



LCIE

RFID 13,56MHz Template: Release October 10th, 2016

# TEST REPORT

N°: 148723-703859

Version : 01

## Subject

Radio spectrum matters  
tests according to standards:  
47 CFR Part 15.225 & RSS210 Issue 9 & RSS-Gen Issue 4

## Issued to

### BIOLOG ID

1 rue du commandant Robert Malrait  
27300-BERNAY  
FRANCE

## Apparatus under test

- ↳ Product
- ↳ Trade mark
- ↳ Manufacturer
- ↳ Model under test
- ↳ Serial number
- ↳ FCC ID

SMART STORAGE AGITATOR SST-A

### BIOLOG ID

### BIOLOG ID

PRD-7150300A

BI 1730000003

2AKUFSSTABIOLOGID

## Test date

: December 7, 2017 to December 13, 2017

## Test location

Ecuelles

## Test Site

6230B-1

## Composition of document

30 pages

## Document issued on

November 12, 2018

**Written by :**  
Armand MAHOUNGOU  
**Tests operator**



F. Leclerc

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## PUBLICATION HISTORY

Version	Date	Author	Modification
01	January 19, 2018	Arnaud FAYETTE	Creation of the document



## SUMMARY

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## 1. TEST PROGRAM

### References

- 47 CFR Part 15.225
- ANSI C63.10-2013

### Radio requirement:

Clause (47CFR Part 15.225) Test Description	Test result - Comments			
Occupied Bandwidth	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input checked="" type="checkbox"/> NA	<input type="checkbox"/> NP(1)
AC Power Line Conducted Emission	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA(2)	<input type="checkbox"/> NP(1)
Frequency Tolerance	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Field strength within the band 13.110-14.010MHz	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Field strength outside of the bands 13.110-14.010 MHz	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Receiver Radiated Emissions	<input checked="" type="checkbox"/> PASS (3)	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)

This table is a summary of test report, see conclusion of each clause of this test report for detail.

(1): Limited program

(2): EUT not directly or indirectly connected to the AC Power Public Network

(3)Testing covered the receive mode, and receiver spurious emissions are considered to be the same as transmitter.

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

NA: Not Applicable

NP: Test Not Performed



## 2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

### 2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

#### Equipment under test (EUT):

BIOLOG ID PRD-7150300A

Serial Number: BI 1730000003



Equipment Under Test



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**Inputs/outputs - Cable:**

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
1	Power supply	-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-
1	Ethernet cable	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CAT. 6
1	Temperature sensor	-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

**Auxiliary equipment used during test:**

Type	Reference	Sn	Comments
Laptop	-	-	Use to set the EUT
Power supply	2420	-	MASCOT
Agitator	PF96i	-	HELMER
Calculator	PRD 7130001A01	BI 1730000004	-

**Equipment information:**

Type:	<input checked="" type="checkbox"/> <b>RFID</b>			
Frequency band:	[13.553 to 13.567] MHz			
Number of Channel:	1			
Antenna Type:	<input checked="" type="checkbox"/> Integral	<input type="checkbox"/> External	<input type="checkbox"/> Dedicated	
Transmit chains:		1		
Receiver chains		1		
Type of equipment:	<input checked="" type="checkbox"/> Stand-alone	<input type="checkbox"/> Plug-in	<input type="checkbox"/> Combined	
Equipment type:	<input type="checkbox"/> Production model		<input checked="" type="checkbox"/> Pre-production model	
Operating temperature range:	Tmin:	<input checked="" type="checkbox"/> -30°C IC* <input checked="" type="checkbox"/> -20°C FCC	<input type="checkbox"/> 0°C	<input type="checkbox"/> X°C
	Tnom:	20°C		
Type of power source:	Tmax:	<input type="checkbox"/> 35°C	<input checked="" type="checkbox"/> 50°C	<input type="checkbox"/> X°C
Operating voltage range:	<input checked="" type="checkbox"/> AC power supply	<input type="checkbox"/> DC power supply	<input type="checkbox"/> Battery	
	Vmin:	<input checked="" type="checkbox"/> 102V/60Hz	<input type="checkbox"/> XVdc	
	Vnom:	<input checked="" type="checkbox"/> 120V/60Hz	<input type="checkbox"/> XVdc	
	Vmax:	<input checked="" type="checkbox"/> 138V/60Hz	<input type="checkbox"/> XVdc	

\*Note : customer request

Antenna Characteristic			
Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
1	-	13.56	50

Modulation Type	
	ASK



## 2.2. RUNNING MODE

The EUT is set in the following modes during tests:

- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power

## 2.3. EQUIPMENT LABELLING



## 2.4. EQUIPMENT MODIFICATION

None       Modification:

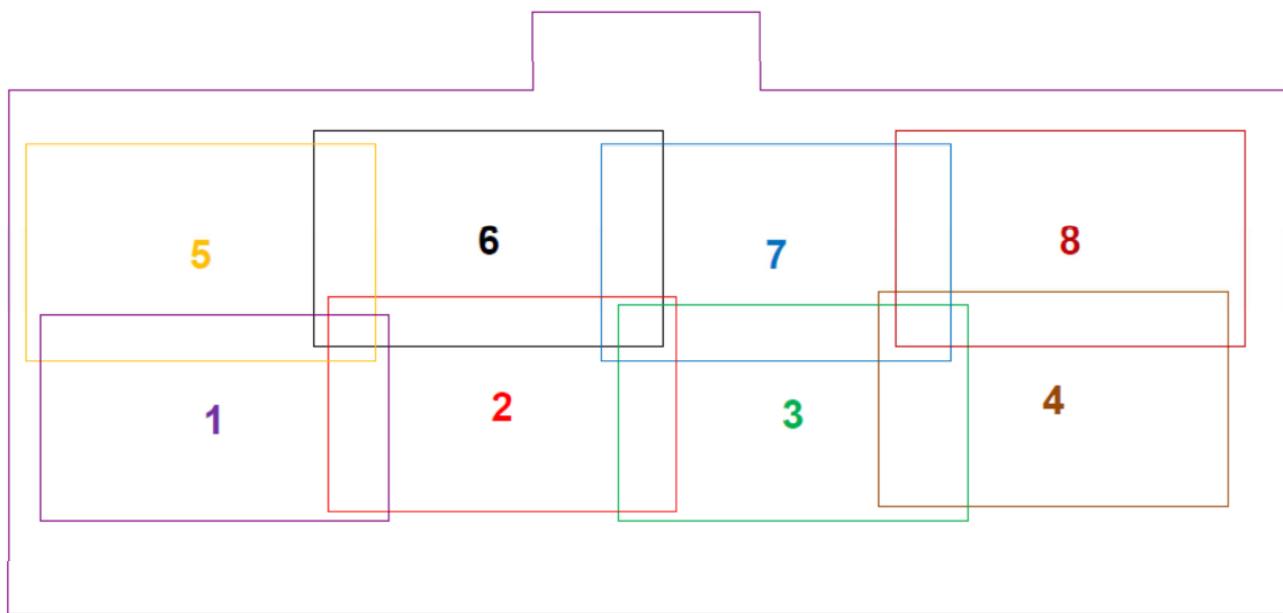
- Adding a ferrite reference 74271222 on CAN COR\_NC\_FP\_4P\_2M5 cable





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-changes in the size of the antennas: 180mm x 220 mm (Antenna size before modification: 180mm x 170mm)



### 3. OCCUPIED BANDWIDTH

#### 3.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU  
Date of test : December 13, 2017  
Ambient temperature : 26 °C  
Relative humidity : 44 %

#### 3.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In a climatic chamber
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- RSS-Gen Issue 4 § 6.6



Photograph for Occupied bandwidth



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Photograph for Occupied bandwidth

### 3.1. LIMIT

None

### 3.2. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Climatic chamber	SECASI Technologies	-	D1025025	Cal with Thermometer	Cal with Thermometer
Thermometer	EUROTHERM 92	Climats Sapratin	D1025025	2016/03	2018/03
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2017/09	2018/09
Multi-meter	KEITHLEY	2000	A1242090	2016/06	2018/06
Programmable AC/DC power supply	KIKUSUI	PCR500M	A7040079	Cal with Multi-meter	Cal with Multi-meter
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	Cal with EMI receiver	Cal with EMI receiver
Cable	CABLES & CONNECTIQUES	-	A5329422	Cal with EMI receiver	Cal with EMI receiver

Note: In our quality system, the test equipment calibration due is more & less 2 months



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### 3.3. RESULTS



### 3.4. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **BIOLOG ID PRD-7150300A**, SN: **BI 1730000003**, in configuration and description presented in this test report, show levels **compliant** to the **RSS-GEN ISSUE 4** limits.



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## 4. FREQUENCY TOLERANCE

### 4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU  
Date of test : December 13, 2017  
Ambient temperature : 26 °C  
Relative humidity : 44 %

### 4.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In a climatic chamber
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

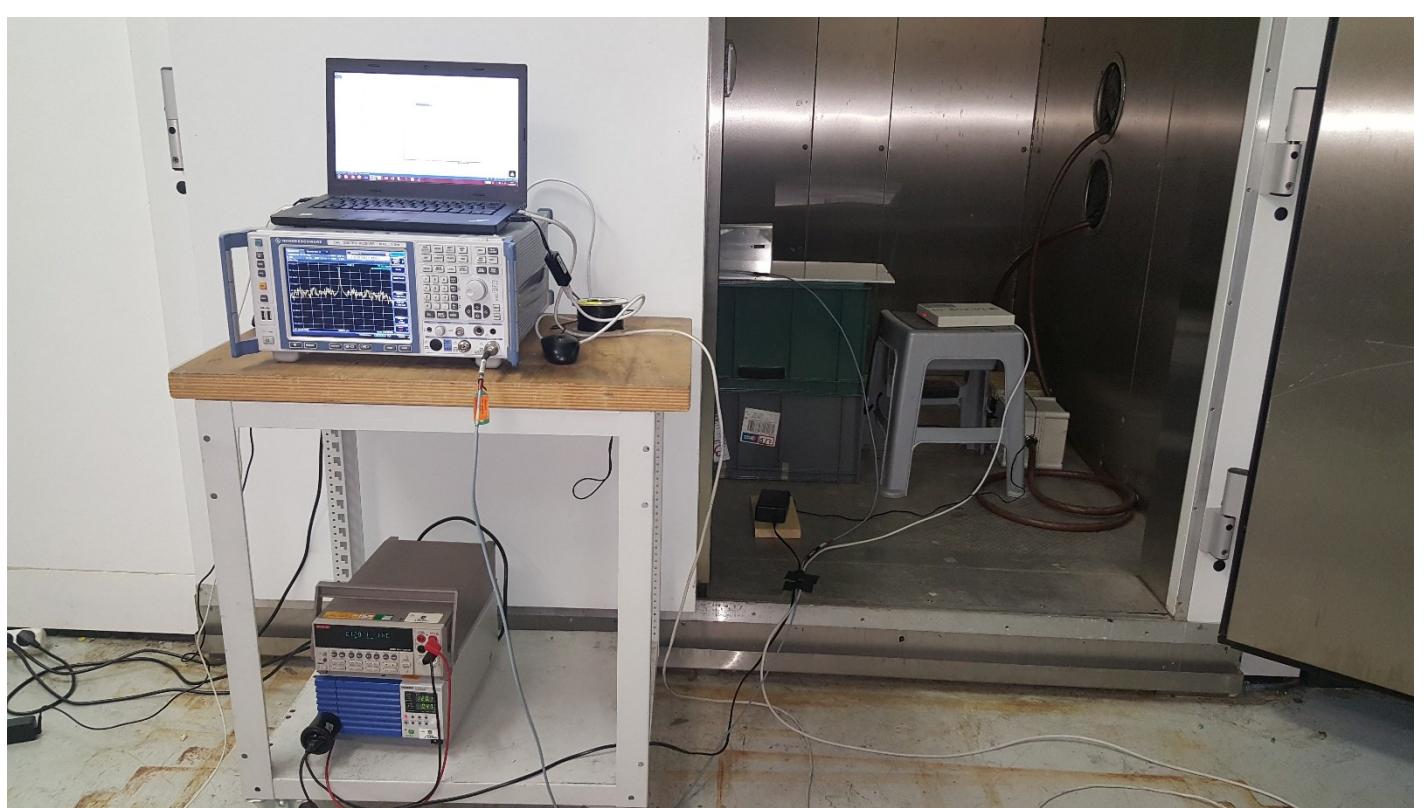
- Conducted Method
- Radiated Method

- Test Procedure:

- ANSI C63.10 § 6.8



Photograph for Frequency Tolerance



Photograph for Frequency Tolerance

#### 4.1. LIMIT

±0.01%

#### 4.2. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Climatic chamber	SECASI Technologies	-	D1025025	Cal with Thermometer	Cal with Thermometer
Thermometer	EUROTHERM 92	Climats Sapratin	D1025025	2016/03	2018/03
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2017/09	2018/09
Multi-meter	KEITHLEY	2000	A1242090	2016/06	2018/06
Programmable AC/DC power supply	KIKUSUI	PCR500M	A7040079	Cal with Multi-meter	Cal with Multi-meter
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	Cal with EMI receiver	Cal with EMI receiver
Cable	CABLES & CONNECTIQUES	-	A5329422	Cal with EMI receiver	Cal with EMI receiver

Note: In our quality system, the test equipment calibration due is more & less 2 months



#### 4.3. RESULTS

<b>EUT activation:</b>	<b>2min</b>								
<b>Voltage:</b>	<b>V<sub>nom</sub></b>								
<b>Temperature:</b>	<b>-30°C</b>	<b>-20°C</b>	<b>-10°C</b>	<b>0°C</b>	<b>10°C</b>	<b>20°C</b>	<b>30°C</b>	<b>40°C</b>	<b>50°C</b>
Frequency (MHz)	13,559469	13,559535	13,559566	13,559566	13,559547	13,559507	13,55948	13,559428	13,559388
Frequency Drift (%)	-0,0039	-0,0034	-0,0032	-0,0032	-0,0033	-0,0036	-0,0038	-0,0042	-0,0045
<b>EUT activation:</b>	<b>5min</b>								
<b>Voltage:</b>	<b>T<sub>nom</sub></b>								
<b>Temperature:</b>	<b>-30°C</b>	<b>-20°C</b>	<b>-10°C</b>	<b>0°C</b>	<b>10°C</b>	<b>20°C</b>	<b>30°C</b>	<b>40°C</b>	<b>50°C</b>
Frequency (MHz)	13,559469	13,559535	13,559566	13,559566	13,559547	13,559507	13,55948	13,559428	13,559388
Frequency Drift (%)	-0,0039	-0,0034	-0,0032	-0,0032	-0,0033	-0,0036	-0,0038	-0,0042	-0,0045
<b>EUT activation:</b>	<b>10min</b>								
<b>Voltage:</b>	<b>T<sub>nom</sub></b>								
<b>Temperature:</b>	<b>-30°C</b>	<b>-20°C</b>	<b>-10°C</b>	<b>0°C</b>	<b>10°C</b>	<b>20°C</b>	<b>30°C</b>	<b>40°C</b>	<b>50°C</b>
Frequency (MHz)	13,55947	13,559535	13,559566	13,559566	13,559547	13,559507	13,55948	13,559428	13,559388
Frequency Drift (%)	-0,0039	-0,0034	-0,0032	-0,0032	-0,0033	-0,0036	-0,0038	-0,0042	-0,0045

<b>Temperature</b>	<b>T<sub>nom</sub></b>		
<b>Voltage:</b>	<b>V<sub>min</sub></b>	<b>V<sub>nom</sub></b>	<b>V<sub>max</sub></b>
Frequency (MHz)	13,5595063	13,5595063	13,5595063
Frequency Drift (%)	-0,0036	-0,0036	-0,0036

#### 4.4. CONCLUSION

Frequency tolerance measurement performed on the sample of the product **BIOLOG ID PRD-7150300A**, SN: **BI 1730000003**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 limits.

## 5. AC POWER LINE CONDUCTED EMISSIONS

### 5.1. TEST CONDITIONS

Test performed by : Laurent DENEUX  
Date of test : December 7, 2017  
Ambient temperature : 22 °C  
Relative humidity : 51 %

### 5.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) method. The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT is powered through the LISN. Measurement is made with a receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. The LISN (measure) is 50Ω / 50µH. Interconnecting cables and equipment's were moved to position that maximized emission.



Photograph for AC Power Line Conducted Emissions (Front view)



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Photograph for AC Power Line Conducted Emissions (Rear view)



### 5.3. LIMIT

#### Quasi-Peak

0,15kHz to 0,5MHz: 66dB $\mu$ V to 56dB $\mu$ V\*

0,5MHz to 5MHz: 56dB $\mu$ V

5MHz to 30MHz: 60dB $\mu$ V

#### Average

0,15kHz to 0,5MHz: 56dB $\mu$ V to 46dB $\mu$ V\*

0,5MHz to 5MHz: 46dB $\mu$ V

5MHz to 30MHz: 50dB $\mu$ V

\*Decreases with the logarithm of the frequency

### 5.4. TEST EQUIPMENT LIST

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Receiver	RHODE & SCHWARZ	ESIB26	A2642021	2015/12	2017/12
V ISLN	SCHWARZBECK	NNLK8129	C2320001	2017/11	2018/11
Pulse limiter	ROHDE & SCHWARZ	ESH3-Z2	A2649008	2017/09	2018/09
Cable	-	-	A5329417	2017/10	2018/10
Reference ground plan 2 x 3m	L.C.I.E.	-	-	-	-

Note: In our quality system, the test equipment calibration due is more & less 2 months

### 5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

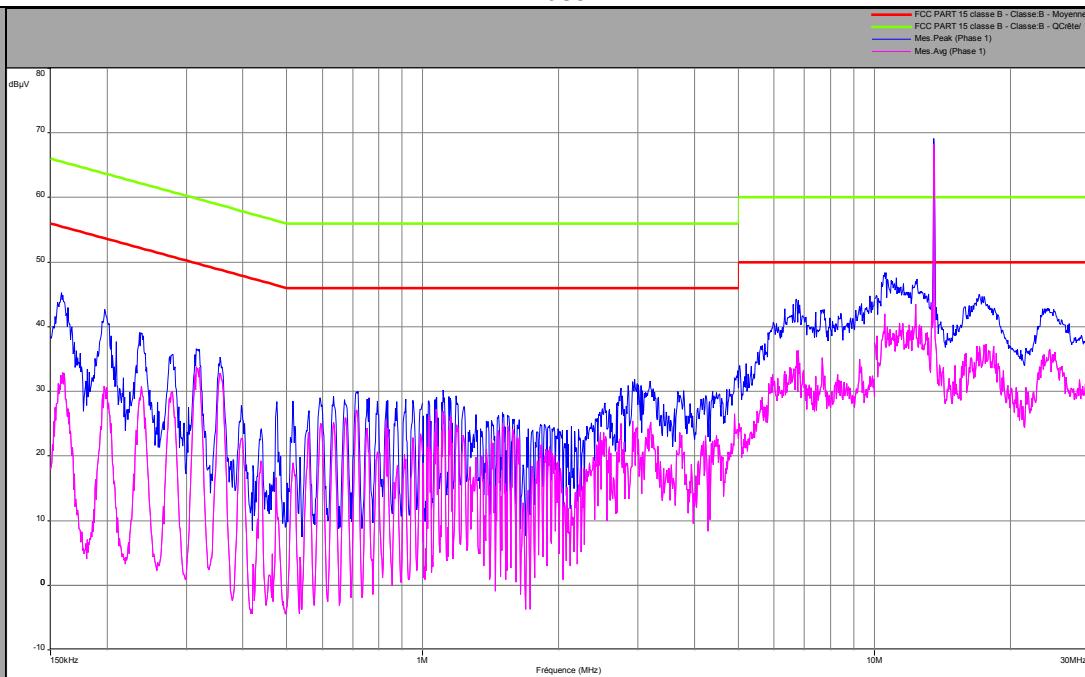
Divergence:

## 5.6. RESULTS

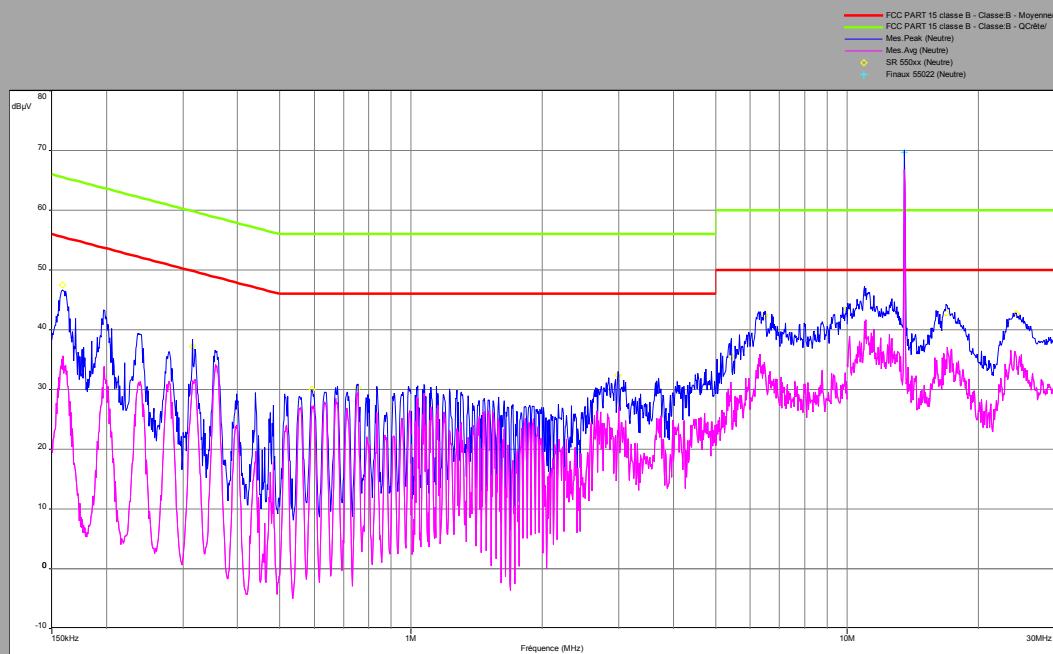
### SST-A with antenna

#### AC Power Line Conducted Emission

##### Phase



##### Line





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Phase Line

Frequency (MHz)	Peak Level (dB $\mu$ V)	Quasi-Peak Level (dB $\mu$ V)	Quasi-Peak Limit (dB $\mu$ V)	Average Level (dB $\mu$ V)	Average Limit (dB $\mu$ V)
0.1585	45.35	33.28	65.54	0.1585	55.54
0.3635	36.84	33.65	58.65	0.3635	48.65
0.7185	29.95	26.94	56	0.7185	46
6.732	46.33	34.3	60	6.732	50
17.094	45.63	37	60	17.094	50

Neutral Line

Frequency (MHz)	Peak Level (dB $\mu$ V)	Quasi-Peak Level (dB $\mu$ V)	Quasi-Peak Limit (dB $\mu$ V)	Average Level (dB $\mu$ V)	Average Limit (dB $\mu$ V)
0.1585	46.51	36.55	65.54	0.1585	55.54
0.358	36.22	33.2	59.82	0.358	49.82
0.756	31	29.4	56	0.756	46
6.478	42.96	36.1	60	6.478	50
10.97	47.46	41.51	60	10.97	50

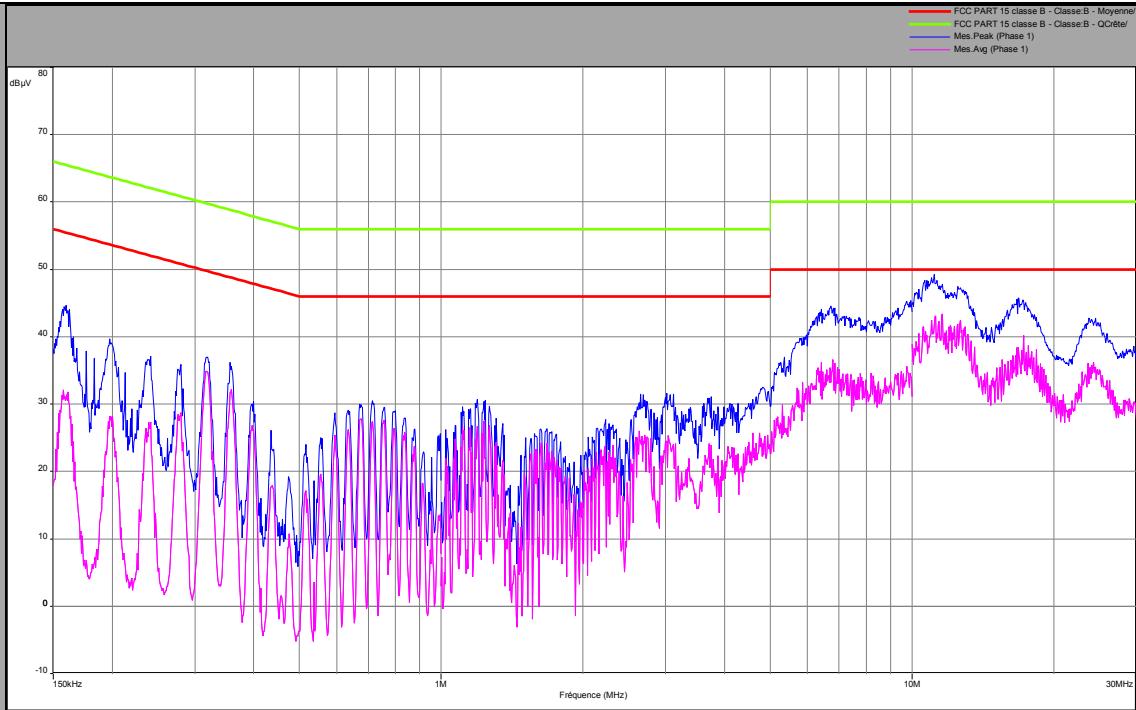


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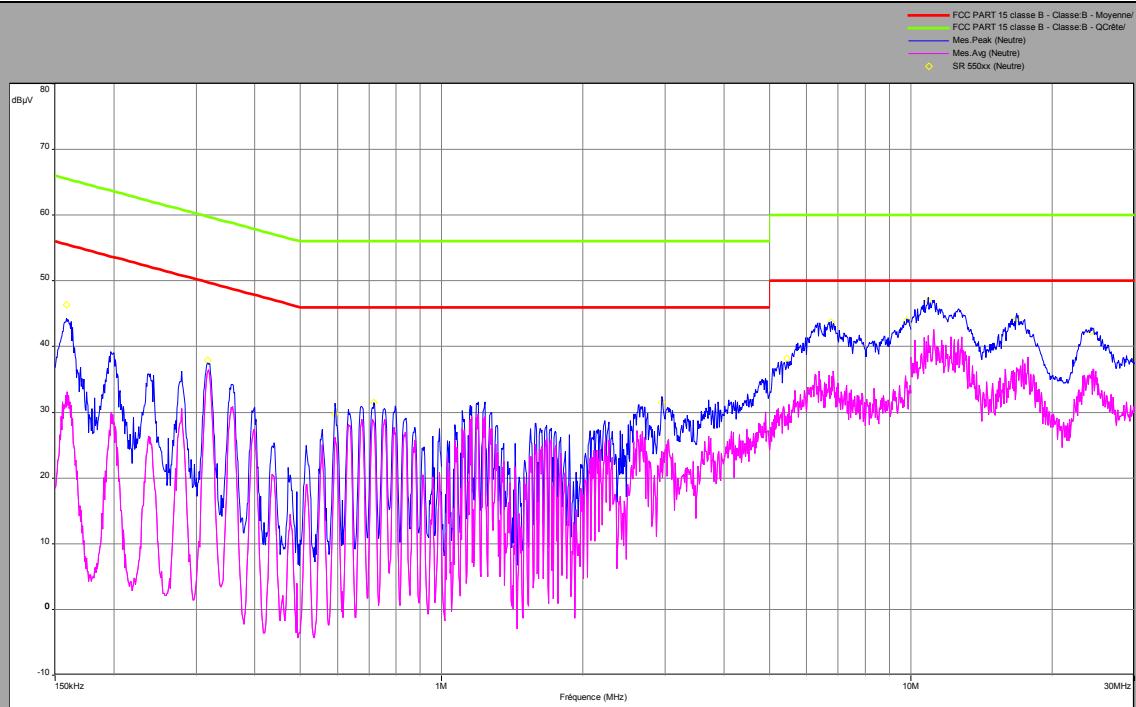
SST-A without antenna

### AC Power Line Conducted Emission

#### Phase



#### Line





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**Phase Line**

Frequency (MHz)	Peak Level (dB $\mu$ V)	Quasi-Peak Level (dB $\mu$ V)	Quasi-Peak Limit (dB $\mu$ V)	Average Level (dB $\mu$ V)	Average Limit (dB $\mu$ V)
0.1585	46.34	32.11	65.54	0.1585	55.54
0.317	37.91	35.58	59.79	0.317	49.79
0.717	31.43	26.93	56	0.717	46
6.78	43.69	36.3	60	6.78	50
16.836	44.26	36.7	60	16.836	50

**Neutral Line**

Frequency (MHz)	Peak Level (dB $\mu$ V)	Quasi-Peak Level (dB $\mu$ V)	Quasi-Peak Limit (dB $\mu$ V)	Average Level (dB $\mu$ V)	Average Limit (dB $\mu$ V)
0.1595	45.84	31.54	65.49	0.1595	55.49
0.317	36.84	34.7	57.85	0.317	47.85
0.7155	30.45	26.07	56	0.7155	46
11.144	48.89	43.51	60	11.144	50
16.812	46.09	38.4	60	16.812	50

## 5.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **BIOLOG ID PRD-7150300A**, SN: **BI 1730000003**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 limits.

## 6. FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHz

### 6.1. TEST CONDITIONS

Test performed by : Laurent DENEUX  
Date of test : December 7, 2017 to December 8, 2017  
Ambient temperature : 21 °C  
Relative humidity : 48 %

### 6.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **3m**.

Test is performed in parallel and perpendicular axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m.

Test is performed in horizontal (H) and vertical (V) polarization with **bilog** between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 1.5m high above 1GHz and at 0.8m high under 1GHz.

Distance between measuring antenna and the EUT is **10m**.



Photograph for Field strength outside of the bands 13.110-14.010 MHz



## 6.3. LIMIT

### Limit at 3m:

9kHz to 0,490MHz: 2400/F(kHz) $\mu$ V/m (300m) or  $20\log(2400/F(kHz))$ dB $\mu$ V/m (3m) QPeak  
 0,490MHz to 1.705MHz: 240000/F(kHz) $\mu$ V/m (30m) or  $20\log(240000/F(kHz))$ dB $\mu$ V/m (3m) QPeak  
 1.705MHz to 30MHz: 30 $\mu$ V/m (30m) or dB $\mu$ V/m (3m) QPeak  
 30MHz to 88MHz: 40dB $\mu$ V/m QPeak  
 88MHz to 216MHz: 43,5dB $\mu$ V/m QPeak  
 216MHz to 960MHz: 46dB $\mu$ V/m QPeak  
 960MHz to 1000MHz: 54dB $\mu$ V/m QPeak  
 Above 1000MHz: 74dB $\mu$ V/m Peak  
 54dB $\mu$ V/m Average

### Limit at 10m:

30MHz to 88MHz: 29.5dB $\mu$ V/m QPeak  
 88MHz to 216MHz: 33dB $\mu$ V/m QPeak  
 216MHz to 960MHz: 35.5dB $\mu$ V/m QPeak  
 960MHz to 1000MHz: 43.5dB $\mu$ V/m QPeak  
 Above 1000MHz: 63.5B $\mu$ V/m Peak  
 43.5B $\mu$ V/m Average

## 6.4. TEST EQUIPMENT LIST

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Open test site	LCIE	-	F2000400	2017-06	2018-06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015-12	2017-12
Preamplifier	HEWLETT PACKARD	8449B	A4069002	2016-01	2018-01
Bilog antenna	CHASE	CBL 6112A	C2040040	2017-03	2018-03
Loop antenna	SCHWARZBECK	FMZB 1513	C2040209	2016/01	2018/01
Horn	ETS	3115	C2042023	2017-03	2018-03
Cable	-	-	A5329449	2017-09	2018-09
Cable	-	-	A5329542	2017-03	2018-03
Cable	-	-	A5329380	2017-06	2018-06
cable	-	-	A5329444	2017-09	2018-09

Note: In our quality system, the test equipment calibration due is more & less 2 months

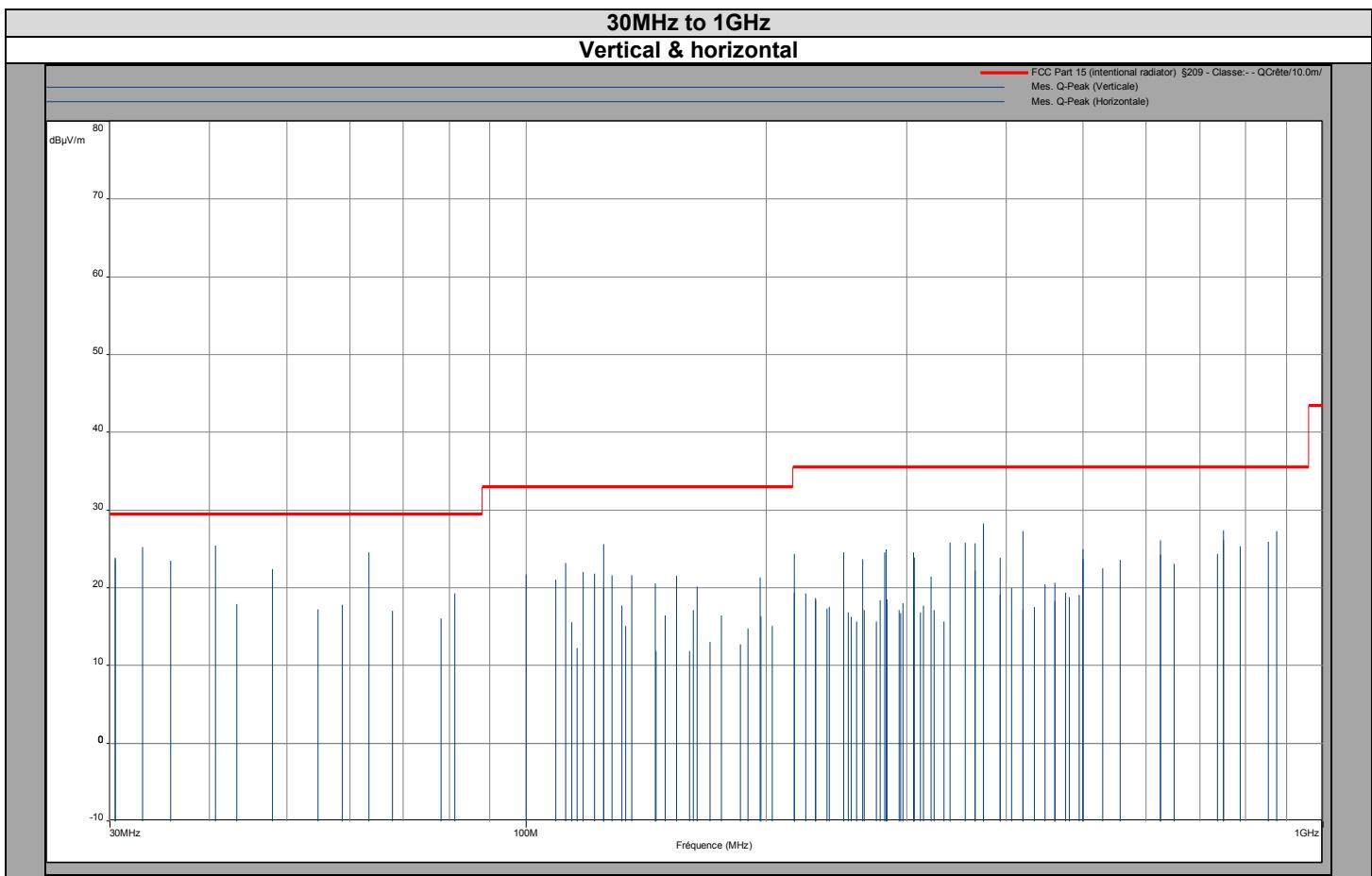
## 6.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

Divergence:



## 6.6. RESULTS

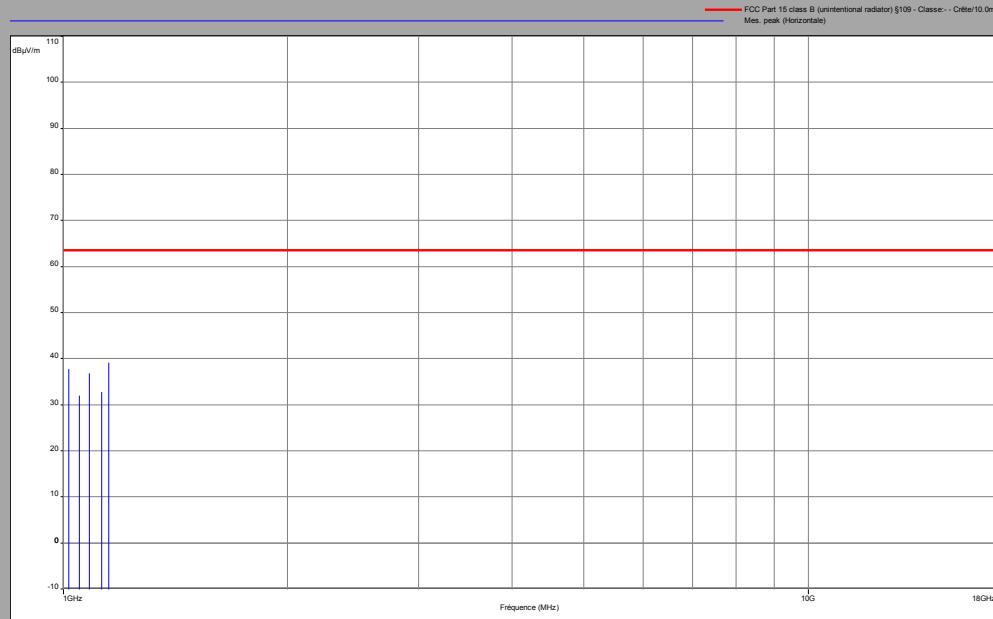




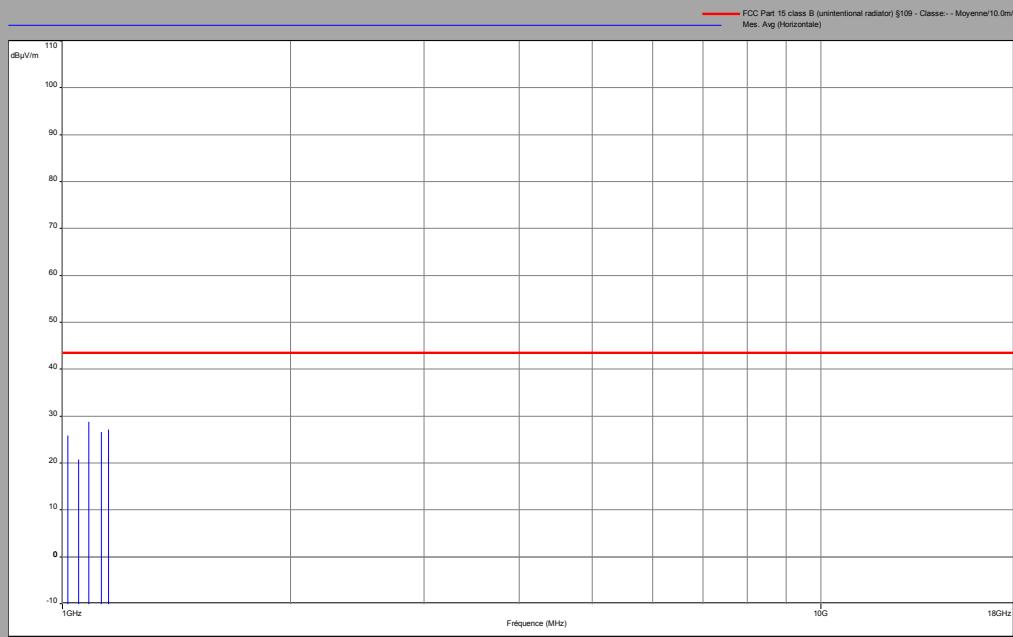
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### Above 1GHz

#### Vertical & horizontal (peak measurement)



#### Vertical & horizontal (average value)





### 9kHz to 30MHz

Polarization	Frequency (MHz)	QPeak Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)
Parallel	25	27.5	69.5
Perpendicular	25	26.5	69.5

### 30MHz to 1GHz

Polarization	Frequency (MHz)	QPeak Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)
Vertical	33	25.32	29.5
Vertical	216.8	24.39	35.5
Vertical	375	28.35	35.5
Vertical	625	26.17	35.5
Horizontal	750	27.38	35.5
Horizontal	875	27.34	35.5

### Above 1GHz

Polarization	Frequency (MHz)	Duty cycle correction (dB)	Average Level (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Peak Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)
Horizontal	1017	0	25.91	43.5	37.75	63.5
Horizontal	1050	0	20.83	43.5	31.99	63.5
Horizontal	1084	0	28.76	43.5	36.82	63.5
Horizontal	1125	0	26.69	43.5	32.79	63.5
Horizontal	1150	0	27.15	43.5	39.11	63.5

## 6.7. CONCLUSION

Field strength outside of the bands 13.110-14.010 MHz measurement performed on the sample of the product **BIOLOG** ID PRD-7150300A, SN: BI 1730000003, in configuration and description presented in this test report, show levels compliant to the 47 CFR PART 15.225 limits.



## 7. FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHz

### 7.1. TEST CONDITIONS

Test performed by : Laurent DENEUX  
Date of test : December 7, 2017 to December 8, 2017  
Ambient temperature : 21 °C  
Relative humidity : 48 %

### 7.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **3m**.

Test is performed in parallel and perpendicular axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m.

The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 0.8m.



Photograph for Field strength within the band 13.110-14.010MHz



### 7.3. LIMIT

**Limit:**

Below 13.110MHz:	30µV/m (30m) or 69.5dBµV/m (3m) QPeak
13.110MHz to 13.410MHz:	106µV/m (30m) or 80.5dBµV/m (3m)
13.410MHz to 13.553MHz:	334µV/m (30m) or 90.5dBµV/m (3m)
13.553MHz to 13.567MHz:	15848µV/m (30m) or 124dBµV/m (3m)
13.567MHz to 13.710MHz:	334µV/m (30m) or 90.5dBµV/m (3m)
13.710MHz to 14.010MHz:	106µV/m (30m) or 80.5dBµV/m (3m)
Above 14.010MHz:	30µV/m (30m) or 69.5dBµV/m (3m) QPeak

### 7.4. TEST EQUIPMENT LIST

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Open test site	LCIE	-	F2000400	2017-06	2018-06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015-12	2017-12
Bilog antenna	CHASE	CBL 6112A	C2040040	2017-03	2018-03
Cable	-	-	A5329449	2017-09	2018-09
Cable	-	-	A5329380	2017-06	2018-06
cable	-	-	A5329444	2017-09	2018-09

Note: In our quality system, the test equipment calibration due is more & less 2 months

### 7.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

Divergence:



## 7.6. RESULTS

Parallel Axis		
Frequency (MHz)	QPeak Level (dB $\mu$ V/m) (3m)	Limit (dB $\mu$ V/m) (3m)
Below 13.110	34	69.5
13.110 to 13.410	36	80.5
13.410 to 13.553	42	90.5
13.553 to 13.567	63.5	124
13.567 to 13.710	44	90.5
13.710 to 14.010	40	80.5
Above 14.010	33	69.5

Perpendicular Axis		
Frequency (MHz)	QPeak Level (dB $\mu$ V/m) (3m)	Limit (dB $\mu$ V/m) (3m)
Below 13.110	32	69.5
13.110 to 13.410	41	80.5
13.410 to 13.553	45	90.5
13.553 to 13.567	66.5	124
13.567 to 13.710	45	90.5
13.710 to 14.010	40	80.5
Above 14.010	36	69.5

## 7.7. CONCLUSION

Field strength within the band 13.110-14.010MHz measurement performed on the sample of the product **BIOLOG ID PRD-7150300A**, SN: **BI 1730000003**, in configuration and description presented in this test report, show levels compliant to the 47 CFR PART 15.225 limits.



## 8. UNCERTAINTIES CHART

47 CFR Part 15.209 & 15.207 Kind of test	Wide uncertainty laboratory (k=2) $\pm x(\text{dB}) / (\text{Hz}) / \text{ms}$	Uncertainty limit
Measurement of conducted disturbances in voltage on the AC power port (9 kHz – 150 kHz)	2,67	3.8
Measurement of conducted disturbances in voltage on the AC power port (150 kHz – 30 MHz)	2,67	3.4
Measurement of conducted disturbances in voltage on the telecommunication port. (AAN)	3,67	5.0
Measurement of conducted disturbances in current (current clamp)	2,73	2.9
Measurement of disturbance power	2,67	4.5
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC V01	4,48	/
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC C01	4,48	/
Measurement of radiated electric field from 30 to 1000MHz in horizontal position on the OATS (Ecuelles)	4,88	6.3
Measurement of radiated electric field from 1 to 18GHz on the Ecuelles site	5.16	/
Measurement of radiated electric field from 30 to 1000MHz in vertical position on the OATS (Ecuelles)	4,99	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC C01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC C01	5,16	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC V01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC V01	5,15	6.3
Measurement of radiated electric field from 1 to 6 GHz C01	5,1	5.2
Measurement of radiated electric field from 1 to 6 GHz V01	4,85	5.2
Measurement of radiated magnetic field from 10kHz to 30MHz on the OATS (Ecuelles)	4,48	/

The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the CISPR. The conformity of the sample is directly established by the applicable limits values. This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report