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File Number **22/36401263**

TEST REPORT
FCC/ICES Test Report

Petitioner's Reference: Certification company			
Customer Address:	Veluwezoom 42, 1327 AH Almere, The Netherlands		
Received material: Robin radar			
Brand:	Robin Radar Systems	Model:	RRS-MAX/A3
S/N:	371#023	Applus Id:	11567/1
FCC Id:	Unknown		
Result: complies			

It has been tested and complies the standard specifications Applicable / s.
See specifications applied on page 8.

Applicable Standards	
Emission standard/s:	**FCC 47 CFR Part 15 Subpart B (October 2020)[1]** *[1]The latest modifications of the standard, published at the date of the tests reported in this document, have been considered* **ICES-003 Issue 7 – 2020 (updated October 2020)**

Date of issue: Bellaterra, March 17, 2022

Fernando Rivas Fernández
Technical Manager
Electrical and Electronics
LGAI Technological Center S.A.

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1. EQUIPMENT RECEIVED AND TESTED

EQUIPMENT SPECIFICATIONS: Robin radar			
Brand:	Robin Radar Systems	**Model:**	RRS-MAX/A3
S/N:	371#023	**Power Supply Range:**	AC 207 - 253 V, 50/60 Hz
SW Version:	N.A.	**HW Version:**	N.A.
Maximum internal frequency:	9250 MHz		

Product description:
(Information declared by the manufacturer, Applus + is not responsible)

The MAX TX Subsystem is composed of a slotted-waveguide antenna array and three TX modules (371.010.100). The total array consists of 24 channels.

RF FEATURES:
Transmitter MAX A3: 8900, 9250, 9650 MHz
Receiver MAX A3: Tuned to TX frequency
Antenna: MAX A3, Slotted waveguide

Test product reception:	13-12-2021
Test initial date:	23-12-2021
Test final date:	18-02-2022

1.1. Test configuration

Power Supply:	AC 220 V, 60 Hz (with external AC/AC transformer)
Set-up:	Floor - standing
Test exercise:	The EUT is operated in mute mode. During emission tests, the EUT is tested on a fix position of the rotating table while the EUT rotates at typical speed without transmission.
Equipment size:	1237 mm x 654 mm x 1660 mm

1.2. Auxiliary and control equipment

- Auxiliary PC, provided by the customer.
- Auxiliary software MAX Radar software version number 22-01, provided by the customer.

1.3. Input/output wires

The equipment under test has the AC power cable, shorter than 3m.
The equipment under test has fibre optic cables, shorter than 3m.

1.4. Modification performed

Modifications were performed on the software.

2. APPLICABLE STANDARDS

2.1. TEST APPLICABLE STANDARDS

Standard: ANSI C63.4:2014 and ICES-003 issue 7
Basic standard: ANSI C63.4:2014
☒ Radio-frequency radiated emissions (30 MHz – 40 GHz)[1] : FCC Part 15.109, ICES-003 Issue 7(3.2.2) [1]Upper limit according to the fifth harmonic of the maximum internal frequency declared by the manufacturer or to 40 GHz, whichever is lower.
Basic standard: ANSI C63.4:2014
☒ Power line conducted emissions (150 kHz – 30 MHz): FCC Part 15.107, ICES-003 Issue 7(3.2.1) **Note:** Test applicable to standard AC/DC power supply

2.1.1. Acceptance criteria for the test

According to standard **FCC 47 CFR Part 15 Subpart B and ICES-003 Issue 7**

2.1.2. Test facilities ID

FCC Test Firm Registration Number:	507478
ISED Assigned Code:	5766A

2.1.3. Competences and Guarantees

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2.1.4. Measuring uncertainties	
Radio-frequency radiated emissions:	± 4.3 dB
Radio-frequency conducted emissions:	± 2.1 dB

Expanded uncertainty measurement is obtained multiplying the typical uncertainty measurement with a coverage factor k=2, which corresponds to a confidence level of 95% for a normal distribution.

2.2. Used Equipment

RADIO-FREQUENCY RADIATED EMISSIONS (SAC0 LF)					
EQUIPMENT	**BRAND**	**MODEL**	**NUMBER**	**LAST CALIBRATION**	**NEXT CALIBRATION**
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU8	1041057	20/04/2021	20/04/2022
ANTENNA	SCHWARZBECK MESS-ELEKTRONIK	VULB9165	104375	23/02/2021	23/02/2022
ATTENUATOR 3DB	HUBER/SUHNER	6803.17.B	1042016	15/02/2022	15/02/2023
RF CABLE (FERRITES CABLE)	HUBER/SUHNER	SF104 WITH FERRITE	1042527	29/06/2021	29/06/2022
RF CABLE	HUBER/SUHNER	TL-8A-11N-11N-01500-51	1042588	30/06/2021	30/06/2022
RF PREAMPLIFIER	BONN ELEKTRONIK	BLNA 0110-01N	1041351	16/07/2021	16/07/2022
RF CABLE (SHORT CABLE)	REDISLOGAR	SF104	1042328	28/10/2021	28/10/2022
RF CABLE (WALL PANEL)	-	-	1041305	16/02/2022	16/02/2023
RF CABLE (CONTROL ROOM)	HUBER/SUHNER	SF104/11N/16N/4000	1042583	29/06/2021	29/06/2022
ANTENNA TOWER	MATURO			--	--
TURNABLE	MATURO			--	--
DC BLOCK	WEINSCHEL	WA6043	1042577	30/06/2021	30/06/2022
MAST-TABLE CONTROLLER	MATURO	NCD/052/8931211	1041952	--	--
SEMIANECHOIC CHAMBER SAC0	TDK	TC0	104380	17/09/2021	17/09/2022
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	--	--

RADIO-FREQUENCY RADIATED EMISSIONS (SAC0 HF 1GHZ -18GHZ)					
EQUIPMENT	**BRAND**	**MODEL**	**NUMBER**	**LAST CALIBRATION**	**NEXT CALIBRATION**
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU 40	1041155	31/12/2021	30/12/2022
ANTENNA TOWER	MATURO			--	--
TURNABLE	MATURO			--	--
LOG ANTENNA	ROHDE & SCHWARZ	HL050	1042575	28/06/2021	28/06/2023
MAST-TABLE CONTROLLER	MATURO	NCD/052/8931211	1041952	--	--
SEMIANECHOIC CHAMBER SAC0	TDK	TC0	104380	17/09/2021	17/09/2022
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	--	--
RF CABLE (FERRITES CABLE)	HUBER/SUHNER	SF104 WITH FERRITE	1042527	29/06/2021	29/06/2022
RF CABLE	HUBER/SUHNER	TL-8A-11N-11N-01500-51	1042588	30/06/2021	30/06/2022
RF PREAMPLIFIER	BONN ELEKTRONIK	BLNA 0110-01N	1041351	16/07/2021	16/07/2022

RADIO-FREQUENCY RADIATED EMISSIONS (SAC0 HF 18GHZ -40GHZ)					
EQUIPMENT	**BRAND**	**MODEL**	**NUMBER**	**LAST CALIBRATION**	**NEXT CALIBRATION**
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU 40	1041155	31/12/2021	30/12/2022
RF CABLE	HUBER/SUHNER	SF 102_E	1042475	18/01/2021	18/01/2022[1]
RF PREAMPLIFIER	BONN ELEKTRONIK	BLMA 1826-4A	1041808	12/08/2021	12/08/2022
ANTENNA TOWER	MATURO			--	--
TURNABLE	MATURO			--	--
STANDARD GAIN HORN ANTENNA	ASYSOL	ASYSGH-2640	1041342	29/06/2020	29/06/2023
LOG ANTENNA	ROHDE & SCHWARZ	HL050	1042575	28/06/2021	28/06/2023
MAST-TABLE CONTROLLER	MATURO	NCD/052/8931211	1041952	--	--
SEMIANECHOIC CHAMBER SAC0	TDK	TC0	104380	17/09/2021	17/09/2022
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	--	--

[1]Calibration in progress

POWER LINE CONDUCTED EMISSIONS					
EQUIPMENT	**BRAND**	**MODEL**	**NUMBER**	**LAST CALIBRATION**	**NEXT CALIBRATION**
EMI RECEIVER	R&S	ESCS 30	104952	18/11/2021	18/11/2022
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8128 RC	1042512	28/01/2021	28/01/2023
SHIELDED ROOM	ALBATROSS	SR-2	1042269		
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	--	--
TRANSIENT LIMITER	SCHWARTZBECK	VTSD 9561	1042102	31/01/2022	31/01/2023

AUXILIARY EQUIPMENT					
EQUIPMENT	**BRAND**	**MODEL**	**NUMBER**	**LAST CALIBRATION**	**NEXT CALIBRATION**
THERMOHIGROMETER	TESTO	608-H1	1041003	19/11/2020	19/11/2022

2.3. Environmental conditions

See results sheets

3. RESULT

PRODUCT: Robin radar			
Brand:	Robin Radar Systems	**Model:**	RRS-MAX/A3
S/N:	371#023	**Internal Id:**	11567/1
Class:	A		

TESTING	RESULTS	NOTES
Radio-frequency radiated emissions. (FCC Part 15.109, ICES-003 Issue 7 (3.2.2))	Pass	Note: 4
Power Line conducted emissions. (FCC Part 15.107, ICES-003 Issue 7 (3.2.1))	Pass	Note: 4

The criteria to give conformity in those cases where it is not implicit in the standard or specification will be, for EMC emissions tests, a non-simple binary decision rule will be followed with a safety zone equal to the value of the uncertainty (w = U).
In this case, the upper limit of the value of the probability of false acceptance, according to ILAC G8, is 2.5% and the criteria notes are:

1: The measured results are above the upper limit, even considering the uncertainty interval**.**
2: The measured results are above the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that non-compliance is more probable than compliance
3: The measured results are below the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that compliance is more probable than non-compliance
4: The measured results are within the limits, including the uncertainty interval.

Service Quality Assurance

Applus+, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: satisfaccion.cliente@applus.com

4. ANNEXES

4.1 Test Results

4.1.1 Radio-frequency radiated emissions

Test Procedures:

The test site, 3 or 10m semi-anechoic chamber, has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4-2014

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz to 1 GHz in semi-anechoic chambers. The receiving antennas are conform to specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

EMI Receiver configuration:
During the radiated emission test, the EMI receiver was set with the following configurations:

Frequency band (MHz)	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	10 Hz

Pre-measurement

- The turntable rotates from 0° to 315° using 45° steps
- The antenna is polarized vertical and horizontal
- The antenna height changes from 1 m to 4 m
- At each turntable position, antenna polarization and height the receiver finds the maximum of all emissions

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position 360 º and antenna height between 1 and 4 m
- The final measurement is done with quasi-peak detector (as described in ANSI C63.4) for 30MHz to 1GHz emissions test
- The final measurement is done in the position (azimuth, height and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C63.4) for 1GHz to 18GHz test
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factors, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is shown

Correction Factor:

Emission Level = Read Level + Corrections (Ant.Factor + Cable Loss – Ampli.Gain (if applies) + Attenuator (if applies))

Limits:

According to FCC Part 15.109:

- Limits of Radiated Emission Measurement (Below 1000 MHz)

Frequency (MHz)	Class B (dBµV/m) (at 3 m)
	QuasiPeak
30 – 88	40
88 – 216	43.5
216 – 960	46
960 – 1000	54

Frequency (MHz)	Class A (dBµV/m) (at 10 m)
	QuasiPeak
30 – 88	39
88 – 216	43.5
216 – 960	46.4
960 – 1000	49.5

- Limits of Radiated Emission Measurement (Above 1000 MHz)

Frequency (MHz)	Class B (dBµV/m) (at 3 m)	
	Peak	Average
Above 1000	74	54

Frequency (MHz)	Class A (dBµV/m) (at 10 m)	
	Peak	Average
Above 1000	69.5	49.5

According to ICES-003 Issue 7 (3.2.2):

- Limits of Radiated Emission Measurement (Below 1000 MHz)

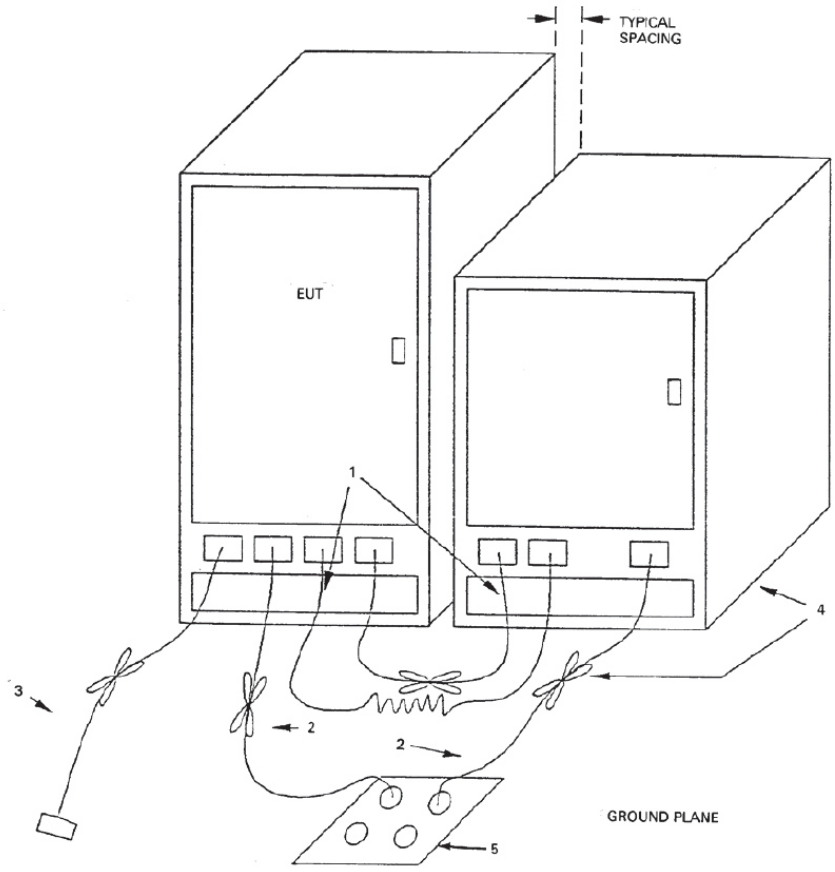
Frequency range (MHz)	Class A (3 m) Quasi-peak (dBµV/m)	Class A (10 m) Quasi-peak (dBµV/m)	Class B (3 m) Quasi-peak (dBµV/m)	Class B (10 m) Quasi-peak (dBµV/m)
30 – 88	50.0	40.0	40.0	30.0
88 – 216	54.0	43.5	43.5	33.1
216 – 230	56.9	46.4	46.0	35.6
230 – 960	57.0	47.0	47.0	37.0
960 – 1000	60.0	49.5	54.0	43.5

- Limits of Radiated Emission Measurement (Above 1000 MHz)

Frequency range (GHz)	Class A (3 m) Average dB(µV/m)	Class A (3 m) Peak dB(µV/m)	Class B (3 m) Average dB(µV/m)	Class B (3 m) Peak dB(µV/m)
1 - 40	60	80	54	74

If using a different measurement distance, the measured levels shall be extrapolated using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test.

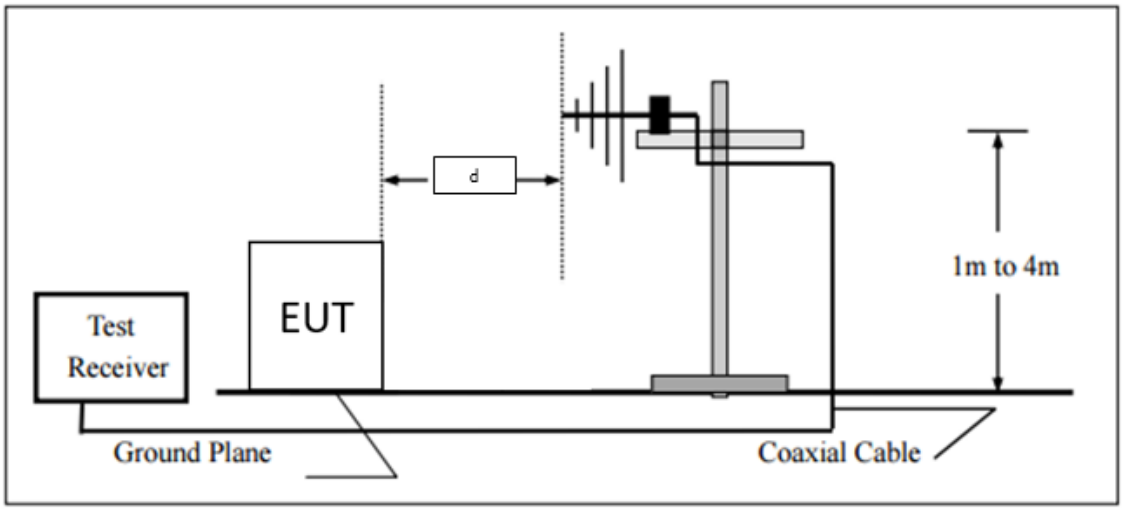
Test Setup:



Radio-frequency radiated emissions of floor-standing equipment.

Test Configuration:

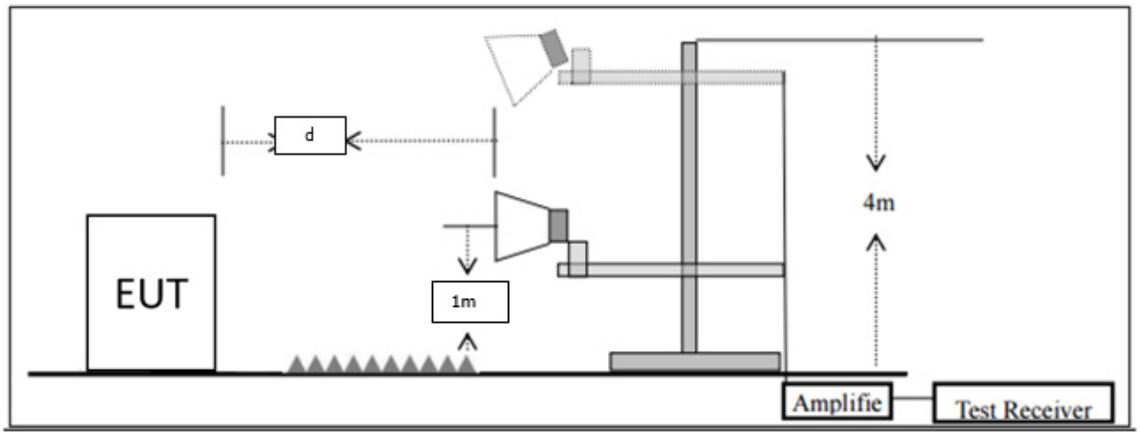
- **For radiated emissions from 30 MHz to 1000 MHz:**



Radio-frequency radiated emissions of floor-standing equipment.

Distance "d" depends on test chamber.

- **For radiated emissions above 1000 MHz:**



Radio-frequency radiated emissions of floor-standing equipment.

Distance "d" depends on test chamber.

RADIO-FREQUENCY RADIATED EMISSIONS (below 1 GHz)

Technician: J.J.Peramos **Frequency range:** 30 MHz – 1 GHz

Test date: 2021-12-23

Basic standard: ANSI C63.4:2014

Temperature:	20.4	ºC
Humidity:	51.2	%
Atm. Pressure:	1019.6	hPa

EUT:	Class	Test Area	Distance	PreScan	Evaluation
Floor-standing	A	SAC0	10 m (30 MHz – 1 GHz)	8 faces (45º step)	Individual

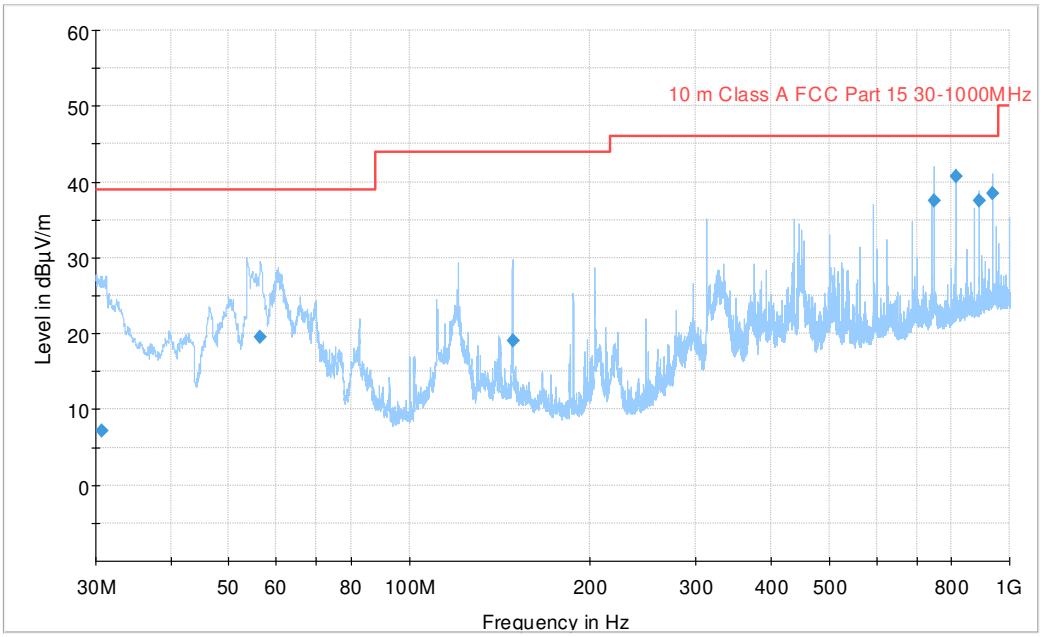
RESULTS: Pass

Identification	Emissions	Main emission source and type
DUT: Device under test BB: Broadband NB: Narrowband SPU: Spurs QP: Quasi-peak U: Uncertainty	QP < Limit - U	DUT, NB

Comments

RADIO-FREQUENCY RADIATED EMISSIONS (below 1 GHz) II

PRESCAN 30 MHz – 1 GHz



FINAL MEASUREMENTS

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.75	7.25	39.00	31.75	125.0	V	100.0	-32.8
56.46	19.59	39.00	19.41	358.0	V	39.0	-30.0
148.50	18.99	44.00	25.01	133.0	V	120.0	-26.6
750.00	37.46	46.00	8.54	136.0	V	241.0	-14.2
812.49	40.80	46.00	5.21	200.0	V	115.0	-14.7
891.00	37.51	46.00	8.49	334.0	V	200.0	-13.5
937.50	38.54	46.00	7.46	126.0	V	242.0	-12.9

Comments:

Emission Level = Read Level + Corrections (Ant.Factor + Cable Loss – Ampli.Gain + Attenuator)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz)

Technician: Miguel Quiles **Frequency range:** 1 GHz – 18 GHz

Test date: 2021-12-23

Basic standard: ANSI C63.4:2014

Temperature:	19.4	ºC
Humidity:	50.2	%
Atm. Pressure:	1009.6	hPa

EUT:	Class	Test Area	Distance	PreScan	Evaluation
Floor-standing	A	SAC0	8 m (1 GHz – 18 GHz)	8 faces (45º step)	Individual

RESULTS: Pass

Identification	Emissions	Main emission source and type
DUT: Device under test BB: Broadband NB: Narrowband SPU: Spurs QP: Quasi-peak U: Uncertainty	QP < Limit - U	DUT, NB

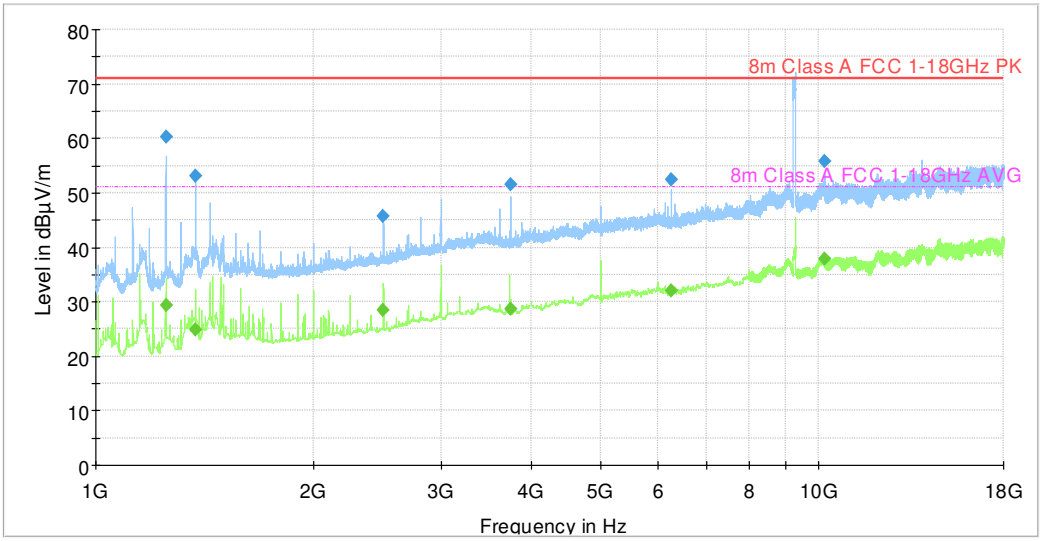
Comments

Note: radiated emissions from 1 GHz to 18 GHz has been done at 8 meters of distance from EUT to antenna. The limits have been modified according to the standard using the following formula: $L_2 = L_1 + 20\log(d_1/d_2)$, where:

L_2: New limit
L_1: Limit at 3 meters
d_1: 3 meters (standard distance)
d_2: 8 meters (new measurement distance)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz) II

PRESCAN 1 GHz – 18 GHz



Preview Result 2-AVG
8m Class A FCC 1-18GHz PK
Final_Result PK+
Preview Result 1-PK+
8m Class A FCC 1-18GHz AVG
Final_Result AVG

FINAL MEASUREMENTS

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Corr. (dB)
1250.00	60.21	71.00	10.79	29.36	51.00	21.64	-26.4
1375.00	53.12	71.00	17.88	24.79	51.00	26.21	-25.3
2500.00	45.61	71.00	25.39	28.50	51.00	22.50	-18.8
3750.00	51.64	71.00	19.36	28.69	51.00	22.31	-14.8
6250.00	52.51	71.00	18.49	32.01	51.00	18.99	-9.1
10169.25	55.87	71.00	15.13	37.77	51.00	13.23	-2.6

Comments:

Emission Level = Read Level + Corrections (Ant.Factor + Cable Loss – Ampli.Gain + Attenuator)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz) III

Technician: J.J.Peramos **Frequency range:** 18 GHz – 26 GHz

Test date: 2022-02-18

Basic standard: ANSI C63.4:2014

Temperature:	20.5	ºC
Humidity:	40.5	%
Atm. Pressure:	1017.1	hPa

EUT:	Class	Test Area	Distance	PreScan	Evaluation
Floor-standing	A	SAC0	2 m (18 GHz – 26 GHz)	8 faces (45º step)	Individual

RESULTS: Pass

Identification	Emissions	Main emission source and type
DUT: Device under test BB: Broadband NB: Narrowband SPU: Spurs QP: Quasi-peak U: Uncertainty	QP < Limit - U	DUT, SPU

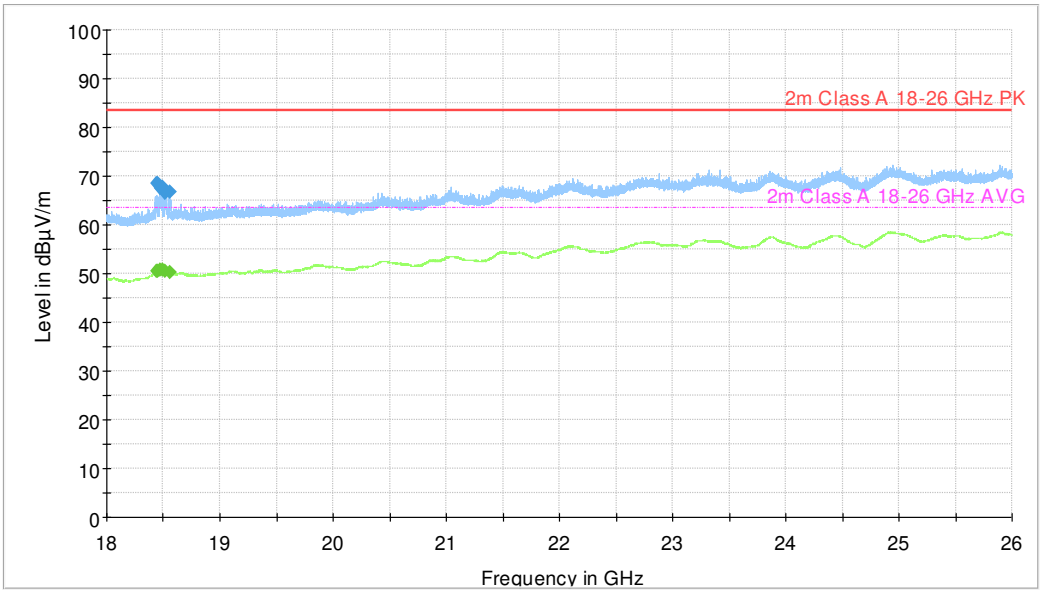
Comments

Note: radiated emissions from 18 GHz to 26GHz has been done at 2 meters of distance from EUT to antenna. The limits have been modified according to the standard using the following formula: $L_2 = L_1 + 20\log(d_1/d_2)$, where:

L_2: New limit
L_1: Limit at 3 meters
d_1: 3 meters (standard distance)
d_2: 2 meters (new measurement distance)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz) IV

PRESCAN 18 GHz – 26 GHz



FINAL MEASUREMENTS

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18438.00	68.47	83.50	15.03	50.40	63.50	13.10	100.0	H	0.0	18.1
18449.25	68.55	83.50	14.95	50.41	63.50	13.09	100.0	V	0.0	18.1
18478.25	67.38	83.50	16.12	50.64	63.50	12.86	100.0	H	0.0	18.1
18490.25	67.85	83.50	15.65	50.70	63.50	12.80	100.0	H	0.0	18.1
18517.25	66.59	83.50	16.91	50.60	63.50	12.90	100.0	H	0.0	18.0
18557.00	66.63	83.50	16.87	50.24	63.50	13.26	100.0	H	0.0	17.8

Comments:

Emission Level = Read Level + Corrections (Ant.Factor + Cable Loss – Ampli.Gain + Attenuator)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz) V	
Technician: J.J.Peramos	**Frequency range:** 26 GHz – 40 GHz
Test date: 2022-02-18	

Basic standard: ANSI C63.4:2014

Temperature:	21.6	ºC
Humidity:	42.5	%
Atm. Pressure:	1014.3	hPa

EUT:	Class	Test Area	Distance	PreScan	Evaluation
Floor-standing	A	SAC0	2 m (26 GHz – 40 GHz)	8 faces (45º step)	Individual

RESULTS: Pass

Identification	Emissions	Main emission source and type
DUT: Device under test BB: Broadband NB: Narrowband SPU: Spurs QP: Quasi-peak U: Uncertainty	QP < Limit - U	DUT, SPU

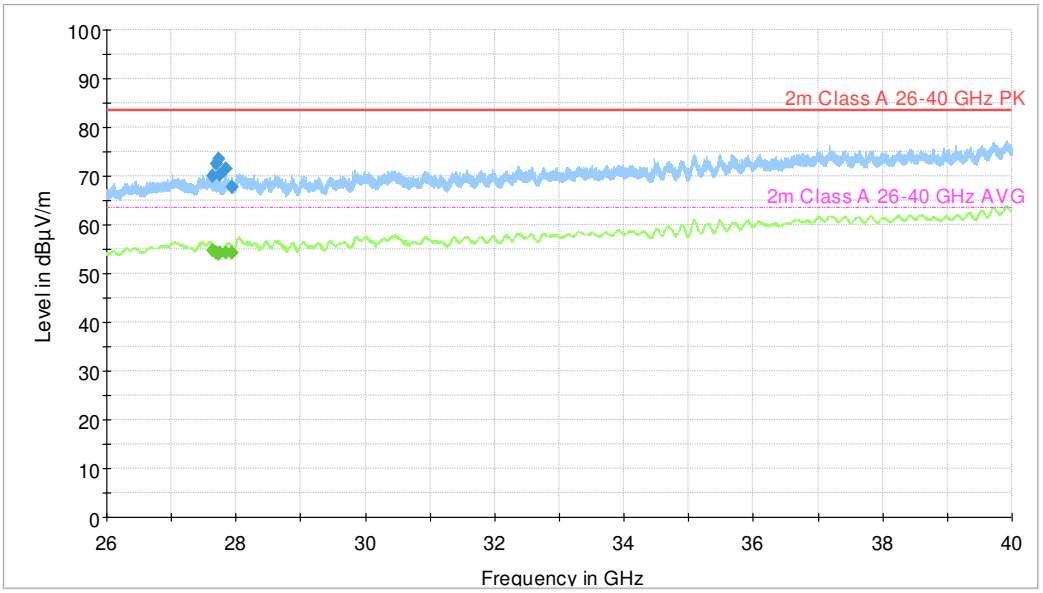
Comments

Note: radiated emissions from 26 GHz to 40 GHz has been done at 2 meters of distance from EUT to antenna. The limits have been modified according to the standard using the following formula: $L_2 = L_1 + 20\log(d_1/d_2)$, where:

L_2: New limit
L_1: Limit at 3 meters
d_1: 3 meters (standard distance)
d_2: 2 meters (new measurement distance)

RADIO-FREQUENCY RADIATED EMISSIONS (above 1 GHz) VI

PRESCAN 26 GHz – 40 GHz



FINAL MEASUREMENTS

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
27641.50	70.01	83.50	13.49	54.79	63.50	8.71	105.0	V	0.0	51.9
27687.75	72.55	83.50	10.95	54.20	63.50	9.30	100.0	V	0.0	51.9
27737.25	73.57	83.50	9.93	54.09	63.50	9.41	258.0	V	0.0	51.9
27756.50	70.14	83.50	13.36	54.19	63.50	9.31	207.0	V	0.0	51.9
27849.50	71.44	83.50	12.06	54.18	63.50	9.32	231.0	V	0.0	52.0
27939.00	67.69	83.50	15.81	54.28	63.50	9.23	146.0	V	0.0	52.0

Comments:

Emission Level = Read Level + Corrections (Ant.Factor + Cable Loss – Ampli.Gain + Attenuator)

4.1.2 Power Line Conducted Emissions

Test Procedure:

The device under test is arranged in table-top or floor-standing position depending on the kind of equipment and keeping the distance from the vertical or horizontal conducting plane located 40 cm to the rear or below of the device, in respective on the test chamber which is evaluated.

The device is connected to line impedance stabilization network (LISN), placed 80cm far from the device under test and other accessories are connected to other LISN too. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.

AC conducted emission measurements are made over frequency range from 150 kHz to 30 MHz.

EMI Receiver configuration:
During the conducted emission test, the EMI receiver was set with the following configurations:

Frequency band (MHz)	Function	Resolution Bandwidth
0.150 - 30	Peak	9kHz
	Average	9kHz

Pre-measurement:

- Pre-scan measurement using a peak and average detector is performed in order to show the emissions of the device under test
- Each line of the power cord is evaluated to find the maximum emissions

Final measurement:

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4
- The final measurement is done with quasi-peak and average detector (as described in ANSI C63.4)
- Final levels, frequency, measuring time, bandwidth,correction factors, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is shown

Correction Factor:

Emission Level = Read Level + Corrections (LISN factor + Cable Loss + Attenuator)

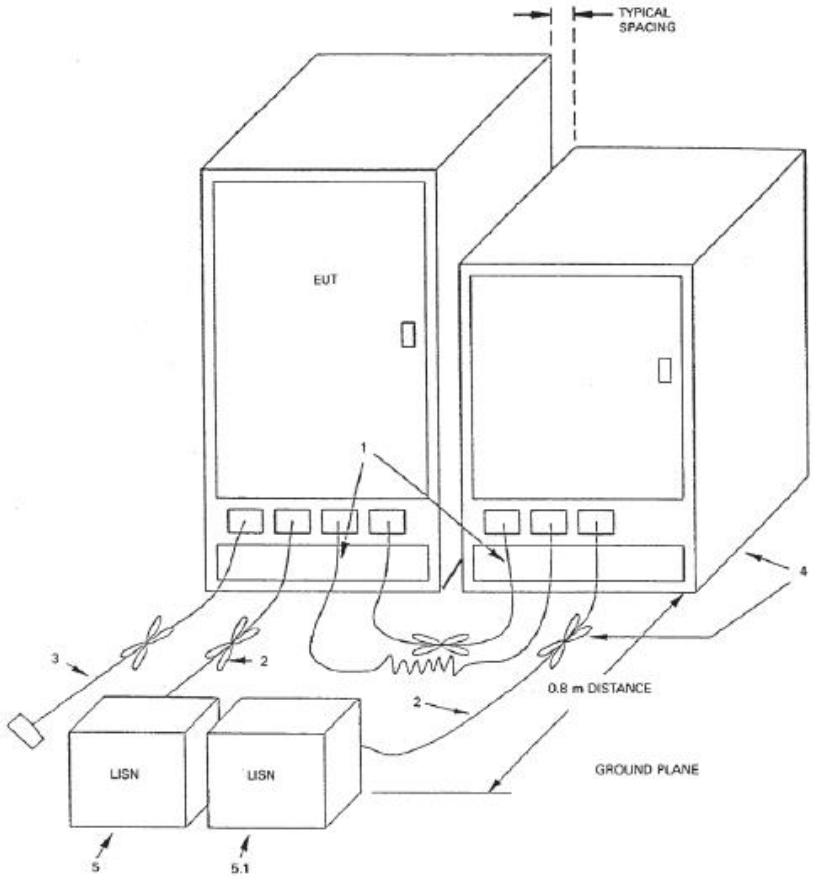
Limits:

Frequency of emission (MHz)	Class B - 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.

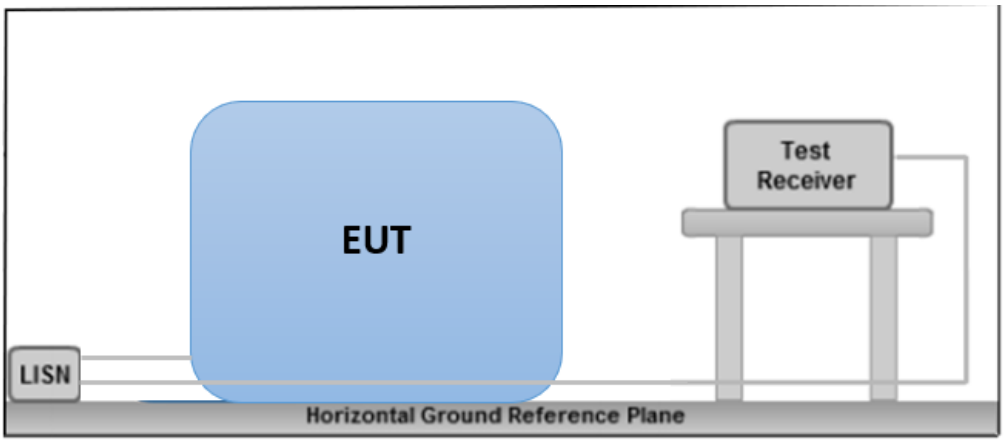
Frequency of emission (MHz)	Class A - Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 – 0.5	79	66
0.5 – 30	73	60

Test Setup:



Power line Conducted emissions of floor-standing equipment

Test Configuration:



Power line conducted emissions of floor-standing equipment in in Semi anechoic Room

POWER LINE CONDUCTED EMISSIONS		
Technician: Miguel Quiles		**Frequency range:** 150 kHz – 30 MHz
Test date: 2021-12-23		
Basic standard: ANSI C63.4:2014		

Temperature:	19.4	ºC
Humidity:	50.2	%
Atm. Pressure:	1009.6	hPa

EUT:	**Class**	**Test Area**
Floor-standing	A	SAC0

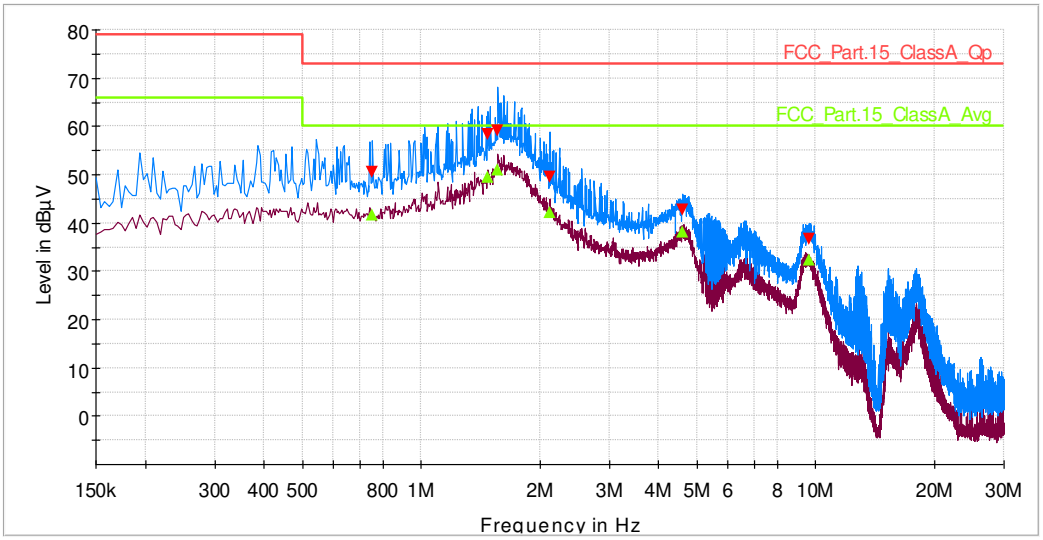
RESULTS: Pass

Identification	**Emissions**	**Main emission source and type**
DUT: Device under test BB: Broadband NB: Narrowband SPU: Spurs QP: Quasi-peak U: Uncertainty	QP < Limit - U	DUT, BB

Comments

POWER LINE CONDUCTED EMISSIONS II

LINE N



FINAL MEASUREMENTS

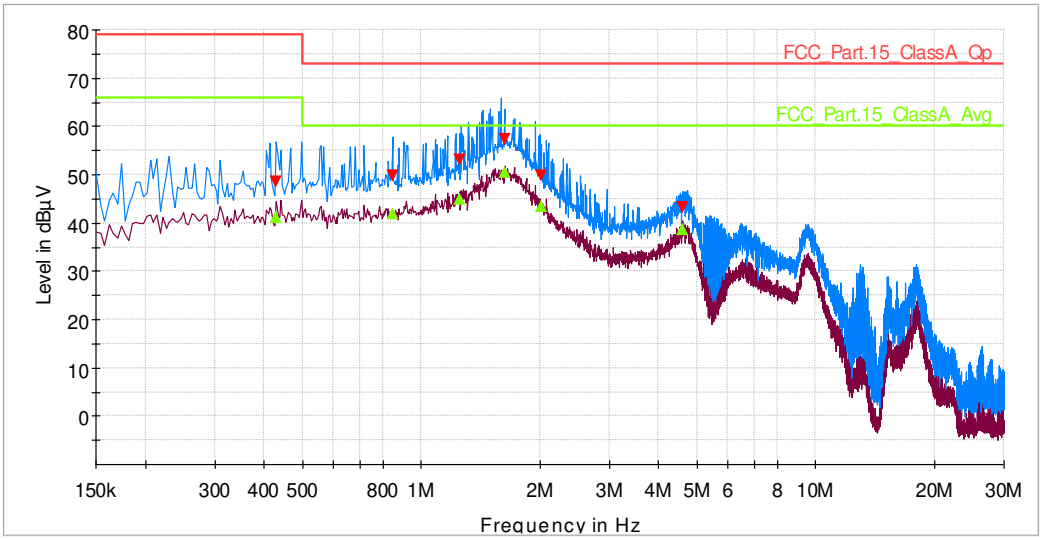
Frequency (MHz)	QuasiPeak (dBµV)	Margin - QPK (dB)	Limit - QPK (dBµV)	Average (dBµV)	Margin - AVG (dB)	Limit - AVG (dBµV)	Line	Corr. (dB)
0.754	50.6	22.4	73.0	41.7	18.3	60.0	N	10.1
1.478	58.3	14.7	73.0	49.5	10.5	60.0	N	10.2
1.566	59.0	14.0	73.0	50.9	9.1	60.0	N	10.2
2.122	49.5	23.5	73.0	42.1	17.9	60.0	N	10.2
4.610	42.7	30.3	73.0	38.2	21.8	60.0	N	10.3
9.626	36.6	36.4	73.0	32.5	27.5	60.0	N	10.5

Comments:

Emission Level = Read Level + Corrections (LISN factor + Cable Loss + Attenuator)

POWER LINE CONDUCTED EMISSIONS III

LINE L



AVG_CLRWR
FCC_Part.15_ClassA_Avg
QuasiPeak-QPK (Single)
PK+_CLRWR
MaxPeak-PK+ (Single)
FCC_Part.15_ClassA_Qp
Average-AVG (Single)

FINAL MEASUREMENTS

Frequency (MHz)	QuasiPeak (dBµV)	Margin - QPK (dB)	Limit - QPK (dBµV)	Average (dBµV)	Margin - AVG (dB)	Limit - AVG (dBµV)	Line	Corr. (dB)
0.430	48.5	30.5	79.0	41.3	24.7	66.0	L1	10.1
0.846	49.9	23.1	73.0	41.9	18.1	60.0	L1	10.1
1.250	53.1	19.9	73.0	44.8	15.2	60.0	L1	10.1
1.626	57.4	15.6	73.0	50.4	9.6	60.0	L1	10.2
2.014	49.7	23.3	73.0	43.4	16.6	60.0	L1	10.2
4.606	43.2	29.8	73.0	38.6	21.4	60.0	L1	10.3

Comments:

Emission Level = Read Level + Corrections (LISN factor + Cable Loss + Attenuator)