0	-23.0	AVG	172	1.4	Side
1123.523	49.1	H	74.0	-24.9	PK	183	1.6	Side
1271.488	47.6	H	74.0	-26.4	PK	172	1.4	Side

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	No significant emissions below 1GHz from the Bluetooth transceiver. Also, the device meets FCC Class B digital device limits below 1GHz with Bluetooth transceiver in receive mode

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1b: Radiated Spurious Emissions, 30 - 25000 MHz. Center Channel @ 2441 MHz



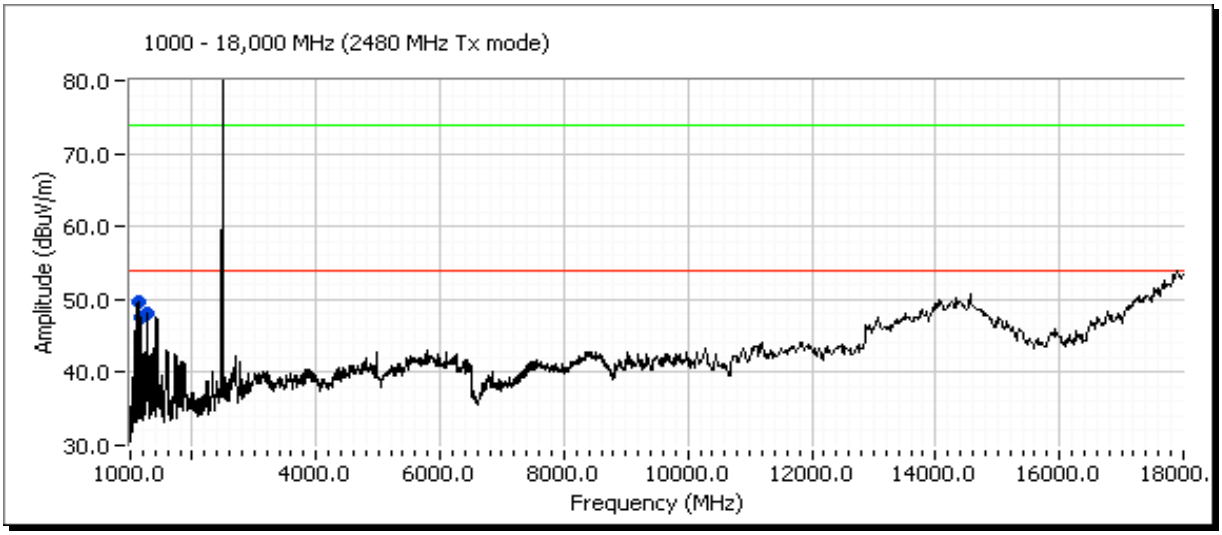
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2439.912	73.8	H	-	-	PK	219	1.0	Laying Flat
2439.964	73.5	V	-	-	PK	192	1.0	Laying Flat
Chamber#5 data								
2440.031	78.9	V	-	-	PK	360	1.1	Laying Flat
2440.032	76.7	H	-	-	PK	360	2.0	Laying Flat
2440.023	79.0	V	-	-	PK	259	1.4	Upright
2440.032	80.9	H	-	-	PK	125	1.5	Upright
2440.023	81.0	V	-	-	PK	82	1.3	Side
2440.032	82.1	H	-	-	PK	144	1.6	Side
1122.956	30.8	V	54.0	-23.2	AVG	159	1.0	Side
1277.025	29.2	H	54.0	-24.8	AVG	169	1.8	Side
1122.956	47.7	V	74.0	-26.3	PK	159	1.0	Side
1277.025	46.8	H	74.0	-27.2	PK	169	1.8	Side

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	No significant emissions below 1GHz from the Bluetooth transceiver. Also, the device meets FCC Class B digital device limits below 1GHz with Bluetooth transceiver in receive mode

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25000 MHz. High Channel @ 2480 MHz

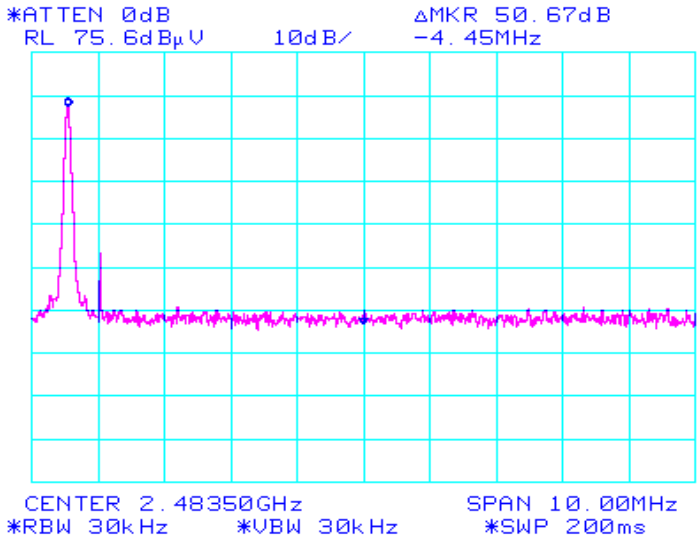
	H	V	
Fundamental emission level @ 3m in 1MHz RBW:	82.8	80.6	Peak Measurement (RBW=VBW = 1MHz)
Fundamental emission level @ 3m in 1MHz RBW:	81.7	79.4	Average Measurement (RBW=VBW = 10Hz)
Delta Marker - Peak	50.67 dB		
Delta Marker - Average	50.67 dB		
Calculated Band-Edge Measurement:	32.13 dBuV/m		Peak Measurement (RBW=VBW = 1MHz)
Calculated Band-Edge Measurement:	31.03 dBuV/m		Average Measurement (RBW=VBW = 10Hz)



EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Bandedge Delta



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2479.085	77.1	V	-	-	AVG	190	1.0	Laying Flat
2479.085	79.1	V	-	-	PK	190	1.0	Laying Flat
2478.927	75.4	H	-	-	AVG	325	1.0	Laying Flat
2478.927	78.4	H	-	-	PK	325	1.0	Laying Flat
2479.032	76.4	V	-	-	AVG	201	1.4	Upright
2479.032	78.2	V	-	-	PK	201	1.4	Upright
2479.032	75.2	H	-	-	AVG	158	1.1	Upright
2479.032	77.2	H	-	-	PK	158	1.1	Upright
2479.032	79.4	V	-	-	AVG	81	1.2	Side
2479.032	80.6	V	-	-	PK	81	1.2	Side
2479.032	81.7	H	-	-	AVG	14	1.1	Side
2479.032	82.8	H	-	-	PK	14	1.1	Side
1123.375	31.9	H	54.0	-22.1	AVG	168	1.6	Side
1272.895	31.4	H	54.0	-22.7	AVG	172	1.4	Side
1123.375	49.0	H	74.0	-25.0	PK	168	1.6	Side
1272.895	48.1	H	74.0	-25.9	PK	172	1.4	Side
1196.118	23.0	H	54.0	-31.0	AVG	182	1.0	Side
1196.118	38.1	H	74.0	-35.9	PK	182	1.0	Side

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EMC Test Data

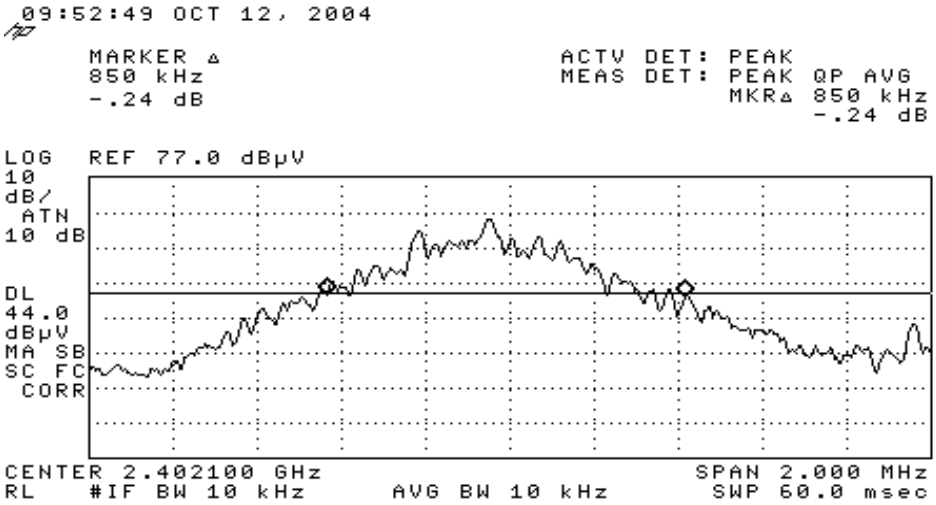
Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

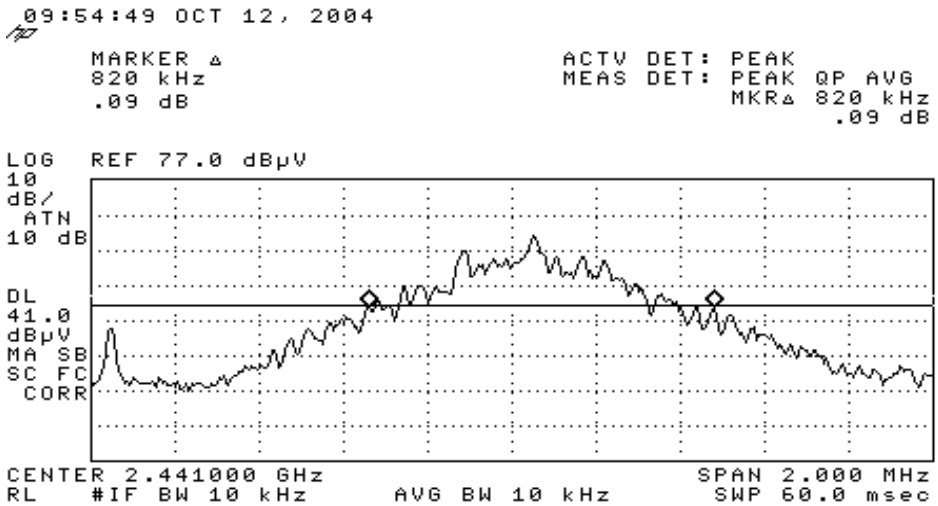
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.
Note 2:	No significant emissions below 1GHz from the Bluetooth transceiver. Also, the device meets FCC Class B digital device limits below 1GHz with Bluetooth transceiver in receive mode

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

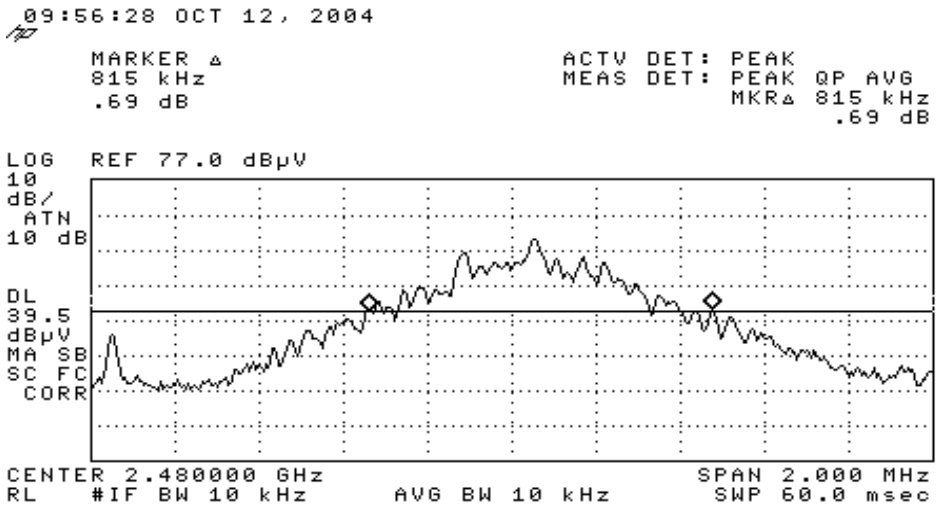
Run #2: Signal Bandwidth

Channel	Frequency (MHz)	Resolution Bandwidth	20dB Signal Bandwidth
Low	2402	10 kHz	850kHz
Mid	2441	10 kHz	820kHz
High	2480	10 kHz	815kHz





Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A



Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #2: Output Power

Channel	Frequency (MHz)	Field Strength at 3m (dBuV/m)	Antenna Pol. (H/V)	Res BW	(EIRP, dBm)
Laying Flat					
Low	2402	75.8	V	Note 1	-19.5
Low	2402	75.5	H	Note 1	-19.8
Mid	2441	73.5	V	Note 1	-21.8
Mid	2441	73.8	H	Note 1	-21.5
High	2480	71.4	V	Note 1	-23.9
High	2480	73.4	H	Note 1	-21.9
Side					
Low	2402	80.7	V	Note 1	-14.6
Low	2402	82.8	H	Note 1	**-12.5**
Mid	2441	81	V	Note 1	-14.3
Mid	2441	82.1	H	Note 1	**-13.2**
High	2480	80.6	V	Note 1	-14.7
High	2480	82.8	H	Note 1	**-12.5**
Upright					
Low	2402	78.6	V	Note 1	-16.7
Low	2402	79.8	H	Note 1	-15.5
Mid	2441	79	V	Note 1	-16.3
Mid	2441	80.9	H	Note 1	-14.4
High	2480	78.2	V	Note 1	-17.1
High	2480	77.2	H	Note 1	-18.1

Power calculation using highest EIRP from the table above

EIRP (dBm)	Gain (dBi)	Conducted Power dBm	Conducted Power W
-12.5	-3	-9.5	0.0001

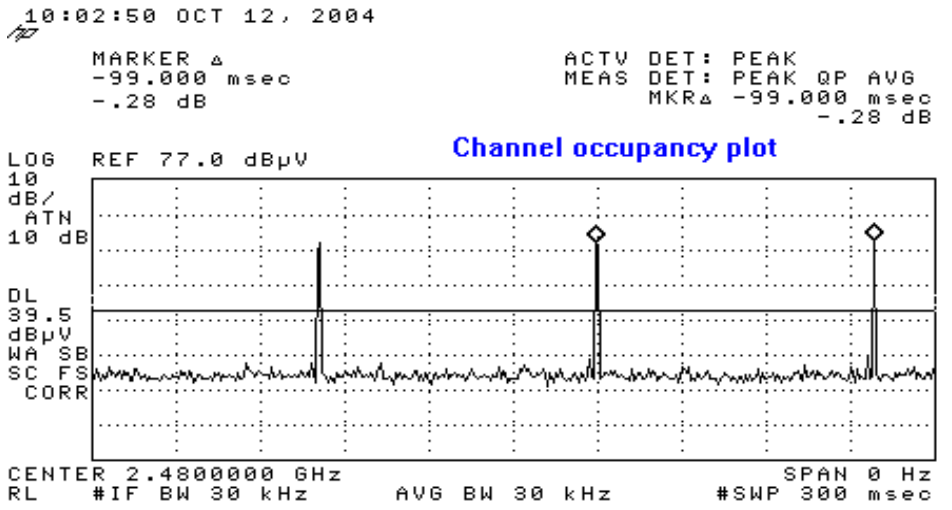
Note 1:	Output power calculated from radiated field strength measured at a 3m distance. Field strength was measured using RBW=VBW=1MHz (i.e. a peak power measurement)

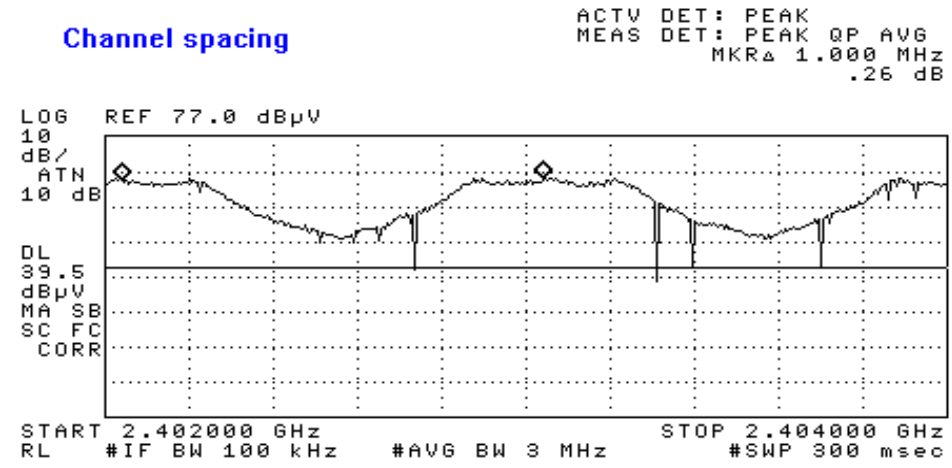
Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

Run #3: Channel Occupancy And Spacing

The channel occupancy was measured with the radio transmitting normally (i.e. In hopping mode)

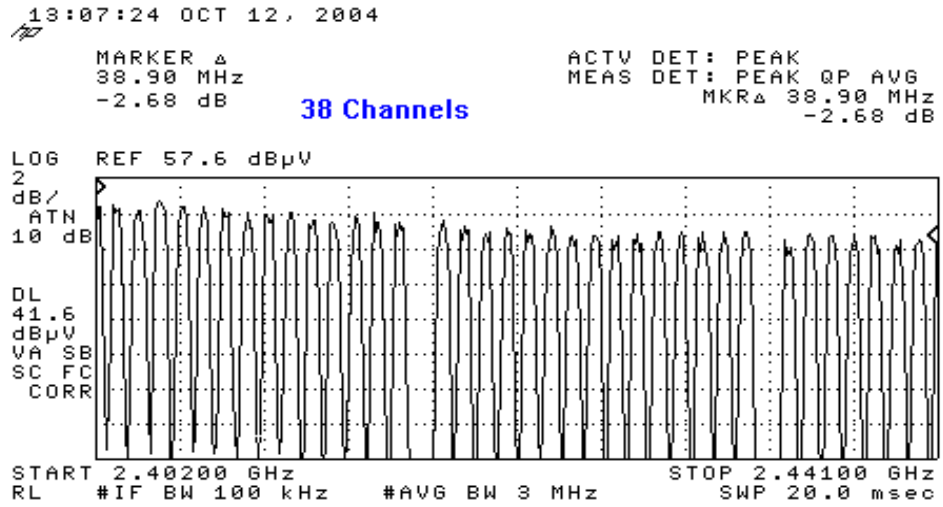
The channel spacing was:	1000	kHz
The time between successive hops on a channel was:	99	ms
The number of channels was:	75	
Channel dwell time in 0.4 seconds mutliplied by the number of channels (30.0 secs) is:	0.4	seconds

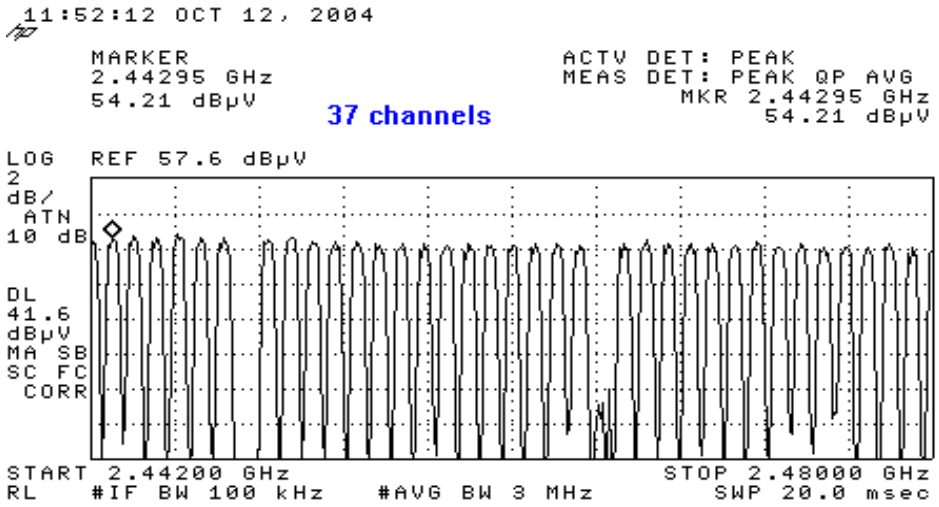




Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A

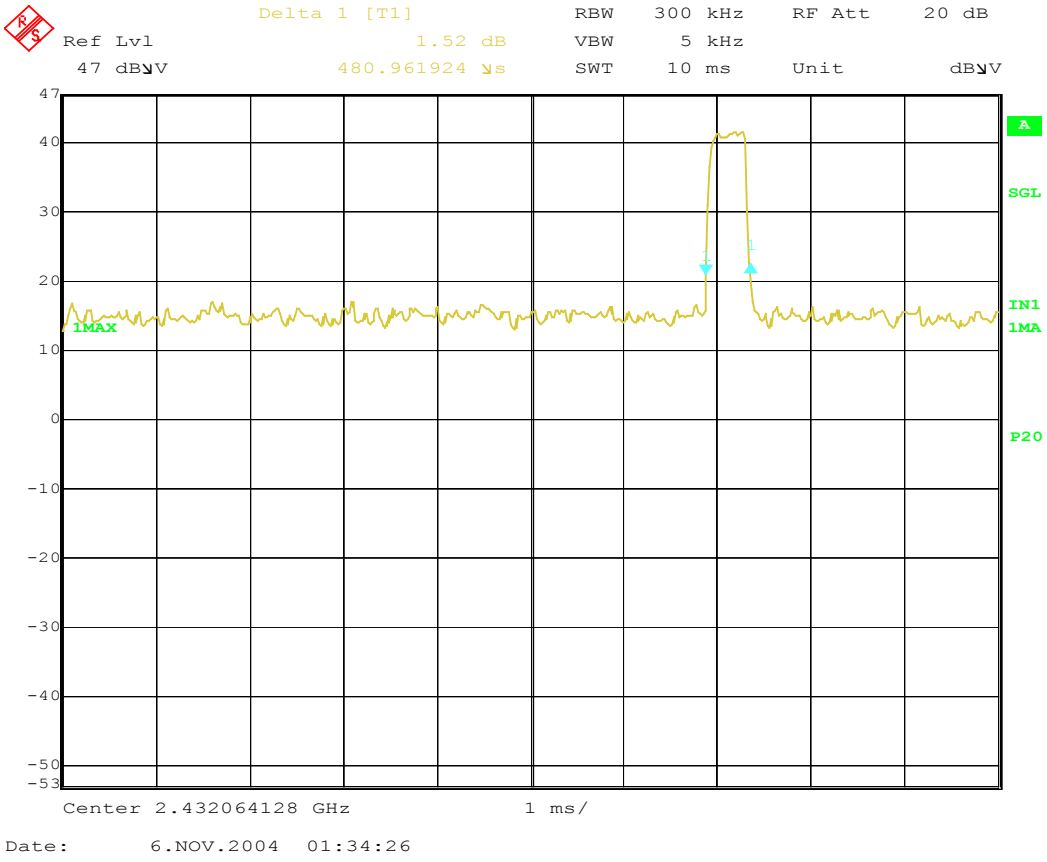
Channel plots - 38 channels from 2402 - 2441 MHz and 37 channels from 2442 - 2480 MHz





Note - device did not transmit on channels 2417 MHz, 2433 MHz, 2449MHz and 2465 MHz

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	N/A



Transmit time per channel = 480uS, dwell time per channel = (time between hops) / (# of channels.)

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	-

Conducted Emissions - Power Ports

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 11/5/2004
Test Engineer: Mark Briggs
Test Location: FT AC#5

Config. Used: #1
Config Change: None
EUT Voltage: Refer to individual run

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions:

Temperature: 18 °C
Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	FCC 15.209	Pass	-6.7dB @ 0.872MHz

Modifications Made During Testing:

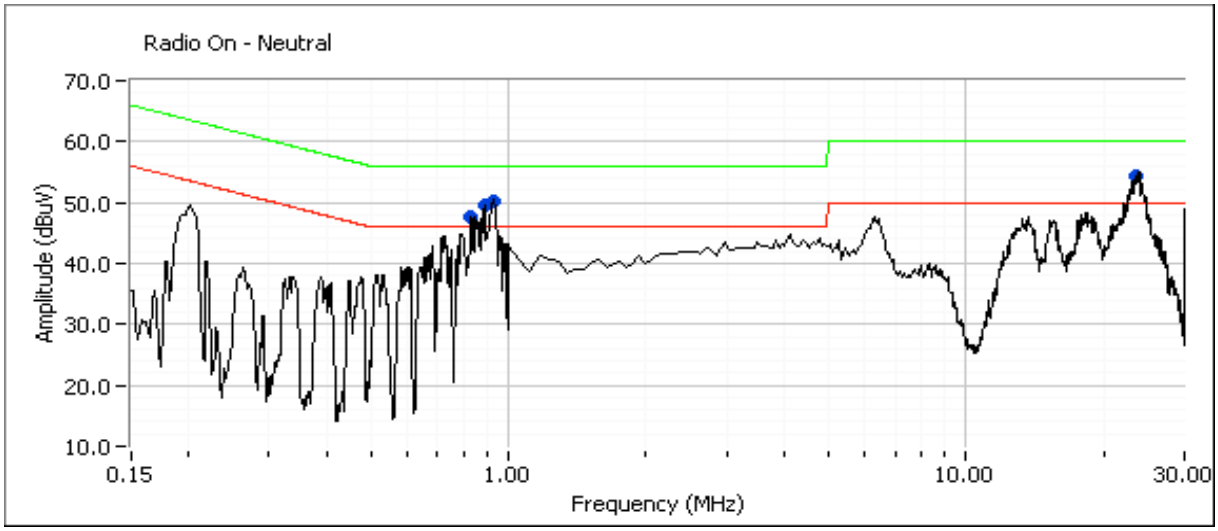
No modifications were made to the EUT during testing

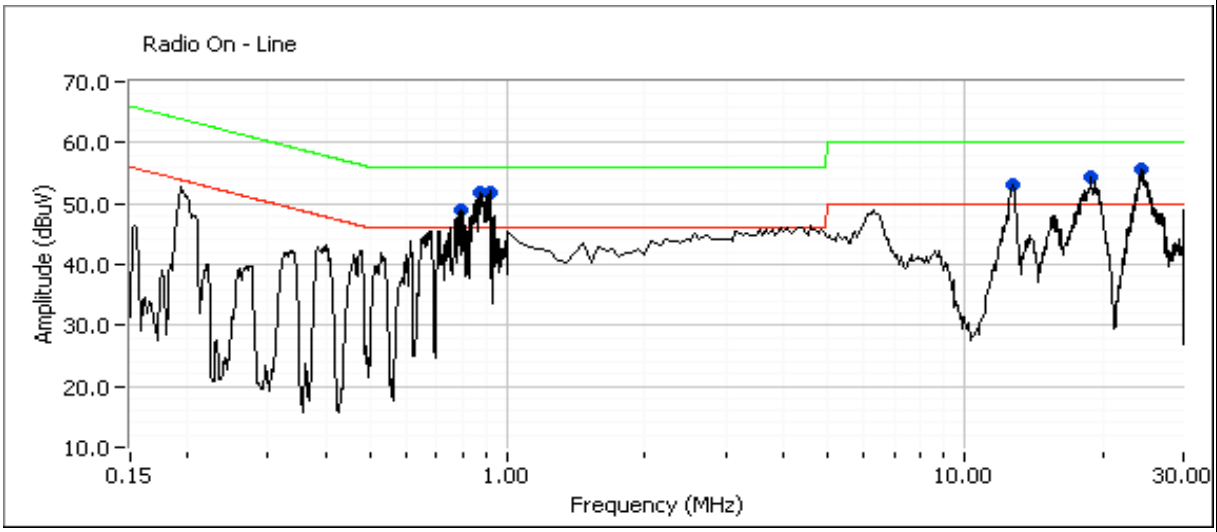
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	-

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T57502
		Account Manager:	-
Contact:	Bob H, Massood		
Spec:	FCC Part 15.247, RSS 210	Class:	-

Frequency	Level	AC	Class B / 15.209		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.872	49.3	Line 1	56.0	-6.7	QP	Radio On
0.881	48.8	Neutral	56.0	-7.2	QP	Radio On
24.306	42.7	Line 1	50.0	-7.3	AVG	Radio On
0.919	48.2	Line 1	56.0	-7.8	QP	Radio On
23.737	41.9	Neutral	50.0	-8.1	AVG	Radio On
0.919	47.8	Neutral	56.0	-8.2	QP	Radio On
24.306	51.2	Line 1	60.0	-8.8	QP	Radio On
0.827	47.1	Neutral	56.0	-8.9	QP	Radio On
12.693	40.8	Line 1	50.0	-9.2	AVG	Radio On
23.737	50.4	Neutral	60.0	-9.7	QP	Radio On
18.866	39.9	Line 1	50.0	-10.1	AVG	Radio On
18.866	49.6	Line 1	60.0	-10.4	QP	Radio On
12.693	49.4	Line 1	60.0	-10.6	QP	Radio On
0.790	45.4	Line 1	56.0	-10.6	QP	Radio On
0.872	32.9	Line 1	46.0	-13.1	AVG	Radio On
0.881	31.5	Neutral	46.0	-14.5	AVG	Radio On
0.919	31.1	Line 1	46.0	-14.9	AVG	Radio On
0.919	30.5	Neutral	46.0	-15.5	AVG	Radio On
0.827	30.1	Neutral	46.0	-15.9	AVG	Radio On
0.790	30.1	Line 1	46.0	-15.9	AVG	Radio On

Note 1: Device was transmitting on center channels on both 802.11b and Bluetooth transceivers simultaneoulsy.

Frequency	Level	AC	RSS 210		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
24.306	51.2	Line 1	48.0	**3.2**	QP	Radio On
23.737	50.4	Neutral	48.0	**2.4**	QP	Radio On
18.866	49.6	Line 1	48.0	**1.6**	QP	Radio On
12.693	49.4	Line 1	48.0	**1.4**	QP	Radio On
0.872	49.3	Line 1	48.0	**1.3**	QP	Radio On
0.881	48.8	Neutral	48.0	**0.8**	QP	Radio On
0.919	48.2	Line 1	48.0	**0.2**	QP	Radio On
0.919	47.8	Neutral	48.0	-0.2	QP	Radio On
0.827	47.1	Neutral	48.0	-0.9	QP	Radio On
0.790	45.4	Line 1	48.0	-2.6	QP	Radio On

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Emissions Spec:	EN 55022	Class:	B
Immunity Spec:	EN 55024	Environment:	ITE

EMC Test Data

For The

OQO

Model

Model 01

Date of Last Test: 7/15/2004

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Emissions Spec:	EN 55022	Class:	B
Immunity Spec:	EN 55024	Environment:	ITE

EUT INFORMATION

General Description

The EUT is an Ultra Personal Computer. Normally, the EUT would be placed on a tabletop during operation. The EUT was, therefore, treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/240 V, 50/60 Hz, 0.5 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
OQO	01	Ultra Personal Computer	4260005	None
OQO	None	Docking Cable	None	None
OQO	None	Power Supply	20234230156	None

EUT Enclosure

The EUT(Model 01 Ultra Personal Computer) enclosure is primarily constructed of magnesium. It measures approximately 10 cm wide by 7 cm deep by 2 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	-

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Emissions Spec:	EN 55022	Class:	B
Immunity Spec:	EN 55024	Environment:	ITE

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Sony (x2)	MDR-V300	Headset	-	-
Intellegent Stick	20	512MB USB Storage	-	-
Apple	iPOD A1019	Firewire Hard drive	U22325TEMMC	-
Netgear	DS104	Ethernet Hub	DS1413CDB107562	-
Samsung	171N	LCD Monitor	NB17HCJWB02528M	-
Attache	D64MB	USB Storage	511-040203002	-

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None	-	-	-	-

Interface Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
USB #1	Intelligent Stick Model 20 USB Storage Device	None	Shielded Port (Direct Connection, No Cable)	N/A
Headset	Headset (MDRV300)	Audio Wire w/ Clamp-On Ferrite	Unshielded	3.0
Firewire #1	iPOD	Firewire w/ Integral Ferrites	Shielded	1.0
Firewire #2	Unterminated	Firewire w/ Integral Ferrites	Shielded	1.5
USB #2	Attache Model D64MB USB Storage Device	None	Shielded Port (Direct Connection, No Cable)	N/A
Line Out	Headset (MDRV300)	Audio Wire w/ Clamp-On Ferrite	Unshielded	3.0
Ethernet	Netgear	Cat 5 w/ Integral Ferrites	Shielded	3.0
VGA	Monitor	VGA Cable	Shielded	2.5
DC Power	Power Supply	Power Cable (5 Wire)	Unshielded	2.0

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Emissions Spec:	EN 55022	Class:	B
Immunity Spec:	EN 55024	Environment:	ITE

EUT Operation During Emissions

During emissions testing, the EUT was running the Windows XP operating system and displaying a "Scrolling H Pattern". An active LINK was established with the external USB, Firewire, and Ethernet devices.
The Bluetooth and 802.11b transceivers were operating by transmitting link beacons.

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Conducted Emissions - Power Ports

Test Specifics

Objective: The objective of this test session is to perform Final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/15/2004
Test Engineer: Elijah Garcia
Test Location: Fremont Chamber #3
Config. Used: 1
Config Change: None
EUT Voltage: Refer to individual runs

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions:

Temperature: 21.3 °C
Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,230V/50Hz	EN 55022 Class B	Pass	-3.8 dB @ 0.944 MHz
2	CE, AC Power, 120V/60Hz	EN 55022 Class B	Pass	-3.5 dB @ 0.876 MHz

Modifications Made During Testing:

Modifications are detailed under each run description.

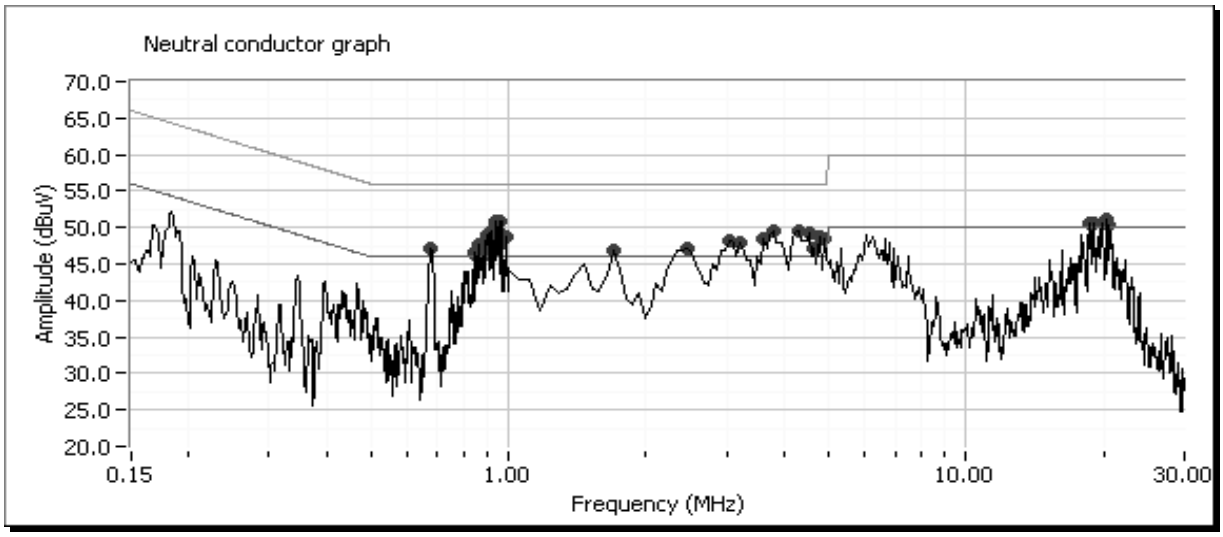
Deviations From The Standard

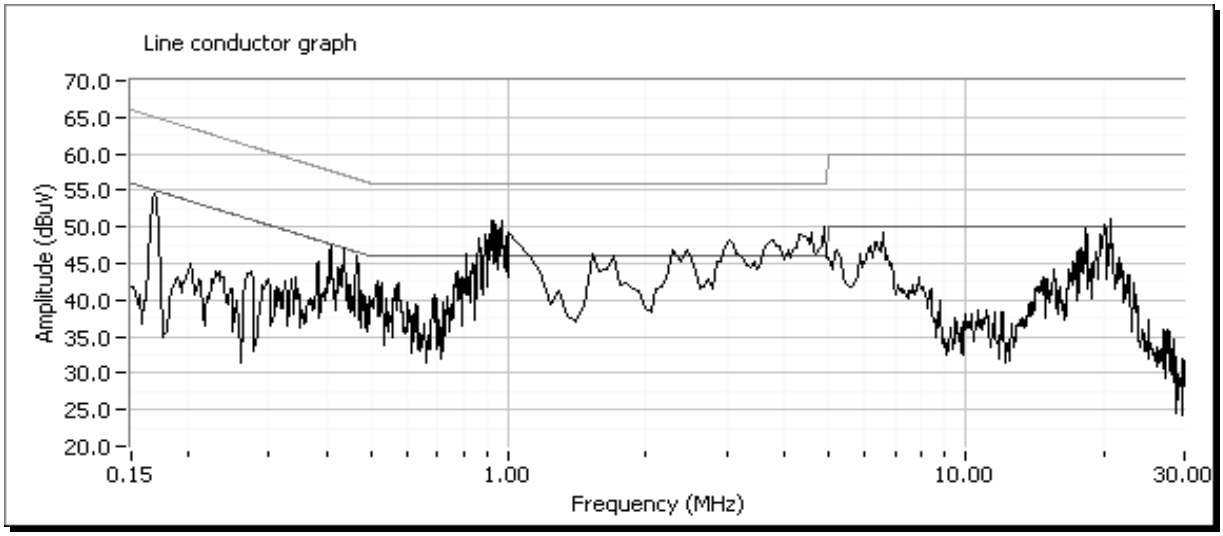
No deviations were made from the requirements of the standard.

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Model 01





EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.948	41.7	Line 1	46.0	-4.4	Average	
0.958	41.0	Line 1	46.0	-5.0	Average	
0.900	40.5	Line 1	46.0	-5.5	Average	
0.967	40.1	Line 1	46.0	-5.9	Average	
0.948	49.9	Line 1	56.0	-6.1	QP	
0.967	49.8	Line 1	56.0	-6.3	QP	
0.882	39.4	Line 1	46.0	-6.6	Average	
0.958	49.3	Line 1	56.0	-6.7	QP	
0.976	39.3	Line 1	46.0	-6.7	Average	
0.900	48.2	Line 1	56.0	-7.8	QP	
0.999	37.8	Line 1	46.0	-8.2	Average	
0.976	47.8	Line 1	56.0	-8.2	QP	
0.882	47.3	Line 1	56.0	-8.7	QP	
0.999	47.1	Line 1	56.0	-8.9	QP	
3.776	36.0	Line 1	46.0	-10.0	Average	
1.689	35.5	Line 1	46.0	-10.5	Average	
4.313	35.3	Line 1	46.0	-10.7	Average	
4.313	44.3	Line 1	56.0	-11.7	QP	
2.265	34.2	Line 1	46.0	-11.8	Average	
20.033	38.0	Line 1	50.0	-12.0	Average	
3.776	44.0	Line 1	56.0	-12.0	QP	
20.678	37.9	Line 1	50.0	-12.1	Average	
4.608	33.2	Line 1	46.0	-12.8	Average	
4.059	43.2	Line 1	56.0	-12.8	QP	
4.608	43.1	Line 1	56.0	-12.9	QP	
2.443	32.9	Line 1	46.0	-13.1	Average	
2.443	42.6	Line 1	56.0	-13.4	QP	
4.876	42.5	Line 1	56.0	-13.5	QP	
2.265	42.4	Line 1	56.0	-13.6	QP	
1.689	42.0	Line 1	56.0	-14.0	QP	
4.059	31.4	Line 1	46.0	-14.6	Average	
20.033	45.3	Line 1	60.0	-14.7	QP	
20.678	44.4	Line 1	60.0	-15.6	QP	
4.876	29.4	Line 1	46.0	-16.7	Average	

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.944	42.2	Line 1	46.0	-3.8	Average	
0.919	41.7	Line 1	46.0	-4.3	Average	
0.933	41.6	Line 1	46.0	-4.4	Average	
0.926	41.5	Line 1	46.0	-4.5	Average	
0.911	41.3	Line 1	46.0	-4.7	Average	
0.922	41.3	Line 1	46.0	-4.7	Average	
0.904	40.2	Line 1	46.0	-5.8	Average	
0.926	50.0	Line 1	56.0	-6.0	QP	
0.944	50.0	Line 1	56.0	-6.0	QP	
0.877	39.9	Line 1	46.0	-6.1	Average	
0.922	49.8	Line 1	56.0	-6.2	QP	
0.933	49.8	Line 1	56.0	-6.2	QP	
0.911	49.4	Line 1	56.0	-6.6	QP	
0.919	49.3	Line 1	56.0	-6.7	QP	
0.984	38.9	Line 1	46.0	-7.1	Average	
0.887	38.9	Line 1	46.0	-7.1	Average	
0.904	48.5	Line 1	56.0	-7.6	QP	
0.989	38.2	Line 1	46.0	-7.8	Average	
0.887	48.2	Line 1	56.0	-7.8	QP	
0.877	48.2	Line 1	56.0	-7.8	QP	
0.991	38.2	Line 1	46.0	-7.8	Average	
0.871	38.1	Line 1	46.0	-7.9	Average	
0.998	38.0	Line 1	46.0	-8.0	Average	
0.864	37.7	Line 1	46.0	-8.3	Average	
0.871	47.5	Line 1	56.0	-8.6	QP	
0.991	47.1	Line 1	56.0	-8.9	QP	
0.984	47.1	Line 1	56.0	-8.9	QP	
0.989	47.1	Line 1	56.0	-8.9	QP	
0.864	46.9	Line 1	56.0	-9.1	QP	
0.998	46.6	Line 1	56.0	-9.4	QP	
0.851	36.4	Line 1	46.0	-9.7	Average	
0.851	45.4	Line 1	56.0	-10.6	QP	
0.163	49.7	Line 1	65.3	-15.6	QP	
0.163	32.4	Line 1	55.3	-22.9	Average	

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.924	41.0	Neutral	46.0	-5.1	Average	
0.954	40.9	Neutral	46.0	-5.1	Average	
0.942	40.7	Neutral	46.0	-5.3	Average	
0.932	40.7	Neutral	46.0	-5.3	Average	
0.948	40.5	Neutral	46.0	-5.5	Average	
0.960	40.4	Neutral	46.0	-5.6	Average	
0.917	40.4	Neutral	46.0	-5.6	Average	
0.896	40.1	Neutral	46.0	-5.9	Average	
0.903	39.9	Neutral	46.0	-6.1	Average	
0.960	39.8	Neutral	46.0	-6.2	Average	
0.942	49.5	Neutral	56.0	-6.5	QP	
0.954	49.5	Neutral	56.0	-6.5	QP	
0.948	49.1	Neutral	56.0	-6.9	QP	
0.960	49.0	Neutral	56.0	-7.0	QP	
0.960	48.9	Neutral	56.0	-7.1	QP	
0.932	48.8	Neutral	56.0	-7.2	QP	
0.924	48.6	Neutral	56.0	-7.4	QP	
0.917	48.3	Neutral	56.0	-7.7	QP	
0.888	38.1	Neutral	46.0	-7.9	Average	
0.896	48.1	Neutral	56.0	-7.9	QP	
0.903	47.9	Neutral	56.0	-8.1	QP	
0.881	37.6	Neutral	46.0	-8.4	Average	
0.990	37.6	Neutral	46.0	-8.5	Average	
0.888	47.4	Neutral	56.0	-8.6	QP	
0.881	47.1	Neutral	56.0	-8.9	QP	
0.861	36.8	Neutral	46.0	-9.2	Average	
0.854	36.1	Neutral	46.0	-9.9	Average	
0.861	45.9	Neutral	56.0	-10.1	QP	
0.990	45.8	Neutral	56.0	-10.2	QP	
0.846	35.5	Neutral	46.0	-10.5	Average	
0.854	44.0	Neutral	56.0	-12.0	QP	
0.846	44.0	Neutral	56.0	-12.0	QP	
0.677	26.9	Neutral	46.0	-19.1	Average	
0.677	36.1	Neutral	56.0	-19.9	QP	

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

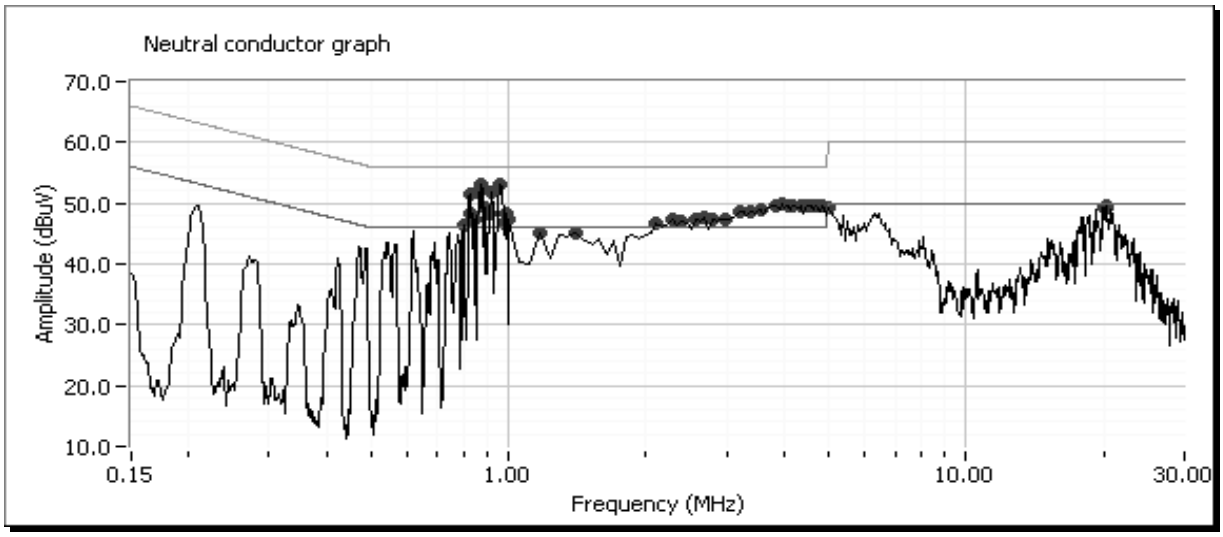
Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Model 01

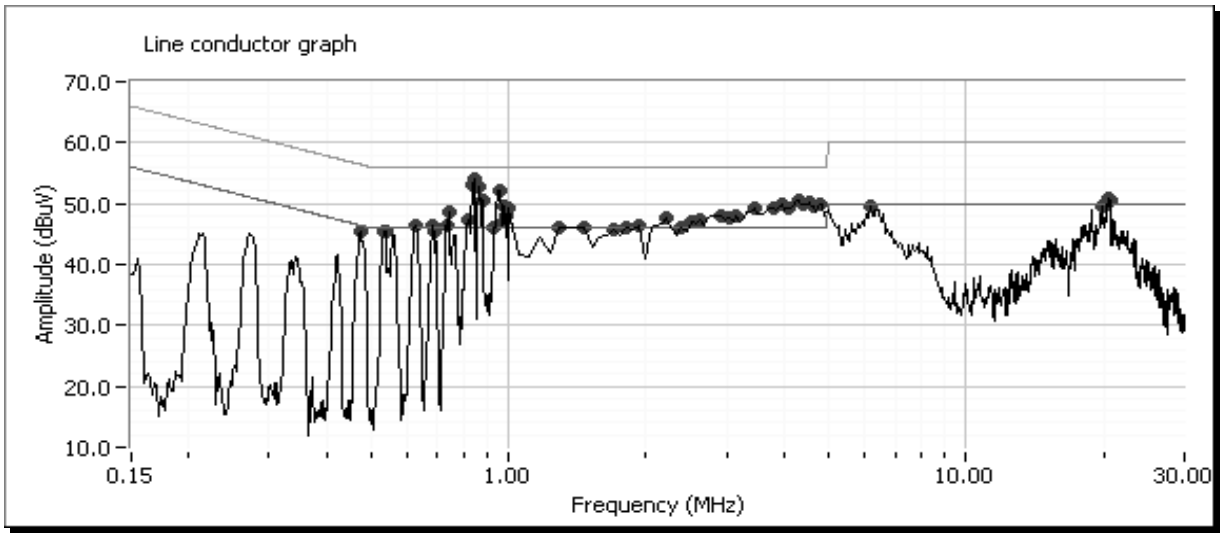
Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
3.814	36.6	Neutral	46.0	-9.5	Average	
3.017	36.4	Neutral	46.0	-9.6	Average	
2.451	35.8	Neutral	46.0	-10.2	Average	
1.736	35.8	Neutral	46.0	-10.2	Average	
4.557	35.1	Neutral	46.0	-10.9	Average	
4.286	44.7	Neutral	56.0	-11.3	QP	
3.814	44.7	Neutral	56.0	-11.3	QP	
3.152	34.5	Neutral	46.0	-11.5	Average	
4.557	44.2	Neutral	56.0	-11.8	QP	
3.623	44.1	Neutral	56.0	-11.9	QP	
3.152	43.9	Neutral	56.0	-12.1	QP	
3.623	33.8	Neutral	46.0	-12.2	Average	
4.672	43.7	Neutral	56.0	-12.3	QP	
3.017	43.5	Neutral	56.0	-12.5	QP	
4.914	43.2	Neutral	56.0	-12.8	QP	
2.451	43.1	Neutral	56.0	-12.9	QP	
4.286	33.1	Neutral	46.0	-12.9	Average	
4.741	43.1	Neutral	56.0	-13.0	QP	
4.914	32.4	Neutral	46.0	-13.6	Average	
1.736	42.3	Neutral	56.0	-13.8	QP	
4.741	31.5	Neutral	46.0	-14.5	Average	
4.672	31.2	Neutral	46.0	-14.8	Average	

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01





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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.909	51.9	neutral	56.0	-4.2	QP	
0.889	51.7	neutral	56.0	-4.3	QP	
0.875	51.1	neutral	56.0	-4.9	QP	
0.863	50.6	neutral	56.0	-5.4	QP	
0.841	50.3	neutral	56.0	-5.7	QP	
0.979	50.2	neutral	56.0	-5.8	QP	
0.961	49.8	neutral	56.0	-6.2	QP	
0.830	49.6	neutral	56.0	-6.4	QP	
0.823	49.6	neutral	56.0	-6.4	QP	
0.799	48.5	neutral	56.0	-7.5	QP	
0.991	47.7	neutral	56.0	-8.3	QP	
0.921	46.6	neutral	56.0	-9.4	QP	
0.889	35.2	neutral	46.0	-10.8	Average	
0.875	35.0	neutral	46.0	-11.0	Average	
0.830	34.6	neutral	46.0	-11.4	Average	
0.863	34.3	neutral	46.0	-11.7	Average	
0.823	34.1	neutral	46.0	-11.9	Average	
0.909	34.1	neutral	46.0	-11.9	Average	
0.841	34.0	neutral	46.0	-12.0	Average	
0.799	32.8	neutral	46.0	-13.2	Average	
0.979	30.6	neutral	46.0	-15.4	Average	
0.961	30.5	neutral	46.0	-15.5	Average	
0.991	28.1	neutral	46.0	-17.9	Average	
0.921	27.3	neutral	46.0	-18.7	Average	

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.999	47.9	neutral	56.0	-8.1	QP	
4.503	46.7	neutral	56.0	-9.3	QP	
4.226	46.7	neutral	56.0	-9.3	QP	
4.566	46.5	neutral	56.0	-9.5	QP	
4.362	46.5	neutral	56.0	-9.6	QP	
4.711	46.3	neutral	56.0	-9.7	QP	
4.100	46.1	neutral	56.0	-9.9	QP	
3.870	46.0	neutral	56.0	-10.0	QP	
3.925	46.0	neutral	56.0	-10.0	QP	
3.434	45.6	neutral	56.0	-10.4	QP	
3.590	45.6	neutral	56.0	-10.4	QP	
4.815	45.4	neutral	56.0	-10.6	QP	
2.957	45.3	neutral	56.0	-10.7	QP	
3.232	44.9	neutral	56.0	-11.1	QP	
2.577	44.7	neutral	56.0	-11.3	QP	
2.252	44.4	neutral	56.0	-11.6	QP	
2.667	44.3	neutral	56.0	-11.7	QP	
4.711	32.0	neutral	46.0	-14.0	Average	
4.503	31.6	neutral	46.0	-14.5	Average	
4.226	31.3	neutral	46.0	-14.7	Average	
4.566	31.2	neutral	46.0	-14.8	Average	
4.362	30.6	neutral	46.0	-15.4	Average	
4.100	30.5	neutral	46.0	-15.5	Average	
3.590	30.5	neutral	46.0	-15.6	Average	
3.434	30.2	neutral	46.0	-15.8	Average	
3.232	30.2	neutral	46.0	-15.9	Average	
3.870	29.7	neutral	46.0	-16.3	Average	
3.925	29.5	neutral	46.0	-16.5	Average	
4.815	29.3	neutral	46.0	-16.7	Average	
2.577	29.1	neutral	46.0	-16.9	Average	
2.252	29.1	neutral	46.0	-17.0	Average	
0.999	28.7	neutral	46.0	-17.3	Average	
2.667	28.7	neutral	46.0	-17.3	Average	
2.957	28.6	neutral	46.0	-17.4	Average	

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.876	52.5	Line 1	56.0	-3.5	QP	
0.863	51.8	Line 1	56.0	-4.2	QP	
0.931	51.8	Line 1	56.0	-4.3	QP	
0.957	51.7	Line 1	56.0	-4.3	QP	
0.843	51.3	Line 1	56.0	-4.7	QP	
0.833	51.2	Line 1	56.0	-4.8	QP	
0.981	50.9	Line 1	56.0	-5.1	QP	
0.819	50.7	Line 1	56.0	-5.3	QP	
0.975	50.7	Line 1	56.0	-5.3	QP	
0.741	47.0	Line 1	56.0	-9.0	QP	
0.732	46.5	Line 1	56.0	-9.5	QP	
0.876	36.3	Line 1	46.0	-9.7	Average	
0.833	35.8	Line 1	46.0	-10.2	Average	
0.538	45.8	Line 1	56.0	-10.2	QP	
0.534	45.7	Line 1	56.0	-10.3	QP	
0.628	45.7	Line 1	56.0	-10.3	QP	
0.819	35.7	Line 1	46.0	-10.3	Average	
0.863	35.2	Line 1	46.0	-10.8	Average	
0.682	45.0	Line 1	56.0	-11.0	QP	
0.686	44.9	Line 1	56.0	-11.1	QP	
0.475	44.7	Line 1	56.4	-11.7	QP	
0.931	34.2	Line 1	46.0	-11.8	Average	
0.957	33.8	Line 1	46.0	-12.2	Average	
0.538	33.8	Line 1	46.0	-12.2	Average	
0.475	33.9	Line 1	46.4	-12.5	Average	
0.843	33.2	Line 1	46.0	-12.8	Average	
0.741	33.2	Line 1	46.0	-12.8	Average	
0.534	32.9	Line 1	46.0	-13.1	Average	
0.732	32.3	Line 1	46.0	-13.7	Average	
0.628	31.8	Line 1	46.0	-14.2	Average	
0.975	31.7	Line 1	46.0	-14.3	Average	
0.981	31.6	Line 1	46.0	-14.5	Average	
0.686	31.4	Line 1	46.0	-14.7	Average	
0.682	30.3	Line 1	46.0	-15.7	Average	

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.998	49.2	Line 1	56.0	-6.8	QP	
4.424	46.6	Line 1	56.0	-9.4	QP	
4.566	46.5	Line 1	56.0	-9.5	QP	
3.943	46.3	Line 1	56.0	-9.7	QP	
4.773	46.2	Line 1	56.0	-9.8	QP	
4.282	46.2	Line 1	56.0	-9.8	QP	
4.070	46.2	Line 1	56.0	-9.8	QP	
3.792	46.1	Line 1	56.0	-9.9	QP	
4.651	46.0	Line 1	56.0	-10.0	QP	
3.451	45.7	Line 1	56.0	-10.3	QP	
3.017	44.9	Line 1	56.0	-11.1	QP	
3.175	44.8	Line 1	56.0	-11.2	QP	
2.600	44.8	Line 1	56.0	-11.3	QP	
2.910	44.6	Line 1	56.0	-11.4	QP	
2.528	44.5	Line 1	56.0	-11.5	QP	
2.244	44.2	Line 1	56.0	-11.8	QP	
20.514	36.9	Line 1	50.0	-13.1	Average	
4.773	32.1	Line 1	46.0	-13.9	Average	
4.566	32.1	Line 1	46.0	-13.9	Average	
20.514	45.9	Line 1	60.0	-14.1	QP	
3.943	31.4	Line 1	46.0	-14.6	Average	
4.424	31.4	Line 1	46.0	-14.6	Average	
4.651	31.3	Line 1	46.0	-14.7	Average	
3.451	30.6	Line 1	46.0	-15.4	Average	
3.792	30.6	Line 1	46.0	-15.4	Average	
4.070	30.5	Line 1	46.0	-15.5	Average	
4.282	29.9	Line 1	46.0	-16.1	Average	
0.998	29.9	Line 1	46.0	-16.1	Average	
2.600	29.6	Line 1	46.0	-16.4	Average	
2.910	29.6	Line 1	46.0	-16.4	Average	
2.528	29.0	Line 1	46.0	-17.0	Average	
2.244	28.8	Line 1	46.0	-17.2	Average	
3.017	28.6	Line 1	46.0	-17.4	Average	
3.175	28.6	Line 1	46.0	-17.4	Average	

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EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
Model 01

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
1.409	44.3	Line 1	56.0	-11.7	QP	
1.826	44.2	Line 1	56.0	-11.8	QP	
2.385	44.1	Line 1	56.0	-12.0	QP	
20.366	37.9	Line 1	50.0	-12.1	Average	
1.283	43.7	Line 1	56.0	-12.3	QP	
1.658	43.5	Line 1	56.0	-12.6	QP	
1.902	43.4	Line 1	56.0	-12.6	QP	
20.722	36.7	Line 1	50.0	-13.3	Average	
20.366	46.2	Line 1	60.0	-13.9	QP	
20.722	45.9	Line 1	60.0	-14.2	QP	
6.199	44.9	Line 1	60.0	-15.1	QP	
2.385	28.9	Line 1	46.0	-17.1	Average	
6.199	32.5	Line 1	50.0	-17.5	Average	
1.826	28.1	Line 1	46.0	-17.9	Average	
1.658	28.0	Line 1	46.0	-18.0	Average	
1.409	27.7	Line 1	46.0	-18.3	Average	
1.902	26.3	Line 1	46.0	-19.7	Average	
1.283	23.1	Line 1	46.0	-22.9	Average	

Elliott

EMC Test Data

Client:	OQO	Job Number:	J56215
Model:	Model 01	T-Log Number:	T56232
		Account Manager:	Christine Vu
Contact:	David Seniawski		
Spec:	EN 55022	Class:	B

0.998	49.2	Line 1	48.0	1.2	QP	
4.424	46.6	Line 1	48.0	-1.4	QP	
4.566	46.5	Line 1	48.0	-1.5	QP	
3.943	46.3	Line 1	48.0	-1.7	QP	
4.773	46.2	Line 1	48.0	-1.8	QP	
4.282	46.2	Line 1	48.0	-1.8	QP	
4.070	46.2	Line 1	48.0	-1.8	QP	
3.792	46.1	Line 1	48.0	-1.9	QP	
4.651	46.0	Line 1	48.0	-2.0	QP	
3.451	45.7	Line 1	48.0	-2.3	QP	
3.017	44.9	Line 1	48.0	-3.1	QP	
3.175	44.8	Line 1	48.0	-3.2	QP	
2.600	44.8	Line 1	48.0	-3.3	QP	
2.910	44.6	Line 1	48.0	-3.4	QP	
2.528	44.5	Line 1	48.0	-3.5	QP	
2.244	44.2	Line 1	48.0	-3.8	QP	
20.514	45.9	Line 1	48.0	-2.1	QP	
1.409	44.3	Line 1	48.0	-3.7	QP	
1.826	44.2	Line 1	48.0	-3.8	QP	
2.385	44.1	Line 1	48.0	-4.0	QP	
1.283	43.7	Line 1	48.0	-4.3	QP	
1.658	43.5	Line 1	48.0	-4.6	QP	
1.902	43.4	Line 1	48.0	-4.6	QP	
20.366	46.2	Line 1	48.0	-1.9	QP	
20.722	45.9	Line 1	48.0	-2.2	QP	
6.199	44.9	Line 1	48.0	-3.1	QP	