TIMCO ENGINEERING, Inc.

An IIA Company

FCC CFR 47 Part 15 Scanning Receiver C2PC Test Report

APPLICANT	UNIDEN AMERICA CORPORATION
FCC ID	AMWUB363
MODEL NUMBER	HomePatrol-2
PRODUCT DESCRIPTION	Scanning Receiver
DATE SAMPLE RECEIVED	AUG 13 2020
FINAL TEST DATE	AUG 14 2020
PREPARED BY	Franklin Rose

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

UNDER ISO/IEC 17025, AND ISO/IEC 17065

A2LA ACCREDITED
Certificate #0955.01

TABLE OF CONTENTS

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

SIGNATURE PAGE

Timco Engineering, Inc. attests that:

☒	The EUT tested herein **fulfills** all approval requirements and/or the customer requirements as identified in this test report.
☐	The EUT tested herein **does not fulfill** all approval requirements and/or the customer requirements as identified in this test report.

This report relates only to the Equipment Under Test (EUT) sample(s) tested.

This report shall not be reproduced except in full without the written approval of Timco Engineering, Inc.

To the best of my knowledge and belief, this device has been tested in accordance with the standards identified in this test report, and these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669

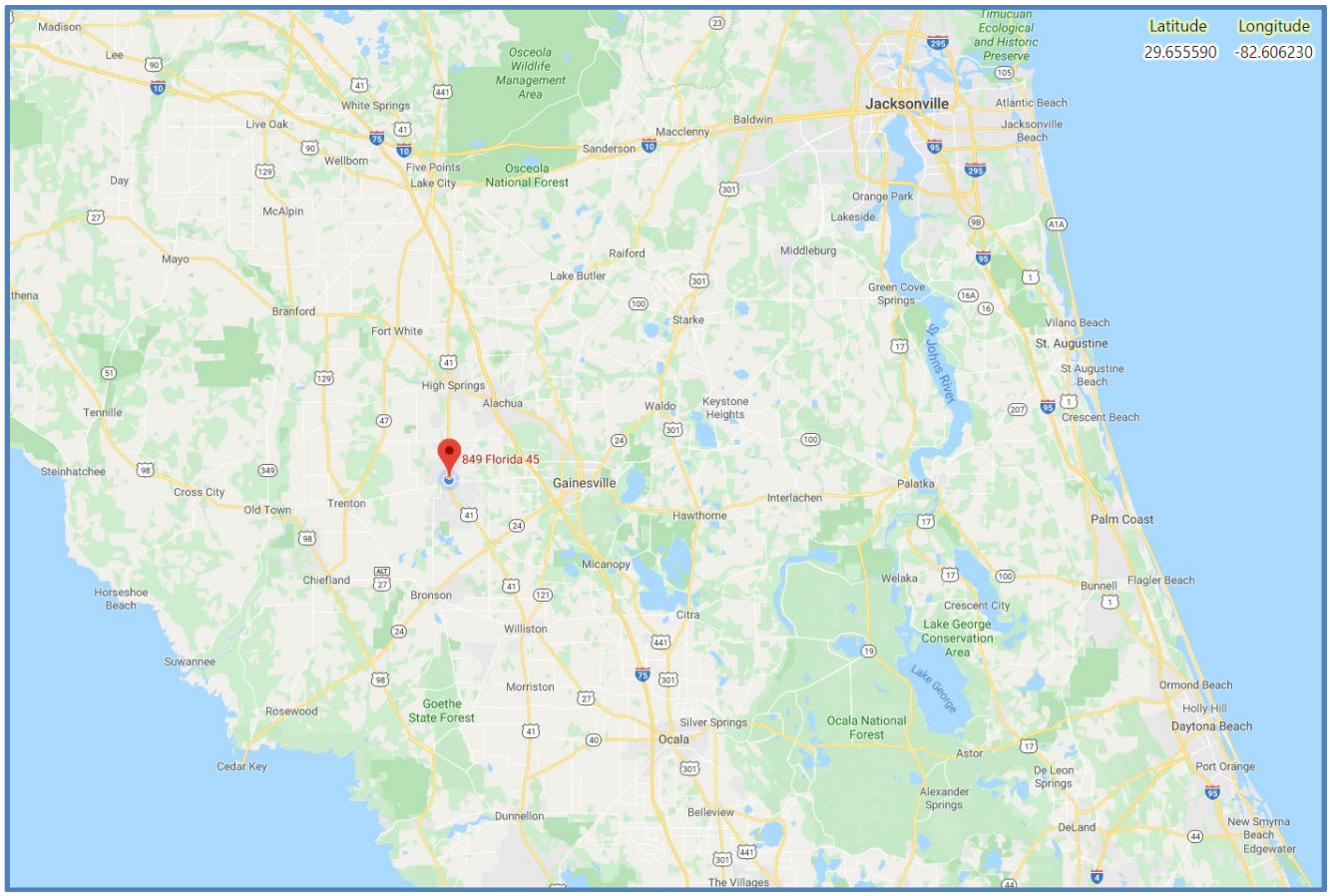
Name and Title Franklin Rose, Project Manager / EMC Specialist

Name and Title Tim Royer, Project Manager / EMC Engineer

Date AUG 13 2020

TEST LABORATORY INFORMATION

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669, USA



United States	FCC Accredited and Recognized Test Lab & TCB # US1070
	DHS Recognized P25 CAP Test Facility # P25CAPTIMCO081016
Australia / New Zealand	U.S. CABs Recognized by Australia ACMA Under MRA
Canada	U.S. Lab & CB Recognized by Canada ISED, Designation # US0111, Test Site # 2056A
Chinese Taipei	U.S. CABs Recognized by Chinese Taipei BSMI/NCC Under MRA
European Union	U.S. EMC & RE Directive NB's, Designation # US0111, Notified Body # 1177
Hong Kong	U.S. Labs & CBs Recognized by Hong Kong OFCA Under MRA
Israel	U.S. CABs Recognized by Israel MOE/MOC Under MRA
Japan	U.S. RCBs Recognized by Japan MIC
Korea	U.S. CABs Recognized by Korea RRA Under MRA
Mexico	U.S. CABs Recognized by Mexico IFT Under MRA
Singapore	U.S. Labs & CBs Recognized by Singapore IMDA Under MRA
Vietnam	U.S. CABs Recognized by Vietnam MIC Under MRA

TEST INFORMATION

Report Version	Description	Issue Date
Rev1	Initial Issue	AUG 13 2020
Rev2	Clerical Update	AUG 26 2020

Test Conditions	Temperature during testing: 26ºC, Humidity during testing: 50%
Test Exercise	The EUT was operated in accordance with the service manual using software supplied by the manufacturer.
Applicable Standards	ANSI C63.4-2014, June 13, 2014 FCC CFR 47 Part 15 B
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EUT INFORMATION

EUT Description	Scanning Receiver		
Model Number	HomePatrol-2		
Modified for Testing	☐		
Modification	n/a		
Antenna Connector	☐ UHF	☐ BNC	☐ N
	☐ TNC	☐ SMA	☒ Other (N/A)
EUT Power Source	☐ AC Power (110-120 V)	☒ DC Power	☒ Battery
Test Item	☐ Engineering Prototype	☒ Pre-Production	☐ Post-Production
Type of Equipment	☐ Fixed	☐ Mobile	☒ Portable

NOTES: Reason for C2PC – PLL IC and 1st Mix IC components were swapped for new models.

TEST RESULTS

General Requirement (FCC PT 15)	Requirement	Complies	N/A
15.107	AC Powerline Conducted Emissions	☒	☐
15.109	Unintentional Radiated Spurious Emissions	☒	☐

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

2.909 RESPONSIBLE PARTY

(a) In the case of equipment that requires the issuance of a grant of certification, the party to whom that grant of certification is issued is responsible for the compliance of the equipment with the applicable standards. If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to §2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

(b) For equipment subject to Supplier's Declaration of Conformity the party responsible for the compliance of the equipment with the applicable standards, who must be located in the United States (see §2.1077), is set forth as follows:

(1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under Supplier's Declaration of Conformity, the assembler.

(2) If the equipment by itself, or, a system is assembled from individual parts and the resulting system is subject to Supplier's Declaration of Conformity and that equipment or system is imported, the importer.

(3) Retailers or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (b)(1) or (b)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.

(4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modifications, if located within the U.S., or the importer, if the equipment is imported subsequent to the modifications, becomes the new responsible party.

(c) If the end product or equipment is subject to both certification and Supplier's Declaration of Conformity (*i.e.,* composite system), all the requirements of paragraphs (a) and (b) of this section apply.

(d) If, because of modifications performed subsequent to authorization, a new party becomes responsible for ensuring that a product complies with the technical standards and the new party does not obtain a new equipment authorization, the equipment shall be labeled, following the specifications in §2.925(d), with the following: "This product has been modified by [insert name, address and telephone number or internet contact information of the party performing the modifications]."

(e) In the case of transfer of control of equipment, as in the case of sale or merger of the responsible party, the new entity shall bear the responsibility of continued compliance of the equipment.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

2.1033 COMPLIANCE INFORMATION

(b) Applications for equipment operating under Parts 11, 15 and 18 of the rules shall be accompanied by a technical report containing the following information:

Application Requirement	Requirement	Information
2.1033(b)(1)	The full name and mailing address of the applicant for certification	UNIDEN AMERICA CORPORATION 6225 N. State Highway 161 Suite 300 IRVING TX 75038-2224
2.1033(b)(2)	FCC Identifier	AMWUB363
2.1033(b)(6)	Applicable Test Results indicating procedure, date, location of measurements	☒
2.1033(b)(6)	Model Number of EUT	HomePatrol-2
2.1033(b)(6)	Serial Number of EUT	n/a
2.1033(b)(8)	Description of Peripherals or Accessories to the EUT (if applicable)	n/a
2.1033(b)(14)	Contain > 1 Drawing or Photograph of each test setup applicable to the device	☒

15.31 MEASUREMENT STANDARDS

(a) The following measurement procedures are used by the Commission to determine compliance with the technical requirements in this part. Except where noted, copies of these procedures are available from the Commission's current duplicating contractor whose name and address are available from the Commission's Consumer and Governmental Affairs Bureau at 1-888-CALL-FCC (1-888-225-5322).

(4) Unintentional radiators are to be measured for compliance using the following procedure excluding clauses 4.5.3, 4.6, 6.2.13, 8.2.2, 9, and 13: ANSI C63.4-2014 (incorporated by reference, see §15.38).

NOTE 1 TO PARAGRAPH (a)(4): Digital devices tested to show compliance with the provisions of §15.109(g)(2) must be tested following the ANSI C63.4-2014 procedure described in paragraph (a)(4) of this section.

15.33 FREQUENCY RANGE

(b) For unintentional radiators:

(1) Except as otherwise indicated in paragraphs (b)(2) or (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

(2) A unintentional radiator, excluding a digital device, in which the highest frequency generated in the device, the highest frequency used in the device and the highest frequency on which the device operates or tunes are less than 30 MHz and which, in accordance with §15.109, is required to comply with standards on the level of radiated emissions within the frequency range 9 kHz to 30 MHz, such as a CB receiver or a device designed to conduct its radio frequency emissions via connecting wires or cables, e.g., a carrier current system not intended to radiate, shall be investigated from the lowest radio frequency generated or used in the device, without going below 9 kHz (25 MHz for CB receivers), up to the frequency shown in the following table. If the unintentional radiator contains a digital device, the upper frequency to be investigated shall be that shown in the table below or in the table in paragraph (b)(1) of this section, as based on both the highest frequency generated and the highest frequency used in the digital device, whichever range is higher.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-10	400
10-30	500

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

Frequency Range of Measurements

(3) Except for a CB receiver, a receiver employing superheterodyne techniques shall be investigated from 30 MHz up to at least the second harmonic of the highest local oscillator frequency generated in the device. If such receiver is controlled by a digital device, the frequency range shall be investigated up to the higher of the second harmonic of the highest local oscillator frequency generated in the device or the upper frequency of the measurement range specified for the digital device in paragraph (b)(1) of this section.

(c) The above specified frequency ranges of measurements apply to the measurement of radiated emissions and, in the case of receivers, the measurement to demonstrate compliance with the antenna conduction limits specified in §15.111. The frequency range of measurements for AC power line conducted limits is specified in §§15.107 and 15.207 and applies to all equipment subject to those regulations. In some cases, depending on the frequency(ies) generated and used by the equipment, only signals conducted onto the AC power lines are required to be measured.

(d) Particular attention should be paid to harmonics and subharmonics of the fundamental frequency as well as to those frequencies removed from the fundamental by multiples of the oscillator frequency. Radiation at the frequencies of multiplier states should also be checked.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

15.35 MEASUREMENT SETTINGS

The conducted and radiated emission limits shown in this part are based on the following, unless otherwise specified in this part:

(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrumentation using the CISPR quasi-peak detector can be found in ANSI C63.4-2014, clause 4 (incorporated by reference, see §15.38). As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function as long at the same bandwidth as indicated for CISPR quasi-peak measurements are employed.

(b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, *e.g.,* see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, *e.g.,* the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

(c) Unless otherwise specified, *e.g.,* §§15.255(b), and 15.256(l)(5), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to Supplier's Declaration of Conformity.

Field Strength Correction Factor Conversion Example				
Frequency (MHz)	**Meter Reading**	**+ Antenna Correction Factor**	**+ Cable Loss**	**= Field Strength**
33 MHz	20 dBµV	+ 10.36 dB/m	+0.40 dB	=30.76 dBµV/m @ 3m

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

15.101 TEST SCOPE

Subpart B—Unintentional Radiators

(a) Except as otherwise exempted in §§15.23, 15.103, and 15.113, unintentional radiators shall be authorized prior to the initiation of marketing, pursuant to the procedures for certification or Supplier's Declaration of Conformity (SDoC) given in subpart J of part 2 of this chapter, as follows:

TABLE 1 TO PARAGRAPH (a)

	Type of device	Equipment Authorization Required
☐	TV Broadcast Receiver	SDoC or Certification.
☐	FM Broadcast Receiver	SDoC or Certification.
☐	CB Receiver	SDoC or Certification.
☐	Superregenerative Receiver	SDoC or Certification.
☒	Scanning Receiver	Certification.
☐	Radar Detector	Certification.
☐	All other receivers subject to Part 15	SDoC or Certification.
☐	TV Interface Device	SDoC or Certification.
☐	Cable System Terminal Device	SDoC or Certification.
☐	Stand-alone Cable input selector switch	SDoC or Certification.
☐	Class B personal computers and peripherals	SDoC or Certification.
☐	CPU boards and internal power supplies used with Class B personal computers	SDoC or Certification.
☐	Class B personal computers assembled using authorized CPU boards or power supplies	SDoC or Certification.
☐	Class B external switching power supplies	SDoC or Certification.
☐	Other Class B digital devices & peripherals	SDoC or Certification.
☐	Class A digital devices, peripherals & external switching power supplies	SDoC or Certification.
☐	Access Broadband over Power Line (Access BPL)	Certification.
☐	All other devices	SDoC or Certification.

(b) Only those receivers that operate (tune) within the frequency range of 30-960 MHz, CB receivers and radar detectors are subject to the authorizations shown in paragraph (a) of this section. Receivers operating above 960 MHz or below 30 MHz, except for radar detectors and CB receivers, are exempt from complying with the technical provisions of this part but are subject to §15.5.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

15.103 TEST EXEMPTIONS

The following devices are subject only to the general conditions of operation in §§15.5 and 15.29 and are exempt from the specific technical standards and other requirements contained in this part. The operator of the exempted device shall be required to stop operating the device upon a finding by the Commission or its representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected. Although not mandatory, it is strongly recommended that the manufacturer of an exempted device endeavor to have the device meet the specific technical standards in this part.

(a) A digital device utilized exclusively in any transportation vehicle including motor vehicles and aircraft.

(b) A digital device used exclusively as an electronic control or power system utilized by a public utility or in an industrial plant. The term *public utility* includes equipment only to the extent that it is in a dedicated building or large room owned or leased by the utility and does not extend to equipment installed in a subscriber's facility.

(c) A digital device used exclusively as industrial, commercial, or medical test equipment.

(d) A digital device utilized exclusively in an appliance, e.g., microwave oven, dishwasher, clothes dryer, air conditioner (central or window), etc.

(e) Specialized medical digital devices (generally used at the direction of or under the supervision of a licensed health care practitioner) whether used in a patient's home or a health care facility. Non-specialized medical devices, *i.e.*, devices marketed through retail channels for use by the general public, are not exempted. This exemption also does not apply to digital devices used for record keeping or any purpose not directly connected with medical treatment.

(f) Digital devices that have a power consumption not exceeding 6 nW.

(g) Joystick controllers or similar devices, such as a mouse, used with digital devices but which contain only non-digital circuitry or a simple circuit to convert the signal to the format required (e.g., an integrated circuit for analog to digital conversion) are viewed as passive add-on devices, not themselves directly subject to the technical standards or the equipment authorization requirements.

(h) Digital devices in which both the highest frequency generated and the highest frequency used are less than 1.705 MHz and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Digital devices that include, or make provision for the use of, battery eliminators, AC adaptors or battery chargers which permit operation while charging or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, do not fall under this exemption.

(i) Responsible parties should note that equipment containing more than one device is not exempt from the technical standards in this part unless all of the devices in the equipment meet the criteria for exemption. If only one of the included devices qualifies for exemption, the remainder of the equipment must comply with any applicable regulations. If a device performs more than one function and all of those functions do not meet the criteria for exemption, the device does not qualify for inclusion under the exemptions.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

15.107 AC CONDUCTED EMISSIONS

(a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	**Quasi-peak**	**Average**
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms LISN. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	**Quasi-peak**	**Average**
0.15-0.5	79	66
0.5-30	73	60

(c) The limits shown in paragraphs (a) and (b) of this section shall not apply to carrier current systems operating as unintentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.109(e).

(d) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

15.109 RADIATED SPURIOUS EMISSIONS

☒ (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

☐ (b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the following:

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	90
88-216	150
216-960	210
Above 960	300

(c) In the emission tables above, the tighter limit applies at the band edges. Sections 15.33 and 15.35 which specify the frequency range over which radiated emissions are to be measured and the detector functions and other measurement standards apply.

☐ (d) For CB receivers, the field strength of radiated emissions within the frequency range of 25-30 MHz shall not exceed 40 microvolts/meter at a distance of 3 meters. The field strength of radiated emissions above 30 MHz from such devices shall comply with the limits in paragraph (a) of this section.

☐ (e) Carrier current systems used as unintentional radiators or other unintentional radiators that are designed to conduct their radio frequency emissions via connecting wires or cables and that operate in the frequency range of 9 kHz to 30 MHz, including devices that deliver the radio frequency energy to transducers, such as ultrasonic devices not covered under part 18 of this chapter, shall comply with the radiated emission limits for intentional radiators provided in §15.209 for the frequency range of 9 kHz to 30 MHz. As an alternative, carrier current systems used as unintentional radiators and operating in the frequency range of 525 kHz to 1705 kHz may comply with the radiated emission limits provided in §15.221(a). At frequencies above 30 MHz, the limits in paragraph (a), (b), or (g) of this section, as appropriate, apply.

☐ (f) For a receiver which employs terminals for the connection of an external receiving antenna, the receiver shall be tested to demonstrate compliance with the provisions of this section with an antenna connected to the antenna terminals unless the antenna conducted power is measured as specified in §15.111(a). If a permanently attached receiving antenna is used, the receiver shall be tested to demonstrate compliance with the provisions of this section.

☐ (h) Radar detectors shall comply with the emission limits in paragraph (a) of this section over the frequency range of 11.7-12.2 GHz.

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1057	Eaton	94455-1	1057	12/13/17	12/13/20
Antenna: Log-Periodic 1122	Eaton	96005	1243	04/20/18	04/20/21
CHAMBER	Panashield	3M	N/A	3/15/19	3/15/21
EMI Test Receiver R & S ESU 40 firmware v 4.43 SP 3 BIOS v5.1-24-3	Rohde & Schwarz	ESU 40	100320	08/28/18	08/28/21
Software: Field Strength Program	Timco	N/A	Version 4.10.7.0	N/A	N/A
Antenna: Double-Ridged Horn/ETS Horn 1	ETS-Lindgren	3117	00035923	02/25/20	02/25/23
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A
Coaxial Cable - Chamber 3 cable set (Primary)	Micro-Coax	Chamber 3 cable set (Primary)	KMKM-0244-01 KMKM-0670-00 KFKF-0198-01	4/12/2019	4/12/21
Pre-amp	RF-LAMBDA	RLNA00M45GA	N/A	2/27/2019	2/27/21
LISN (Primary)	Electro-Metrics	ANS-25/2	225363	08/26/17	08/26/20

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

ANNEX I – MANUFACTURER-PROVIDED DATA

Note: The accuracy and precision of the following information provided by the manufacturer of the equipment under test has not been verified using test methods, cannot be verified, or is not necessary to verify.

n/a

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

ANNEX II – MEASUREMENT DATA

Test Engineer: FR
Test Date: AUG 14 2020

Note: Data was taken while receiver employed scanning function. All LO's were exercised during testing.

Radiated Emissions 30 MHz to 200 MHz

Horizontal Polarity

ROHDE&SCHWARZ

14.Aug 20 13:38

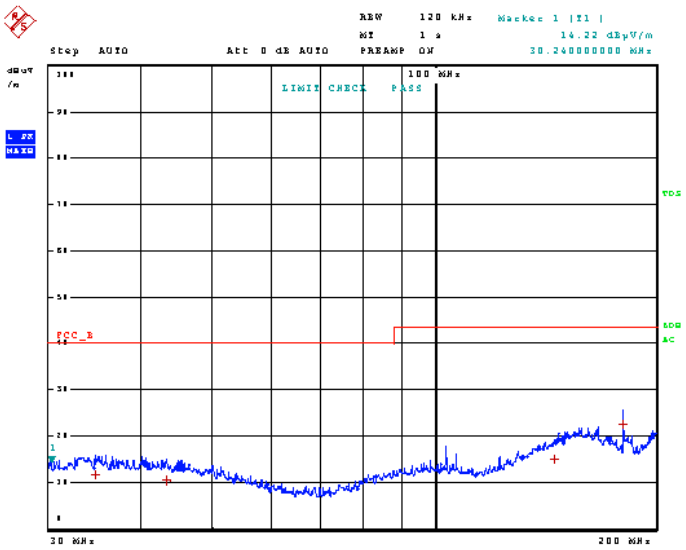
Test Spec CISPR 22 Radiated Disturbances

Polarity
H

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 13:38

Test Spec CISPR 22 Radiated Disturbances

Polarity
H

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	34.680000000 MHz	11.61	Quasi Peak	-28.39
1	43.240000000 MHz	10.47	Quasi Peak	-29.53
1	145.400000000 MHz	15.07	Quasi Peak	-28.43
1	180.320000000 MHz	22.58	Quasi Peak	-20.92

Page 2 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

Vertical Polarity

ROHDE&SCHWARZ

14.Aug 20 13:40

Test Spec CISPR 22 Radiated Disturbances

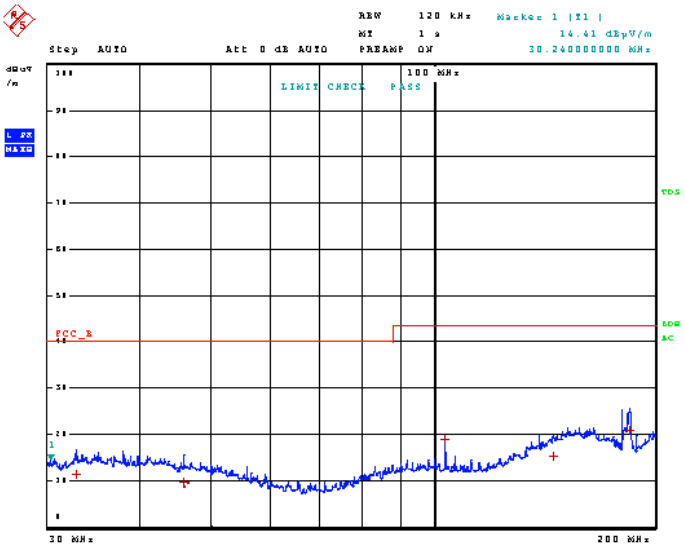
Polarity

V

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 13:40

Test Spec CISPR 22 Radiated Disturbances

Polarity
V

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 5

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	32.720000000 MHz	11.36	Quasi Peak	-28.64
1	45.920000000 MHz	9.66	Quasi Peak	-30.34
1	103.680000000 MHz	19.05	Quasi Peak	-24.45
1	145.360000000 MHz	15.13	Quasi Peak	-28.37
1	184.800000000 MHz	21.00	Quasi Peak	-22.50

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

Radiated Emissions 200 MHz to 1000 MHz

Horizontal Polarity

ROHDE&SCHWARZ

14.Aug 20 13:47

Test Spec CISPR 22 Radiated Disturbances

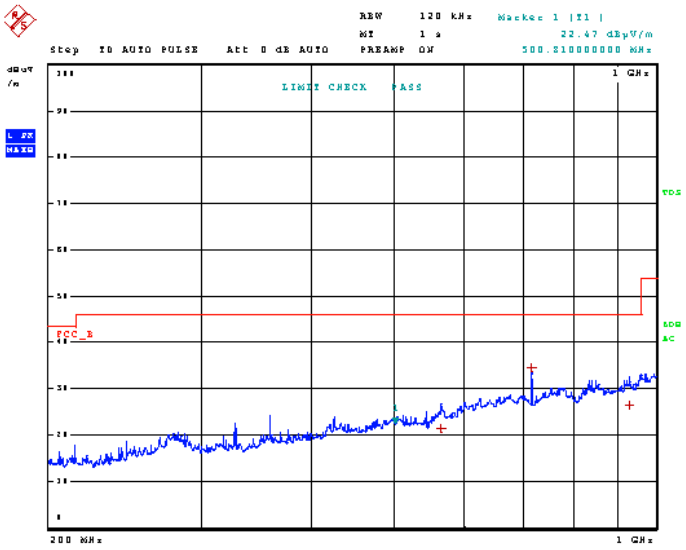
Polarity

H

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1



Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 13:47

Test Spec CISPR 22 Radiated Disturbances

Polarity
H

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 3

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	565.370000000 MHz	21.62	Quasi Peak	-24.38
1	718.910000000 MHz	34.50	Quasi Peak	-11.50
1	929.660000000 MHz	26.43	Quasi Peak	-19.57

Page 2 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

Vertical Polarity

ROHDE&SCHWARZ

14.Aug 20 13:44

Test Spec CISPR 22 Radiated Disturbances

Polarity

V

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 µs	Auto	20 dB	INPUT1

Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 13:44

Test Spec CISPR 22 Radiated Disturbances

Polarity
V

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 3

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	560.300000000 MHz	26.85	Quasi Peak	-19.15
1	718.910000000 MHz	34.60	Quasi Peak	-11.40
1	953.750000000 MHz	27.00	Quasi Peak	-19.00

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

Radiated Emissions Above 1000 MHz

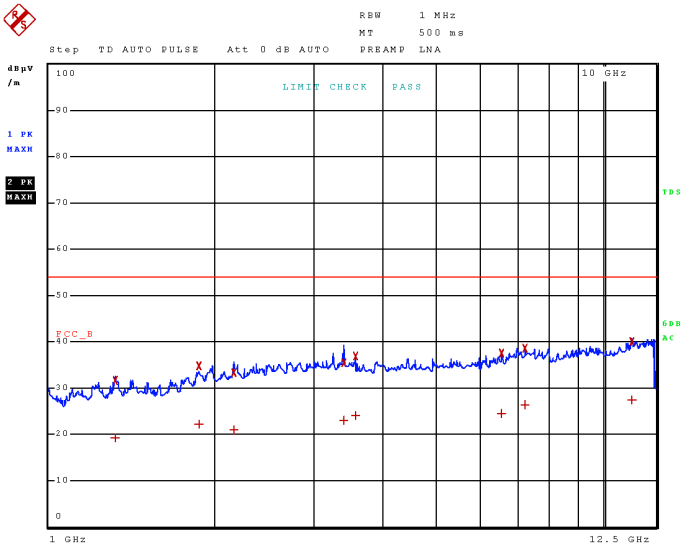
Horizontal Polarity

14.Aug 20 17:24

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_05

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 µs	Auto	35 dB	INPUT1



849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 17:24

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.318250000 GHz	19.31	CISPR Averag	-34.69
2	1.318250000 GHz	31.57	Max Peak	
1	1.863750000 GHz	22.19	CISPR Averag	-31.81
2	1.863750000 GHz	34.80	Max Peak	
1	2.156250000 GHz	20.90	CISPR Averag	-33.10
2	2.156250000 GHz	33.32	Max Peak	
1	3.402000000 GHz	23.05	CISPR Averag	-30.95
2	3.402000000 GHz	35.45	Max Peak	
1	3.587750000 GHz	24.00	CISPR Averag	-30.00
2	3.587750000 GHz	36.90	Max Peak	
1	6.575000000 GHz	24.49	CISPR Averag	-29.51
2	6.575000000 GHz	37.58	Max Peak	
1	7.240000000 GHz	26.31	CISPR Averag	-27.69
2	7.240000000 GHz	38.58	Max Peak	
1	11.314000000 GHz	27.35	CISPR Averag	-26.65
2	11.314000000 GHz	39.99	Max Peak	

Page 2 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

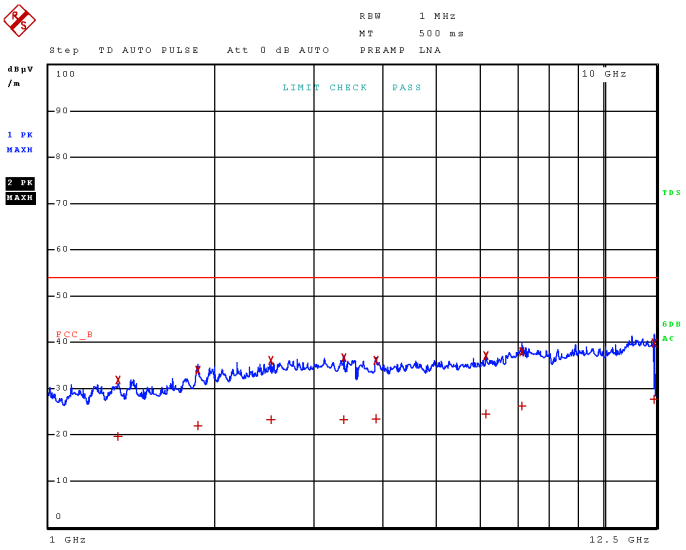
Vertical Polarity

14.Aug 20 17:22

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_05

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 µs	Auto	35 dB	INPUT1



849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

14.Aug 20 17:22

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.335250000 GHz	19.57	CISPR Averag	-34.43
2	1.335250000 GHz	31.75	Max Peak	
1	1.853750000 GHz	21.96	CISPR Averag	-32.04
2	1.853750000 GHz	34.03	Max Peak	
1	2.519500000 GHz	23.31	CISPR Averag	-30.69
2	2.519500000 GHz	36.13	Max Peak	
1	3.402000000 GHz	23.17	CISPR Averag	-30.83
2	3.402000000 GHz	36.68	Max Peak	
1	3.900000000 GHz	23.45	CISPR Averag	-30.55
2	3.900000000 GHz	36.06	Max Peak	
1	6.158000000 GHz	24.44	CISPR Averag	-29.56
2	6.158000000 GHz	37.02	Max Peak	
1	7.136250000 GHz	26.10	CISPR Averag	-27.90
2	7.136250000 GHz	37.95	Max Peak	
1	12.383250000 GHz	27.70	CISPR Averag	-26.30
2	12.383250000 GHz	39.83	Max Peak	

Page 2 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

POWER LINE CONDUCTED EMISSIONS

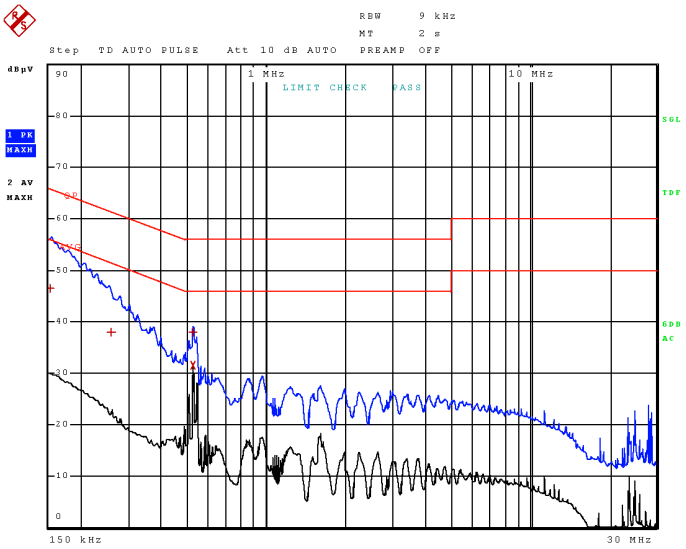
Line 1

14.Aug 20 13:15

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: tdf_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
Margin: 20 dB
Subranges: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	152.250000000 kHz	46.38	Quasi Peak	-19.50
1	255.750000000 kHz	37.85	Quasi Peak	-23.71
1	525.750000000 kHz	37.92	Quasi Peak	-18.08
2	525.750000000 kHz	31.51	Average	-14.49

Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

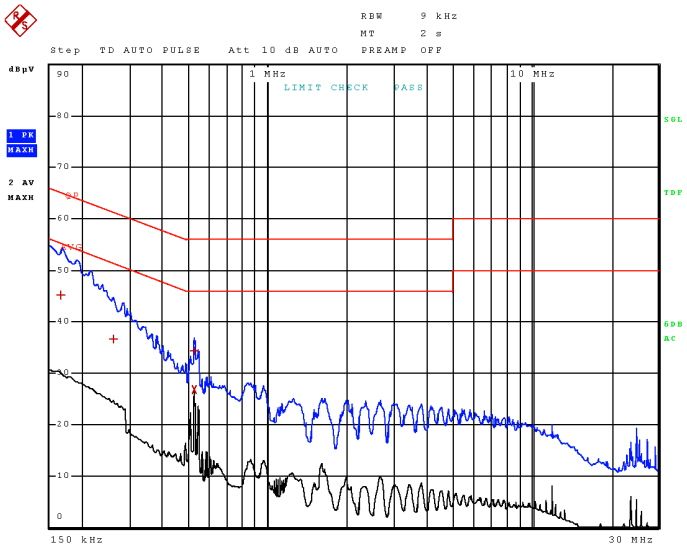
Line 2

14.Aug 20 13:19

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: tdf_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
Margin: 20 dB
Subranges: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	165.750000000 kHz	45.06	Quasi Peak	-20.11
1	258.000000000 kHz	36.67	Quasi Peak	-24.82
1	523.500000000 kHz	34.25	Quasi Peak	-21.75
2	525.750000000 kHz	26.77	Average	-19.23

Page 1 of 2

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

END OF TEST REPORT

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM