

RC-030-GTE-14-105110-5-A

"This report cancels and replaces the test report N° RC-030-GTE-14-105110-5-A Edition 0"

## E.M.C Test Report

**According to the standard:**  
FCC 47 CFR PART 15 : 2014 (§15.407)

**Equipment under test:**  
Wireless Conference Access Point  
Type CONFIDEA WCAP G3  
FCC ID: WM7CONFIDEAWCAPG3

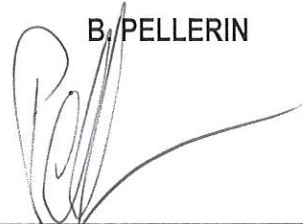
**Company:**  
TELEVIC

FCC accredited: FR0004

**DISTRIBUTION:** Mr DUMEZ

(Company: TELEVIC)

Number of pages: 54 with 4 annexes

Ed.	Date	Modified pages	Written by		Technical Verification and Quality Approval	
			Name	Visa	Name	Visa
1	04/03/15	1, 2, 3, 4, 5, 7, 12 to 25, 33	F. LHEUREUX FL		B. PELLERIN 	

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This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole production of the item tested.*



**TEST CERTIFICATION FOR:**

FCC Certification

**NAME OF THE EQUIPMENT UNDER TEST:** Wireless conference access point Type: CONFIDEA WCAP G3**Serial number:** 1440077150000C1**Reference / model (P/N):** 71.98.0033 V 1.01**Software version:** ap-1.09.0005.rf-validation.tuf**NAME OF THE MANUFACTURER:** TELEVIC**ADDRESS OF THE APPLICANT:****Company:** TELEVIC**Address:** Leo Bekaertlaan 1  
8870 Izegem  
BELGIUM**Person in charge:** Mr DUMEZ**DATES OF TESTS:** From 03/10/2014 to 20/10/2014 and 25/02/2015**TESTS LOCATION:** Open area test site in Aunainville (28) - FRANCE**TESTS OPERATOR:** F. LHEUREUX

## TABLE OF CONTENTS

1. INTRODUCTION	4
2. REFERENCES DOCUMENTS	4
3. PRODUCT DESCRIPTION	5
4. TESTS AND CONCLUSION	6
5. CONDUCTED EMISSION	9
6. 6 dB BANDWIDTH, 26 dB BANDWIDTH AND 99 % OCCUPIED BANDWIDTH	12
7. MAXIMUM OUTPUT POWER	17
8. PEAK POWER SPECTRAL DENSITY	20
9. PEAK EXCURSION RATIO	23
10. ADDITIONAL PROVISIONS TO THE GENERAL RADIATED EMISSIONS LIMITATION	26
11. BAND EDGE	28
12. UNINTENTIONAL RADIATED EMISSIONS AND TRANSMITTER UNWANTED EMISSION IN THE BAND 9 KHz – 40 GHz	30

**ANNEX 1: ANTENNA FACTORS, INSERTION LOSSES AND AMPLIFIER VALUES**

**ANNEX 2: EXTERNAL PHOTOGRAPHIES**

**ANNEX 3: TEST SETUP PHOTOGRAPHIES**

**ANNEX 4: CALIBRATION DATES**

## **1. INTRODUCTION**

This document presents the results of Electromagnetic Compatibility tests performed on the equipment «**Wireless conference access point type: CONFIDEA WCPA G3**» according to references documents listed below.

## **2. REFERENCES DOCUMENTS**

### **FCC 47 CFR Part 15: 2014**

Code of Federal Regulations  
Title 47- Telecommunication  
Chapter 1- Federal Communication Commission  
Part 15- Radio frequency devices

### **ANSI C63.4: 2003**

Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz.

### **789033 D02 General UNII Test Procedures new rules v01**

Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E

### 3. PRODUCT DESCRIPTION

Class:	B (residential environment)
Antenna type and gain:	External antenna (x3): Not communicated
Modulation:	OFDM @ 54 Mbits/sec
Power source:	120 Vac / 60 Hz
Software power setting:	The WCAP has a built-in web server that allows you to set/monitor certain parameters characterizing the wireless conference system. (The power is not adjustable, only the channels)
Operating frequency range:	From 5150 MHz to 5250 MHz From 5725 MHz to 5825 MHz
Operating mode:	Master device without radar detection

Table for carrier frequency: 802.11 a (20 MHz)

Channel No.	36	40	44	48	149	153	157	161
CF (MHz)	5180	5200	5220	5240	5745	5765	5785	5805
Tested	X		X	X	X		X	X

<sup>1</sup> : The E.U.T. does not use the following frequencies bands:  
5250 MHz to 5350 MHz  
5470 MHz to 5725 MHz

Modification of the equipment during the tests: No

**4. TESTS AND CONCLUSION**

The following tables summarize test results of the EUT.

Subpart B of the standard FCC part 15 – Unintentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.107	Measurement of conducted emission on AC mains ports	X				
15.109	Radiated emission limits			X		①

①: The equipment under test always transmits continuously

## Subpart C of the standard FCC part 15 – Intentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.205	Restricted bands of operation	X				
15.207	Measurement of conducted emission on AC mains ports	X				
15.209	Radiated emission limits; general requirements	X				
15.215	Additional provisions to the general radiated emission limitations					
	(a) Alternative to general radiated emission limits	X				
	(b) Unwanted emissions outside of § 15.247 frequency bands	X				
	(c) 20 dB bandwidth and band-edge compliance			X		
15.407	Intentional radiated emissions					
	a) Power limits					
	a) (1) in the bands 5150–5250 MHz					
	- maximum conducted output power	X				
	- 26 dB bandwidth	X				
	- peak power spectral density	X				
	a) (2) in the bands 5250–5350 MHz and 5470–5725 MHz					
	- maximum conducted output power			X		
	- 26 dB bandwidth			X		
	- peak power spectral density			X		
	a) (3) in the bands 5725–5825 MHz					
	- maximum conducted output power	X				
	- 6 dB bandwidth	X				
	- peak power spectral density	X				
	a) (6) peak excursion ratio	X				
	b) Undesirable emission limits					
	b) (1) outside of the bands 5150–5250 MHz	X				
	b) (2) outside of the bands 5250–5350 MHz			X		
	b) (3) outside of the bands 5470–5725 MHz			X		
	b) (4) outside of the bands 5725–5825 MHz	X				
	c) Operation in the absence of information to transmit	X				
	g) Frequency Stability	X				
	h) Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)			X		
	h) (1) TPC operating in the bands 5250–5350 MHz and 5470–5725MHz			X		output power < 500mW
	h) (2) DFS operating in the bands 5250–5350 MHz and 5470–5725MHz			X		

N.A.: Not Applicable

N.P.: Not Performed

**Conclusion:**

The tested sample " **Wireless conference access point type: CONFIDEA WCAP G3** " submitted to the tests complies with the requirements of the standard:

- FCC 47 CFR PART 15: 2014

According to the limits specified in this report.



## 5. CONDUCTED EMISSION

**Standard:** FCC 47 CFR Part 15 : 2014

**Section:** 15.207

**Test configuration:**

Tested cable	Measure with	E.U.T. height
Power supply 120 Vac	L.I.S.N.	80 cm

Frequency band	Tested cable	Resolution bandwidth	Video bandwidth	Detection mode
150 kHz - 1 MHz	Power supply 120 Vac	10 kHz	30 kHz	Peak
1 MHz - 30 MHz	Power supply 120 Vac	10 kHz	30 kHz	Peak
150 kHz - 30 MHz	Power supply 120 Vac	9 kHz	30 kHz	Average

**Test method deviation:** No

**Test equipment list:**

CATEGORY	BRAND	TYPE	N° EMITECH
AC Power supply	Schaffner	NSG 1007-5-400	4637
Cable	-	N-4m	2809
Cable	-	N-2m	2811
Harmonic/flicker Analyzer	Schaffner	CCN 1000-3-75	4348
Limiter	Hewlett Packard	HP11947A	1094
LISN	Rohde & Schwarz	ESH2-Z5	0326
Receiver	Rohde & Schwarz	R&S FSU8	9129
Tests enclosure	Emitech	JD	1804
Wattmeter	Rohde & Schwarz	R&S ESH3	0181

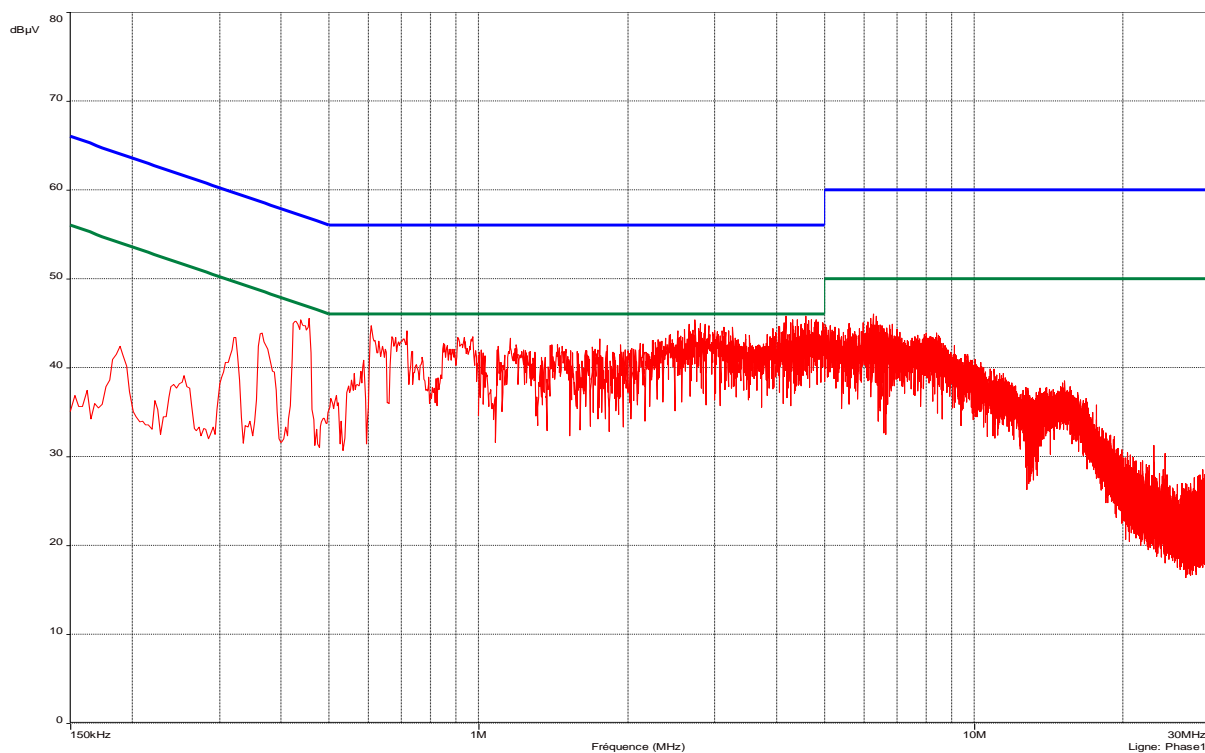
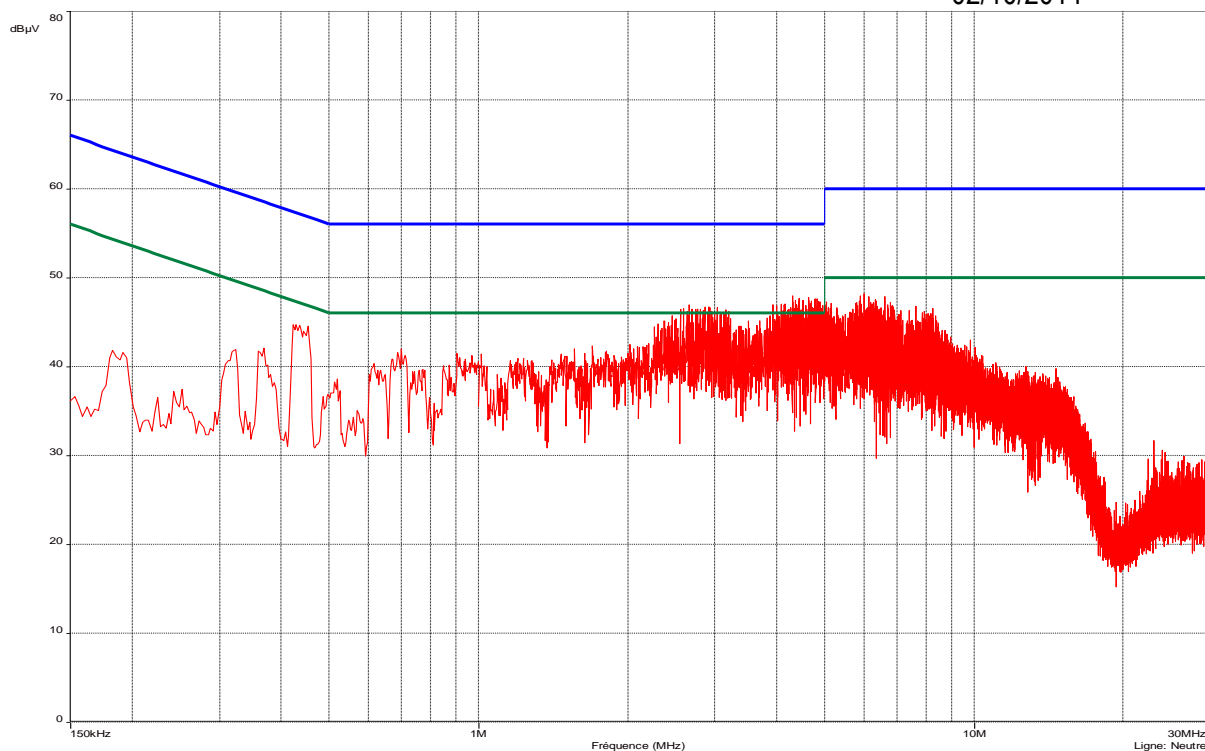
**Results:**

See curves hereafter. Limits on the curves are average limit (green) and quasi-peak limit (blue).

Curves 1 and 2

Wireless conference access point type: CONFIDEA WCAP G3  
Conducted voltage emission (measurement): Power supply 120 Vac in peak detection.

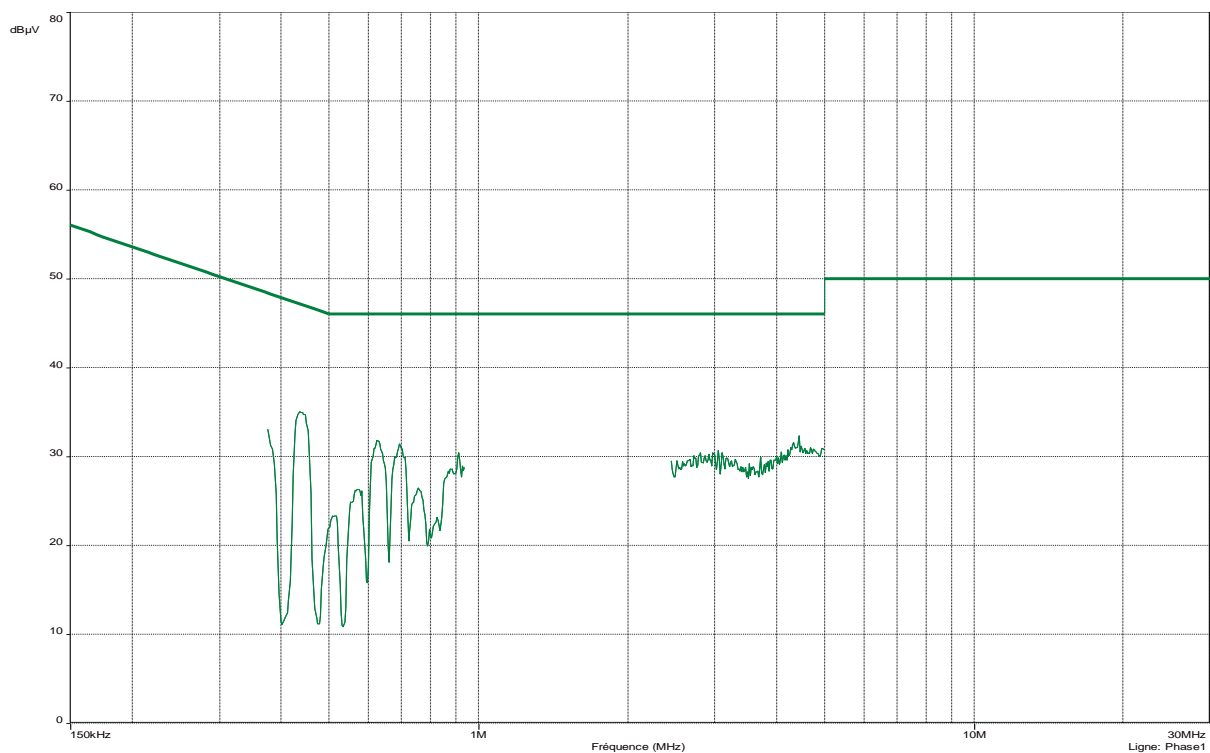
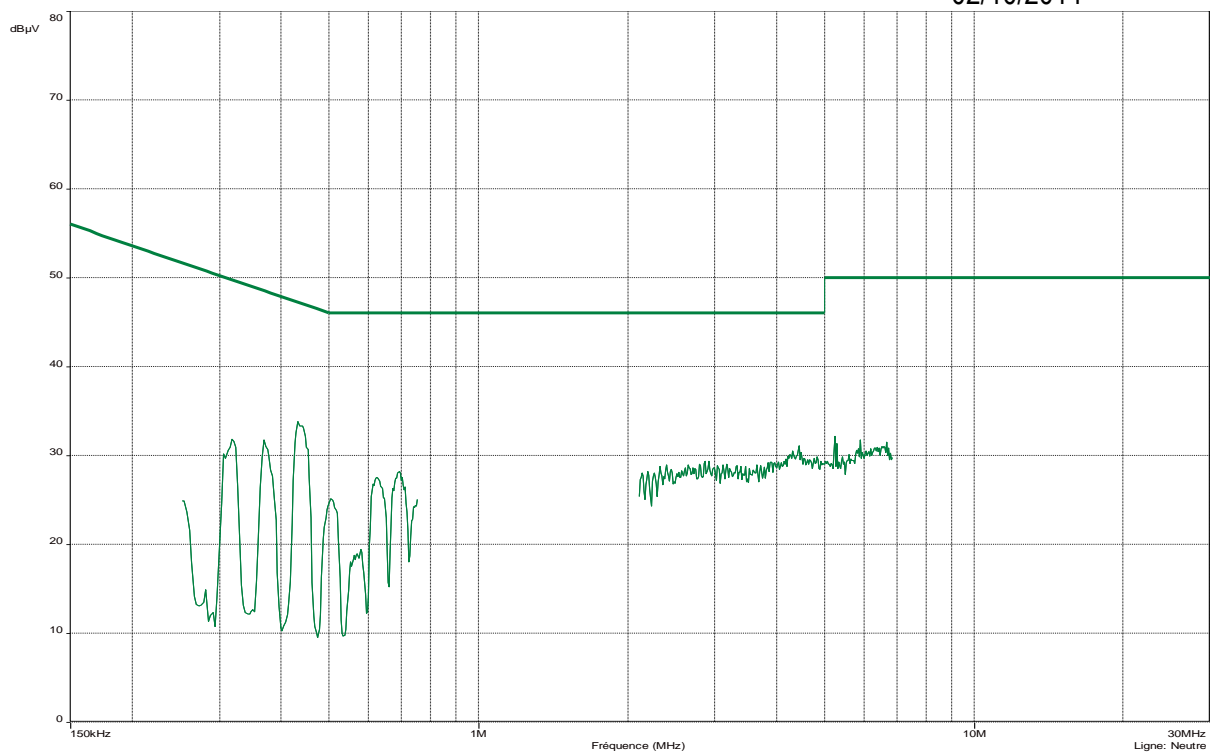
02/10/2014



**Curves 3 and 4**

Wireless conference access point type: CONFIDEA WCAP G3  
Conducted voltage emission (measurement): Power supply 120 Vac in average detection.

02/10/2014



## 6. 6 dB BANDWIDTH, 26 dB BANDWIDTH AND 99 % OCCUPIED BANDWIDTH

**Standard:** FCC 47 CFR PART 15 : 2014

**Sections:** 15.407 a) (1) and (3)

### **Test configuration:**

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

### **Test procedure:**

789033 D02 General UNII test Procedures new rules v01

**Distance of antenna:** 3 meters

### **Instrumentation test list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Emco	3115	3374
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Micro-Coax	N-13m	8063
Open area test site	Emitech	Aunainville	0187
Power supply AC	SECAS	CF1000 50/60	2102
Receiver	Rohde & Schwarz	FSU8	9129
Turntable	Maturo	MCU	7626

### **Equipment under test operating condition:**

EUT is in continuous transmission mode.

### **Measure conditions:**

Ambient temperature (°C): 15

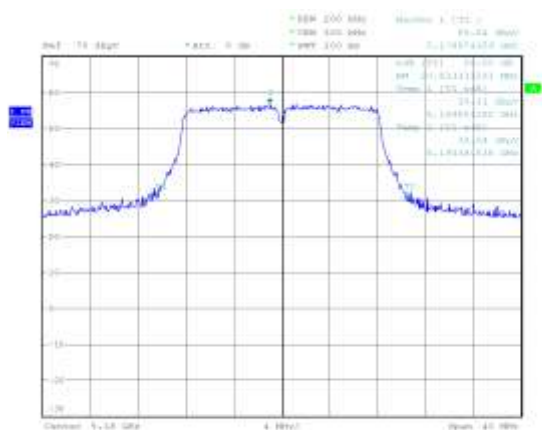
Relative humidity (%): 69

Power source: 120 Vac / 60 Hz

## Results:

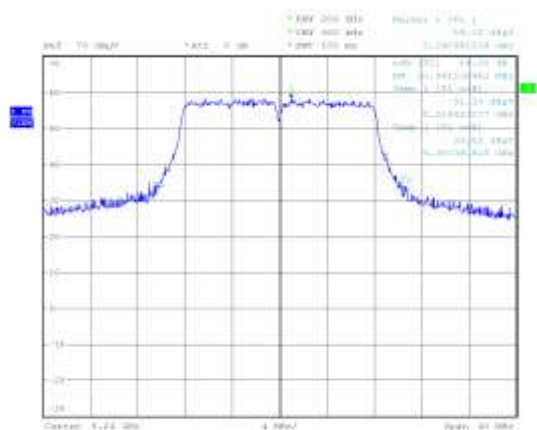
26 dB Bandwidth

Channel	Mode	Results	Comments
36 (5180 MHz)	802.11a	20.83 MHz	See curve n°1
44 (5220 MHz)		20.71 MHz	See curve n°27
48 (5240 MHz)		20.96 MHz	See curve n°2



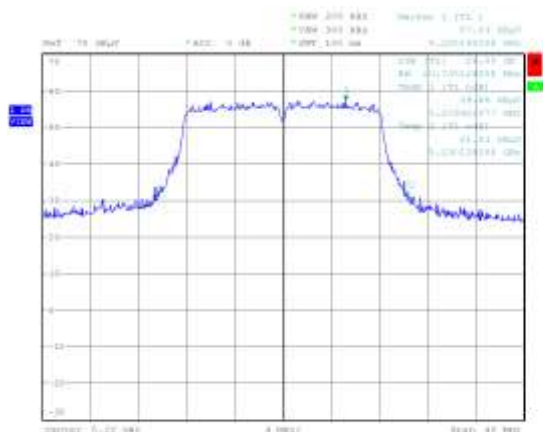
Display: 3.00GHz-2014 12151114

Curve 1



Display: 3.00GHz-2014 12151114

Curve 2

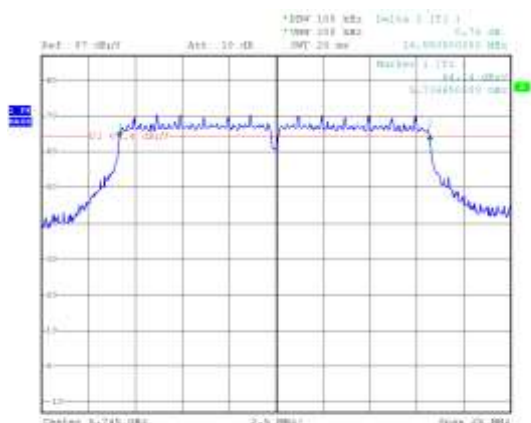


Display: 3.00GHz-2014 12151114

Curve 27

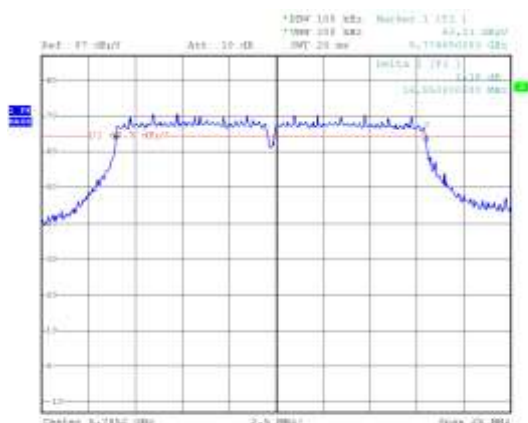
## 6 dB Bandwidth

Channel	Mode	Results	Comments
149 (5745 MHz)	802.11a	16.55 MHz	See curve n°3
157 (5785 MHz)		16.55 MHz	See curve n°28
161 (5805 MHz)		16.55 MHz	See curve n°4



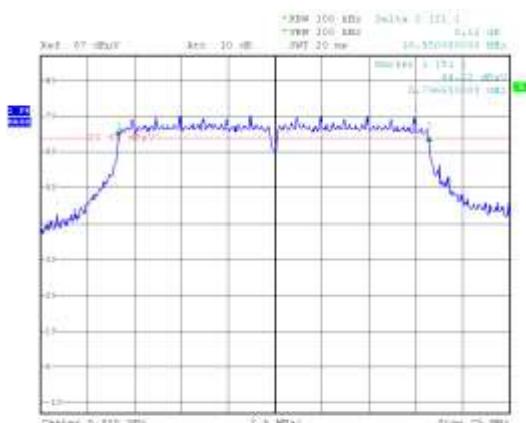
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Curve 3



Date: 9.JUL.2019 11:23:13

Curve 28

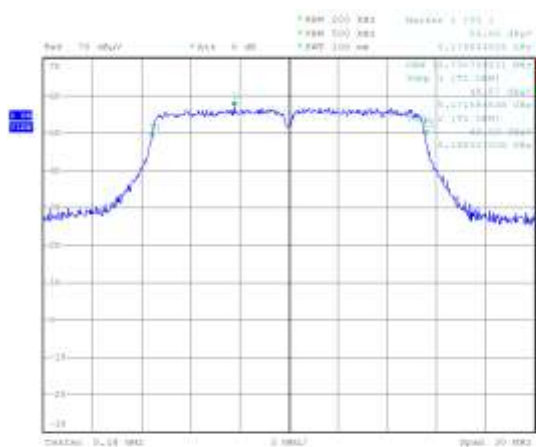


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Curve 4

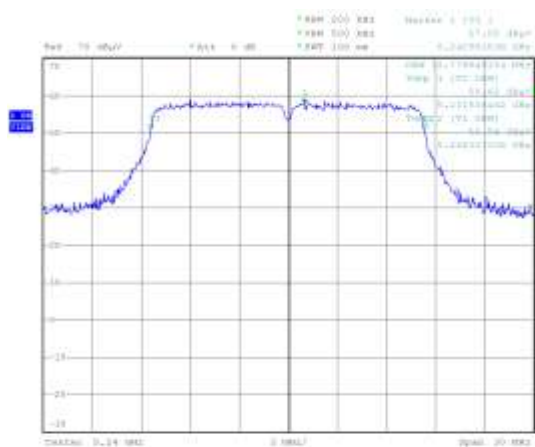
99 % Occupied bandwidth

Channel	Mode	Results	Comments
36 (5180 MHz)	802.11a	16.73 MHz	See curve n°5
44 (5220 MHz)		16.68 MHz	See curve n°29
48 (5240 MHz)		16.79 MHz	See curve n°6
149 (5745 MHz)	802.11a	17.05 MHz	See curve n°7
157 (5785 MHz)		16.77 MHz	See curve n°30
161 (5805 MHz)		16.76 MHz	See curve n°8



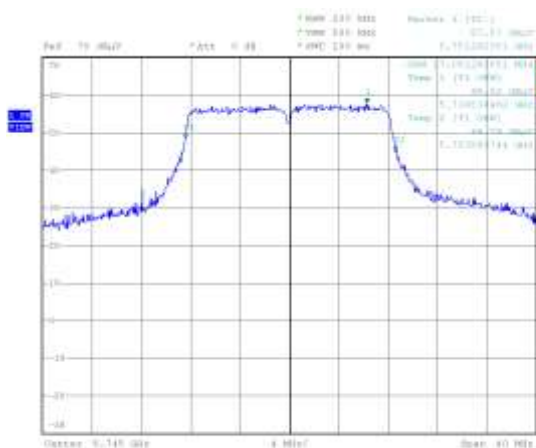
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Curve 5



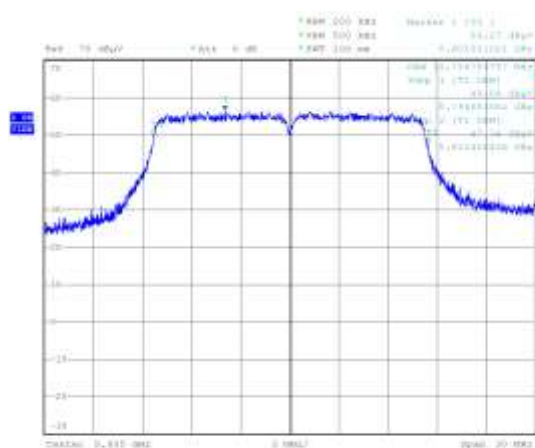
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Curve 6



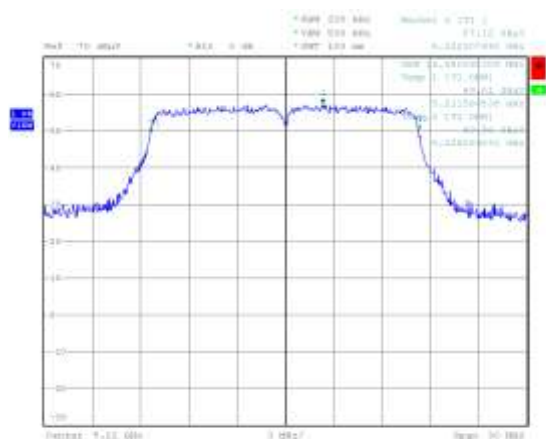
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Curve 7

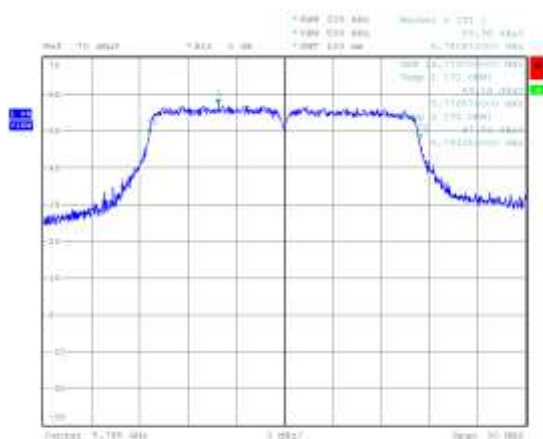


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Curve 8



Curve 29



Curve 30



**7. MAXIMUM OUTPUT POWER**

**Standard:** FCC 47 CFR PART 15 : 2014

**Sections:** 15.407 a) (1) and (3)

**Test configuration:**

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

**Test procedure:**

789033 D02 General UNII test Procedures new rules v01

**Distance of antenna:** 3 meters

**Instrumentation test list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Emco	3115	3374
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Micro-Coax	N-13m	8063
Open area test site	Emitech	Aunainville	0187
Power supply AC	SECAS	CF1000 50/60	2102
Receiver	Rohde & Schwarz	FSU8	9129
Turntable	Maturo	MCU	7626

**Equipment under test operating condition:**

EUT is in continuous transmission mode.

**Measure conditions:**

Ambient temperature (°C): 15

Relative humidity (%): 69

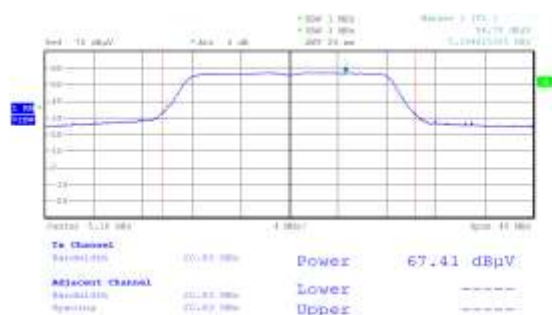
Resolution bandwidth: 1 MHz

Power source: 120 Vac / 60 Hz

### Results:

Channel	Mode	Electro-magnetic field (dBμV/m)	Maximum output power* (dBm)	Limits (dBm)	Comments
36 (5180 MHz)	802.11a	108.61	13.4	17	See curve n°9
44 (5220 MHz)		109.12	13.9	17	See curve n°31
48 (5240 MHz)		109.90	14.7	17	See curve n°10
149 (5745 MHz)	802.11a	110.31	15.1	30	See curve n°11
157 (5785 MHz)		109.10	13.9	30	See curve n°32
161 (5805 MHz)		109.10	13.9	30	See curve n°12

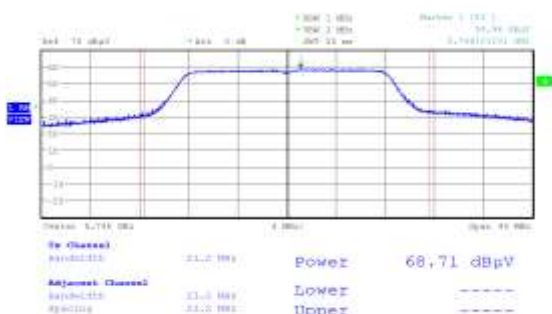
\* Maximum output power =  $E \text{ (dB}\mu\text{V/m)} - 95.2$  for  $d = 3 \text{ m}$



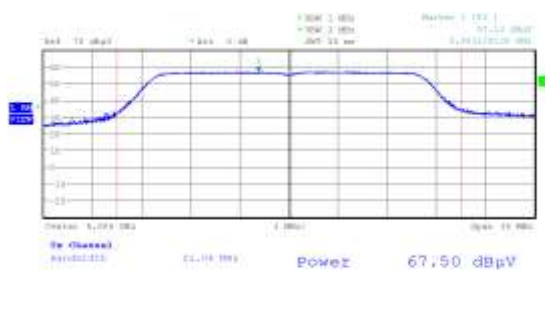
Curve 9



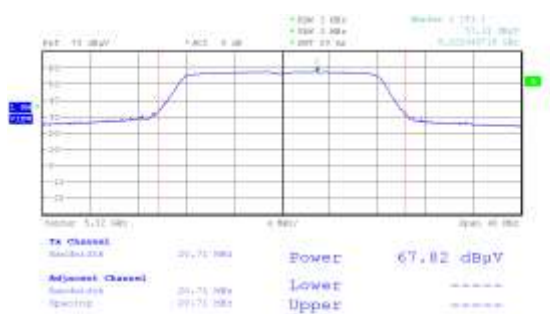
Curve 10



Curve 11



Curve 12



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Curve 31



Date: 25.FEB.2019 10:25:40

Curve 32

**Test conclusion:** Complies with the requirements of the standard.

**8. PEAK POWER SPECTRAL DENSITY**

**Standard:** FCC 47 CFR PART 15 : 2014

**Sections:** 15.407 a) (1) and (3)

**Test configuration:**

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

**Test procedure:**

789033 D02 General UNII test Procedures new rules v01

**Distance of antenna:** 3 meters

**Instrumentation test list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Emco	3115	3374
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Micro-Coax	N-13m	8063
Open area test site	Emitech	Aunainville	0187
Power supply AC	SECAS	CF1000 50/60	2102
Receiver	Rohde & Schwarz	FSU8	9129
Turntable	Maturo	MCU	7626

**Equipment under test operating condition:**

EUT is in continuous transmission mode.

**Measure conditions:**

Ambient temperature (°C): 15

Relative humidity (%): 69

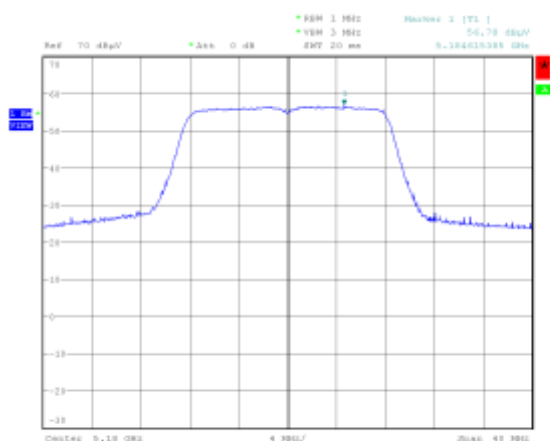
Resolution bandwidth: 1 MHz (Band 5150 – 5250 MHz) / 500 kHz (Band 5725 - 5850 MHz)

Power source: 120 Vac / 60 Hz

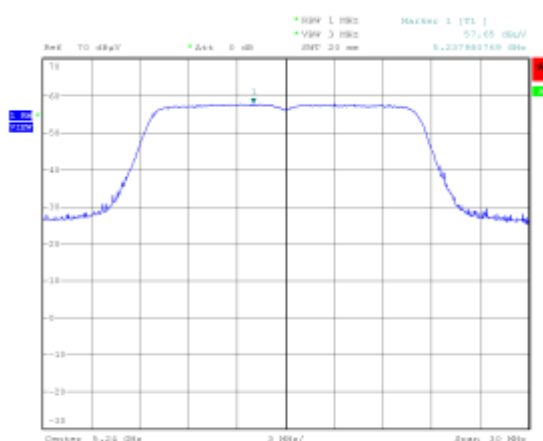
## Results:

Channel	Mode	Electro-magnetic field (dBμV/m)	PPSD* (dBm)	Limits (dBm)	Comments
36 (5180 MHz)	802.11a	97.98	2.78	4	See curve n°13
44 (5220 MHz)		98.61	3.41	4	See curve n°33
48 (5240 MHz)		98.95	3.75	4	See curve n°14
149 (5745 MHz)	802.11a	101.72	6.50	17	See curve n°15
157 (5785 MHz)		101.35	6.10	17	See curve n°34
161 (5805 MHz)		101.45	6.20	17	See curve n°16

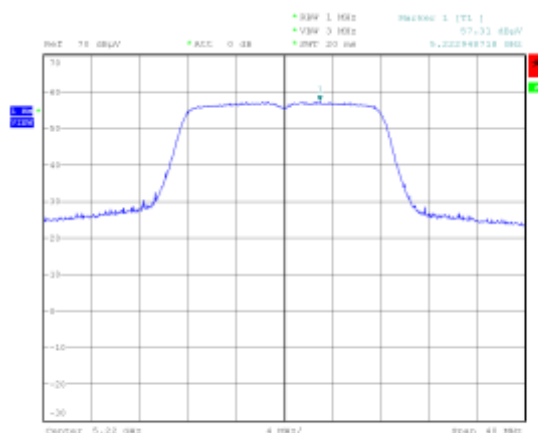
\* PPSD = E (dBμV/m) – 95.2 for d = 3 m



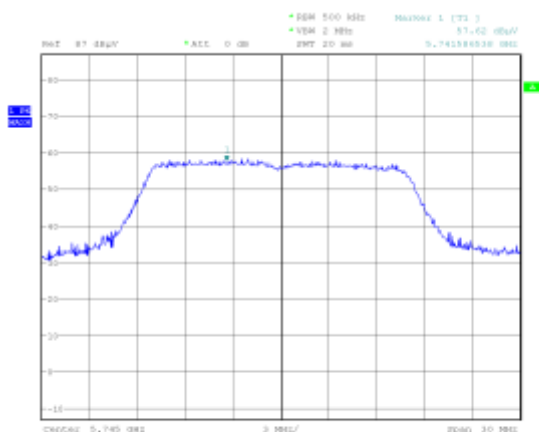
Curve 13



Curve 14

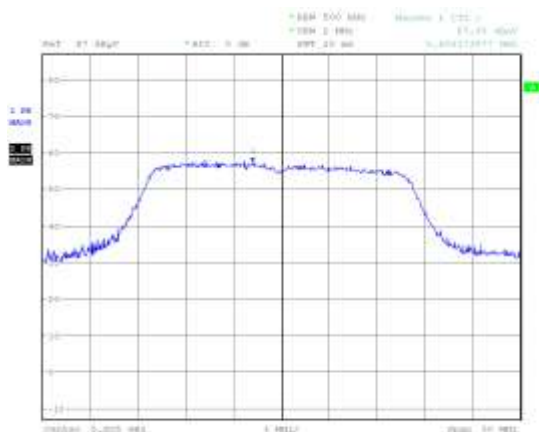


Curve 33



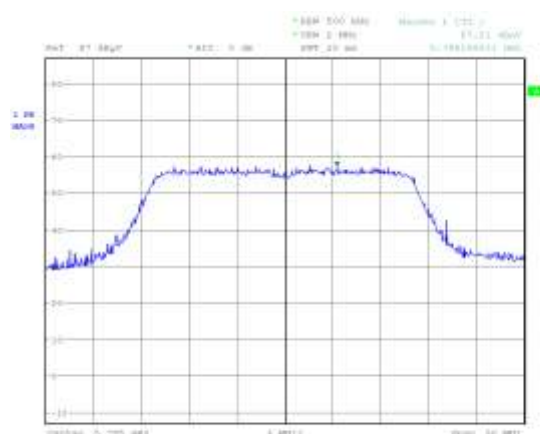
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Curve 15



Date: 9\_JUL\_2019 15:18:35

Curve 16



Date: 9\_JUL\_2019 15:13:57

Curve 34

**Test conclusion:** Complies with the requirements of the standard.

**9. PEAK EXCURSION RATIO**

**Standard:** FCC 47 CFR PART 15 : 2014

**Section:** 15.407 a) (6)

**Test configuration:**

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

**Test procedure:**

789033 D02 General UNII test Procedures new rules v01

**Distance of antenna:** 3 meters

**Instrumentation test list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Emco	3115	3374
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Micro-Coax	N-13m	8063
Open area test site	Emitech	Aunainville	0187
Power supply AC	SECAS	CF1000 50/60	2102
Receiver	Rohde & Schwarz	FSU8	9129
Turntable	Maturo	MCU	7626

**Equipment under test operating condition:**

EUT is in continuous transmission mode.

**Measure conditions:**

Ambient temperature (°C): 15

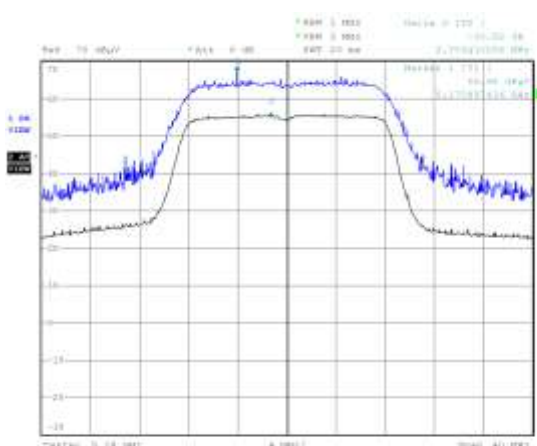
Relative humidity (%): 69

Resolution bandwidth: 1 MHz

Power source: 120 Vac / 60 Hz

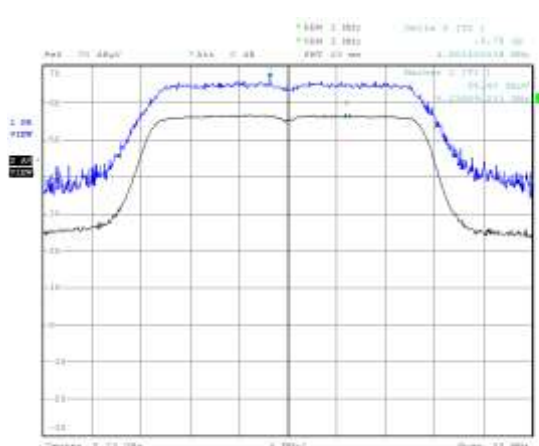
## Results:

Channel	Mode	Peak excursion to average ratio (dB)	Limit (dB)	Comments
36 (5180 MHz)	802.11a	10.82	<13	See curve n°17
44 (5220 MHz)		8.39	<13	See curve n°35
48 (5240 MHz)		9.75	<13	See curve n°18
149 (5745 MHz)	802.11a	9.07	<13	See curve n°19
157 (5785 MHz)		7.74	<13	See curve n°36
161 (5805 MHz)		8.40	<13	See curve n°20



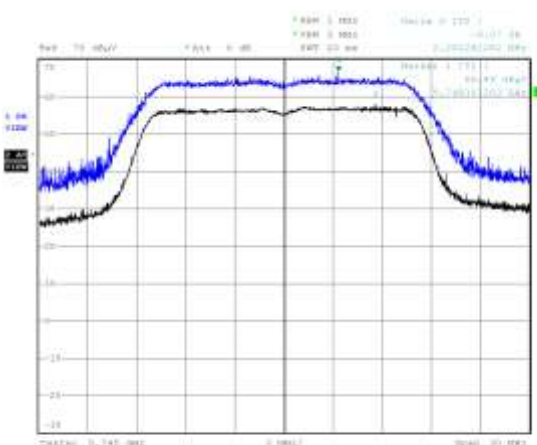
Date: 01/01/2018 13:18:45

Curve 17



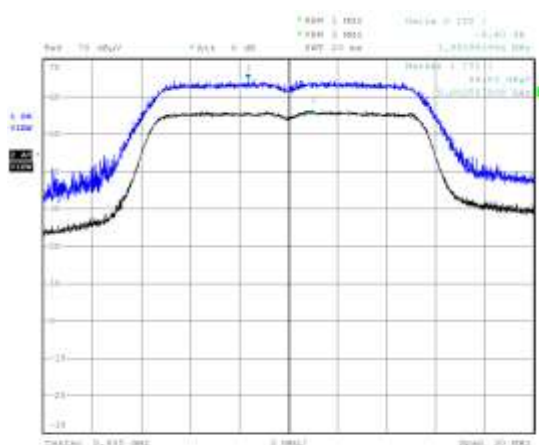
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Curve 18



Date: 01/01/2018 13:18:45

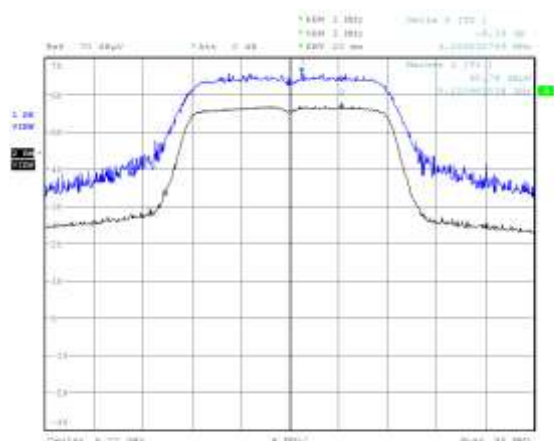
Curve 19



Date: 01/01/2018 13:18:45

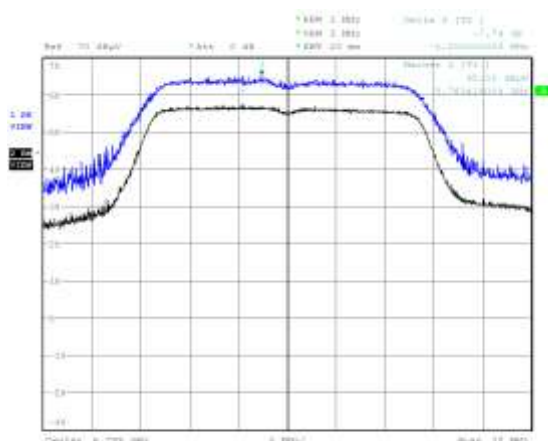
Curve 20





Dekker 24-FEB-2019 13:13:19

Curve 35



Dekker 24-FEB-2019 13:13:19

Curve 36

**Test conclusion:** Complies with the requirements of the standard.

# 10. ADDITIONAL PROVISIONS TO THE GENERAL RADIATED EMISSIONS LIMITATION

**Standard:** FCC 47 CFR PART 15 : 2014

**Section:** 15.215 (b)

## Instrumentation test list:

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Emco	3115	3374
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Micro-Coax	N-13m	8063
Open area test site	Emitech	Aunainville	0187
Power supply AC	SECAS	CF1000 50/60	2102
Receiver	Rohde & Schwarz	FSU8	9129
Turntable	Maturo	MCU	7626

## Equipment under test arrangement:

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

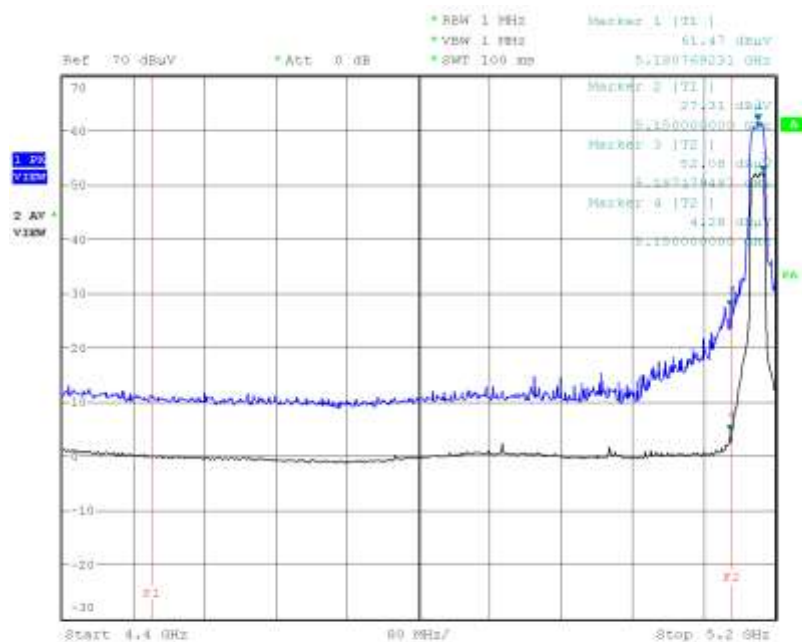
## Results:

Ambient temperature (°C): 15

Relative humidity (%): 69

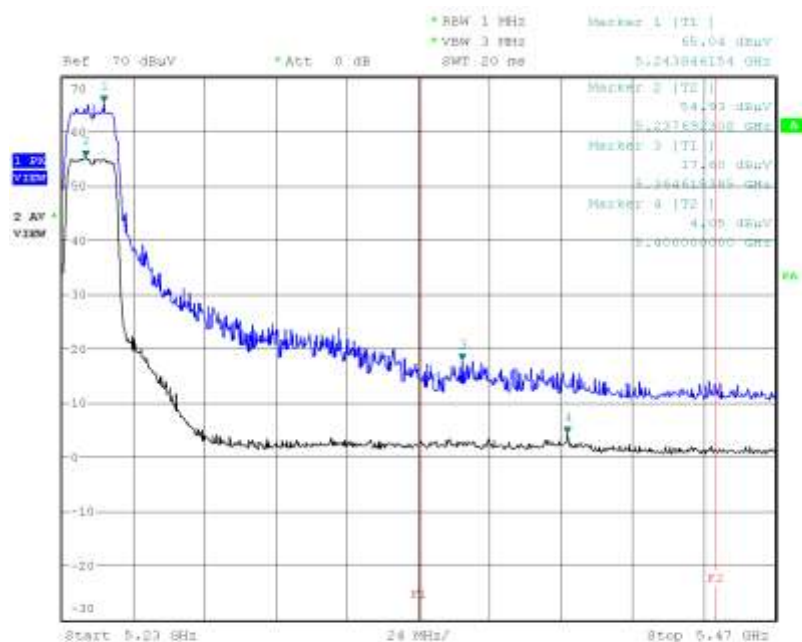
Restricted band: from 4500 MHz to 5150 MHz and from 5350 MHz to 5460 MHz

Channel	Mode	Detector (Peak or Average)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Comments
36	802.11a	Peak	68.51	68.2	0.31	See curve n°21
36	802.11a	Average	45.48	54.0	8.52	See curve n°21
48	802.11a	Peak	58.90	68.2	9.30	See curve n°22
48	802.11a	Average	45.35	54.0	8.65	See curve n°22



Date: 3.OCT.2014 13:34:12

Curve 21



Date: 3.OCT.2014 14:08:09

Curve 22

## 11. BAND EDGE

**Standard:** FCC 47 CFR PART 15 : 2014

**Sections:** 15.407 b) (1) and (4)

### Equipment under test arrangement:

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal metal ground plane.

For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization. The frequency azimuth and antenna height are presented in the table on the next pages.

The E.U.T. is blocked in continuous transmission.

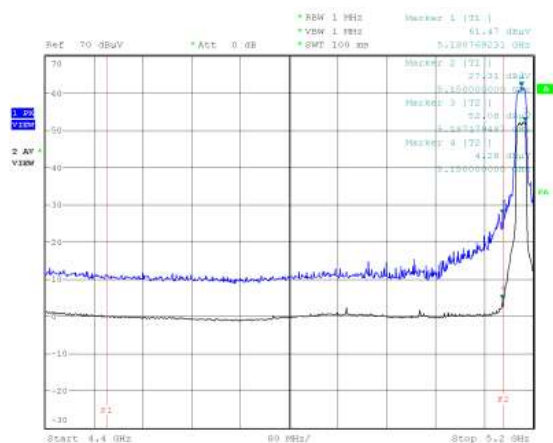
### Results:

Ambient temperature (°C): 15

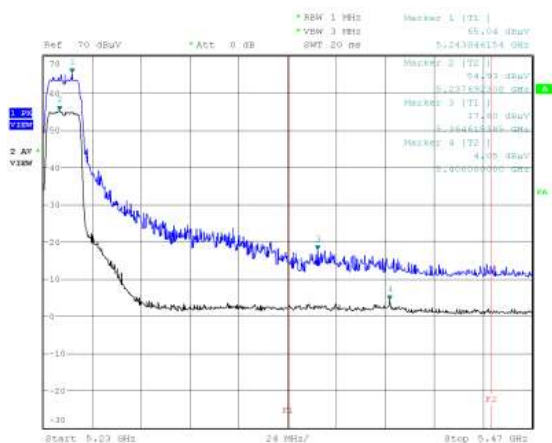
Relative humidity (%): 69

Band edge: from 5150 MHz to 5350 MHz and from 5725 MHz to 5825 MHz

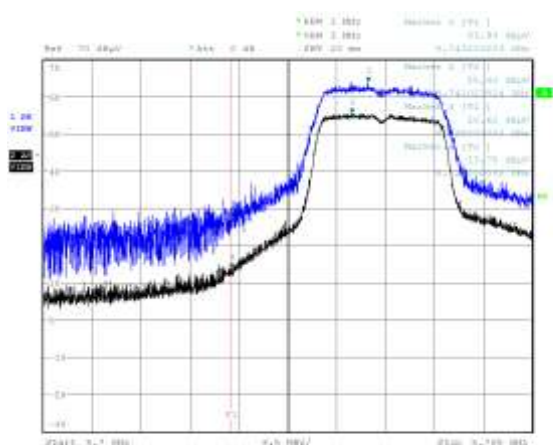
Channel	Mode	Detector (Peak or Average)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Comments
36	802.11a	Peak	68.51	68.2	0.31	See curve n°23
36	802.11a	Average	45.48	54.0	8.52	See curve n°23
48	802.11a	Peak	58.90	68.2	9.30	See curve n°24
48	802.11a	Average	45.35	54.0	8.65	See curve n°24
149	802.11a	Peak	68.22	78.2	9.98	See curve n°25
149	802.11a	Average	55.35	78.2	22.85	See curve n°25
161	802.11a	Peak	72.85	78.2	5.35	See curve n°26
161	802.11a	Average	62.72	78.2	15.48	See curve n°26



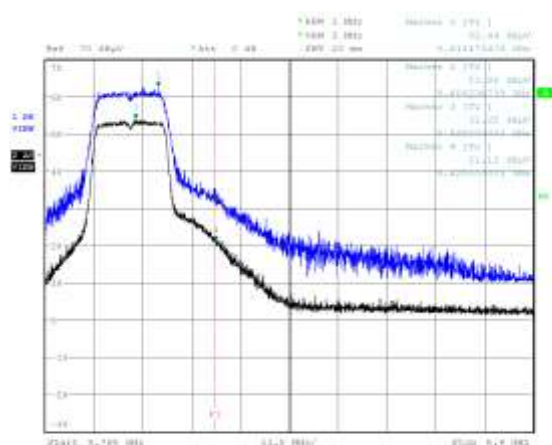
Curve 23



Curve 24



Curve 25



Curve 26

**12. UNINTENTIONAL RADIATED EMISSIONS AND TRANSMITTER UNWANTED EMISSION IN THE BAND 9 KHz – 40 GHz**

**Standard:** FCC 47 CFR PART 15 : 2014

**Sections:** 15.205; 15.209 and 15.407

**Equipment under test arrangement:**

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal metal ground plane.

For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization. The frequency azimuth and antenna height are presented in the table on the next pages.

The E.U.T. is blocked in continuous transmission.

**Frequency range:** 9 kHz – 30 MHz  
30 MHz - 1 GHz  
1 GHz – 26 GHz  
26 GHz – 40 GHz

**Detection mode:** Quasi-peak for 9 kHz – 30 MHz  
Quasi-peak for 30 MHz - 1 GHz  
Average for 1 GHz – 40 GHz

**Resolution bandwidth:** 200 Hz for 9 kHz – 150 kHz  
9 kHz for 150 kHz – 30 MHz  
120 kHz for 30 MHz - 1 GHz  
1 MHz for 1 GHz – 40 GHz

**Measurement distance:** 30 meters from 9 kHz to 30 MHz  
3 meters from 30 MHz to 26 GHz  
1 meter from 26 GHz to 40 GHz

- Limit for emission radiated outside the frequency band, except the harmonics, shall be attenuated by at least 20 dB below the level of fundamental or the general radiated emission limits in § 15.407 (see table).

### From 9 kHz to 30 MHz

Frequency range	Limit $\mu\text{V/m}$
9 – 490 kHz	$2400/F$ (F in kHz) *
490 – 1705 kHz	$24000/F$ (F in kHz)
1.705 – 30 MHz	30

\* Limits in  $\mu\text{V/m}$  can be extrapolated to 30 m using 20 dB / decade.

### From 30 MHz to 40 GHz

Frequency range (MHz)	Limit	
	(dB $\mu\text{V/m}$ )	$\mu\text{V/m}$
30 to 88	40.0	100
88 to 216	43.5	150
216 to 960	46.0	200
Above 960	54.0	500

**Instrumentation test list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Oritel	Cornet CM 42-25	1045
Antenna	Emco	Cornet 3115	3374
Antenna	Chase	Bilog CBL6111	4428
Antenna	Eaton	Cadre Eaton 96009/2	4713
Antenna	Amplifier research	Cornet WBH18-40K	6950
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Câbles & Connectiques	N-13m	2452
Cable	-	N-2m	2805
Cable	Câbles & Connectiques	N-SMA	2864
Cable	-	N-30m	4359
Cable	-	Câbles Orgeval	6000
Cable	N-0.5m	N-0.5m	6037
Cable	Micro-Coax	N-13m	8063
Cable	C&C	K	11133
Câble	-	N-8m	8021
Filter	Micro-tronics	Passe haut	4692
Filter	FILTEK	Passe haut	6356
Filter	Micro-Tronics	Passe haut	6361
Open area test site	Emitech	Site champ libre	0187
Preamplifier	Hewlett Packard	HF	0051
Preamplifier	ALC	HF	4354
Preamplifier	Mini Circuits	RF	5437
Receiver	Rohde & Schwarz	R&S FSU8	9129
Spectrum analyzer	Rohde & Schwarz	R&S FSP40	5175
Turntable	Maturo	MCU	7626
Voltmeter	Rohde & Schwarz	R&S ESVS10	1216
Wattmeter	Agilent Technologies	Agilent E7405A	2205
Wattmeter	Advantest	Advantest R3361	5644

Ambient temperature (°C): 15  
 Relative humidity (%): 69  
 Power source: 120 Vac / 60 Hz

Frequency 5180 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5



## Frequency 5220 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5

## Frequency 5240 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5

## Frequency 5745 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5

## Frequency 5785 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5

Frequency 5805 MHz

FREQUENCY (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	Resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
42.650	Quasi-peak	100	330	120	V	32.4	40.0	7.6
42.650	Quasi-peak	400	190	120	H	19.9	40.0	20.1
67.000	Quasi-peak	140	110	120	V	29.0	40.0	11.0
67.000	Quasi-peak	230	230	120	H	17.5	40.0	22.5

No significant frequency has been found other than those given above between 9 kHz to 30 MHz and 1 GHz to 40 GHz.

### **Test conclusion:**

The equipment complies with the requirements of the standard.

« □□□ End of report, 4 annexes to be forwarded □□□ »

# **ANNEX 1**

## ***ANTENNA FACTORS, INSERTION LOSSES AND AMPLIFIER VALUES***

### **BILL OF MATERIAL**

The test antenna used for the radiated emission between 9 kHz and 30 MHz is the active loop antenna n°4713. Antenna factors are given in table 1.

The test antenna used for the radiated emission between 30 MHz and 1 GHz is the biclog antenna n°4428. Antenna factors are given in table 2.

The measuring receiver n°1216 used in the frequency range 30 MHz to 1 GHz has an integrated preamplifier.

The spectrum analyzer n°2205 is used in the frequency range 1 GHz to 26 GHz and the spectrum analyzer n°5175 is used in frequency range 26 GHz to 40 GHz.

The test cable used between 9 kHz and 30 MHz to connect the antennas to the receiver for measurements at a distance of 30 meters has losses given in table 3.

The test cable used between 30 MHz and 1 GHz to connect the antennas to the receiver for measurements at a distance of 3 meters has losses given in table 4.

The test antenna used for the radiated emission between 1 GHz and 18 GHz is the horn antenna n°3374. Factors are given in table 5.

The test antenna used for the radiated emission between 18 GHz and 26 GHz is the horn antenna n°1045. Factors are given in table 6.

The test antenna used for the radiated emission between 26 GHz and 40 GHz is the horn antenna n°6950. Factors are given in table 7.

The amplifier n°3229 used to connect the spectrum analyzer to the test cable has gain values given in the table 8.

The amplifier n°4354 used to connect the spectrum analyzer to the test cable has gain values given in the table 9.

The test cable used between 1 GHz and 26 GHz to connect the horn antenna to the amplifier for measurements at a distance of 3 meters has losses given in table 10.

The test cable used between 26 GHz and 40 GHz to connect the horn antenna to the amplifier for measurements at a distance of 1 meter has losses given in table 11.

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
0.009	26.3	0.8	9.9
0.01	25.6	1	10.0
0.015	22.8	1.5	10.1
0.02	21.0	2	10.1
0.03	18.7	3	10.0
0.05	15.4	5	10.0
0.08	12.8	8	9.8
0.1	11.8	10	9.7
0.15	10.5	15	9.2
0.2	9.9	20	8.5
0.3	9.7	25	7.4
0.5	9.7	30	5.6

**TABLE 1 : ACTIVE LOOP ANTENNA**

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
30	20.2	180	9.6
35	17.4	200	11.7
40	13.9	250	12.0
45	12.8	300	13.7
50	10.2	400	16.5
60	7.0	500	18.3
70	6.9	600	20.3
80	8.0	700	21.6
90	9.2	800	22.2
100	11.0	900	23.2
120	12.3	1000	23.7
140	11.4	-	-
160	10.9	-	-

**TABLE 2 : BILOG ANTENNA**

Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
0.009	0.0	6.000	0.5
0.020	0.0	7.000	0.5
0.050	0.0	8.000	0.5
0.100	0.1	9.000	0.6
0.500	0.1	10.00	0.6
1.000	0.2	15.00	0.8
2.000	0.3	20.00	0.9
3.000	0.3	25.00	1.0
4.000	0.4	30.00	1.1
5.000	0.4	-	-

**TABLE 3 : TEST CABLE FOR 30M MEASUREMENT INTO 9 kHz  
AND 30 MHz**

Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
30	0.7	250	1.8
40	0.7	300	2.1
50	0.9	400	2.3
60	0.9	500	2.5
70	0.9	600	3.0
80	0.9	700	3.4
90	1.1	800	3.6
100	1.1	900	3.9
150	1.4	1000	4.1
200	1.6	-	-

**TABLE 4 : TEST CABLE FOR 3M MEASUREMENT INTO 30 MHz  
AND 1 GHz**

Frequency (GHz)	Antenna factor (dB/m)	Frequency (GHz)	Antenna factor (dB/m)
1.0	23.7	10.0	37.6
1.5	25.0	10.5	37.8
2.0	27.5	11.0	38.1
2.5	28.8	11.5	38.3
3.0	29.8	12.0	38.8
3.5	31.2	12.5	38.8
4.0	32.5	13.0	39.4
4.5	32.5	13.5	40.0
5.0	33.5	14.0	40.1
5.5	34.1	14.5	40.6
6.0	34.1	15.0	40.6
6.5	34.4	15.5	39.7
7.0	35.4	16.0	39.3
7.5	36.6	16.5	39.9
8.0	36.6	17.0	41.4
8.5	37.0	17.5	45.1
9.0	37.1	18.0	46.3
9.5	37.2	-	-

TABLE 5 : HORN ANTENNA

Frequency (GHz)	Antenna factor (dB/m)	Frequency (GHz)	Antenna factor (dB/m)
18.0	31.5	22.5	32.7
18.5	31.8	23.0	33.2
19.0	31.9	23.5	33.1
19.5	32.1	24.0	33.2
20.0	32.2	24.5	33.3
20.5	32.4	25.0	33.3
21.0	32.5	25.5	33.2
21.5	32.4	26.0	33.1
22.0	32.4	-	-

TABLE 6 : HORN ANTENNA

Frequency (GHz)	Antenna factor (dB/m)	Frequency (GHz)	Antenna factor (dB/m)
26.0	44.2	33.5	45.3
26.5	44.3	34.0	45.0
27.0	44.2	34.5	44.9
27.5	44.0	35.0	45.7
28.0	44.0	35.5	46.3
28.5	45.0	36.0	46.4
29.0	45.3	36.5	47.0
29.5	45.5	37.0	47.2
30.0	45.8	37.5	47.5
30.5	45.9	38.0	47.7
31.0	45.6	38.5	47.9
31.5	45.5	39.0	48.3
32.0	45.6	39.5	49.0
32.5	45.6	40.0	48.9
33.0	45.6	-	-

**TABLE 7 : HORN ANTENNA**

Frequency (GHz)	Gain value (dB)	Frequency (GHz)	Gain value (dB)
1.0	33.4	13.0	32.5
1.5	33.7	14.0	31.6
2.0	33.9	15.0	33.0
2.5	34.0	16.0	33.5
3.0	33.9	17.0	33.9
4.0	34.3	18.0	34.3
5.0	35.2	19.0	34.4
6.0	34.7	20.0	32.9
7.0	34.0	21.0	33.2
8.0	33.7	22.0	34.3
9.0	31.8	23.0	34.6
9.5	31.1	24.0	34.4
10.0	30.5	25.0	34.5
10.5	30.7	26.0	32.5
11.0	31.1	-	-
12.0	32.4	-	-

**TABLE 8 : AMPLIFIER GAIN VALUE**



Frequency (GHz)	Gain value (dB)	Frequency (GHz)	Gain value (dB)
26.0	34.6	33.5	35.3
26.5	35.2	34.0	35.1
27.0	33.9	34.5	34.2
27.5	34.1	35.0	33.4
28.0	34.5	35.5	32.9
28.5	33.6	36.0	32.2
29.0	33.7	36.5	33.0
29.5	34.3	37.0	33.5
30.0	34.5	37.5	31.7
30.5	35.9	38.0	32.8
31.0	35.4	38.5	31.4
31.5	34.9	39.0	34.0
32.0	34.7	39.5	34.0
32.5	35.9	40.0	35.0
33.0	36.0	-	-

**TABLE 9 : AMPLIFIER GAIN VALUE**

Frequency (GHz)	Loss (dB)	Frequency (GHz)	Loss (dB)
1.0	3.2	12.0	11.8
1.5	4.0	13.0	12.2
2.0	4.6	14.0	12.4
2.5	5.2	15.0	12.9
3.0	5.7	16.0	13.4
3.5	6.2	17.0	13.9
4.5	7.1	18.0	14.5
5	7.3	19.0	14.7
6	7.9	20.0	15.4
8	9.3	22.0	16.3
10	10.5	24.0	16.9
11.0	11.1	26.0	17.7

**TABLE 10: TEST CABLE FOR 3M MEASUREMENT INTO 1 TO 26 GHz**

Frequency (GHz)	Loss (dB)	Frequency (GHz)	Loss (dB)
26	4.6	34	5.3
27	4.7	35	5.3
28	4.7	36	5.3
29	4.8	37	5.5
30	4.9	38	5.7
31	5.0	39	5.5
32	5.1	40	5.9
33	5.1	-	-

**TABLE 11: TEST CABLE FOR 1M MEASUREMENT INTO 26 TO 40 GHz**

# **ANNEX 2**

## ***EXTERNAL PHOTOGRAPHIES***



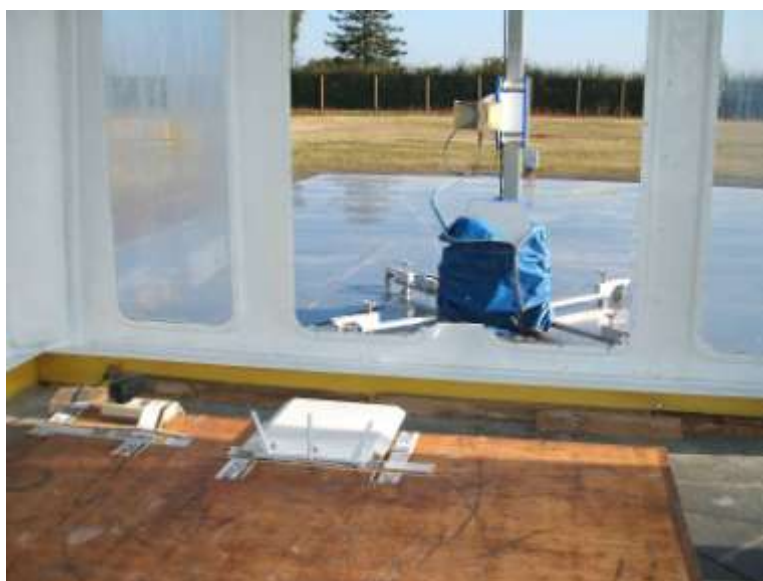




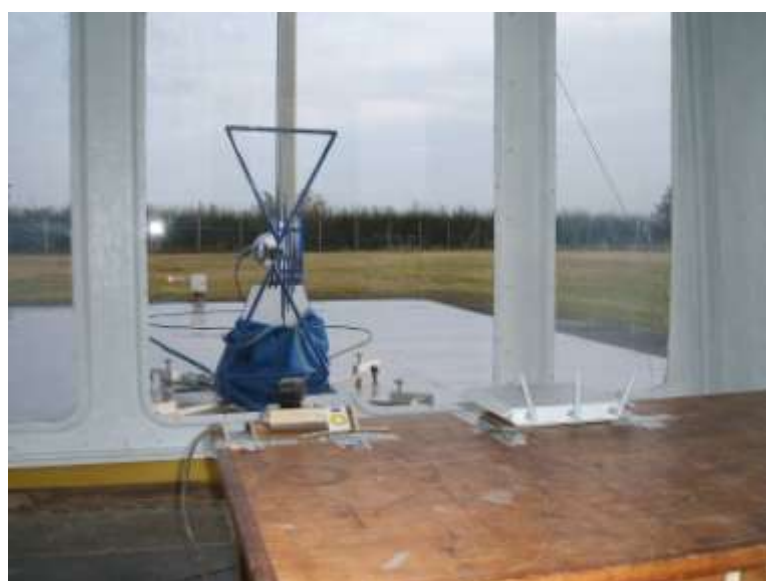
# **ANNEX 3**

## ***TEST SETUP PHOTOGRAPHIES***















# **ANNEX 4**

## ***CALIBRATION DATES***

N° EMITECH	LAST CALIBRATION	CALIBRATION DUE DATE
1216	23/04/2014	23/04/2016
0187	15/03/2013	15/03/2016
4428	25/02/2014	25/02/2018
2452	24/10/2012	24/10/2014
2805	01/08/2013	01/08/2015
3374	08/02/2012	08/02/2016
2864	06/01/2014	06/01/2016
8063	23/07/2014	23/07/2016
1097	15/03/2013	15/03/2015
1529	15/03/2013	15/03/2015
4691	15/03/2013	15/03/2015
2205	12/06/2013	12/06/2015
4713	11/02/2014	11/02/2016
4359	27/06/2014	27/06/2016
1045	13/12/2010	13/12/2014
0051	09/06/2014	09/06/2015
8021	22/02/2013	22/02/2015
5175	23/06/2014	23/06/2016
4354	21/07/2014	21/07/2015
11133	10/03/2014	10/03/2016
6950	20/04/2012	20/04/2016