

TEST REPORT

ARIB STD-T66 VERSION 3.5

MANUFACTURER	IDEXX Laboratories, Inc. One Thomas Drive Westbrook Maine 04092 USA
EUT DESCRIPTION	IDEXX SNAP Pro - Portable imaging diagnostic instrument for veterinary labs with wireless networking capability – Bluetooth (2402-2480 MHz) / WiFi (2412-2472 MHz)
MODEL NUMBER(S) TESTED	89-91921-02
SERIAL NUMBER(S) TESTED	2299912345
TEST REPORT NUMBER	NC1306936.4

TÜV SÜD America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable requirements of ARIB STANDARD ARIB STD-T66 VERSION 3.5 *“Second generation low power data communication system / wireless LAN system”*.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV SÜD America, Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NARTE, and VCCI.

Not Transferable

1 TEST RESULT SUMMARY

Tables 1 and 2 summarize the device's test results with respect to the essential requirements defined in ARIB STD-T66 VERSION 3.5.

1.1. Transmitter

Table 1: Transmitter results summary

Clause	Transmitter parameters	Pass	Fail	Not applicable	Not Tested
3.2.2	Maximum transmit power	X			
3.2.4	Allowable deviation for frequency	X			
3.2.6	Allowable value of spurious emissions or unwanted emissions strength	X			
3.2.7	Allowable value for occupied bandwidth	X			
3.2.11	Dwell time	X			

1.2 Receiver

Table 2: Receiver results summary

EN Clause	Transmitter parameters	Pass	Fail	Not applicable	Not Tested
3.3.1	Receiver spurious emissions	X			

Test Result

☒ Compliant

☐ Non-compliant

REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	32	25 November 2013	Initial Release

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2. Introduction

This testing is intended to verify that the model 89-91921-02 is performing in accordance with the requirements of ARIB STD-T66 VERSION 3.5

This test report consists of:

- Test result summary
- List of contents
- Introduction and further information
- Equipment application data
- Detailed test information
- List of measurement equipment with calibration validity
- Photographs and further test results (plots, graphs, etc.)

All pages have been numbered consecutively and bear TÜV SÜD America, the test report number, the date, the test specification in its current version as well as the type designation of the EUT. The total number of pages in this report is 32.

The tests were carried out on a representative assembly and in accordance with the test methods stated in: ARIB STD-T66 VERSION 3.5

The sample of the product was received on: 25 September 2013.

The tests were carried out in the following period of time:
25 September– 07 October 2013

3. Testing laboratory

The tests were carried out at TÜV SÜD America:

Wild River Lab
19333 Wild Mountain Road
Taylors Falls MN 55084

- - Large Test Site Open Area Test Site
- - Small Test Site Open Area Test Site

New Brighton Lab
1775 Old Highway 8 NW
New Brighton MN 55112

- - Environmental Testing Lab

Accredited by:

A2LA

Accreditation number 2955.12

4. Applicant

Company name : IDEXX Laboratories, Inc.
Address : One Thomas Drive
Country : USA
Contact : Wayne Bell
Telephone : 207-556-8733
Email : wayne-bell@idexx.com

5. Product and product documentation

Samples of the following apparatus were submitted for testing:

Manufacturer : IDEXX Laboratories, Inc.
Trademark : IDEXX SNAP Pro
Type designation : Bluetooth/WiFi transmitter
Hardware version : See attached test plan
Serial number : 2299912345
Software release : See attached test plan
Type of equipment : Portable imaging diagnostic instrument for veterinary labs with wireless networking capability

For issuing this report the following product documentation was used:
SNAP PRO TESTPLANCDF

6. Conclusions, observations and comments

The test report will be filed at TÜV SÜD America for a period of 10 years following the issue of this report. It may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval from TÜV SÜD America.

TÜV SÜD America Inc reports apply only to the specific samples tested under stated test conditions. TÜV SÜD America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America Inc issued reports.

TÜV SÜD America assumes the sample to comply with the requirements of ARIB STD-T66 VERSION 3.5 for the respective test sector, if the test results are positive.

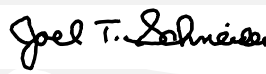
Comments: ---

Tested By

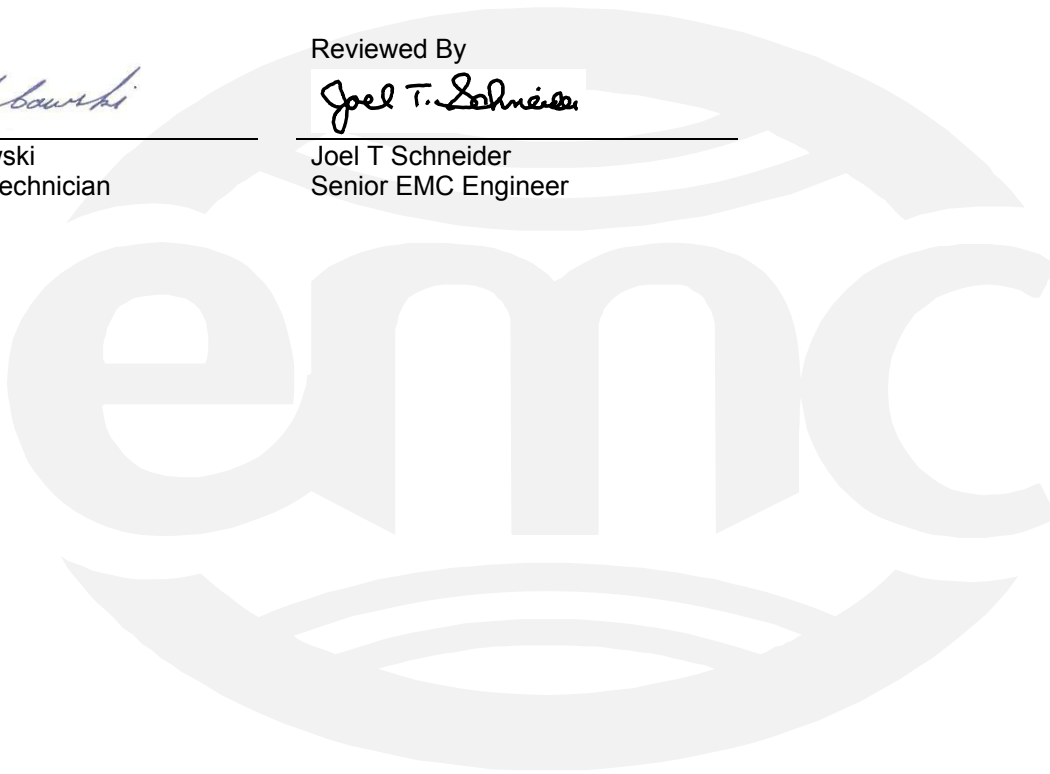


Greg Jakubowski
Senior EMC Technician

Reviewed By



Joel T Schneider
Senior EMC Engineer



7.0 ENVIRONMENTAL CONDITIONS IN THE LAB

	<u>Actual</u>
Temperature:	: 19-21°C
Atmospheric pressure	: 98 kPa
Relative Humidity	: 57-58%

POWER SUPPLY UTILIZED

Power supply system : 50/60 Hz 100-240 VAC

MEASUREMENT UNCERTAINTY

Table 3: Measurement uncertainties

Parameter	Maximum Measurement Uncertainty	Actual
Radio Frequency	$\pm 1 \times 10^{-7}$	$\pm 3 \times 10^{-9}$
Radiated emission of transmitter	valid up to 4 GHz ± 6 dB	± 4.8 dB
Radiated emission of receiver	valid up to 4 GHz ± 6 dB	± 4.8 dB
Temperature	± 1 °C	± 0.8 °C
Humidity	± 5 %	± 4.6 %

The equipment comprising the test systems is calibrated on an annual basis.

SIGN EXPLANATIONS

- ☐ - not applicable
- ☒ - applicable

8. Transmitter parameters

8.1 Maximum transmit power

Worst case mode of FCC ID: YKP1024119 test report re-tested for Bluetooth and WiFi modes. 2412-2462 MHz output power reduced from FCC product. Tested low, mid and high channels with 1, 6, 11, 36, 54 Mb/s, MCS0, MCS7 modes.

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

New Brighton environmental lab

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03371	E4440A	Agilent	Spectrum Analyzer	MY43362222	06-Nov-13
NBLE10440	E4446A	HP	Spectrum Analyzer 44GHz	US44300488	25 Sep 14
NBLE02238	SH27	ENVIRONTRONICS	27 Cu Ft T/H Chamber	09963482-5	Code B 29-Oct-13

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

Test limit

- a. The antenna power of a transmitting unit of spectrum spread method using FH method or compound method of DS method and FH method or compound method of FH method and OFDM method and using a frequency band of 2,427 MHz to 2,470.75 MHz shall be such that the average power in a bandwidth of 1 MHz is 3 mW or lower in case of modulation using a standard coding test signal with the same transmission speed as that of the modulation signal.
- b. The antenna power of a transmitting unit using a spectrum spread method other than those stated in above shall be such that the average power within a bandwidth of 1 MHz is 10 mW or lower in case of modulation using a standard coding test signal with the same transmission speed as that of the modulation signal
- c. The antenna power of a transmitting unit using OFDM method shall be such that the average power within a bandwidth of 1 MHz is one of the following 1 or 2 in case of modulation using a standard coding test signal with the same transmission speed as that of the modulation signal.
 1. 10 mW or less, in case of a transmitting unit with an occupied bandwidth of 26 MHz or less.
 2. 5 mW or less, in case of a transmitting unit with an occupied bandwidth of more than 26 MHz but less than 38 MHz.
- d. The antenna power of a transmission unit other than those described above shall be 10 mW or less.

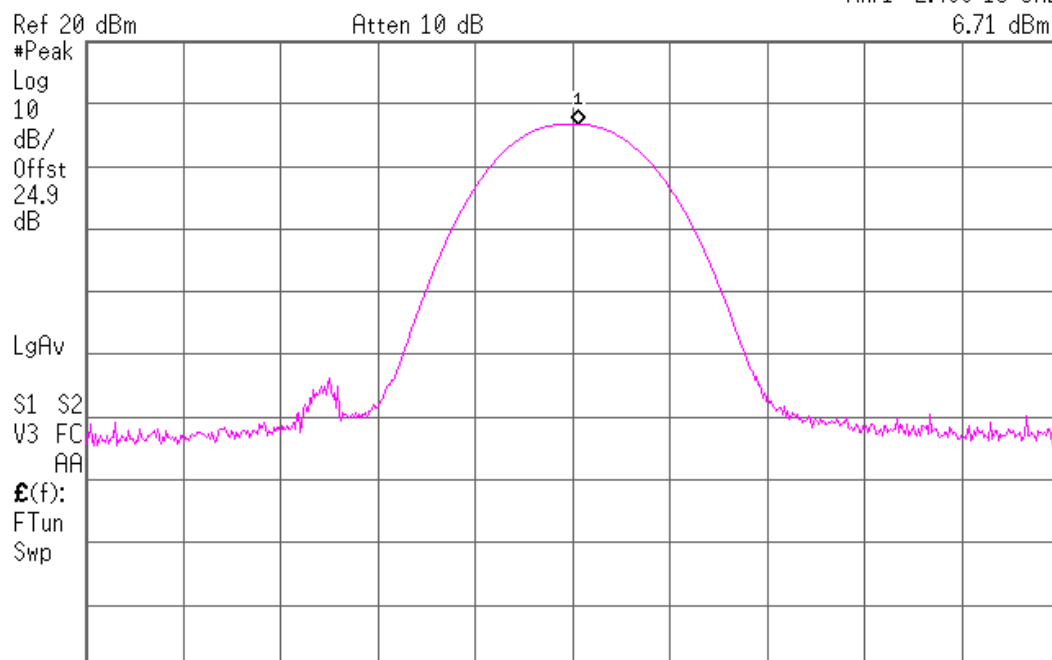
Test Data

Bluetooth – measured 6.71 dBm / 2 MHz, calculated 3.71 dBm / 1 MHz, or 2.35 mW / 1 MHz. (limit a)

WiFi – measured -52.36 dBm / Hz, calculated 7.64 dBm / 1 MHz, or 5.82 mW / 1 MHz. (limit c1)

Agilent 16:14:25 Oct 7, 2013

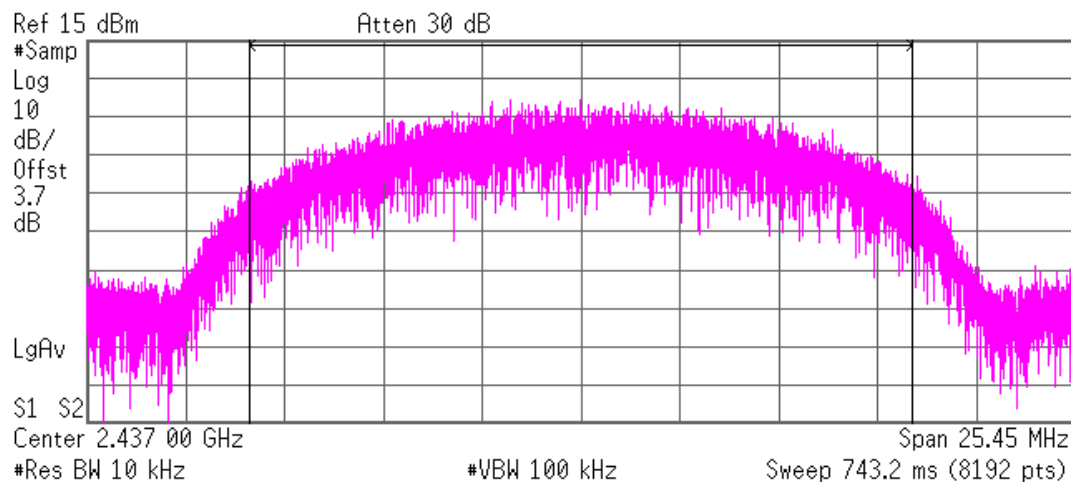
Mkr1 2.480 13 GHz



Worst case Bluetooth

Worst case Wifi – 11 Mb/s

Agilent 10:09:19 Sep 26, 2013



Channel Power

19.95 dBm /17.0000 MHz

Power Spectral Density

-52.36 dBm/Hz

8.2 Allowable deviation for frequency

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

New Brighton environmental lab

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
NBLE10440	E4446A	HP	Spectrum Analyzer 44GHz	US44300488	25 Sep 14
NBLE02238	SH27	ENVIRONTRONICS	27 Cu Ft T/H Chamber	09963482-5	Code B 29-Oct-13
NBLE10715	436A	Hewlett Packard	Power Meter	2101A09002	29-Jan-14
NBLE02700	8482A	Hewlett Packard	Power Sensor	1925A04282	20-May-14

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

Test limit

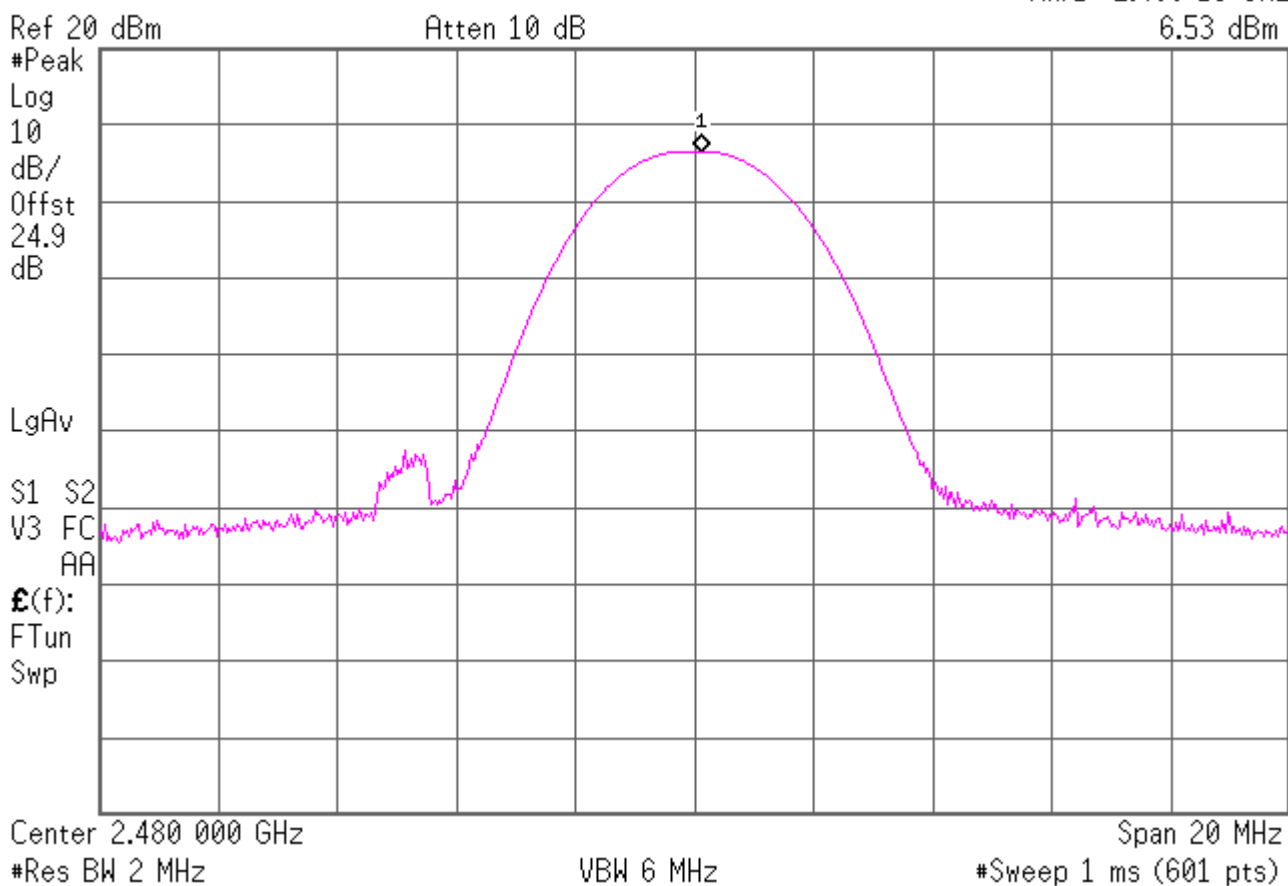
The allowable deviation for frequency is within $\pm 50 \times 10^{-6}$.

Test Data

15°C

Agilent 14:37:26 Oct 7, 2013

Mkr1 2.480 13 GHz



30 degrees C

Agilent 16:14:25 Oct 7, 2013

Mkr1 2.480 13 GHz
6.71 dBm

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

24.9

dB

LgAv

S1 S2

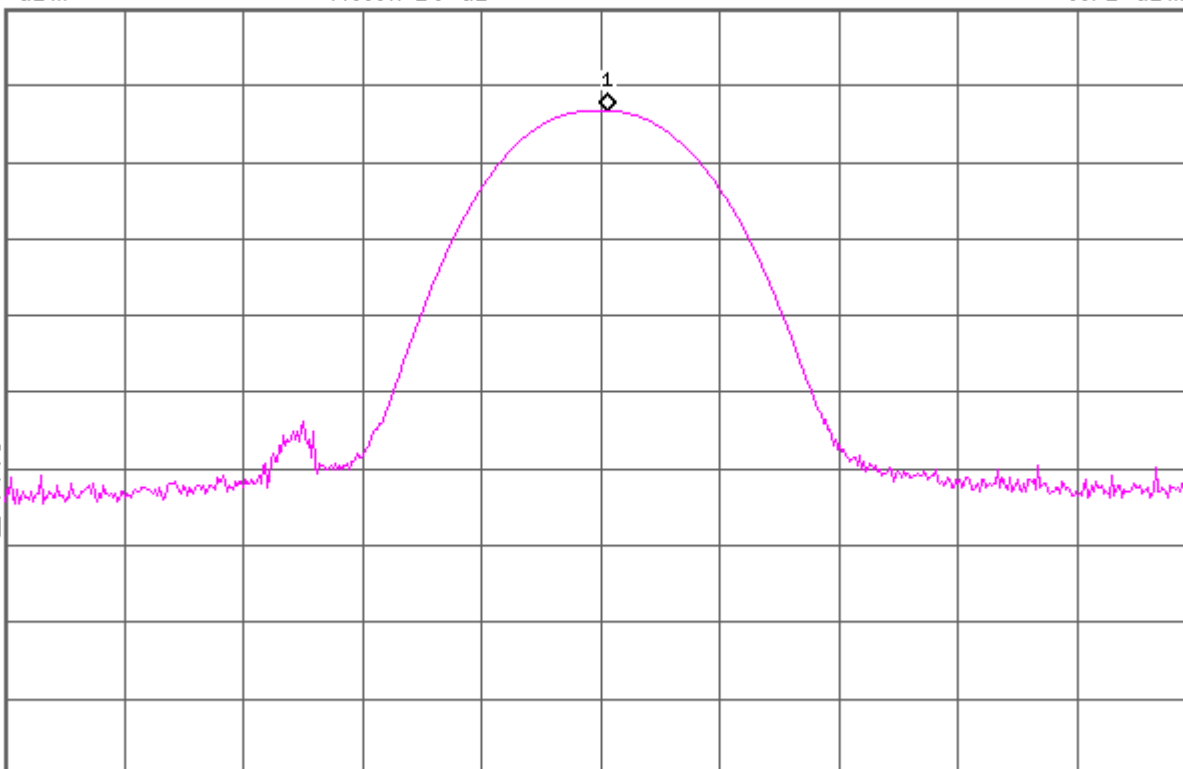
V3 FC

AA

$E(f)$:

FTun

Swp



Center 2.480 000 GHz

#Res BW 2 MHz

VBW 6 MHz

Span 20 MHz

#Sweep 1 ms (601 pts)

8.3 Transmitter spurious emissions

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03371	E4440A	Agilent	Spectrum Analyzer	MY43362222	06-Nov-13
NBLE10986	436A	Hewlett-Packard	Power Meter	2347A17580	01 Nov 13
NBLE10447	8482A	HP	Power Sensor	3318A26753	11-Mar-14

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

Test limit

Frequency	Allowable value of unwanted emissions strength
< 2,387 MHz and > 2,496.5 MHz.	Average power of 2.5µW or lower in any bandwidth of 1 MHz
≥ 2,387 MHz but < 2,400 MHz and > 2,483.5 MHz but ≤ 2,496.5 MHz	Average power of 25µW or lower in any bandwidth of 1 MHz

Test Data

Worst case Bluetooth conducted spurious below 1 GHz = -76.43 dBm with 1 kHz rbw, calculates to -66.43 dBm /1 MHz, or 0.228 nW / 1 MHz

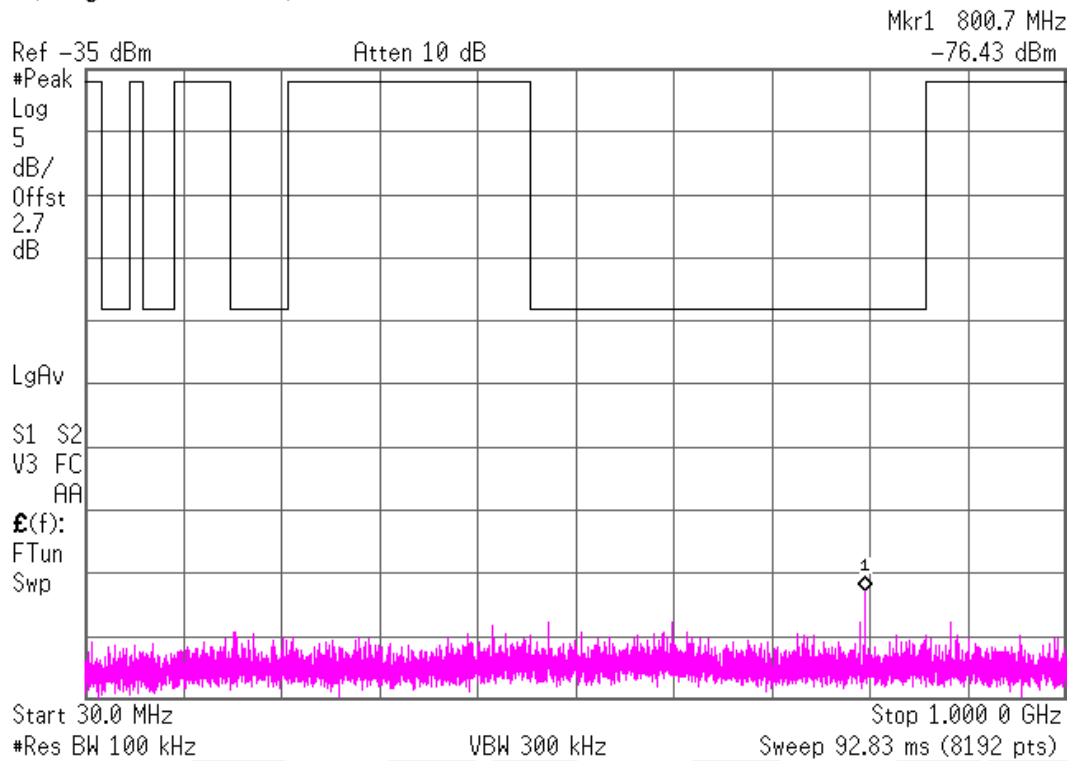
Worst case Bluetooth conducted spurious above 1 GHz = -44.27 dBm / 1 MHz, or 37.5 nW / 1 MHz

Worst case WiFi conducted spurious below 1 GHz = -56.87 dBm with 1 kHz rbw, calculates to -46.87 dBm /1 MHz, or 20.6 nW / 1 MHz

Worst case WiFi conducted spurious above 1 GHz = -47.97 dBm / 1 MHz, or 16 nW / 1 MHz

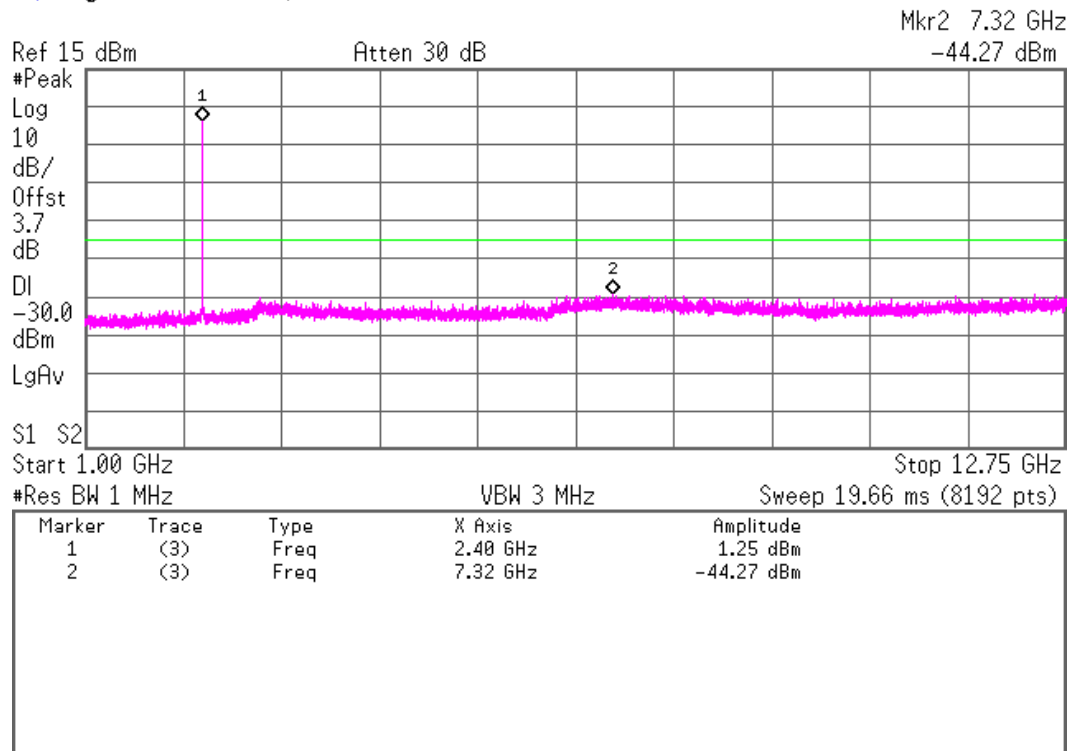
See following pages

Agilent 13:24:08 Sep 25, 2013

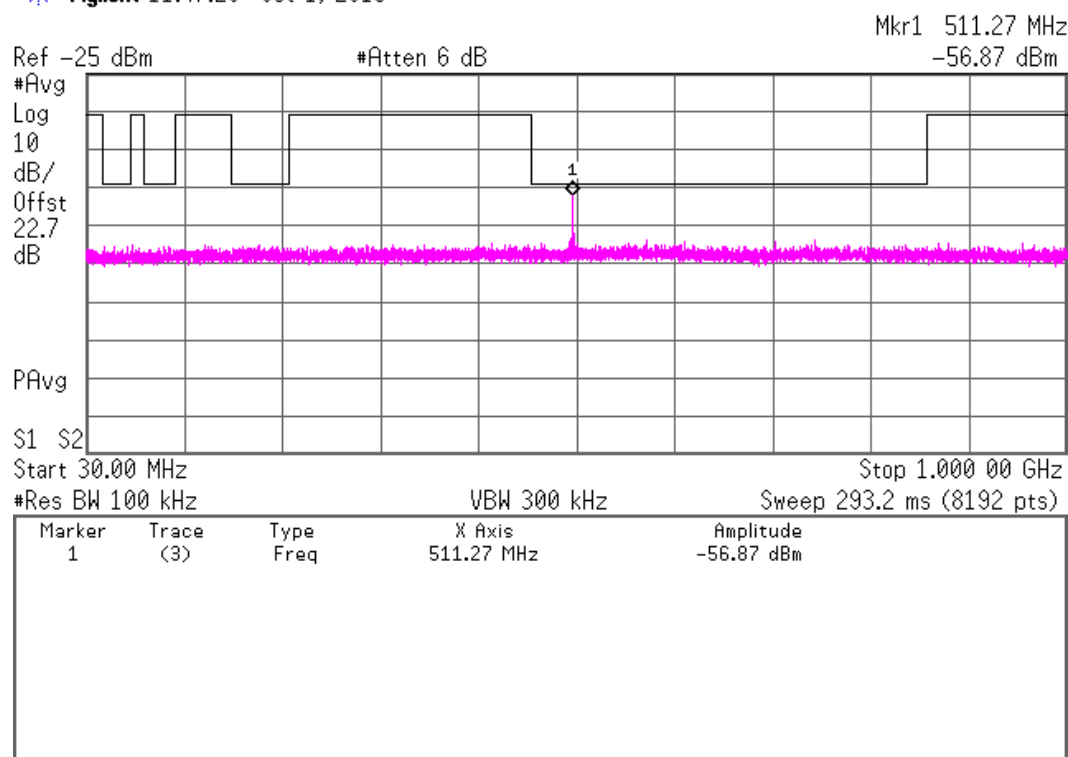


Worst case Bluetooth dh5 8 dpsk mode

Agilent 13:40:08 Sep 25, 2013

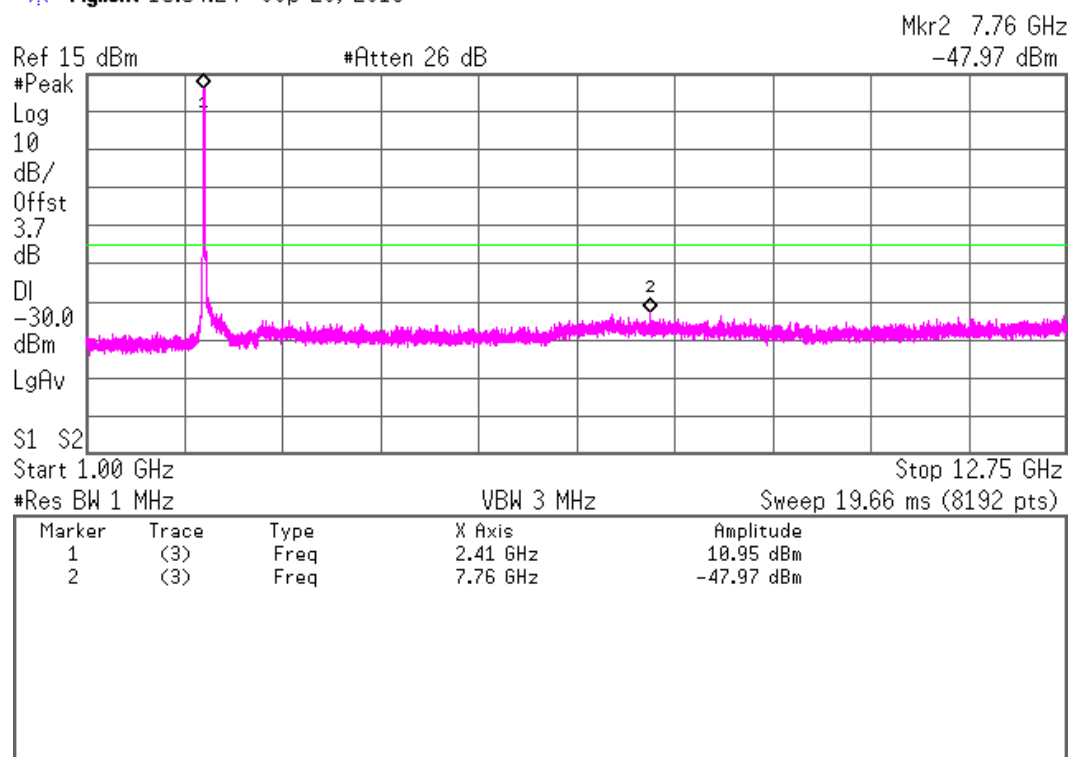


Agilent 11:47:28 Oct 1, 2013



Worst case wifi - 1 Mb/s

Agilent 15:54:24 Sep 26, 2013



8.4 Allowable value for occupied bandwidth

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03371	E4440A	Agilent	Spectrum Analyzer	MY43362222	06-Nov-13

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

Test limit

The necessary bandwidth (minimum value of occupied bandwidth sufficient to ensure the transfer of information at the quality and speed necessary for the method used under specified conditions for a given emission type) for units using the FH method or a compound method combining the DS method and the FH method or a compound method combining the FH method and the OFDM method shall be 83.5 MHz or less, for units using the OFDM method it shall be 38 MHz, while for units using a method other than any of the above it shall be 26 MHz or less.

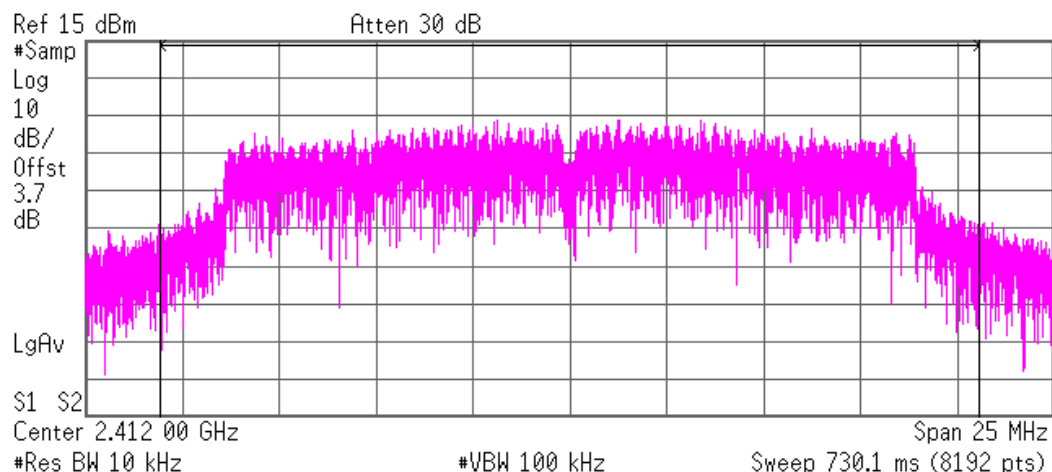
Test Data

Worst case WiFi occupied bw per FCC test report 21.1 MHz – MCS0 mode

Worst case bluetooth occupied bw 1.2312 MHz – dh5 pi_4dpsk mode

See following pages

Agilent 10:26:05 Sep 26, 2013



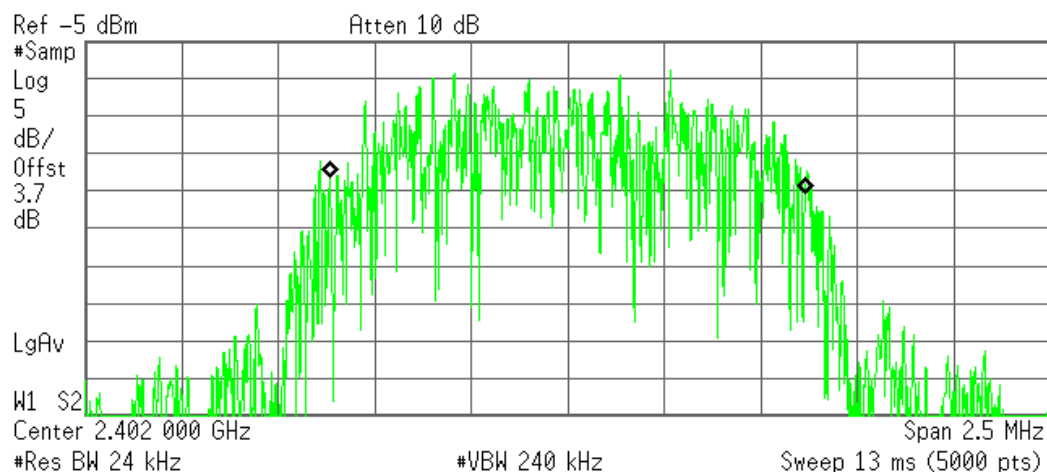
Channel Power

15.89 dBm /21.1000 MHz

Power Spectral Density

-57.35 dBm/Hz

Agilent 11:45:04 Sep 25, 2013



Occupied Bandwidth

1.2312 MHz

Occ BW % Pwr 99.00 %

x dB -26.00 dB

Transmit Freq Error 225.695 Hz

x dB Bandwidth 1.401 MHz*

8.5 Dwell time

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

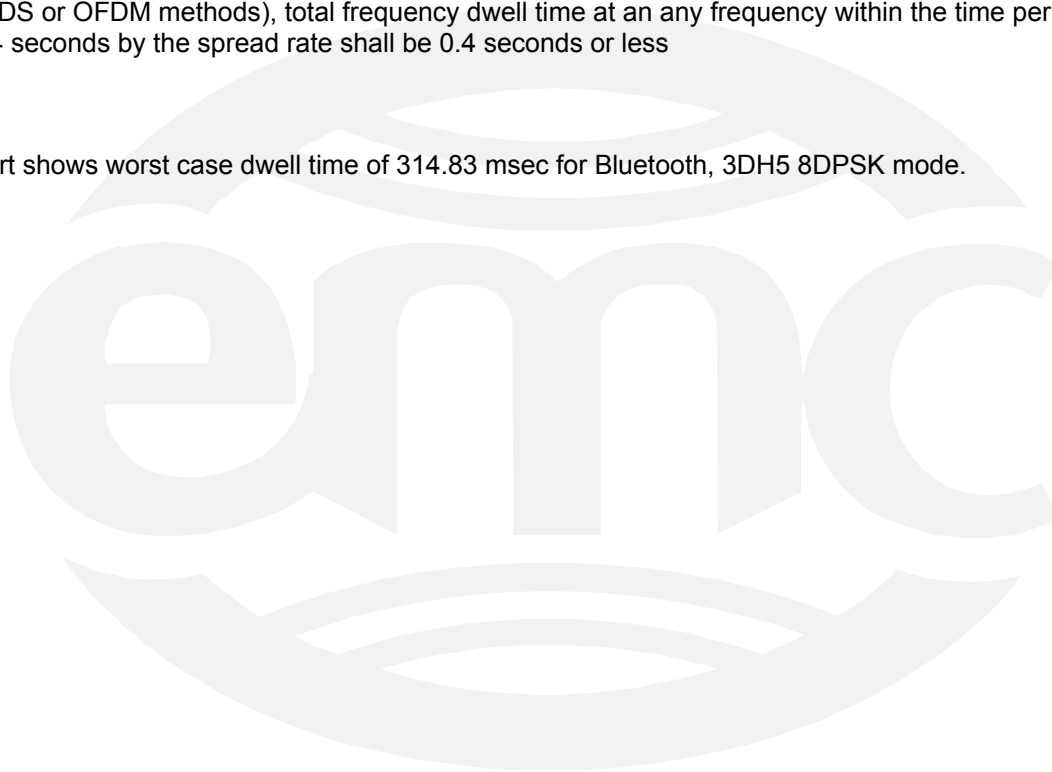
■ - Wild River Lab Large Test Site (Open Area Test Site)

Test limit

In a transmitting unit using the FH method, frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) shall be 0.4 seconds or less (0.05 seconds or less in case of a transmitting unit used for radio control of model airplanes used outdoors), and in a transmitting unit using a simple FH method (except compound methods with DS or OFDM methods), total frequency dwell time at an any frequency within the time period obtained by multiplying 0.4 seconds by the spread rate shall be 0.4 seconds or less

Test Data

FCC test report shows worst case dwell time of 314.83 msec for Bluetooth, 3DH5 8DPSK mode.



9. Receiver Parameters

9.1 Receiver spurious emissions

Test summary

The requirements are: ■ - MET □ - NOT MET

Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03204	EM-6917B	Electro-Metrics	Biconicalog Periodic	102	30-May-14
WRLE02670	8447D	Hewlett-Packard	Preamplifier	2443A03954	Code B 11-Jan-14
WRLE02689	8566B	Hewlett-Packard	Spectrum Analyzer	2416A00321	22-Apr-14
WRLE03295	85662A	Hewlett-Packard	Analyzer Display	2349A06144	22-Apr-14
NBLE02683	85650A	Hewlett-Packard	Quasi-peak Adapter	2430A00495	30-May-14
NBLE02652	SMY02	Rhode & Schwarz	Signal Gen 9 KHz-2.08 GHz	DE11277	20 May 14
WRLE03236	UHAP-10dB	Schwarzbeck	Dipole Antenna 300-1000	164	Code Y
WRLE02075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	12-Feb-14
WRLE10527	SL18B4020	Phase 1 Microwave	Preamplifier 1 – 18 GHz	0001	Code B 08-Jan-14

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

Test limit

The limit within which secondarily radiated radio waves do not hinder the function of other radio equipment shall be, in case of being measured using a dummy antenna circuit that has an electrical constant equivalent to the receiving antenna, 4 nW or less at a frequency of less than 1 GHz and 20 nW or less at a frequency of 1 GHz or more.

Test Data

Measurement summary for limit1: EN 300 328 <1GHz Rx 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	FINAL <1GHz nW
567.781 MHz	41.18 Qp	2.34 / 18.63 / 27.11 / 0.0	35.04	V / 1.51 / 139	.893
543.097 MHz	39.1 Qp	2.3 / 18.08 / 27.18 / 0.0	32.3	V / 1.50 / 180	< .893
617.155 MHz	36.17 Qp	2.43 / 19.54 / 26.96 / 0.0	31.17	V / 1.39 / 105	< .893
419.671 MHz	37.3 Qp	1.95 / 16.43 / 27.23 / 0.0	28.45	V / 1.00 / 0	< .893
641.827 MHz	31.85 Qp	2.47 / 19.38 / 26.89 / 0.0	26.81	V / 1.00 / 0	< .893
444.355 MHz	35.2 Qp	2.02 / 16.48 / 27.29 / 0.0	26.42	H / 1.50 / 90	< .893
358.357 MHz	33.75 Qp	1.77 / 15.0 / 27.25 / 0.0	23.27	V / 1.00 / 0	< .893
172.807 MHz	36.7 Qp	1.18 / 9.19 / 27.42 / 0.0	19.64	V / 1.00 / 90	< .893
176.97 MHz	36.2 Qp	1.2 / 9.37 / 27.41 / 0.0	19.35	V / 1.00 / 0	< .893
123.438 MHz	34.79 Qp	0.91 / 8.9 / 27.53 / 0.0	17.06	V / 1.00 / 0	< .893

Example substitution performed at 567.781 MHz matching 41.2 dBuV at analyzer input

Signal generator = -48 dBm

Coax loss = 6.3 dB

1/2 wave Schwarzbeck dipole gain = -6.2 dBi

-48 dBm - 6.3 dB + -6.2 dBi = -60.5 dBm eirp = .893 nW

Device in idle mode

Both Wifi & Bluetooth radios in receive mode, high channel

Rotated EUT 360 degrees, antenna 1-4m high, V & H

No significant emissions detected

Bore sight

No significant emissions detected

Both Wifi & Bluetooth radios in receive mode, low channel

No significant emissions detected

Measurement summary for limit1: EN 300 328 <1GHz Rx 3m (Qp)

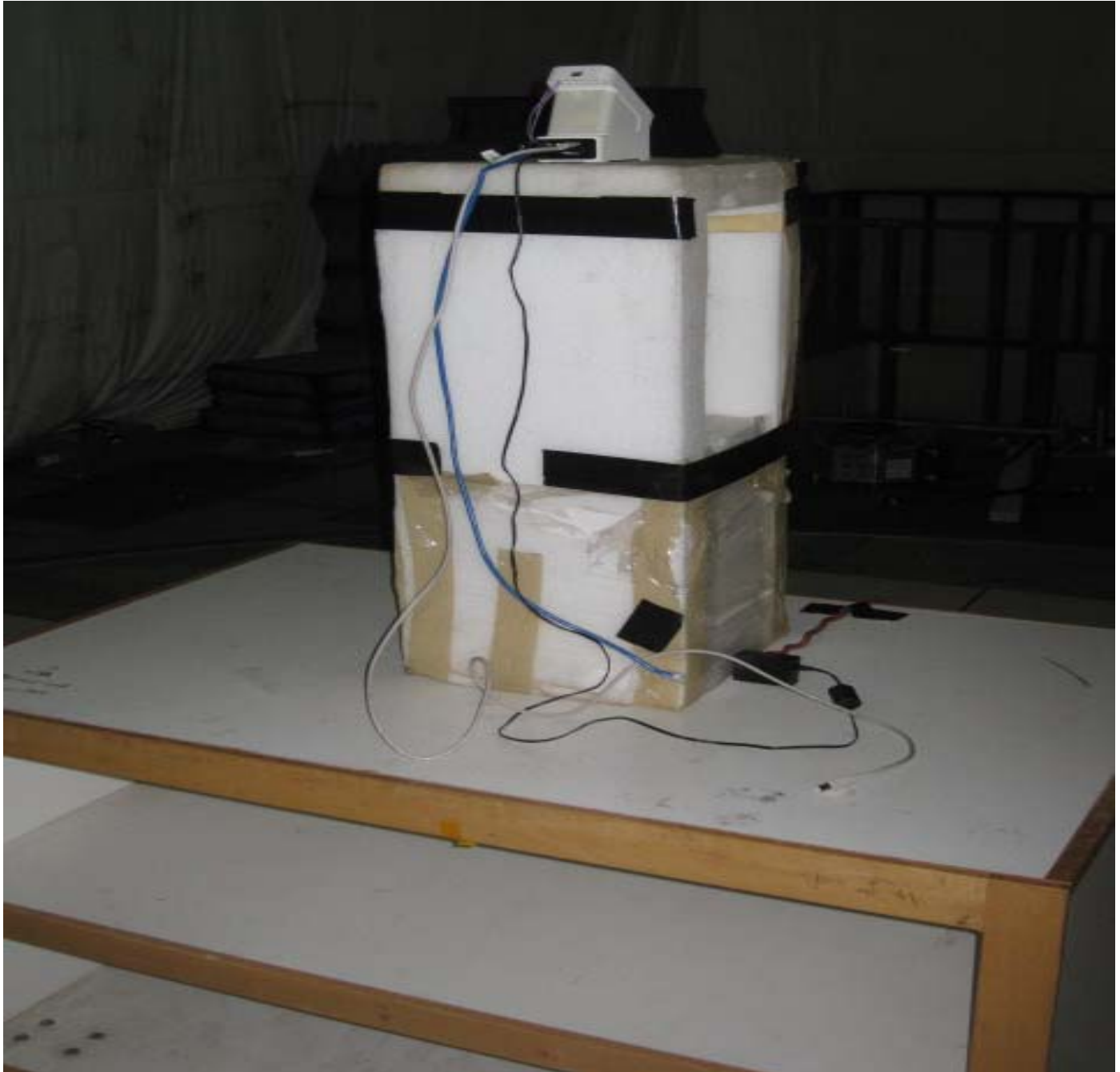
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	FINAL <1GHz nW
------	-----------------	---	---------------------	----------------------------	-------------------

End scan 1 - 12.75 GHz



10. Test-setup photo(s):

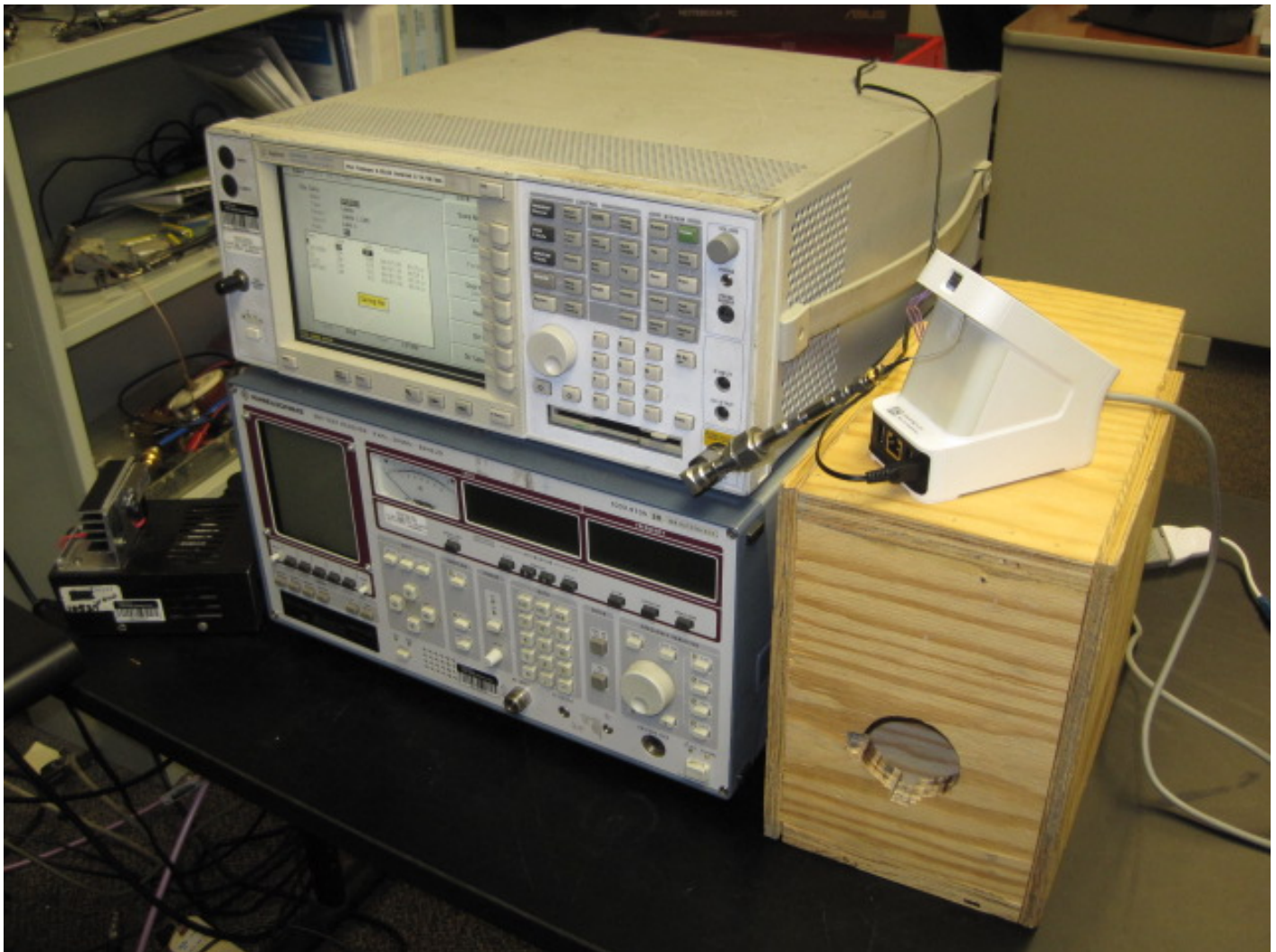
Radiated emissions



Radiated emissions



Conducted measurements



Temperature measurements



11. GENERAL INFORMATION

Test Methodology

Emission testing is performed according to the procedures in EN 300 328.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

Radiated Emissions

The spectrum analyzer uses a quasi-peak detector for frequencies up to and including 1 GHz. For measurements above 1 GHz, peak and average detectors are used. The bandwidth used are equal to or greater than 100 Hz from 9 kHz to 150 kHz, 9 kHz from 150 kHz to 30 MHz, 100 kHz from 30 MHz to 1000 MHz, and 1 MHz from 1 GHz to 40 GHz. Video bandwidth are at least three times greater than the IF bandwidth

The final level, in dB μ V/m, equals the reading from the spectrum analyzer (Level dB μ V), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data. Intentional radiators are rotated through 3 orthogonal axes to determine the test position yielding the maximum emission levels.

Example:

FREQ (MHz)	LEVEL (dB μ V)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)	FINAL (dB μ V/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

12. CONSTRUCTIONAL DATA FORM





EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company: IDEXX Laboratories, Inc.
 Address: One Thomas Drive
Westbrook, Maine, 04092
 Contact: Wayne Bell Position: Program Manager
 Phone: 207-556-8733 Fax: _____
 E-mail Address: wayne-bell@idexx.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description Portable, battery powered, imaging diagnostics instrument used in veterinary labs. Instrument activates tests on animal fluid samples in disposable snap cartridges and captures images of the chemical reactions. Instrument can optionally be networked wirelessly (WiFi or Bluetooth) or wired (Ethernet or USB).
 EUT Name IDEXX SNAP Pro
 Model No.: 89-91921-02 Serial No.: _____
 Product Options: N/A
 Configurations to be tested: 1 - typical

Equipment Modification (If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)

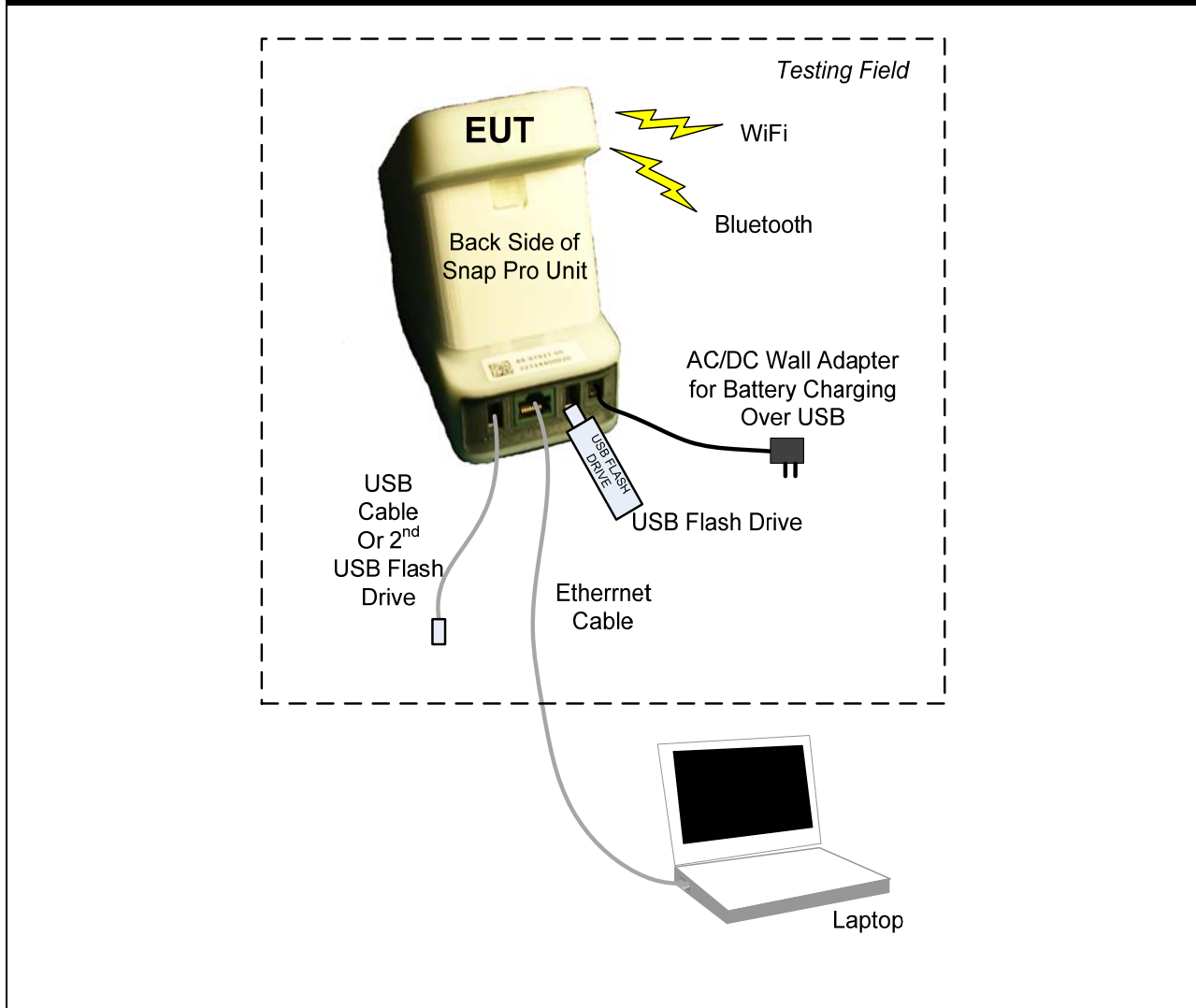
Modifications since last test: N/A
 Modifications made during test: N/A

Test Objective(s): Please indicate the tests to be performed, entering the applicable standard(s) where noted.

- | | |
|---|--|
| ☒ EMC Directive 2004/108/EC (EMC)
Std: <u>EN 55024, EN 55022:2010 and FCC testing up to 2.4GHz intentional</u> | ☒ FCC: Class ☒ A ☐ B Part _____
☐ VCCI: Class ☐ A ☐ B |
| ☐ Machinery Directive 89/392/EEC (EMC)
Std: _____ | ☐ BSMI: Class ☐ A ☐ B (Separate Report)
☒ Canada: Class ☒ A ☐ B |
| ☐ Medical Device Directive 93/42/EEC (EMC)
Std: _____ | ☒ Australia: Class ☒ A ☐ B
☒ Other: <u>CE Mark and Japan</u> |
| ☐ Vehicle Directive - 2004/104/EC (EMC)
☐ Other Vehicle Std: _____ | ☐ Ag Directive *2009/64/EC (EMC) |
| ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



Authorization Signatures

Customer authorization to perform tests according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date



EMC Test Plan and Constructional Data Form

Third Party Certification (contact TÜV for quote), if applicable (*Signature on last page required).

☐ Attestation of Compliance (AoC)*	☐ EMC Certification (used with Octagon Mark)*
☐ Statement of Compliance (SoC, previously CoC)* - All aspects of the essential requirements were assessed	
Protection Class (Req'd for AoC, SoC, EMC Cert. N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III (Press F1 when field is selected to show additional information on Protection Class.)	
☐ FCC / TCB Certification	☐ Taiwan Certification
☐ Industry Canada / FCB Certification	☐ Korean Certification
☐ e-Mark Certification	

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TÜV SÜD America should:

- ☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
- ☐ Continue testing to complete test series.
- ☒ Continue testing to define corrective action.
- ☐ Stop testing.

EUT Specifications and Requirements

Length: 5" Width: 2.5" Height: 5" Weight: 1-1/4 lb.

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 3.7V (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: N/A

Current (Amps/phase(max)): 1.46A Current (Amps/phase(nominal)): 0.6A

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
Veterinary Lab benchtop

EUT Power Cable

- ☐ Permanent OR ☐ Removable Length (in meters): _____
- ☐ Shielded OR ☐ Unshielded
- ☒ Not Applicable

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables														
Type	Analog	Digital	During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent	
			Active	Passive		Yes	No							Type
EXAMPLE: RS232	☐	☒	☒	☐	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒	☐
USB	☐	☒	☒	☐	1	☒	☐	Metal Shell	USB	USB type A receptacle	USB flash drive	N/A	☒	☐
USB	☐	☒	☒	☐	1	☒	☐	Unknown	USB	USB type A receptacle	Characteristic Impedance	1	☒	☐
Ethernet	☐	☒	☒	☐	1	☐	☒		Ethernet	RJ-45	Cable goes back to PC	10	☒	☐
USB	☒	☐	☐	☒	1	☒	☐	Unknown	AC/DC wall adapter	mini-USB receptacle	AC/DC wall adapter	1.5	☒	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐



EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: 2013-07-12-(1.12)Master-LogicPD-MFR.imgc

Description: Standard MCU firmware image, Linux X-Loader, Linux U-Boot loader, Linux kernel, RFS (root filesystem)

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Linux Kernel running on SOM with microSD Card, applications, and files.
- 2.
- 3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
ASSEMBLY, DM3730 Torpedo SOM with 802.11 A/B/G/N and Bluetooth capability	SOMDM3730-IDX01-0301R-A		YKP1024119 10029A-1024119
ASSY, IDEXX, TOP BOARD	2053-79-91946-02		
ASSY, IDEXX, VERTICAL BRD	2053-79-91945-02		
ASSY, IDEXX, INTERFACE BRD	2053-79-91944-01		
ASSY, IDEXX, BATTERY DOOR BRD	2053-79-91948-01		
ASSY, IDEXX, BATTERY FRONT BRD	2053-79-91941-00		
ASSY, IDEXX, LED FLEX BOARD	2053-79-91951-01		
Truly 3.5" TFT Display w/Touch	TFT2N2126		
Truly 3MP Camera Module	CM8042-A300SA-E		
Igarashi DC Electric Motor	3020-2557-01B		



EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)
This information is required for FCC & Taiwan testing.

Description	Model #	Serial #	FCC ID #
Fluid Sample Cartridge			
Glob Tek USB Charger Wall Adapter	GT-41076-0605		

Oscillator Frequencies

Manufacturer	Frequency	Derived Frequency	Component # / Location	Description of Use
Abrakon or ECS	12.0000MHz		Y2000 (Top Board)	High Speed USB Controller
Abrakon	25.000MHz		Y2001 (Top Board)	Ethernet Controller
Abrakon	32.768KHz		Y2 (SOM)	Real Time Clock
Epson	26.000MHz	1GHz	Y4, Y5, (SOM)	SOM Processor Clock

Power Supply

Manufacturer	Model #	Serial #	Type
N/A			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
N/A			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	Model #	Location in EUT
N/A		
N/A		



EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	Manufacturer	Part # or Value	Qty	Component # / Location
Ferrite Bead	Murata	BLM21PG221S N1D	6	FB1001-FB1006/ Interface Board
Ferrite Bead	Taiyo Yuden	FBMJ3216HS80 0-T	2	FB1,FB12/ Vertical Board
Ferrite Bead	Murata	BLM18EG221S N1	1	FB13/ Vertical Board
Common Mode Choke	Murata	DLW21SN900S Q2	3	L1000,L1001 on Interface Board. L4 on Vertical Board

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

N/A

PLEASE ENTER NAMES BELOW (INSERT ELECTRONIC SIGNATURE IF POSSIBLE)

Authorization (Signature Required if a Third Party Certification is checked on pg 1)

Customer authorization to perform tests according to this test plan.

Rick Kinnunen (Logic PD)

Test Plan/CDF Prepared By (please print)

Date

07-JUL-2013

Date