



LCIE

WIFI 5GHz Template: Release February 06th, 2020

TEST REPORT

N°: 167005-751005-C

Version : 01

Subject

Radio spectrum matters
tests according to standards:
47 CFR Part 15.407(RF Test Only)
(Limited Program)

Issued to

SAGEMCOM BROADBAND
250 Route de l'Empereur
92500 - RUEIL MALMAISON
FRANCE

Apparatus under test

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

Set Top Box
SAGEMCOM
SAGEMCOM
DCIW384 UHD Alt US V4
195005290000030
VW3DCIW384-V4

Conclusion

See Test Program chapter

Test date

May 4, 2020 to May 15, 2020

Test location

Fontenay Aux Roses & Ecuelles

Test Site

6230B-1

Sample receipt date

May 4, 2020

Composition of document

49 pages

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Written by :
Armand MAHOUNGOU
Tests operator

Approved by :

Arnaud FAYETTE
Technical manager
INDUSTRIES ELECTRIQUES
15, rue de la République 15 745 984 6
33 avenue du Général Leclerc
F - 92700 FONTENAY AUX ROSES

Fayette

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LCIE

Laboratoire Central des Industries Electriques
Une société de Bureau Veritas

33, Av du Général Leclerc
92266 Fontenay Aux Roses
FRANCE

Tél : +33 1 40 95 60 60
contact@lcie.fr
www.lcie.fr



PUBLICATION HISTORY

Version	Date	Author	Modification
01	June 23, 2020	Armand MAHOUNGOU	Creation of the document

Each new edition of this test report replaces and cancels the previous edition. The control of the old editions of report is under responsibility of client.



SUMMARY

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1. TEST PROGRAM

References

- 47 CFR Part 15.407
- KDB 789033 D02 General U-NII Tests Procedures New Rules v02r01
- KDB 662911 D01 Multiple Transmitter Output v02r01
- KDB 484596 D01 Referencing Test Data v01
- ANSI C63.10-2013

Radio requirement:

Clause (47CFR Part 15.407) Test Description	Test result - Comments			
Occupied Bandwidth P	☒ PASS(1)	☐ FAIL	☐ NA	☐ NP
26dB Bandwidth P	☐ PASS	☐ FAIL	☐ NA(3)	☒ NP(2)
6dB Bandwidth P	☒ PASS(1)	☐ FAIL	☐ NA(4)	☐ NP
Duty Cycle P	☒ PASS(1)	☐ FAIL	☐ NA	☐ NP
EIRP P	☒ PASS(1)	☐ FAIL	☐ NA	☐ NP
Maximum Conducted Output Power P	☒ PASS(1)	☐ FAIL	☐ NA	☐ NP
Power Spectral Density P	☐ PASS	☐ FAIL	☐ NA	☒ NP(2)
Transmit Power Control P	☐ PASS	☐ FAIL	☐ NA(5)	☒ NP(2)
AC Power Line Conducted Emission P	☒ PASS(1)	☐ FAIL	☐ NA(6)	☐ NP
Unwanted Emissions & Undesirable Emission P	☒ PASS(1)	☐ FAIL	☐ NA	☐ NP
Frequency Stability P	☐ PASS	☐ FAIL	☐ NA	☒ NP(2)
This table is a summary of test report, see conclusion of each clause of this test report for detail.				

(1): Spot check verification. For additional results see test report: 155636-721608-D (FCC ID: VW3DCIWA384-V2)

(2): Limited program. See test report 155636-721608-D (FCC ID: VW3DCIWA384-V2)

(3): EUT only operates outside the 5725MHz-5850MHz band

(4): EUT only operates inside the 5725MHz-5850MHz band

(5): EIRP below 27dBm or EUT only operates inside 5150MHz-5250MHz or/and 5725MHz-5850MHz bands

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

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

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

SAGEMCOM DCIW384 UHD Ait US V4

Serial Number: 195005290000030

Power supply:

During all the tests, EUT is supplied by V_{nom} : 120V-60Hz

For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Sn	Comments
Supply1	☒ AC ☐ DC ☐ Battery	100-127V	NBS30G120250VU 191600824-xx	NETBIT

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
1	Power supply	1	☒	☐	☒	

Equipment information:

Type:	WIFI			
Frequency band:	☒ 5150MHz-5250MHz	☒ 5250MHz-5350MHz		☒ 5470MHz-5725MHz
	☒ 5725MHz-5850MHz			
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
TPC:	☒ Yes		☐ No	
Receiver chains	☐ 1	☐ 2	☐ 3	☒ 4
	☐ 5	☐ 6	☐ 7	☐ 8
Type of equipment:	☒ Stand-alone	☐ Plug-in		☐ Combined
Operating temperature range:	Tmin:	☐ -20℃	☒ 0℃	☐ X ℃
	Tnom:	20℃		
	Tmax:	☐ 35℃	☐ 55℃	☒ 45 ℃
Type of power source:	☒ AC power supply	☐ DC power supply		☐ Battery Battery Type
Operating voltage range:	Vnom:	☒ 120V/60Hz		☐ X Vdc
Mode:	☐ Master	☐ Slave with radar detection		☒ Slave without radar detection
	☐ Bridge		☐ Mesh	

Fixed outdoor P to P/M application:	☐ Yes	☒ No
System architectures:	☒ IP based	☐ Frame based
User access restriction:	☒ Yes (The manufacturer declares that information regarding the parameters of the detected Radar Waveforms is not available to the end user)	☐ No

Antenna Characteristic			
Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
1	1,58	5150-5350	50
2	1,02	5150-5350	50
3	2	5150-5350	50
4	1,7	5150-5350	50
Accumulated	7.6	5150-5350	50
Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
1	2,62	5470-5850	50
2	2,1	5470-5850	50
3	2,96	5470-5850	50
4	2,8	5470-5850	50
Accumulated	8.65	5470-5850	50

Accumulated gain calculation		
Formula used for calculation	KDB	Correlated
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi	KDB 662911 D01 v02r01	☒ Yes / ☐ No

Hardware information		
Software (if applicable):	V. :	To be defined by customer

CHANNEL PLAN		
802.11a / 802.11n HT20/ 802.11ac VHT20		
Channel	Frequency (MHz)	Available Channel
C1=36	5180	☒
C2=40	5200	☒
44	5220	☒
C3=48	5240	☒
C4=52	5260	☒
56	5280	☒
C5=60	5300	☒
C6=64	5320	☒
C7=100	5500	☒
104	5520	☒
108	5540	☒
112	5560	☒
C8=116	5580	☒
120	5600	☒
124	5620	☒
128	5640	☒
132	5660	☒
136	5680	☒
C9=140	5700	☒
C10=144	5720	☒
C11=149	5745	☒
153	5765	☒
C12=157	5785	☒
161	5805	☒
C13=165	5825	☒

CHANNEL PLAN		
802.11n HT40/ 802.11ac VHT40		
Channel	Frequency (MHz)	Available Channel
C14=36+40	5190	☒
C15=44+48	5230	☒
C16=52+56	5270	☒
C17=60+64	5310	☒
C18=100+104	5510	☒
C19=108+112	5550	☒
116+120	5590	☒
124+128	5630	☒
C20=132+136	5670	☒
C21=140+144	5710	☒
C22=149+153	5755	☒
C23=157+161	5795	☒

CHANNEL PLAN		
802.11ac VHT80		
Channel	Frequency (MHz)	Available Channel
C24=36+40+44+48	5210	☒
C25=52+56+60+64	5290	☒
C26=100+104+108+112	5530	☒
C27=116+120+124+128	5610	☒
C28=132+136+140+144	5690	☒
C29=149+153+157+161	5775	☒

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	☐



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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	☐



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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	☐



2.2. RUNNING MODE

Test mode	Description of test mode
Test mode 1	Permanent emission with modulation on a fixed channel in the data rate that produced the highest power

Test	Running mode
Occupied Bandwidth	☒ Test mode 1 (1) ☐ Alternative test mode()
6dB Bandwidth	☒ Test mode 1 (1) ☐ Alternative test mode()
Duty Cycle	☒ Test mode 1 (1) ☐ Alternative test mode()
EIRP	☒ Test mode 1 (1) ☐ Alternative test mode()
Maximum Conducted Output Power	☒ Test mode 1 (1) ☐ Alternative test mode()
AC Power Line Conducted Emission	☒ Test mode 1 (1) ☐ Alternative test mode()
Unwanted Emissions & Undesirable Emission	☒ Test mode 1 (1) ☐ Alternative test mode()

(1) Following commands with the specific test software "MTool V3.0.0.1" are used to set the product:

- a. – See document "SD-2020_05_06 - WIFI compliance test command of M384R-US-4L FCC 5GHz.docx"(provided by customer) for the command used during test.

2.3. EQUIPMENT LABELLING

	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Code barre type 128 MSO Part Number: XXXXX Code barre type 128 12 Digits SGCSN: 123456789012 Code barre type 128 STB MAC: XXXXXXXXXXXXX Code barre type 128 Wi-Fi 5 GHz MAC: XXXXXXXXXXXXX </td> <td style="width: 50%; padding: 5px;"> Sagemcom DCIW384 UHD Alt US V4 253866952-ind  Tested To Comply With FCC Standards FCC ID: VW3DCIW384-V4  LISTED I.T.E. E308616 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. 5 Ghz 2.4 Ghz HPF CA S/N: XXXXXXXXXXXXX Code barre type 128 </td> </tr> </table>	Code barre type 128 MSO Part Number: XXXXX Code barre type 128 12 Digits SGCSN: 123456789012 Code barre type 128 STB MAC: XXXXXXXXXXXXX Code barre type 128 Wi-Fi 5 GHz MAC: XXXXXXXXXXXXX	Sagemcom DCIW384 UHD Alt US V4 253866952-ind  Tested To Comply With FCC Standards FCC ID: VW3DCIW384-V4  LISTED I.T.E. E308616 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. 5 Ghz 2.4 Ghz HPF CA S/N: XXXXXXXXXXXXX Code barre type 128
Code barre type 128 MSO Part Number: XXXXX Code barre type 128 12 Digits SGCSN: 123456789012 Code barre type 128 STB MAC: XXXXXXXXXXXXX Code barre type 128 Wi-Fi 5 GHz MAC: XXXXXXXXXXXXX	Sagemcom DCIW384 UHD Alt US V4 253866952-ind  Tested To Comply With FCC Standards FCC ID: VW3DCIW384-V4  LISTED I.T.E. E308616 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. 5 Ghz 2.4 Ghz HPF CA S/N: XXXXXXXXXXXXX Code barre type 128		

2.4. EQUIPMENT MODIFICATION

☒ None
☐ Modification:

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : May 14, 2020
Ambient temperature : 22°C
Relative humidity : 45%

3.2. TEST SETUP

- The Equipment Under Test is installed:

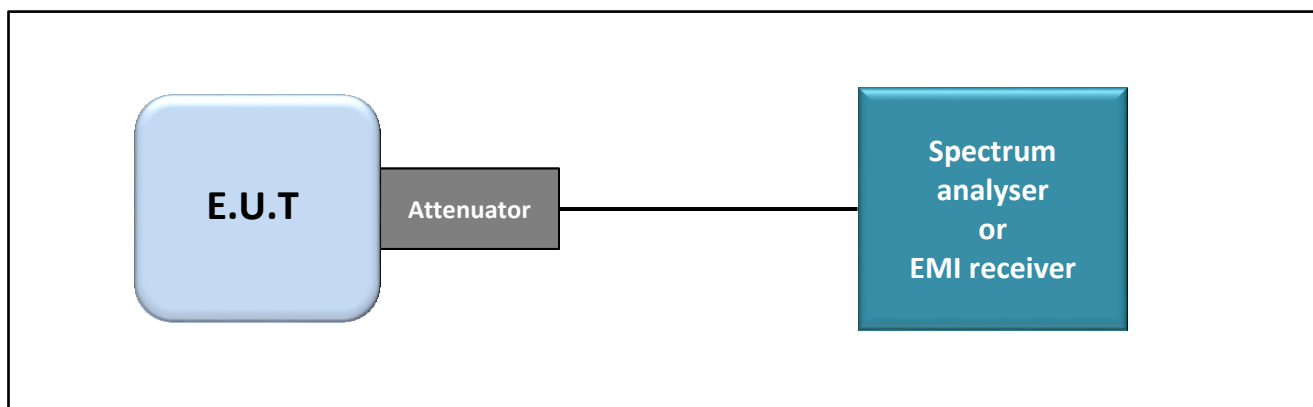
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

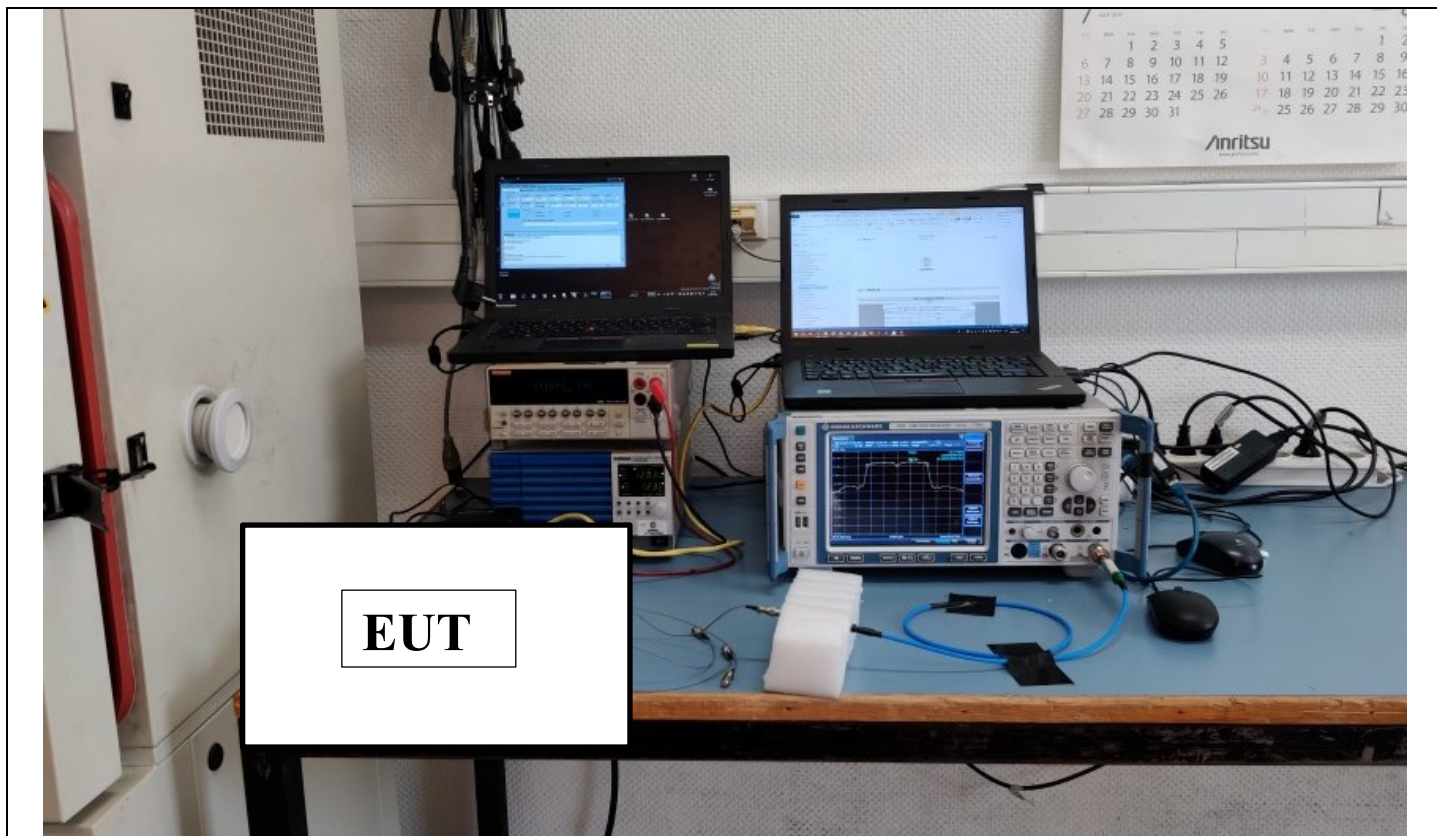
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § D



Test set up of Occupied Bandwidth



Photograph for Occupied bandwidth

3.3. LIMIT

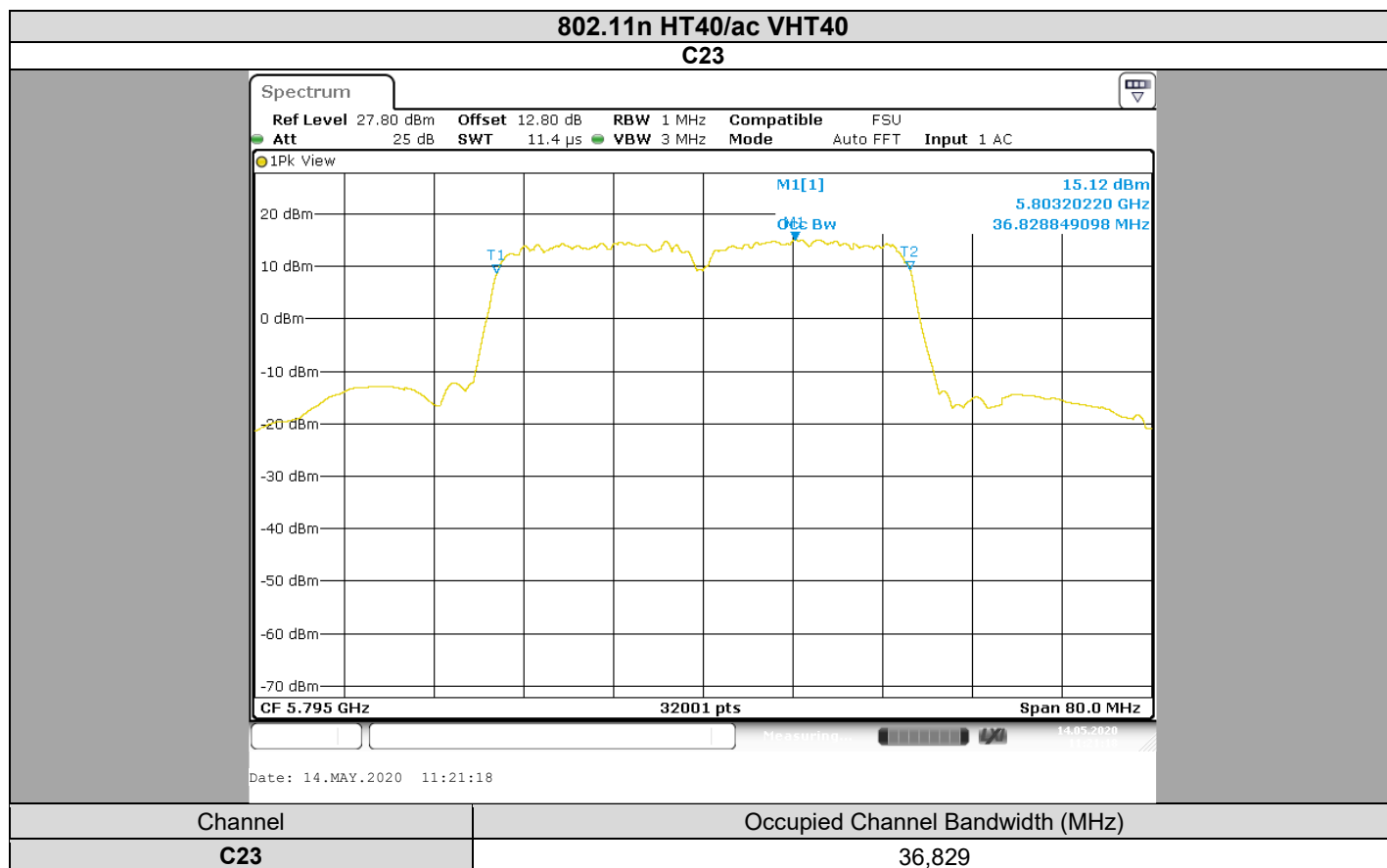
None

3.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2019/01	2021/01
Multimeter	Keithley	2000	A1241084	2019/05	2021/05
Power supply	KIKUSUI	PCR500M	A7049006	See Multimeter	See Multimeter
Cable + Attenuateur 10dB	PASTERNAK	PE350-100CM	A5329768	2019/08	2020/08
Load 50 ohms	TELEGARTNER	-	A7150105	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150104	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150103	2019/04	2021/04

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

3.5. RESULTS



3.6. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD Alt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407** limits

4. 6dB EMISSION BANDWIDTH

4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : May 14, 2020
Ambient temperature : 22°C
Relative humidity : 45%

4.2. TEST SETUP

- The Equipment Under Test is installed:

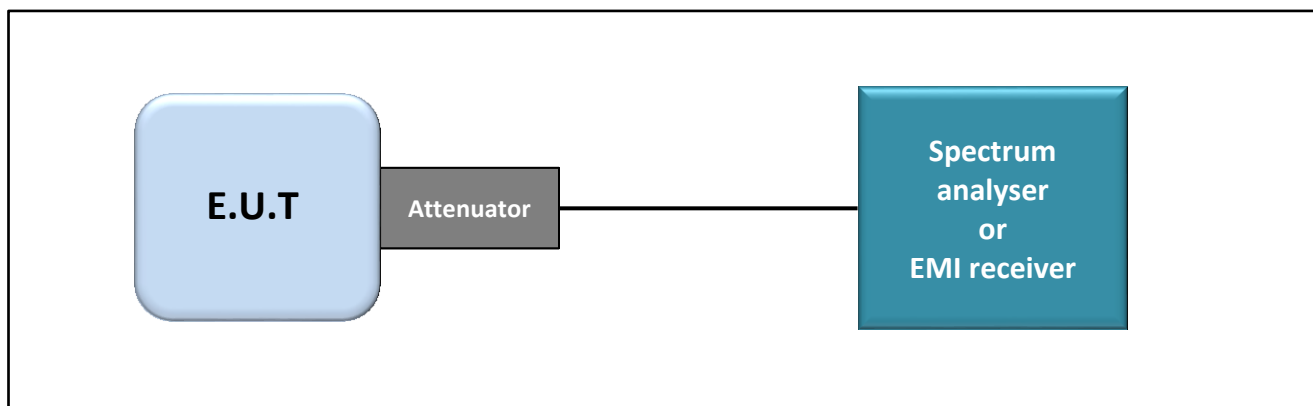
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

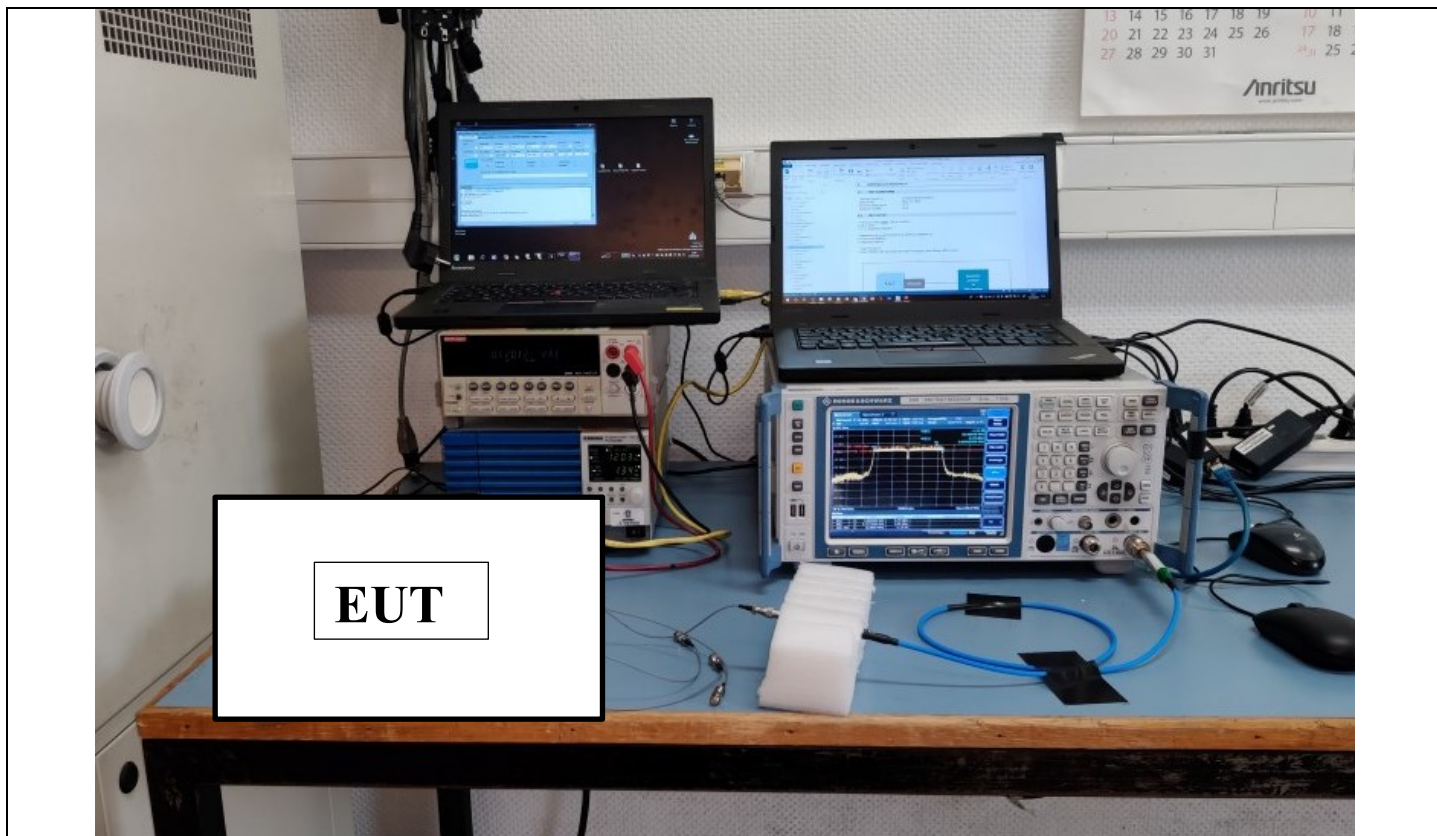
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § C2



Test set up of 6dB Emission Bandwidth



Photograph for 6dB emission bandwidth

4.3. LIMIT

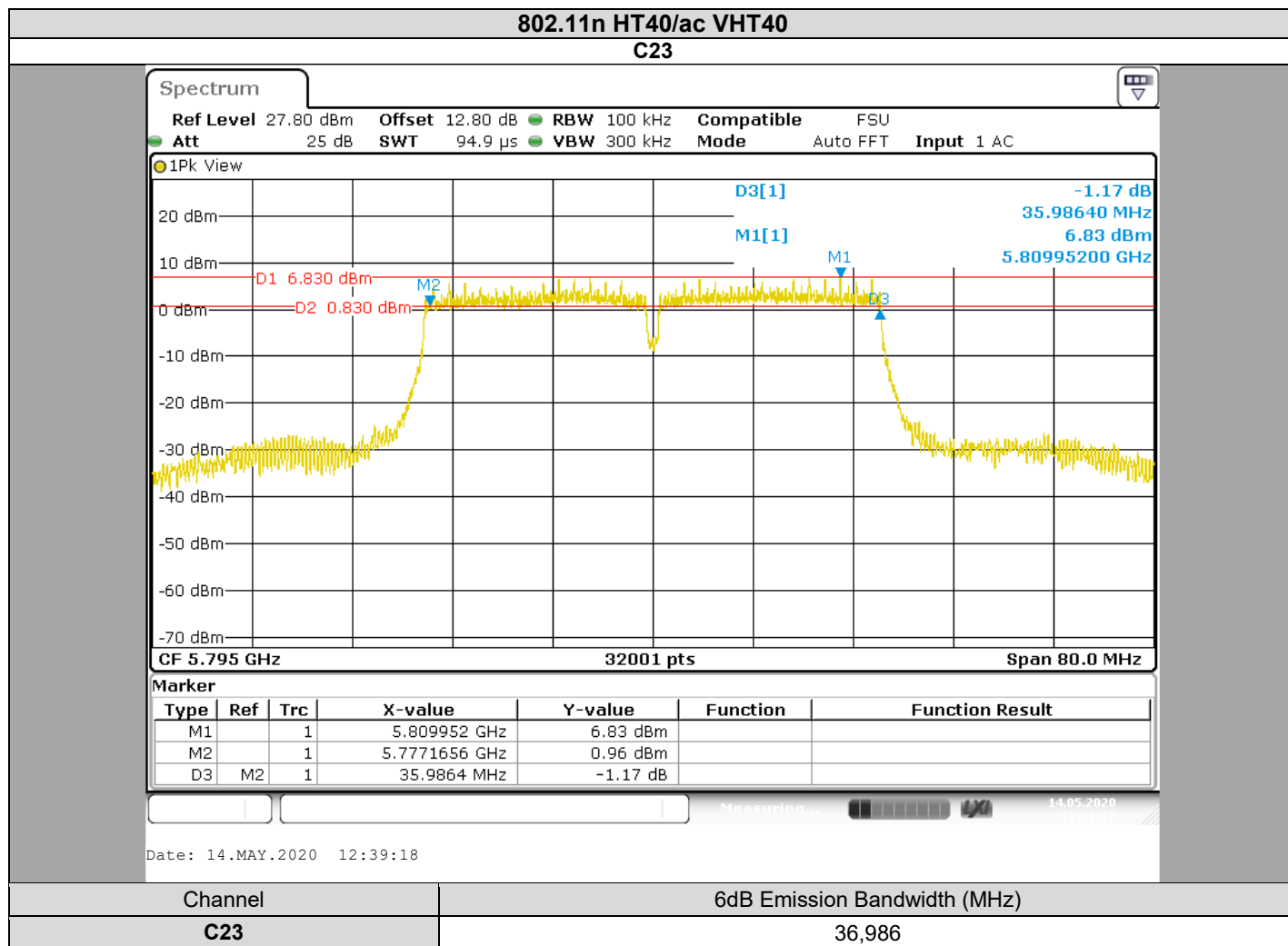
The 6dB bandwidth shall be at least 500kHz

4.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2019/01	2021/01
Multimeter	Keithley	2000	A1241084	2019/05	2021/05
Power supply	KIKUSUI	PCR500M	A7049006	See Multimeter	See Multimeter
Cable + Attenuateur 10dB	PASTERNAK	PE350-100CM	A5329768	2019/08	2020/08
Load 50 ohms	TELEGARTNER	-	A7150105	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150104	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150103	2019/04	2021/04

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

4.5. RESULTS



4.6. CONCLUSION

6dB Emission Bandwidth measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD AIt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407** limits.

5. DUTY CYCLE

5.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : May 14, 2020
Ambient temperature : 22°C
Relative humidity : 45%

5.2. TEST SETUP

- The Equipment Under Test is installed:

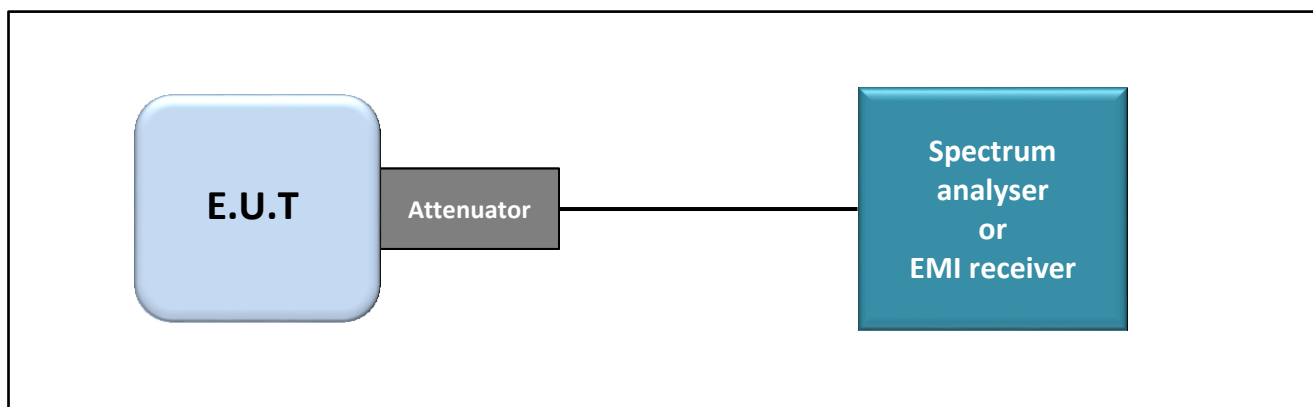
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

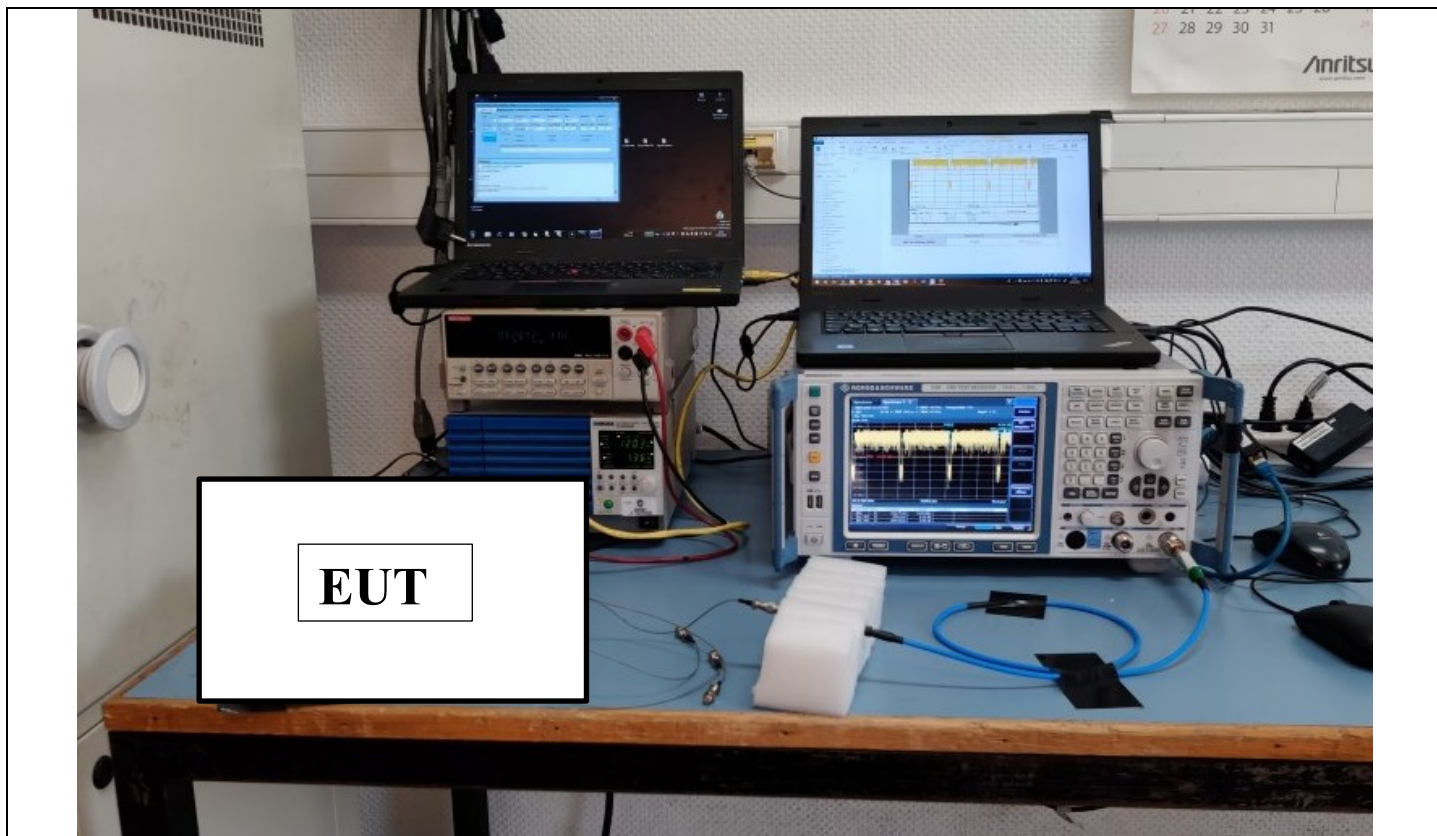
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § B2 b)



Test set up of Duty Cycle



Photograph for Duty Cycle

5.3. LIMIT

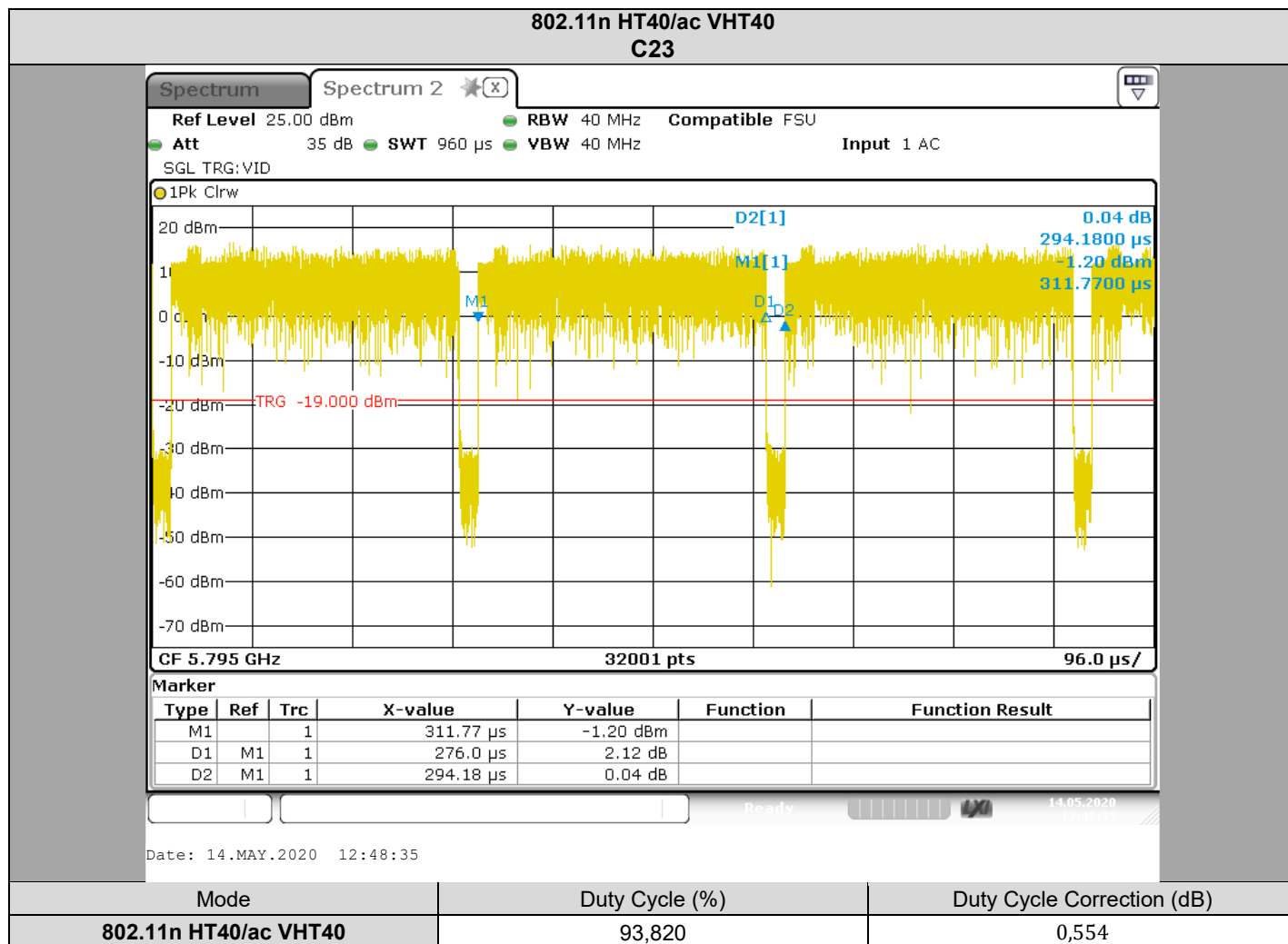
None

5.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2019/01	2021/01
Multimeter	Keithley	2000	A1241084	2019/05	2021/05
Power supply	KIKUSUI	PCR500M	A7049006	See Multimeter	See Multimeter
Cable + Attenuateur 10dB	PASTERNAK	PE350-100CM	A5329768	2019/08	2020/08
Load 50 ohms	TELEGARTNER	-	A7150105	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150104	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150103	2019/04	2021/04

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

5.5. RESULTS



5.6. CONCLUSION

Duty Cycle measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD AIt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407** limits.

6. MAXIMUM CONDUCTED OUTPUT POWER, MAXIMUM POWER SPECTRAL DENSITY, MAXIMUM EIRP, MAXIMUM EIRP SPECTRAL DENSITY

6.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : May 14, 2020
Ambient temperature : 22°C
Relative humidity : 45%

6.2. TEST SETUP

- The Equipment Under Test is installed:

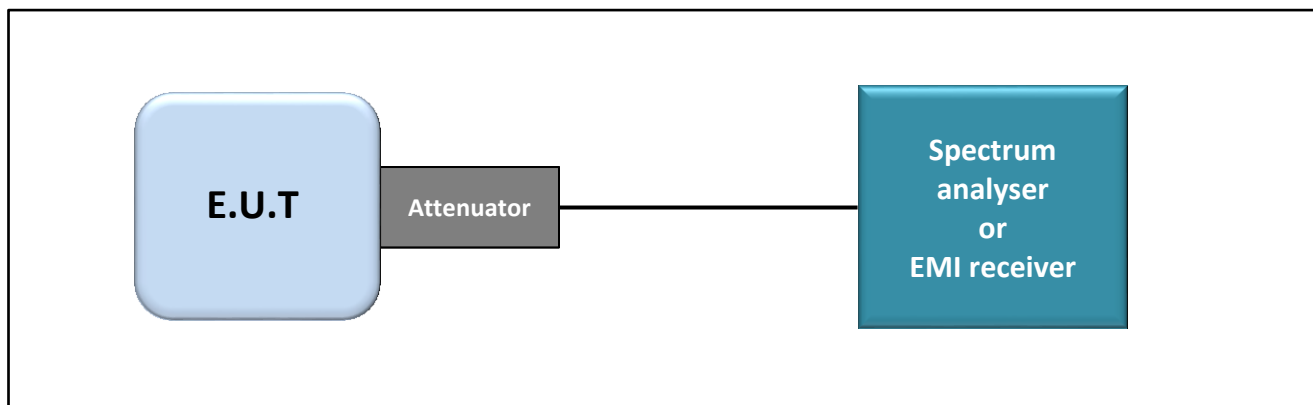
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

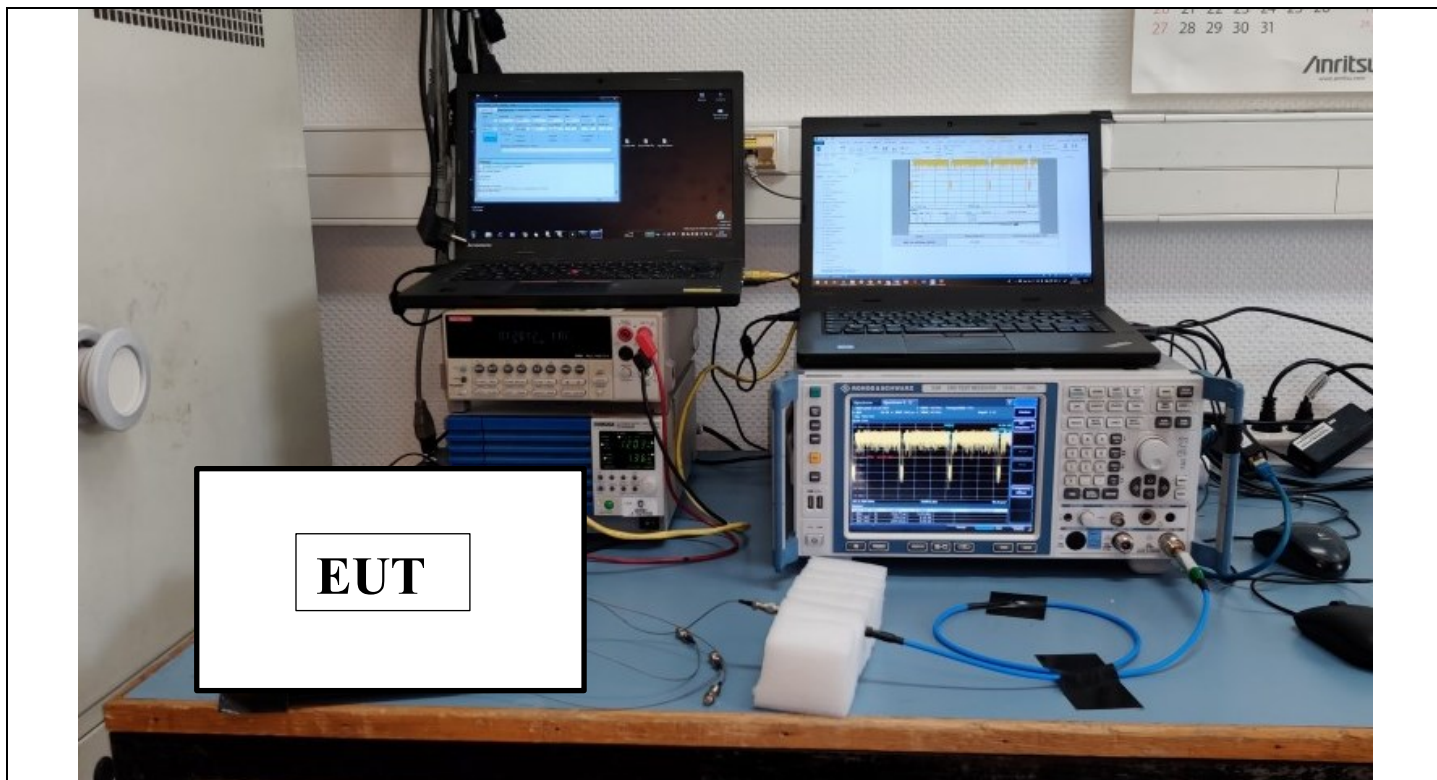
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § E2 b) (Method SA-1) & F
- ☐ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § E2 c) (Method SA-2) & F
- ☐ KDB 662911 D01 Multiple Transmitter Output v02r01



Test set up of Maximum Conducted Output Power



Photograph for Maximum Conducted Output Power



6.3. LIMIT

FCC Part 15.407

Maximum Conducted Output power:

5150MHz-5250MHz: Shall not exceed 30dBm for Indoor Access Point devices & 24dBm for Client devices

5250MHz-5350MHz: Shall not exceed 24dBm or 11dBm +10*log (-26dB Bandwidth (MHz))

5470MHz-5725MHz: Shall not exceed 24dBm or 11dBm +10*log (-26dB Bandwidth (MHz))

5725MHz-5850MHz: Shall not exceed 30dBm

Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

Maximum Power Spectral Density:

5150MHz-5250MHz: Shall not exceed 17dBm/MHz for Indoor Access Point & 11dBm/MHz for Client devices

5250MHz-5350MHz: Shall not exceed 11dBm/MHz

5470MHz-5725MHz: Shall not exceed 11dBm/MHz

5725MHz-5850MHz: Shall not exceed 30dBm/500kHz

Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

RSS-247

Maximum Conducted Output power:

5250MHz-5350MHz: Shall not exceed 24dBm or 11dBm +10*log (-26dB Bandwidth (MHz))

5470MHz-5725MHz: Shall not exceed 24dBm or 11dBm +10*log (-26dB Bandwidth (MHz))

5725MHz-5850MHz: Shall not exceed 30dBm

Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

Maximum Power Spectral Density:

5250MHz-5350MHz: Shall not exceed 11dBm/MHz

5470MHz-5725MHz: Shall not exceed 11dBm/MHz

5725MHz-5850MHz: Shall not exceed 30dBm/500kHz

Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

Maximum EIRP:

5150MHz-5250MHz: Shall not exceed 23dBm or 10dBm +10*log (-26dB Bandwidth (MHz))

5250MHz-5350MHz: Shall not exceed 30dBm or 17dBm +10*log (-26dB Bandwidth (MHz)) (Above 23dBm Antenna pattern)

5470MHz-5725MHz : Shall not exceed 30dBm or 17dBm +10*log (-26dB Bandwidth (MHz))

Maximum EIRP Power Spectral Density:

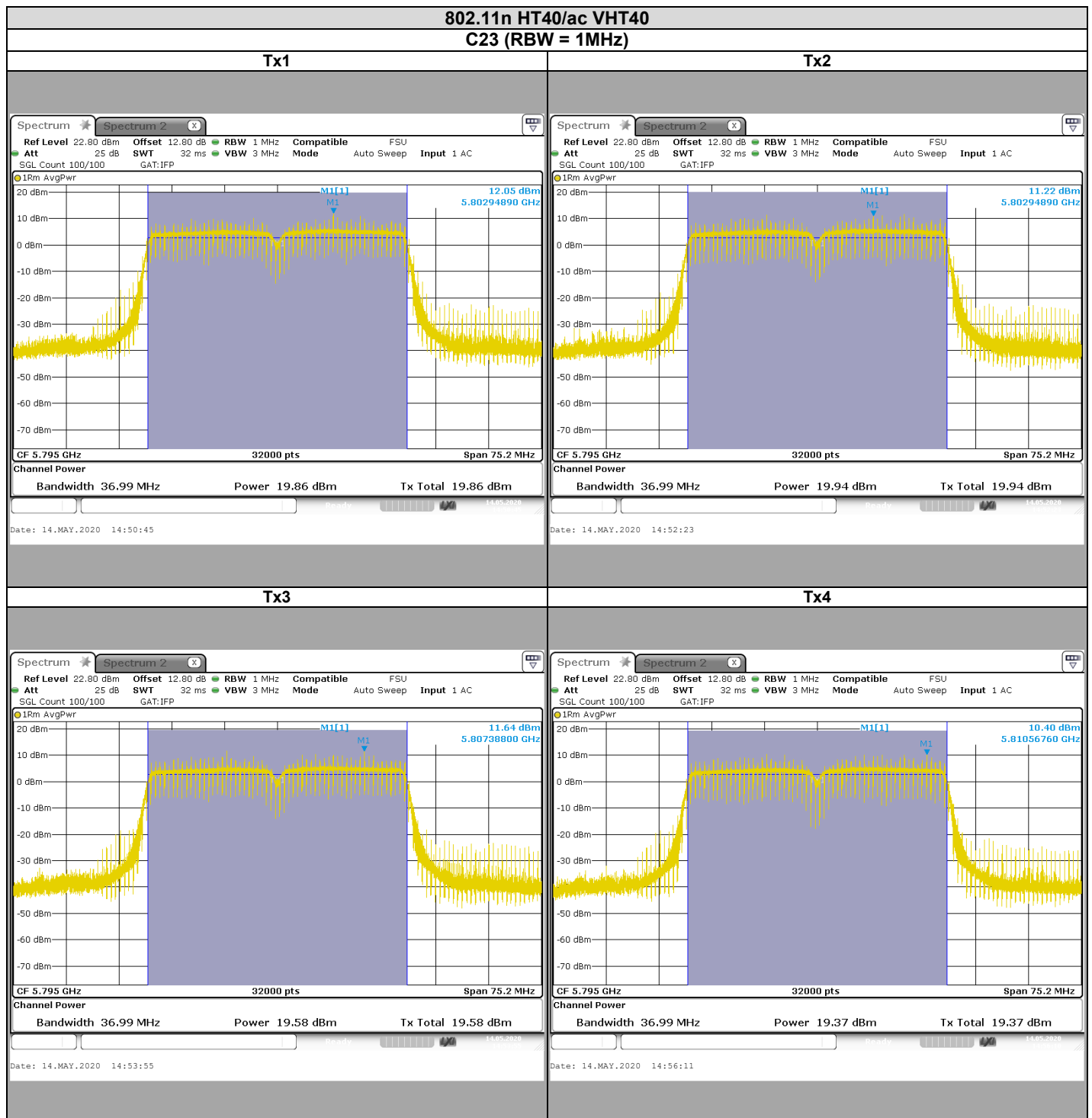
5150MHz-5250MHz: Shall not exceed 10dBm/MHz

6.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2019/01	2021/01
Multimeter	Keithley	2000	A1241084	2019/05	2021/05
Power supply	KIKUSUI	PCR500M	A7049006	See Multimeter	See Multimeter
Cable + Attenuateur 10dB	PASTERNAK	PE350-100CM	A5329768	2019/08	2020/08
Load 50 ohms	TELEGARTNER	-	A7150105	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150104	2019/04	2021/04
Load 50 ohms	TELEGARTNER	-	A7150103	2019/04	2021/04

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

6.5. RESULTS





802.11n HT40/ac VHT40							
Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	Tx Limit FCC (dBm)
C23	19,86	19,94	19,58	19,37	25,7	8,65	27,35

6.6. CONCLUSION

Maximum Conducted Output Power, Maximum Power Spectral Density, Maximum EIRP, Maximum EIRP Power Spectral Density measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD AIt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407** limits.

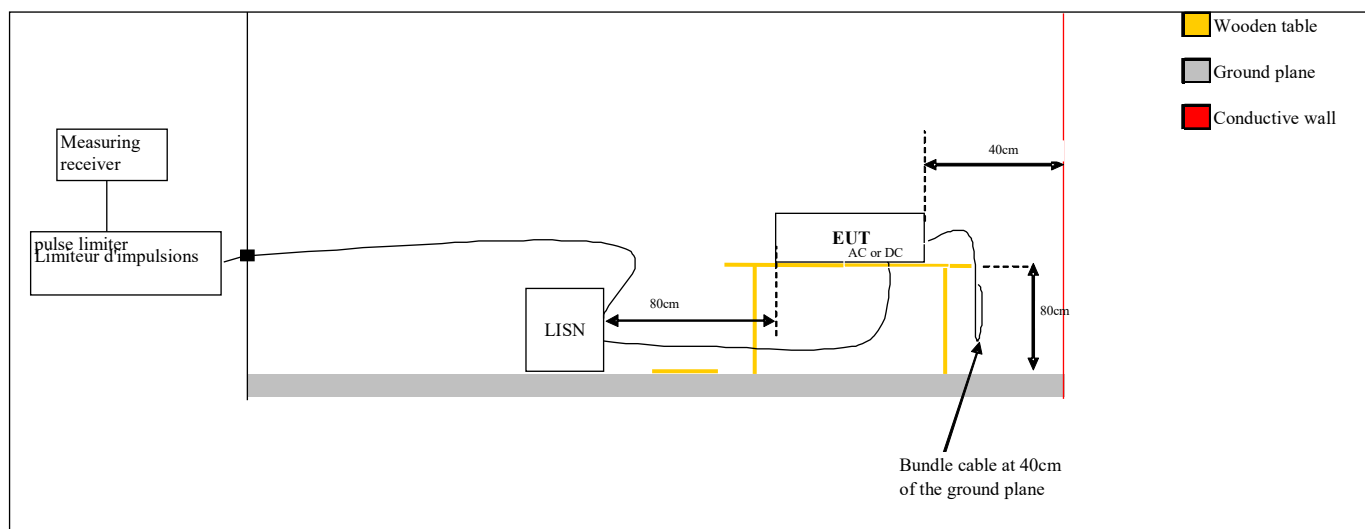
7. AC POWER LINE CONDUCTED EMISSIONS

7.1. TEST CONDITIONS

Test performed by : Laurent DENEUX
 Date of test : May 4, 2020
 Ambient temperature : 20 °C
 Relative humidity : 48 %

7.2. TEST SETUP

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





Photograph for AC Power Line Conducted Emissions



Photograph for AC Power Line Conducted Emissions

7.3. LIMIT

Frequency range	Level	Detector
0,15kHz to 0,5MHz	66dB μ V to 56 μ V*	QPeak
	56dB μ V to 46 μ V*	Average
0,5MHz to 5MHz	56dB μ V	QPeak
	46dB μ V	Average
5MHz to 30MHz	60B μ V	QPeak
	50dB μ V	Average

*Decreases with the logarithm of the frequency



7.4. TEST EQUIPMENT LIST

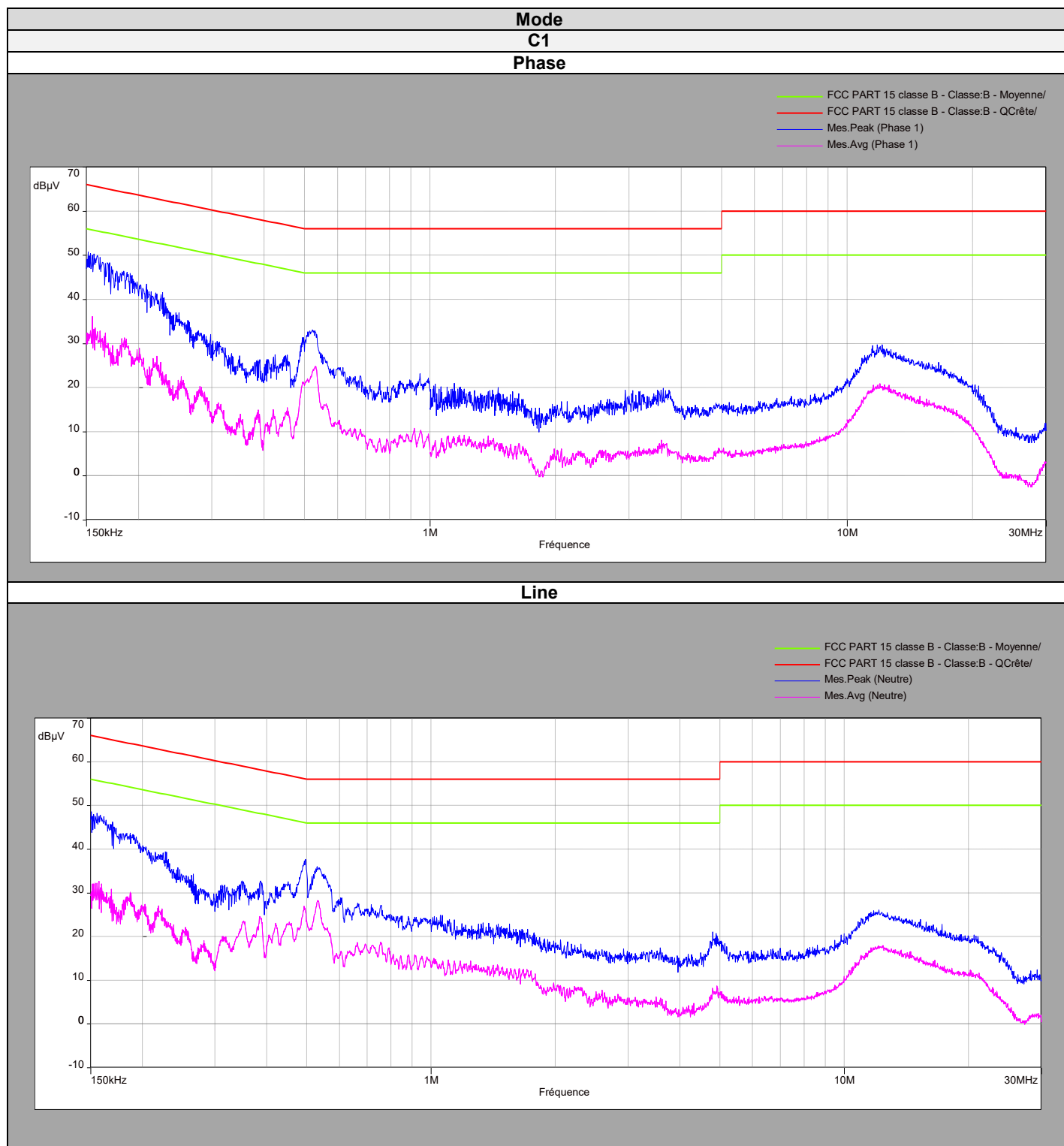
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	A2642021	10/2018	10/2020
V ISLN	ROHDE & SCHWARZ	ESH2-Z5	C2322001	08/2019	08/2020
Pulse limiter	R&S	ESH3-Z2	A2649008	03/2019	03/2020
Cable	-	-	A5329417	12/2018	12/2020
Cable	-	-	A5329589	10/2019	10/2020
Ground plane	LCIE	-	-	-	-

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

7.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☒ None ☐ Divergence:

7.6. RESULTS



Phase line

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0.155	50	-	65.6	15.6	36	55.6	19.6
0.53	32.6	-	56	23.4	24.8	46	21.2
0.945	23	-	56	33	10.2	46	35.8
3.62	20	-	56	36	7.3	46	38.7
11.81	29.7	-	60	30.3	20.8	50	29.2

Neutral line

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0.155	48.2	-	65.6	17.4	32.2	55.6	23.4
0.53	36	-	56	20	28	46	18
1.1	23	-	56	33	15	46	31
4.91	20.2	-	56	35.8	8.6	46	37.4
12.13	26	-	60	34	16.5	50	33.5

7.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD Alt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 limits.

8. UNWANTED EMISSIONS & UNDESIRABLE EMISSION

8.1. TEST CONDITIONS

Test performed by : Armand MAHOUGOU & Laurent DENEUX
 Date of test : May 5 to 13, 2020
 Ambient temperature : 21 to 25°C
 Relative humidity : 44 to 46%

8.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) and FCC part 15 subpart C.

Test is performed in parallel, perpendicular and ground parallel axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. Antenna height was 1m. The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **3m**.

Test is performed in horizontal (H) and vertical (V) polarization with **bilog** between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. The EUT is placed at 1.5m high above 1GHz and at 0.8m high under 1GHz. The EUT is placed **in a full anechoic chamber** above 1GHz and **on an open area test site** from 30MHz to 1GHz. Distance between measuring antenna and the EUT is **3m** above 1 GHz and 10m between 30MHz & 1GHz.

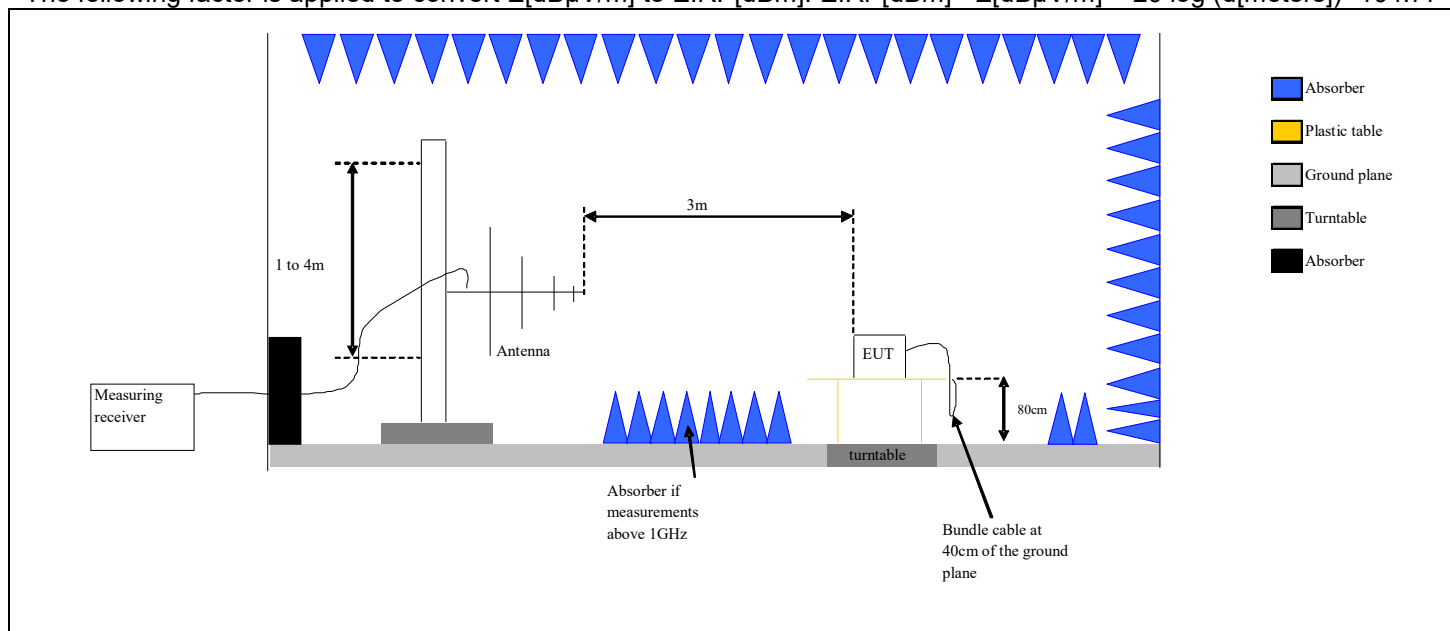
The height antenna is varied from 1m to 4m from 30MHz to 1GHz and above 1GHz is :

☐ On mast, varied from 1m to 4m

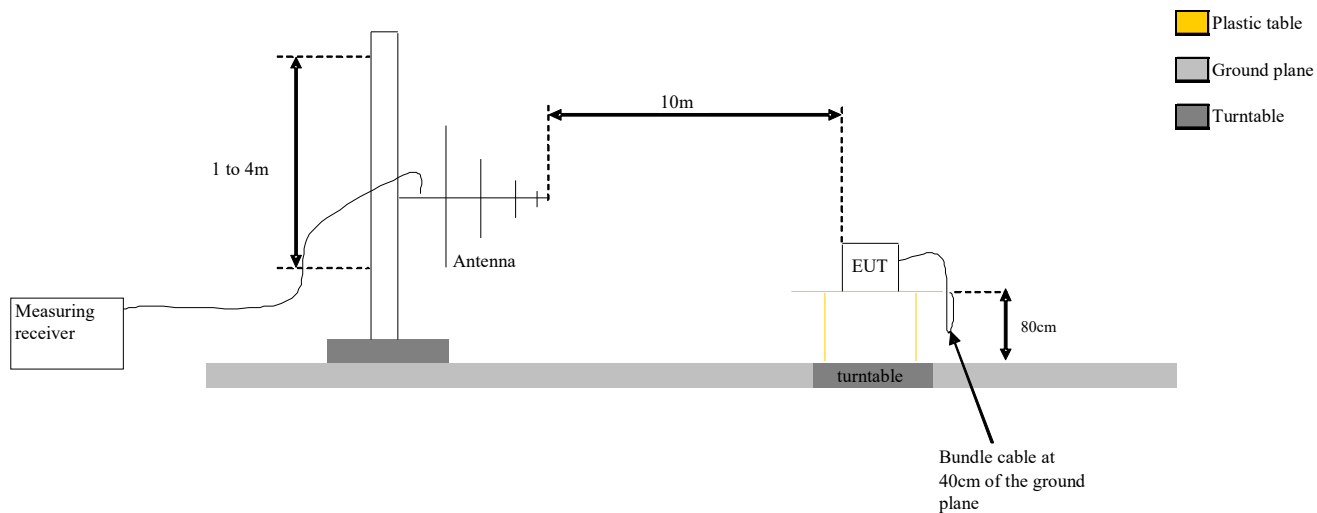
☒ Fixed and centered on the EUT (EUT smaller than the bandwidth of the measurement antenna, ANSI C63.10 §6.6.5)

The product has been tested according to the FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

The following factor is applied to convert $E[dB\mu V/m]$ to $EIRP[dBm]$. $EIRP[dBm] = E[dB\mu V/m] + 20 \log(d[meters]) - 104.77$



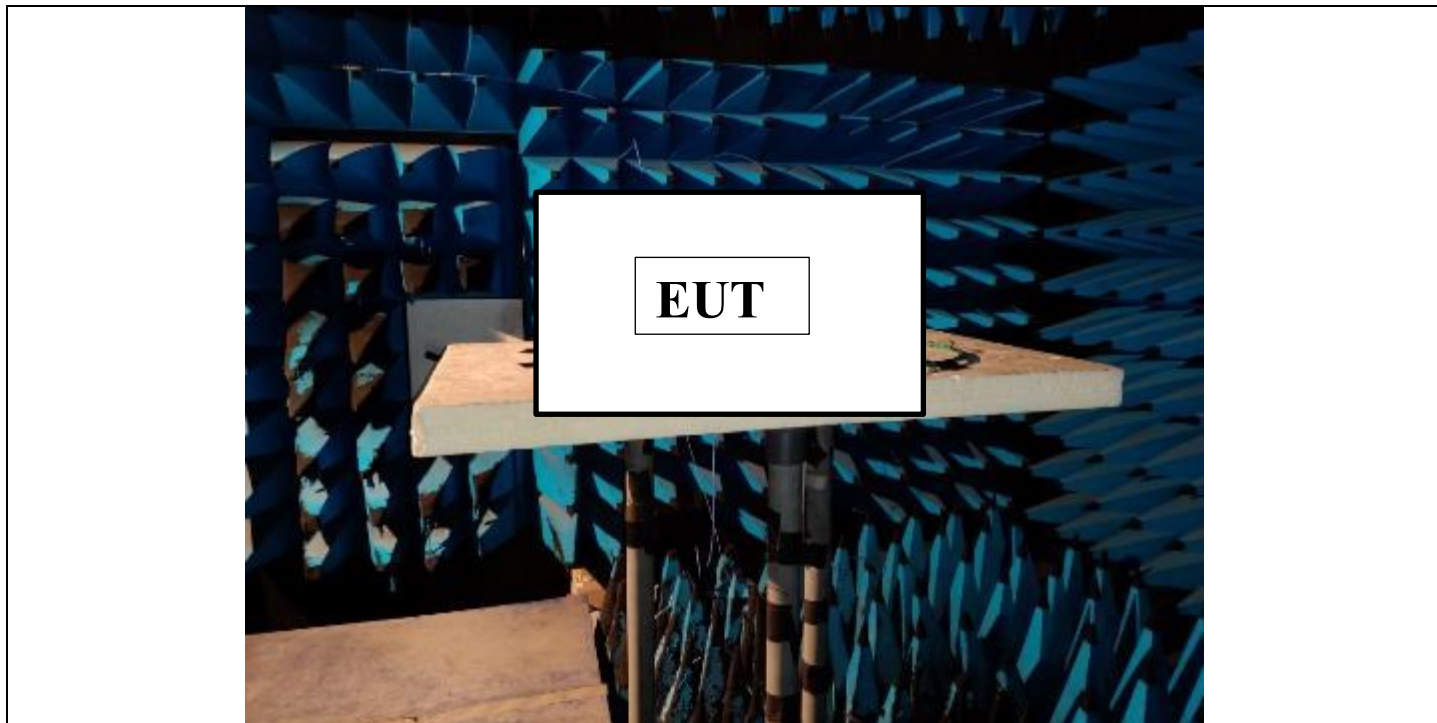
Test set up of Unwanted Emissions in Restricted Frequency Bands in semi anechoic chamber



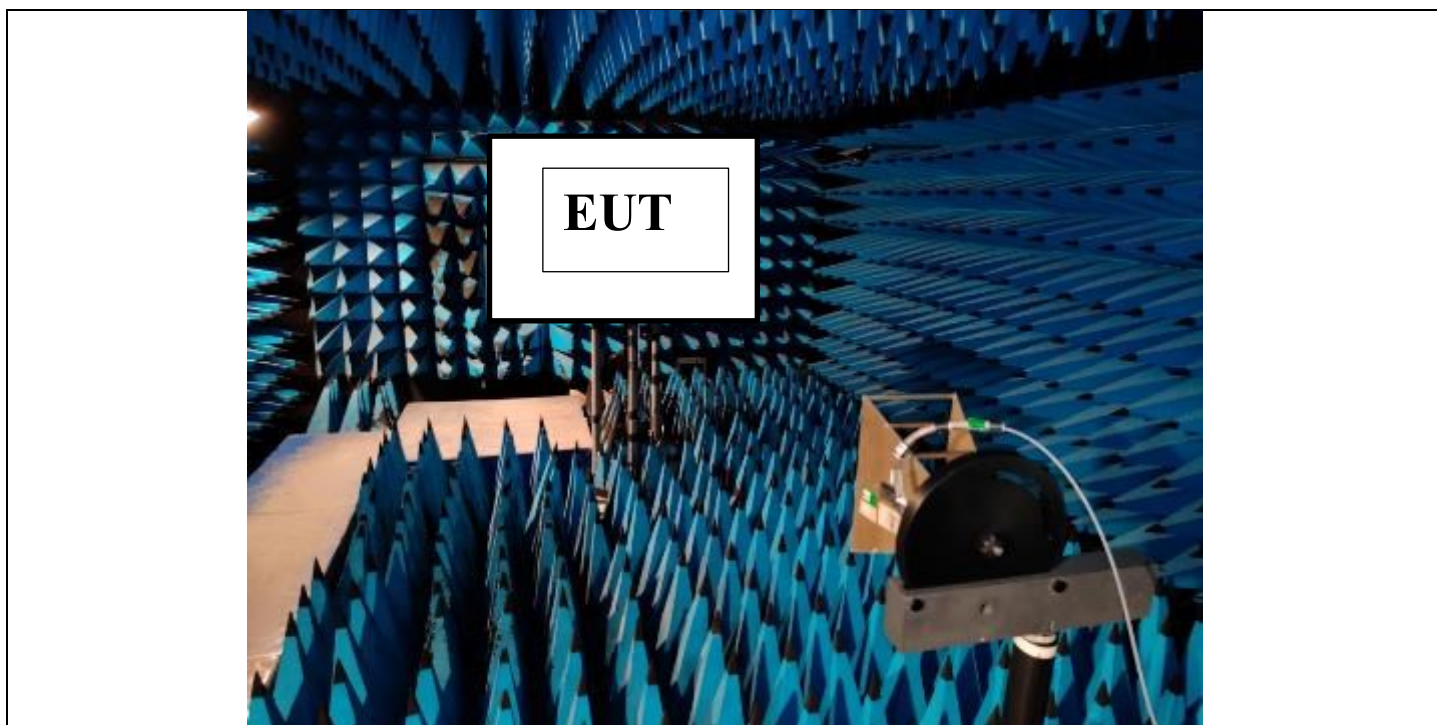
Test Set up for radiated measurement in open area test site



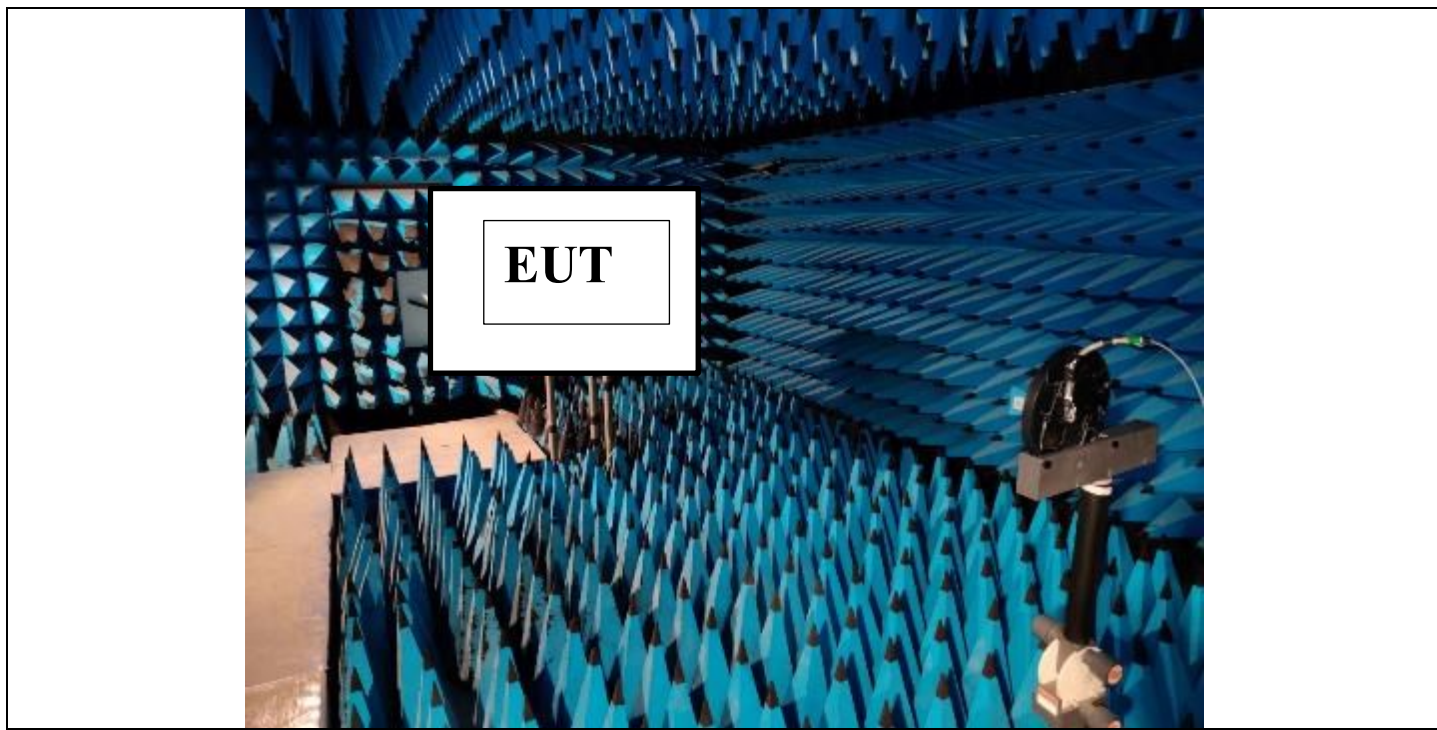
Photograph for Unwanted Emissions & Undesirable Emission limits



Photograph for Unwanted Emissions & Undesirable Emission limits



Photograph for Unwanted Emissions & Undesirable Emission limits



Photograph for Unwanted Emissions & Undesirable Emission limits

8.3. LIMIT

Limit at 3m:

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

Limit at 3m:

30MHz to 88MHz:	$29,5\text{dB}\mu\text{V/m}$ QPeak
88MHz to 216MHz:	$33\text{dB}\mu\text{V/m}$ QPeak
216MHz to 960MHz:	$35,5\text{dB}\mu\text{V/m}$ QPeak
960MHz to 1000MHz:	$43,5\text{dB}\mu\text{V/m}$ QPeak
Above 1000MHz:	$63,5\text{dB}\mu\text{V/m}$ Peak $43,5\text{dB}\mu\text{V/m}$ Average

Limit (dBm):

5150MHz-5250MHz:	Shall not exceed EIRP of -27dBm/MHz outside of the band
5250MHz-5350MHz:	Shall not exceed EIRP of -27dBm/MHz outside of the band
5470MHz-5725MHz:	Shall not exceed EIRP of -27dBm/MHz outside of the band

FCC 15.407

5725MHz-5850MHz: Shall not exceed EIRP of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of EIRP of 27 dBm/MHz at the band edge.

RSS 247

5725MHz-5850MHz: Within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.

8.4. TEST EQUIPMENT LIST

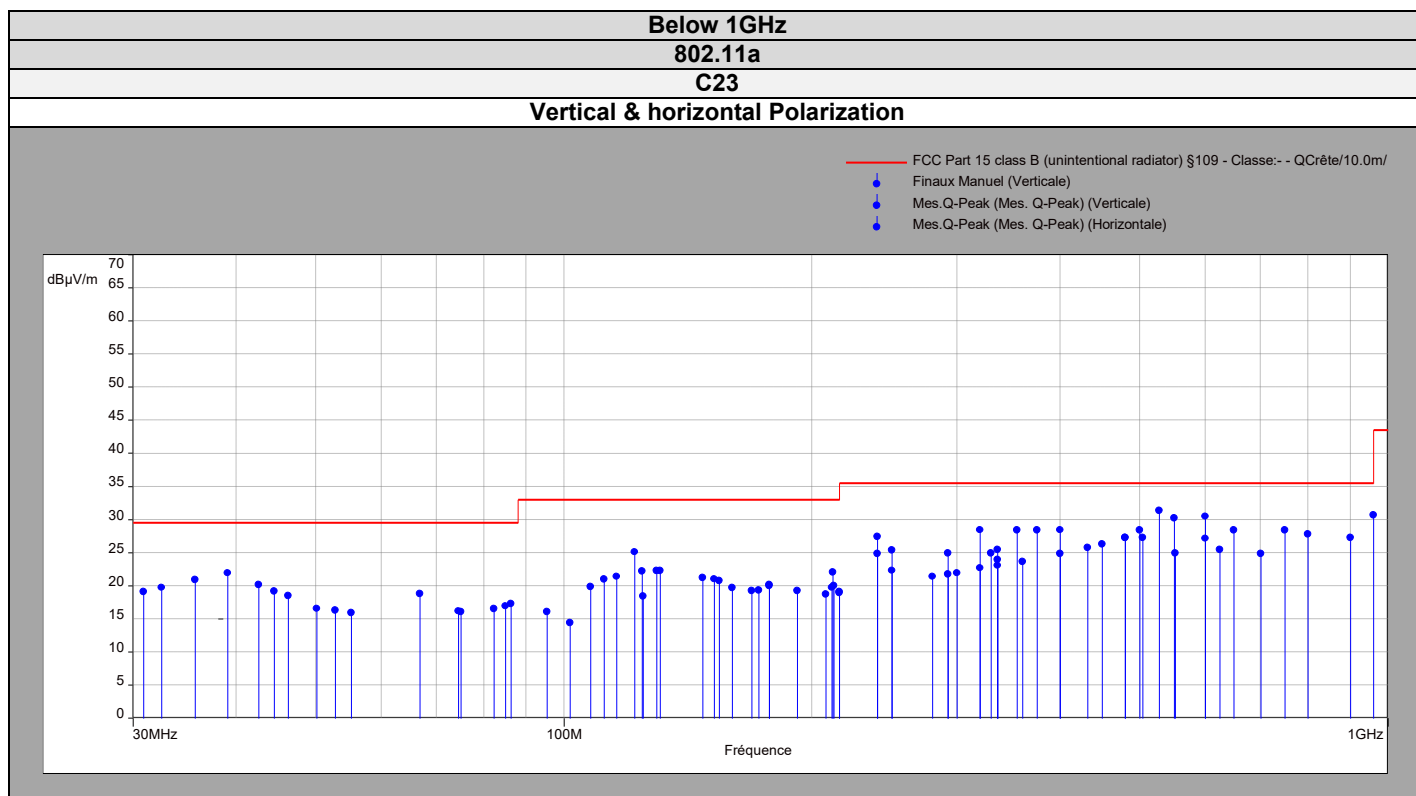
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Open test site	LCIE	-	F2000400	2019-06	2020-06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2018-10	2020-10
Cable	-	-	A5329444	2019-12	2020-12
Bilog antenna	CHASE	CBL 6112A	C2040040	2019-04	2020-04
Cable	-	-	A5329449	2019-12	2020-12
Cable	-	-	A5329876	2019-12	2020-12
Cable	-	-	A5329542	2019-08	2020-08
Cable	-	-	A5329368	2019-12	2020-12
Cable	-	-	A5329416	2019-12	2020-12
Loop antenna	Scharzbeck	FMZB	C2040209	2018-03	2020-03
Full anechoic chamber	SIEPEL	-	D3044019	2019/10	2023/10
Preamplifier	LCIE	LCIE-ALB-001	A7080073	2018/12	2020/12
Horn antenna	AH SYSTEMS	SAS 571	C2042041	2019/11	2021/11
EMI receiver	ROHDE & SCHWARZ	FSV40GHz	A4060061	2019/05	2021/05
High Pass Filter 5GHz	MICRO-TRONICS	-	A7484059	2018/12	2020/12
Cable S36 chamber	PASTERNAK	PE360-3000CM	A5329872	2020/01	2021/01
Cable S36 chamber	PASTERNAK	PE360-1000CM	A5329939	2020/01	2021/01
Cable S36 chamber	PASTERNAK	PE360-1500CM	A5329940	2020/01	2021/01
Horn antenna (18-26,5GHz)	PASTERNAK	PE9852/2F-20	C2042048	2019/12	2021/12

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

8.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☒ None ☐ Divergence:

8.6. RESULTS



Above 1GHz

802.11n HT40/ac VHT40

C23

Vertical Polarization

— FCC/FCC 15.407 b (4) (i) 5725MHz-5850MHz - Classe:1 - Crête/3.0m/
— Mes.Peak (Verticale)
— Mes.Avg (Verticale)

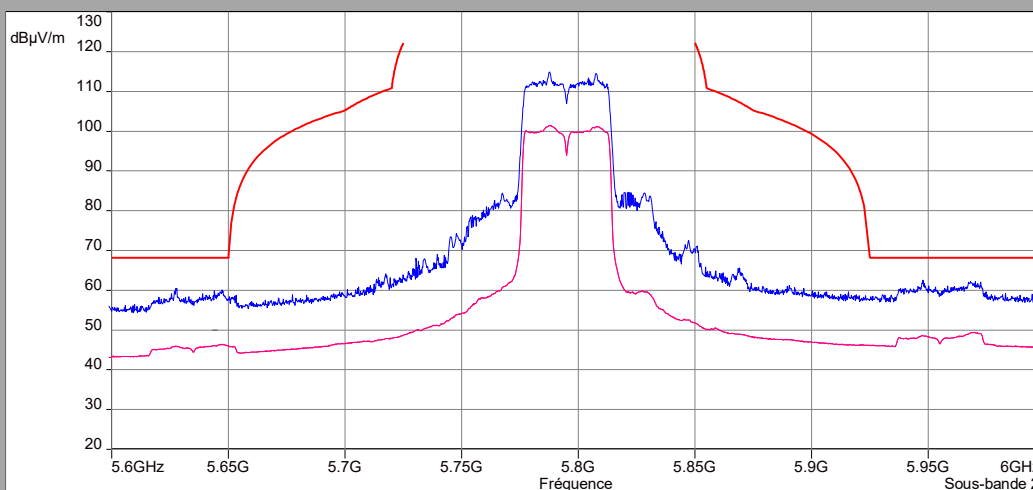
Description Sous-bande 2

Fréquences:5.45 GHz - 6 GHz (Mode analyseur) 32001 Points

Réglages: RBW: 1MHz, VBW: 3MHz, Durée balayage : 2 ms/Pts, Atténuation : 5 dB, Nombre de Balayages : 1, Preamp : C

Polarisation:Verticale

Distance: 3 m



Horizontal polarization

— FCC/FCC 15.407 b (4) (i) 5725MHz-5850MHz - Classe:1 - Crête/3.0m/
— Mes.Peak (Horizontale)
— Mes.Avg (Horizontale)

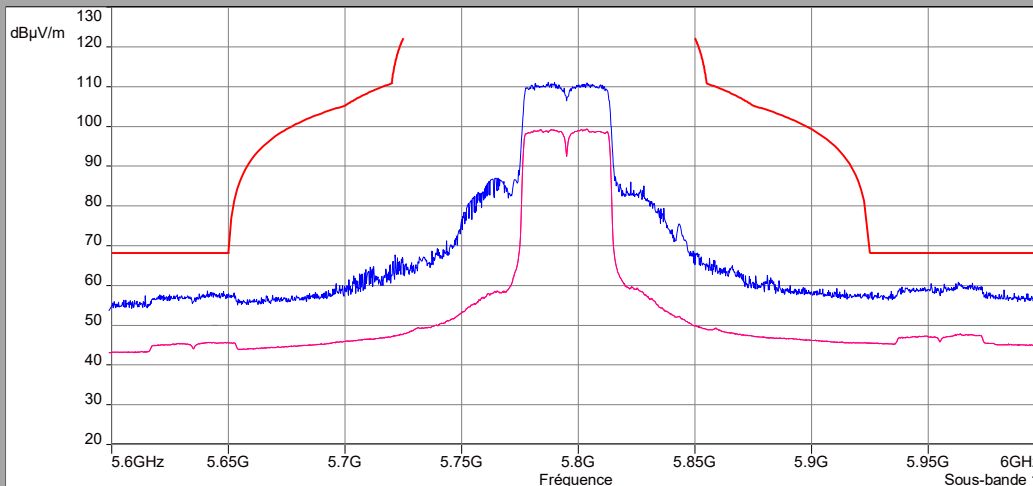
Description Sous-bande 1

Fréquences:5.45 GHz - 6 GHz (Mode analyseur) 32001 Points

Réglages: RBW: 1MHz, VBW: 3MHz, Durée balayage : 2 ms/Pts, Atténuation : 5 dB, Nombre de Balayages : 1, Preamp : C

Polarisation:Horizontale

Distance: 3 m



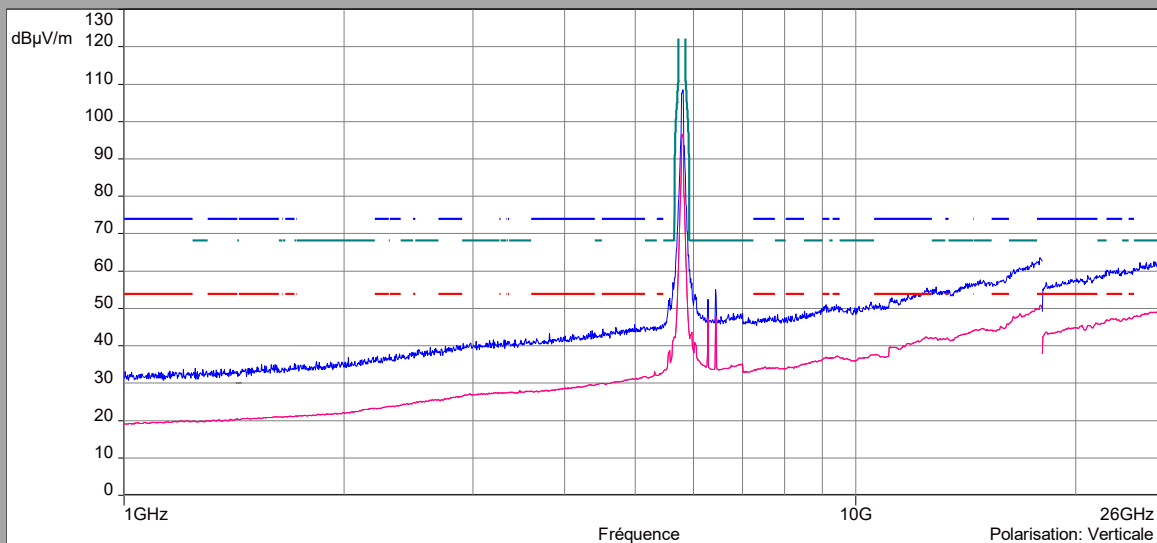
Above 1GHz

802.11n HT40/ac VHT40

C23

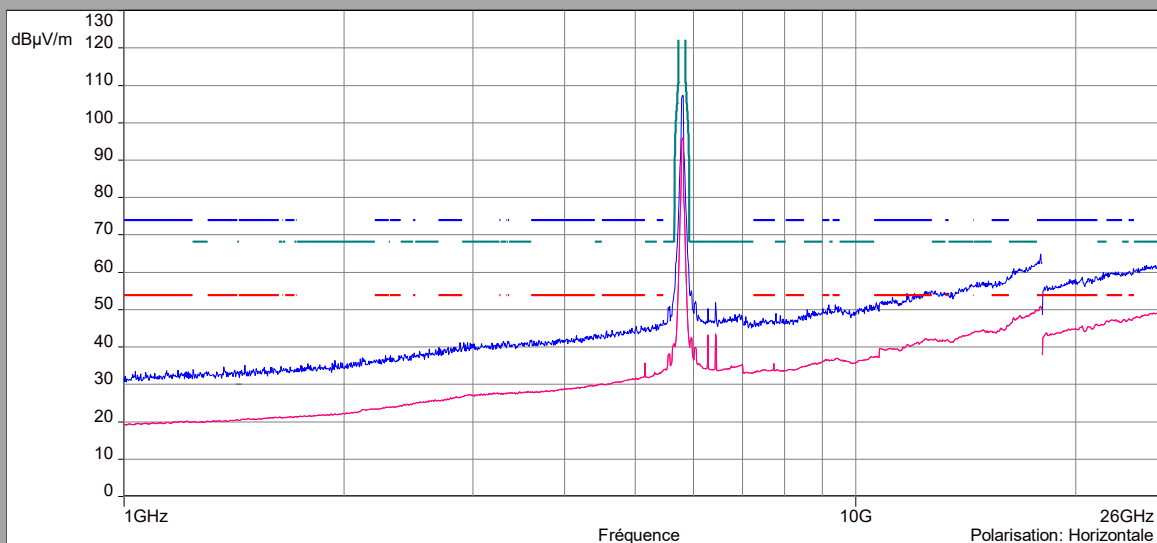
Vertical Polarization

- FCC/FCC restricted frequency band - Classe:1 - Moyenne/3.0m/
- FCC/FCC restricted frequency band - Classe:1 - Crête/3.0m/
- FCC/FCC non restricted frequency band 5725-5850 - Classe:1 - Crête/3.0m/
- Mes.Peak (Verticale)
- Mes.Avg (Verticale)



Horizontal polarization

- FCC/FCC restricted frequency band - Classe:1 - Moyenne/3.0m/
- FCC/FCC restricted frequency band - Classe:1 - Crête/3.0m/
- FCC/FCC non restricted frequency band 5725-5850 - Classe:1 - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Avg (Horizontale)



9kHz to 30MHz				
Polarization	Frequency (MHz)	Peak Level (dBμV/m)	QPeak Level (dBμV/m)	Limit (dBμV/m)
all emissions were greater than 20 dB below the limit				

Below 1GHz					
Polarization	Frequency (MHz)	Peak Level (dBμV/m)	QPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dBμV/m)
Vertical	39.1	-	21.95	29.5	7.55
Horizontal	121.9	-	25.12	33	7.88
Vertical	528	-	31.3	35.5	4.2
Vertical	550	-	30.24	35.5	5.26
Horizontal	600	-	30.51	35.5	4.99
Vertical	960	-	30.69	35.5	4.81

Above 1GHz											
802.11n HT40/ac VHT40											
C22/C23 (5725MHz-5850MHz)											
Polarization	Frequency (MHz)	Average Level (dBμV/m)	Average Level + Duty Cycle Factor (dBμV/m)	Average Limit (dBμV/m)	Average Margin Level (dBμV/m)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin Level (dBμV/m)	Peak Level (dBm)	Peak Limit (dBm)	Peak Margin Level (dBm)
Horizontale	5151.19	35.75	36,304	54	31.896	45.26	74	22.94	-	-	-
Verticale	5627.85	-	-	-	-	-	-	-	60.46	68.2	7.74
Horizontale	5725	-	-	-	-	-	-	-	60.51	122.2	61.69
Verticale	5725	-	-	-	-	-	-	-	61.80	122.2	60.40
Horizontale	5850	-	-	-	-	-	-	-	64.28	122.2	57.92
Verticale	5850	-	-	-	-	-	-	-	69.63	122.2	52.57
Verticale	5947.63	-	-	-	-	-	-	-	62.55	68.2	5.65
Verticale	5970.21	-	-	-	-	-	-	-	62.21	68.2	5.99
Verticale	6277.97	-	-	-	-	-	-	-	52.48	68.2	15.72
Verticale	6438.94	-	-	-	-	-	-	-	55.11	68.2	13.09

8.7. CONCLUSION

Unwanted emissions & Undesirable emission measurement performed on the sample of the product **SAGEMCOM DCIW384 UHD AIt US V4**, SN: **195005290000030**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 limits.

9. UNCERTAINTIES CHART

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

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



10. ANNEX: DIFFERENCE BETWEEN FCC ID

Sagemcom

Date: May 27th, 2020

Object: Creation variant "DCIW384 Alt US V4"

TO WHOM MIGHT BE CONCERNED

Dear Sirs,

Hereby, we declare that the Set Top Box "DCIW384 Alt US V4" is a variant of the Set Top Box "DCIWA384 Alt US V2".
This variant is created by removing Wi-Fi 2.4GHz chipset and Wi-Fi 5GHz AP functionality.
The radio equipment's and the software of the variant "DCIW384 Alt US V4" are the same as for the reference product "DCIWA384 Alt US V2".

See the description of the differences between "DCIW384 Alt US V4" and "DCIWA384 Alt US V2" on the next pages.

Sincerely,

Name: Boris FONTAINE
Title: R&D Director
Audio & Video Solution Business Unit

SAGEMCOM BROADBAND SAS
250 Route de l'Empereur
92848 RUEIL MALMAISON CEDEX
FRANCE

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Sagemcom

List of differences between "DCIW384 Alt US V4" and "DCIWA384 Alt US V2":

- Wi-Fi chipset 2,4GHz removal
- Wi-Fi AP 5GHz functionality removal
- Power Supply Unit maximum power changed from 3.5A to 2.5A
- Power jack shape change
- Rear panel marking 12V/3.5A replaced by 12V/2.5A