



849 NW State Road 45
Newberry, FL 32669 USA
Phone: 352.472.5500
Fax: 352.472.2030
Email: info@timcoengr.com
Website: www.timcoengr.com

TEST REPORT
FCC PART 15
for
FCC ID: K660A290X10

Applicant	YAESU MUSEN CO., LTD.
Address	TENNOZU PARKSIDE BUILDING 2-5-8 HIGASHI-SHINAGAWA, SHINAGAWA-KU, TOKYO 140-0002 JAPAN
Model Number	SSM-71H
Product Description	WI-FI REMOTE MICROPHONE
Date Sample Received	3/9/2017
Date Tested	3/20/2017
Tested By	FRANKLIN ROSE
Approved By	Cory Leverett
Test Results	☒ PASS ☐ FAIL

Report Number	Version Number	Description	Issue Date
383AUT17TestReport	Rev1	Initial Issue	3/21/2017

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, 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 the necessary measurements were made at:

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



Tested by:

Name and Title: Franklin Rose, Project Manager/Testing Technician

Date: March 21, 2017



Reviewed and approved by:

Name and Title: Cory Leverett, Engineering Project Manager

Date: 03/21/2017

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K660A290X10
Report: 383AUT17TestReport_Rev1

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GENERAL INFORMATION

The test results relate only to the items tested.	
EUT Description	WI-FI REMOTE MICROPHONE
FCC ID	K660A290X10
Model Number	SSM-71H
Highest Tuned Frequency	2462 MHz
I / O Port Type	USB – Charge Only
EUT Power Source	☐ 110–120Vac/50– 60Hz
	☐ 12.6 VDC Nominal
	☒ Battery Operated Exclusively
Test Item	☐ Prototype
	☐ Pre-Production
	☒ Production
Environmental Condition in the laboratory	Temperature: 24-26°C Relative humidity: 50-65% Barometric Pressure:

TEST INFORMATION

Regulatory Standard	CFR Title 47 FCC Rule part 15B § 15.109, 15.107 IC ICES-003 issue 6
Test Procedures	FCC Part 15.31, 15.33, 15.35 ICES-003 ANSI C63.4 – 2014
Operational Modes	Mode 1: EUT operating Channel 1 802.11b Mode 2: EUT operating Channel 6 802.11b Mode 3: EUT operating Channel 11 802.11b
Setup	Configuration 1: The EUT was configured as a wifi client through a supplied computer peripheral with receiving antenna, attached to the test PC via USB cable. The setup used was a tabletop arrangement for IT equipment as specified in the standard.
Modifications required for Testing	None
Deviation from the standard / procedure	No deviation
Host PC Model	DELL Latitude E6330, TIMCO #NL13-000

PERIPHERAL EQUIPMENT FOR TESTING

Description	Connector	Length
Antenna SCU-31 with cable	8-pin weatherproof	62 in.
"Jig" SCU-30	8-pin weatherproof, mini-USB, DC 12v socket	n/a
Banana Jack to DC 12v plug w/ ferrites	Banana Jacks (+, -), DC 12v plug	70 in.
Mini-USB to USB w/ ferrites	Mini-USB, USB	70 in.
X2 Micro-USB to USB	Micro-USB, USB	40 in.
X2 USB wall outlet adapter	USB, AC Outlet	n/a

RESULTS SUMMARY

FCC Rule Part	Requirement	Frequency MHz	Level (dBuV / m)		RESULTS Pass / Fail
15.109	Radiated Emissions	30 – 88	40.0		PASS
		80 – 216	43.0		PASS
		216 – 960	46.0		PASS
		Above 960	54.0		PASS
15.107	AC Powerline Conducted	Frequency MHz	Quasi Peak Limits (dBμV)	Average Limits (dBμV)	RESULTS Pass / Fail
		0.15 – 0.5	66 – 56	56 – 46 *	PASS
		0.5 – 5.0	56	46	PASS
		5.0 – 30	60	50	PASS

Decrease with logarithm of frequency

RADIATED SPURIOUS EMISSIONS

Rule Part No.: FCC Part 15 Subpart B

Requirements: FCC Part 15.109(a)

Class B Field Strength Limits @ 3 Meters	
Frequency (MHz)	Level (dBuV / m)
30 – 88	40.0
80 – 216	43.5
216 – 960	46.0
Above 960	54.0

Procedure: FCC Part 15.33(b)(1) Frequency range of radiated measurements
FCC Part 15.35(a) Measurement detector functions and bandwidths
ANSI C63.4 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment 9 kHz to 40 GHz
§ 11.2 Operating conditions
§ 11.3 Peripherals / Accessories
§ 11.5 Tabletop equipment arrangement
§ 11.9 Radiated emission measurements

Configuration: See Configuration 1.

RADIATED SPURIOUS EMISSIONS

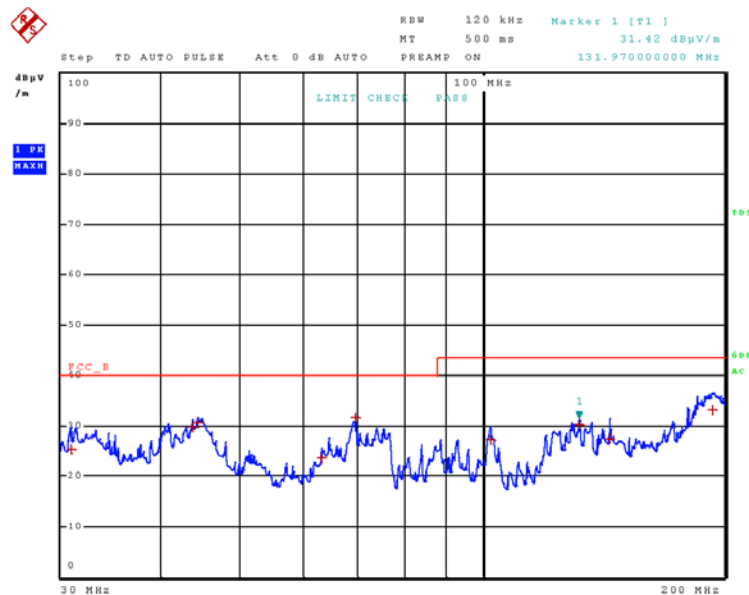
TEST DATA: 30-200 MHz VERTICAL MODE 1

20.Mar 17 16:27

Time Domain 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	30.00 kHz	120.00 kHz	10 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

20.Mar 17 16:27

Final Measurement

Meas Time: 500 ms
Margin: 20 dB
Subranges: 9

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	30.870000000 MHz	25.28	Quasi Peak	-14.72
1	43.770000000 MHz	29.82	Quasi Peak	-10.18
1	44.340000000 MHz	30.51	Quasi Peak	-9.49
1	63.240000000 MHz	23.62	Quasi Peak	-16.38
1	69.510000000 MHz	31.62	Quasi Peak	-8.38
1	102.480000000 MHz	27.30	Quasi Peak	-16.20
1	131.970000000 MHz	30.21	Quasi Peak	-13.29
1	143.970000000 MHz	27.35	Quasi Peak	-16.15
1	192.990000000 MHz	32.99	Quasi Peak	-10.51

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RADIATED SPURIOUS EMISSIONS

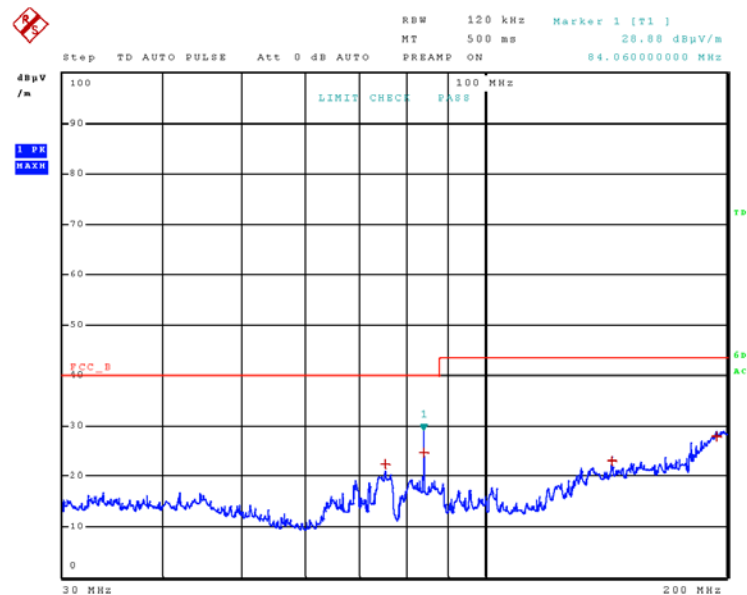
TEST DATA: 30-200 MHZ HORIZONTAL MODE 1

20.Mar 17 16:43

Time Domain 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	30.00 kHz	120.00 kHz	10 μ s	Auto	20 dB	INPUT1



Final Measurement

Meas Time: 500 ms
Margin: 20 dB
Subranges: 4

Trace	Frequency	Level (dBV/m)	Detector	Delta Limit/dB
1	75.33000000 MHz	22.28	Quasi Peak	-17.72
1	84.06000000 MHz	24.67	Quasi Peak	-15.33
1	144.09000000 MHz	23.00	Quasi Peak	-20.50
1	193.71000000 MHz	27.85	Quasi Peak	-15.65

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RADIATED SPURIOUS EMISSIONS

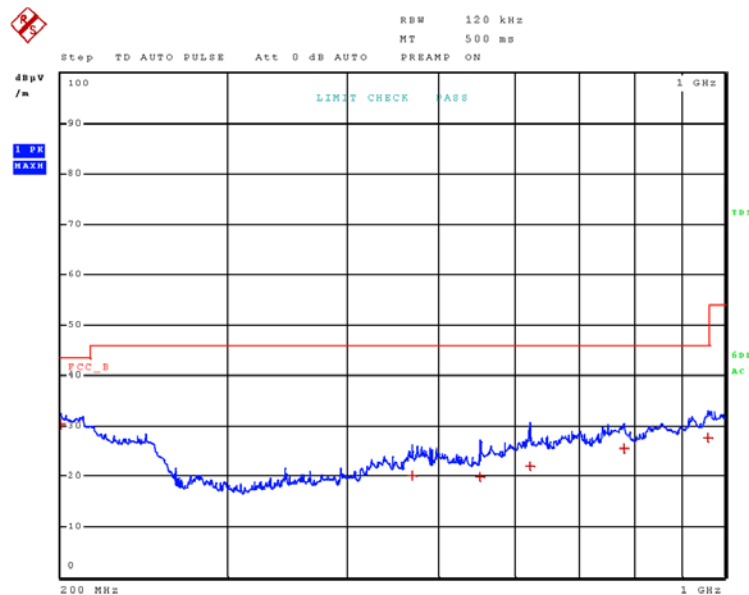
TEST DATA: 200-1000 MHZ VERTICAL MODE 1

20.Mar 17 15:51

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	10 μ s	Auto	20 dB	INPUT1



Final Measurement

Meas Time: 500 ms
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dBV/m)	Detector	Delta Limit/dB
1	200.06000000 MHz	30.44	Quasi Peak	-13.06
1	467.96000000 MHz	20.01	Quasi Peak	-25.99
1	551.96000000 MHz	19.88	Quasi Peak	-26.12
1	623.36000000 MHz	22.00	Quasi Peak	-24.00
1	782.21000000 MHz	25.48	Quasi Peak	-20.52
1	958.43000000 MHz	27.71	Quasi Peak	-18.29

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RADIATED SPURIOUS EMISSIONS

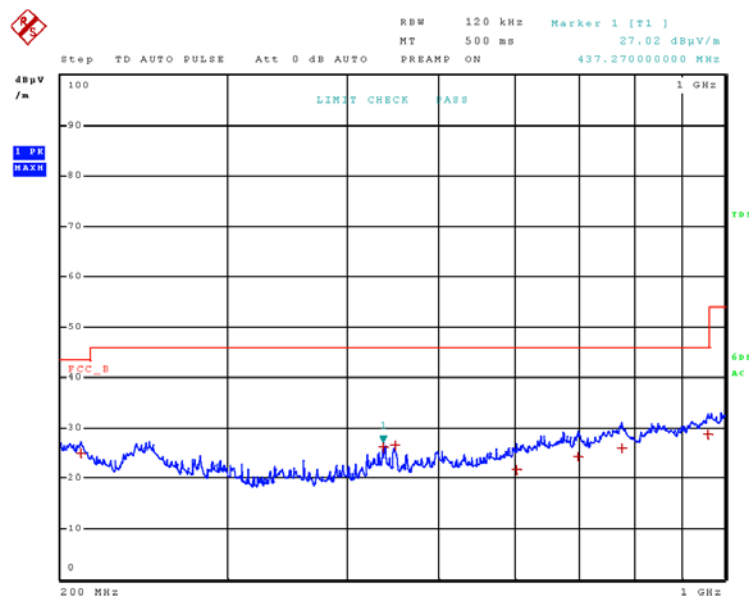
TEST DATA: 200-1000 MHZ HORIZONTAL MODE 1

20.Mar 17 16:03

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	10 μ s	Auto	20 dB	INPUT1



Final Measurement

Meas Time: 500 ms
Margin: 20 dB
Subranges: 7

Trace	Frequency	Level (dBuV/m)	Detector	Delta Limit/dB
1	210.170000000 MHz	24.88	Quasi Peak	-18.62
1	437.270000000 MHz	26.22	Quasi Peak	-19.78
1	449.270000000 MHz	26.51	Quasi Peak	-19.49
1	602.870000000 MHz	21.69	Quasi Peak	-24.31
1	701.390000000 MHz	24.25	Quasi Peak	-21.75
1	779.510000000 MHz	25.85	Quasi Peak	-20.15
1	959.990000000 MHz	28.70	Quasi Peak	-17.30

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RADIATED SPURIOUS EMISSIONS

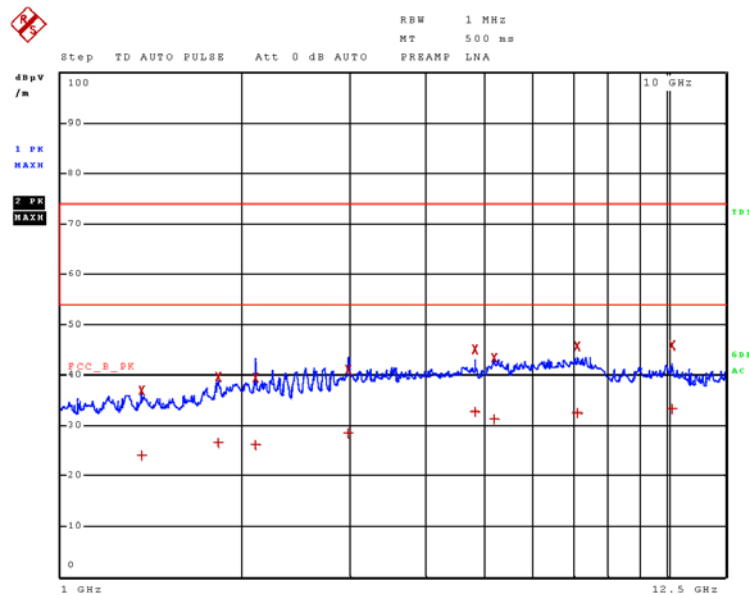
TEST DATA: 1-12.5 GHZ VERTICAL MODE 1

17.Mar 17 13:09

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_01

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 μ s	Auto	35 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

17.Mar 17 13:09

Final Measurement

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

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.360750000 GHz	24.11	CISPR Averag	-29.89
2	1.360750000 GHz	36.88	Max Peak	-37.12
1	1.820500000 GHz	26.62	CISPR Averag	-27.38
2	1.820500000 GHz	39.67	Max Peak	-34.33
1	2.093750000 GHz	26.14	CISPR Averag	-27.86
2	2.093750000 GHz	39.31	Max Peak	-34.69
1	2.987000000 GHz	28.57	CISPR Averag	-25.43
2	2.987000000 GHz	41.15	Max Peak	-32.85
1	4.824000000 GHz	32.57	CISPR Averag	-21.43
2	4.824000000 GHz	45.14	Max Peak	-28.86
1	5.183500000 GHz	31.23	CISPR Averag	-22.77
2	5.183500000 GHz	43.32	Max Peak	-30.68
1	7.134500000 GHz	32.52	CISPR Averag	-21.48
2	7.134500000 GHz	45.74	Max Peak	-28.26
1	10.218250000 GHz	33.40	CISPR Averag	-20.60
2	10.218250000 GHz	45.92	Max Peak	-28.08

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RADIATED SPURIOUS EMISSIONS

TEST DATA: 1-12.5 GHZ HORIZONTAL MODE 1



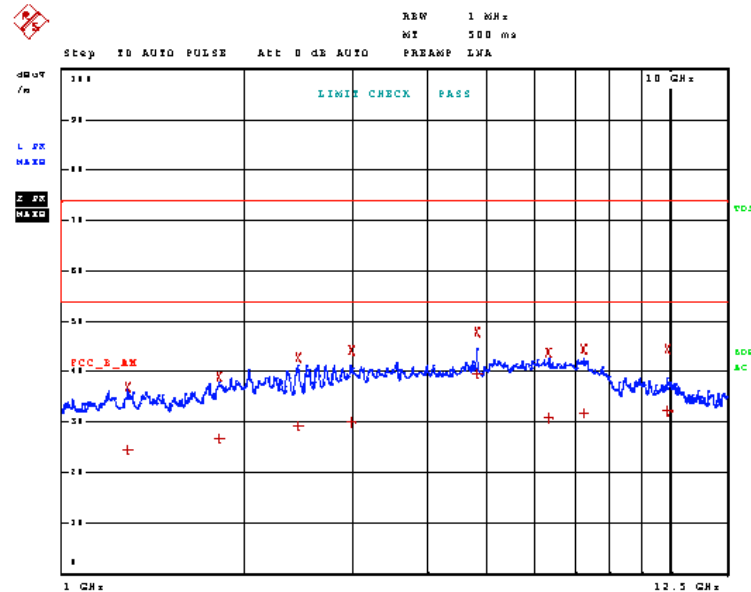
17.Mar 17 12:17

Operator Cory Leverett

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_01

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



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RADIATED SPURIOUS EMISSIONS



17.Mar 17 12:17

Operator Cory Leverett

Final Measurement

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

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	1.279500000 GHz	24.53	CISPR Averag	-29.47
2	1.279500000 GHz	36.87	Max Peak	-37.13
1	1.814000000 GHz	26.68	CISPR Averag	-27.32
2	1.814000000 GHz	39.01	Max Peak	-34.99
1	2.443750000 GHz	29.30	CISPR Averag	-24.70
2	2.443750000 GHz	42.66	Max Peak	-31.34
1	2.993000000 GHz	29.95	CISPR Averag	-24.05
2	2.993000000 GHz	44.17	Max Peak	-29.83
1	4.824000000 GHz	39.65	CISPR Averag	-14.35
2	4.824000000 GHz	47.81	Max Peak	-26.19
1	6.331750000 GHz	30.85	CISPR Averag	-23.15
2	6.331750000 GHz	43.83	Max Peak	-30.17
1	7.232000000 GHz	31.77	CISPR Averag	-22.23
2	7.232000000 GHz	44.38	Max Peak	-29.62
1	9.978750000 GHz	32.16	CISPR Averag	-21.84
2	9.978750000 GHz	44.51	Max Peak	-29.49

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RADIATED SPURIOUS EMISSIONS

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: FCC Subpart B

Requirements: FCC 15.107 (a)

Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50

* Decrease with logarithm of frequency

Procedure: ANSI C63.4 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment 9 kHz to 40 GHz

§ 11.2 Operating conditions

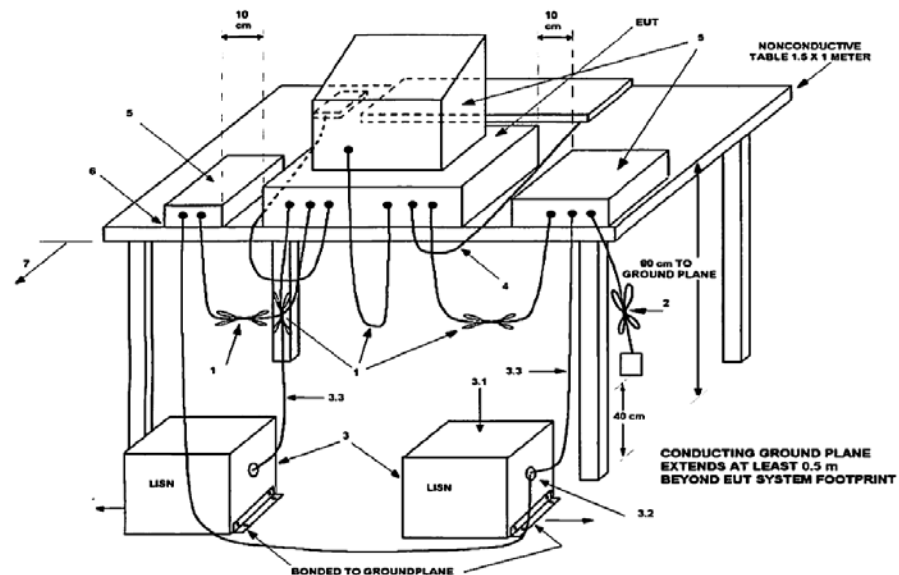
§ 11.3 Peripherals / Accessories

§ 11.5 Tabletop equipment arrangement

§ 11.8 AC power-line conducted emission measurements

Configuration: See Configuration 1.

Setup:



POWER LINE CONDUCTED INTERFERENCE

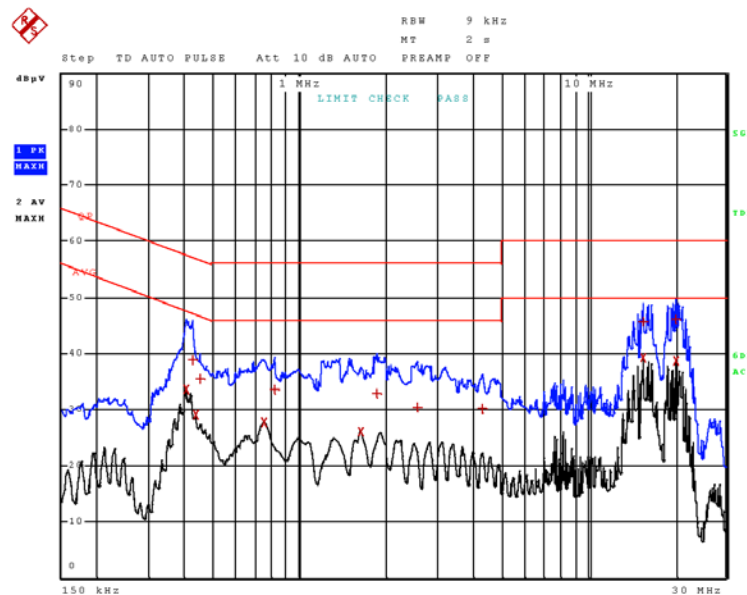
TEST DATA: LINE 1 MODE 1

16.Mar 17 12:57

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



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POWER LINE CONDUCTED INTERFERENCE

16.Mar 17 12:57

Final Measurement

Meas Time: 2 s
Margin: 20 dB
Subranges: 14

Trace	Frequency	Level (dBμV)	Detector	Delta Limit/dB
2	402.000000000 kHz	33.60	Average	-14.22
1	422.250000000 kHz	38.94	Quasi Peak	-18.47
2	435.750000000 kHz	28.93	Average	-18.21
1	451.500000000 kHz	35.39	Quasi Peak	-21.46
2	750.750000000 kHz	27.78	Average	-18.22
1	820.500000000 kHz	33.51	Quasi Peak	-22.49
2	1.623750000 MHz	25.95	Average	-20.05
1	1.855500000 MHz	32.86	Quasi Peak	-23.14
1	2.548500000 MHz	30.34	Quasi Peak	-25.66
1	4.290000000 MHz	30.20	Quasi Peak	-25.80
1	15.513000000 MHz	45.69	Quasi Peak	-14.31
2	15.513000000 MHz	39.19	Average	-10.81
1	20.051250000 MHz	46.06	Quasi Peak	-13.94
2	20.051250000 MHz	38.60	Average	-11.40

Transducer Table

Name: tdf_20
Interpolation: LIN
Comment: ANS 25/2 Primary LISN IL Line 1 + Coax Cable IL

Frequency	Factor (dB)
150.00 kHz	0.19
170.00 kHz	0.17
200.00 kHz	0.16
250.00 kHz	0.13
300.00 kHz	0.12
350.00 kHz	0.12
400.00 kHz	0.11
500.00 kHz	0.12
600.00 kHz	0.12
700.00 kHz	0.11
800.00 kHz	0.13
900.00 kHz	0.12
1.00 MHz	0.21
1.20 MHz	0.22
1.50 MHz	0.28
2.00 MHz	0.37
2.50 MHz	0.41
3.00 MHz	0.59
4.00 MHz	0.40
5.00 MHz	0.47
7.00 MHz	0.63
10.00 MHz	0.88
15.00 MHz	1.08
20.00 MHz	1.01
30.00 MHz	1.80

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POWER LINE CONDUCTED INTERFERENCE

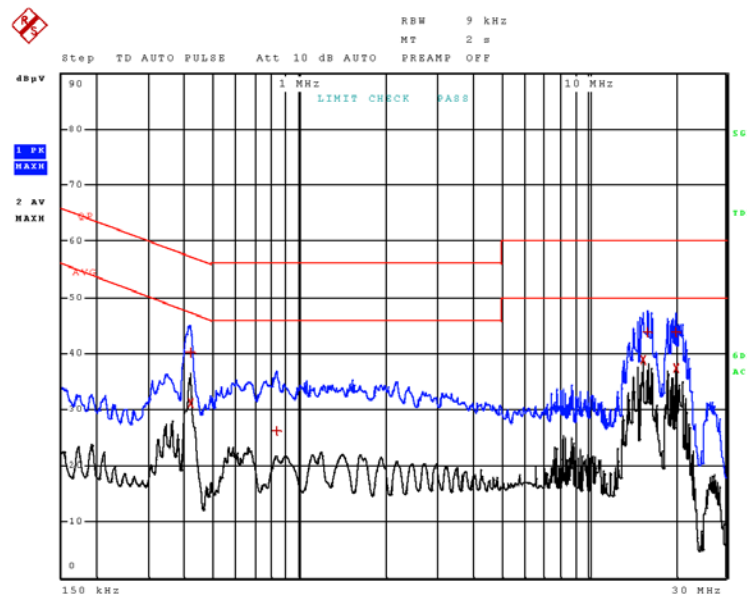
TEST DATA: LINE 2 MODE 1

16.Mar 17 13:06

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: tdf_21

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: 7

Trace	Frequency	Level (dBμV)	Detector	Delta Limit/dB
1	415.50000000 kHz	40.09	Quasi Peak	-17.45
2	415.50000000 kHz	31.19	Average	-16.35
1	829.50000000 kHz	26.15	Quasi Peak	-29.85
2	15.51300000 MHz	38.94	Average	-11.06
1	15.95175000 MHz	43.77	Quasi Peak	-16.23
1	20.04900000 MHz	43.86	Quasi Peak	-16.14
2	20.05125000 MHz	37.31	Average	-12.69

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POWER LINE CONDUCTED INTERFERENCE

16.Mar 17 13:06

Transducer Table

Name: tdf_21
Interpolation: LIN
Comment: ANS 25/2 Primary LISN IL Line 2 + Coax Cable IL

Frequency	Factor (dB)
150.00 kHz	0.20
170.00 kHz	0.25
200.00 kHz	0.22
250.00 kHz	0.19
300.00 kHz	0.15
350.00 kHz	0.16
400.00 kHz	0.17
500.00 kHz	0.16
600.00 kHz	0.15
700.00 kHz	0.16
1000.00 kHz	0.17
3000.00 kHz	0.15
1.00 MHz	0.23
1.20 MHz	0.28
1.50 MHz	0.34
2.00 MHz	0.40
2.50 MHz	0.44
3.00 MHz	0.65
4.00 MHz	0.47
5.00 MHz	0.48
7.00 MHz	0.68
10.00 MHz	0.92
15.00 MHz	1.10
20.00 MHz	0.93
30.00 MHz	1.82

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POWER LINE CONDUCTED INTERFERENCE

UNCERTAINTY TABLE

State of the measurement uncertainty

The data and results referenced in this document are true and accurate. The measurement uncertainty was calculated for all measurements listed in this test report according To CISPR 16 – 4 or ENTR 100-028 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: “Uncertainty in EMC Measurements” and is documented in the Timco Engineering, Inc. quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Timco Engineering, Inc. is reported:

Test Items	Measurement Uncertainty	Notes
Radiated Emissions to 6.0GHz	$\pm 4.4\text{dB}$	(1)
Power line conducted emissions	$\pm 3.9\text{dB}$	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1096 Chamber	Eaton	94455-1	1096	07/14/15	07/14/17
Antenna: Log-Periodic 1122	Electro-Metrics	LPA-25	1122	07/14/15	07/14/17
LISN (Primary)	Electro-Metrics	ANS-25/2	2604	07/13/15	07/13/17
LISN (Secondary)	Electro-Metrics	EM-7820	2682	05/08/15	05/08/17
CHAMBER	Panashield	3M	N/A	04/25/16	12/31/17
Antenna: Double- Ridged Horn/ETS Horn 2	ETS-Lindgren Chamber	3117	00041534	03/01/17	03/01/19
Software: Field Strength Program	Timco	N/A	Version 4.0	n/a	n/a
EMI Test Receiver R & S ESU 40	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Coaxial Cable - BMBM- 1000-00 Silver	Semflex	LISN Cable	BMBM-1000- 00	01/05/17	01/05/18
Coaxial Cable - Chamber 3 cable set (Primary)	Micro-Coax	Chamber 3 cable set (Primary)	KMKM-0244- 01; KMKM- 0670-00; KFKF-0198- 01	08/09/16	08/09/18
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	n/a	n/a
Pre-amp	RF-LAMBDA	RLNA00M45GA	NA	01/04/16	01/04/18

*EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

END OF REPORT