WIFI 5GHz Template: Release April 22nd, 2016

TEST REPORT

N°: 143160-689135-F(FILE#916702) **Version : 02**

Subject	**Radio spectrum matters tests according to standards: 47 CFR Part 15.407 & RSS 247 Issue 1(DFS Only)**
Issued to	**INGENICO 9 Avenue de la Gare Rovaltain TGV 26300 VALENCE - FRANCE**

Apparatus under test

Product	**Payment terminal**
Trade mark	**INGENICO**
Manufacturer	**INGENICO**
Model under test	**Desk/5000 CL/Eth/Mod/WiFi/BT**
Reference	**TCA33310133A**
Serial number	**160287313331013301014523**
FCCID	**XKB-D5000CLWIBT**
IC	**2586D-D5000CLWIBT**

Conclusion	See Test Program chapter
Test date	August 2, 2016 to November 16, 2016
Test location	Moirans
Composition of document	38 pages
Document issued on	December 19, 2016

Written by :
Gaetan DESCHAMPS
Tests operator

Approved by :
Anthony MERLIN
Technical manager

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
LCIE SUD-EST
ZI Centr'Alp
170, Rue de Chatagnon
38430 MOIRANS
Tel 04 76 07 36 36
Fax 04 76 55 90 88

PUBLICATION HISTORY

Version	Date	Author	Modification
01	November 17, 2016	Gaetan DESCHAMPS	Creation of the document
02	December 19, 2016	Gaetan DESCHAMPS	Modification further to review

SUMMARY

1. TEST PROGRAM

References

- **47 CFR Part 15.407 (DFS requirements)**
- **RSS 247 Issue 1 (DFS requirements)**
- **KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02**
- **KBD 905462 D04 Test Mode New Rules v01**
- **KDB 905462 D03 Client Without DFS New Rules v01r01**
- **KDB 905462 D06 802.11 Channel Plans New Rules v02**
- **KDB905462 D07 Overview UNII Rules v01**

Radio requirement:

Clause (47CFR Part 15.407 & RSS 247 Issue 1) Test Description	Test result - Comments			
Channel Availability Check Time & DFS Detection Threshold	☐ PASS	☐ FAIL	☑ NA(1)(2)	☐ NP(3)
U-NII Detection Bandwidth	☐ PASS	☐ FAIL	☑ NA(1)	☐ NP(3)
Statistical Performance Check & DFS Detection Threshold	☑ PASS	☐ FAIL	☐ NA	☐ NP(3)
Channel Closing Transmission Time & Channel Move Time	☑ PASS	☐ FAIL	☐ NA	☐ NP(3)
Non-occupancy period	☑ PASS	☐ FAIL	☐ NA(1)	☐ NP(3)
This table is a summary of test report, see conclusion of each clause of this test report for detail.				

(1): Client without radar detection
(2): Client with radar detection
(3): Limited program

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

2.1. INFORMATIONS

The EUT can be used with different configuration :

- ✓ **Initial functionnalities**
  - Cless Interface (RFID)
  - Bluetooth chipset: CSR8811 (CSR)
  - SAM1 & SAM2 readers
  - Host or slave (µUSB connector)
  - USB Host (Type A connector)
  - RS232 (COM1)
  - Modem RTC
  - Ethernet
- ✓ **With option card (internal)**
  - RS232-COM2
  - Jack Audio
  - SAM3
  - Bluetooth chipset: CSR8811 (CSR)
  - Chipset Marvell 88W8782
- ✓ **1 power supply**
  - PSM32W-080L6IN-R-

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):
INGENICO Desk/5000 CL/Eth/Mod/WiFi/BT **Serial Number: 160287313331013301014523**

Equipment Under Test

Power supply:
During all the tests, EUT is supplied by V_{nom}: 8VDC
For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Mark	Comments
Supply1	☑ AC ☐ DC ☐ Battery	100-240VAC to 8VDC, 50/60Hz 0.9 A to 4A	PSM32W-080L6IN-R- / PHIHONG	-

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Supply1	Input AC, 2 wires	1.8	☑	☐	☑	
	Output DC, Jack	1.8	☑	☐	☑	
Twist cable to Magicbox	Power supply Jack	2	☑	☐	☑	Supply Terminal
	RJ11					COM0
	RJ45					Ethernet line
	RJ11					Modem line
SAM1	SAM card	/	/	/	☑	/
SAM2	SAM card	/	/	/	☑	/
SAM3	SAM card	/	/	/	☑	/
CAM0	SAM card	/	/	/	☑	/
USB	USB port (Micro-B)	1	☑	☑	☑	/
USB HOST	USB port (Type A)	1	☑	☑	☑	/
MicroSD	Micro SD port	/	/	/	☑	/
COM2	Mini USB	1	☐	☑	☑	/
Audio	Audio Jack 3.5mm	1	☐	☑	☑	/
SIM1	SIM CARD	/	/	/	☑	/
SIM2	SIM CARD	/	/	/	☑	/

Inputs/outputs & Cable: Magicbox 51/2014 CUST P/N: 296165425 INGELEC P/N : MUL0885C						
Access	**Type**	**Length used (m)**	**Declared <3m**	**Shielded**	**Under test**	**Comments**
Supply Magicbox	Power supply Jack	1.5	☑	☐	☑	/
COM0	RJ11	3	☐	☐	☑	/
Ethernet	RJ45	5	☐	☐	☑	/
Modem	RJ11	5	☐	☐	☑	/
Magicbox cable twisted	Twist cable	2	☑	☐	☑	/

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
TOSHIBA Laptop	Satellite	-	-
Access point certified	DLINK	-	-

Equipment information:

Type:	WIFI			
Frequency band:	☑ 5150MHz-5250MHz	☑ 5250MHz-5350MHz	☑ 5470MHz-5725MHz	
Standard:	☑ 802.11a	☑ 802.11n HT20	☑ 802.11n HT40	
	☐ 802.11ac VHT20	☐ 802.11ac VHT40	☐ 802.11ac VHT80	
	☐ 802.11ac VHT160			
Spectrum Modulation:	☑ OFDM			
Channel bandwidth:	☑ 20MHz	☑ 40MHz	☐ 80MHz	☐ 160MHz
Antenna Type:	☑ Integral	☐ External	☐ Dedicated	
Antenna connector:	☐ Yes	☑ No	☑ Temporary for test	
Transmit chains:	☑ 1	☐ 2	☐ 3	☐ 4
	☐ 5	☐ 6	☐ 7	☐ 8
	☑ Single antenna	☐ Symmetrical	☐ Asymmetrical	
	Gain 1: 1.5dBi	Gain 2: X dBi	Gain 3: X dBi	Gain 4: X dBi
	Gain 5: X dBi	Gain 6: X dBi	Gain 7: X dBi	Gain 8: X dBi
	Accumuled Gain: 1.5 dBi			
Beam forming gain:	☐ Yes: X dB		☑ No	
TPC:	☐ Yes		☑ No	
Receiver chains	☑ 1	☐ 2	☐ 3	☐ 4
	☐ 5	☐ 6	☐ 7	☐ 8
Type of equipment:	☑ Stand-alone	☐ Plug-in	☐ Combined	
Ad-Hoc mode:	☐ Yes		☑ No	
Duty cycle:	☑ Continuous duty	☐ Intermittent duty	☐ 100% duty	
Unmodulated mode:	☐ Yes		☑ No	
Equipment type:	☑ Production model		☐ Pre-production model	
Operating temperature range:	Tmin:	☑ -20°C	☐ 0°C	☐ X °C
	Tnom:	20°C		
	Tmax:	☐ 35°C	☑ 55°C	☐ X °C
Type of power source:	☑ AC power supply	☐ DC power supply	☑ Battery Battery Type	
Operating voltage range:	Vmin:	☑ 207V/50Hz	☐ 3.2 Vdc	
	Vnom:	☑ 230V/50Hz	☐ 3.7 Vdc	
	Vmax	☑ 253V/50Hz	☐ 4.2 Vdc	
Mode:	☐ Master	☐ Slave with radar detection	☑ Slave without radar detection	
Fixed outdoor P to P/M application:	☐ Yes		☑ No	
System architectures:	☑ IP based		☐ Frame based	
Off-channel CAC function:	☐ Yes (Off-Channel CAC Time: X hours)		☑ No	
Fixed outdoor P to P/M application:	☐ Yes		☑ No	
User access restriction:	☐ Yes (The DFS settings are not accessible to the end user if changing those settings result in no longer being compliant with DFS requirement in clause 4.7 of ETSI EN 301 893 V1.8.1)		☑ No	
Geo-location capability:	☐ Yes (The geographical location determined by the equipment is not accessible to the end user as defined in section 4.10.2 of ETSI EN 301 893 V1.8.1 standard)		☑ No	

Antenna Characteristic			
Antenna	**Gain (dBi)**	**Frequency Band (GHz)**	**Impedance(Ω)**
1	1.5	[5.150-5.725]GHz	50

CHANNEL PLAN		
802.11a / 802.11n HT20/ 802.11ac VHT20		
Channel	**Frequency (MHz)**	**Available Channel**
36	5180	☑
40	5200	☑
44	5220	☑
48	5240	☑
52	5260	☑
56	5280	☑
60	5300	☑
C1=64	5320	☑
C2=100	5500	☑
104	5520	☑
108	5540	☑
112	5560	☑
116	5580	☑
120	5600	☑
124	5620	☑
128	5640	☑
132	5660	☑
136	5680	☑
140	5700	☑
149	5745	☐
153	5765	☐
157	5785	☐
161	5805	☐
165	5825	☐

CHANNEL PLAN		
802.11n HT40/ 802.11ac VHT40		
Channel	**Frequency (MHz)**	**Available Channel**
36+40	5190	☑
44+48	5230	☑
52+56	5270	☑
C3=60+64	5310	☑
C4=100+104	5510	☑
108+112	5550	☑
116+120	5590	☑
124+128	5630	☑
132+136	5670	☑
140+144	5710	☑
149+153	5755	☐
157+161	5795	☐

CHANNEL PLAN		
802.11ac VHT80		
Channel	**Frequency (MHz)**	**Available Channel**
36+40+44+48	5210	☐
C5=52+56+60+64	5290	☐
C6=100+104+108+112	5530	☐
116+120+124+128	5610	☐
132+136+140+144	5690	☐
149+153+157+161	5775	☐

CHANNEL PLAN		
802.11ac VHT160		
Channel	**Frequency (MHz)**	**Available Channel**
C7=36+40+44+48+52+56+60+64	5250	☐
C8=100+104+108+112+116+120+124+128	5570	☐

No DFS Channel
DFS Channel
Weather DFS Channel (Not Authorised for RSS-247)

DATA RATE		
802.11a		
Data Rate (Mbps)	**Modulation Type**	**Modulation Worst Case**
6	BPSK	☑
9	BPSK	☐
12	QPSK	☐
18	QPSK	☐
24	16-QAM	☐
36	16-QAM	☐
48	64-QAM	☐
54	64-QAM	☐

DATA RATE									
802.11n HT20									
Available for EUT	MCS Index	Spatial streams	Modulation				Data Rate (Mbps)		Worst Case Modulation
							(GI = 800ns)	(GI = 400ns)	
☑	0	1	BPSK				6.5	7.2	☑
☑	1	1	QPSK				13	14.4	☐
☑	2	1	QPSK				19.5	21.7	☐
☑	3	1	16-QAM				26	28.9	☐
☑	4	1	16-QAM				39	43.3	☐
☑	5	1	64-QAM				52	57.8	☐
☑	6	1	64-QAM				58.5	65	☐
☑	7	1	64-QAM				65	72.2	☐
☐	8	2	BPSK				13	14.4	☐
☐	9	2	QPSK				26	28.9	☐
☐	10	2	QPSK				39	43.3	☐
☐	11	2	16-QAM				52	57.8	☐
☐	12	2	16-QAM				78	86.7	☐
☐	13	2	64-QAM				104	115.6	☐
☐	14	2	64-QAM				117	130.3	☐
☐	15	2	64-QAM				130	144.4	☐
☐	16	3	BPSK				19.5	21.7	☐
☐	17	3	QPSK				39	43.3	☐
☐	18	3	QPSK				58.5	65	☐
☐	19	3	16-QAM				78	86.7	☐
☐	20	3	16-QAM				117	130	☐
☐	21	3	64-QAM				156	173.3	☐
☐	22	3	64-QAM				175.5	195	☐
☐	23	3	64-QAM				195	216.7	☐
☐	24	4	BPSK				26	28.9	☐
☐	25	4	QPSK				52	57.8	☐
☐	26	4	QPSK				78	86.7	☐
☐	27	4	16-QAM				104	115.6	☐
☐	28	4	16-QAM				156	173.3	☐
☐	29	4	64-QAM				208	231.1	☐
☐	30	4	64-QAM				234	260	☐
☐	31	4	64-QAM				260	288.9	☐
☐	32	1	BPSK	-	-	-	-	-	☐
☐	33	2	16-QAM	QPSK	-	-	39	43.3	☐
☐	34	2	64-QAM	QPSK	-	-	52	57.8	☐
☐	35	2	64-QAM	16-QAM	-	-	65	72.2	☐
☐	36	2	16-QAM	QPSK	-	-	58.5	65	☐
☐	37	2	64-QAM	QPSK	-	-	78	86.7	☐
☐	38	2	64-QAM	16-QAM	-	-	97.5	108.3	☐
☐	39	3	16-QAM	QPSK	QPSK	-	52	57.8	☐
☐	40	3	16-QAM	16-QAM	QPSK	-	65	72.2	☐
☐	41	3	64-QAM	QPSK	QPSK	-	65	72.2	☐
☐	42	3	64-QAM	16-QAM	QPSK	-	78	86.7	☐
☐	43	3	64-QAM	16-QAM	16-QAM	-	91	101.1	☐
☐	44	3	64-QAM	64-QAM	QPSK	-	91	101.1	☐
☐	45	3	64-QAM	64-QAM	16-QAM	-	104	115.6	☐
☐	46	3	16-QAM	QPSK	QPSK	-	78	86.7	☐
☐	47	3	16-QAM	16-QAM	QPSK	-	97.5	108.3	☐
☐	48	3	64-QAM	QPSK	QPSK	-	97.5	108.3	☐
☐	49	3	64-QAM	16-QAM	QPSK	-	117	130	☐
☐	50	3	64-QAM	16-QAM	16-QAM	-	136.5	151.7	☐
☐	51	3	64-QAM	64-QAM	QPSK	-	136.5	151.7	☐
☐	52	3	64-QAM	64-QAM	16-QAM	-	156	173.3	☐
☐	53	4	16-QAM	QPSK	QPSK	QPSK	65	72.2	☐
☐	54	4	16-QAM	16-QAM	QPSK	QPSK	78	86.7	☐
☐	55	4	16-QAM	16-QAM	16-QAM	QPSK	91	101.1	☐
☐	56	4	64-QAM	QPSK	QPSK	QPSK	78	86.7	☐
☐	57	4	64-QAM	16-QAM	QPSK	QPSK	91	101.1	☐
☐	58	4	64-QAM	16-QAM	16-QAM	QPSK	104	115.6	☐
☐	59	4	64-QAM	16-QAM	16-QAM	16-QAM	117	130	☐
☐	60	4	64-QAM	QPSK	QPSK	QPSK	104	115.6	☐
☐	61	4	64-QAM	16-QAM	16-QAM	QPSK	117	130	☐
☐	62	4	64-QAM	16-QAM	16-QAM	16-QAM	130	144.4	☐
☐	63	4	64-QAM	64-QAM	64-QAM	QPSK	130	144.4	☐
☐	64	4	64-QAM	64-QAM	64-QAM	16-QAM	143	158.9	☐
☐	65	4	16-QAM	QPSK	QPSK	QPSK	97.5	108.3	☐
☐	66	4	16-QAM	16-QAM	QPSK	QPSK	117	130	☐
☐	67	4	16-QAM	16-QAM	16-QAM	QPSK	136.5	151.7	☐
☐	68	4	64-QAM	QPSK	QPSK	QPSK	117	130	☐
☐	69	4	64-QAM	16-QAM	QPSK	QPSK	136.5	151.7	☐
☐	70	4	64-QAM	16-QAM	16-QAM	QPSK	156	173.3	☐
☐	71	4	64-QAM	16-QAM	16-QAM	16-QAM	175.5	195	☐
☐	72	4	64-QAM	64-QAM	QPSK	QPSK	156	173.3	☐
☐	73	4	64-QAM	64-QAM	16-QAM	QPSK	175.5	195	☐
☐	74	4	64-QAM	64-QAM	16-QAM	16-QAM	195	216.7	☐
☐	75	4	64-QAM	64-QAM	64-QAM	QPSK	195	216.7	☐
☐	76	4	64-QAM	64-QAM	64-QAM	16-QAM	214.5	238.3	☐

DATA RATE									
802.11n HT40									
Available for EUT	MCS Index	Spatial streams	Modulation				Data Rate (Mbps)		Worst Case Modulation
							(GI = 800ns)	(GI = 400ns)	
☑	0	1	BPSK				13	15	☑
☑	1	1	QPSK				27	30	☐
☑	2	1	QPSK				40.5	45	☐
☑	3	1	16-QAM				54	60	☐
☑	4	1	16-QAM				81	90	☐
☑	5	1	64-QAM				108	120	☐
☑	6	1	64-QAM				121.5	135	☐
☑	7	1	64-QAM				135	150	☐
☐	8	2	BPSK				27	30	☐
☐	9	2	QPSK				54	60	☐
☐	10	2	QPSK				81	90	☐
☐	11	2	16-QAM				108	120	☐
☐	12	2	16-QAM				162	180	☐
☐	13	2	64-QAM				216	240	☐
☐	14	2	64-QAM				243	270	☐
☐	15	2	64-QAM				270	300	☐
☐	16	3	BPSK				40.5	45	☐
☐	17	3	QPSK				81	90	☐
☐	18	3	QPSK				121.5	135	☐
☐	19	3	16-QAM				162	180	☐
☐	20	3	16-QAM				243	270	☐
☐	21	3	64-QAM				324	360	☐
☐	22	3	64-QAM				364.5	405	☐
☐	23	3	64-QAM				405	450	☐
☐	24	4	BPSK				54	60	☐
☐	25	4	QPSK				108	120	☐
☐	26	4	QPSK				162	180	☐
☐	27	4	16-QAM				216	240	☐
☐	28	4	16-QAM				324	360	☐
☐	29	4	64-QAM				432	480	☐
☐	30	4	64-QAM				486	540	☐
☐	31	4	64-QAM				540	600	☐
☐	32	1	BPSK	-	-	-	6.0	6.7	☐
☐	33	2	16-QAM	QPSK	-	-	81	90.0	☐
☐	34	2	64-QAM	QPSK	-	-	108	120	☐
☐	35	2	64-QAM	16-QAM	-	-	135	150	☐
☐	36	2	16-QAM	QPSK	-	-	121.5	135	☐
☐	37	2	64-QAM	QPSK	-	-	162	180	☐
☐	38	2	64-QAM	16-QAM	-	-	202.5	225	☐
☐	39	3	16-QAM	QPSK	QPSK	-	108	120	☐
☐	40	3	16-QAM	16-QAM	QPSK	-	135	150	☐
☐	41	3	64-QAM	QPSK	QPSK	-	135	150	☐
☐	42	3	64-QAM	16-QAM	QPSK	-	162	180	☐
☐	43	3	64-QAM	16-QAM	16-QAM	-	189	210	☐
☐	44	3	64-QAM	64-QAM	QPSK	-	189	210	☐
☐	45	3	64-QAM	64-QAM	16-QAM	-	216	240	☐
☐	46	3	16-QAM	QPSK	QPSK	-	162	180	☐
☐	47	3	16-QAM	16-QAM	QPSK	-	202.5	225	☐
☐	48	3	64-QAM	QPSK	QPSK	-	202.5	225	☐
☐	49	3	64-QAM	16-QAM	QPSK	-	243	270	☐
☐	50	3	64-QAM	16-QAM	16-QAM	-	283.5	315	☐
☐	51	3	64-QAM	64-QAM	QPSK	-	283.5	315	☐
☐	52	3	64-QAM	64-QAM	16-QAM	-	324	360	☐
☐	53	4	16-QAM	QPSK	QPSK	QPSK	135	150	☐
☐	54	4	16-QAM	16-QAM	QPSK	QPSK	162	180	☐
☐	55	4	16-QAM	16-QAM	16-QAM	QPSK	189	210	☐
☐	56	4	64-QAM	QPSK	QPSK	QPSK	162	180	☐
☐	57	4	64-QAM	16-QAM	QPSK	QPSK	189	210	☐
☐	58	4	64-QAM	16-QAM	16-QAM	QPSK	216	240	☐
☐	59	4	64-QAM	16-QAM	16-QAM	16-QAM	243	270	☐
☐	60	4	64-QAM	QPSK	QPSK	QPSK	216	240	☐
☐	61	4	64-QAM	16-QAM	16-QAM	QPSK	243	270	☐
☐	62	4	64-QAM	16-QAM	16-QAM	16-QAM	270	300	☐
☐	63	4	64-QAM	64-QAM	64-QAM	QPSK	270	300	☐
☐	64	4	64-QAM	64-QAM	64-QAM	16-QAM	297	330	☐
☐	65	4	16-QAM	QPSK	QPSK	QPSK	202.5	225	☐
☐	66	4	16-QAM	16-QAM	QPSK	QPSK	243	270	☐
☐	67	4	16-QAM	16-QAM	16-QAM	QPSK	283.5	315	☐
☐	68	4	64-QAM	QPSK	QPSK	QPSK	243	270	☐
☐	69	4	64-QAM	16-QAM	QPSK	QPSK	283.5	315	☐
☐	70	4	64-QAM	16-QAM	16-QAM	QPSK	324	360	☐
☐	71	4	64-QAM	16-QAM	16-QAM	16-QAM	364.5	405	☐
☐	72	4	64-QAM	64-QAM	QPSK	QPSK	324	360	☐
☐	73	4	64-QAM	64-QAM	16-QAM	QPSK	364.5	405	☐
☐	74	4	64-QAM	64-QAM	16-QAM	16-QAM	405	450	☐
☐	75	4	64-QAM	64-QAM	64-QAM	QPSK	405	450	☐
☐	76	4	64-QAM	64-QAM	64-QAM	16-QAM	445.5	495	☐

DATA RATE: 802.11ac VHT20							
Available for EUT	MCS Index	Nbr of spatial streams	Modulation (Stream 1/2/3/4)	Coding rate	GI = 800ns	GI = 400ns	Worst Case Modulation
☐	0	1	BPSK	1/2	6,5	7,2	☐
☐	1	1	QPSK	1/2	13	14,4	☐
☐	2	1	QPSK	3/4	19,5	21,7	☐
☐	3	1	16-QAM	1/2	26	28,9	☐
☐	4	1	16-QAM	3/4	39	43,3	☐
☐	5	1	64-QAM	2/3	52	57,8	☐
☐	6	1	64-QAM	3/4	58,5	65	☐
☐	7	1	64-QAM	5/6	65	72,2	☐
☐	8	1	256-QAM	3/4	78	86,7	☐
☐	9	1	256-QAM	5/6	N/A	N/A	☐
☐	10	2	BPSK	1/2	13	14,4	☐
☐	11	2	QPSK	1/2	26	28,8	☐
☐	12	2	QPSK	3/4	39	43,4	☐
☐	13	2	16-QAM	1/2	52	57,8	☐
☐	14	2	16-QAM	3/4	78	86,6	☐
☐	15	2	64-QAM	2/3	104	115,6	☐
☐	16	2	64-QAM	3/4	117	130	☐
☐	17	2	64-QAM	5/6	130	144,4	☐
☐	18	2	256-QAM	3/4	156	173,4	☐
☐	19	2	256-QAM	5/6	N/A	N/A	☐
☐	20	3	BPSK	1/2	19,5	21,6	☐
☐	21	3	QPSK	1/2	39	43,2	☐
☐	22	3	QPSK	3/4	58,5	65,1	☐
☐	23	3	16-QAM	1/2	78	86,7	☐
☐	24	3	16-QAM	3/4	117	129,9	☐
☐	25	3	64-QAM	2/3	156	173,4	☐
☐	26	3	64-QAM	3/4	175,5	195	☐
☐	27	3	64-QAM	5/6	195	216,6	☐
☐	28	3	256-QAM	3/4	234	260,1	☐
☐	29	3	256-QAM	5/6	N/A	N/A	☐
☐	30	4	BPSK	1/2	26	28,8	☐
☐	31	4	QPSK	1/2	52	57,6	☐
☐	32	4	QPSK	3/4	78	86,8	☐
☐	33	4	16-QAM	1/2	104	115,6	☐
☐	34	4	16-QAM	3/4	156	173,2	☐
☐	35	4	64-QAM	2/3	208	231,2	☐
☐	36	4	64-QAM	3/4	234	260	☐
☐	37	4	64-QAM	5/6	260	288,8	☐
☐	38	4	256-QAM	3/4	312	346,8	☐
☐	39	4	256-QAM	5/6	N/A	N/A	☐
☐	40	5	BPSK	1/2	32,5	36	☐
☐	41	5	QPSK	1/2	65	72	☐
☐	42	5	QPSK	3/4	97,5	108,5	☐
☐	43	5	16-QAM	1/2	130	144,5	☐
☐	44	5	16-QAM	3/4	195	216,5	☐
☐	45	5	64-QAM	2/3	260	289	☐
☐	46	5	64-QAM	3/4	292,5	325	☐
☐	47	5	64-QAM	5/6	325	361	☐
☐	48	5	256-QAM	3/4	390	433,5	☐
☐	49	5	256-QAM	5/6	N/A	N/A	☐
☐	50	6	BPSK	1/2	39	43,2	☐
☐	51	6	QPSK	1/2	78	86,4	☐
☐	52	6	QPSK	3/4	117	130,2	☐
☐	53	6	16-QAM	1/2	156	173,4	☐
☐	54	6	16-QAM	3/4	234	259,8	☐
☐	55	6	64-QAM	2/3	312	346,8	☐
☐	56	6	64-QAM	3/4	351	390	☐
☐	57	6	64-QAM	5/6	390	433,2	☐
☐	58	6	256-QAM	3/4	468	520,2	☐
☐	59	6	256-QAM	5/6	N/A	N/A	☐
☐	60	7	BPSK	1/2	45,5	50,4	☐
☐	61	7	QPSK	1/2	91	100,8	☐
☐	62	7	QPSK	3/4	136,5	151,9	☐
☐	63	7	16-QAM	1/2	182	202,3	☐
☐	64	7	16-QAM	3/4	273	303,1	☐
☐	65	7	64-QAM	2/3	364	404,6	☐
☐	66	7	64-QAM	3/4	409,5	455	☐
☐	67	7	64-QAM	5/6	455	505,4	☐
☐	68	7	256-QAM	3/4	546	606,9	☐
☐	69	7	256-QAM	5/6	N/A	N/A	☐
☐	70	8	BPSK	1/2	52	57,6	☐
☐	71	8	QPSK	1/2	104	115,2	☐
☐	72	8	QPSK	3/4	156	173,6	☐
☐	73	8	16-QAM	1/2	208	231,2	☐
☐	74	8	16-QAM	3/4	312	346,4	☐
☐	75	8	64-QAM	2/3	416	462,4	☐
☐	76	8	64-QAM	3/4	468	520	☐
☐	77	8	64-QAM	5/6	520	577,6	☐
☐	78	8	256-QAM	3/4	624	693,6	☐
☐	79	8	256-QAM	5/6	N/A	N/A	☐

DATA RATE: 802.11ac VHT40							
Available for EUT	MCS Index	Nbr of spatial streams	Modulation (Stream 1/2/3/4)	Coding rate	GI = 800ns	GI = 400ns	Worst Case Modulation
☐	0	1	BPSK	1/2	13,5	15	☐
☐	1	1	QPSK	1/2	27	30	☐
☐	2	1	QPSK	3/4	40,5	45	☐
☐	3	1	16-QAM	1/2	54	60	☐
☐	4	1	16-QAM	3/4	81	90	☐
☐	5	1	64-QAM	2/3	108	120	☐
☐	6	1	64-QAM	3/4	121,5	135	☐
☐	7	1	64-QAM	5/6	135	150	☐
☐	8	1	256-QAM	3/4	162	180	☐
☐	9	1	256-QAM	5/6	180	200	☐
☐	10	2	BPSK	1/2	27	30	☐
☐	11	2	QPSK	1/2	54	60	☐
☐	12	2	QPSK	3/4	81	90	☐
☐	13	2	16-QAM	1/2	108	120	☐
☐	14	2	16-QAM	3/4	162	180	☐
☐	15	2	64-QAM	2/3	216	240	☐
☐	16	2	64-QAM	3/4	243	270	☐
☐	17	2	64-QAM	5/6	270	300	☐
☐	18	2	256-QAM	3/4	324	360	☐
☐	19	2	256-QAM	5/6	360	400	☐
☐	20	3	BPSK	1/2	40,5	45	☐
☐	21	3	QPSK	1/2	81	90	☐
☐	22	3	QPSK	3/4	121,5	135	☐
☐	23	3	16-QAM	1/2	162	180	☐
☐	24	3	16-QAM	3/4	243	270	☐
☐	25	3	64-QAM	2/3	324	360	☐
☐	26	3	64-QAM	3/4	364,5	405	☐
☐	27	3	64-QAM	5/6	405	450	☐
☐	28	3	256-QAM	3/4	486	540	☐
☐	29	3	256-QAM	5/6	540	600	☐
☐	30	4	BPSK	1/2	54	60	☐
☐	31	4	QPSK	1/2	108	120	☐
☐	32	4	QPSK	3/4	162	180	☐
☐	33	4	16-QAM	1/2	216	240	☐
☐	34	4	16-QAM	3/4	324	360	☐
☐	35	4	64-QAM	2/3	432	480	☐
☐	36	4	64-QAM	3/4	486	540	☐
☐	37	4	64-QAM	5/6	540	600	☐
☐	38	4	256-QAM	3/4	648	720	☐
☐	39	4	256-QAM	5/6	720	800	☐
☐	40	5	BPSK	1/2	67,5	75	☐
☐	41	5	QPSK	1/2	135	150	☐
☐	42	5	QPSK	3/4	202,5	225	☐
☐	43	5	16-QAM	1/2	270	300	☐
☐	44	5	16-QAM	3/4	405	450	☐
☐	45	5	64-QAM	2/3	540	600	☐
☐	46	5	64-QAM	3/4	607,5	675	☐
☐	47	5	64-QAM	5/6	675	750	☐
☐	48	5	256-QAM	3/4	810	900	☐
☐	49	5	256-QAM	5/6	900	1000	☐
☐	50	6	BPSK	1/2	81	90	☐
☐	51	6	QPSK	1/2	162	180	☐
☐	52	6	QPSK	3/4	243	270	☐
☐	53	6	16-QAM	1/2	324	360	☐
☐	54	6	16-QAM	3/4	486	540	☐
☐	55	6	64-QAM	2/3	648	720	☐
☐	56	6	64-QAM	3/4	729	810	☐
☐	57	6	64-QAM	5/6	810	900	☐
☐	58	6	256-QAM	3/4	972	1080	☐
☐	59	6	256-QAM	5/6	1080	1200	☐
☐	60	7	BPSK	1/2	94,5	105	☐
☐	61	7	QPSK	1/2	189	210	☐
☐	62	7	QPSK	3/4	283,5	315	☐
☐	63	7	16-QAM	1/2	378	420	☐
☐	64	7	16-QAM	3/4	567	630	☐
☐	65	7	64-QAM	2/3	756	840	☐
☐	66	7	64-QAM	3/4	850,5	945	☐
☐	67	7	64-QAM	5/6	945	1050	☐
☐	68	7	256-QAM	3/4	1134	1260	☐
☐	69	7	256-QAM	5/6	1260	1400	☐
☐	70	8	BPSK	1/2	108	120	☐
☐	71	8	QPSK	1/2	216	240	☐
☐	72	8	QPSK	3/4	324	360	☐
☐	73	8	16-QAM	1/2	432	480	☐
☐	74	8	16-QAM	3/4	648	720	☐
☐	75	8	64-QAM	2/3	864	960	☐
☐	76	8	64-QAM	3/4	972	1080	☐
☐	77	8	64-QAM	5/6	1080	1200	☐
☐	78	8	256-QAM	3/4	1296	1440	☐
☐	79	8	256-QAM	5/6	1440	1600	☐

DATA RATE: 802.11ac VHT80							
Available for EUT	MCS Index	Nbr of spatial streams	Modulation (Stream 1/2/3/4)	Coding rate	GI = 800ns	GI = 400ns	Worst Case Modulation
☐	0	1	BPSK	1/2	29.3	32.5	☐
☐	1	1	QPSK	1/2	58.5	65	☐
☐	2	1	QPSK	3/4	87.8	97.5	☐
☐	3	1	16-QAM	1/2	117	130	☐
☐	4	1	16-QAM	3/4	175.5	195	☐
☐	5	1	64-QAM	2/3	234	260	☐
☐	6	1	64-QAM	3/4	263.3	292.5	☐
☐	7	1	64-QAM	5/6	292.5	325	☐
☐	8	1	256-QAM	3/4	351	390	☐
☐	9	1	256-QAM	5/6	390	433.3	☐
☐	10	2	BPSK	1/2	58.6	65	☐
☐	11	2	QPSK	1/2	117	130	☐
☐	12	2	QPSK	3/4	175.6	195	☐
☐	13	2	16-QAM	1/2	234	260	☐
☐	14	2	16-QAM	3/4	351	390	☐
☐	15	2	64-QAM	2/3	468	520	☐
☐	16	2	64-QAM	3/4	526.6	585	☐
☐	17	2	64-QAM	5/6	585	650	☐
☐	18	2	256-QAM	3/4	702	780	☐
☐	19	2	256-QAM	5/6	780	866.6	☐
☐	20	3	BPSK	1/2	87.9	97.5	☐
☐	21	3	QPSK	1/2	175.5	195	☐
☐	22	3	QPSK	3/4	263.4	292.5	☐
☐	23	3	16-QAM	1/2	351	390	☐
☐	24	3	16-QAM	3/4	526.5	585	☐
☐	25	3	64-QAM	2/3	702	780	☐
☐	26	3	64-QAM	3/4	789.9	877.5	☐
☐	27	3	64-QAM	5/6	877.5	975	☐
☐	28	3	256-QAM	3/4	1053	1170	☐
☐	29	3	256-QAM	5/6	1170	1299.9	☐
☐	30	4	BPSK	1/2	117.2	130	☐
☐	31	4	QPSK	1/2	234	260	☐
☐	32	4	QPSK	3/4	351.2	390	☐
☐	33	4	16-QAM	1/2	468	520	☐
☐	34	4	16-QAM	3/4	702	780	☐
☐	35	4	64-QAM	2/3	936	1040	☐
☐	36	4	64-QAM	3/4	1053.2	1170	☐
☐	37	4	64-QAM	5/6	1170	1300	☐
☐	38	4	256-QAM	3/4	1404	1560	☐
☐	39	4	256-QAM	5/6	1560	1733.2	☐
☐	40	5	BPSK	1/2	146.5	162.5	☐
☐	41	5	QPSK	1/2	292.5	325	☐
☐	42	5	QPSK	3/4	439	487.5	☐
☐	43	5	16-QAM	1/2	585	650	☐
☐	44	5	16-QAM	3/4	877.5	975	☐
☐	45	5	64-QAM	2/3	1170	1300	☐
☐	46	5	64-QAM	3/4	1316.5	1462.5	☐
☐	47	5	64-QAM	5/6	1462.5	1625	☐
☐	48	5	256-QAM	3/4	1755	1950	☐
☐	49	5	256-QAM	5/6	1950	2166.5	☐
☐	50	6	BPSK	1/2	175.8	195	☐
☐	51	6	QPSK	1/2	351	390	☐
☐	52	6	QPSK	3/4	526.8	585	☐
☐	53	6	16-QAM	1/2	702	780	☐
☐	54	6	16-QAM	3/4	1053	1170	☐
☐	55	6	64-QAM	2/3	1404	1560	☐
☐	56	6	64-QAM	3/4	1579.8	1755	☐
☐	57	6	64-QAM	5/6	1755	1950	☐
☐	58	6	256-QAM	3/4	2106	2340	☐
☐	59	6	256-QAM	5/6	2340	2599.8	☐
☐	60	7	BPSK	1/2	205.1	227.5	☐
☐	61	7	QPSK	1/2	409.5	455	☐
☐	62	7	QPSK	3/4	614.6	682.5	☐
☐	63	7	16-QAM	1/2	819	910	☐
☐	64	7	16-QAM	3/4	1228.5	1365	☐
☐	65	7	64-QAM	2/3	1638	1820	☐
☐	66	7	64-QAM	3/4	1843.1	2047.5	☐
☐	67	7	64-QAM	5/6	2047.5	2275	☐
☐	68	7	256-QAM	3/4	2457	2730	☐
☐	69	7	256-QAM	5/6	2730	3033.1	☐
☐	70	8	BPSK	1/2	234.4	260	☐
☐	71	8	QPSK	1/2	468	520	☐
☐	72	8	QPSK	3/4	702.4	780	☐
☐	73	8	16-QAM	1/2	936	1040	☐
☐	74	8	16-QAM	3/4	1404	1560	☐
☐	75	8	64-QAM	2/3	1872	2080	☐
☐	76	8	64-QAM	3/4	2106.4	2340	☐
☐	77	8	64-QAM	5/6	2340	2600	☐
☐	78	8	256-QAM	3/4	2808	3120	☐
☐	79	8	256-QAM	5/6	3120	3466.4	☐

DATA RATE: 802.11ac VHT160							
Available for EUT	MCS Index	Nbr of spatial streams	Modulation (Stream 1/2/3/4)	Coding rate	GI = 800ns	GI = 400ns	Worst Case Modulation
☐	0	1	BPSK	1/2	58,5	65	☐
☐	1	1	QPSK	1/2	117	130	☐
☐	2	1	QPSK	3/4	175,5	195	☐
☐	3	1	16-QAM	1/2	234	260	☐
☐	4	1	16-QAM	3/4	351	390	☐
☐	5	1	64-QAM	2/3	468	520	☐
☐	6	1	64-QAM	3/4	526,5	585	☐
☐	7	1	64-QAM	5/6	585	650	☐
☐	8	1	256-QAM	3/4	702	780	☐
☐	9	1	256-QAM	5/6	780	866,6	☐
☐	10	2	BPSK	1/2	117	130	☐
☐	11	2	QPSK	1/2	234	260	☐
☐	12	2	QPSK	3/4	351	390	☐
☐	13	2	16-QAM	1/2	468	520	☐
☐	14	2	16-QAM	3/4	702	780	☐
☐	15	2	64-QAM	2/3	936	1040	☐
☐	16	2	64-QAM	3/4	1053	1170	☐
☐	17	2	64-QAM	5/6	1170	1300	☐
☐	18	2	256-QAM	3/4	1404	1560	☐
☐	19	2	256-QAM	5/6	1560	1733,3	☐
☐	20	3	BPSK	1/2	175,5	195	☐
☐	21	3	QPSK	1/2	351	390	☐
☐	22	3	QPSK	3/4	526,5	585	☐
☐	23	3	16-QAM	1/2	702	780	☐
☐	24	3	16-QAM	3/4	1053	1170	☐
☐	25	3	64-QAM	2/3	1404	1560	☐
☐	26	3	64-QAM	3/4	1579,5	1755	☐
☐	27	3	64-QAM	5/6	1755	1950	☐
☐	28	3	256-QAM	3/4	2106	2340	☐
☐	29	3	256-QAM	5/6	-	-	☐
☐	30	4	BPSK	1/2	234	260	☐
☐	31	4	QPSK	1/2	468	520	☐
☐	32	4	QPSK	3/4	702	780	☐
☐	33	4	16-QAM	1/2	936	1040	☐
☐	34	4	16-QAM	3/4	1404	1560	☐
☐	35	4	64-QAM	2/3	1872	2080	☐
☐	36	4	64-QAM	3/4	2106	2340	☐
☐	37	4	64-QAM	5/6	2340	2600	☐
☐	38	4	256-QAM	3/4	2808	3120	☐
☐	39	4	256-QAM	5/6	3120	3466,7	☐
☐	40	5	BPSK	1/2	292,5	325	☐
☐	41	5	QPSK	1/2	585	650	☐
☐	42	5	QPSK	3/4	877,5	975	☐
☐	43	5	16-QAM	1/2	1170	1300	☐
☐	44	5	16-QAM	3/4	1755	1950	☐
☐	45	5	64-QAM	2/3	2340	2600	☐
☐	46	5	64-QAM	3/4	2632,5	2925	☐
☐	47	5	64-QAM	5/6	2925	3250	☐
☐	48	5	256-QAM	3/4	3510	3900	☐
☐	49	5	256-QAM	5/6	3900	4333,3	☐
☐	50	6	BPSK	1/2	351	390	☐
☐	51	6	QPSK	1/2	702	780	☐
☐	52	6	QPSK	3/4	1053	1170	☐
☐	53	6	16-QAM	1/2	1404	1560	☐
☐	54	6	16-QAM	3/4	2106	2340	☐
☐	55	6	64-QAM	2/3	2808	3120	☐
☐	56	6	64-QAM	3/4	3159	3510	☐
☐	57	6	64-QAM	5/6	3510	3900	☐
☐	58	6	256-QAM	3/4	4212	4680	☐
☐	59	6	256-QAM	5/6	4680	5200	☐
☐	60	7	BPSK	1/2	409,5	455	☐
☐	61	7	QPSK	1/2	819	910	☐
☐	62	7	QPSK	3/4	1228,5	1365	☐
☐	63	7	16-QAM	1/2	1638	1820	☐
☐	64	7	16-QAM	3/4	2457	2730	☐
☐	65	7	64-QAM	2/3	3276	3640	☐
☐	66	7	64-QAM	3/4	3685,5	4095	☐
☐	67	7	64-QAM	5/6	4095	4550	☐
☐	68	7	256-QAM	3/4	4914	5460	☐
☐	69	7	256-QAM	5/6	5460	6066,7	☐
☐	70	8	BPSK	1/2	468	520	☐
☐	71	8	QPSK	1/2	936	1040	☐
☐	72	8	QPSK	3/4	1404	1560	☐
☐	73	8	16-QAM	1/2	1872	2080	☐
☐	74	8	16-QAM	3/4	2808	3120	☐
☐	75	8	64-QAM	2/3	3744	4160	☐
☐	76	8	64-QAM	3/4	4212	4680	☐
☐	77	8	64-QAM	5/6	4680	5200	☐
☐	78	8	256-QAM	3/4	5616	6240	☐
☐	79	8	256-QAM	5/6	6240	6932,3	☐

Test report reference: N°143160-689135-D

802.11a

Channel	Tx1 (dBm)	AG (dBi)	Tx Limit FCC (dBm)	Tx EIRP (dBm)	EIRP Limit RSS (dBm)
C1	10.34	1.5	24	11.8	23
C2	10.44	1.5	24	11.9	23
C3	10.13	1.5	24	11.6	23
C4	10.94	1.5	24	12.4	30
C5	11.18	1.5	24	12.7	30
C6	11.38	1.5	24	12.9	30
C7	14.76	1.5	24	16.3	30
C8	13.49	1.5	24	15.0	30
C9	12.55	1.5	24	14.1	30

802.11n HT20

Channel	Tx1 (dBm)	AG (dBi)	Tx Limit FCC (dBm)	Tx EIRP (dBm)	EIRP Limit RSS (dBm)
C1	10.15	1.5	24	11.7	23
C2	10.29	1.5	24	11.8	23
C3	10.14	1.5	24	11.6	23
C4	10.85	1.5	24	12.4	30
C5	11.13	1.5	24	12.6	30
C6	11.08	1.5	24	12.6	30
C7	14.63	1.5	24	16.1	30
C8	13.51	1.5	24	15.0	30
C9	12.40	1.5	24	13.9	30

802.11n HT40

Channel	Tx1 (dBm)	AG (dBi)	Tx Limit FCC (dBm)	Tx EIRP (dBm)	EIRP Limit RSS (dBm)
C14	10.24	1.5	24	11.7	23
C15	9.93	1.5	24	11.4	23
C16	10.66	1.5	24	12.2	23
C17	10.95	1.5	24	12.5	30
C18	14.52	1.5	24	16.0	30
C19	13.98	1.5	24	15.5	30
C20	13.07	1.5	24	14.6	30

2.3. RUNNING MODE

The EUT is set in the following modes during tests:
- Emission-reception with a duty cycle above 17% in the data rate that produced the highest output power
- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power

Test setup:
The EUT is connected to the master device (auxiliary). The choice of data traffic, modulation and duty cycle are set in the EUT software. The sleep tempo is set in 27ms (duty cycle >17%)

Firmware / Software version of EUT: SDK_OS 03.20.08

2.4. EQUIPMENT MODIFICATION

☑ None ☐ Modification:

3. DFS DETECTION THRESHOLDS DETERMINATION, REFERENCE NOISE LEVEL & CHANNEL LOADING

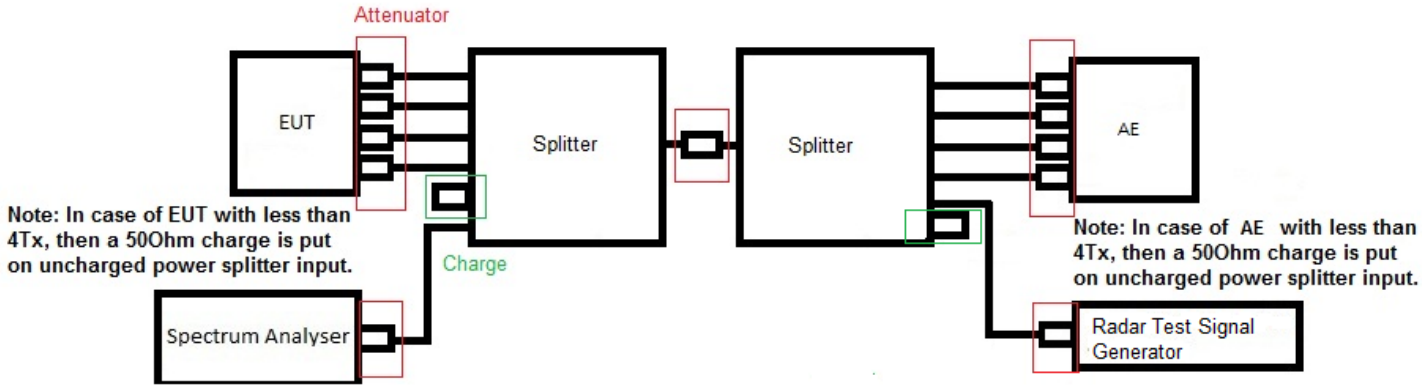
3.1. TEST CONDITIONS

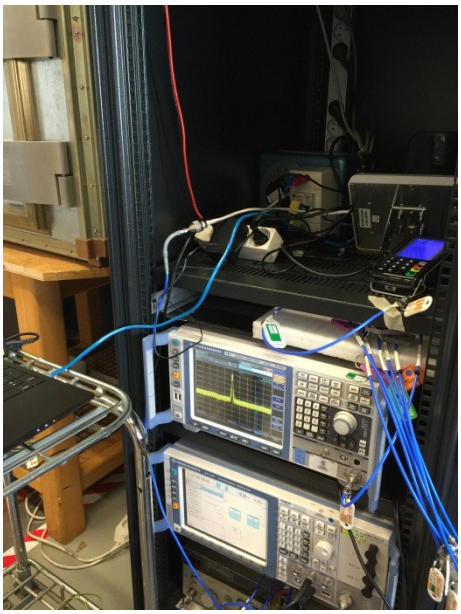
Test performed by : Gaetan DESCHAMPS
Date of test : November 16, 2016
Ambient temperature : 20 °C
Relative humidity : 30 %

3.2. TEST SETUP

- The Equipment Under Test is:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer:
☑ On the EUT conducted access
☐ On the EUT with a test fixture





Photograph for DFS Detection Thresholds Determination, Reference Noise Level, Channel Loading

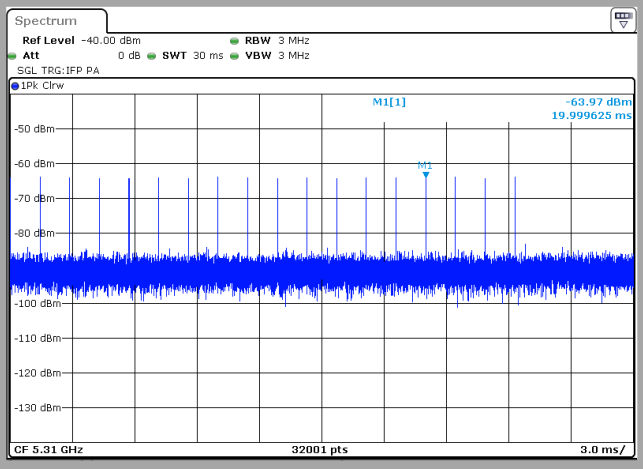
3.3. TEST EQUIPMENT LIST

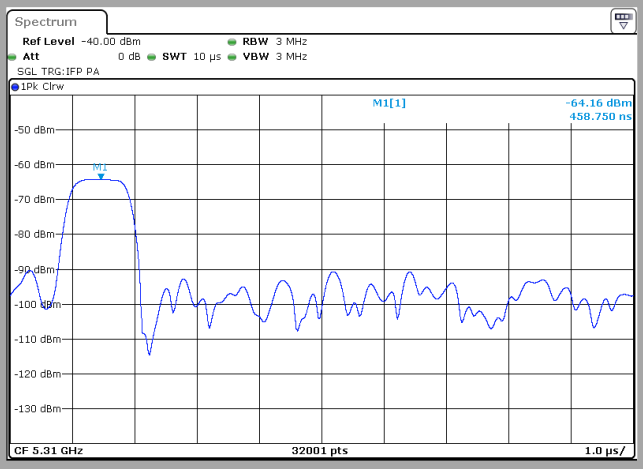
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122249	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122250	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122251	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122252	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122253	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122254	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122255	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122256	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122257	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122258	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122259	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122260	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122261	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122262	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122263	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122264	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122265	11/15	11/16
Attenuator 10dB	AEROFLEX	-	A7122267	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122268	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122269	08/16	08/17
Attenuator 10dB	AEROFLEX	-	A7122270	02/16	02/17
Cable SMA	STORMFLEX	60cm	A5329683	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329684	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329685	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329686	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329687	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329688	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329689	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329690	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329691	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329692	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329693	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329694	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329695	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329696	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329697	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329698	11/15	11/16

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable 2m	-	-	A5329701	01/16	01/17
Cable 2m	-	-	A5329702	01/16	01/17
Cable 2m	-	-	A5329703	01/16	01/17
Cable 2m	-	-	A5329704	02/16	02/17
Cable 2m	-	-	A5329705	08/16	08/17
Cable 2m	-	-	A5329706	08/16	08/17
Vector Signal Generator	RHODE & SCHWARZ	SMJ100A - K62	A5400043	11/16	11/17
Frequency generator 2GHz – 18GHz	HEWLETT PACKARD	8672A	A5442022	09/16	09/17
Load 50Ω SMA	-	-	A7156020	11/15	11/16
Load 50Ω SMA	-	-	A7156021	11/15	11/16
Load 50Ω SMA	-	-	A7156022	11/15	11/16
Load 50Ω SMA	-	-	A7156023	11/15	11/16
Load 50Ω SMA	-	-	A7156024	11/15	11/16
Load 50Ω SMA	-	-	A7156025	11/15	11/16
Load 50Ω SMA	-	-	A7156026	11/15	11/16
Load 50Ω SMA	-	-	A7156027	11/15	11/16
Load 50Ω SMA	-	-	A7156028	11/15	11/16
Load 50Ω SMA	-	-	A7156029	11/15	11/16
Load 50Ω SMA	-	-	A7156030	11/15	11/16
Load 50Ω SMA	-	-	A7156031	11/15	11/16
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130080	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130081	11/15	11/16
RSCommander	R&S	v1.6.4	L1000116	-	-
Thermometer (radio)	FLUKE	52 II	B4043150	-	-
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	08/16	08/17

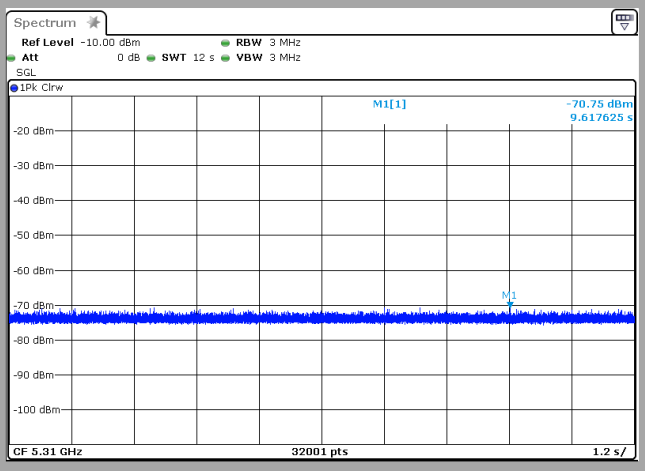
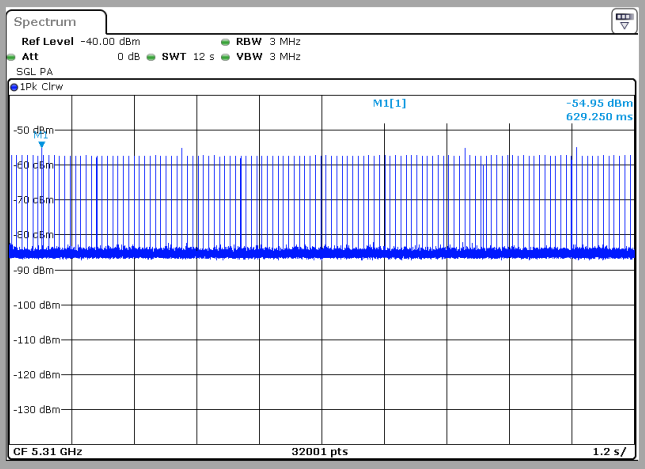
3.4. RESULTS

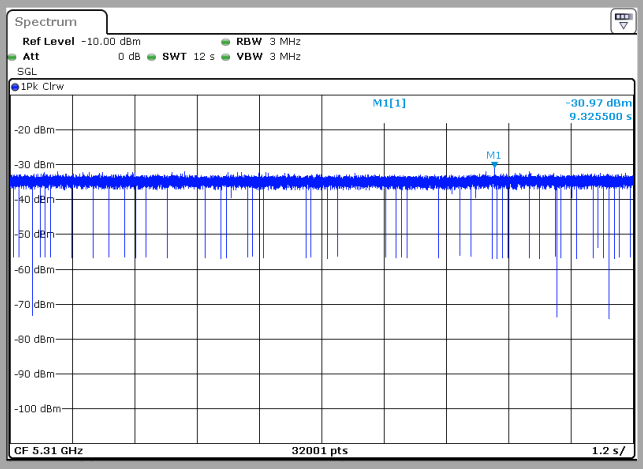
DFS Detection Thresholds Calibration
C7
Type 0

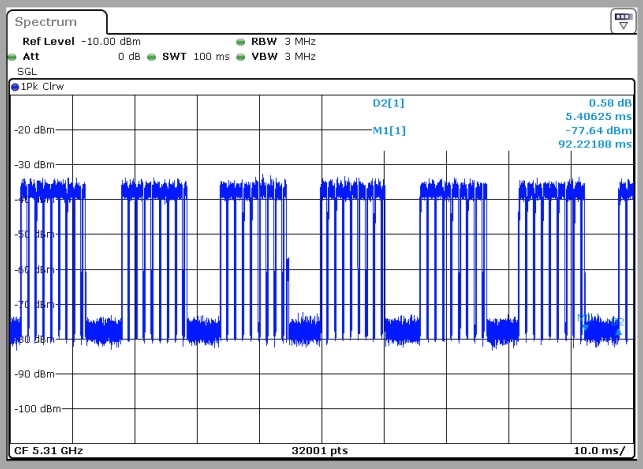




Temperature	**Tnom**
Voltage	**Vnom**
Channel	**C7**
Duty Cycle (%)	**Over 17**
EIRP (See test report from FCC ID: RRK2012060056-1)	338,065mW
DFS Detection thresholds applied	-64dBm

Reference Noise Level
C7

Master Level
C7


Client Level
C7


Client
C7


Duty Cycle (%)	Over 17%

4. DYNAMIC FREQUENCY SELECTION (DFS): CHANNEL CLOSING TRANSMISSION TIME & CHANNEL MOVE TIME

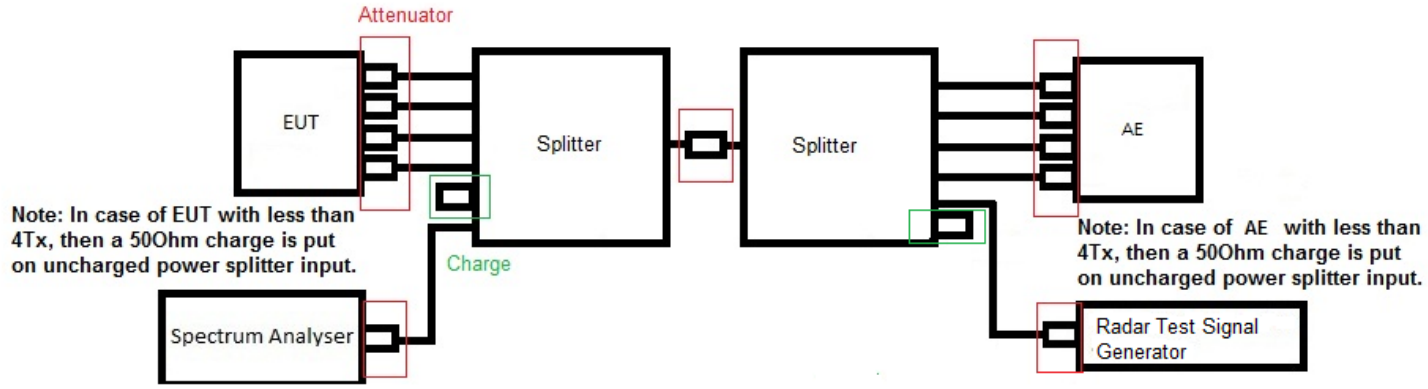
4.1. TEST CONDITIONS

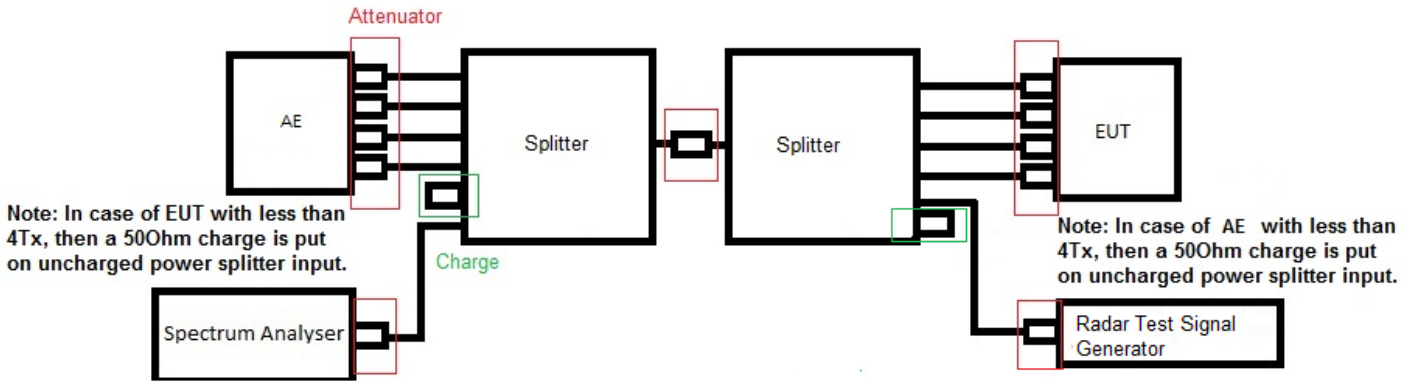
Test performed by : Gaetan DESCHAMPS
Date of test : November 16, 2016
Ambient temperature : 20 °C
Relative humidity : 30 %

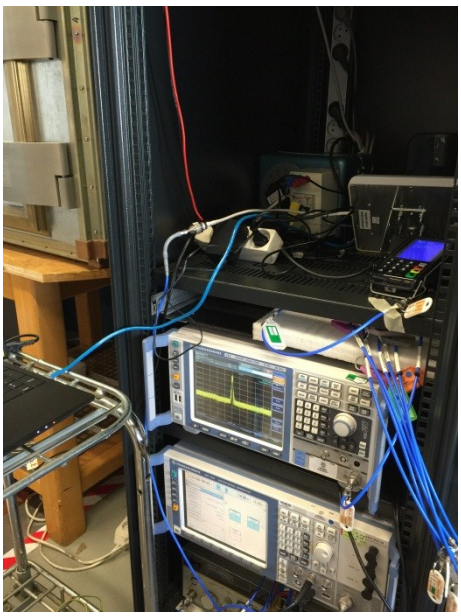
4.2. TEST SETUP

- The Equipment Under Test is:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer:
☑ On the EUT conducted access
☐ On the EUT with a test fixture







Photograph for DFS Channel Closing Transmission Time & Channel Move Time

4.3. LIMIT

Channel Closing Transmission Time shall not exceed 0.26second
Channel Move Time shall not exceed 10seconds

4.4. TEST EQUIPMENT LIST

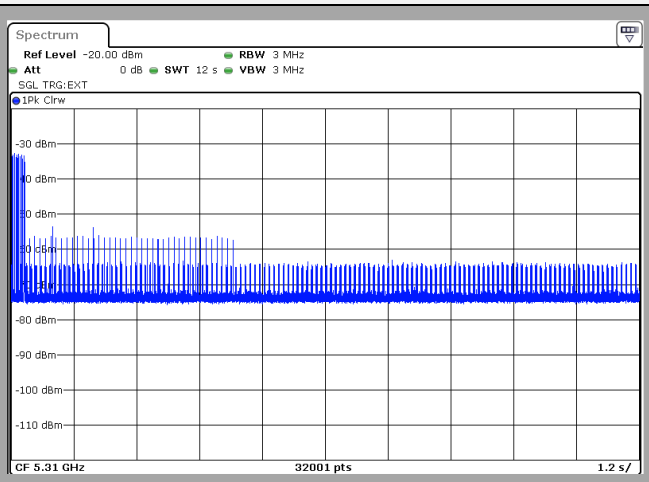
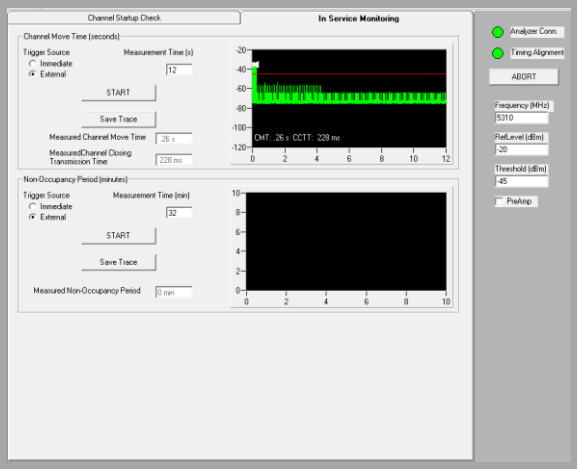
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122249	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122250	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122251	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122252	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122253	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122254	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122255	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122256	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122257	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122258	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122259	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122260	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122261	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122262	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122263	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122264	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122265	11/15	11/16
Attenuator 10dB	AEROFLEX	-	A7122267	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122268	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122269	08/16	08/17
Attenuator 10dB	AEROFLEX	-	A7122270	02/16	02/17
Cable SMA	STORMFLEX	60cm	A5329683	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329684	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329685	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329686	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329687	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329688	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329689	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329690	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329691	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329692	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329693	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329694	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329695	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329696	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329697	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329698	11/15	11/16

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable 2m	-	-	A5329701	01/16	01/17
Cable 2m	-	-	A5329702	01/16	01/17
Cable 2m	-	-	A5329703	01/16	01/17
Cable 2m	-	-	A5329704	02/16	02/17
Cable 2m	-	-	A5329705	08/16	08/17
Cable 2m	-	-	A5329706	08/16	08/17
Vector Signal Generator	RHODE & SCHWARZ	SMJ100A - K62	A5400043	11/16	11/17
Frequency generator 2GHz – 18GHz	HEWLETT PACKARD	8672A	A5442022	09/16	09/17
Load 50Ω SMA	-	-	A7156020	11/15	11/16
Load 50Ω SMA	-	-	A7156021	11/15	11/16
Load 50Ω SMA	-	-	A7156022	11/15	11/16
Load 50Ω SMA	-	-	A7156023	11/15	11/16
Load 50Ω SMA	-	-	A7156024	11/15	11/16
Load 50Ω SMA	-	-	A7156025	11/15	11/16
Load 50Ω SMA	-	-	A7156026	11/15	11/16
Load 50Ω SMA	-	-	A7156027	11/15	11/16
Load 50Ω SMA	-	-	A7156028	11/15	11/16
Load 50Ω SMA	-	-	A7156029	11/15	11/16
Load 50Ω SMA	-	-	A7156030	11/15	11/16
Load 50Ω SMA	-	-	A7156031	11/15	11/16
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130080	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130081	11/15	11/16
RSCommander	R&S	v1.6.4	L1000116	-	-
Thermometer (radio)	FLUKE	52 II	B4043150	-	-
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	08/16	08/17

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

4.6. RESULTS

Channel Closing Transmission Time & Channel Move Time	
802.11n HT40	
C7	
	
	
Channel Closing Transmission Time (s)	0.228
Channel Move Time (s)	0.260

4.7. CONCLUSION

Channel Closing Transmission Time & Channel Move Time measurement performed on the sample of the product **INGENICO Desk/5000 CL/Eth/Mod/WiFi/BT**, SN: **160287313331013301014523**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 & RSS 247 ISSUE 1 limits.

5. DYNAMIC FREQUENCY SELECTION (DFS): NON-OCCUPANCY PERIOD

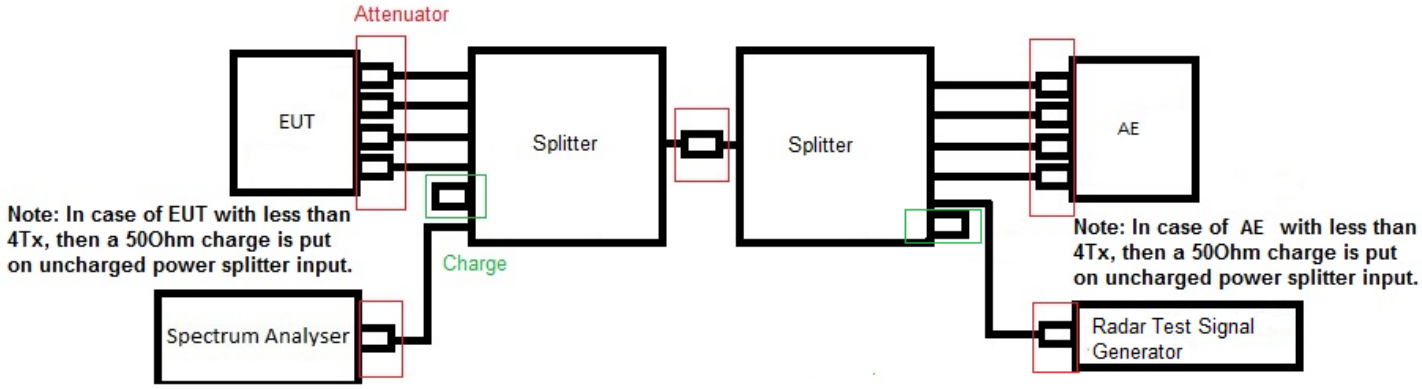
5.1. TEST CONDITIONS

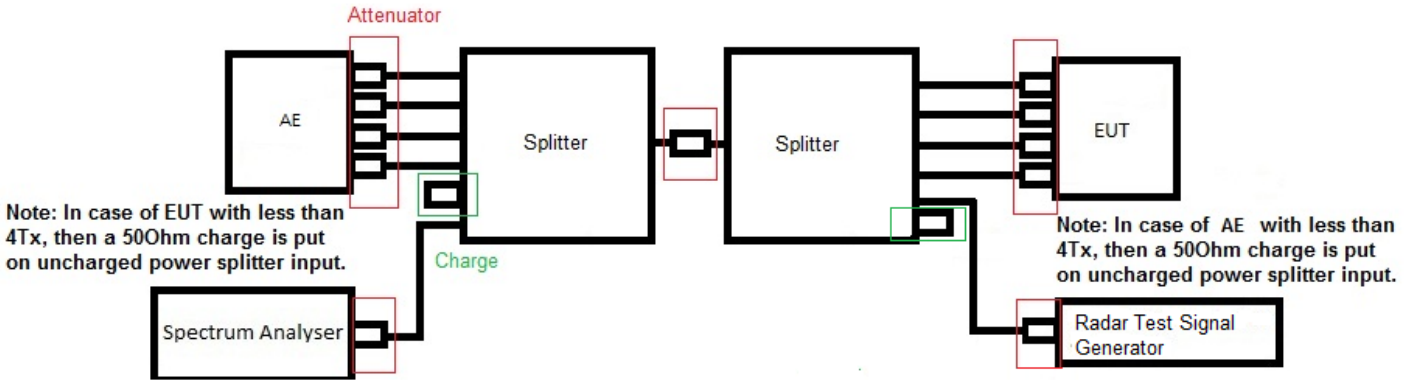
Test performed by : Gaetan DESCHAMPS
Date of test : November 16, 2016
Ambient temperature : 20 °C
Relative humidity : 30 %

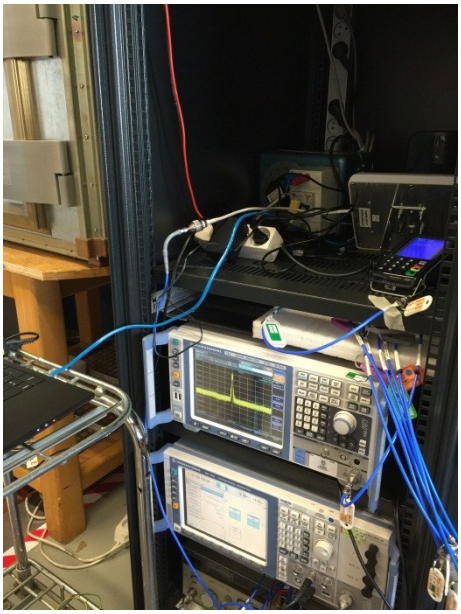
5.2. TEST SETUP

- The Equipment Under Test is:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer:
☑ On the EUT conducted access
☐ On the EUT with a test fixture







Photograph for DFS Non-Occupancy Period

5.3. LIMIT

Non-Occupancy Period shall exceed 1800 seconds

5.4. TEST EQUIPMENT LIST

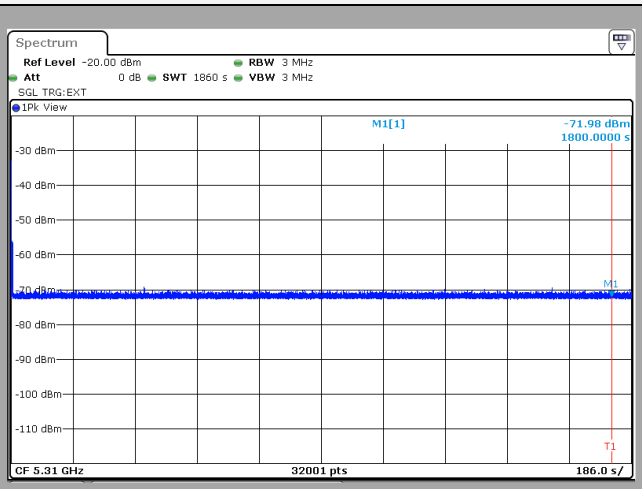
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122249	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122250	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122251	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122252	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122253	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122254	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122255	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122256	11/15	11/16
Attenuator 3dB SMA	Mini-Circuit	BW-S3W2+	A7122257	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122258	11/15	11/16
Attenuator 10dB SMA	Mini-Circuit	BW-S10W2+	A7122259	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122260	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122261	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122262	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122263	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122264	11/15	11/16
Attenuator 40dB SMA	Mini-Circuit	BW-S40W2+	A7122265	11/15	11/16
Attenuator 10dB	AEROFLEX	-	A7122267	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122268	06/16	06/17
Attenuator 10dB	AEROFLEX	-	A7122269	08/16	08/17
Attenuator 10dB	AEROFLEX	-	A7122270	02/16	02/17
Cable SMA	STORMFLEX	60cm	A5329683	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329684	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329685	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329686	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329687	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329688	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329689	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329690	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329691	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329692	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329693	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329694	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329695	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329696	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329697	11/15	11/16
Cable SMA	STORMFLEX	60cm	A5329698	11/15	11/16

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable 2m	-	-	A5329701	01/16	01/17
Cable 2m	-	-	A5329702	01/16	01/17
Cable 2m	-	-	A5329703	01/16	01/17
Cable 2m	-	-	A5329704	02/16	02/17
Cable 2m	-	-	A5329705	08/16	08/17
Cable 2m	-	-	A5329706	08/16	08/17
Vector Signal Generator	RHODE & SCHWARZ	SMJ100A - K62	A5400043	11/16	11/17
Frequency generator 2GHz – 18GHz	HEWLETT PACKARD	8672A	A5442022	09/16	09/17
Load 50Ω SMA	-	-	A7156020	11/15	11/16
Load 50Ω SMA	-	-	A7156021	11/15	11/16
Load 50Ω SMA	-	-	A7156022	11/15	11/16
Load 50Ω SMA	-	-	A7156023	11/15	11/16
Load 50Ω SMA	-	-	A7156024	11/15	11/16
Load 50Ω SMA	-	-	A7156025	11/15	11/16
Load 50Ω SMA	-	-	A7156026	11/15	11/16
Load 50Ω SMA	-	-	A7156027	11/15	11/16
Load 50Ω SMA	-	-	A7156028	11/15	11/16
Load 50Ω SMA	-	-	A7156029	11/15	11/16
Load 50Ω SMA	-	-	A7156030	11/15	11/16
Load 50Ω SMA	-	-	A7156031	11/15	11/16
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130080	11/15	11/16
Splitter	Mini Circuits	ZN8PD-642W-S+	A7130081	11/15	11/16
RSCommander	R&S	v1.6.4	L1000116	-	-
Thermometer (radio)	FLUKE	52 II	B4043150	-	-
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	08/16	08/17

5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

5.6. RESULTS

Non Occupancy Period	
802.11n HT40	
C7	
	
	
Non occupancy period:	>31mn (1860sec)

5.7. CONCLUSION

Non-Occupancy period measurement performed on the sample of the product **INGENICO Desk/5000 CL/Eth/Mod/WiFi/BT**, SN: **160287313331013301014523**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 & RSS 247 ISSUE 1 limits.

6. RADAR TEST SIGNALS

TEST SIGNAL 0		
Pulses per Burst	**Pulse Width (µsec)**	**PRI (µs)**
18	1	1428

7. UNCERTAINTIES CHART

Type de mesure / *Kind of measurement*	**Incertitude élargie laboratoire / *Wide uncertainty laboratory* (k=2) ± x**	**Incertitude limite du CISPR / *CISPR uncertainty limit* ± y**
Mesure des perturbations conduites en tension sur le réseau d'énergie *Measurement of conducted disturbances in voltage on the power port*	3.51 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication *Measurement of conducted disturbances in voltage on the telecommunication port.*	3.26 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension *Measurement of discontinuous conducted disturbances in voltage*	3.45 dB	3.6 dB
Mesure des perturbations conduites en courant *Measurement of conducted disturbances in current*	3.09 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans *Measurement of radiated electric field on the Moirans open area test site*	5.20 dB	6.3 dB

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par la norme, la conformité de l'échantillon est établie directement par les niveaux limites applicables. / *The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the standard. The conformity of the sample is directly established by the applicable limits values.*