



BLUEGUIDEEMCLAB

TEST REPORT

File Number/Version: EMC-316-2018


E.U.T. Name : PhytoStem

Serial n°: stem227

- The Test Report may not be reproduced other than in full except with a written approval of the issuing laboratory.
- The test results relate only to the items tested.

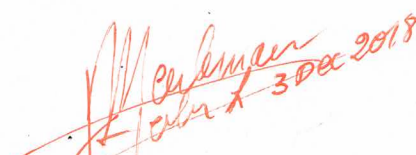
Test engineer

Bart De Geeter


03 Dec. 2018

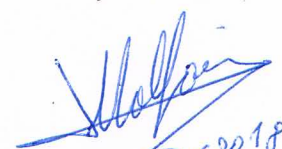
Technical manager

Meuleman Hendrik


3 Dec 2018

General manager

Malfait Ivan


03 Dec. 2018

BLUE GUIDE EMC LAB

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General manager
Technical manager
Test engineer

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(1) in front of the measurement = NOT under accreditation

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(1) in front of the measurement = NOT under accreditation

FCD-0370/4

QP-0017

- Name and address of the customer.

Name : **Phyto-IT BVBA**
 Contact person : **Mr. Dirk De Pauw**
 Witness during testing : **Mr. Dirk De Pauw, Mr. Aaron Boucke**
 Address : **Jozef Guislainstraat 4**
9000 Gent
Belgium
 Tel/Fax : -----
 GSM : **+32 (0) 486 80 82 50**
 VAT Nr : -----
 Offerte nr BGEMC : **BGEMC-18-379**

Purchase Order : -----

- Description of the E.U.T.

File number BGEMC lab : **EMC-316-2018**

Name : **PhytoStem**
 Serial N° : **stem227**
 Remark : -----

Manufacturer/ Brand : **Phyto-IT BVBA**

Short description of the functions : (photo) if applicable
None

BGEMC date in : **29/11/2018**
 BGEMC date out : **30/11/2018**
 Manual : **No**



- Measurements according following standard(s):

The product is evaluated according to the standard ETSI EN 301 489-7 V1.3.1 referring to ETSI EN 301 489-1 V2.2.0 (fixed use) and EN 61326-1:2013 (Basic and industrial electromagnetic environments) and below basic standards:

Emission

Enclosure Port	Radiated Emission	EN 55032:2015 (30MHz-6GHz, Class B)
AC Ports (input)	Conducted Emission	EN 55032:2015 (150kHz-30MHz, Class B)
	Voltage fluctuations and flicker	EN 61000-3-3:2013

Immunity

Enclosure Port	Radiated Immunity	EN 61000-4-3:2006 + A1:2008 + A2:2010
	Electrostatic discharge	EN 61000-4-2:2009
Signal Ports	Common Mode Immunity	EN 61000-4-6:2009
	Fast Transients	EN 61000-4-4:2012
AC Ports (input)	Common Mode Immunity	EN 61000-4-6:2009
	Fast Transients	EN 61000-4-4:2012
	Surges	EN 61000-4-5:2006
	Voltage dips and Interruptions	EN 61000-4-11:2004

- Sampling method.

None

Sampling method :
 If YES how :

- Subcontracting.

No

Tests :
 Name subcontractor :

- Remarks and actions during measurements

The Power frequency magnetic field test was not performed as there are no magnetic sensitive components inside the EUT.
The harmonic current emission test is not applicable for this EUT as power consumption is less than 75W.
The Flicker test does not need to be performed as it is unlikely that the equipment would cause flicker.

For contents of testplan refer to QP-0017.

- Uncertainty :

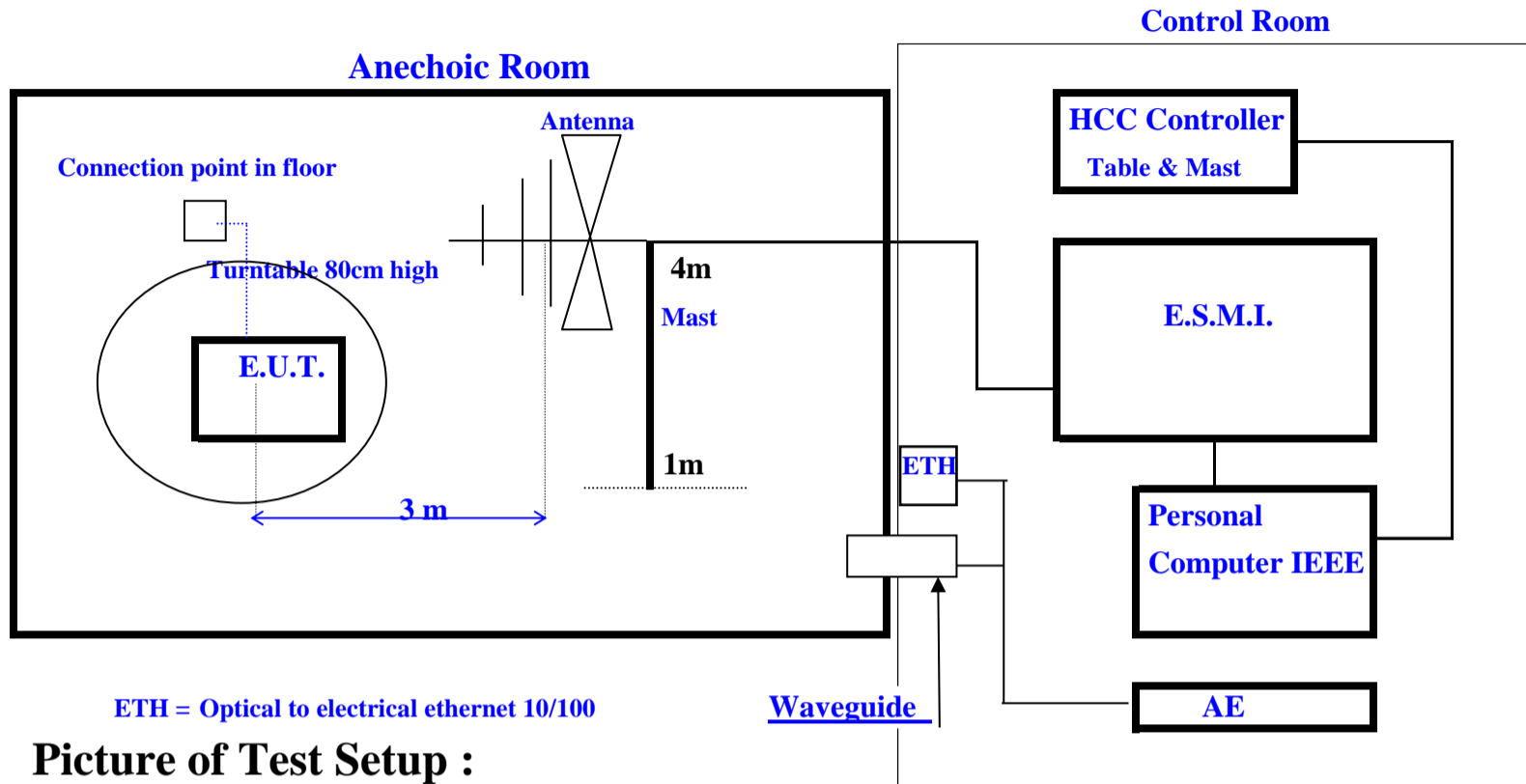
(if the measured value is within the uncertainty of the measuring system, the uncertainty will be indicated into this report. The judge Pass/Fail will not be indicated)

- Temperature & humidity during measurements was between spec:

Humidity : min. : 30%	max.: 60%	actual: 46%
Temperature: min. : 18°C	max.: 26°C	actual: 21 °C
Atmospheric pressure : 1009 hPa		
Mains Voltage : 230V/50Hz to AC/DC adapter		
DC Voltage : N/A		

DRAWING AND/OR PICTURE OF TEST SETUP

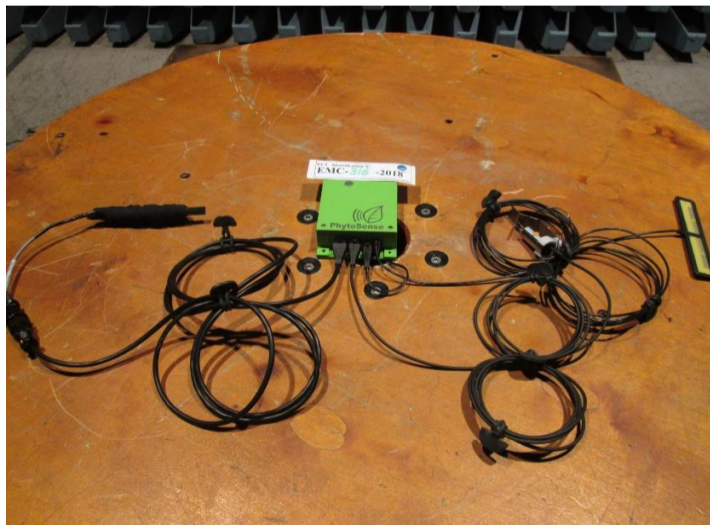
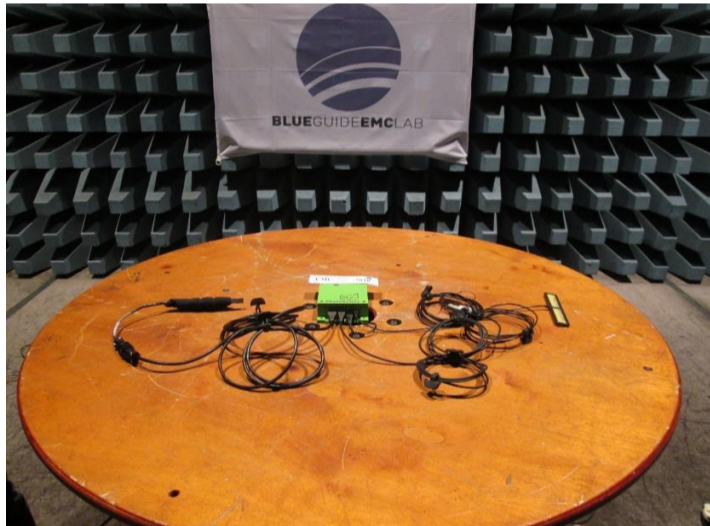
Test system : PEMC 01



ETH = Optical to electrical ethernet 10/100

Waveguide

Picture of Test Setup :

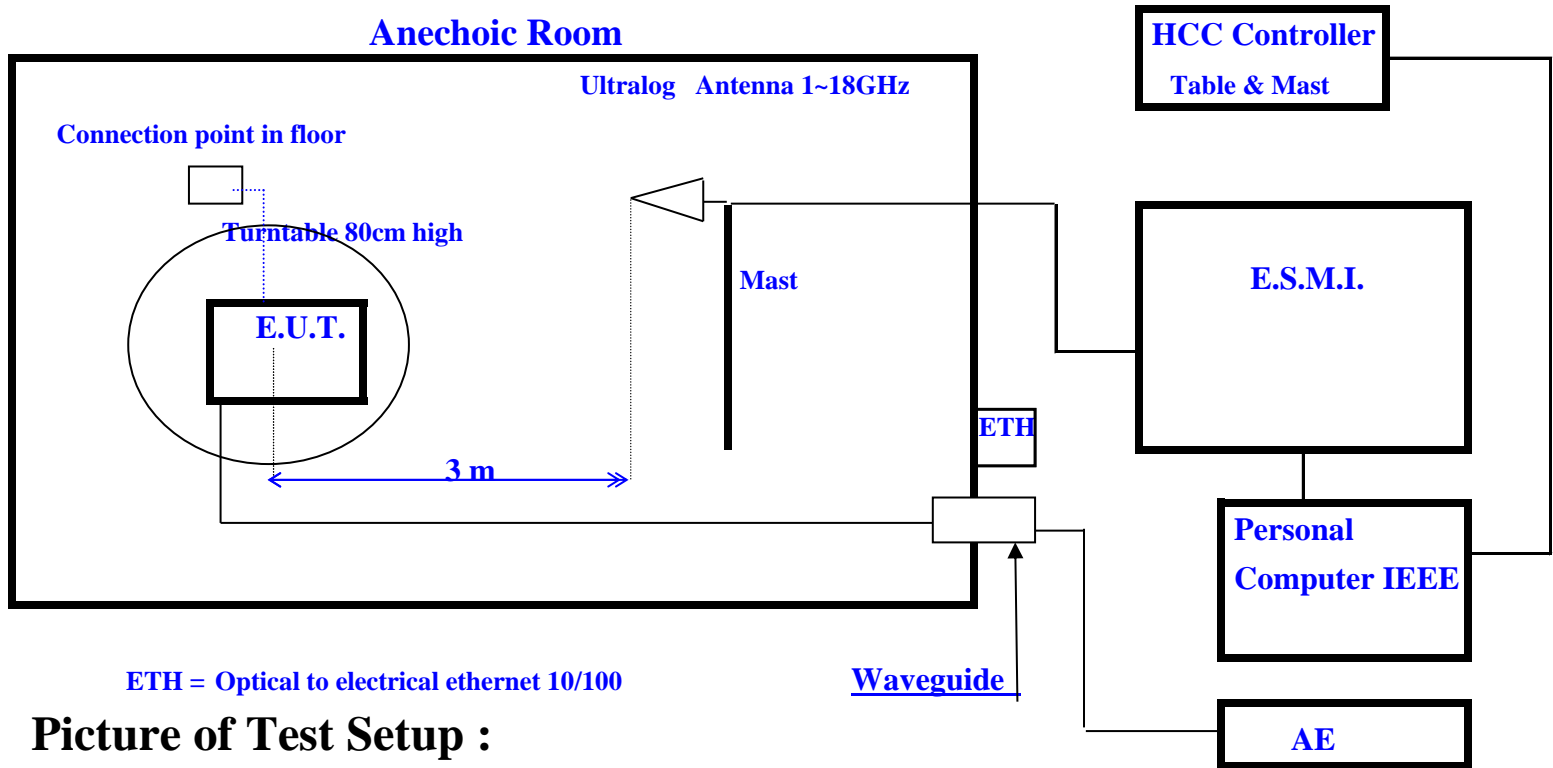


FCD-0371/3

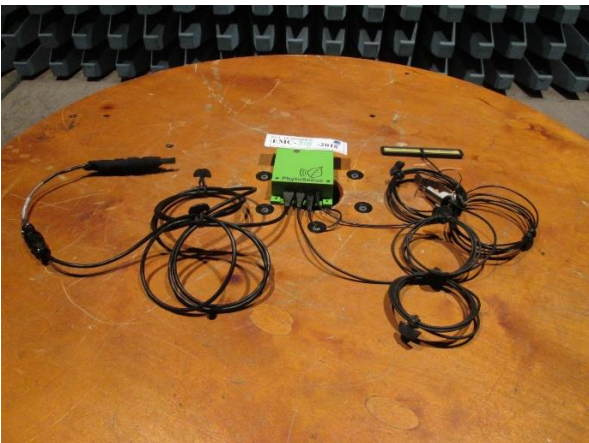
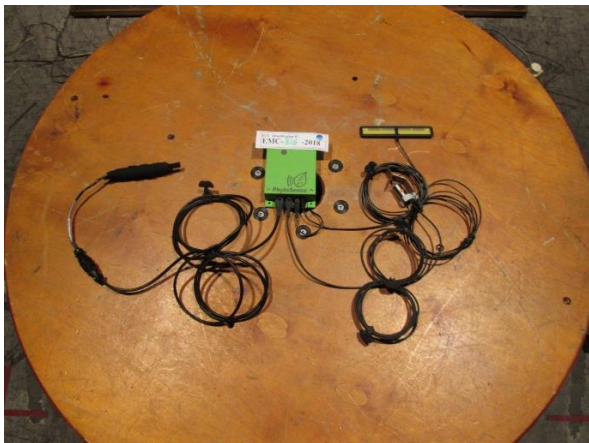
QP-0017

DRAWING AND/OR PICTURE OF TEST SETUP

Test system : **PEMC 01 Radiated Emission**



Picture of Test Setup :



USED EQUIPMENT DURING MEASUREMENT

Test system : PEMC 01

ID n°	Description	Type	Serial n°	Certificat n°
PEMC 01-000K	Anechoic Room	Siemens-Matsushita	003-002-033-94	201401278.02
PEMC 01-001	Automatic turntable, wooden, d=1.2m	HCT12	835822/0006	-
PEMC 01-002	Automatic antenna mast, mobile, h=4m	HCM	836622/0009	-
PEMC 01-003K	Bilog antenna 30 MHz-1GHz	CBL6111A	1556	201601825.00
PEMC 01-004	Mast adapter for mounting the Bilog Antenna on the mast	CBL-MASTAD	0	-
PEMC 01-006K	LISN 9 KHz - 30 MHz 2 * 10A, TWO LINE V-NETWORK ESH3-Z5	ESH3-Z5	840730/001	BGEMC2015081801.01
PEMC 01-007K	LISN 100 kHz ... 200 MHz 100A, 600Vdc	ESH3-Z6	840522/005	BGEMC2015093001.01
PEMC 01-013	Tripod for Loop Antenna	HFU-Z	839008/0011	-
PEMC 01-014K	EMI test receiver 20 Hz - 26.5 GHz	ESMI	839699/0010 & 840498/004	201601826.00
PEMC 01-019	Mast & turntable positioning controller	HCC	840760/0001	-
PEMC 01-020K	Adjustable DC Power supply for DUT, max. 32 V, 10 A	NGSM	451367/0389	BGEMC2016042101.01
PEMC 01-022	IPC-610F Industrial PC chassis	IPC-610F	-----	-
PEMC 01-023	Keyboard	----	-----	-
PEMC 01-024	Basic EMI Measurement & reporting software	ES-K1	ES-K1.50	-
PEMC 01-025	Driver software for ESMI with ES-K1	ES-K12	ESK-1.6	-
PEMC 01-026	Driver software for mast & turntable with ES-K1	ES-K30	ESK-1.6	-
PEMC 01-030	RF Cabling RG 214-501 COAX 50 Ohm	TS-CABLRF1	0	-
PEMC-01-031	DC Power supply cabling	TS-CABLPS1	0	-
PEMC 01-032	AC Power supply cabling	TS-CABLAC	0	-
PEMC 01-033	Fiber optic cable Field Probe	TS-CABFO	0	-
PEMC 01-034	Fiber optic Cable Mast	TS-CABFO	0	-
PEMC 01-035	Fiber optic cable Turntable	TS-CABFO	0	-
PEMC 01-037	EN 55013 Filter Amplifier 12v	Filter	No	-
PEMC 01-038K	Pre-amplifier A.R. 9 kHz - 2 GHz typ 29 dB	CPA9231A	3205 / 18564	BGEMC2016090601.01
PEMC 01-039K	LISN 100 kHz ... 200 MHz 100A, 600Vdc	ESH3-Z6	846422/027	BGEMC2014100701.01
PEMC 01-040K	Active rod antenna 9 kHz - 30 MHz	HFH2-Z6	844857/008	2014020474-1
PEMC 01-041K	RF cable Rod Antenna BNC-BNC	BNC-BNC	None	-----
PEMC 01-049K	RF- Cable Mast-Bilog ant (AC CP2)	-	0	NA
PEMC 01-055K	Passive Probe 250V~/50Hz 1500 Ohm 9pF 30 dB 9kHz-30 MHz	ESH2-Z3	837517/002	BGEMC2016070703.01
PEMC 01-056K	Current Probe 20Hz-100 MHz	EZ-17 /02	837394/015	none
PEMC 01-057K	Decoupling clamp 1...1000 MHz	FTC40x15E	5310	8039318.00
PEMC 01-058K	LOG-PER Antenna 1 GHz ~ 26GHz	HL 025	100193	201407021
PEMC 01-059K	Pre-amplifier 1 GHz ... 26 GHz	AFS	937326	201407021
PEMC 01-061K	4-WIRE ISN	ENY 41	100192	NA
PEMC 01-064K	Attenuator 6 dB, 2W	DNF	272,4110,50	BGEMC20131128.01
PEMC 01-069K	Transient Limiter 10 dB (150 kHz ... 30 MHz)	HZ560	16981196	BGEMC2015100103.01
PEMC 01-070K	Van Veen Loop Magnetic field 9kHz ~30MHz	Van Veen Loop	NA	BGEMC2016082901.01
PEMC 01-071K	Attenuator DC ... 3 GHz 10 dB	Attenuator	NA	-
PEMC 01-072K	RF- Cable Van Veen Loop to X11	BNC-BNC ferrite sleeved	0	0
PEMC 01-073K	Cleaning of Door Fingers	AR	003-002-033-94	NA
PEMC 01-075K	2.4 GHz Notch Filter	BRM50702-01	G038	0
PEMC 01-078K	RF- Cable Mast-Bilog	RG213-MIL	None	BGEMC2017111004.01
PEMC 01-085	EMC32 Software Application	EMC32	v0.35.01 or higher	NA

OVERVIEW TEST RESULTS

Test System : PEMC -01

	Antenna Polarisation		Requests from customer	Remarks
	Horizontal	Vertical		
Test mode used				
Combined Horizontal & Vertical	X	X	-----	-----
Used test setup and EUT placement/mode				
1 30MHz ~ 1GHz (Class B)	P	P	-----	mobile transmitter OFF during measurement
2 1GHz ~ 6GHz (Class B)	P	P	-----	mobile transmitter OFF during measurement
3 _____			-----	-----
4 _____			-----	-----
5 _____			-----	-----
6 _____			-----	-----
7 _____			-----	-----
8 _____			-----	-----
9 _____			-----	-----
Observations	The EUT has PASSED the test.			
Validation				
	<input checked="" type="checkbox"/>	Hardware	Legend	
	<input checked="" type="checkbox"/>	Software	<input style="border: 1px solid black; padding: 2px 5px;"/> P = Test Pass	<input style="border: 1px solid black; padding: 2px 5px; color: red;"/> F = Test Fail
			<input style="border: 1px solid black; padding: 2px 5px;"/> - = Test not performed/input not used	<input style="border: 1px solid black; padding: 2px 5px; color: blue;"/> X = Used Input

FCD-0373/3

QP-0017

Radiated emission measurement

EUT Information

BGEMC number:	EMC-316-2018
EUT Name:	PhytoStem
Manufacturer:	Phyto-IT BVBA
Serial Number:	stem227
Hardware Rev:	----
Software Rev:	-----
Comment:	EUT ON / mobile transmitter OFF
Operation Mode :	normal operation
Power Supply:	230V 50Hz to AC/DC adapter
Standard used:	EN 55032: Radiated emissions (30MHz-1GHz)
Operator:	Bart De Geeter

Hardware Setup: EMI radiated\RE 30M-1G - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 1 GHz
Receiver:	ESMI26 (PEMC 01-014K) [ESMI] @ GPIB0 (ADR 20), SN 0, FW 2.75 2.70 2.75
Signal Path:	ESMI26 (PEMC 01-014K)-CBL6111A 3m (PEMC 01-003K) FW 1.0 Correction Table: AC CP2 (X10) - ANT (PEMC 01-078K) Correction Table: AC CP2 (X10) - RFIN2 (PEMC 01-079K) Correction Table: Preamp CPA9231A (PEMC 01-038K)
Antenna:	CBL6111A 3m (PEMC 01-003K) Correction Table (vertical): CBL6111A 3m (PEMC 01-003K) Correction Table (horizontal): CBL6111A 3m (PEMC 01-003K)
Antenna Tower:	HCM (PEMC 01-002) [HCM/RSM Antenna Tower] @ GPIB0 (ADR 15), SN 0, FW 1.06
Turntable:	HCT (PEMC 01-001) [HCT/RST Turntable] @ GPIB0 (ADR 15), SN 0, FW 1.06

EMI Auto Test Template: EN 55032 RE 30M-1G ClassB

Hardware Setup: RE 30M-1G
 Measurement Type: Open-Area-Test-Site (SAC/FAR)
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dBµV/m - 80 dBµV/m

Preview Measurements:
 Sweep Test Template: EN 55032 RE 30M-1G Pre

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESMI] 30 MHz - 1 GHz	1,078 MHz	PK+	120 kHz	Coupled	0 dB

Data Reduction:
 Limit Line #1: EN 55032 F 3M ClassB QP
 Peak Search: 6 dB , Maximum Results: 24
 Subrange Maxima: 0 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 6

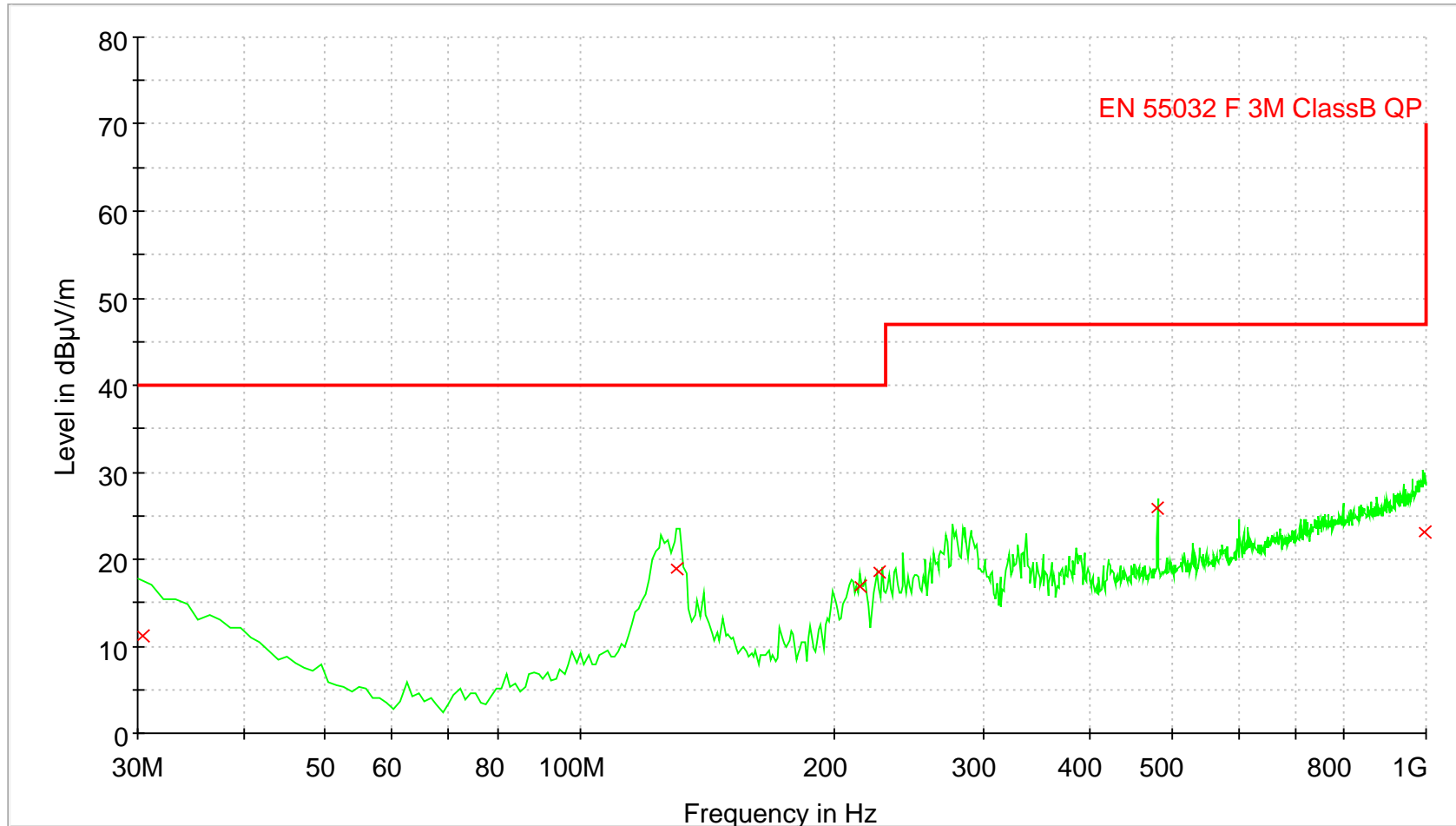
Frequency Zoom:
 Zoom Scan Template: EN 55032 RE 30M-1G Max

Adjustment:
 Template for Single Meas.: EN 55032 RE 30M-1G Max

Final Measurements:
 Template for Single Meas.: EN 55032 RE 30M-1G Fin

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESMI] 30 MHz - 1 GHz	40 kHz	QPK	120 kHz	1 s	0 dB

Full Spectrum



— Preview Result 1-PK+ — EN 55032 F 3M ClassB QP × Final_Result QPK

Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.360000	17.72	40.00	22.28	---	---	120.0	V	339.0	-9.1
129.931111	23.57	40.00	16.43	---	---	110.0	V	294.0	-16.4
214.080000	18.33	40.00	21.67	---	---	184.0	H	156.0	-17.2
225.853333	19.04	40.00	20.96	---	---	150.0	H	156.0	-16.4
480.048889	27.03	47.00	19.97	---	---	128.0	V	209.0	-9.8
993.075556	30.20	47.00	16.80	---	---	326.0	H	204.0	1.1

Final Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.360000	11.24	40.00	28.76	1000.0	120.000	120.0	V	339.0	-9.4
129.931111	18.84	40.00	21.16	1000.0	120.000	110.0	V	294.0	-16.4
214.080000	16.82	40.00	23.18	1000.0	120.000	184.0	H	156.0	-17.2
225.853333	18.48	40.00	21.52	1000.0	120.000	150.0	H	156.0	-16.5
480.048889	25.91	47.00	21.09	1000.0	120.000	128.0	V	208.0	-9.8
993.075556	23.09	47.00	23.91	1000.0	120.000	326.0	H	204.0	1.1

Radiated emission measurement

EUT Information

BGEMC number: EMC-316-2018
EUT Name: PhytoStem
Manufacturer: Phyto-IT BVBA
Serial Number: stem227
Hardware Rev: ----
Software Rev: ----
Comment: EUT ON / mobile transmitter OFF
Operation Mode : normal operation
Power Supply: 230V 50Hz to AC/DC adapter
Standard used: EN 55032: Radiated emissions (1GHz-6GHz)
Operator: Bart De Geeter

EMI Auto Test Template: EN 55032 RE 1G-6G ClassB

Hardware Setup: RE 1G-26,5G
Measurement Type: Open-Area-Test-Site (SAC/FAR)
Frequency Range: 1 GHz - 6 GHz
Graphics Level Range: 0 dB μ V/m - 90 dB μ V/m

Preview Measurements:
Sweep Test Template: EN 55032 RE 1G-6G Pre

Frequency Zoom:
Zoom Scan Template: EN 55032 RE 1G-6G Max

Adjustment:
Template for Single Meas.: EN 55032 RE 1G-6G Max

Final Measurements:
Template for Single Meas.: EN 55032 RE 1G-6G Fin

Hardware Setup: EMI radiated\RE 1G-26,5G - [EMI radiated]

Subrange 1
Frequency Range: 1 GHz - 26,500 GHz

Receiver: ESMI26 (PEMC 01-014K) [ESMI]
@ GPIB0 (ADR 20), SN 0, FW 2.75 2.70 2.75

Signal Path: ESMI26 (PEMC 01-014K)-HL025 3m (PEMC 01-058K)
Correction Table: Preamp AFS (PEMC 01-059K)
Correction Table: Cable Pasternack PE332-1000CM (PEMC 01-092K)

Antenna: HL025 3m (PEMC 01-058K)
Correction Table (vertical): HL025 3m (PEMC 01-058K)
Correction Table (horizontal): HL025 3m (PEMC 01-058K)

Antenna Tower: HCM (PEMC 01-002) [HCM/RSM Antenna Tower]
@ GPIB0 (ADR 15), SN 0, FW 1.06

Turntable: HCT (PEMC 01-001) [HCT/RST Turntable]
@ GPIB0 (ADR 15), SN 0, FW 1.06

EMI Auto Test Template: EN 55032 RE 1G-6G ClassB

Hardware Setup: RE 1G-26,5G
 Measurement Type: Open-Area-Test-Site (SAC/FAR)
 Frequency Range: 1 GHz - 6 GHz
 Graphics Level Range: 0 dBµV/m - 90 dBµV/m

Preview Measurements:
 Sweep Test Template: EN 55032 RE 1G-6G Pre

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESMI]					
1 GHz - 6 GHz	5,556 MHz	PK+	1 MHz	Coupled	0 dB
6 GHz - 12 GHz	6,667 MHz	PK+	1 MHz	Coupled	0 dB

Data Reduction:
 Limit Line #1: EN 55032 F 3M ClassB PK
 Limit Line #2: EN 55032 F 3M ClassB AVG
 Peak Search: 6 dB , Maximum Results: 24
 Subrange Maxima: 0 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 6

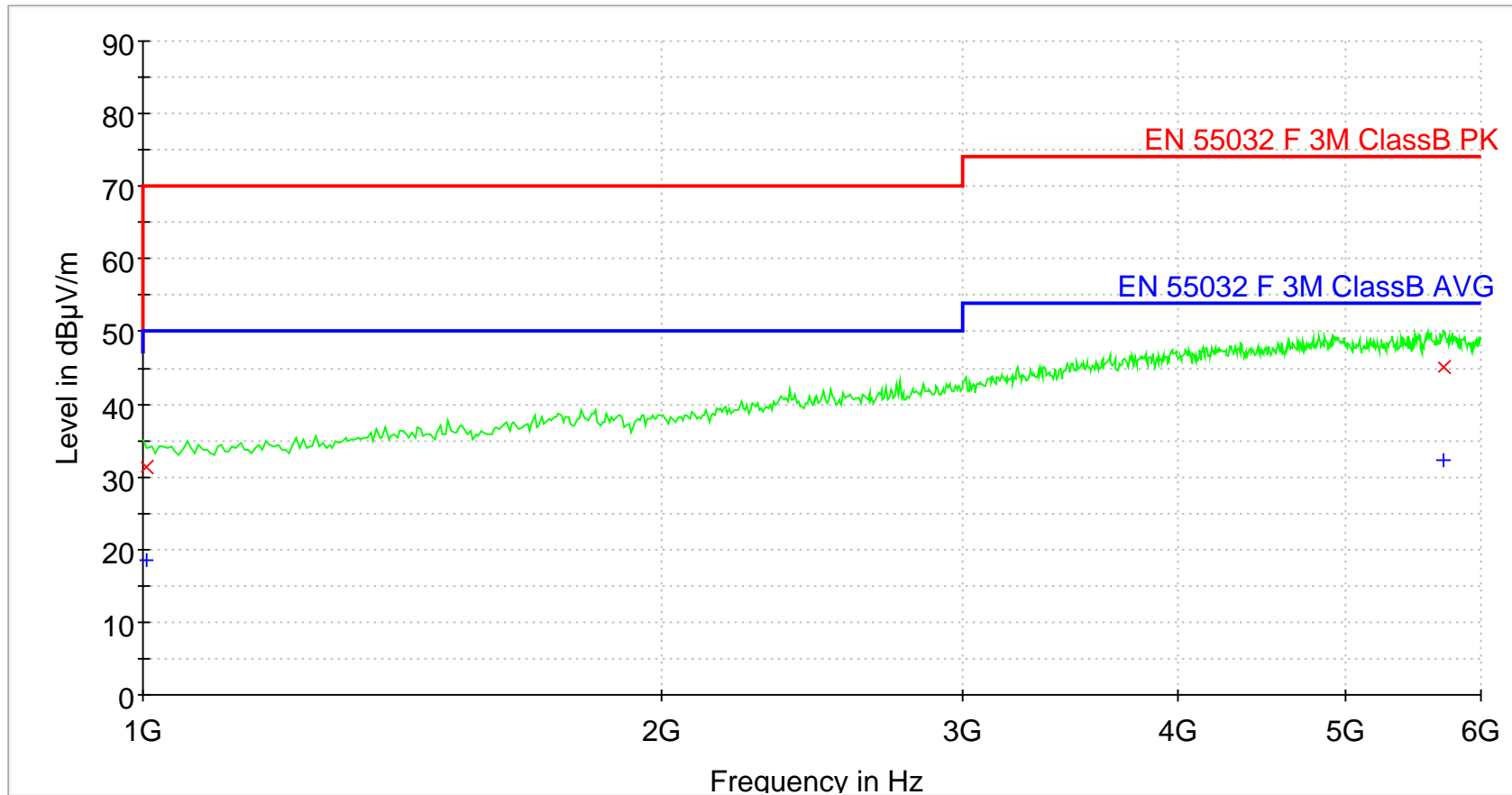
Frequency Zoom:
 Zoom Scan Template: EN 55032 RE 1G-6G Max

Adjustment:
 Template for Single Meas.: EN 55032 RE 1G-6G Max

Final Measurements:
 Template for Single Meas.: EN 55032 RE 1G-6G Fin

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESMI]					
1 GHz - 6 GHz	400 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
6 GHz - 12 GHz	400 kHz	PK+ ; AVG	1 MHz	1 s	10 dB

Full Spectrum



- Preview Result 1-PK+
- EN 55032 F 3M ClassB PK
- EN 55032 F 3M ClassB AVG
- x Final_Result PK+
- + Final_Result AVG

Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.000000	35.20	47.00	11.80	---	---	110.0	H	291.0	-10.4
5710.355556	50.17	74.00	23.83	---	---	258.0	V	246.0	4.0

Final Result PK+

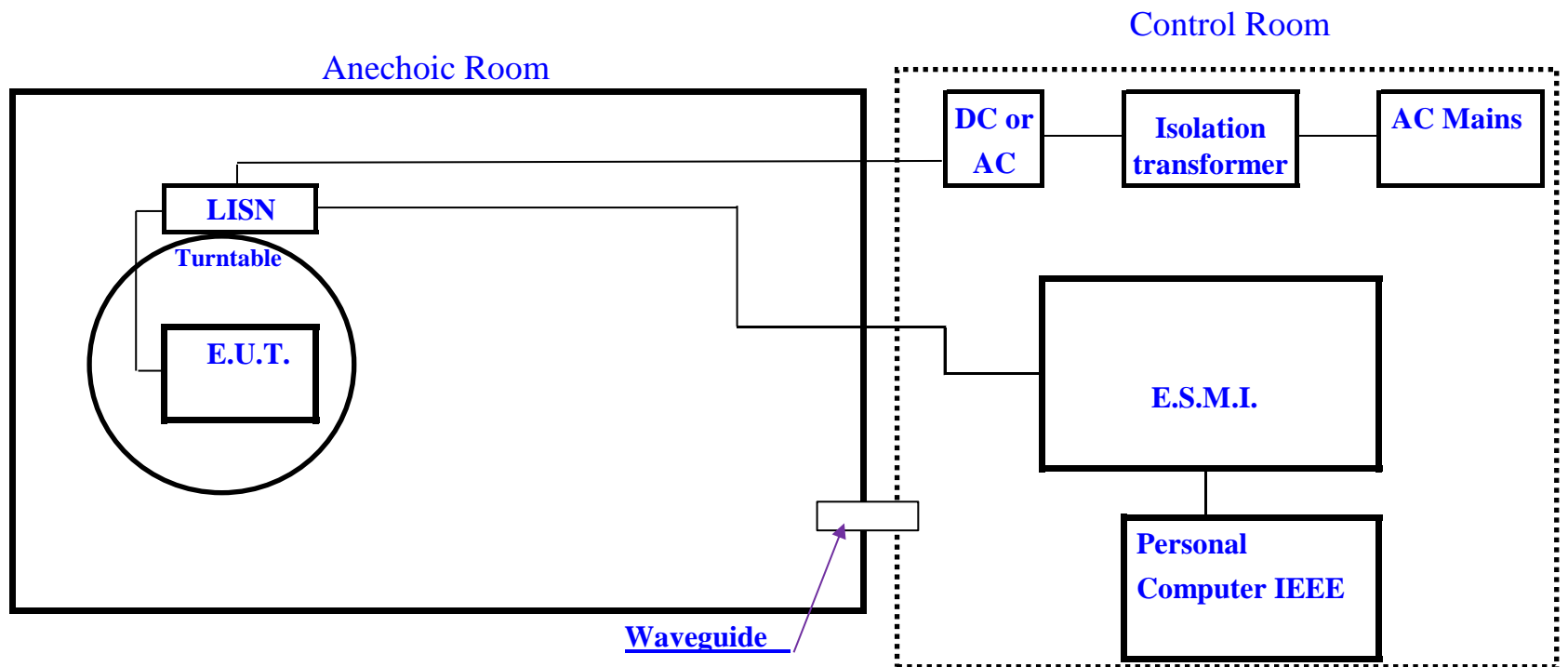
Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.000000	31.31	70.00	38.69	1000.0	1000.000	110.0	H	289.0	-10.4
5710.355556	45.15	74.00	28.85	1000.0	1000.000	258.0	V	246.0	4.0

Final Result AVG

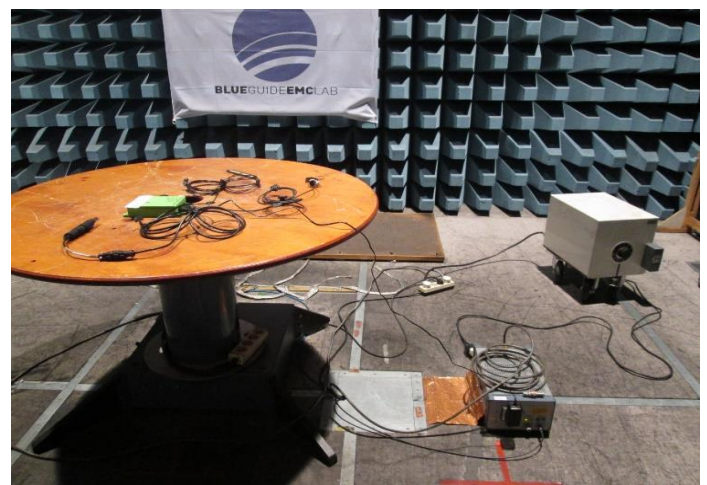
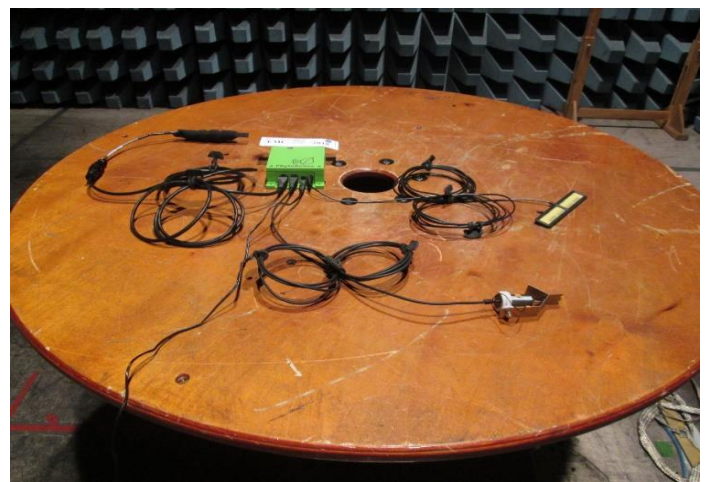
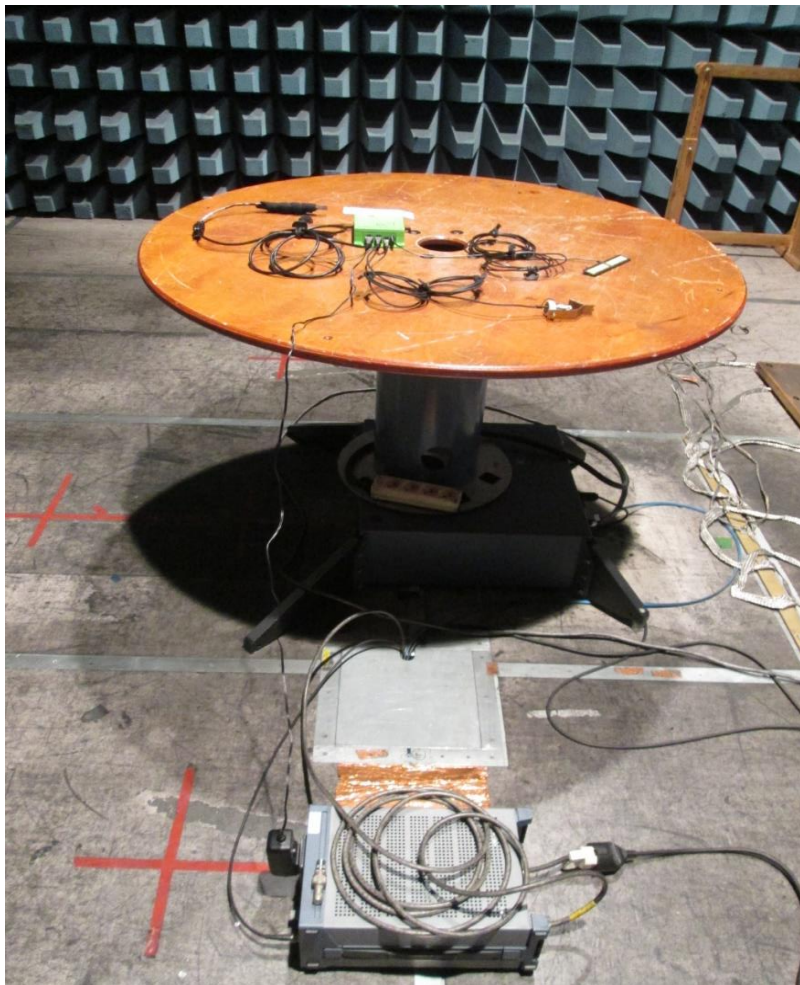
Frequency (MHz)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.000000	18.54	50.00	31.46	1000.0	1000.000	110.0	H	289.0	-10.4
5710.355556	32.41	54.00	21.59	1000.0	1000.000	258.0	V	246.0	4.0

DRAWING AND/OR PICTURE OF TEST SETUP

Test system : PEMC 01 Conducted disturbances



Picture of Test Setup :



USED EQUIPMENT DURING MEASUREMENT

Test system : PEMC 01

ID n°	Description	Type	Serial n°	Certificat n°
PEMC 01-000K	Anechoic Room	Siemens-Matsushita	003-002-033-94	2018xxxxxxxx
PEMC 01-001	Automatic turntable, wooden, d=1.2m	HCT12	835822/0006	-
PEMC 01-006K	LISN 9 KHz - 30 MHz 2 * 10A, TWO LINE V-NETWORK ESH3-Z5	ESH3-Z5	840730/001	SS170307ESH3Z5840730
PEMC 01-007K	LISN 100 kHz ... 200 MHz 100A, 600Vdc	ESH3-Z6	840522/005	BGEMC2017080802.01
PEMC 01-014K	EMI test receiver 20 Hz - 26.5 GHz	ESMI	839699/0010 & 840498/004	201802298.00
PEMC 01-019	Mast & turntable positioning controller	HCC	840760/0001	-
PEMC 01-020K	Adjustable DC Power supply for DUT, max. 32 V, 10 A	NGSM	451367/0389	BGEMC2018050601.01
PEMC 01-022	IPC-610F Industrial PC chassis	IPC-610F	-----	-
PEMC 01-023	Keyboard	----	-----	-
PEMC 01-024	Basic EMI Measurement & reporting software	ES-K1	ES-K1.50	-
PEMC 01-025	Driver software for ESMI with ES-K1	ES-K12	ESK-1.6	-
PEMC 01-026	Driver software for mast & turntable with ES-K1	ES-K30	ESK-1.6	-
PEMC 01-030	RF Cabling RG 214-501 COAX 50 Ohm	TS-CABLRF1		-
PEMC-01-031	DC Power supply cabling	TS-CABLPS1		-
PEMC 01-032	AC Power supply cabling	TS-CABLAC		-
PEMC 01-039K	LISN 100 kHz ... 200 MHz 100A, 600Vdc	ESH3-Z6	846422/027	BGEMC2017080801.01
PEMC 01-069K	Transient Limiter 10 dB (150 kHz ... 30 MHz)	HZ560	16981196	BGEMC2018052404.01
PEMC 01-070K	Van Veen Loop Magnetic field 9kHz ~30MHz	Van Veen Loop	NA	BGEMC2016082901.01
BGEMC 01-019K	Impedance Stabilisation Network	ISN N8	ISN-S8-0009	BGEMC2018091701.01
BGEMC 01-020K	Impedance Stabilisation Network	NTFM8158	8158-0050	BGEMC2017080903.01
PEMC 01-074K	Pre-amplifier 1 GHz~ 26 GHz	AFS42-00102650-42-10P-42-R	1955399	201703362.00
PEMC 01-085	EMC32 Software Application	EMC32	Ver 10.35.01	NA
PEMC 01-089K	LISN 1Ph/3Ph	L3-32	122WX40318	201802583.00

File Number : EMC-316-2018

OVERVIEW TEST RESULTS

Test System : PEMC 01
According standard : Conducted emission

		E.U.T.									
		I/O Connected					I/O Measured				
		AC 230V 50Hz Input	2 sensors	antenne cable			AC 230V 50Hz				
Conducted emissions	230V / 50Hz (Class B)	X	X	X	--	--	P	--	--	--	--
Remarks	During the test the mobile transmitter inside the EUT was turned OFF. The EUT has PASSED the test.										
Legend		<input type="checkbox"/> P	= Test Pass				<input type="checkbox"/> F	= Test Fail			
		<input type="checkbox"/> ✓	= Validation		<input type="checkbox"/> --	= Test not performed/input not used		<input type="checkbox"/> X	= Used Input		

FCD-0373/3

QP-0017

Conducted emission measurement

EUT Information

BGEMC number: EMC-316-2018
EUT Name: PhytoStem
Manufacturer: Phyto-IT BVBA
Serial Number: stem227
Hardware Rev: ----
Software Rev: ----
Comment: EUT ON / mobile transmitter OFF
Operation Mode : normal operation
Power Supply: 230V / 50Hz
Standard used: EN 55032 : Mains conducted disturbance measurement
Operator: Bart De Geeter

EMI Auto Test Template: EN 55032 CE 150k-30M Class B (L-N)

Hardware Setup: CE 150k-30M
Measurement Type: 2 Line LISN
Frequency Range: 150 kHz - 30 MHz
Graphics Level Range: 0 dB μ V - 90 dB μ V

Preview Measurements:
Sweep Test Template: EN 55032 CE 150k-30M Pre

Frequency Zoom:
Zoom Scan Template: EN 55032 CE 150k-30M Max

Final Measurements:
Template for Single Meas.: EN 55032 CE 150k-30M Fin

Hardware Setup: EMI conducted\CE 150k-30M - [EMI conducted]

Subrange 1

Frequency Range: 9 kHz - 150 kHz

Receiver: ESMI26 (PEMC 01-014K) [ESMI]
@ GPIB0 (ADR 20), SN 0, FW 2.75 2.70 2.75
Signal Path: AC CP1 (X12) - RFIN1 (PEMC 01-080K)
FW 1.0
Correction Table: AC CP1 (X12) - RFIN1 (PEMC 01-080K)
Correction Table: CR LISN - RFIN1
LISN: ESH3-Z5 (PEMC 01-006K)
Correction Table (Line 0): ESH3-Z5 (PEMC 01-006K)
Correction Table (Line 1): ESH3-Z5 (PEMC 01-006K)

Subrange 2

Frequency Range: 150 kHz - 30 MHz

Receiver: ESMI26 (PEMC 01-014K) [ESMI]
@ GPIB0 (ADR 20), SN 0, FW 2.75 2.70 2.75
Signal Path: AC CP1 (X12) - RFIN1 (PEMC 01-080K) + Trans.Lim.
FW 1.0
Correction Table: AC CP1 (X12) - RFIN1 (PEMC 01-080K)
Correction Table: CR LISN - RFIN1
Correction Table: Trans.Lim. HZ560 (PEMC 01-069K)
LISN: ESH3-Z5 (PEMC 01-006K)

Correction Table (Line 0): ESH3-Z5 (PEMC 01-006K)

Correction Table (Line 1): ESH3-Z5 (PEMC 01-006K)

EMI Auto Test Template: EN 55032 CE 150k-30M Class B (L-N)

Hardware Setup: CE 150k-30M
Measurement Type: 2 Line LISN
Frequency Range: 150 kHz - 30 MHz
Graphics Level Range: 0 dB μ V - 90 dB μ V

Preview Measurements:

Sweep Test Template: EN 55032 CE 150k-30M Pre

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESMI]					
9 kHz - 50 kHz	45,556 Hz	PK+	200 Hz	2 s	0 dB
50 kHz - 150 kHz	111,111 Hz	PK+	200 Hz	2 s	0 dB
150 kHz - 2 MHz	2,056 kHz	PK+	9 kHz	2 s	0 dB
2 MHz - 30 MHz	31,111 kHz	PK+	9 kHz	2 s	0 dB

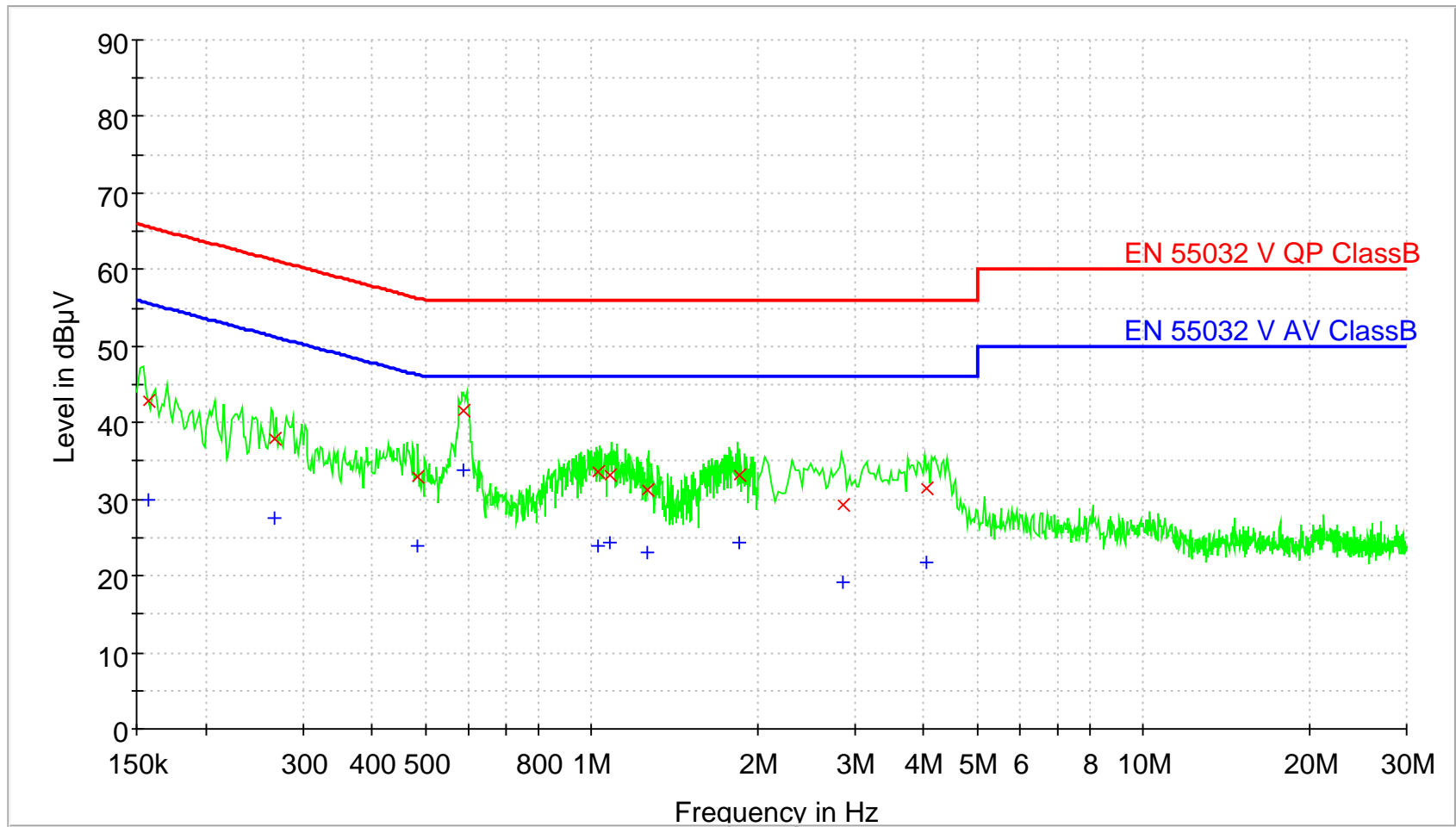
Frequency Zoom:

Zoom Scan Template: EN 55032 CE 150k-30M Max

Final Measurements:

Template for Single Meas.: EN 55032 CE 150k-30M Fin

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESMI]					
9 kHz - 50 kHz	80 Hz	QPK ; AVG	200 Hz	1 s	0 dB
50 kHz - 150 kHz	80 Hz	QPK ; AVG	200 Hz	1 s	0 dB
150 kHz - 30 MHz	4 kHz	QPK ; AVG	9 kHz	1 s	0 dB



— Preview Result 1-PK+
 — EN 55032 V QP ClassB
 — EN 55032 V AV ClassB
× Final_Result QPK
 + Final_Result AVG

Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.158000	47.30	65.78	18.48	---	---	L1	FLO	10.2
0.266556	41.84	61.33	19.49	---	---	L1	FLO	10.1
0.484206	37.15	56.25	19.10	---	---	N	FLO	10.0
0.588060	43.96	56.00	12.04	---	---	L1	FLO	10.0
1.027620	37.03	56.00	18.97	---	---	N	FLO	10.0
1.080460	37.42	56.00	18.58	---	---	N	FLO	10.0
1.263540	36.45	56.00	19.55	---	---	L1	FLO	10.0
1.857340	37.38	56.00	18.62	---	---	L1	FLO	10.1
2.868400	36.02	56.00	19.98	---	---	L1	FLO	10.2
4.062000	35.78	56.00	20.22	---	---	L1	FLO	10.3

Final Result QPK

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.158000	42.75	65.57	22.82	1000.0	9.000	L1	FLO	10.2
0.266556	37.97	61.22	23.26	1000.0	9.000	L1	FLO	10.1
0.484206	32.97	56.27	23.29	1000.0	9.000	N	FLO	10.0
0.588060	41.53	56.00	14.47	1000.0	9.000	L1	FLO	10.0
1.027620	33.50	56.00	22.50	1000.0	9.000	N	FLO	10.0
1.080460	33.16	56.00	22.84	1000.0	9.000	N	FLO	10.0
1.263540	31.31	56.00	24.69	1000.0	9.000	L1	FLO	10.0
1.857340	33.09	56.00	22.91	1000.0	9.000	L1	FLO	10.1
2.868400	29.32	56.00	26.68	1000.0	9.000	L1	FLO	10.2
4.062000	31.40	56.00	24.60	1000.0	9.000	L1	FLO	10.3

Final Result AVG

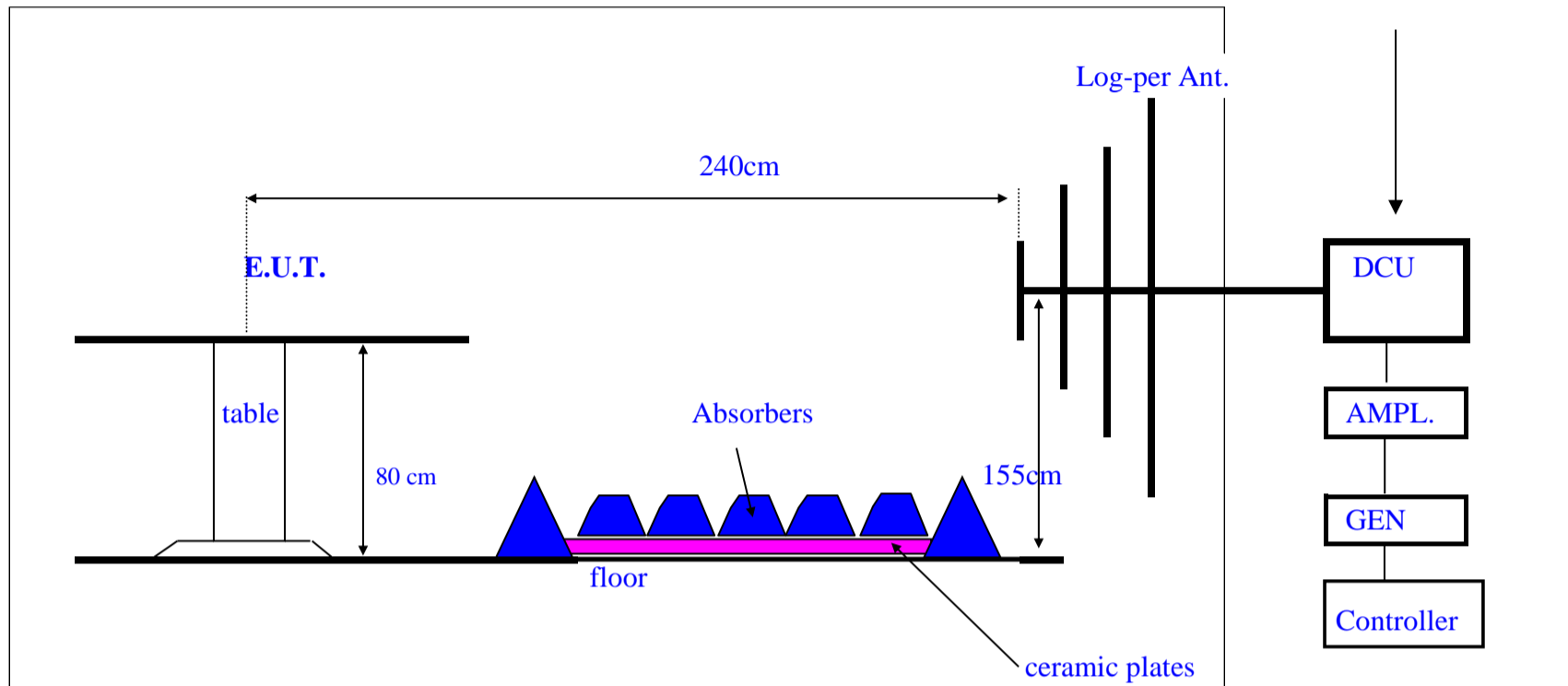
Frequency (MHz)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.158000	30.00	55.57	25.57	1000.0	9.000	L1	FLO	10.2
0.266556	27.50	51.22	23.73	1000.0	9.000	L1	FLO	10.1
0.484206	23.98	46.27	22.28	1000.0	9.000	N	FLO	10.0
0.588060	33.81	46.00	12.19	1000.0	9.000	L1	FLO	10.0
1.027620	23.88	46.00	22.12	1000.0	9.000	N	FLO	10.0
1.080460	24.42	46.00	21.58	1000.0	9.000	N	FLO	10.0
1.263540	23.08	46.00	22.92	1000.0	9.000	L1	FLO	10.0
1.857340	24.30	46.00	21.70	1000.0	9.000	L1	FLO	10.1
2.868400	19.12	46.00	26.88	1000.0	9.000	L1	FLO	10.2
4.062000	21.64	46.00	24.36	1000.0	9.000	L1	FLO	10.3

PICTURE AND/OR DRAWING OF TEST SETUP

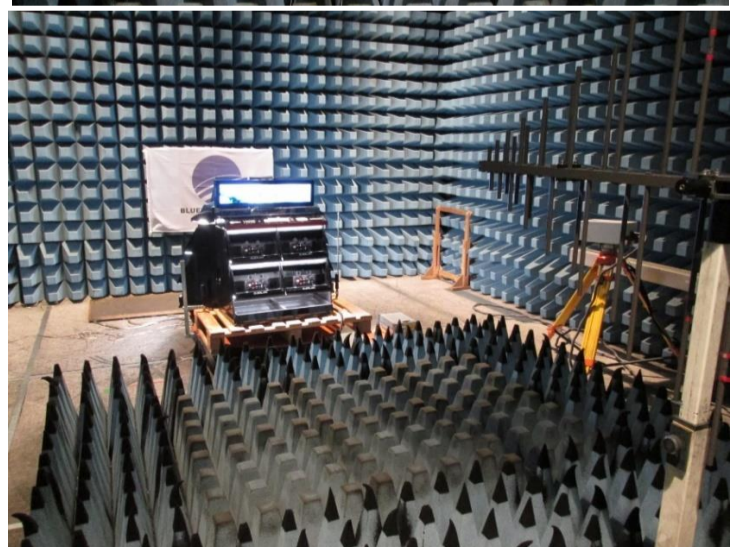
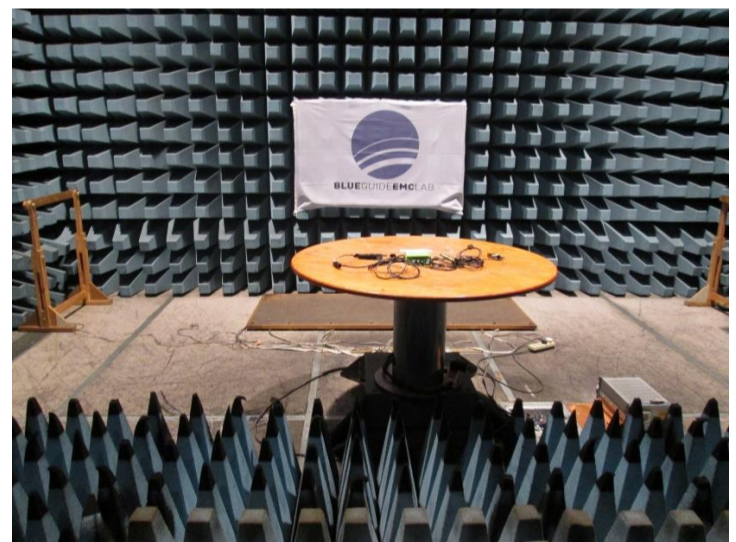
Test system : PEMC04 Immunity to radiated electromagnetic field

Drawing of test setup :

ANECHOIC ROOM



Picture of test setup :



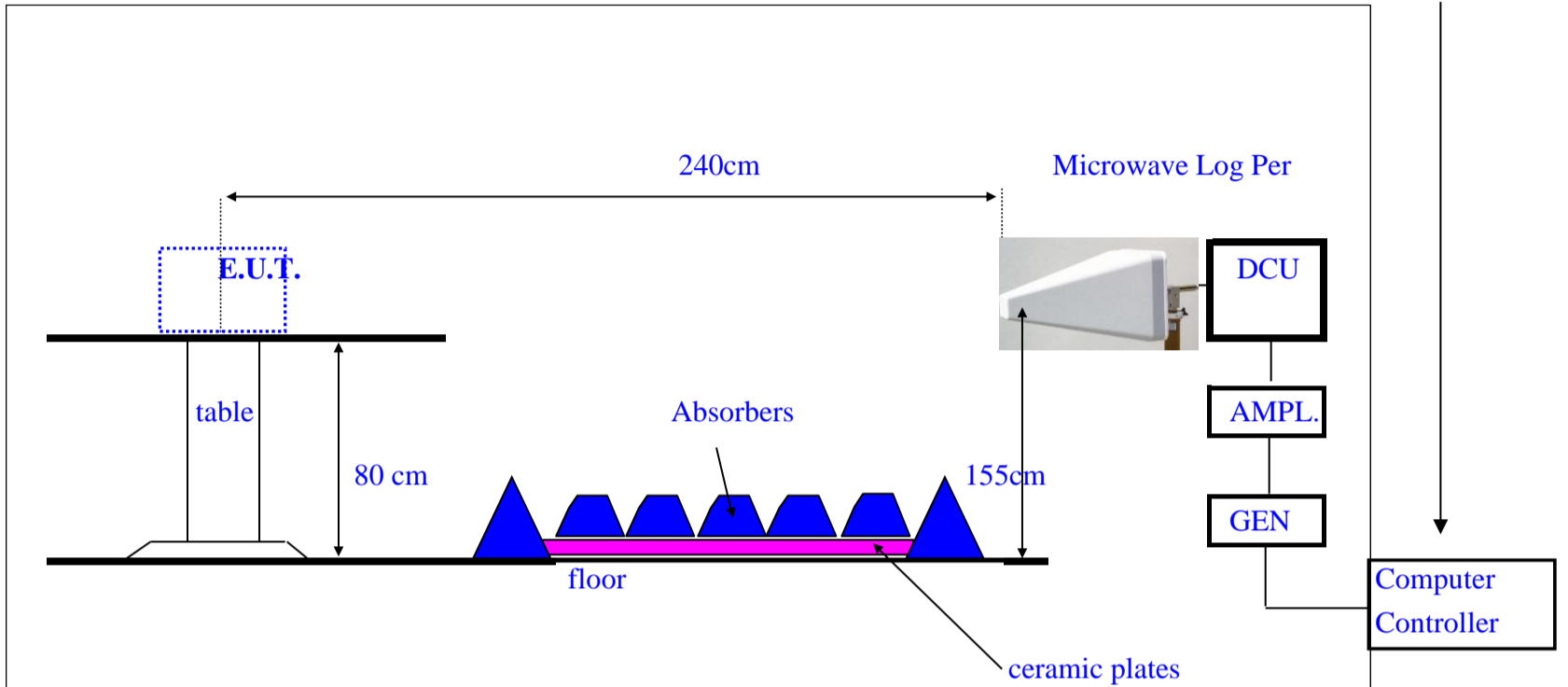
PICTURE AND/OR DRAWING OF TEST SETUP

Test system : PEMC04 Immunity to radiated electromagnetic field

Drawing of test setup :

ANECHOIC ROOM

CONTROL ROOM



Picture of test setup :



USED EQUIPMENT DURING MEASUREMENTTest system : **PEMC04 Immunity to radiated electromagnetic field**

ID n°	Description	Type	Serial n°	Certificat n°	Date Last performed Calibration
PEMC 04-001K	RF Signal Generator	SMY 01	840703/028	201802587.00	16-jul-18
PEMC 04-002K	Two Channel Power Meter	NRVD	841234/022	201802588.00	25-jul-18
PEMC 04-003K	RF Voltage Probe, 9 kHz - 2 GHz for NRVD A channel	URV5-Z2	840510/031	201802589.00	26-jul-18
PEMC 04-004K	RF Voltage Probe, 9 kHz - 2 GHz for NRVD B channel	URV5-Z2	840510/032	201802590.00	26-jul-18
PEMC 04-005K	Termination 50 Ohm	RNB		201802659.00	17-jul-18
PEMC 04-006K	Termination 50 Ohm	RNB		201802599.00	17-jul-18
PEMC 04-007K	Log. Per. Antenna	AT1080	21979	NA	02-sep-13
PEMC 04-008K	Field Probe	FP4000	16456	-	20-jul-13
PEMC 04-009	Interface	IF4000		-	NA
PEMC 04-010	Probe stand	PS2000		-	NA
PEMC 04-011	Stand for Field Probe	PS2000		-	NA
PEMC 04-012	Antenna stand			-	NA
PEMC 04-013	No equipment specified	No equipment specified		-	NA
PEMC 04-014	No equipment specified	No equipment specified		-	NA
PEMC 04-015K	Directional Coupler build in DC6180	DCU	338192/005	201802591.00	43298
PEMC 04-016	RF Cabling in double floor of Anechoic Chamber	TS-CABLEMS		-	NA
PEMC 04-018	No equipment specified	No equipment specified		-	NA
PEMC 04-019	No equipment specified	No equipment specified		-	NA
PEMC 04-020	No equipment specified	No equipment specified		-	NA
PEMC 04-021	100 Watt Broadband Power Amplifier	AR-100A		-	NA
PEMC 04-022K	Nardalert RF safety alertmodule 50-2000 MHz	8845E0.5	14896	0	02-aug-99
PEMC 04-023K	400 Watt Broadband Amplifier	BLWA 0810-400	98 44 75	-----	30-jun-14
PEMC 04-024K	Function Generator	AFG	860449/0040	201802592.00	17-jul-18
PEMC 04-025K	10 Mhz pulse Generator	TGP110	211709	59120-1210	18-mei-04
PEMC 04-026K	Microwave Signal generator 1 GHz ~27GHz	SMR27	100100	NA	03-sep-18
PEMC 04-027K	NRVD Power meter (with heads 04-028K & 04-029K)	NRVD	101000	201802594.00	26-jul-18
PEMC 04-028K	Thermal power sensor used with NRVD Power meter (04-027K)	NRV-Z51	100682	201802595.00	25-jul-18
PEMC 04-029K	Thermal power sensor used with NRVD Power meter (04-027K)	NRV-Z51	100677	201802596.00	25-jul-18
PEMC 04-030K	Electric field probe 80 MHz~40GHz	FP4080	308106	NA	16-apr-18
PEMC 04-031K	Dual directional coupler 0,7~4,2 GHz 400 Watt CW	DC7144	309086	201502852.00	20-jul-15
PEMC 04-032K	Horn antenna 1 ... 4.2 GHz	AT4510	309096	201407025.01	02-jan-15
PEMC 04-033	Non metallic Tripod for Horn antenna's	TP1000A	308867	0	NA
PEMC 04-034K	25 Watt Broadband microwave amplifier 0,8~4,2 GHz	25S1G4AM2	309219	-----	13-mei-13
PEMC 04-035	E-H Field Generator	AT5000	11713		na
PEMC 04-036	50 W Attenuator 30 dB (DC-18 GHz)	776B-30	none	-	NA
PEMC 04-037	Cable DCU out to Horn in CPPA3	Sucoflex 100	none	0	NA
PEMC 04-038	Cable AT1080 to X1 connection point 1 in AR	Ecoflex 15 + (solderless N connector 7395)	none	-	NA
PEMC 04-039K	Directional Coupler (1 ... 6 GHz)	DDH4016	none	201802597.00	19-jul-18
PEMC 04-040K	RF Amplifier 30 W (1 ... 6 GHz)	30HM1G6-45		-----	NA
PEMC 04-042K	Signal Generator	SMP 02 (incl option SMP-B11)	100066	Rohde & Schwarz	14-mei-18
PEMC 04-043K	Antenna 0.7 ... 9 (10.5) GHz	STLP 9149	9149596	Schwarzbeck	02-mei-18
PEMC 04-044K	Attenuator 20 dB	PE7005-20	None	Pasternack Enterprises	03-sep-18
PEMC 04-045K	Attenuator	PE7005-20	None	Pasternack Enterprises	02-mei-17
PEMC 01-085	EMC32 Software Application			EMC32	NA

OVERVIEW TEST SEVERITY LEVELS AND RESULTS

Test System : PEMC -04

According standard : Radiated RF immunity in Absorber-lined chamber (Anechoic room)

		Horizontal Polarisation					Vertical Polarisation					
		3V/m	10V/m	3V/m	10V/m	Value requested by customer	3V/m	10V/m	3V/m	10V/m	Value requested by customer	
Test method used												
Closed-loop leveling method (field probe leveling)		-	-	-	-	-	-	-	-	-	-	
Substitution method (reference field calibration procedure)		X	X	-	-	-	X	X	-	-	-	
Applied frequency range		Illuminated side of the EUT										
80MHz~1000MHz	Front 0°	-	P (1)	-	-	-	-	P (1)	-	-	-	
80MHz~1000MHz	Rear 180°	-	P (1)	-	-	-	-	P (1)	-	-	-	
80MHz~1000MHz	Left hand side 270°	-	P (1)	-	-	-	-	P (1)	-	-	-	
80MHz~1000MHz	Right hand side 90°	-	P (1)	-	-	-	-	P (1)	-	-	-	
1,0~6GHz	Front 0°	P (1)	-	-	-	-	P (1)	-	-	-	-	
1,0~6GHz	Rear 180°	P (1)	-	-	-	-	P (1)	-	-	-	-	
1,0~6GHz	Left hand side 270°	P (1)	-	-	-	-	P (1)	-	-	-	-	
1,0~6GHz	Right hand side 90°	P (1)	-	-	-	-	P (1)	-	-	-	-	
Special condition/modes tested /remarks or request by customer												
Monitoring EUT with camera in control room		X	X	-	-	-	X	X	-	-	-	
(Data analysis is done after each position change)		-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	
Remarks		The EUT is continuously logging data during the test. After the test is finished, the data captured is sent via mobile communications link to the cloud application. The sensor data received is analysed by the customer. No issues seen. The EUT has PASSED the test.										
Validation	<input checked="" type="checkbox"/> Hardware						Legend	<input type="checkbox"/> P = Test Pass				<input type="checkbox"/> F = Test Fail
	<input checked="" type="checkbox"/> Software							<input type="checkbox"/> - = Test not performed/input not used				<input type="checkbox"/> X = Used Input
(1) Class A result : Normal performance within limits specified by the manufacturer, requestor or purchaser												

EMC32 Report

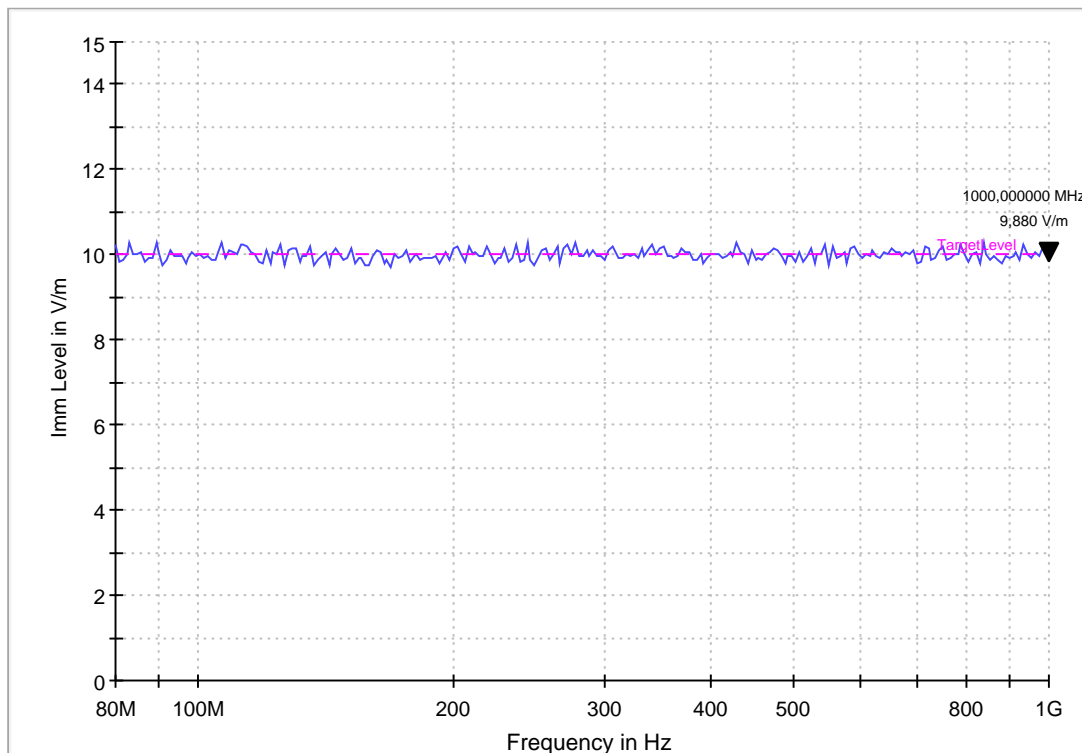
EUT Information

BGEMC number: EMC-316-2018
 EUT Name: PhytoStem
 Manufacturer: Phyto-IT BVBA
 Serial Number: stem227
 Hardware Rev: ----
 Software Rev: ----
 Comment: EUT ON / mobile transmitter ON
 Operation Mode : normal operation
 Power Supply: 230V/50Hz
 Standard used: EN 61000-4-3 : Radiated immunity: 10V/m 1kHz 80% AM (80MHz-1GHz)
 Operator: Bart De Geeter

EMS Scan Template: RI 80M-1G 10Vm 1kHz 80% AM-2.4m [EMS Radiated]

Hardware Setup: EMS radiated\RS 80M-1G
 Level On: Substitution Method: EMS radiated\RI EN 61000-4-3 80M-1G\RefCal EN61000-4-3 20Vm 2.4m 80M-1G

Subrange	Step Width	Level	Modulation	Dwell Time
80MHz - 1GHz	1% LOG	10V/m	AM: 1,0kHz	1s



— Imm Level
 - - - Limit
 ◆ Comment

EMC32 Report

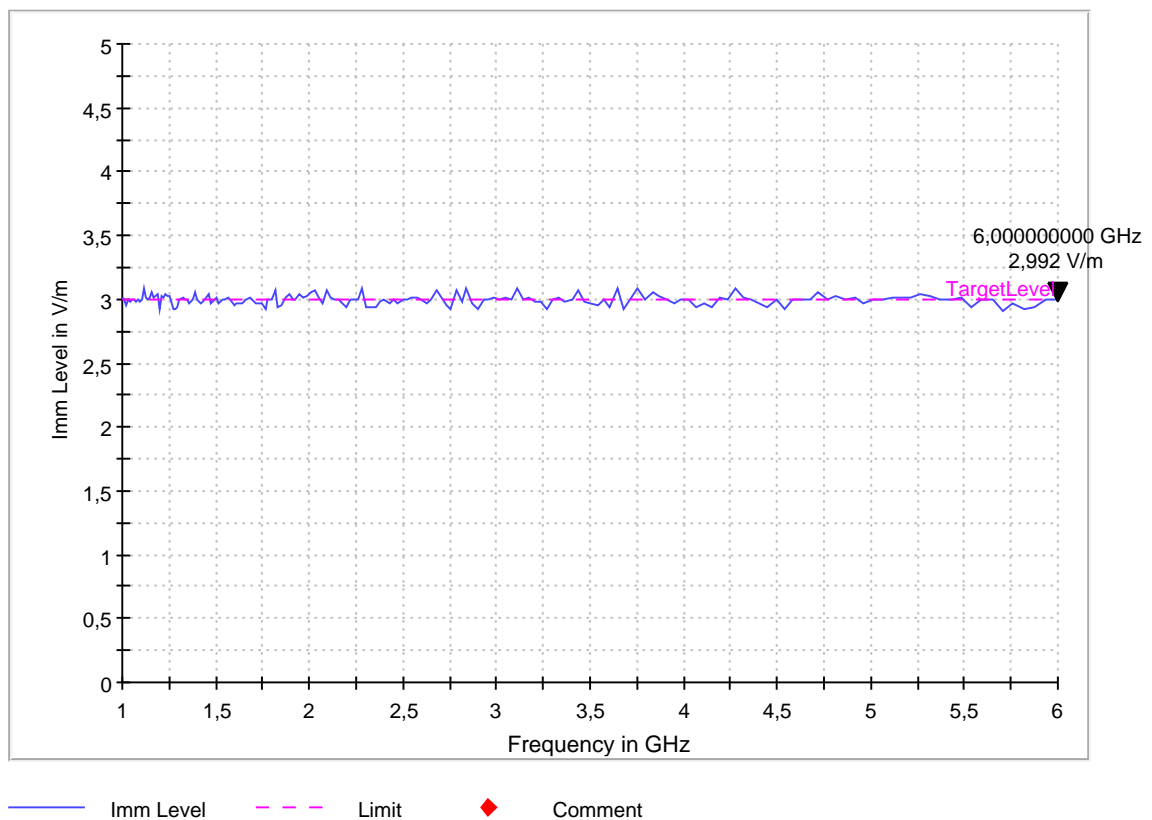
EUT Information

BGEMC number: EMC-316-2018
 EUT Name: PhytoStem
 Manufacturer: Phyto-IT BVBA
 Serial Number: stem227
 Hardware Rev: -----
 Software Rev: -----
 Comment: EUT ON / mobile transmitter ON
 Operation Mode : normal operation
 Power Supply: 230V 50Hz to AC/DC adapter
 Standard used: EN 61000-4-3 : Radiated immunity: 3V/m 1kHz 80% AM (1-6GHz)
 Operator: Bart De Geeter

EMS Scan Template: RI 1G-6G 3Vm 1kHz 80% AM-2.4m [EMS Radiated]

Hardware Setup: EMS radiated\RS 1G-6G
 Level On: Substitution Method: EMS radiated\RI EN 61000-4-3 1G-6G\Refcal EN61000-4-3 10Vm 2.4m 1G-6G

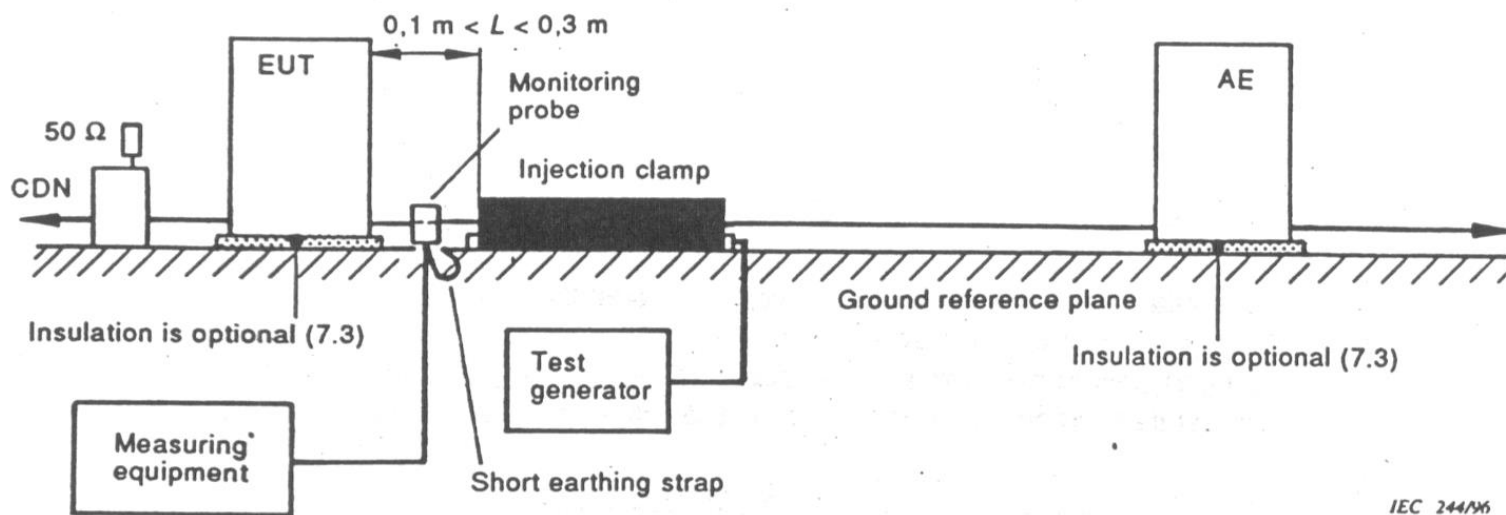
Subrange	Step Width	Level	Modulation	Dwell Time
1GHz - 6GHz	1% LOG	3V/m	AM: 1,0kHz	1s



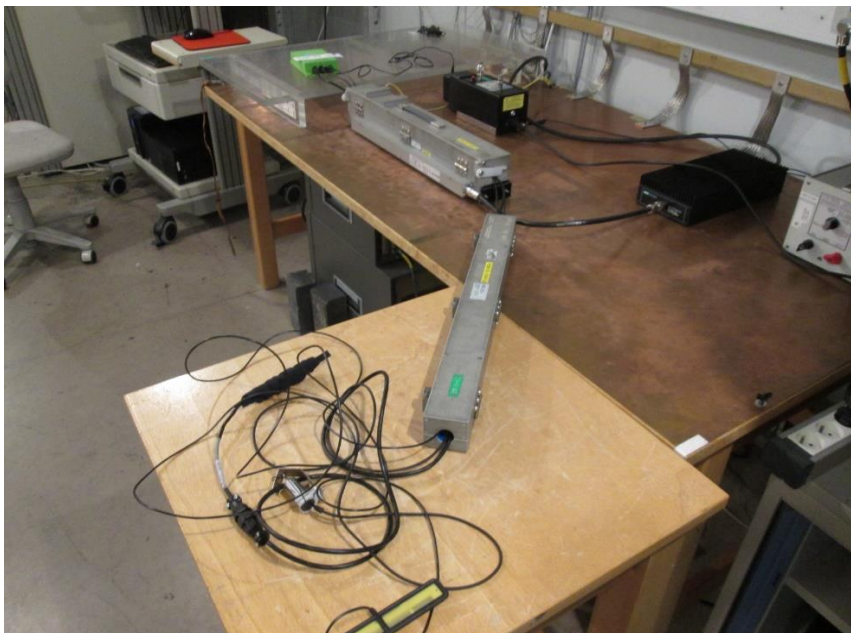
PICTURE OF TEST SETUP

Test system : **PEMC05**
Immunity to conducted disturbances induced by RF (EM clamp)

Drawing of Test Setup :



Picture of Test Setup :



USED EQUIPMENT DURING MEASUREMENT

Test system : TS05

Common Mode RF

ID n°	Description	Type	Serial n°	Calibration n°	Date Last performed Calibration
PEMC 05-002K	Dual channel RF voltmeter	NRVD	841234/028	201802299.00	26-jul-18
PEMC 05-003K	RF Voltage Probe, 9 KHz - 2 GHz for NRVD	URV5-Z2	841128/008	201802300.00	26-jul-18
PEMC 05-004K	RF Voltage Probe, 9 KHz - 2 GHz for NRVD	URV5-Z2	841128/009	201802301.00	26-jul-18
PEMC 05-005K	Termination 50 Ohm	RNB	-----	201802598.00	17-jul-18
PEMC 05-006K	Termination 50 Ohm	RNB	-----	201802413.00	17-jul-18
PEMC 05-007K	System Control / Interface Unit	SCIU	338178/004	31499905.00	31-jul-02
PEMC 05-008	TEM Cell	EO-5103	9510-0192	-	NA
PEMC 05-009K	Field Probe	FP4000	16457	-	20-jul-12
PEMC 05-010K	50 Ohm Load 400Watt	SP-50LD	70087982	BGEMC2017110902.01	09-nov-17
PEMC 04-017	EMS System software TR "Radiated & Conducted susceptibility"	EMS-K1	V 1.2 150kHz ~ 240MHz	-	NA
PEMC 05-024K	Generator 9KHz - 1040 KHz	SMY-01	70087983	201702715.00	18-jul-17
PEMC 05-025K	Directional Coupler Unit	DCU	70087984	201702716.00	18-jul-17
PEMC 05-026K	RF ATT 50 Ohm 6 dB 250 W	RA6	70087985	BGEMC2018061201.01	12-jun-18
PEMC 05-027K	CDN801-M2/M3	CDN	70087986	BGEMC2014101501.01	15-okt-14
PEMC 05-028K	CDN 801-S1	CDN	70087987	NA	14-nov-13
PEMC 05-029K	Current Probe	Cip9136	1001	BGEMC2018091802.01	18-sep-18
PEMC 05-030K	Current Probe Test Jig	Current Probe Jig	1064	BGEMC2018091801.01	18-sep-18
PEMC 05-032K	ATT 25 W 20 dB 50 Ohm	ATT	25088	BGEMC2018052406.01	24-mei-18
PEMC 05-033K	RF Current Probe	F-51	103	201703107.00	24-jul-17
PEMC 05-036K	100 Ohm 0-500 MHz	CDN	70087991	BGEMC2017111001.01	10-nov-17
PEMC 05-037K	100 Ohm 0-500 MHz	CR 100A	70087992	BGEMC2017111002.01	10-nov-17
PEMC 05-038K	250 Watt Broadband Power Amplifier 250A250	AR-250A	17215	-----	28-mei-13
PEMC 05-039K (1)+(2)	RF Current injection clamp EM101 + decoupling clamp FTC101 0,15 ~ 1000MHz	EM101 + FTC101 0,15 ~ 1000MHz	35555 4631	,201703351.00+201703102.00	20-jul-17
PEMC 05-040K	Coupling -Decoupling Network	L-801 M2/M3	2669	BGEMC2017080805.01	08-aug-17
PEMC 05-041	Transformer	6220-1A	none	-	NA
PEMC 01-085	EMC32 Software Application	EMC32	NA	NA	00-jan-00
PEMC 01-021K	Power amplifier	AR100W1000M	17109	BGEMC2016090201.01	31-aug-16

File Number : **EMC-316-2018**

OVERVIEW TEST SEVERITY LEVELS AND RESULTS

Test System : **PEMC -05**

		Unmodulated					Modulated				
		Voltage level (e.m.f.)									
		1V	3V	10V		Value requested by customer	1V	3V	3V	10V	Value requested by customer
Frequency range :											
150kHz-10MHz		-	-	-	-	-	-	X	-	-	-
10MHz-30MHz		-	-	-	-	-	-	X	-	-	-
30MHz-80MHz		-	-	-	-	-	-	X	-	-	-
Test method used :											
BCI Direct Injection		-	-	-	-	-	-	-	-	-	-
CDN Injection		-	-	-	-	-	-	X	-	-	-
EM Clamp Injection		-	-	-	-	-	-	-	X	-	-
Injection line of the EUT :											
	L →	-	-	-	-	-	-	P(1)	-	-	-
	N →	-	-	-	-	-	-	P(1)	-	-	-
	PE →	-	-	-	-	-	-	-	-	-	-
	Other →	-	-	-	-	-	-	-	-	-	-
Description other lines and or / coupling method:											
2 sensor cables (3m) + 1 antenn cable (5m) in EM clamp		-	-	-	-	-	-	-	P(1)	-	-
		-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-
Observations:		During the test the EUT is connected to the mobile network and logging data. The data can be analysed with a cloud application. No issues seen. The EUT has PASSED the test.									
Validation :											
	<input checked="" type="checkbox"/> Hardware	Legend		<input type="checkbox"/> P = Test Pass				<input type="checkbox"/> F = Test Fail			
	<input checked="" type="checkbox"/> Software			<input type="checkbox"/> - = Test not performed/input not used				<input type="checkbox"/> X = Used Input			
		(1) Normal performance within specifications = Class A performance result									

Immunity to Common mode conducted RF

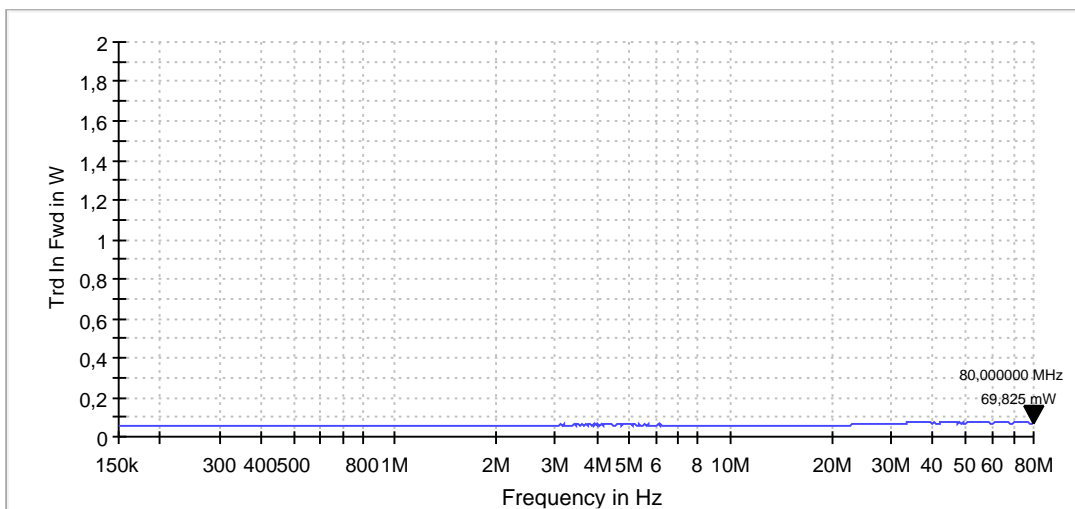
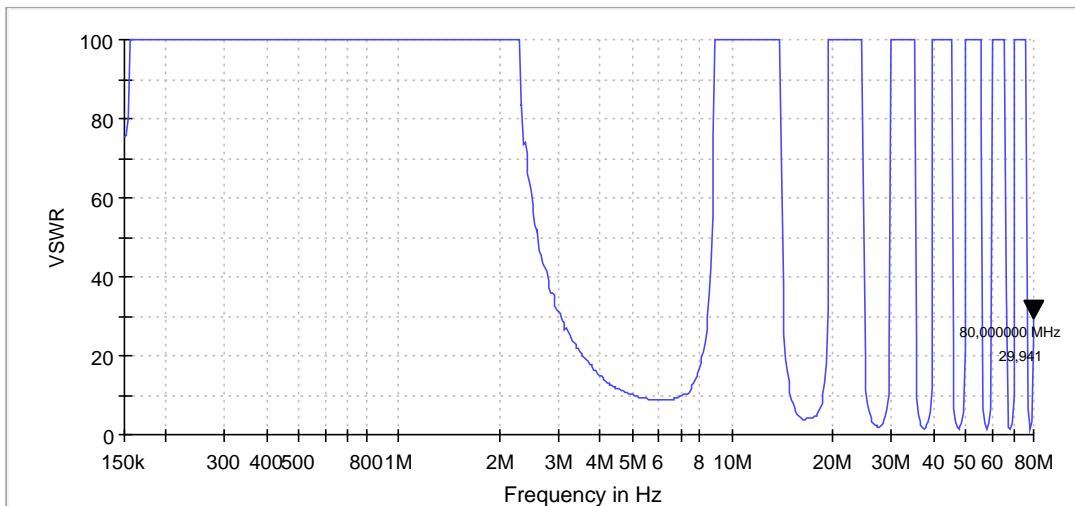
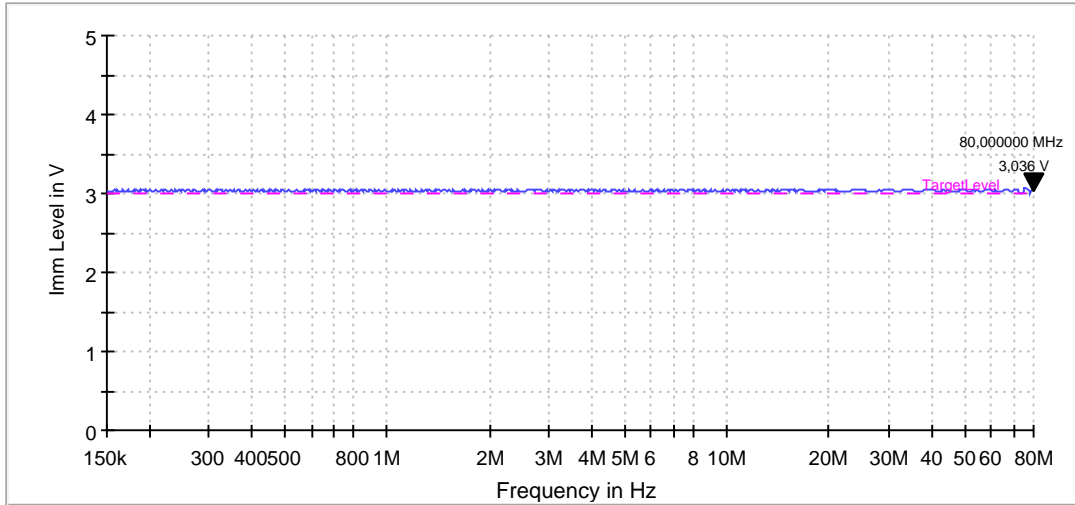
EUT Information

BGEMC number: EMC-316-2018
 EUT Name/Type: PhytoStem
 Manufacturer: Phyto-IT BVBA
 Serial Number: stem227
 Hardware Rev: -----
 Software Rev: -----
 Comment: connected to mobile network and logging data from sensors
 Operation Mode : normal operation
 Power Supply: 230V 50Hz
 Standard used: EN 61000-4-6 3Vrms 150kHz-80MHz
 Operator : Bart De Geeter

EMS Scan Template: EN 61000-4-6 3V 80% AM 1kHz [EMS Conducted]

Hardware Setup: EMS conducted\CDN BENCH
 Level On: Substitution Method: EMS conducted\CDN-M2 (PEMC 05-040K)\RefCal. CDN-M2 3V 1%

Subrange	Step Width	Level	Modulation	Dwell Time
150kHz - 80MHz	1% LOG	3V	AM: 1,0kHz	1s



Immunity to Common mode conducted RF

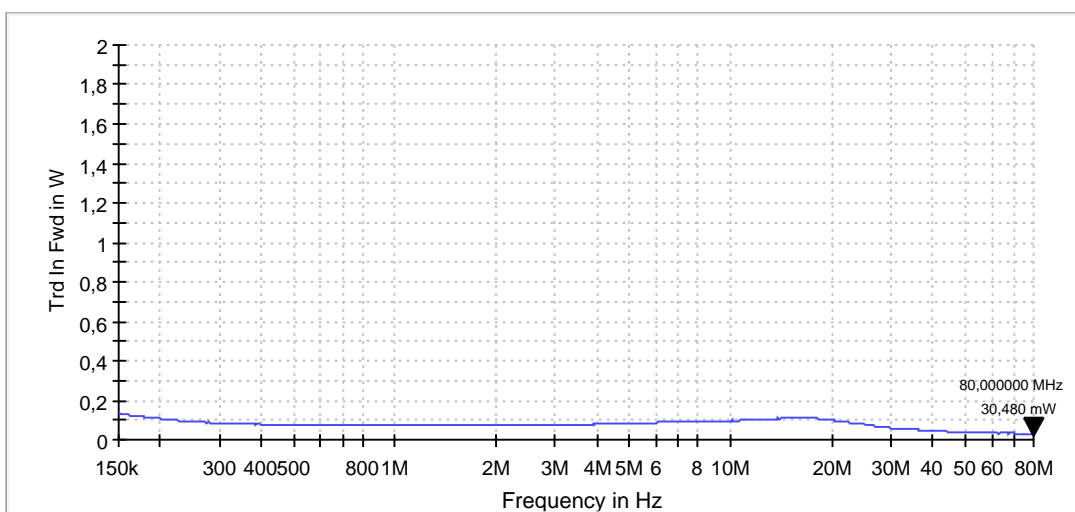
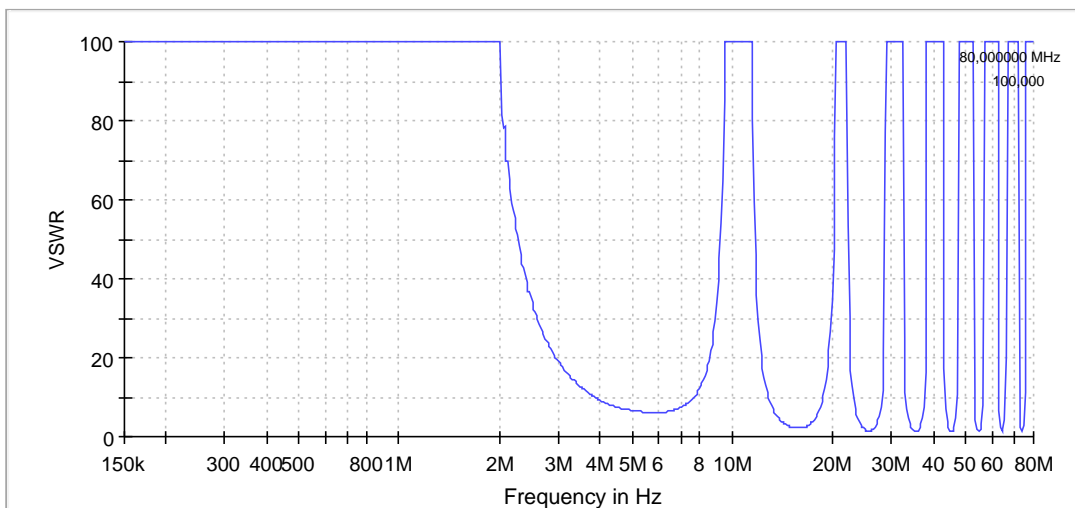
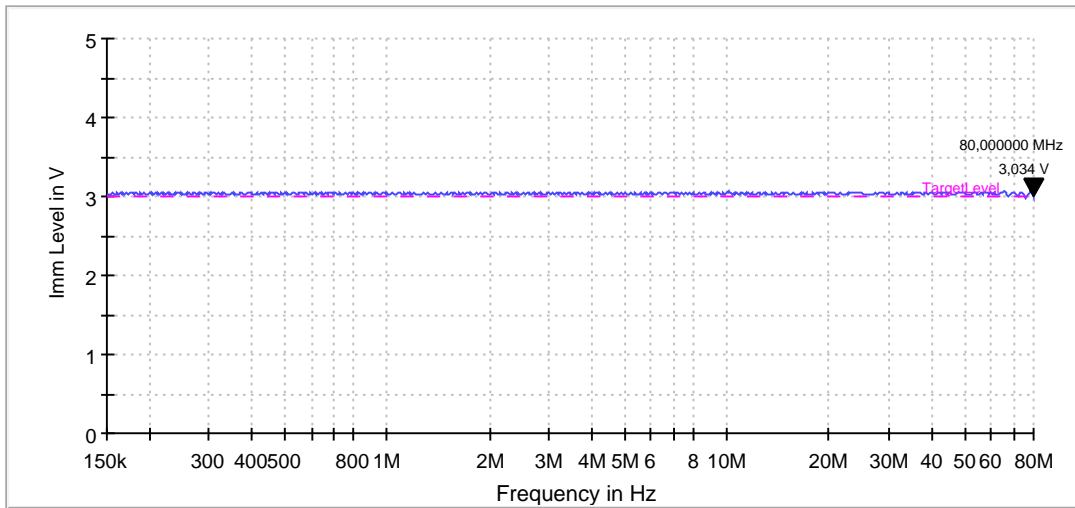
EUT Information

BGEMC number: EMC-316-2018
 EUT Name/Type: PhytoStem
 Manufacturer: Phyto-IT BVBA
 Serial Number: stem227
 Hardware Rev: -----
 Software Rev: -----
 Comment: Two sensor cables (3m) + 1 antenna cable in EM clamp (5m)
 Operation Mode : connected to mobile network and logging data from sensors
 Power Supply: 230V 50Hz
 Standard used: EN 61000-4-6 3Vrms 150kHz-80MHz
 Operator : Bart De Geeter

EMS Scan Template: EN 61000-4-6 3V 80% AM 1kHz [EMS Conducted]

Hardware Setup: EMS conducted\CLAMP BENCH
 Level On: Substitution Method: EMS conducted\EM101\RefCal. EM101 3V 1%

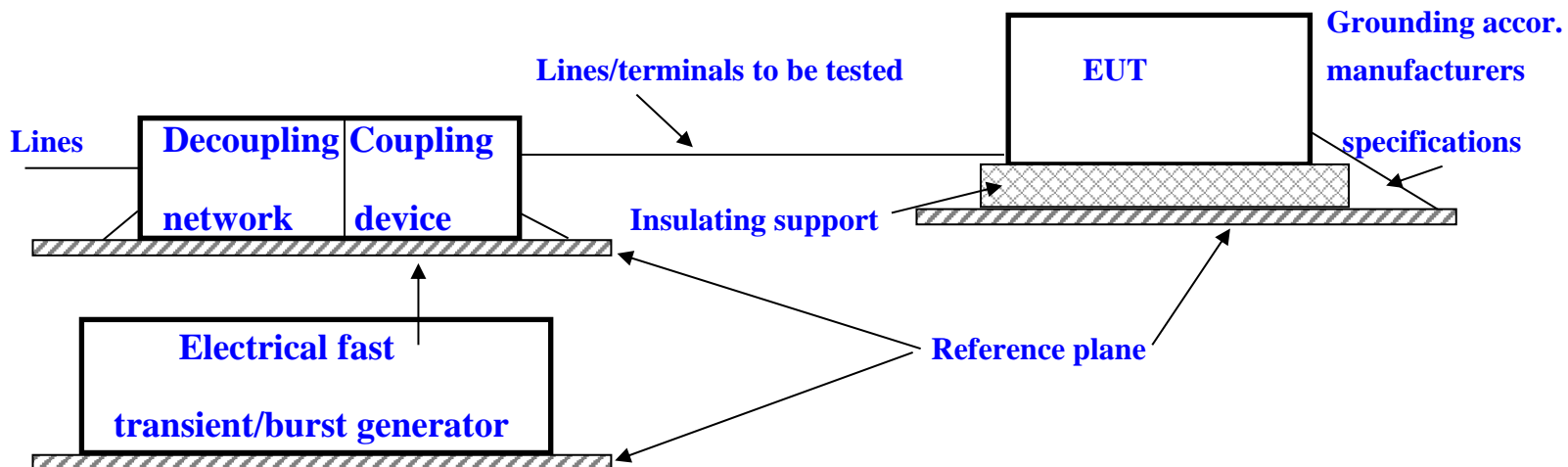
Subrange	Step Width	Level	Modulation	Dwell Time
150kHz - 80MHz	1% LOG	3V	AM: 1,0kHz	1s



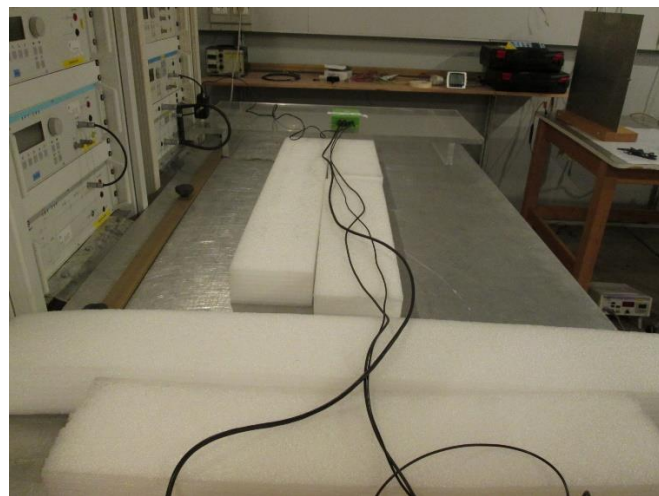
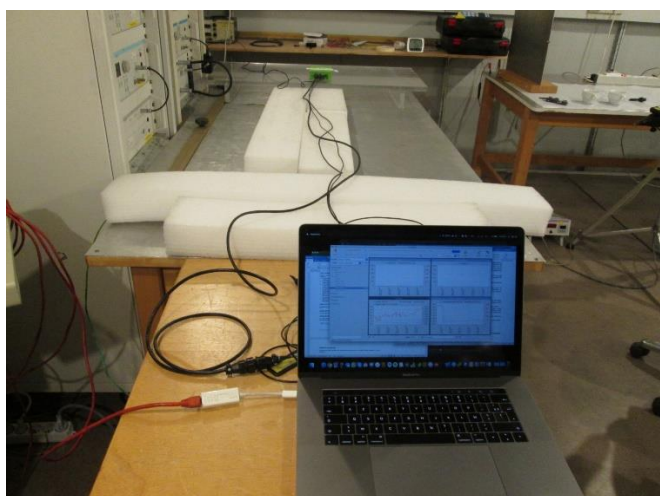
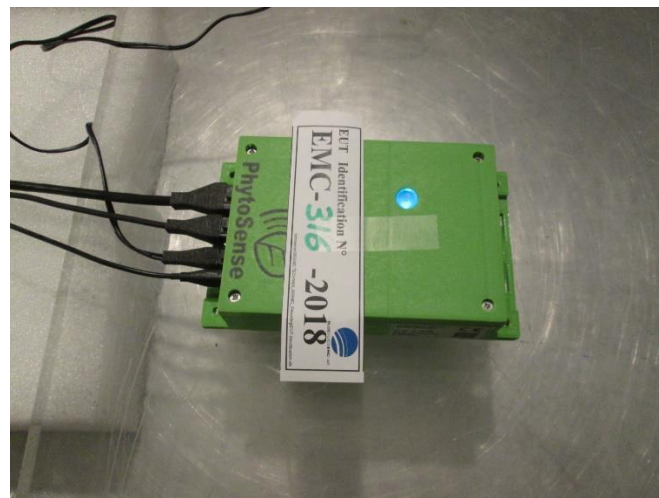
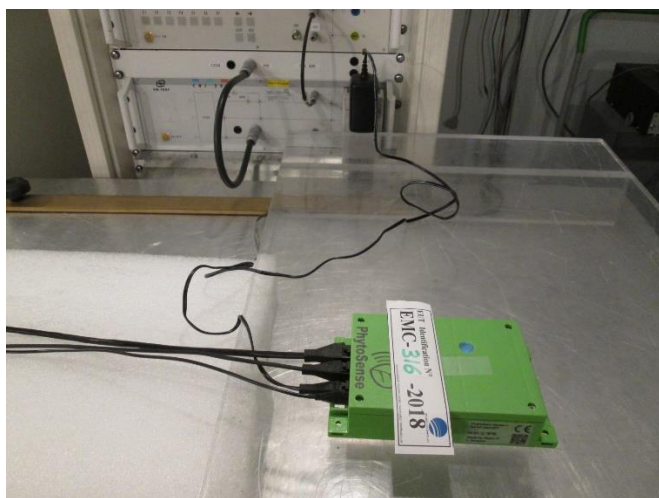
PICTURE and/or DRAWING OF TEST SETUP

Test system : PEMC10 Fast transients & bursts

Drawing of Test Setup :



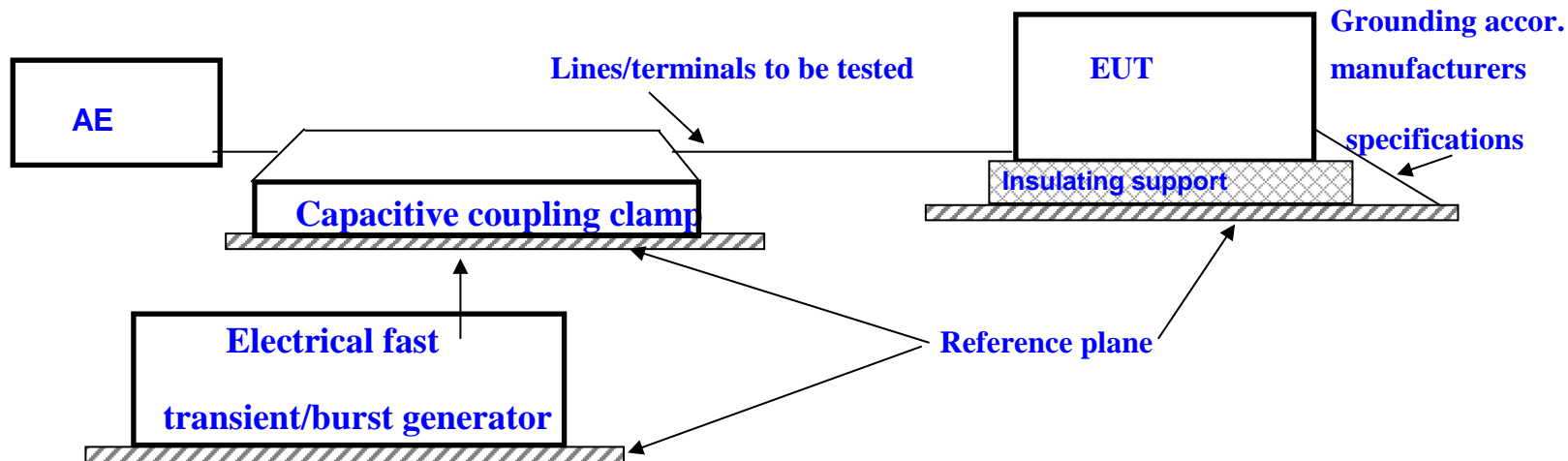
Picture(s) of Test Setup :



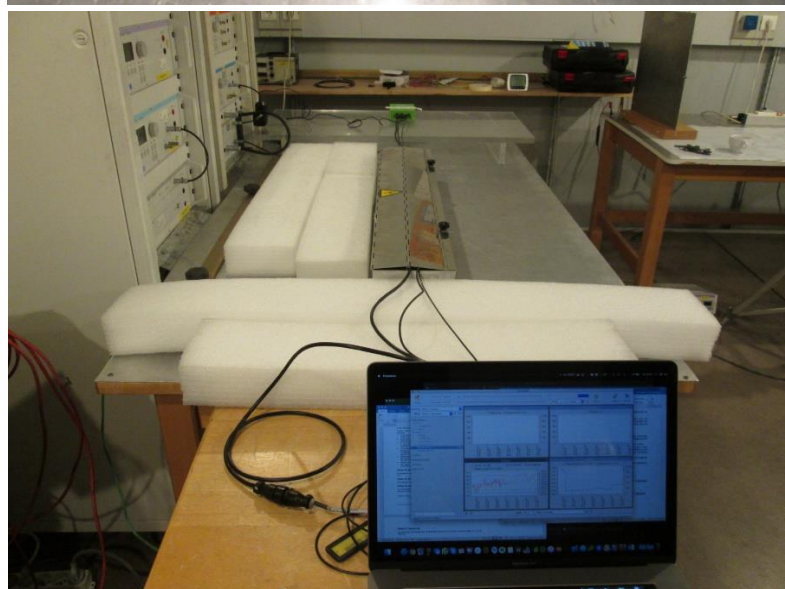
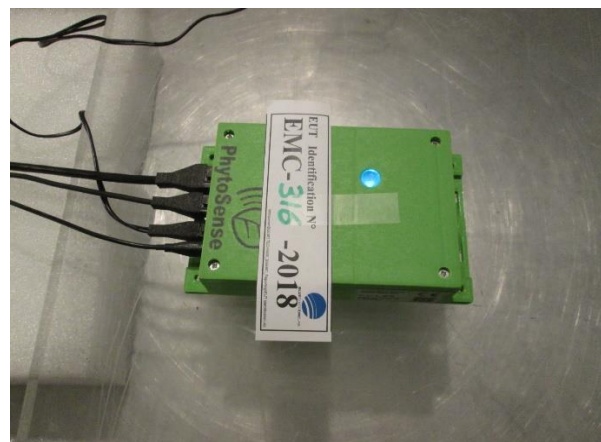
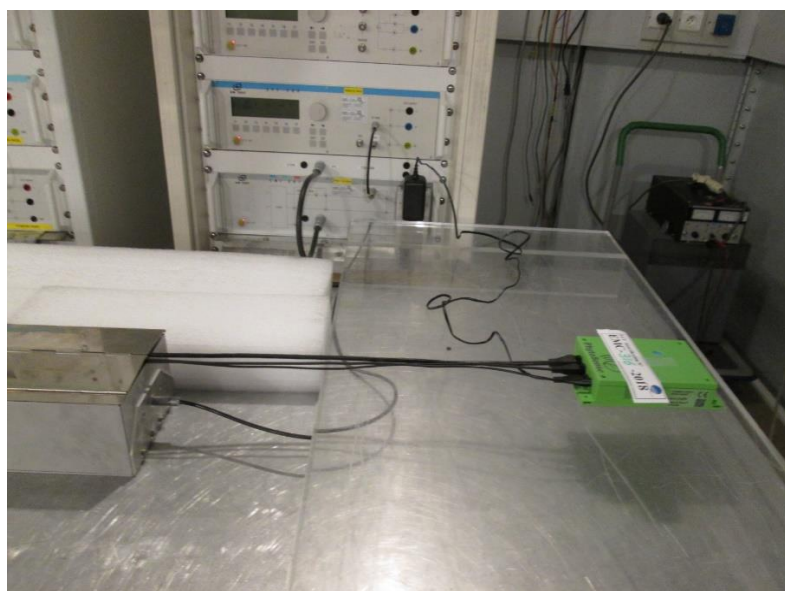
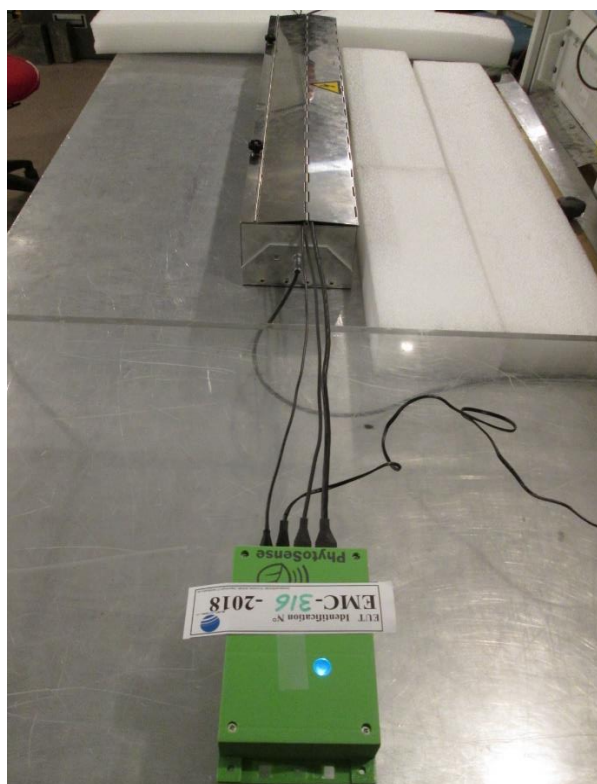
PICTURE and/or DRAWING OF TEST SETUP

Test system : PEMC10 Fast transients & bursts

Drawing of Test Setup :



Picture(s) of Test Setup :




USED EQUIPMENT DURING MEASUREMENT

Test system : **PEMC 10 Electrical fast transients / bursts**

ID n°	Description	Type	Serial n°	Calibration n°	Last Cal date
PEMC 10-001K	Burst Generator EFT500	EFT 500	0196-97	201802362.00	20/07/2018
PEMC 10-002K	Surge Generator VCS500 1,2/50µs 8/20µs	VCS500	0396-21	201802361.00 and .01	19/07/2018
PEMC 10-003K	Surge Generator TSS500 1,2/50µs 10/700µs	TSS500 M4	0696-02	201802604.00	20/07/2018
PEMC 10-004K	Single phase coupling network CNI501	CNI501	0695-03	201802364.00	20/07/2018
PEMC 10-005K	Coupling network CNV508	CNV508	1195-03	201702793.00	20/07/2017
PEMC 10-006K (A+B)	Calibration set for EFT/Burst generators	KW50+KW1000	0104-19	CE-010429-525727-KW1000	17/08/2009
PEMC 10-007	Capacitive coupling clamp	HFK	None	NA	NA
PEMC 10-008K	CNI (including cables)	CNI 508N2	P1545166834	CE-1545166834-536830-CNI508N2	26/11/2015

OVERVIEW TEST SEVERITY LEVELS AND RESULTS

Test System : PEMC 10 Electrical fast transient/burst immunity test

Repetition rate	Applied 5kHz values										Applied 100kHz values									
	0.5 kV		1 kV		2 kV		4 kV		Special		0.5 kV		1 kV		2 kV		4 kV		Special	
Test level used	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Polarity	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Applied to : AC 230V/50Hz																				
Power supply port , L	--	--	P(1)	P(1)	P(1)	P(1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	--	--	P(1)	P(1)	P(1)	P(1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
L+N	--	--	P(1)	P(1)	P(1)	P(1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N+PE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
L+PE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
L+N+PE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
I/O (Input/Output) signal , data & control ports:	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Details of ports :																				
2x sensor cable + antenna cable in capacitive clamp	P(1)	P(1)	P(1)	P(1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Observations :	The EUT has PASSED the test.																			
Validation :	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  Hardware </div> <div style="text-align: center;"> Legend </div> <div style="text-align: center;"> P = Test Pass </div> <div style="text-align: center;"> F = Test Fail </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> - = Test not performed/input not used </div> <div style="text-align: center;"> X = Used input / value </div> </div>																			
<p>(1) Class A: Normal performance within specification limits.</p>																				

Test Report

Company Name:	Blue Guide EMC Lab a dept.of Dekimo
Report No.:	EMC-316-2018
Date of test:	November-29-2018, 10:36
Tester:	Bart De Geeter
Customer:	Phyto-IT BVBA
E. U. T.:	PhytoStem
Standard used:	IEC 61000-4-(2012)
Application:	Power Supply AC
Ambient Temperature:	22 °C
Humidity:	46 %
Pressure:	

Test Result

Result:	Test passed ! Performance result Class A
---------	---

D. U. T

Name:	PhytoStem
Serial Number:	stem227
Operation Mode:	normal operation
Connection:	230V 50Hz
Description:	EUT connected and logging data

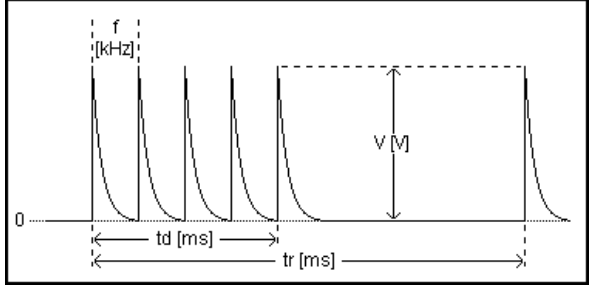
Accessories

CNI 508N2	N2
CNV508	1195-03

Test Procedure

Pulse Name:	IEC 61000-4-(2012) : Part 4 (5kHz)		
Test generator:	EFT500	Software No.:	000509
		Serial No.:	0196-97
Coupling network:	CNI501	Serial No.:	0695-03

Test Setup		
V:	1000	V
f:	5	kHz
td:	15	ms
tr:	300	ms
Mode:	Asynchronous	
Polarity:	Alternate	
Coupling:	L, N, L+N	
Test duration:	1	m
Time between Tests:	2	s



Test Result			
V:	±1000	V	f: 5 kHz
			td: 15 ms
			tr: 300 ms
Coupling:	L, N, L+N		
Elapsed Test time:	1	m	
Result:	Test passed ! Performance result Class A		

Test Report

Company Name:	Blue Guide EMC Lab a dept.of Dekimo
Report No.:	EMC-316-2018
Date of test:	November-29-2018, 10:50
Tester:	Bart De Geeter
Customer:	Phyto-IT BVBA
E. U. T.:	PhytoStem
Standard used:	IEC 61000-4-(2012)
Application:	Data Bus, SDB
Ambient Temperature:	22 °C
Humidity:	46 %
Pressure:	

Test Result

Result:	Test passed ! Performance result Class A
---------	---

D. U. T

Name:	PhytoStem
Serial Number:	stem227
Operation Mode:	normal operation
Connection:	230V 50Hz
Description:	EUT connected and logging data

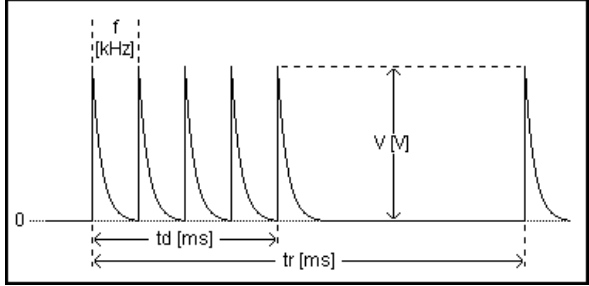
Accessories

CNI 508N2	N2
CNV508	1195-03

Test Procedure

Pulse Name:	IEC 61000-4-(2012) : Part 4 (5 kHz)		
Test generator:	EFT500	Software No.:	000509
		Serial No.:	0196-97

Test Setup		
V:	500	V
f:	5	kHz
td:	15	ms
tr:	300	ms
Mode:	Asynchronous	
Polarity:	Alternate	
Coupling:	50 Ohm	
Test duration:	1	m
Time between Tests:	2	s



Test Result					
V:	± 500	V	f:	5	kHz
			td:	15	ms
			tr:	300	ms
Coupling:	50 Ohm				
Elapsed Test time:	1 m				
Result:	Test passed ! Performance result Class A				

Test Report

Company Name:	Blue Guide EMC Lab a dept.of Dekimo
Report No.:	EMC-316-2018
Date of test:	November-29-2018, 12:46
Tester:	Bart De Geeter
Customer:	Phyto-IT BVBA
E. U. T.:	PhytoStem
Standard used:	IEC 61000-4-(2012)
Application:	Power Supply AC
Ambient Temperature:	22 °C
Humidity:	46 %
Pressure:	

Test Result

Result:	Test passed ! Performance result Class A
---------	---

D. U. T

Name:	PhytoStem
Serial Number:	stem227
Operation Mode:	normal operation
Connection:	230V 50Hz
Description:	EUT connected and logging data

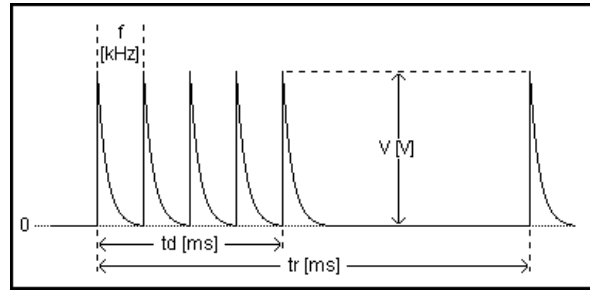
Accessories

CNI 508N2	N2
CNV508	1195-03

Test Procedure

Pulse Name:	IEC 61000-4-(2012) : Part 4 (5kHz)		
Test generator:	EFT500	Software No.:	000509
		Serial No.:	0196-97
Coupling network:	CNI501	Serial No.:	0695-03

Test Setup		
V:	2000	V
f:	5	kHz
td:	15	ms
tr:	300	ms
Angle:	0	°
Mode:	Synchronous	
Polarity:	Alternate	
Coupling:	L, N, L+N	
Test duration:	2	m
Time between Tests:	2	s



Test Result			
V:	±2000	V	f: 5 kHz
			td: 15 ms
			tr: 300 ms
Angle:	0	°	
Coupling:	L, N, L+N		
Elapsed Test time:	2	m	
Result:	Test passed ! Performance result Class A		

Test Report

Company Name:	Blue Guide EMC Lab a dept.of Dekimo
Report No.:	EMC-316-2018
Date of test:	November-29-2018, 12:51
Tester:	Bart De Geeter
Customer:	Phyto-IT BVBA
E. U. T.:	PhytoStem
Standard used:	IEC 61000-4-(2012)
Application:	Data Bus, SDB
Ambient Temperature:	22 °C
Humidity:	46 %
Pressure:	

Test Result

Result:	Test passed ! Performance result Class A
---------	---

D. U. T

Name:	PhytoStem
Serial Number:	stem227
Operation Mode:	normal operation
Connection:	230V 50Hz
Description:	EUT connected and logging data

Accessories

CNI 508N2	N2
CNV508	1195-03

Test Procedure

Pulse Name:	IEC 61000-4-(2012) : Part 4 (5 kHz)		
Test generator:	EFT500	Software No.:	000509
		Serial No.:	0196-97

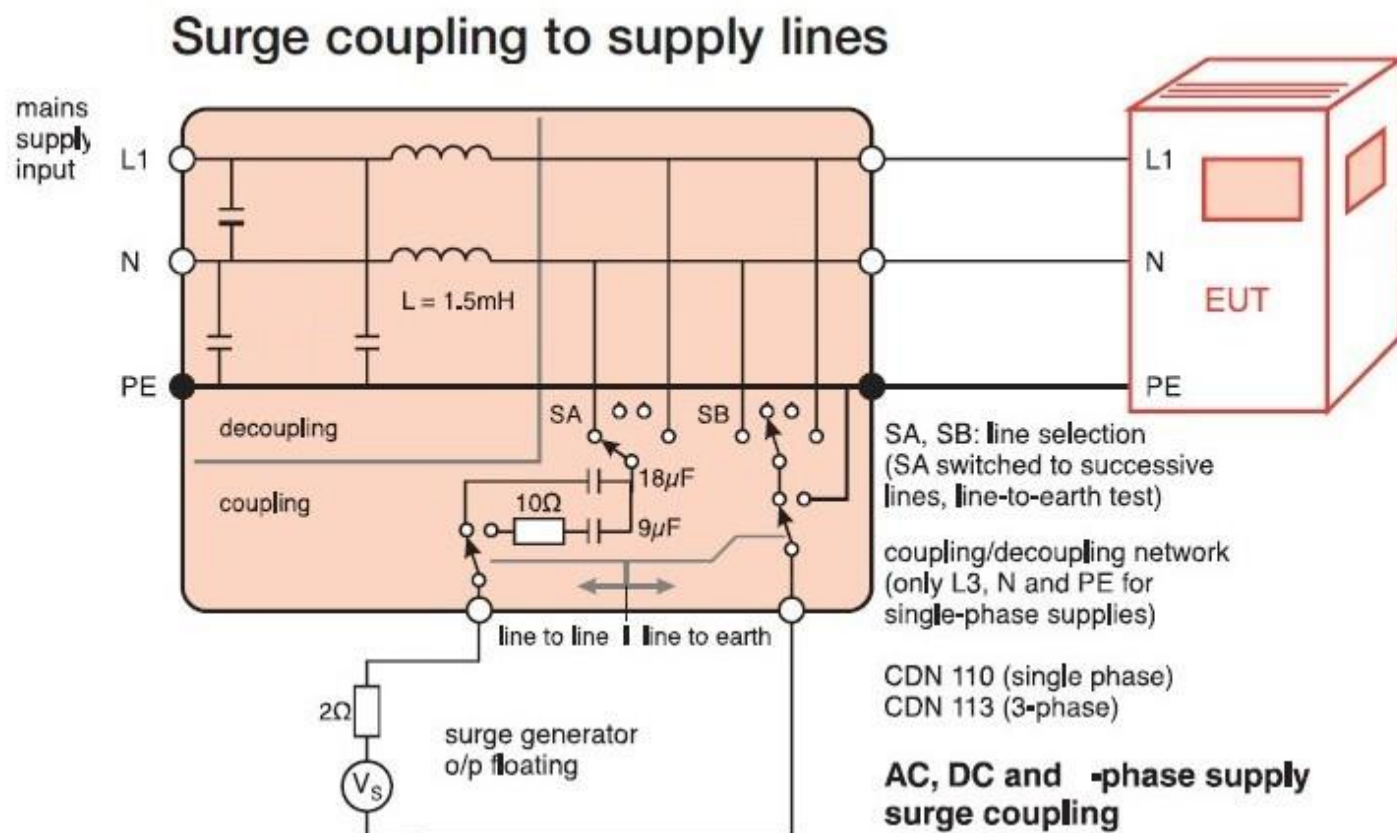
Test Setup		
V:	1000	V
f:	5	kHz
td:	15	ms
tr:	300	ms
Mode:	Asynchronous	
Polarity:	Alternate	
Coupling:	50 Ohm	
Test duration:	1	m
Time between Tests:	2	s

Test Result					
V:	±1000	V	f:	5	kHz
			td:	15	ms
			tr:	300	ms
Coupling:	50 Ohm				
Elapsed Test time:	1 m				
Result:	Test passed ! Performance result Class A				

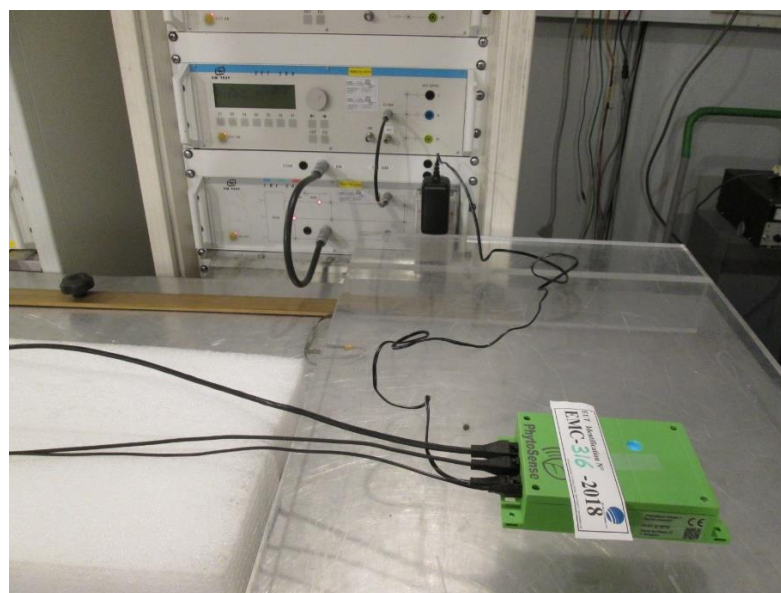
PICTURE and/or DRAWING OF TEST SETUP

Test system : PEMC10 Surge immunity test

Drawing of Test Setup :



Picture(s) of Test Setup :



USED EQUIPMENT DURING MEASUREMENTTest system : **PEMC 10 Electrical Surges**

ID n°	Description	Type	Serial N°	Calibration N°	Last Cal date
PEMC 10-001K	Burst Generator EFT500	EFT 500	0196-97	201802362.00	20/07/2018
PEMC 10-002K	Surge Generator VCS500 1,2/50µs 8/20µs	VCS500	0396-21	201802361.00 and .01	19/07/2018
PEMC 10-003K	Surge Generator TSS500 1,2/50µs 10/700µs	TSS500 M4	0696-02	201802604.00	20/07/2018
PEMC 10-004K	Single phase coupling network CNI501	CNI501	0695-03	201802364.00	20/07/2018
PEMC 10-005K	Coupling network CNV508	CNV508	1195-03	201702793.00	20/07/2017
PEMC 10-006K (A+B)	Calibration set for EFT/Burst generators	KW50+KW1000	0104-19	CE-010429-525727-KW1000	17/08/2009
PEMC 10-007	Capacitive coupling clamp	HFK	None	NA	NA
PEMC 10-008K	CNI (including cables)	CNI 508N2	P1545166834	CE-1545166834-536830-CNI508N2	26/11/2015

FCD-0372/3

QP-0017

OVERVIEW TEST SEVERITY LEVELS AND RESULTS

Test System : PEMC 10 Surge immunity test

Test method used :		Polarity		Applied values										Remarks		
		Asynchrone				0.5 kV		1 kV		2kV		4 kV		Special		
		Angle	0°	90°	180°	+	-	+	-	+	-	+	-	+	-	
Coupling mode :	CDN															
Power supply AC	Line To Line	X	X	X	X	P(1)	P(1)	P(1)	P(1)	--	--					
	Line to Earth	--	--	--	--	--	--	--	--	--	--	--	--			
Power supply DC	Line To Line					--	--	--	--	--	--					
	Line to Earth					--	--	--	--	--	--					
Unbalanced operated circuits/lines long distance bus	Line To Line					+	-	+	-	+	-	+	-	+	-	
	Line to Earth															
						--	--	--	--	--	--	--	--			
						--	--	--	--	--	--	--	--			
						--	--	--	--	--	--	--	--			
Balanced operated circuits/lines	Line To Line					+	-	+	-	+	-	+	-	+	-	
	Line to Earth					--	--	--	--	--	--	--	--			
						--	--	--	--	--	--	--	--			
						--	--	--	--	--	--	--	--			
						--	--	--	--	--	--	--	--			
Short distance bus / data bus data line	Line To Line					+	-	+	-	+	-	+	-	+	-	
	Line to Earth															
Observations :	The EUT has PASSED the test.															
Validation :	<input checked="" type="checkbox"/> Hardware															
	Legend P = Test Pass F = Test Fail = Not applicable - = Test not performed X = Used input / value															
	(1) Class A: Normal performance within specification limits.															

Test Report

Company Name:	Blue Guide EMC Lab a dept.of Dekimo
Report No.:	EMC-316-2018
Date of test:	November-29-2018, 11:21
Tester:	Bart De Geeter
Customer:	Phyto-IT BVBA
E. U. T.:	PhytoStem
Standard used:	IEC 61000-4-(2006)
Application:	Power Supply AC
Ambient Temperature:	22 °C
Humidity:	46 %
Pressure:	

Test Result

Result:	Test passed ! Performance result Class A
---------	---

D. U. T

Name:	PhytoStem
Serial Number:	stem227
Operation Mode:	normal operation
Connection:	230V 50Hz
Description:	EUT connected and logging data

Accessories

CNI 508N2	N2
CNV508	1195-03

Test Procedure

Pulse Name:	IEC 61000-4-(2006) : Part 5		
Test generator:	VCS500	Software No.:	000216
		Serial No.:	0396-21
Pulse (Open circuit)	1.2/50 us	Pulse (Short circuit)	8/20 us
Coupling network:	CNI501	Serial No.:	0695-03

Test Setup		
tr	15	s
Angle (Start):	0	°
Angle (Stop):	270	°
Angle (Step):	90	°
Mode:	Synchronous	
Polarity:	Alternate	
Line to Line:	500 V -> 1000 V	
	L-N	
Events:	5	

Test Results						
Pulse	V set	tr	Angle	Coupling	V peak	I peak
1	-500 V	15 s	0 °	L-N	-660 V	-10 A
2	-500 V	15 s	0 °	L-N	-660 V	-10 A
3	-500 V	15 s	0 °	L-N	-660 V	-10 A
4	-500 V	15 s	0 °	L-N	-660 V	-10 A
5	-500 V	15 s	0 °	L-N	-660 V	-10 A
6	-500 V	15 s	90 °	L-N	-660 V	+0 A
7	-500 V	15 s	90 °	L-N	-660 V	+0 A
8	-500 V	15 s	90 °	L-N	-660 V	+0 A
9	-500 V	15 s	90 °	L-N	-660 V	+0 A
10	-500 V	15 s	90 °	L-N	-660 V	+0 A
11	-500 V	15 s	180 °	L-N	-640 V	+0 A
12	-500 V	15 s	180 °	L-N	-620 V	+0 A
13	-500 V	15 s	180 °	L-N	-620 V	+0 A
14	-500 V	15 s	180 °	L-N	-620 V	+0 A
15	-500 V	15 s	180 °	L-N	-640 V	+0 A
16	-500 V	15 s	270 °	L-N	-620 V	-40 A
17	-500 V	15 s	270 °	L-N	-620 V	-40 A
18	-500 V	15 s	270 °	L-N	-620 V	-40 A
19	-500 V	15 s	270 °	L-N	-620 V	-40 A
20	-500 V	15 s	270 °	L-N	-620 V	-40 A
21	+500 V	15 s	0 °	L-N	+640 V	+20 A
22	+500 V	15 s	0 °	L-N	+660 V	+20 A
23	+500 V	15 s	0 °	L-N	+660 V	+20 A
24	+500 V	15 s	0 °	L-N	+660 V	+20 A
25	+500 V	15 s	0 °	L-N	+660 V	+20 A
26	+500 V	15 s	90 °	L-N	+640 V	+40 A
27	+500 V	15 s	90 °	L-N	+640 V	+40 A
28	+500 V	15 s	90 °	L-N	+640 V	+40 A
29	+500 V	15 s	90 °	L-N	+640 V	+40 A
30	+500 V	15 s	90 °	L-N	+640 V	+40 A
31	+500 V	15 s	180 °	L-N	+680 V	+10 A
32	+500 V	15 s	180 °	L-N	+680 V	+10 A
33	+500 V	15 s	180 °	L-N	+680 V	+0 A
34	+500 V	15 s	180 °	L-N	+680 V	+0 A
35	+500 V	15 s	180 °	L-N	+680 V	+10 A
36	+500 V	15 s	270 °	L-N	+680 V	+10 A
37	+500 V	15 s	270 °	L-N	+680 V	+20 A
38	+500 V	15 s	270 °	L-N	+680 V	+20 A
39	+500 V	15 s	270 °	L-N	+680 V	+10 A
40	+500 V	15 s	270 °	L-N	+680 V	+10 A
41	-1000 V	15 s	0 °	L-N	-1260 V	-60 A
42	-1000 V	15 s	0 °	L-N	-1260 V	-60 A
43	-1000 V	15 s	0 °	L-N	-1260 V	-60 A
44	-1000 V	15 s	0 °	L-N	-1260 V	-60 A

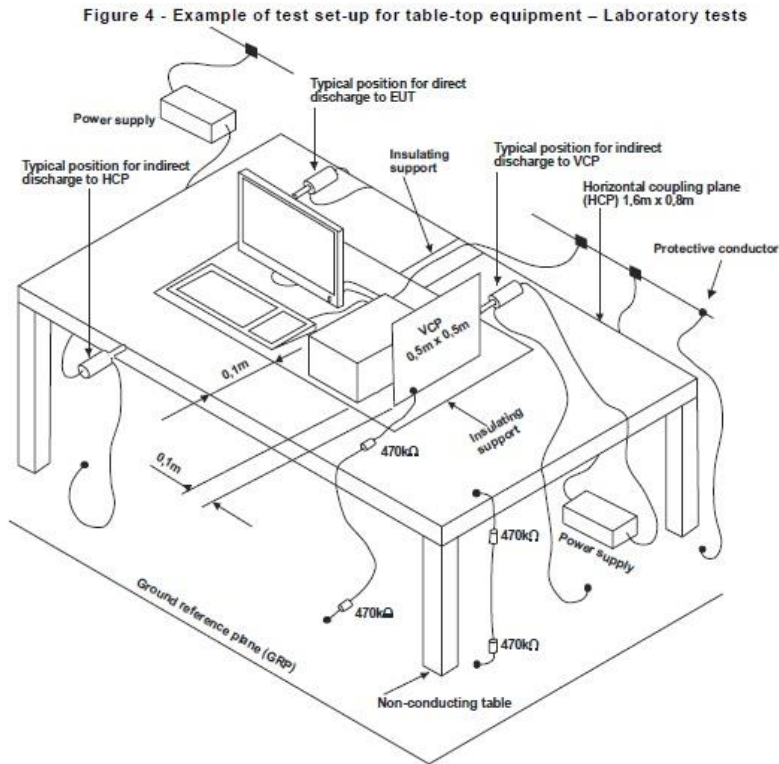
45	-1000 V	15 s	0 °	L-N	-1240 V	-60 A
46	-1000 V	15 s	90 °	L-N	-1280 V	-20 A
47	-1000 V	15 s	90 °	L-N	-1260 V	-20 A
48	-1000 V	15 s	90 °	L-N	-1260 V	-20 A
49	-1000 V	15 s	90 °	L-N	-1260 V	-20 A
50	-1000 V	15 s	90 °	L-N	-1260 V	-20 A
51	-1000 V	15 s	180 °	L-N	-1240 V	-60 A
52	-1000 V	15 s	180 °	L-N	-1240 V	-60 A
53	-1000 V	15 s	180 °	L-N	-1240 V	-50 A
54	-1000 V	15 s	180 °	L-N	-1240 V	-60 A
55	-1000 V	15 s	180 °	L-N	-1240 V	-60 A
56	-1000 V	15 s	270 °	L-N	-1220 V	-110 A
57	-1000 V	15 s	270 °	L-N	-1220 V	-100 A
58	-1000 V	15 s	270 °	L-N	-1220 V	-100 A
59	-1000 V	15 s	270 °	L-N	-1220 V	-100 A
60	-1000 V	15 s	270 °	L-N	-1220 V	-100 A
61	+1000 V	15 s	0 °	L-N	+1280 V	+50 A
62	+1000 V	15 s	0 °	L-N	+1280 V	+50 A
63	+1000 V	15 s	0 °	L-N	+1280 V	+50 A
64	+1000 V	15 s	0 °	L-N	+1280 V	+50 A
65	+1000 V	15 s	0 °	L-N	+1280 V	+50 A
66	+1000 V	15 s	90 °	L-N	+1260 V	+100 A
67	+1000 V	15 s	90 °	L-N	+1260 V	+100 A
68	+1000 V	15 s	90 °	L-N	+1260 V	+100 A
69	+1000 V	15 s	90 °	L-N	+1240 V	+100 A
70	+1000 V	15 s	90 °	L-N	+1260 V	+100 A
71	+1000 V	15 s	180 °	L-N	+1300 V	+50 A
72	+1000 V	15 s	180 °	L-N	+1320 V	+50 A
73	+1000 V	15 s	180 °	L-N	+1300 V	+50 A
74	+1000 V	15 s	180 °	L-N	+1320 V	+60 A
75	+1000 V	15 s	180 °	L-N	+1320 V	+50 A
76	+1000 V	15 s	270 °	L-N	+1320 V	+50 A
77	+1000 V	15 s	270 °	L-N	+1320 V	+50 A
78	+1000 V	15 s	270 °	L-N	+1320 V	+50 A
79	+1000 V	15 s	270 °	L-N	+1340 V	+50 A
80	+1000 V	15 s	270 °	L-N	+1320 V	+50 A

Test Result	
Result:	Test passed ! Performance result Class A

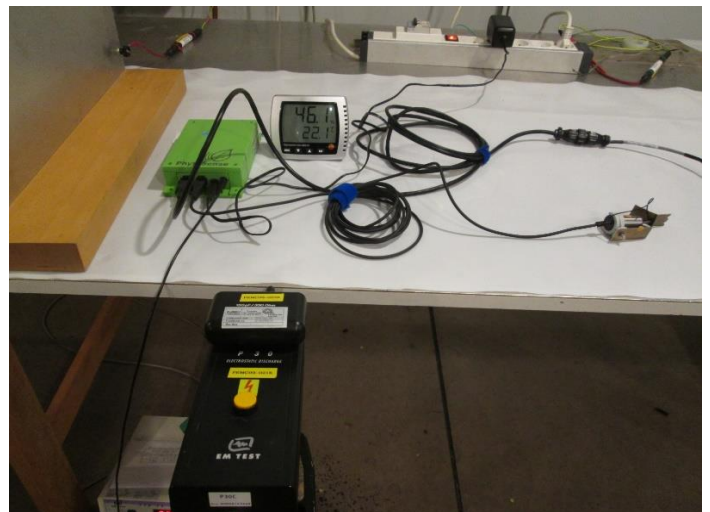
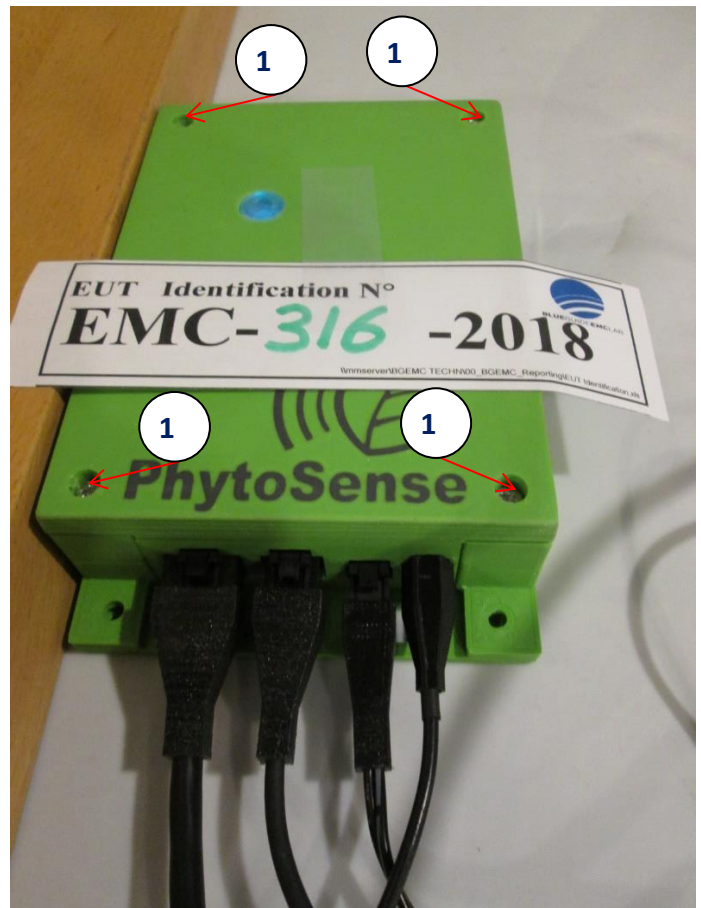
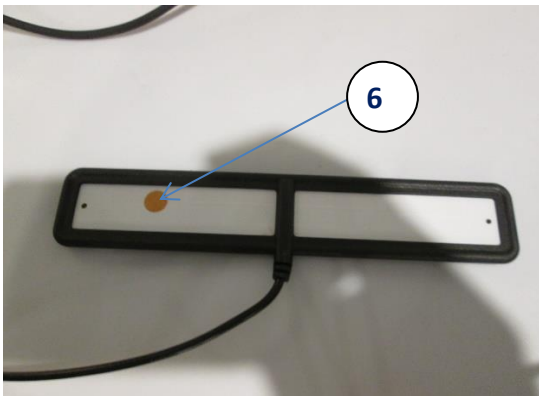
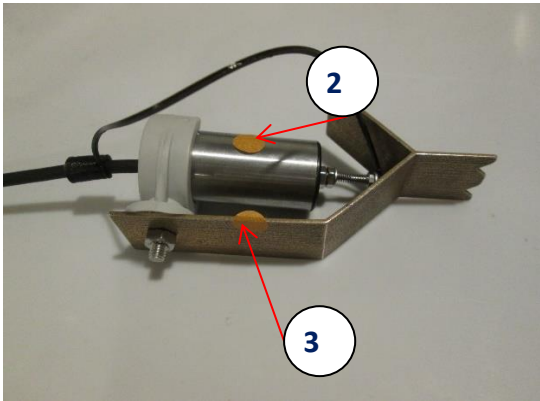
DRAWING AND/OR PICTURE OF TEST SETUP

Test system : PEMC09 Electrostatic discharge tests

DRAWING OF TEST SETUP :



PICTURE OF TEST SETUP :



USED EQUIPMENT DURING MEASUREMENTTest system : **PEMC09 Electrostatic discharges**

ID n°	Description	Type	Serial n°	Calibration n°
PEMC 09-013K	Digital storage oscilloscope, 2 ch.real time , with probes	TDS 680B	B030199	201702739.00
PEMC 09-014	Probe 1 MOhm for use TDS680B	P6245		201702739.01
PEMC 09-015	Probe 1 MOhm for use TDS 680B	P6246		201702739.01
PEMC 09-017K	ESD Resistor 940 kOhm		-----	BGEMC2017080102.01
PEMC 09-018K	ESD Resistor 940 kOhm		-----	BGEMC2017080103.01
PEMC 09-019K	ESD Resistor 940 kOhm		-----	BGEMC2017080104.01
PEMC 09-020K	ESD Generator	ESD30 C	V0809103468	201802363.00 + .01
PEMC 09-021K	ESD Discharge unit (Gun)	P30C	V0809103469	201802363.00 + .01
PEMC 09-022K	ESD Discharge network 150pF/330 ohm	AC30	-----	201802363.00
PEMC 09-023K	ESD Resistor 2x 470 kOhm	EAS 30	-----	BGEMC2017080105.01
PEMC 09-025K	BNC-BNC Cable	BNC-BNC Cable	-----	NA
PEMC 09-026	Cable from ATT to scoop	Sucoflex	-----	-

QP-0017

OVERVIEW TEST SEVERITY LEVELS AND RESULTS

Test System : PEMC 09 Electrostatic discharge

According standard : IEC 61000-4-2

<u>Test method used:</u>		Contact discharge																			
<u>Indirect contact discharge applied to:</u>		Polarisation		2kV		4kV		6kV		8kV		15kV		Remarks							
		+	-	+	-	+	-	+	-	+	-	+	-								
Horizontal coupling plane	Number of discharges	---	---	10	10	---	---	---	---	---	---	---	---								
	Result	---	---	P(1)	P(1)	---	---	---	---	---	---	---	---								
Vertical coupling plane	Number of discharges	---	---	10	10	---	---	---	---	---	---	---	---								
	Result	---	---	P(1)	P(1)	---	---	---	---	---	---	---	---								
<u>Direct contact discharge applied to:</u>		Number of discharges	---	---	10	10	---	---	---	---	---	---	---								
TP1: 4 metallic screws in top cover		Polarisation	+	-	+	-	+	-	+	-	+	-	+	-							
TP2: diameter variation sensor (body)		Result	---	---	P(1)	P(1)	---	---	---	---	---	---	---	---							
TP3: diameter variation sensor holder		Result	---	---	P(1)	P(1)	---	---	---	---	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
<u>Test method used:</u>		Air discharge																			
		Polarisation	+	-	+	-	+	-	+	-	+	-	+	-							
		Number of discharges	---	---	---	---	---	---	10	10	---	---	---	---							
<u>Air discharge applied to:</u>		Result	---	---	---	---	---	---	P(1)	P(1)	---	---	---	---							
TP4: seams around enclosure		Result	---	---	---	---	---	---	P(1)	P(1)	---	---	---	---							
TP5: sensor connector area		Result	---	---	---	---	---	---	P(1)	P(1)	---	---	---	---							
TP6: antenna		Result	---	---	---	---	---	---	P(1)	P(1)	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
		Result	---	---	---	---	---	---	---	---	---	---	---	---							
<u>Remarks</u>		No issues seen. The EUT has PASSED the test.																			
Validation	<input checked="" type="checkbox"/>	Hardware		Legend		P	= Test Pass		F	= Test Fail		---	= Test not performed/input not used		X	= Used Input / value		█	= Not applicable		
(1) Performance criteria A result																					

TEST REPORT

E.U.T. : **PhytoStem**
Manufacturer : **Phyto-IT BVBA**
File number : **EMC-316-2018**
Operating Condition : **Operational**
Test Site : **BGEMC**
Date Test : **29/11/2018** Temp. °C: **22,1°C** RH. %: **46,1%** hPa : **1009 hPa**
Operator : **Bart De Geeter**
Test Specification : **EN 61000-4-2**
Comment : **EUT tested fully operational, connected with mobile link**

Test Pulse/Tip : **150pF/330 Ohm**
Voltage (kV) : **4kV**
Repetition (s) : **1 sec**
Mode : **POSITIVE & NEGATIVE**
Test position /coupling plane : **CONTACT**
Events : **10 each point**
Test performed on E.U.T. point : **test points 1 ~ 3**
Test result : **Performance result Class A all points**

Test Pulse/Tip : **150pF/330 Ohm**
Voltage (kV) : **8kV**
Repetition (s) : **1 sec**
Mode : **POSITIVE & NEGATIVE**
Test position /coupling plane : **AIR**
Events : **10 each point**
Test performed on E.U.T. point : **test points 4 ~ 6**
Test result : **Performance result Class A all points**

Test Pulse/Tip : **150pF/330 Ohm**
Voltage (kV) : **4kV**
Repetition (s) : **1 sec**
Mode : **POSITIVE & NEGATIVE**
Test position /coupling plane : **HORIZONTAL / VERTICAL**
Events : **10 each plane each polarity**
Test performed on E.U.T. point : **Horizontal & Vertical plane (4 sides of the EUT)**
Test result : **Performance result Class A all planes**

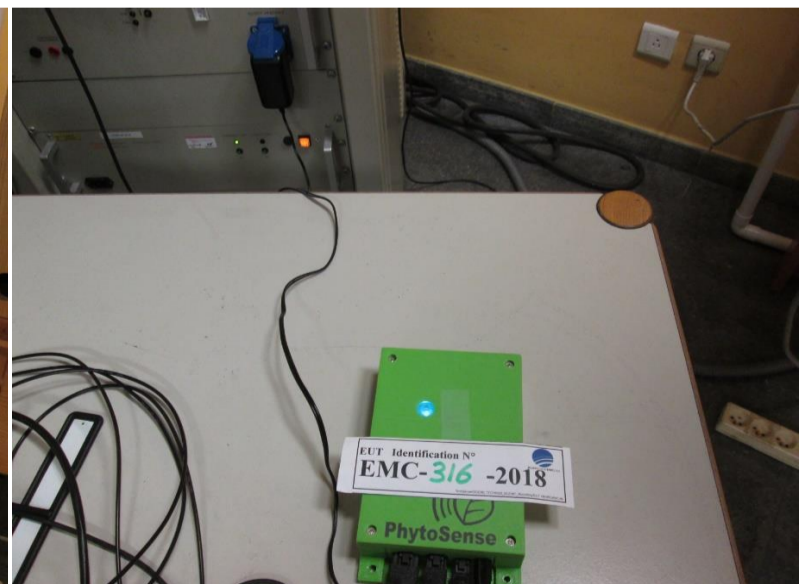
Test Pulse/Tip :
Voltage (kV) :
Repetition (s) :
Mode : **POSITIVE & NEGATIVE**
Test position /coupling plane : **INSIDE/OUTSIDE/COMPONENT--AIR/CONTACT--HORIZONTAL / VERTICAL**
Events :
Test performed on E.U.T. point :
Test result :

Test Pulse/Tip :
Voltage (kV) :
Repetition (s) :
Mode : **POSITIVE & NEGATIVE**
Test position /coupling plane : **INSIDE/OUTSIDE/COMPONENT--AIR/CONTACT--HORIZONTAL / VERTICAL**
Events :
Test performed on E.U.T. point :
Test result :

PICTURE OF TEST SETUP

Test system : **PEMC07**
Voltage dips & short interruptions

Picture of Test Setup :



FCD-0371/3

QP-0017

USED EQUIPMENT DURING MEASUREMENT

Test system : **PEMC 07**
Voltage Dips & short interruptions

ID n°	Description	Type	Serial n°	Calibration n°
PEMC 07-004K	Emission Analyzer	Emission Analyzer	M50518	A6234d
PEMC 07-005K	Magnetic Field display + Probe	Magnetic Field display + Probe	A175904/00696 - A175911/S0696	A6234h
PEMC 07-008	Power Supply	Power Supply	-----	-
PEMC 07-009	HelmHoltz Coil	HelmHoltz Coil	-----	-
PEMC 07-010	Software Spitzenberger + Spies	Software Spitzenberger + Spies	696M3	-
PEMC 07-011K	Reference Testload	Reference Testload	A1867 11/0/1196	A6234i
PEMC 07-012K	Testload	Testload		BGEMC2018102901.00

OVERVIEW TEST RESULTS

Test System : **PEMC 07 Voltage dips & short interruptions ; Voltage variations**

Voltage dips & short interruptions

Duration (in period(s))

Voltage test level	Voltage Dip	0.5	1	10	25	100	250
0 Ut	100% Ut	P(1)	P(1)	--	--	--	P(2)
40% Ut	60% Ut	--	--	P(1)	--	--	--
70% Ut	30% Ut	--	--	--	P(1)	--	--

Voltage variations

-----	---
-----	---

Remarks / Observations

The EUT has PASSED the test.

Legend

- P = Test Pass
- F = Test Fail
- ✓ = Validation
- = Test not performed/input not used
- X = Used Input

(1) Class A : During testing, normal performance within specification limits.

(2) Class B : During testing temporary degradation, or loss of function or performance which is self recovering

Spitzenberger & Spies
Viechtach

Name:	Bart De Geeter	Serial no:	stem227
Department:	Blue Guide EMC	Operating modes:	normal operation
Company:	DEKIMO	Comment1:	230V 50Hz
Test report no:	EMC-316-2018	Comment2:	
Device:	PhytoStem	Comment3:	Witness evaluation
Specimen:		Comment4:	
Manufacturer:	Phyto-IT	Date:	29.11.2018
Type:		Test date:	29.11.2018

Test conditions: EN 61000-4-11 voltage dips, short interruptions and variations test

Voltage / frequency:	230.0 V / 50.0 Hz
Test phase:	Single phase / L1-N
Executed test:	IMA EN 61000-4-11:2004 (8)
Test description:	according: EN 61326-1:2013 (Basic Environment)
Disturbances per step:	3 (per phase angle) / 10.5 sec delay between

Step	Disturbance	Test level	Duration	Phase angle(s) (Ref. L1)
1	Voltage dip / short interruption	0 %	0.5 periods	0° L1
2	Voltage dip / short interruption	0 %	1 period	0° L1
3	Voltage dip / short interruption	70 %	25 periods	0° L1
4	Voltage dip / short interruption	0 %	250 periods	0° L1

Test results:

- Normal performance within limits specified by manufacturer, requestor or purchaser
- Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention
- Temporary loss of function or degradation of performance, the correction of which requires operator intervention
- Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data

Comments:

Performance result Class A for the voltage dips, Class B for the short voltage interruptions. The EUT reboots and automatically resumes its logging.

Spitzenberger & Spies
Viechtach

Name:	Bart De Geeter	Serial no:	stem227
Department:	Blue Guide EMC	Operating modes:	normal operation
Company:	DEKIMO	Comment1:	230V 50Hz
Test report no:	EMC-316-2018	Comment2:	
Device:	PhytoStem	Comment3:	Witness evaluation
Specimen:		Comment4:	
Manufacturer:	Phyto-IT	Date:	29.11.2018
Type:		Test date:	29.11.2018

Test conditions: EN 61000-4-11 voltage dips, short interruptions and variations test

Voltage / frequency:	230.0 V / 50.0 Hz
Test phase:	Single phase / L1-N
Executed test:	IMA EN 61000-4-11:2004 (9)
Test description:	according: EN 61326-1:2013 (Industrial Environment)
Disturbances per step:	3 (per phase angle) / 10.5 sec delay between

Step	Disturbance	Test level	Duration	Phase angle(s) (Ref. L1)
1	Voltage dip / short interruption	0 %	0.5 periods	0° L1
2	Voltage dip / short interruption	40 %	10 periods	0° L1
3	Voltage dip / short interruption	70 %	25 periods	0° L1
4	Voltage dip / short interruption	0 %	250 periods	0° L1

Test results:

- Normal performance within limits specified by manufacturer, requestor or purchaser
- Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention
- Temporary loss of function or degradation of performance, the correction of which requires operator intervention
- Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data

Comments:

Performance result Class A for the voltage dips; Class B performance for the short voltage interruptions.