Specifications

Physical specifications

Protection classifications, all monitor configurations	
Characteristic	**Specification**
Electrical rating	100 – 240 V AC, 50 – 60 Hz, 1.5 – 0.8 A
Duty cycle	Continuous operation
Type of protection against electric shock	Class I equipment (protectively earthed) with double insulation
Degree of protection against electric shock, for parts applied to patients	Type BF defibrillator proof IEC EN 60601-1, 2nd Edition
Recovery time following defibrillator discharge	Less than or equal to 10 seconds
Flammable anesthetics	**WARNING** Not suitable for use with flammable anesthetics.
Degree of protection provided by the enclosure with respect to harmful ingress of liquids	IPX0 Non-protected according to EN/IEC 60529; Pulse oximeter equipment complies with ISO 9919 Cl. 44.6 Ingress of liquids tests and EN/IEC 60601-1, 60601-2-30, 60601-2-49 Cl. 44.3 Spillage tests
Height	10 in. (25.4 cm)
Width	11 in. (29.2 cm)
Depth	6 in. (15.7 cm)
Weight (including battery)	9.5 lb. (4.3 kg)
Graphical display resolution	
Display area	8 in. (H) x 4 in. (V) (19.5 [H] cm x 11.3 [V] cm)
Pixels	1024 (H) x 600 (V)

Protection classifications, all monitor configurations	
Pixel arrangement	RGB (red, green, blue)
Color depth	16 bits per pixel
Speaker volume	
Output sound pressure	67 dB at 1.0 meter
Alarm and pulse tones	per IEC 60601-1-8
Pulse frequency (f_0)	150 – 1000 Hz
Number of harmonic components in the range 300 Hz to 4000 Hz	minimum of 4
Effective pulse duration (t_d)	high priority: 75 –200 ms medium and low priority: 125 – 250 ms
Rise time (t_r)	10 – 20% of t_d
Fall time[a] (t_f)	$t_f \leq t_s - t_r$

Note The relative sound pressure level of the harmonic components should be within 15 dB above or below the amplitude at the pulse frequency.

[a] Prevents overlap of pulses.

Battery specifications	**6 cell**	**9 cell**
Rating	11.1 V 3.80Ah (42Wh)	10.8 V 6.75Ah (73Wh)
Composition	Lithium-ion	Lithium-ion
Charge time to 80 percent capacity	2hr 7m	2hr 25m
Charge time to 100 percent capacity	3hr	4hr
Patient exams per charge[1]	26	47
Age to 70 percent capacity[2]	300	300

[1]A patient exam includes NIBP, Temperature, and SpO2 measurements at the rate of one patient every 10 minutes with a 2-minute display time out setting and a new battery.

[2]After this many full charge and discharge cycles, the battery has aged to where its total capacity has been reduced to 70 percent of its rating.

Nurse Call connection specifications	
Nurse Call	25 V AC or 60 V DC maximum at 1A maximum

NIBP specifications

Cuff pressure range	Meets or exceeds ANSI/AAMI SP10:2002 standards for cuff pressure range
Systolic range	Adult: 30 to 260 mmHg (StepBP, SureBP) Pediatric: 30 to 260 mmHg (StepBP, SureBP) Neonate: 20 to 120 mmHg (StepBP)
Diastolic range	Adult: 20 to 220 mmHg (StepBP, SureBP) Pediatric: 20 to 220 mmHg (StepBP, SureBP) Neonate: 10 to 110 mmHg (StepBP)
Cuff Inflation Target	Adult:160 mmHg (StepBP) Pediatric: 120 mmHg (StepBP) Neonate: 90 mmHg (StepBP)
Maximum Target Pressure	Adult: 280 mmHg (StepBP, SureBP) Pediatric: 280 mmHg (StepBP, SureBP) Neonate: 130 mmHg (StepBP)
Blood pressure determination time	Typical: 15 seconds Maximum: 150 seconds
Blood pressure accuracy	Meets or exceeds ANSI.AAMI SP10:2002 standards for noninvasive blood pressure accuracy (±5 mmHg mean error, 8 mmHg standard deviation)
Mean Arterial Pressure (MAP) range The formula used to calculate MAP yields an approximate value.	Adult: 23 to 230 mmHg (StepBP, SureBP) Pediatric: 23 to 230 mmHg (StepBP, Sure BP) Neonate: 13 to 110 mmHg (StepBP)
Pulse rate range (using blood pressure determination)	Adult: 30 to 200 bpm (StepBP, SureBP) Pediatric: 30 to 200 bpm (StepBP, SureBP) Neonate: 35 to 220 bpm (StepBP)
Pulse rate accuracy (using blood pressure determination)	±5.0% (±3 bpm)
Overpressure cutoff	Adult: 300 mmHg ±15 mmHg Pediatric: 300 mmHg ±15 mmHg Neonate: 150 mmHg maximum

Temperature specifications

Temperature range	80°F to 110°F (26.7°C to 43.3°C)
Calibration accuracy	
Average error	±0.3°F for oral, axillary, and rectal predictive measurements

Temperature specifications	
Standard deviation	Does not exceed 0.5°F for oral, axillary, and rectal modes

SpO2 specifications (refer to sensor manufacturer's directions for use for additional information)	
SpO2 performance measurement range	1 to 100%
Masimo sensor accuracy guide	Accuracy specified when used with Masimo SET pulse oximetry monitors or with licensed Masimo SET pulse oximetry modules Masimo sensor accuracy guide using PC series patient cables, during no motion. Numbers present ± 1standard deviation. Plus or minus one standard deviation represents 68% of the population.
Perfusion	0.02 % to 20 %
Pulse rate	25 to 240 beats per minute (bpm) No motion: ± 3 digits Motion: ± 5 digits
Saturation **Note** Saturation accuracy varies by sensor type.	70% to 100% Adults, Pediatrics (No motion): ± 2 digits Neonates (No motion): ± 3 digits Adults, Pediatrics, Neonates (Motion): ± 3 digits Low Perfusion: 0.02 % to 20 % ± 2 digits
Nellcor sensor accuracy guide	SpO2 measurement accuracy can only be evaluated in vivo by comparing pulse oximeter readings with SaO2 measurements obtained from simultaneously sampled arterial blood made using a laboratory CO-oximeter. The VSM 6000 SpO2 accuracy was validated through breathe-down-equivalent testing by Covidien using electronic measurements to prove equivalence to the Nellcor N600x predicate device. The Nellcor N600x predicate device was validated by performing human-subject, “breathe-down” clinical trials.
Perfusion	0.03 % to 20 %
Pulse rate	20 to 250 beats per minute (bpm) ± 3 digits
Saturation **Note** Saturation accuracy varies by sensor type.	70% to 100% Adult, Pediatrics: ± 2 digits Neonate: ± 3 digits Low Perfusion: 0.02 % to 20 % ± 2 digits
Functional tester	**WARNING** A functional tester cannot be used to assess the accuracy of a pulse oximeter monitor.[1]

[1] Some models of commercially available bench top functional testers and patient simulators can be used to verify the proper functionality of Nellcor pulse oximeter sensors, cables and monitors. See the individual testing device's operator's manual for the procedures specific to the model of tester being used.

While such devices may be useful for verifying that the pulse oximeter sensor, cabling, and monitor are functional, they are incapable of providing the data required to properly evaluate the accuracy of a system's SpO2 measurements. Fully evaluating the accuracy of the SpO2 measurements requires, at a minimum, accommodating the wavelength characteristics of the sensor and reproducing the complex optical interaction of the sensor and the patient's tissue. These capabilities are beyond the scope of known bench top testers. SpO2 measurement accuracy can only be evaluated in vivo by comparing pulse oximeter readings with SaO2 measurements obtained from simultaneously sampled arterial blood made using a laboratory CO-oximeter.

Many functional testers and patient simulators have been designed to interface with the pulse oximeter's expected calibration curves and may be suitable for use with Nellcor monitors and/or sensors. Not all such devices, however, are adapted for use with the Nellcor OXIMAX digital calibration system. While this will not affect use of the simulator for verifying system functionality, displayed SpO2 measurement values may differ from the setting of the test device. For a properly functioning monitor, this difference will be reproducible over time and from monitor to monitor within the performance specifications of the test device.

Environmental specifications

Operating temperature	50°F to 104°F (10°C to 40°C)
Storage temperature	-4°F to 122°F (-20°C to 50°C)
Operating altitude	-557 to 10,000 ft. (-170 m to 3,048 m)
Operating humidity	15 to 95% noncondensing
Storage humidity	15% to 95% noncondensing

Monitor radio

The monitor's radio operates on Welch Allyn FlexNet™ or other 802.11 networks.

Wireless network interface	IEEE 802.11 b/g, 802.11a
Frequency	802.11 b/g: 2.402 GHz to 2.4835 GHz
	802.11a: 5.125 GHz to 5.875 GHz
Channels	Up to 14 in 802.11b/g, up to 24 in 802.11a; country-dependent
Security/encryption/ authentication	WPA2/AES (either EAP or PSK authentication)
Antenna	Internal multiband PIFA
Wireless data rates	802.11b: 1Mbps or higher during vitals transmission only
	802.11a/g: 6Mbps or higher during vitals transmission only
	(approximately 2 seconds per reading)
Agency approvals	US: FCC Part 15, Class B; C/UL; CE; 47 CFR Part 2.1093, 15.207, 15.209, 15.247, 15.407; FCC OET Bulletin 65C

	Europe: CE; EN 50371; EN/ETSI 300 328 V1.7.1, 301 489-1 V1.6.1, 301 489-17 V1.2.1, 301 893 V1.4.1
	Canada: RSS-210; RSS-GEN; RSS-102
	Hong Kong: HKTA 1039
Protocols	UDP, DHCP, TCP/IP
Data transfer protocols	UDP/TCP/IP
Modulation	OFDM (802.11a/g), DSSS/CCK (802.11b)
Output power	40mW typical, country-dependent
Ancillary IEEE standards	802.11e, 802.11h, 802.11i, 802.11X

Channel restrictions in the 5-GHz band are determined by country.
Marking by the symbol (!) indicates that usage restrictions apply. To ensure compliance with local regulations, be sure the correct country in which the access point is installed is selected. This product can be used with the following restriction(s):

France - Outdoor use is limited to 10 mW EIRP within the band 2454 to 2483.5 MHz.

Note Effective Isotropic Radiated Power (EIRP).

Note Some countries restrict the use of 5-GHz bands. The 802.11a radio in the monitor uses only the channels indicated by the access point with which the radio associates. The hospital IT department must configure access points to operate with approved domains.

Configuration options

The monitor is available in multiple configurations.

Model	Description
6300	Basic. Includes USB connectivity. Ethernet connectivity is optional.
6400	Standard. Includes nurse call, Ethernet, and USB connectivity. The radio is optional.
6500	Wireless. Includes all Standard features plus an internal 802.11 a/b/g radio.

Patents

The Welch Allyn VSM 6000 series monitor is covered under the following patents:

6,000,846; 6,036,361; 6,036,718; 6,095,983; 6,544,173; 6,544,174; 6,578,428; 6,616,606; 6,971,790; 6,827,488; 6,988,989; 7,021,824; 7,226,419; 7,255,475; 7,390,299; 7,429,245; 7,439,856; 7,515,043; 7,515,044; D480,977; D568,478; D575,871; and other patents pending.

Standards and compliance

General compliance and standards

The monitor complies with the following standards:

21 CFR Subchapter H – Medical Devices – US Food and Drug Administration
2002 No. 236 – Australian Therapeutic Goods Act
93/42/EEC – European Economic Community Medical Devices Directive
2007/47/EC – European Economic Community Medical Devices Directive 2007 Amendment
94/62/EC – European Economic Community Packaging Directive
2002/96/EC – European Economic Community Waste Electrical and Electronic Equipment Directive
2006/66/EC – European Economic Community Batteries and Accumulators Directive
SOR/98-282 – Canadian Medical Devices Regulation
IATA DGR – International Air Transport Association Dangerous Goods Regulation
United Nations ST/SG/AC.10/11 – Manual of Tests and Criteria, Part III, Sub-Section 38.3

ANSI/AAMI SP10
AS/NZS 3200.1.0[1]
ASTM D 4332, E 1104
CAN/CSA C22.2 NO.601.1[1] CAN/CSA-C22.2 NO.60601-1-2, CSA Z9919
EN 1060-1, 1060-3, 1060-4[2]
EN/IEC 60601-1, 60601-1-2, 60601-1-4, 60601-1-6, 60601-1-8, 60601-2-30, 60601-2-49, 62304
EN/ISO 9919, 13485, 14971
ISTA 2A
UL 60601-1[1]

Directive 2002/96/EC-WEEE:
Disposal of noncontaminated electrical and electronic equipment

This product must be disposed of according to local laws and regulations. Do not dispose of this product as unsorted municipal waste. Prepare this product for reuse or separate collection as specified by Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste Electronic and Electrical Equipment (WEEE). If this product is contaminated, this directive does not apply.

[1] Standard is essentially the IEC 60601-1 General standard plus the listed country's National Deviations.

[2] Non-Invasive Sphygmomanometers – Part 1: General Requirements, Part 3. Supplementary Requirements for Electro-Mechanical Blood Pressure Measuring Systems, Part 4: Test Procedures to Determine the Overall System Accuracy of Automated Non-Invasive Sphygmomanometers.

For more specific disposal or compliance information, see www.welchallyn.com/weee, or contact Welch Allyn Customer Service at +44 207 365 6780.

General radio compliance

The 802.11a Wireless PC Card must be used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

This device complies with Part 15 of the FCC rules and with the rules of the Canadian ICES-003 as described below.

Federal Communications Commission (FCC)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the distance between the equipment and the receiver
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-0034504.

Welch Allyn is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this Welch Allyn product, or the substitution or attachment of connecting cables and equipment other than specified by Welch Allyn.

The correction of interference caused by such unauthorized modification, substitution, or attachment will be the responsibility of the user.

Industry Canada (IC) emissions

This device complies with RSS 210 of Industry Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit étre prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

European Union

Czech	Welch Allyn tímto prohlašuje, ze tento RLAN device je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Danish	Undertegnede Welch Allyn erklærer herved, at følgende udstyr RLAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF
Dutch	Bij deze verklaart Welch Allyn dat deze RLAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
English	Hereby, Welch Allyn, declares that this RLAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Estonian	Käesolevaga kinnitab Welch Allyn seadme RLAN device vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Finnish	Welch Allyn vakuuttaa täten että RLAN device tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
French	Par la présente, Welch Allyn déclare que ce RLAN device est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables
German	Hiermit erklärt Welch Allyn die Übereinstimmung des Gerätes RLAN device mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Welch Allyn ΔΗΛΩΝΕΙ ΟΤΙ RLAN device ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ
Hungarian	Alulírott, Welch Allyn nyilatkozom, hogy a RLAN device megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Italian	Con la presente Welch Allyn dichiara che questo RLAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latvian	Ar šo Welch Allyn deklarē, ka RLAN device atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lithuanian	Šiuo Welch Allyn deklaruoja, kad šis RLAN device atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Malti	Hawnhekk, Welch Allyn, jiddikjara li dan RLAN device jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC

Portuguese	Welch Allyn declara que este RLAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovak	Welch Allyn týmto vyhlasuje, ze RLAN device spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Slovene	Šiuo Welch Allyn deklaruoja, kad šis RLAN device atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Spanish	Por medio de la presente Welch Allyn declara que el RLAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE
Swedish	Härmed intygar Welch Allyn att denna RLAN device står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Guidance and manufacturer's declaration

EMC compliance

Special precautions concerning electromagnetic compatibility (EMC) must be taken for all medical electrical equipment. This device complies with IEC EN 60601-1-2:2007.

- All medical electrical equipment must be installed and put into service in accordance with the EMC information provided in this document and the *VSM 6000 Directions For Use.*
- Portable and mobile RF communications equipment can affect the behavior of medical electrical equipment.

The VSM 6000 monitor complies with all applicable and required standards for electromagnetic interference.

- It does not normally affect nearby equipment and devices.
- It is not normally affected by nearby equipment and devices.
- It is not safe to operate the monitor in the presence of high-frequency surgical equipment.
- However, it is good practice to avoid using the monitor in extremely close proximity to other equipment.

Emissions and immunity information

Electromagnetic emissions

The monitor is intended for use in the electromagnetic environment specified below. The customer or user of the monitor should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The monitor uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The monitor is suitable for use in all establishments other than domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded:
Harmonic emissions IEC 61000-3-2	Class A	

Electromagnetic emissions

Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	**WARNING** This equipment/system is intended for use by healthcare professionals only. This equipment/ system may cause radio interference or may disrupt the operation of nearby equipment [a]. It may be necessary to take mitigation measures, such as re-orienting or relocating the monitor or shielding the location.

[a] The monitor contains a 5-GHz orthogonal frequency-division multiplexing transmitter or a 2.4-GHz frequency hopping spread-spectrum transmitter for the purpose of wireless communication. The radio is operated according to the requirements of various agencies, including FCC 47 CFR 15.247 and R&TTE Directive (1995/5/ EC). The transmitter is excluded from the EMC requirements of 60601-1-2:2007, but should be considered when addressing possible interference issues between this and other devices.

Electromagnetic immunity

The monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the monitor should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/ output lines	±2 kV for power supply lines ±1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	>95% dip in 0.5 cycle 60% dip in 5 cycles 30% dip for 25 cycles >95% dip in 5 seconds	>95% dip in 0.5 cycle 60% dip in 5 cycles 30% dip for 25 cycles >95% dip in 5 seconds	Mains power quality should be that of a typical commercial or hospital environment. If the user of the monitor requires continued operation during power mains interruptions, it is recommended that the monitor be powered from an uninterruptible power supply or a battery.

Electromagnetic immunity

The monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the monitor should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance

Electromagnetic immunity			
			Portable and mobile RF communications equipment should be used no closer to any part of the monitor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
			Recommended separation distance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	$d = (1.17)\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 1 GHz	3 V/m	$d = (1.17)\sqrt{P}$ 80 to 800 MHz
			$d = (2.33)\sqrt{P}$ 800 MHz to 2,5 GHz where *P* is the maximum output power rating of the transmitter in watts (W) and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol: 

Note1: At 80 MHz and 800 MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

[a]Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the monitor is used exceeds the applicable RF compliance level above, the monitor should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the monitor.

[b]Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the monitor

The monitor is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the monitor as recommended below, according to the maximum output power of the communications equipment.

Separation distance according to frequency of transmitter (m)

Recommended separation distances between portable and mobile RF communications equipment and the monitor

Rated max. output power of transmitter (W)	150 kHz to 80 MHz $d = (1.17)\sqrt{P}$	80 MHz to 800 MHz $d = (1.17)\sqrt{P}$	800 MHz to 2.5 GHz $d = (2.23)\sqrt{P}$
0.01	0.11667	0.11667	0.23333
0.1	0.36894	0.36894	0.73785
1	1.1667	1.1667	2.3333
10	3.6894	3.6894	7.3785
100	11.667	11.667	23.3333

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.