REGULATORY COMPLIANCE TEST REPORT

FCC CFR 47 Part 15 SubPart B

Report No.: KUMU06-U2 Rev A

Company: Kumu Networks Inc

Model: Relay 2.0

REGULATORY COMPLIANCE TEST REPORT

Company: Kumu Networks Inc.

Model: Relay 2.0

To: FCC CFR 47 Part 15 Subpart B FCC CFR 47 Part 15 Subpart B (-)

Test Report Serial No.: KUMU06-U2 Rev A

This report supersedes: NONE

Applicant: Kumu Networks Inc
390 Hamlin Court
Sunnyvale, California 94089
USA

Issue Date: 14th September 2020

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
USA
Phone: +1 (925) 462-0304
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www.micomlabs.com

ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2017. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 24th day of February 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2021

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

1.2. RECOGNITION

MiCOM Labs, Inc has widely recognized wireless testing and certification capabilities. In addition to being recognized for Testing and Certification under Phase 2 agreements with Canada, Europe and Japan, our international recognition includes Conformity Assessment Body designation under Phase 1 agreements with APEC MRA countries. MiCOM Labs test reports are accepted globally.

Country	Recognition Body	Status	MRA Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 Test Firm Designation#: US1084
Canada	Industry Canada (ISED)	FCB	APEC MRA 2	US0159 ISED#: 4143A
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	Japan MRA 2	RCB 210
	Japan Approvals Institute for Telecommunication Equipment (JATE)			
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA 2	NB 2280
Mexico	Instituto Federal de Telecomunicaciones (IFT)	CAB	Mexico MRA 1	US0159
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)			
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)			
Singapore	Infocomm Development Authority (IDA)			
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)			
Vietnam	Ministry of Communication (MIC)			

EU MRA – European Union Mutual Recognition Agreement
NB – Notified Body
APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement. Recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.
MRA PhasePhase I - recognition for product testing
Phase II – recognition for both product testing and certification

1.3. PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf

Accredited Product Certification Body

A2LA has accredited

MiCOM LABS

Pleasanton, CA

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 *Requirements for bodies certifying products, processes and services*. This product certification body also meets the *A2LA R322 – Specific Requirements – Notified Body Accreditation Requirements* and *A2LA R308 - Specific Requirements - ISO-IEC 17065 - Telecommunication Certification Body Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a management system.

Presented this 24th day of February 2020

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2021

For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.

United States of America – Telecommunication Certification Body (TCB)
Industry Canada – Certification Body, CAB Identifier – US0159
Europe – Notified Body (NB), NB Identifier - 2280
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	6th August 2020	
Rev A	14th September 2020	Initial Release
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In the above table the latest report revision will replace all earlier versions.

MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

3. TEST RESULT CERTIFICATE

Manufacturer: Kumu Networks Inc 390 Hamlin Court Sunnyvale California 94089 USA	**Tested By:** MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model: KR5192	**Telephone:** +1 925 462 0304 **Fax:** +1 925 462 0306
Equipment Type: Backhaul Relay	
S/N's: #3	
Test Date(s): 11th May – 5th August 2020	**Website:** www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart B FCC	EQUIPMENT COMPLIES

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

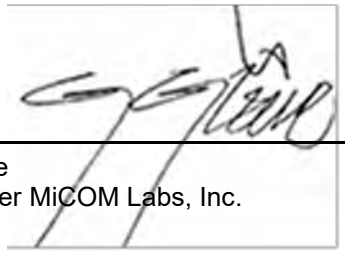
1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:



Graeme Grieve
Quality Manager MiCOM Labs, Inc.

Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	A2LA	October 2019	R105 - Requirement's When Making Reference to A2LA Accreditation Status
II	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
III	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
IV	RSS-Gen Issue 5	March 2019 Amendment 1	General Requirements for Compliance of Radio Apparatus
V	FCC CFR 47 Part 15 Subpart B	2020	Title 47 CFR Part 15, Sub Part B; Unintentional Radiators

4.2. Test and Uncertainty Procedure

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

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5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the Kumu Networks Inc Relay 2.0 to FCC CFR 47 Part 15 Subpart B FCC CFR 47 Part 15 Subpart B (-). Title 47 CFR Part 15, Sub Part B; Unintentional Radiators
Applicant:	Kumu Networks Inc 390 Hamlin Court Sunnyvale California 94089 USA
Manufacturer:	Same as Applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	KUMU06
Date EUT received:	11th May 2020
Standard(s) applied:	FCC CFR 47 Part 15 Subpart B FCC
Dates of test (from - to):	11th May – 5th August 2020
No of Units Tested:	1
Product Family Name:	Relay
Model(s):	KR5192
Equipment Secondary Function(s):	None
Type of Technology:	LTE Backhaul Relay
Installation type:	Fixed installation
Construction/Location for Use:	Outdoor
Rated Input Voltage and Current:	120VAC, 0.8A -48VDC, 1.9A
Operating Temperature Range:	-40°C to +55°C
Equipment Dimensions:	18 / 10.5 / 6 in
Weight:	33 Lb
Hardware Rev:	Rev-1
Software Rev:	De30b91

5.2. Scope Of Test Program

Kumu Networks Inc KR5192

The scope of the test program was to test the Kumu Networks Inc KR5192, Relay 2.0 configuration for compliance against the following specification:

- FCC CFR 47 Part 15, Subpart B - Title 47 CFR Part 15, SubPart B; Unintentional Radiators.

MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

5.3. Equipment Model(s) and Serial Number(s)

Type (EUT/ Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	Relay 2.0 Backhaul	Kumu Networks	KR5192	3
Support	Laptop	Dell	D620	-

5.4. Antenna Details

No Antennas were included in this test program

5.5. Cabling and I/O Ports

Port Type	Port Description	Qty	Screened (Yes/ No)	Length
RJ45	Ethernet	1	N	>10m
SMA	LTE Ports	2	Y	
TNC	Data	4	Y	
DC Leads	DC Power	1	N	
AC Power Triax	AC	1	N	

5.6. Test Configurations

Test configurations are as noted in the test results.

5.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:
1. NONE

5.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:
1. NONE

6. TEST SUMMARY

The following table represent the list of measurements required under the FCC CFR 47 Part 15 B and ISED ICES-003 standards;

TABLE OF REQUIRED TESTS – Class A Emissions

Test Standard	Description	Limits	Compliance
FCC Part 15B	Radiated Emissions	Class A	Complies
FCC Part 15B	Conducted Emissions - ac power I/O port	Class A	Complies

7. TEST RESULTS

7.1. EMC EMISSIONS TEST RESULTS

7.1.1 Radiated Emissions

FCC, Part 15 Subpart B §15.109

Test Procedure

Testing 30 – 6,000 MHz was performed in a anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR Compliant receiver. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Only the highest emissions relative to the limit are listed.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

FS = R + AF + CORR – FO

FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
FO = Distance Falloff Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss
AG = Amplifier Gain
NFL = Notch Filter Loss or Waveguide Loss

Field Strength Calculation Example:

Given receiver input reading of 51.5 dBμV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

FCC and IC Spurious Emissions Limits

FCC, Part 15 Subpart B §15.109
Industry Canada ICES-003 Section 6.2

Except for Class A digital device, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values.

Limits below 1 GHz:
Class A limits

Frequency(MHz)	Quasi-peak Limit (dBµV/m)	Measurement Distance (meters)	Quasi-peak Limit (dBµV/m)	Measurement Distance (meters)
30 to 88	39.0	10	49.5	3
88-216	43.5	10	54	3
216-960	46.4	10	56.5	3
960-1000	49.5	10	60	3

Class B limits

Frequency(MHz)	Quasi-peak Limit (dBµV/m)	Measurement Distance (meters)	Quasi-peak Limit (dBµV/m)	Measurement Distance (meters)
30 to 88	29.5	10	40	3
88-216	33	10	43.5	3
216-960	35.6	10	46	3
960-1000	43.5	10	54	3

Limits above 1GHz:

Frequency(MHz)	Average Limit (dBµV/m)	Peak Limit (dBµV/m)	Measurement Distance (meters)	Class (A/B)
1 000 to 6000	54	74	3	Class B

Frequency(MHz)	Average Limit (dBµV/m)	Peak Limit (dBµV/m)	Measurement Distance (meters)	Class (A/B)
1 000 to 6000	60	80	3	Class A

Traceability

Laboratory Measurement Uncertainty	
Measurement uncertainty	+5.6/ -4.5 dB

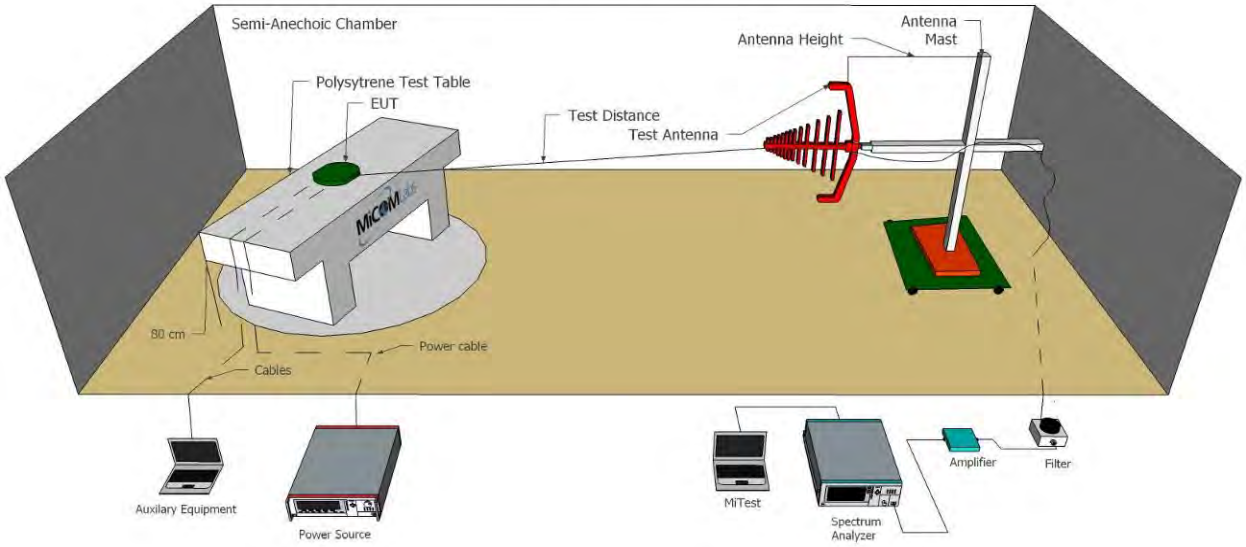
Method
Work instruction WI-EMC-07: Radiated Emissions Test

Test Equipment Utilized

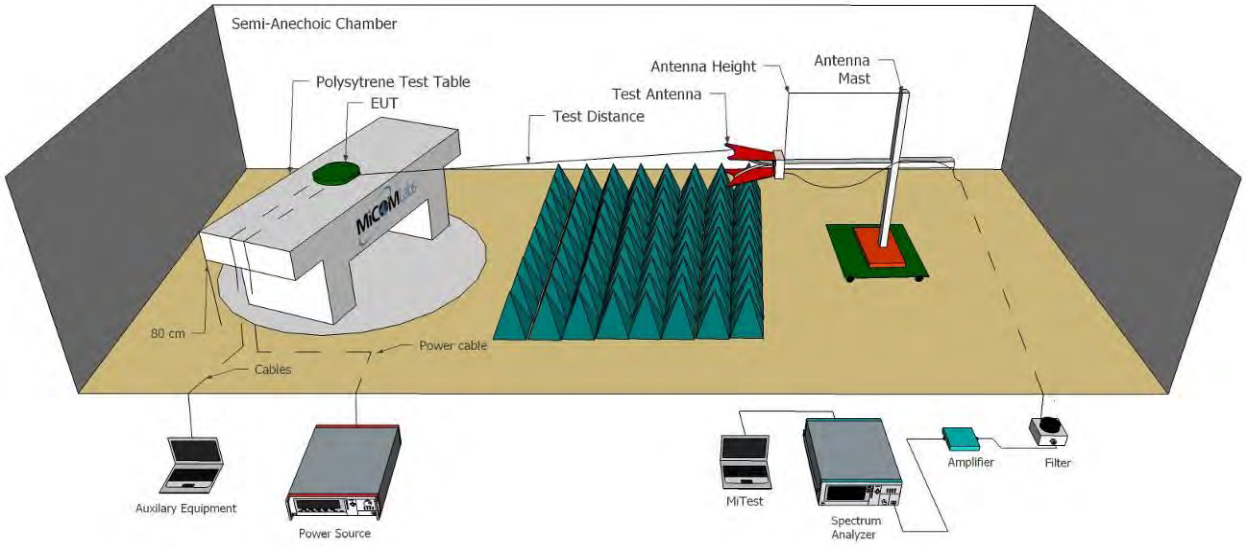
Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	8 Oct 2020
298	3M Radiated Emissions Chamber Maintenance Check	MiCOM	3M Chamber	298	26 Nov 2020
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	4 Apr 2021
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	6 Sep 2020
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	12 Oct 2020
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	9 Sep 2020
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	Not Required
416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	5 Sep 2020
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	5 Sep 2020
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	9 Sep 2020
466	Low Pass Filter DC-1500 MHz	Mini-Circuits	NLP-1750+	VUU10401438	3 Sep 2020
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	9 Sep 2020
481	Cable - Bulkhead to RCVR	SRC Haverhill	151-3050787	481	9 Sep 2020
510	Barometer/Thermometer	Control Company	68000-49	170871375	20 Dec 2020
518	Cable - Amp to Antenna	SRC Haverhill	157-3051574	518	9 Sep 2020
CC05	Confidence Check	MiCOM	CC05	None	4 Oct 2020

Test Setup for Radiated Emissions for above and below 1 GHz

Radiated Emissions Below 1GHz Test Setup



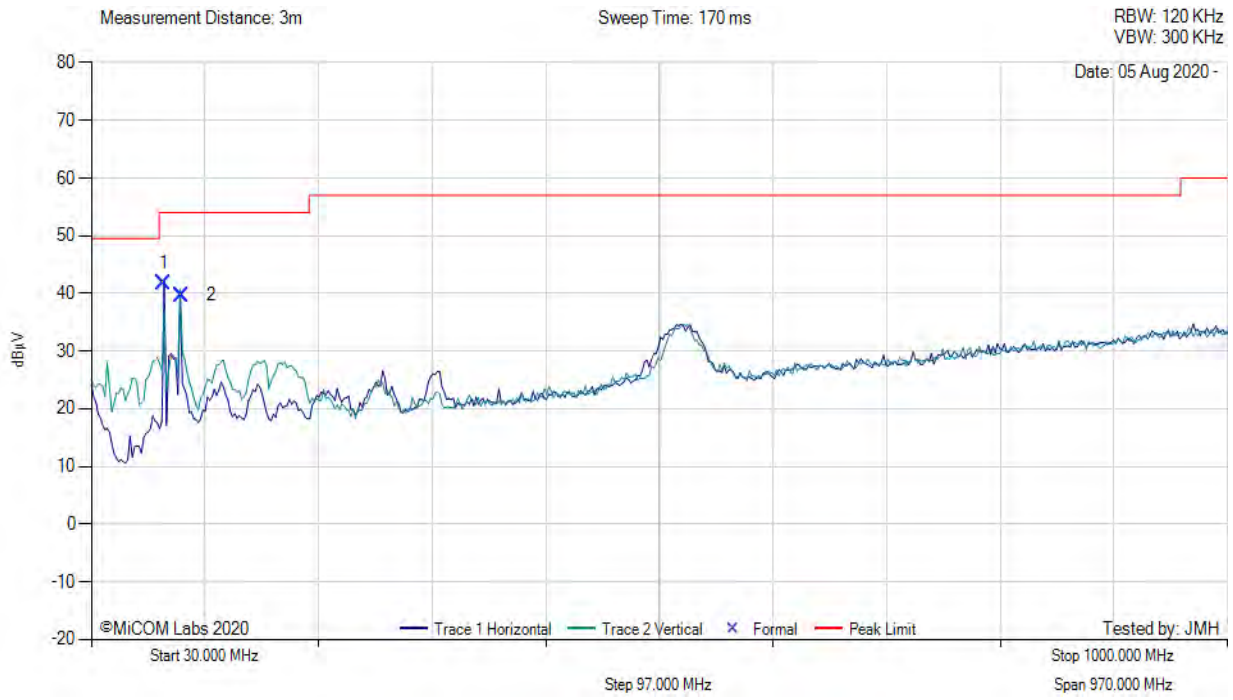
Radiated Emissions Above 1GHz Test Setup



30-1000 MHz

Model:	KR5192	Configuration tested:	-48Vdc
Input power:	-48V DC	Standard:	FCC Part 15

Variant: 5 MHz, Test Freq: 1852.50 MHz, Power Setting: Max, Duty Cycle (%): 99

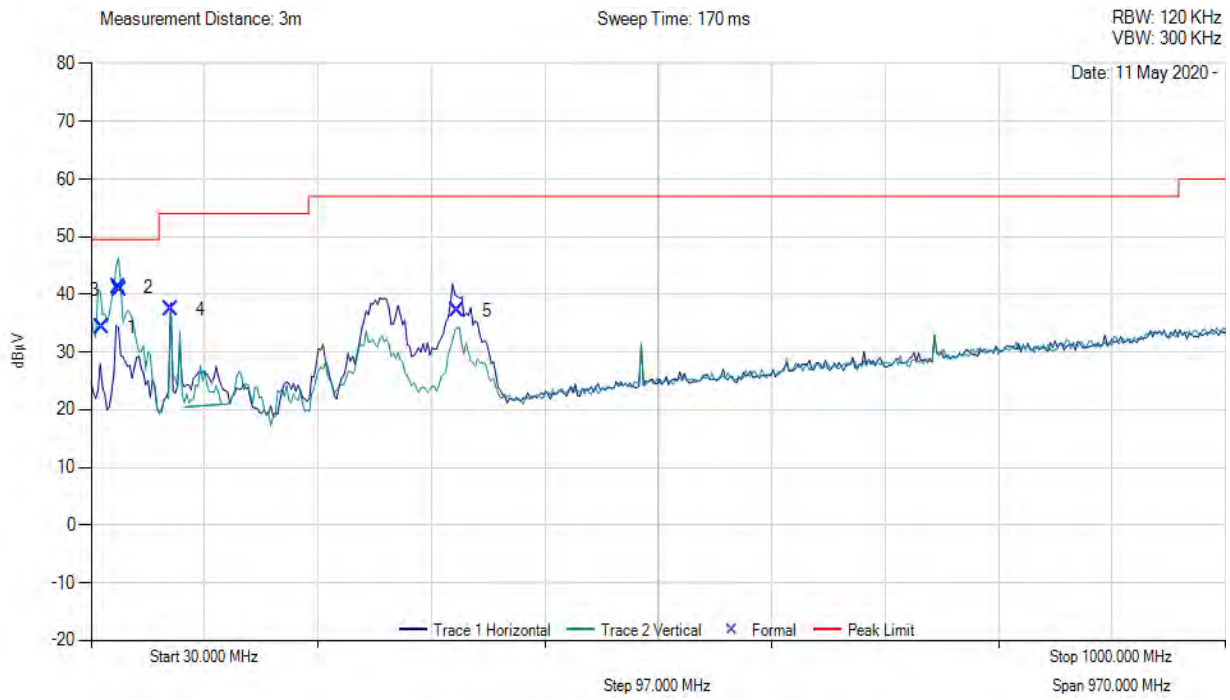


30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	92.25	58.20	4.01	-20.48	41.73	MaxQP	Horizontal	162	211	54.0	-12.3	Pass
2	107.30	51.67	4.10	-16.05	39.72	MaxQP	Vertical	100	156	54.0	-14.3	Pass

Test Notes: EUT powered by -48V, connected to Call box outside chamber.

Model:	KR5192	Configuration tested:	120 Vac, 60 Hz
Input power:	120 Vac	Standard:	FCC Part 15

Variant: , Test Freq: 1880.00 MHz

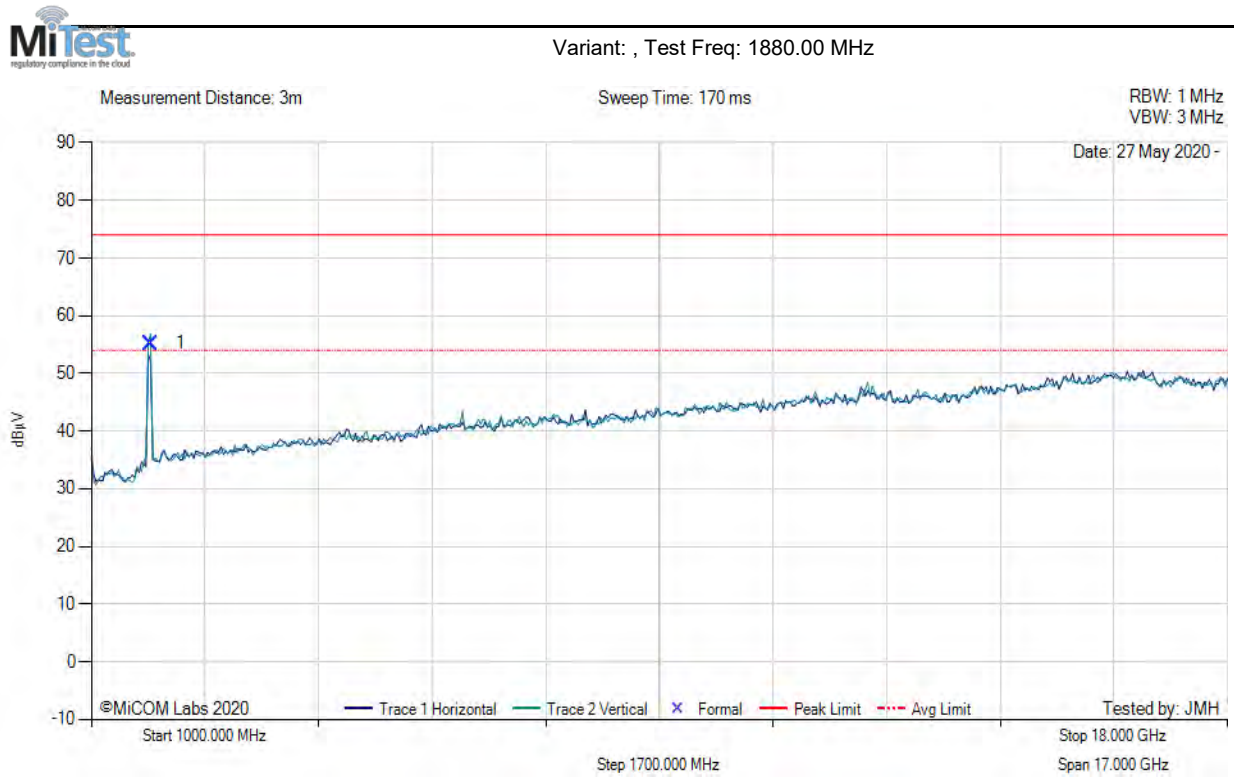


30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	38.71	44.59	3.64	-13.91	34.32	MaxQP	Vertical	98	137	49.5	-15.2	Pass
2	53.02	58.68	3.76	-21.13	41.31	MaxQP	Vertical	99	352	49.5	-8.2	Pass
3	54.92	58.11	3.77	-21.14	40.74	MaxQP	Vertical	98	356	49.5	-8.8	Pass
4	98.14	52.08	4.04	-18.69	37.43	MaxQP	Horizontal	180	194	54.0	-16.6	Pass
5	342.78	45.58	5.06	-13.43	37.21	MaxQP	Horizontal	108	198	57.0	-19.8	Pass

Test Notes: KUMU Band 2 relay. AC Mains. Connected via cable to callbox outside chamber.

1-18 GHz

Model:	KR5192	Configuration tested:	-48Vdc
Input power:	- 48V DC	Standard:	FCC Part 15

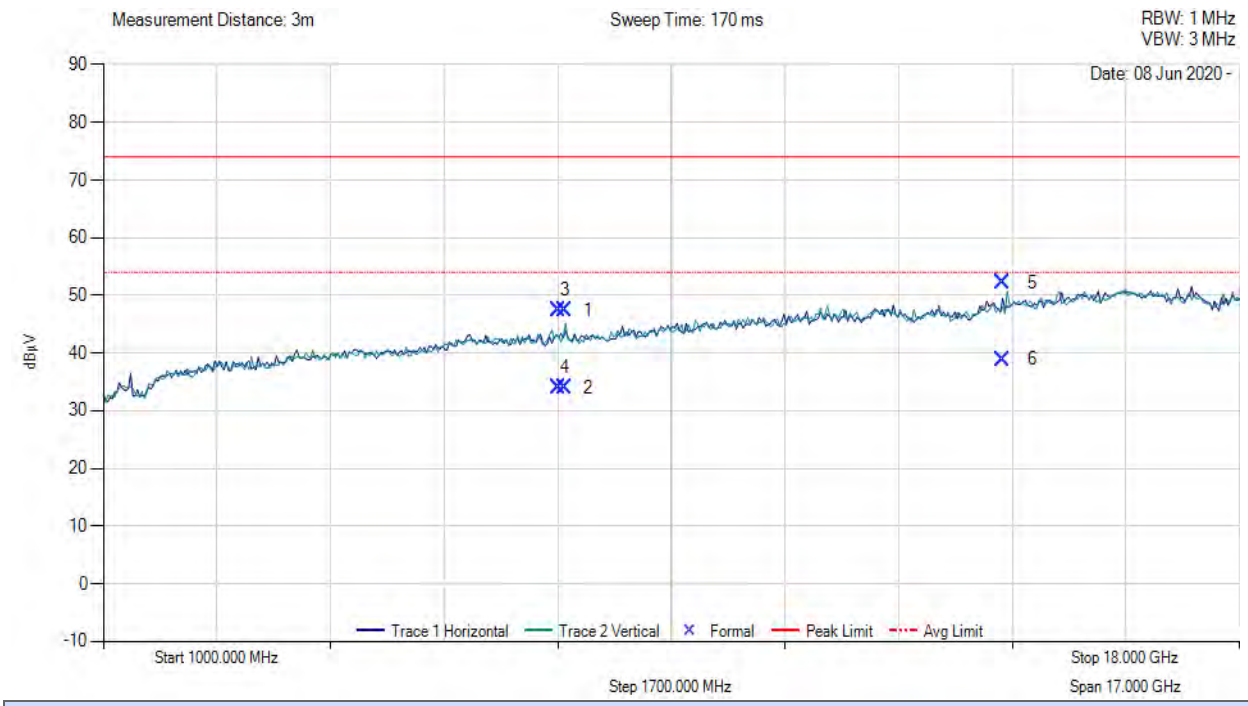


1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1880.98	67.40	1.80	-13.96	55.24	Fundamental	Vertical	100	289	--	--	

Test Notes: EUT powered by DC /DC converter

Model:	KR5192	Configuration tested:	120 Vac, 60 Hz
Input power:	120 Vac	Standard:	FCC Part 15

Variant: , Test Freq: 710.00 MHz



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	7811.80	51.27	3.77	-7.66	47.38	Max Peak	Vertical	134	310	74.0	-26.6	Pass
2	7811.80	37.94	3.77	-7.66	34.05	Max Avg	Vertical	134	310	54.0	-20.0	Pass
3	7905.30	51.52	3.85	-7.92	47.45	Max Peak	Vertical	173	156	74.0	-26.6	Pass
4	7905.30	38.14	3.85	-7.92	34.07	Max Avg	Vertical	173	156	54.0	-19.9	Pass
5	14447.03	53.87	5.10	-6.80	52.17	Max Peak	Vertical	174	99	74.0	-21.8	Pass
6	14447.03	40.60	5.10	-6.80	38.90	Max Avg	Vertical	174	99	54.0	-15.1	Pass
Test Notes: AC Powered. Band 17 UL 710 MHz												

7.1.2. AC Mains Power Input / Output Ports

Scope

This test assesses the ability of the EUT to limit its internal noise from being present on the AC mains power input/output ports.

Test Procedure

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

Limits

The equipment shall meet the class B limits given in FCC Part 15. Alternatively, for equipment intended to be used in non-residential environment only, the class A limits given in EN 55032 may be used.

Class B Emissions

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	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

Class A Emissions

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

Traceability

All conducted emission measurements are traceable to national standards. The uncertainty of measurement at a confidence level of not less than 95 %, with a coverage factor of k=2, in the range 9 kHz – 30 MHz (Average & Quasi-peak) is ±2.64 dB.

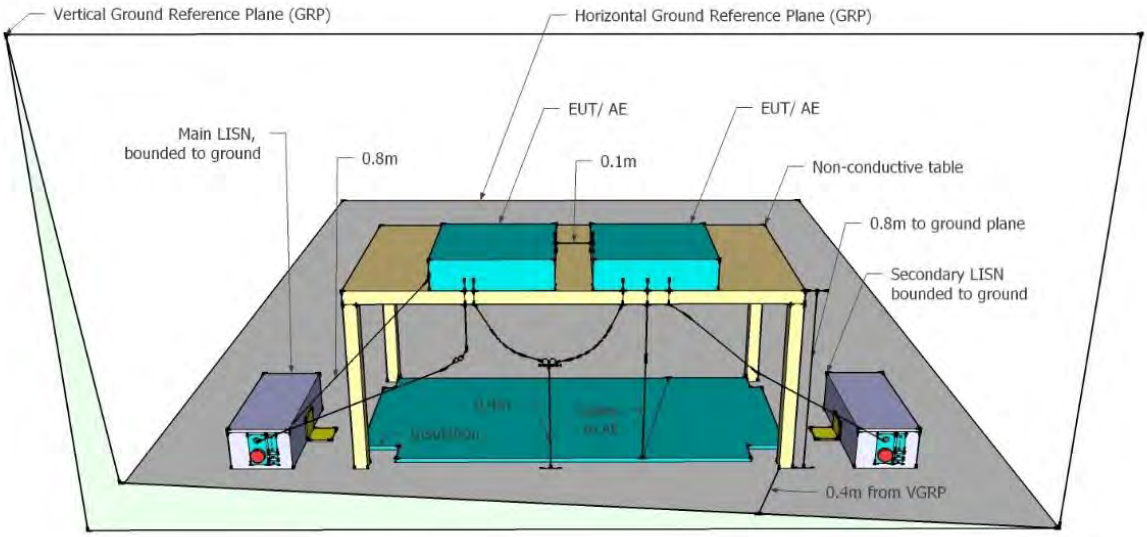
Laboratory Measurement Uncertainty	
Measurement uncertainty	±2.64 dB

Method
Measurements were made per work instruction WI-EMC-01 ‘Measurement of Conducted Emissions’

Test Equipment Utilized

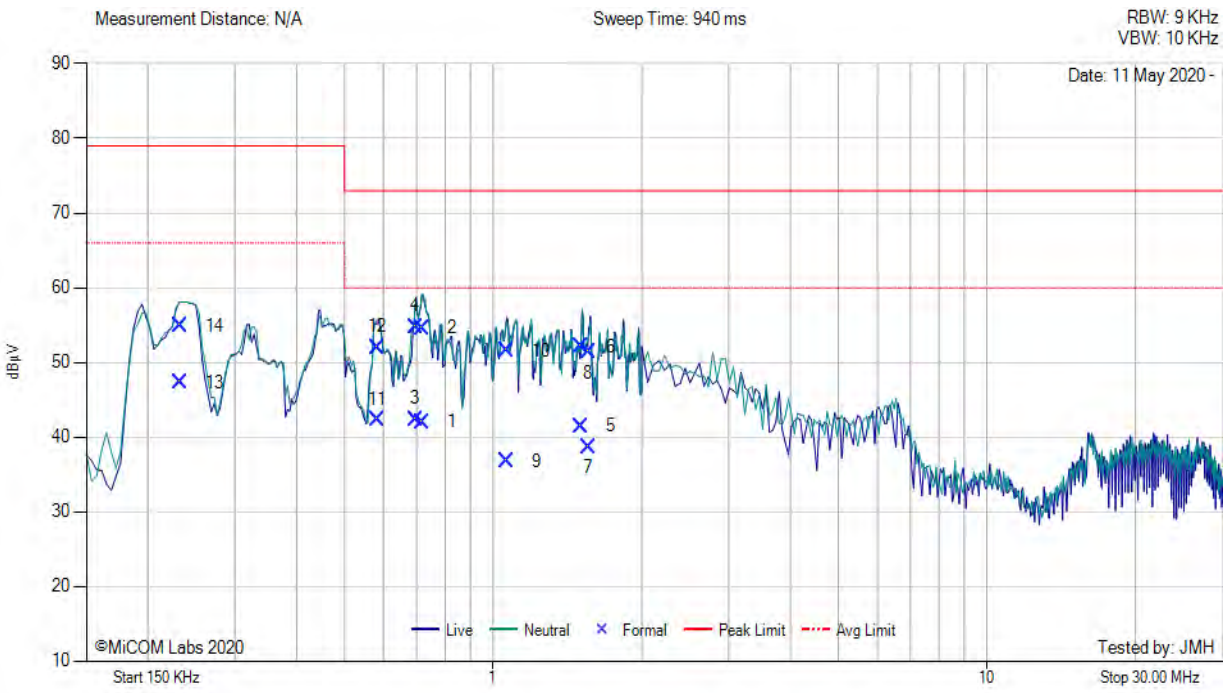
Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
184	Pulse Limiter	Rhode & Schwarz	ESH3Z2	357.8810.52	30 Aug 2021
190	LISN (two-line V-network)	Rhode & Schwarz	ESH3Z5	836679/006	18 Oct 2020
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	8 Oct 2020
295	Conducted Emissions Chamber Maintenance Check	MiCOM	Conducted Emissions Chamber	295	26 Nov 2020
307	BNC-CABLE	Megaphase	1689 1GVT4	15F50B002	11 Sep 2020
316	Dell desktop computer workstation	Dell	Desktop	WS04	Not Required
372	AC Variable PS	California Instruments	1251P	L06951	Cal when used
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	12 Oct 2020
389	LISN (3 Phase) 9kHz - 30 MHz for support equipment	Rohde & Schwarz	ESH2-Z5	881493/013	Not Required
496	MiTest Conducted Emissions test software.	MiCOM	Conducted Emissions Test Software Version 1.0	496	Not Required
510	Barometer/Thermometer	Control Company	68000-49	170871375	20 Dec 2020
CCEMC01	Confidence Check.	MiCOM	CCEMC01	None	28 Aug 2020

Test Setup – Power Input / Output Port



Model:	KR5192	Configuration tested:	120 Vac, 60 Hz
Input power:	120V_{AC}/60Hz	Standard:	FCC Part 15B

Variant: 120 Vac, 60 Hz

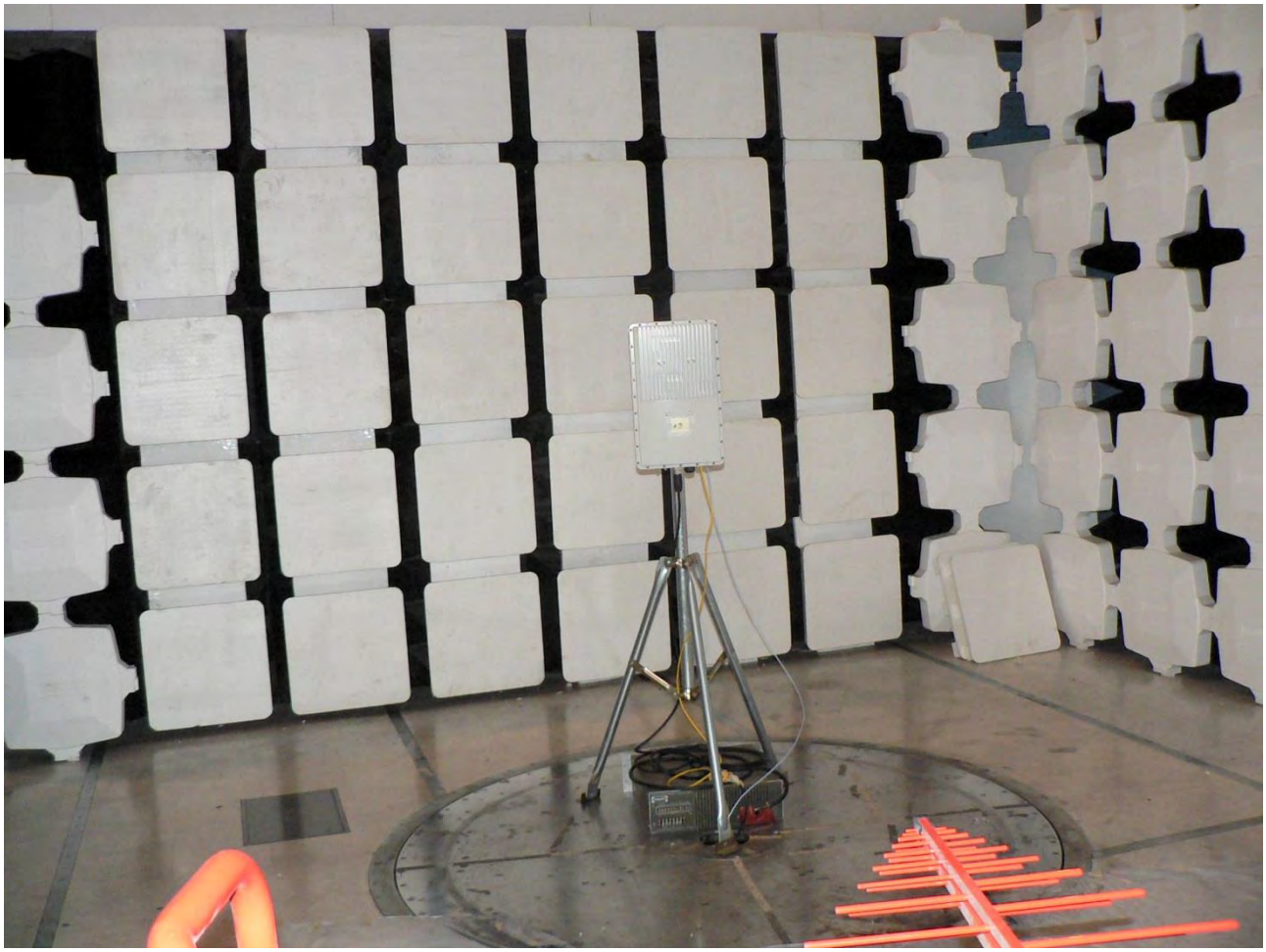


Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV/m	Margin dB	Pass /Fail
1	0.719	31.95	0.12	9.93	10.05	42.00	Max Avg	Neutral	60.0	-18.0	Pass
2	0.719	44.55	0.12	9.93	10.05	54.60	Max Qp	Neutral	73.0	-18.4	Pass
3	0.696	32.38	0.11	9.93	10.04	42.42	Max Avg	Live	60.0	-17.6	Pass
4	0.696	44.76	0.11	9.93	10.04	54.80	Max Qp	Live	73.0	-18.2	Pass
5	1.509	31.36	0.13	9.96	10.09	41.45	Max Avg	Neutral	60.0	-18.6	Pass
6	1.509	42.04	0.13	9.96	10.09	52.13	Max Qp	Neutral	73.0	-20.9	Pass
7	1.558	28.61	0.14	9.96	10.10	38.71	Max Avg	Live	60.0	-21.3	Pass
8	1.558	41.32	0.14	9.96	10.10	51.42	Max Qp	Live	73.0	-21.6	Pass
9	1.065	26.79	0.08	9.94	10.02	36.81	Max Avg	Live	60.0	-23.2	Pass
10	1.065	41.57	0.08	9.94	10.02	51.59	Max Qp	Live	73.0	-21.4	Pass
11	0.585	32.31	0.10	9.92	10.02	42.33	Max Avg	Neutral	60.0	-17.7	Pass
12	0.585	42.00	0.10	9.92	10.02	52.02	Max Qp	Neutral	73.0	-21.0	Pass
13	0.233	37.29	0.07	9.92	9.99	47.28	Max Avg	Live	66.0	-18.7	Pass
14	0.233	44.91	0.07	9.92	9.99	54.90	Max Qp	Live	79.0	-24.1	Pass

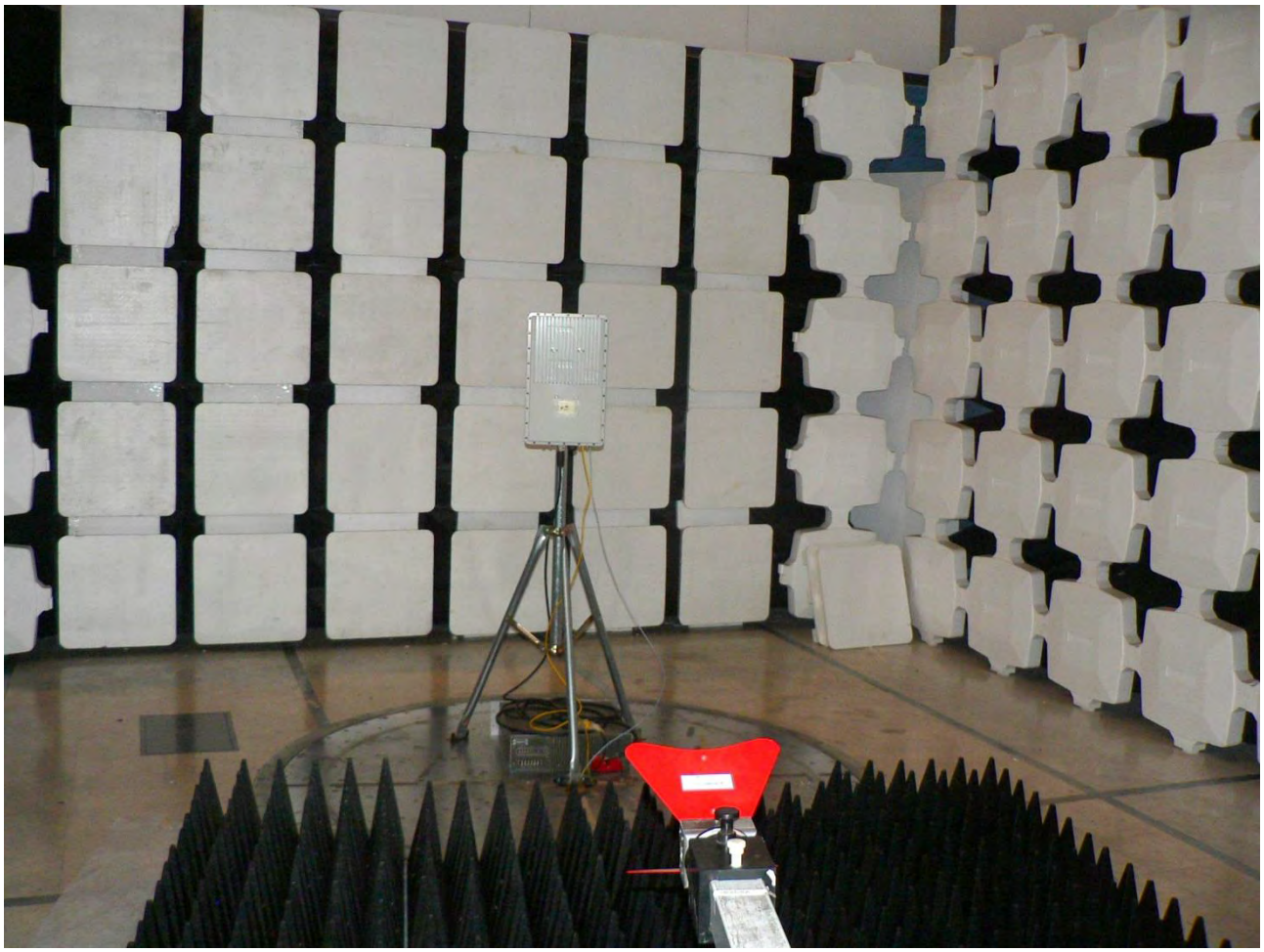
Test Notes: KUMU relay band 2 connected to callbox UL 1900 DL 1980 MHz. AC Mains 120V

8 PHOTOGRAPHS

8.1 Emissions 30-1000 MHz



8.2 Emissions 1 – 18 GHz



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