CMC Centro Misure Compatibilità S.r.l.
Via della Fisica, 20
36016 Thiene (VI) – ITALY
Tel./Fax +39 0445 367702
www.cmclab.it - info@cmclab.it

LAB N° 0168 L

Independent Testing Laboratory
Accredited by ACCREDIA according to UNI CEI EN ISO/IEC 17025 cert. nr. 0168

TEST REPORT
Nr. R19194601

Radio Spectrum Matters

Report Reference No......:	R19194601
Date of issue.....:	27.07.2020
Total number of pages .....:	63
Testing Laboratory.....:	CMC Centro Misure Compatibilità S.r.l.
Address .....:	Via della Fisica, 20 – 36016 Thiene (VI) – Italy
Applicant's name.....:	Imet S.r.l.
Address .....:	Via Ronche, 93 – 33077 Sacile (PN) – Italy
Test specification:	
Standards .....:	ETSI EN 300 220-2 v3.2.1 ETSI EN 300 220-1 v3.1.1
Non-standard test method……..:	N/A
Test Report Form No.....:	EN300_220-2_CMC
Test Report Form Originator .....:	CMC
Master TRF.....:	Dated 05/2020

General disclaimer:
The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of CMC.

Test item description .....:	Industrial radio remote control
Trademark .....:	Imet
Manufacturer .....:	Imet S.r.l.
Type/Model .....:	M880-Thor2
Ratings .....:	3,6 Vdc from battery

Report

Tested by.....: G. Gandini .....

Approved by .....: R. Beghetto – Laboratory Manager .....

Index

1. Test specification

1.1 Reference standard

ETSI EN 300 220-2 v3.2.1	Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz; Part 2: Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU for non specific radio equipment
ETSI EN 300 220-1 v3.1.1	Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz; Part 1: Technical characteristics and methods of measurement

1.2 List of attachments

- Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references
- Attachment 2: Components list

1.3 Deviation(s) from test specification

None

1.4 Testing location

CMC Centro Misure Compatibilità S.r.l.
Via della Fisica, 20 – 36016 Thiene (VI) - Italy

1.5 Possible test case verdict

Test case does not apply to the test object:	N/A (Not Applicable)
Test object does meet the requirement:	P (Pass)
Test object does not meet the requirement:	F (Fail)
Test object does not performed:	N/E (Not Executed)

1.6 General remarks

This report shall not be reproduced, except in full, without the written approval of CMC.
The test results presented in this report relate only to the object tested.
“(see appended table)": refers to a table appended to the report.
Throughout this report a comma is used as the decimal separator.
Tests reported in this test report marked by wording: “Test not accredited by ACCREDIA” are not part of the ACCREDIA accreditation of this laboratory.

Revision index	***Date***	***Change history***
1.0	27.07.2020	--

2. Summary of testing

Test specifications	*Environmental Phenomena*	*Result*
ETSI EN 300 220-2 cl. 4.2.1	Operating frequency	Declared by the manufacturer
ETSI EN 300 220-2 cl. 4.2.2	Unwanted emissions in the spurious domain	P
ETSI EN 300 220-2 cl. 4.3.1	TX effective radiated power	P
ETSI EN 300 220-2 cl. 4.3.2	TX Maximum e.r.p. spectral density	N/A
ETSI EN 300 220-2 cl. 4.3.3	TX Duty cycle	P
ETSI EN 300 220-2 cl. 4.3.4	TX Occupied bandwidth	P
ETSI EN 300 220-2 cl. 4.3.5	TX Out of band emissions	N/A
ETSI EN 300 220-2 cl. 4.3.6	TX Transient	P
ETSI EN 300 220-2 cl. 4.3.7	TX Adjacent channel power	P
ETSI EN 300 220-2 cl. 4.3.8	TX Behaviour under low voltage conditions	N/A
ETSI EN 300 220-2 cl. 4.3.9	TX Adaptive power control	N/A
ETSI EN 300 220-2 cl. 4.3.10	TX FHSS	N/A
ETSI EN 300 220-2 cl. 4.3.11	TX Short term behaviour	N/A
ETSI EN 300 220-2 cl. 4.4.1	RX sensitivity	N/A
ETSI EN 300 220-2 cl. 4.5.2	Clear channel assessment threshold	N/A
ETSI EN 300 220-2 cl. 4.5.3	Polite spectrum access timing parameters	N/A
ETSI EN 300 220-2 cl. 4.4.2	RX Blocking	P
ETSI EN 300 220-2 cl. 4.5.4	Adaptive Frequency Agility	N/A

All tests have been performed on model M880-Thor2 M9N-10006, see the following table for the description of M880-Thor2

Name (X)	*Model (YYYYY)*	*Variants (ZZ) (Note 1)*	*Display (Note 2)*
M880	THOR2	M1, M2, M3, M4, M5, M6, M7, M8, M9, X1, X2, X3, X4, X5, X6, X7, X8, B1, B2, B3, B4, NJ	N, D

Note 1:
The first letter indicated the type of joystick; the digit indicated the number of joystick.
M mean mono-axial joystick.
B mean biaxial joystick
X means the mix of mono-axial and biaxial joystick.
NJ mean no joystick

Note 2:
D means with display
N means without display

This document aims to report the compatibility test results according to the 2014/53 UE Directive.

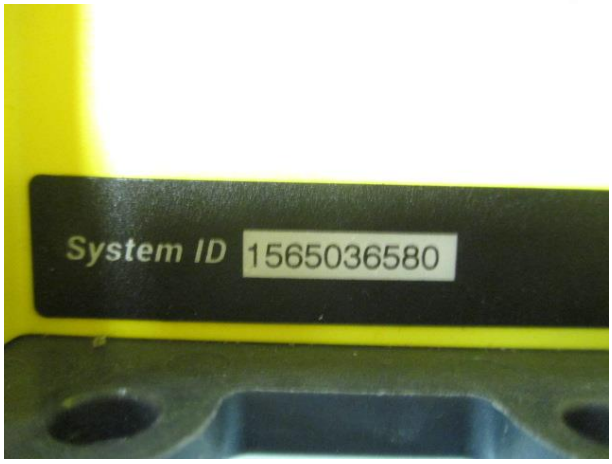
The Test Report was given to the Client representatives for necessary documentation of ratification of the tested equipment and it is valid for the CE marking

3. General information

3.1 Operating frequency (declared by the manufacturer)	
Operational Frequency Band (OFBmin – OFBmax) . :	433,050 – 434,790 MHz 434,040 – 434,790 MHz
Lower Operating Frequency (Fmin) ..... :	433,075 MHz
Upper Operating Frequency (Fmax) ..... :	434,775 MHz
Operating Channel Width (OCW) ..... :	25 kHz (declared)
Maximum output power ..... :	10 mW (10 dBm)
3.2 Description of Equipment Under Test (EUT)	
Power supply (Vnom) ..... :	3,6 Vdc from battery
Serial number ..... :	TX ID: 1500057817 System ID: 1565036580
Software release tested into equipment ..... :	PCB025R02_TRX2_2v4_10dBm__0dBm (radio module PCB904) PCB050R02_TXA_4v56_CERTIF (logic board PCB050)
Components list ..... :	Attachment 2
Type of equipment ..... :	☑ Transmitter Unit ☑ Receiver Unit
Receiver category ..... :	1,5
Extreme temperature ranges ..... :	Portable: -10 °C to +55 °C
Extreme test source voltages ..... :	Battery supplied: 0,85Vnom – Vnom
Duty cycle ..... :	10%
Number of channels ..... :	30
Channel separation (ChS) ..... :	25 kHz
Modulation ..... :	FSK
Polite access ..... :	No
Information on antenna ..... :	λ/4 integrated antenna
Antenna gain ..... :	-- dBi
Declination of responsibility ..... :	Components list and software/hardware version (if reported) are provided by the manufacturer. CMC Centro Misure Compatibilità S.r.l. cannot be considered responsible for these information, for any other document sent by the manufacturer and for any difference between the software version present in the tested sample and that present in the object intended for final sale. In some cases, the software in the tested sample is in a version dedicated exclusively to the test, and therefore does not represent the software installed in the final version of the product.

3.3 Auxiliary equipment	
None	
3.4 Operative condition(s)	
EUT exercising..... :	EUT in continuous transmission in test other than transient where EUT transmits in ON OFF mode, and blocking test, where EUT was in receiver mode
Performance check for tests..... :	--
3.5 Testing and sampling	
Date of receipt of test item(s) ..... :	01.08.2019
Testing start date..... :	20.02.2020
Testing end date..... :	22.07.2020
Samples tested nr. ..... :	1
Sampling procedures ..... :	Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion
Internal identification..... :	Adhesive label with the product number P190945

4. Photograph(s) of EUT



5. Normative references

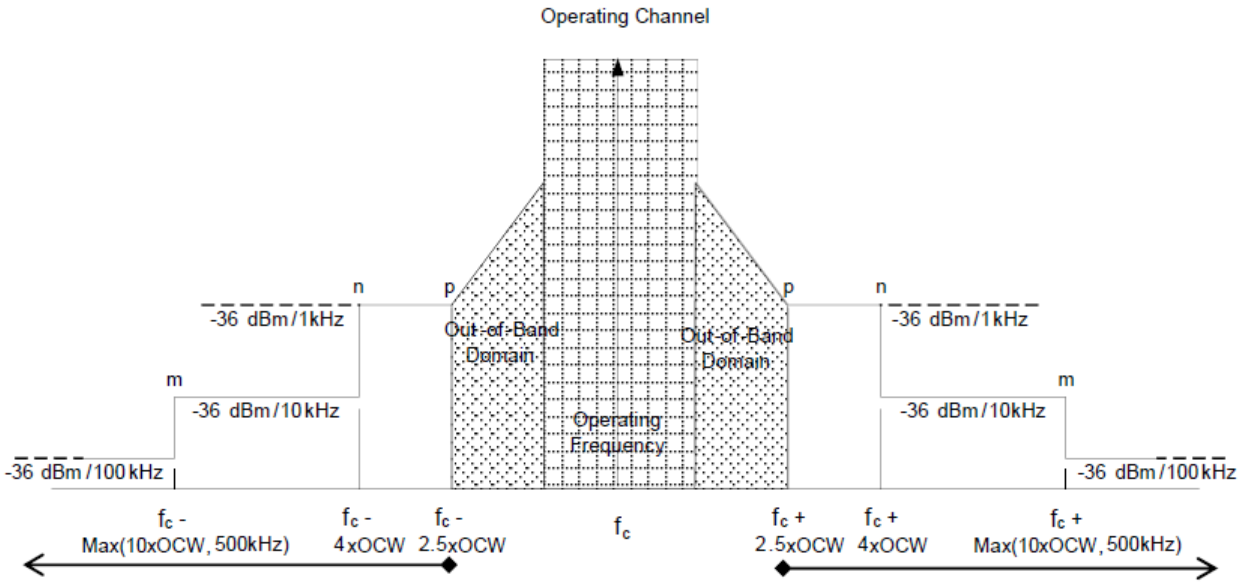
Reference no.	***Description***
ETSI EN 300 220-2 v3.2.1	Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz; Part 2: Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU for non specific radio equipment
ETSI EN 300 220-1 v3.1.1	Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz; Part 1: Technical characteristics and methods of measurement

6. Test results

6.1 Unwanted emissions in the spurious domain

Test specification
ETSI EN 300 220-2 cl. 4.2.2 ETSI EN 300 220-1 cl. 5.9 Measurement uncertainty: see attachment 1 Internal procedure PM001
EUT exercising
See clause 3.4 of this test report *Auxiliary equipment*: See clause 3.3 of this test report
Test setup
Test site: SAC-10 (CMC A070) EUT – Antenna distance: 10 m for frequencies ≤ 1000 MHz 3 m for frequencies > 1000 MHz EUT height about the floor: 1,5 m Test method: substitution method EUT has been tested in 3 orthogonal planes with antenna on both horizontal and vertical position. The results show the highest values.

Acceptance limits

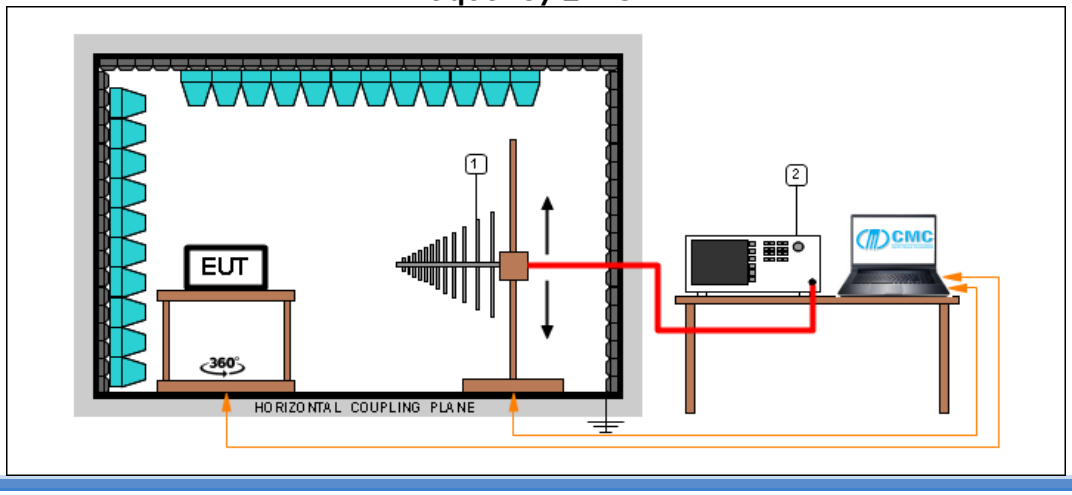


Frequency (MHz)	*RBW (kHz)*	*Level (dBm)*	*Limit min (MHz)*	*Limit max (MHz)*
Fc	1	-36	Fc – (2,5xOCW)	Fc + (2,5xOCW)
	10	-36	Fc – (4xOCW or 100 kHz, whichever is the greater)	Fc + (4xOCW or 100 kHz, whichever is the greater)
	100	-36	Fc – Max(10xOCW or 500 kHz, whichever is the greater)	Fc + Max(10xOCW or 500 kHz, whichever is the greater)

Frequency / **state**	47 MHz to 74 MHz 87,5 to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies below 1000 MHz	Frequencies above 1000 MHz
Operating	-54 dBm	-36 dBm	-30 dBm
Stand-by	-57 dBm	-57 dBm	-47 dBm

Test setup

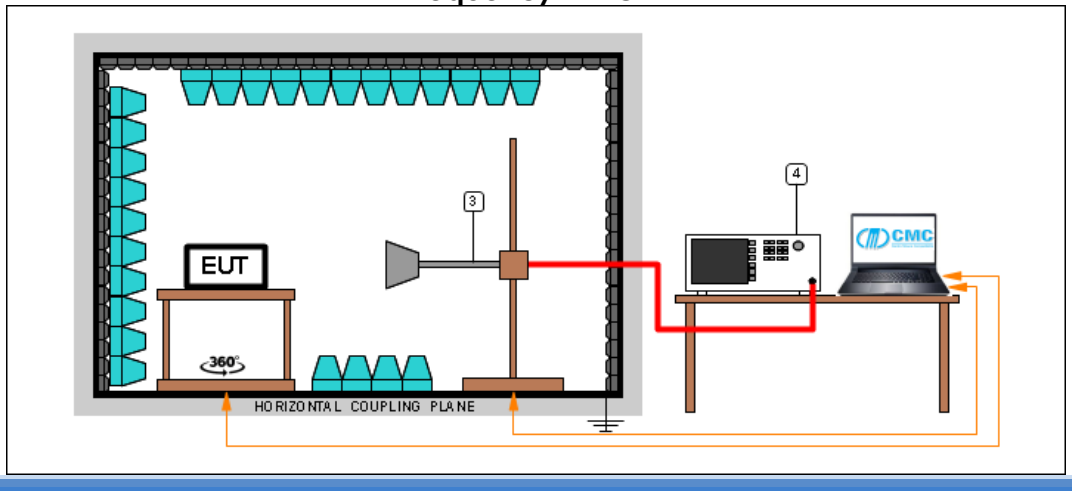
Frequency ≤ 1 GHz



Test setup PR001_02				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna

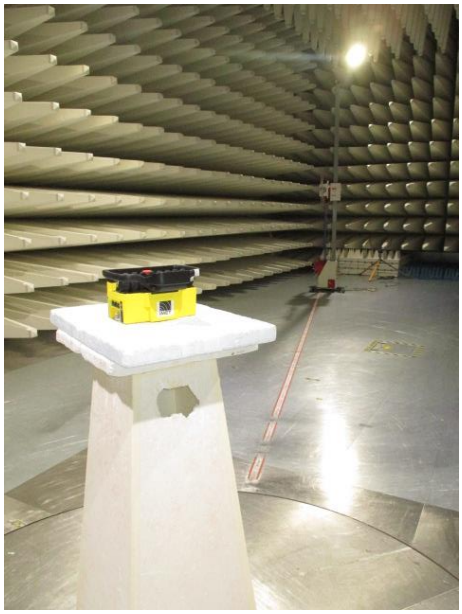
Test setup PR001_03				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S287	Schwarzbeck	VUSLP 9111B	Broadband Antenna

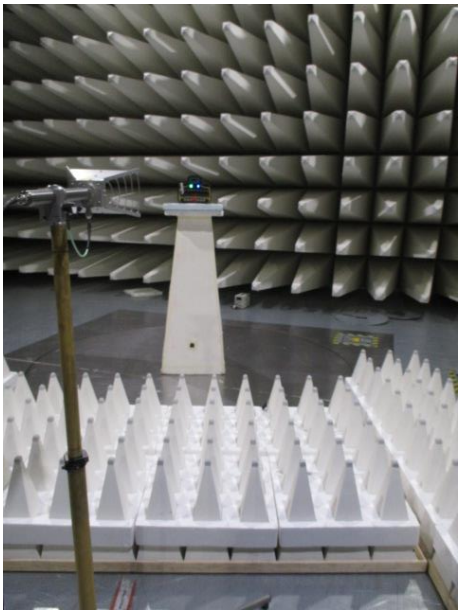
Frequency > 1 GHz



Test setup PR001_04				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
4	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
3	CMC S190	Spin	AMDR-10180	Horn Antenna

Photograph(s) of setup





Result

	Fmin: 433,075 MHz / OCW: 25 kHz		
RBW:	1 kHz	10 kHz	100 kHz
Level:	-36 dBm	-36 dBm	-36 dBm
Graphs	G19194621	G19194620	G19194619
FL limit	**433,0125 MHz**	**432,9750 MHz**	**432,5750 MHz**
FL measurement	433,0680 MHz	433,0555 MHz	432,9202 MHz
FH measurement	433,0819 MHz	433,0925 MHz	433,2288 MHz
FH limit	**433,1375 MHz**	**433,1750 MHz**	**433,5750 MHz**

Frequency (MHz)	*Frequency Range (MHz)*	*Graphs*
Fmin Tx mode	30 – 200	G19194617
	200 – 1000	G19194618
	1000 – 6000	G19194613
Remarks: graphs reported on this table are purely indicative. Correct values are reported on the following tables		

Tx mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-36 or -54***
1731,66	1000	-66,20	**-30**
> 1731,66	1000	No emissions detected	**-30**
*: for the following frequency ranges a limit of -54 dBm shall apply: 47 MHz to 74 MHz, 87,5 to 118 MHz, 174 MHz to 230 MHz and 470 MHz to 790 MHz. For all other frequencies below 1000 MHz the limits must be -36 dBm			

Standby mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-57**
> 1000	1000	No emissions detected	**-47**

Rx mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-57**
> 1000	1000	No emissions detected	**-47**

	Fmax: 434,775 MHz / OCW: 25 kHz		
RBW:	1 kHz	10 kHz	100 kHz
Level:	-36 dBm	-36 dBm	-36 dBm
Graphs	G19194604	G19194603	G19194601
FL limit	**434,7125 MHz**	**434,6750 MHz**	**434,2750 MHz**
FL measurement	434,7667 MHz	434,7526 MHz	434,5852 MHz
FH measurement	434,7832 MHz	434,7957 MHz	434,9608 MHz
FH limit	**434,8375 MHz**	**434,8750 MHz**	**435,2750 MHz**

Frequency (MHz)	*Frequency Range (MHz)*	*Graphs*
Fmin Tx mode	30 – 200	G19194608
	200 – 1000	G19194607
	1000 – 6000	G19194612
Remarks: graphs reported on this table are purely indicative. Correct values are reported on the following tables		

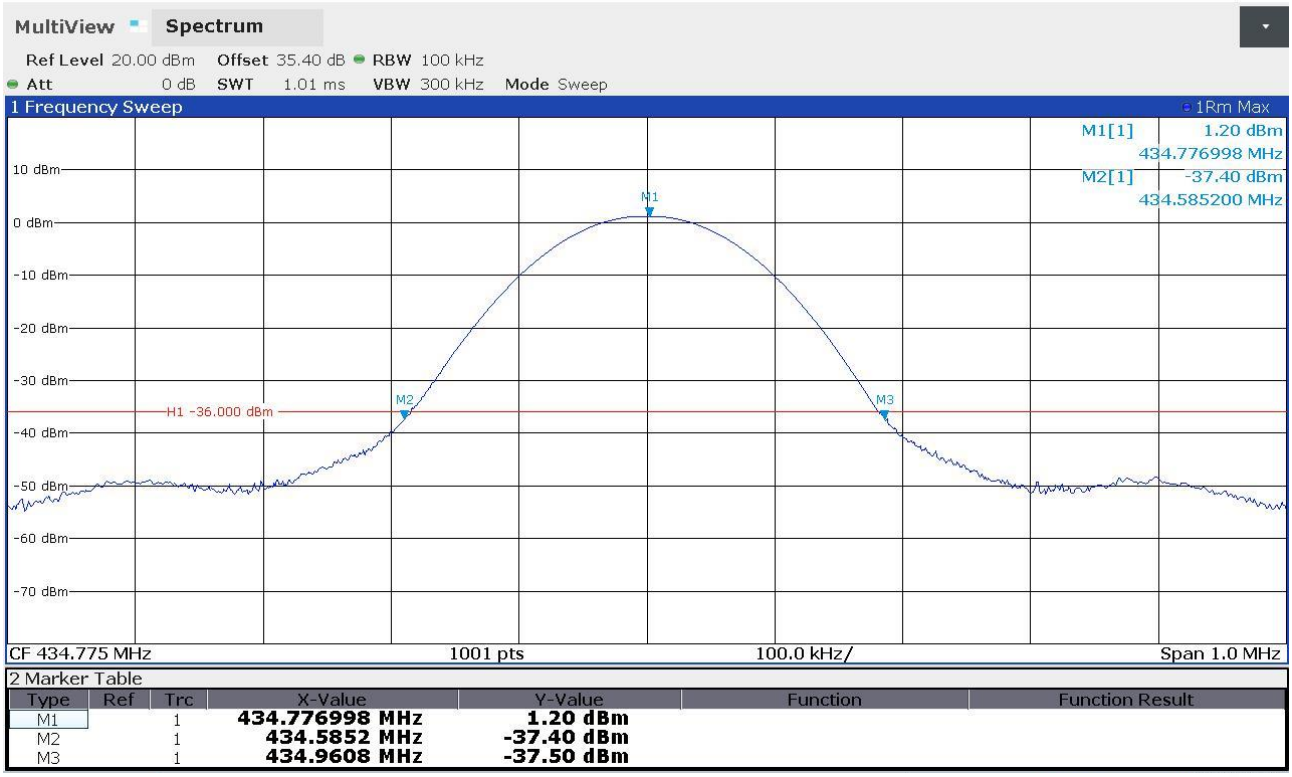
Tx mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-36 or -54***
1755,83	1000	-60,60	**-30**
> 1755,83	1000	No emissions detected	**-30**
*: for the following frequency ranges a limit of -54 dBm shall apply: 47 MHz to 74 MHz, 87,5 to 118 MHz, 174 MHz to 230 MHz and 470 MHz to 790 MHz. For all other frequencies below 1000 MHz the limits must be -36 dBm			

Standby mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-57**
> 1000	1000	No emissions detected	**-47**

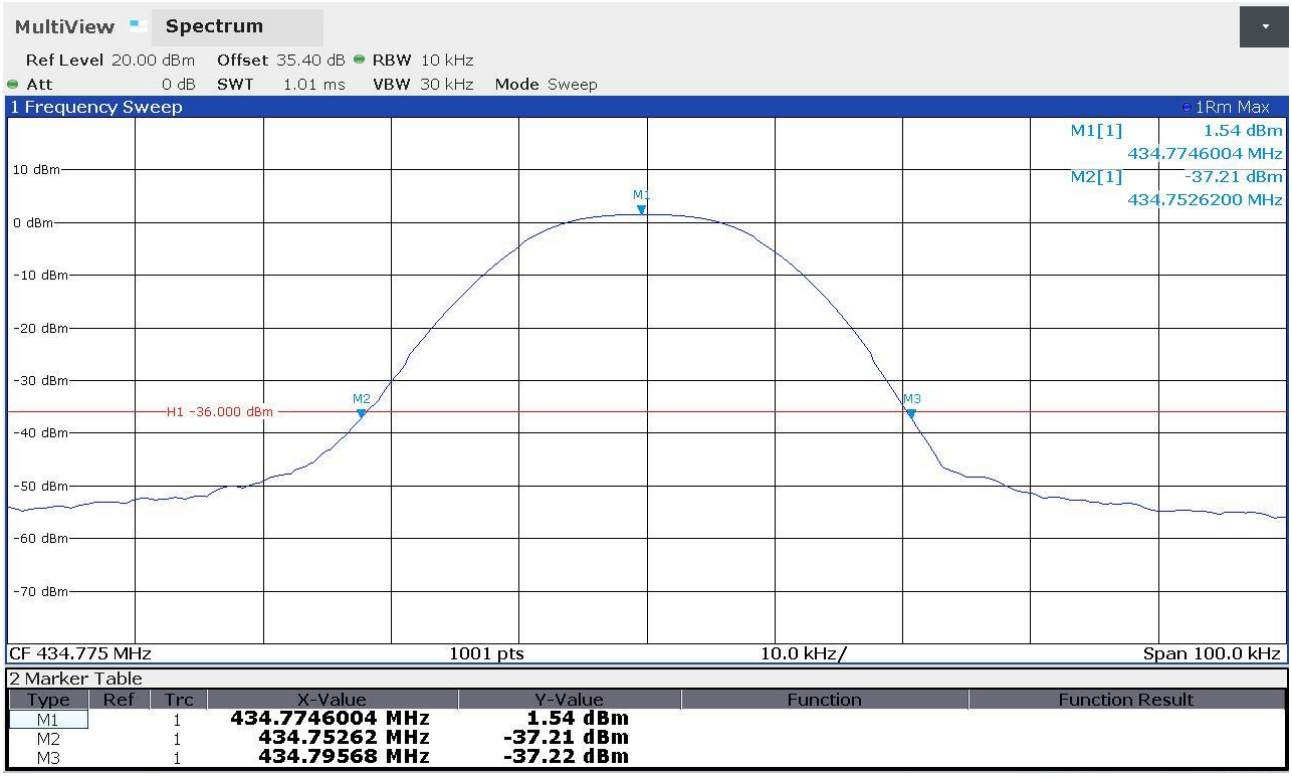
Rx mode			
f (MHz)	*RBW (kHz)*	*Worst case level (dBm)*	*Limits (dBm)*
< 1000	100	No emissions detected	**-57**
> 1000	1000	No emissions detected	**-47**

Graphs

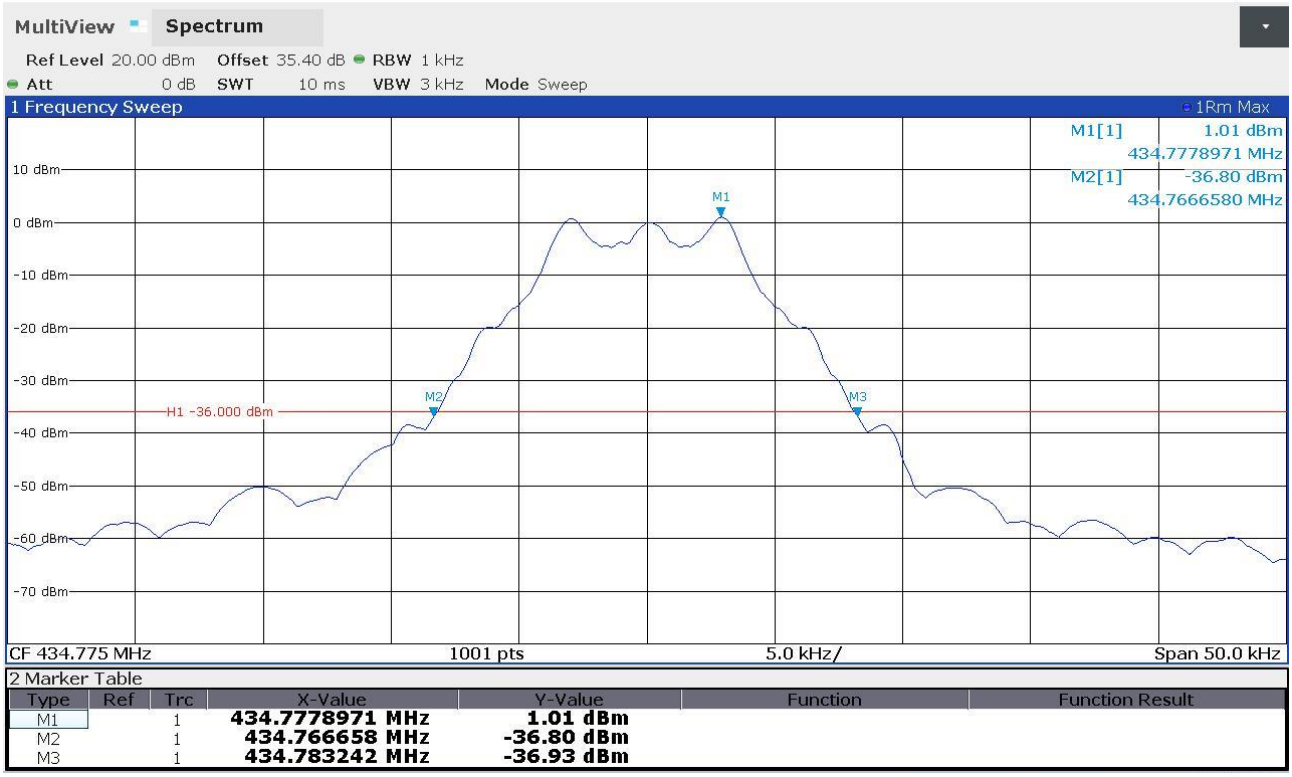
Gandini 19194601

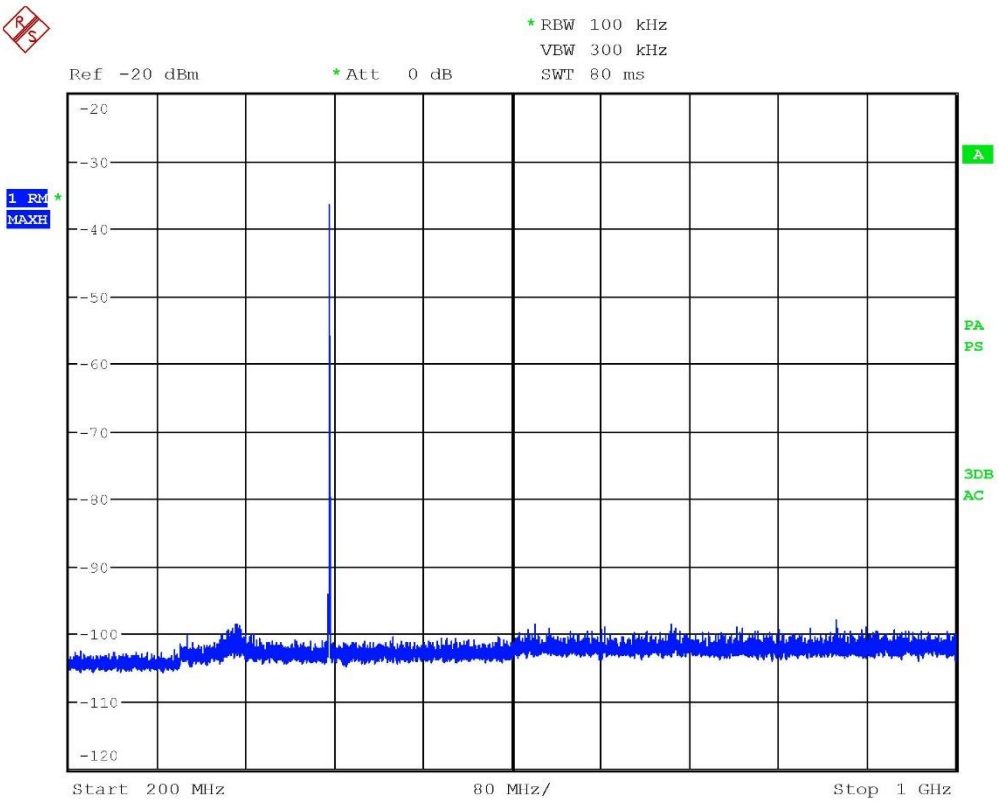


Gandini 19194603

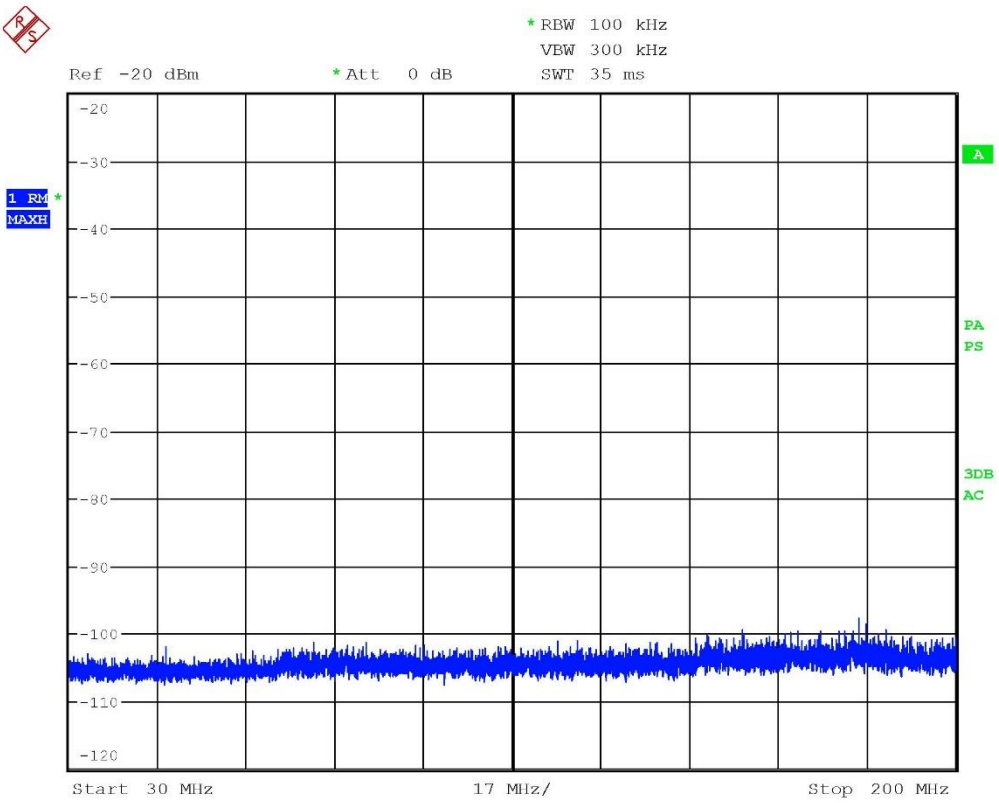


Gandini 19194604

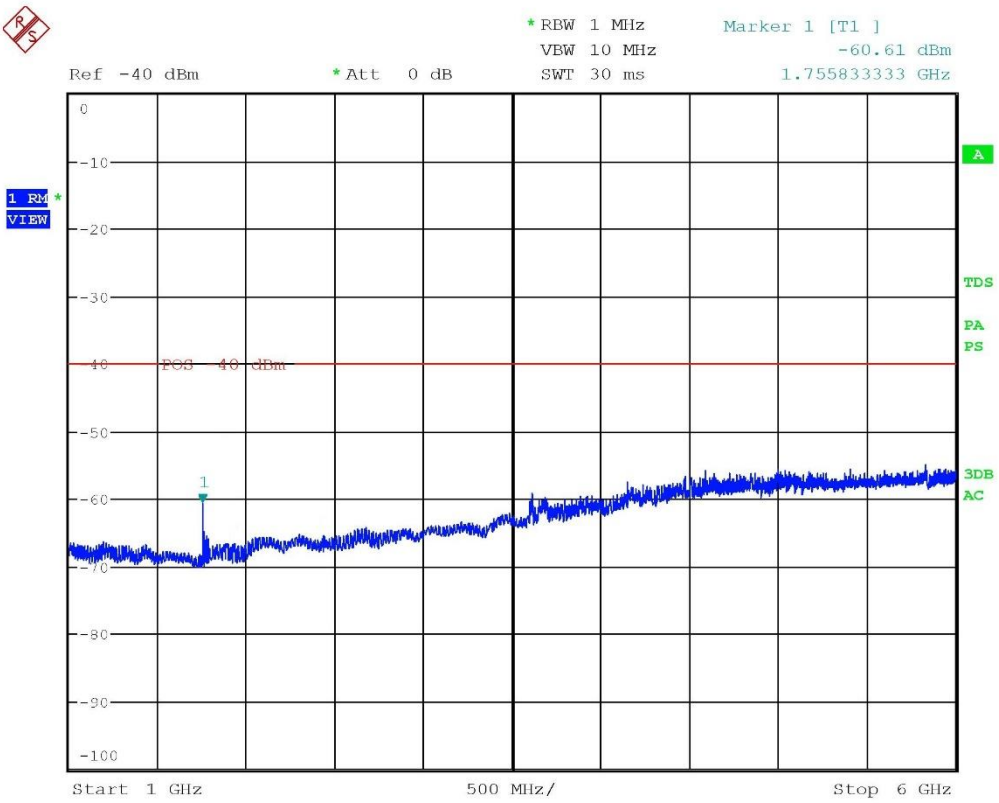




Gandini 19194607



Gandini 19194608



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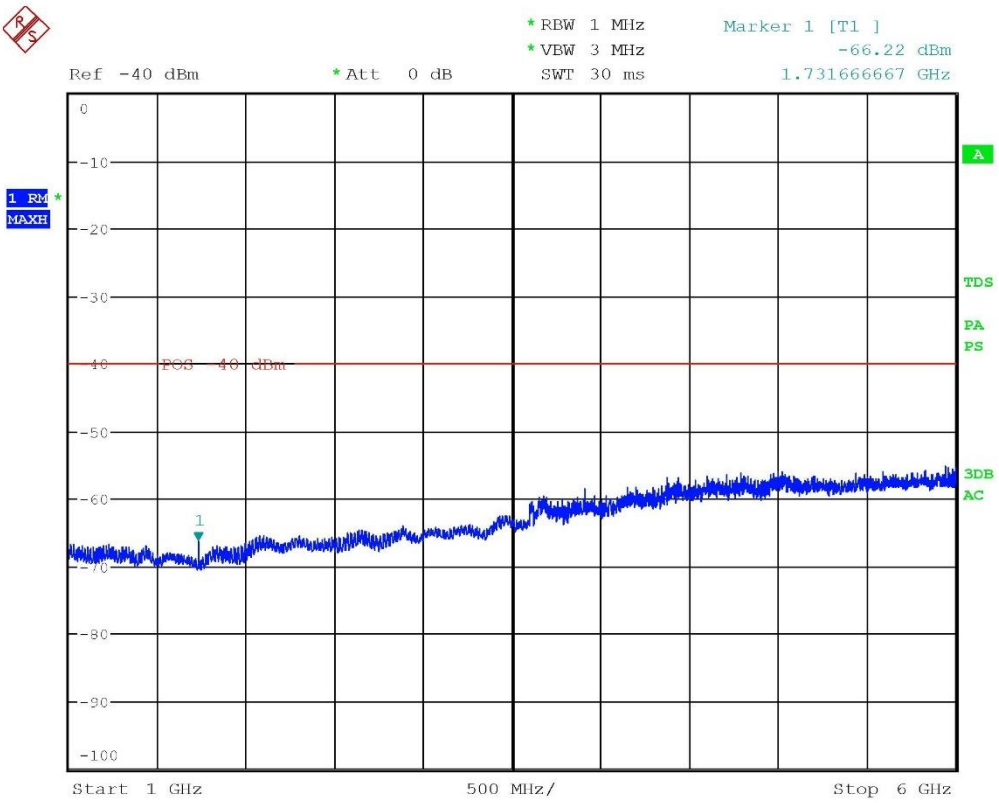
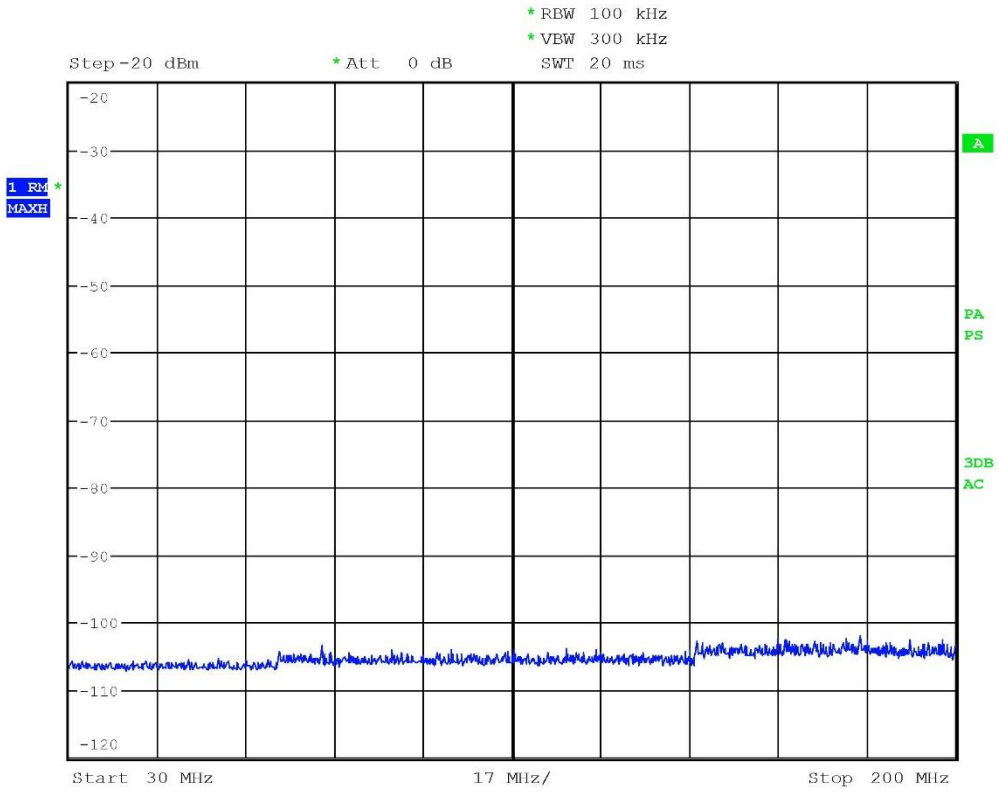
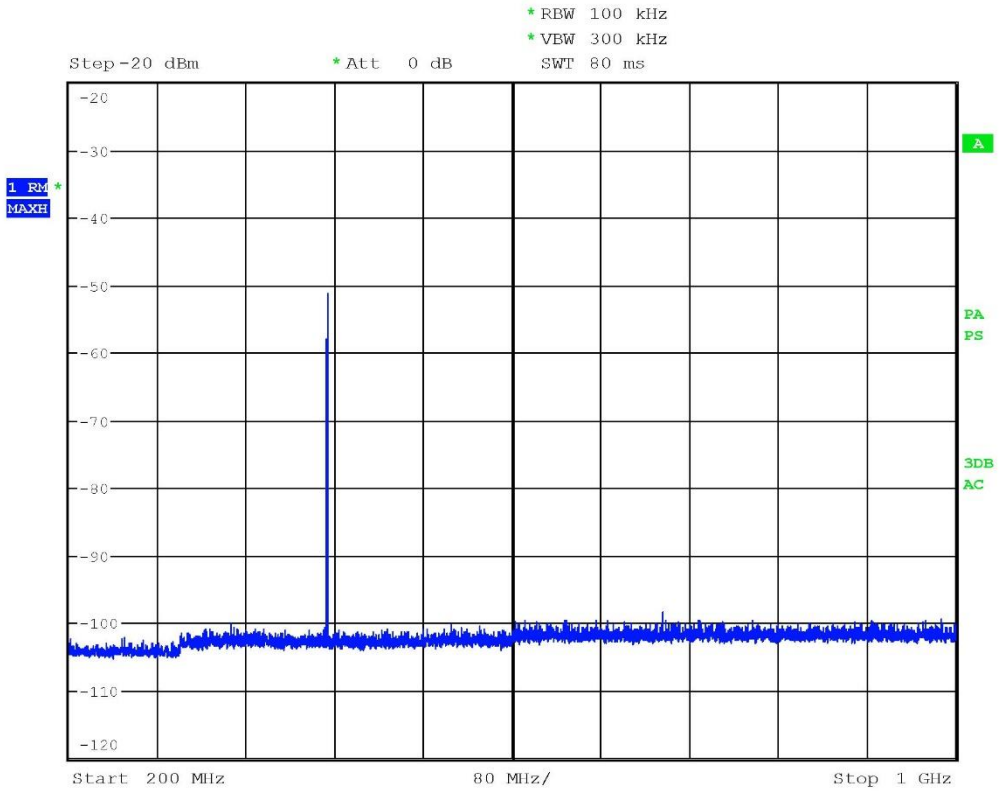


Gandini 19194613

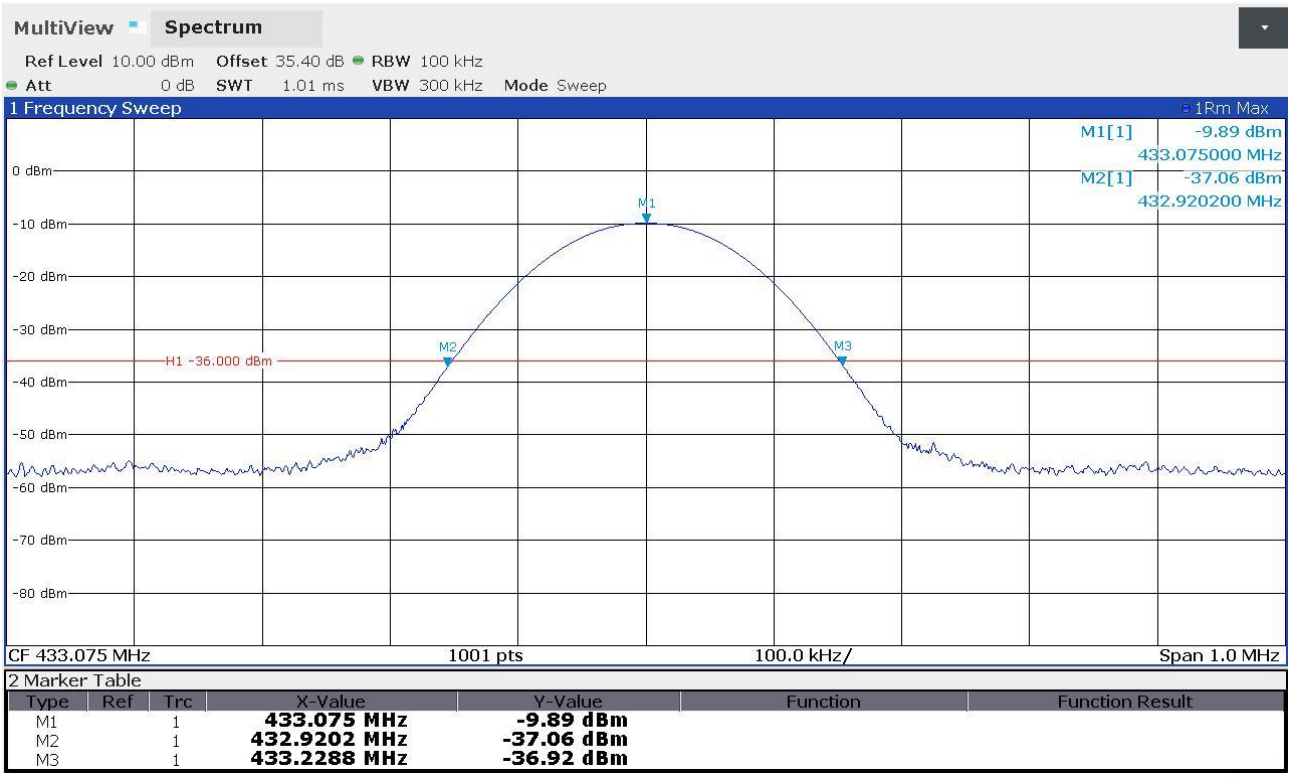


Gandini 19194617

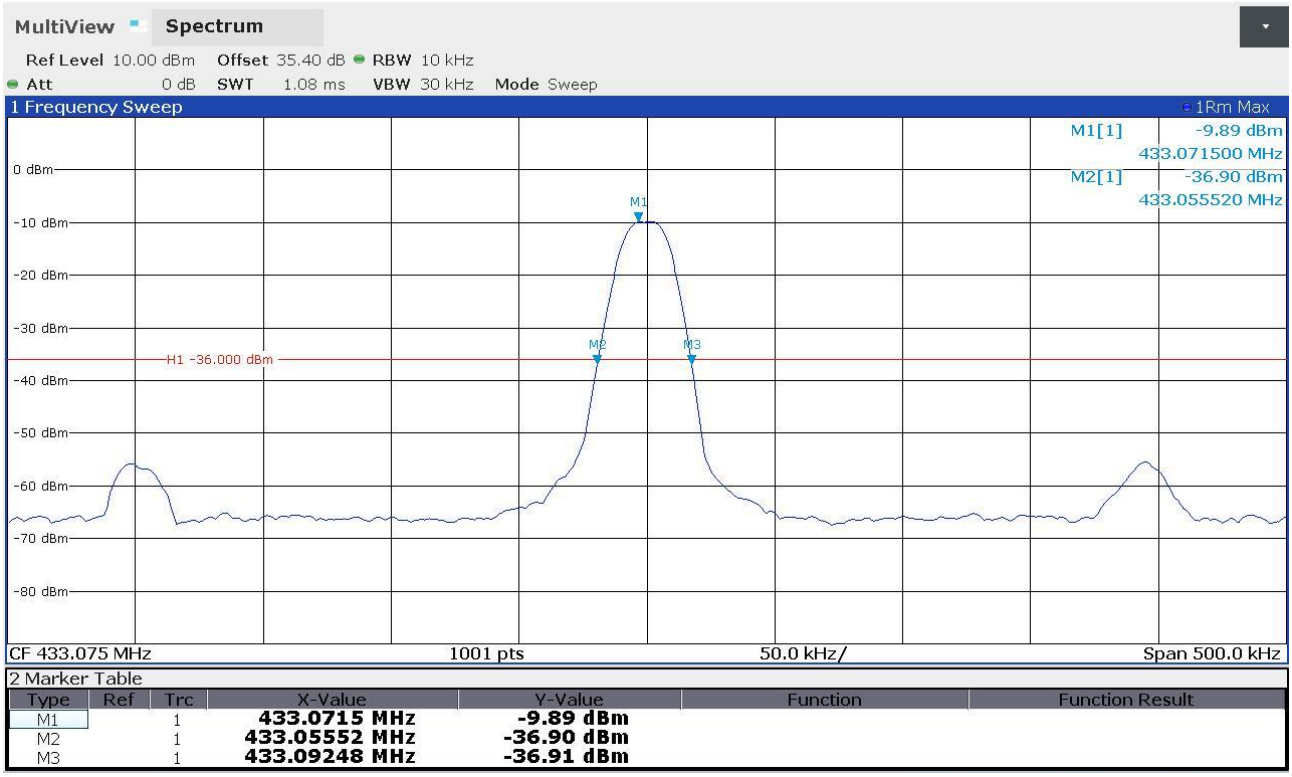


Gandini 19194618

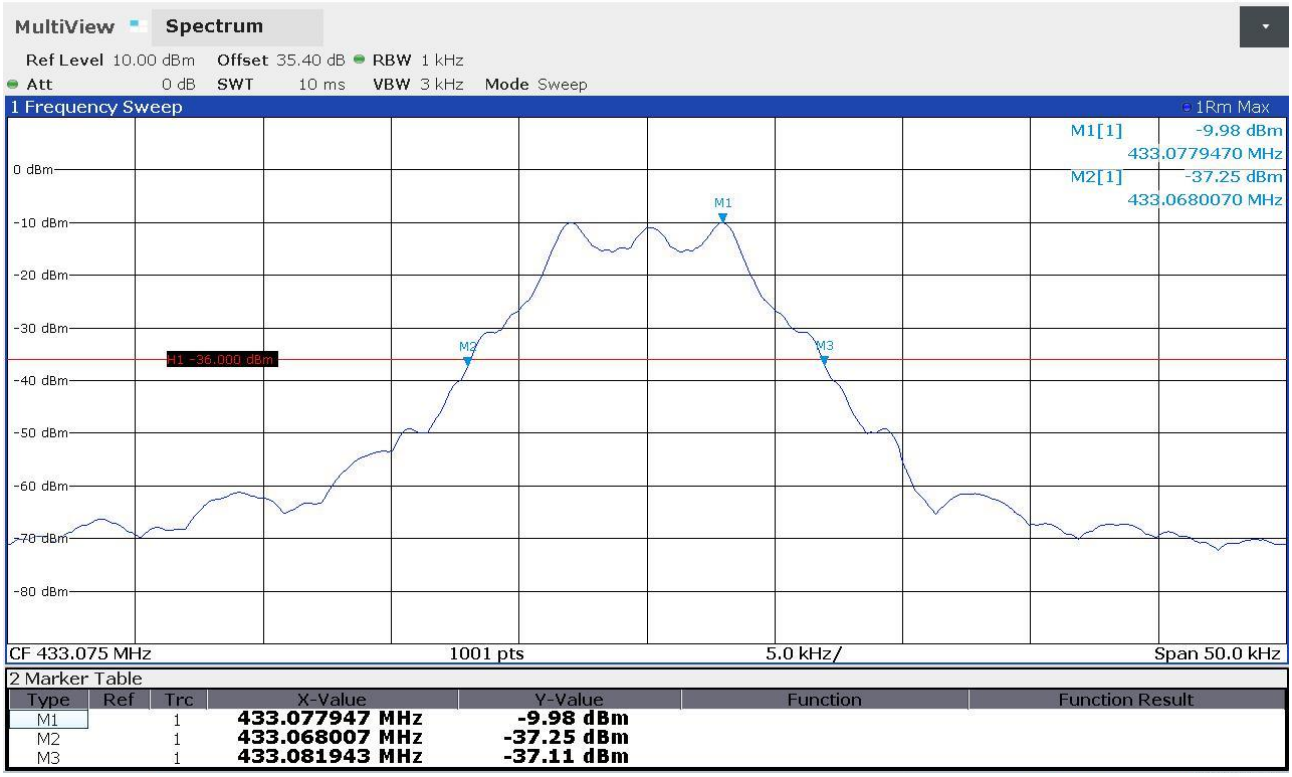
Gandini 19194619



Gandini 19194620



Gandini 19194621



2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	**433.077947 MHz**	**-9.98 dBm**		
M2		1	**433.068007 MHz**	**-37.25 dBm**		
M3		1	**433.081943 MHz**	**-37.11 dBm**		

6.2 TX effective radiated power

Test specification

ETSI EN 300 220-2 cl. 4.2.1.3
ETSI EN 300 220-1 cl. 7.3
Measurement uncertainty: see attachment 1
Internal procedure PM001

EUT exercising

See clause 3.4 of this test report

Auxiliary equipment: See clause 3.3 of this test report

Test setup

Test setup for normal conditions
Test site: SAC-10 (CMC A070)
EUT – Antenna distance: 10 m
EUT height about the floor: 1,5 m
Test method: substitution method
EUT has been tested in 3 orthogonal planes with antenna on both horizontal and vertical position. The results show the highest values.

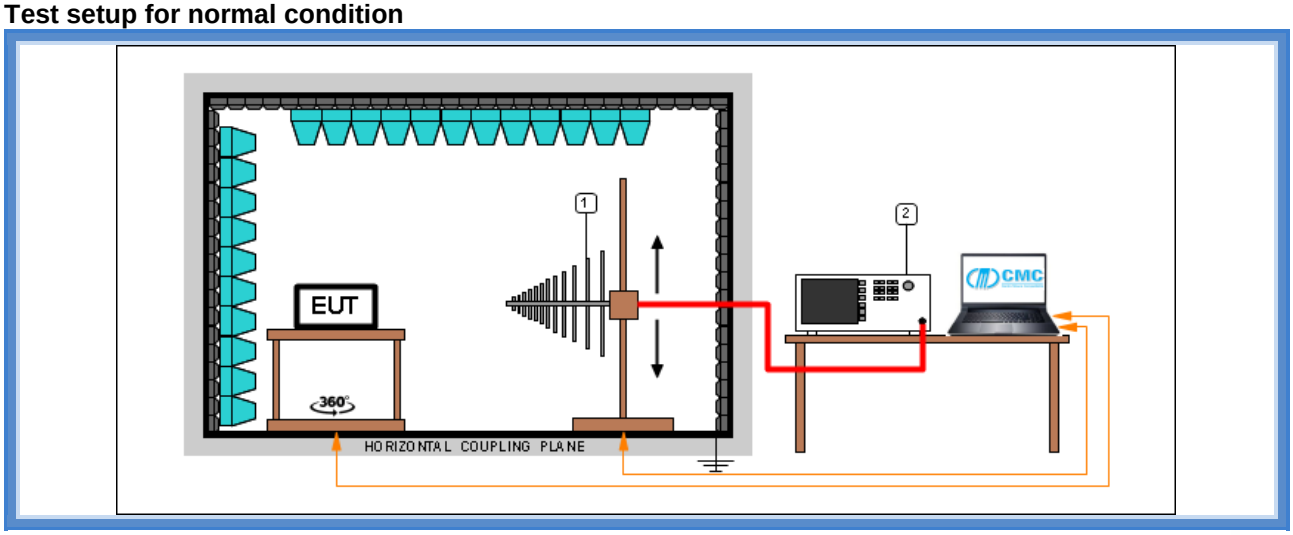
Test setup for extreme conditions
Test site: Climatic chamber (CMC B026)

Acceptance limits

The permitted carrier powers in different SRD frequency bands are given in table 5 of the ETSI EN 300 220-2; as implemented Radio Interferences (NRI) and additional NRI as relevant.

Frequency band / Frequencies	*Maximum radiated power, e.r.p.*	*Maximum occupied bandwidth*	*Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)*
433,050 MHz to 434,790 MHz	**10 mW (10 dBm)**	**The whole band**	**10%**
434,040 MHz to 434,790 MHz	**10 mW (10 dBm)**	**25 kHz**	**No requirement**

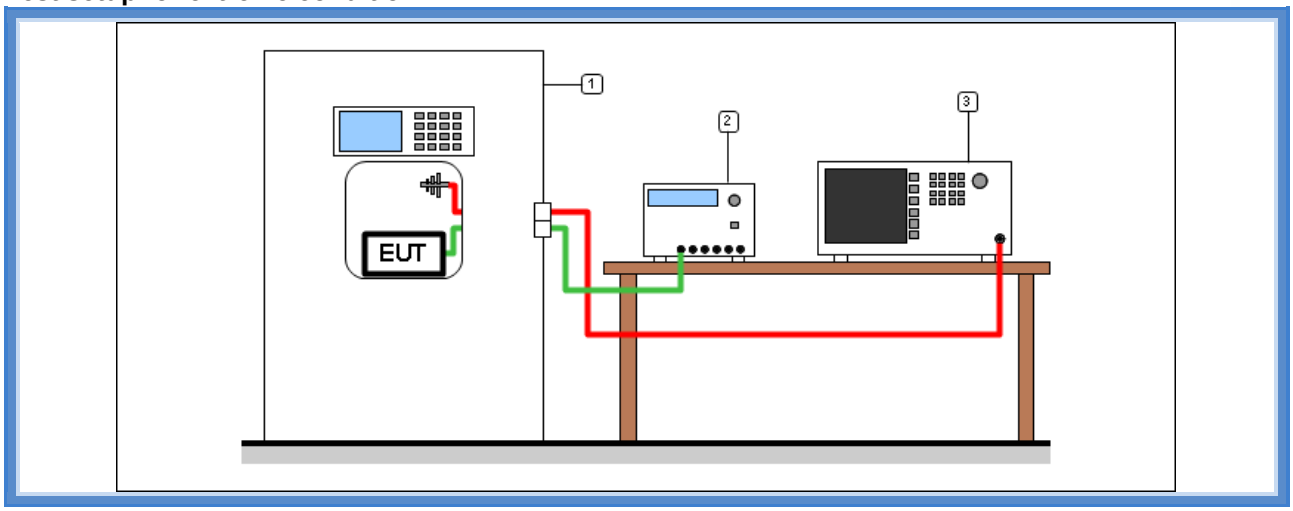
Test setup for normal condition



Test setup PR001_02				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna

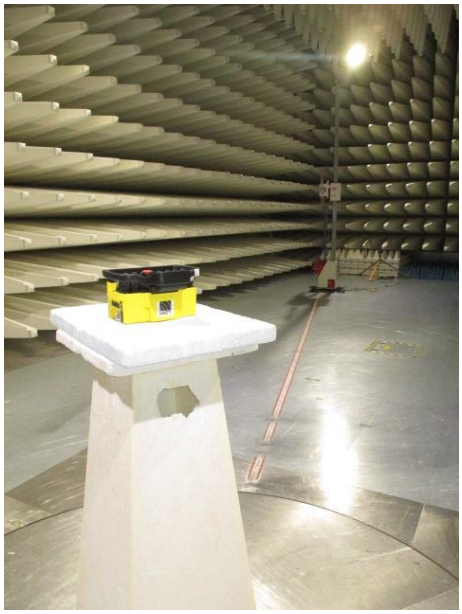
Test setup PR001_03				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S287	Schwarzbeck	VUSLP 9111B	Broadband Antenna

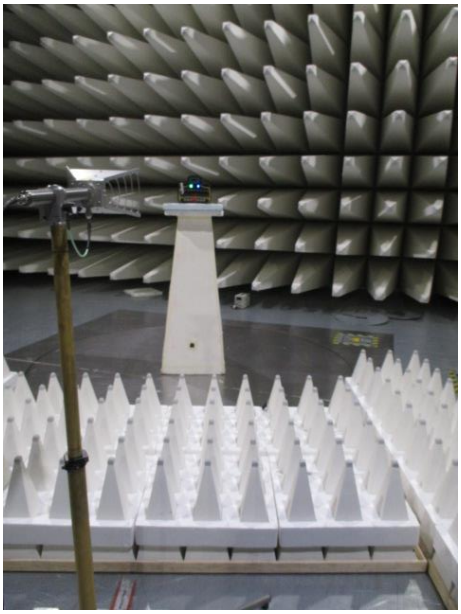
Test setup for extreme condition



Test setup PR003_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
3	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer
2	CMC S118	Hewlett Packard	E3632A	Power Supply
1	CMC B026	Angelantoni	UY 245 IU	Climatic chamber

Photograph(s) of setup





Result

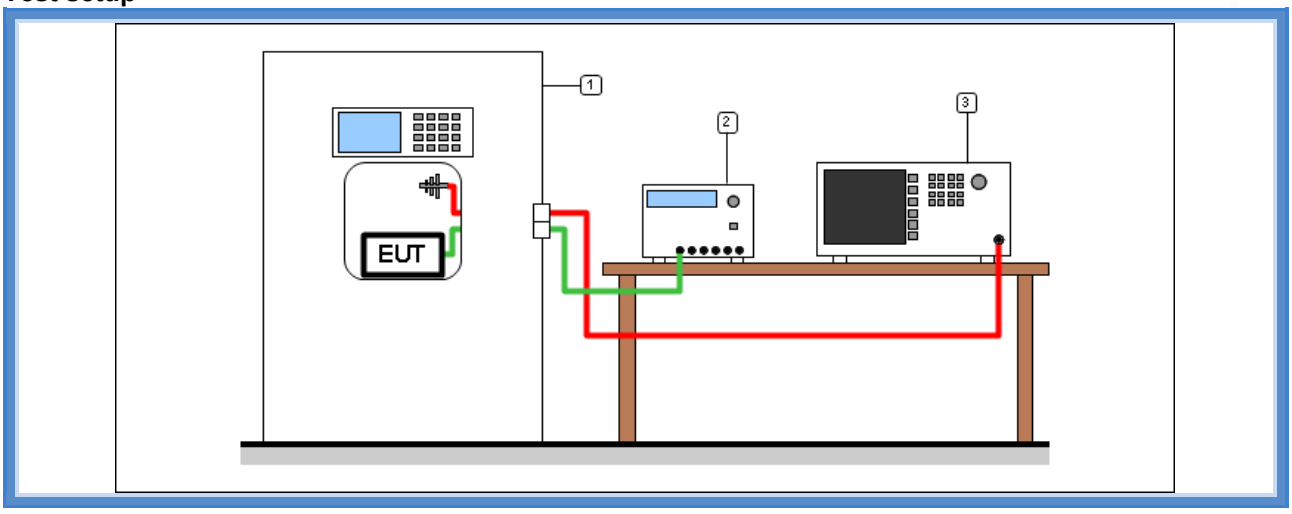
Frequency (MHz)	*BW (kHz)*	*Temperature (°C)*	*Voltage (V)*	*Level (dBm)*	*Limits (dBm)*
Fmin	100	20	3,60	-9,90	**10**
	100	-10	3,60	-9,90	**10**
	100	-10	3,06	-10,10	**10**
	100	55	3,60	-10,10	**10**
	100	55	3,06	-10,20	**10**

Frequency (MHz)	*BW (kHz)*	*Temperature (°C)*	*Voltage (V)*	*Level (dBm)*	*Limits (dBm)*
Fmax	100	20	3,60	1,20	**10**
	100	-10	3,60	0,70	**10**
	100	-10	3,06	0,70	**10**
	100	55	3,60	0,70	**10**
	100	55	3,06	0,70	**10**

6.3 TX Occupied bandwidth

Test specification
ETSI EN 300 220-2 cl. 4.3.4 ETSI EN 300 220-1 cl. 5.6 Measurement uncertainty: see attachment 1 Internal procedure PM001
EUT exercising
See clause 3.4 of this test report *Auxiliary equipment: See clause 3.3 of this test report*
Test setup
Test site: Climatic chamber (CMC B026)
Acceptance limits
The Operating Channel shall be declared and shall reside entirely within the Operational Frequency Band. The Maximum Occupied Bandwidth at 99% shall reside entirely within the Operating Channel defined by F_{Low} and F_{High}.

Test setup



Test setup PR003_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
3	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer
2	CMC S118	Hewlett Packard	E3632A	Power Supply
1	CMC B026	Angelantoni	UY 245 IU	Climatic chamber

Result – Fmin

BW (kHz)	*Temp. (°C)*	*Voltage (V)*	*99% BW (kHz)*	***OCW (kHz)***	***F_{Low} limit (MHz)***	*F_{Low} (MHz)*	*F_{High} (MHz)*	***F_{High} limit (MHz)***
0,3	20	3,60	10,5087	**25**	**433,0625**	433,0698	433,0803	**433,0875**
0,3	-10	3,60	10,1521	**25**	**433,0625**	433,0698	433,0799	**433,0875**
0,3	-10	3,06	10,1419	**25**	**433,0625**	433,0698	433,0799	**433,0875**
0,3	55	3,60	10,1380	**25**	**433,0625**	433,0701	433,0802	**433,0875**
0,3	55	3,06	10,1564	**25**	**433,0625**	433,0701	433,0802	**433,0875**

Result – Fmax

BW (kHz)	*Temp. (°C)*	*Voltage (V)*	*99% BW (kHz)*	***OCW (kHz)***	***F_{Low} limit (MHz)***	*F_{Low} (MHz)*	*F_{High} (MHz)*	***F_{High} limit (MHz)***
0,3	20	3,60	10,2056	**25**	**434,7625**	434,7699	434,7801	**434,7875**
0,3	-10	3,60	10,6228	**25**	**434,7625**	434,7695	434,7802	**434,7875**
0,3	-10	3,06	10,6451	**25**	**434,7625**	434,7695	434,7804	**434,7875**
0,3	55	3,60	10,6425	**25**	**434,7625**	434,7698	434,7804	**434,7875**
0,3	55	3,06	10,6385	**25**	**434,7625**	434,7698	434,7804	**434,7875**

6.4 TX Out of band emissions

Test specification

ETSI EN 300 220-2 cl. 4.3.5
ETSI EN 300 220-1 cl. 5.8
Measurement uncertainty: see attachment 1
Internal procedure PM001

EUT exercising

See clause 3.4 of this test report

Auxiliary equipment: See clause 3.3 of this test report

Test setup

Test setup for normal conditions
Test site: SAC-10 (CMC A070)
EUT – Antenna distance: 10 m
EUT height about the floor: 1,5 m
Test method: substitution method
EUT has been tested in 3 orthogonal planes with antenna on both horizontal and vertical position. The results show the highest values.

Test setup for extreme conditions
Test site: Climatic chamber (CMC B026)

Acceptance limits

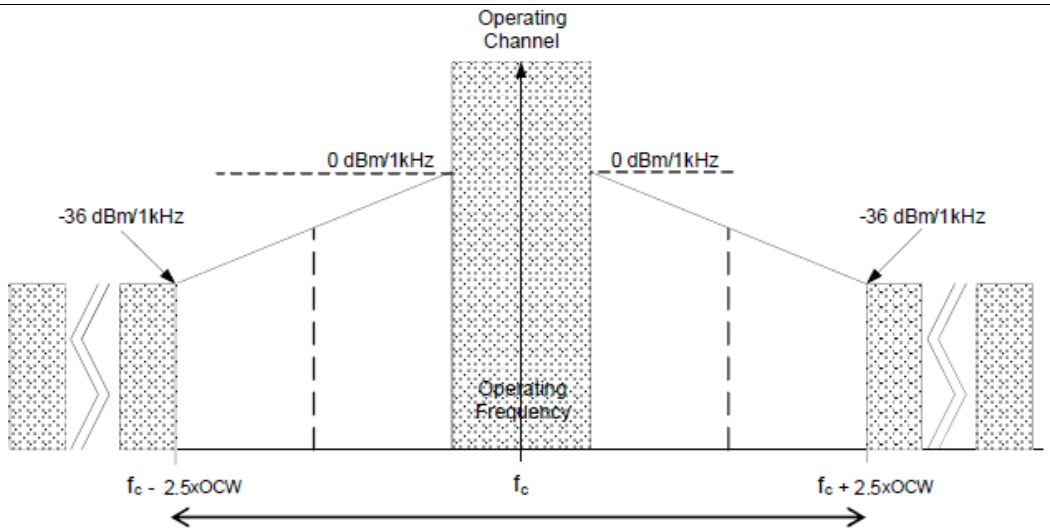


Figure 5: Out Of Band Domain for Operating Channel with reference BW

Frequency (MHz)	*RBW (kHz)*	*Level (dBm)*	*Limit min (MHz)*	*Limit max (MHz)*
Fc	1	0	Fc – (OCW / 2)	Fc + (OCW / 2)
	1	-36	Fc – (2,5xOCW)	Fc + (2,5xOCW)

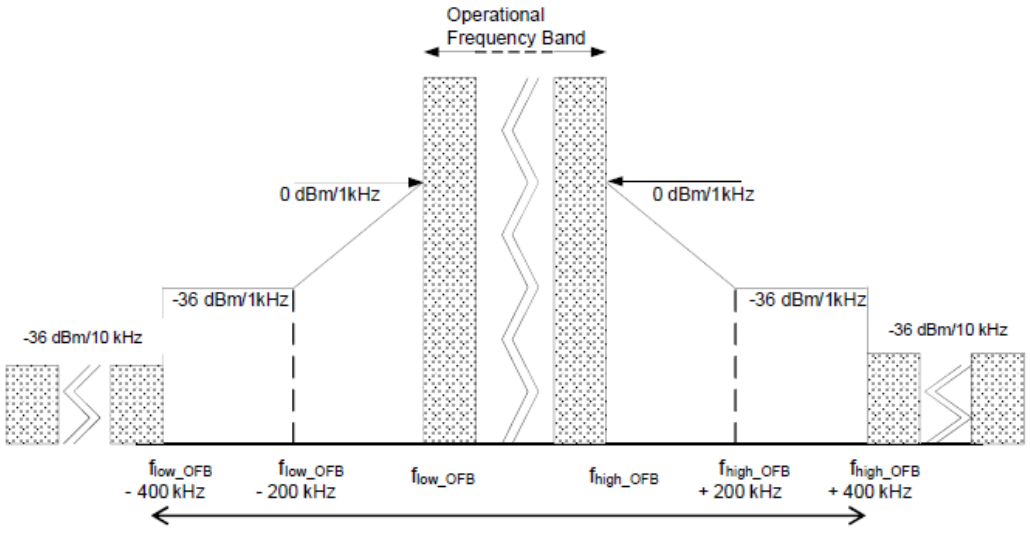
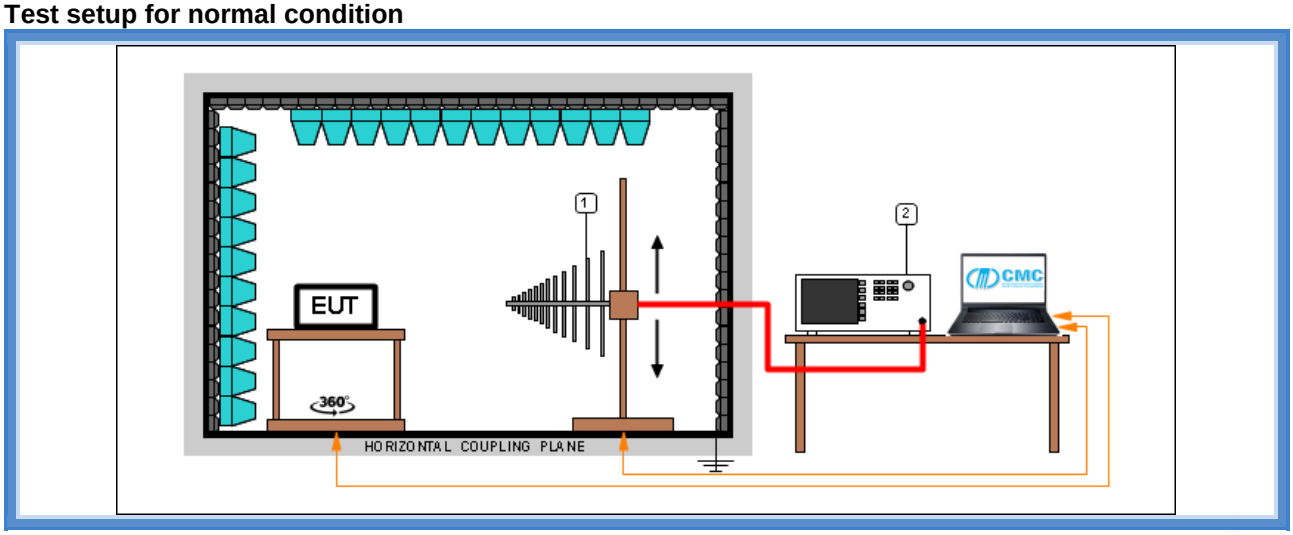


Figure 6: Out Of Band Domain for Operational Frequency Band with reference BW

Frequency (MHz)	*RBW (kHz)*	*Level (dBm)*	*Limit min (MHz)*	*Limit max (MHz)*
Fc	1	0	OFBmin	OFBmax
	1	-36	OFBmin - 200 kHz	OFBmax + 200 kHz
	10	-36	OFBmin - 400 kHz	OFBmax + 400 kHz

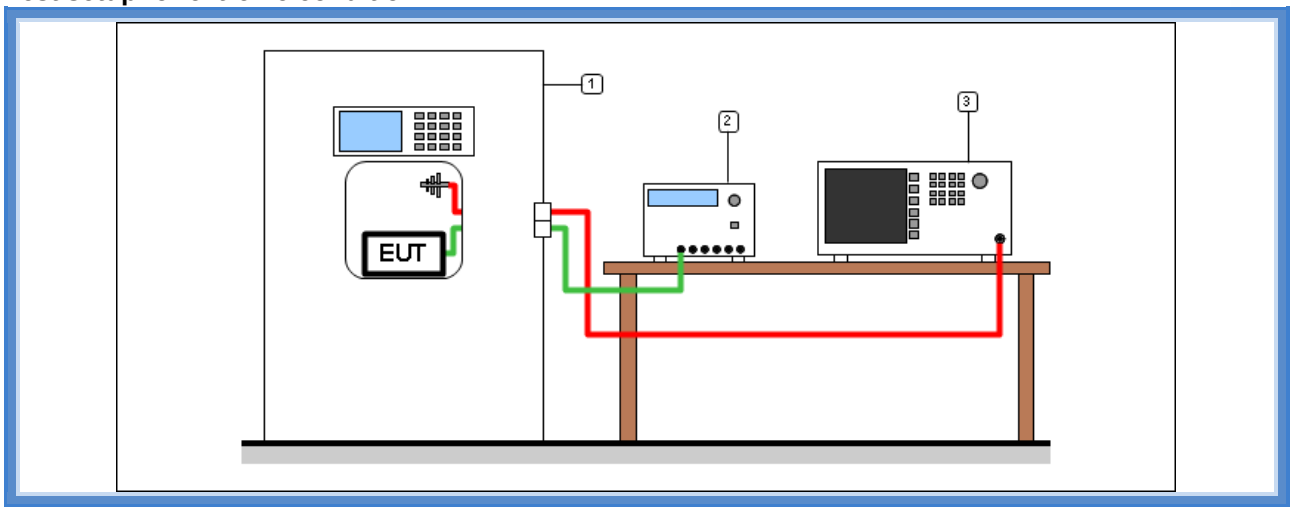
Test setup for normal condition



Test setup PR001_02				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna

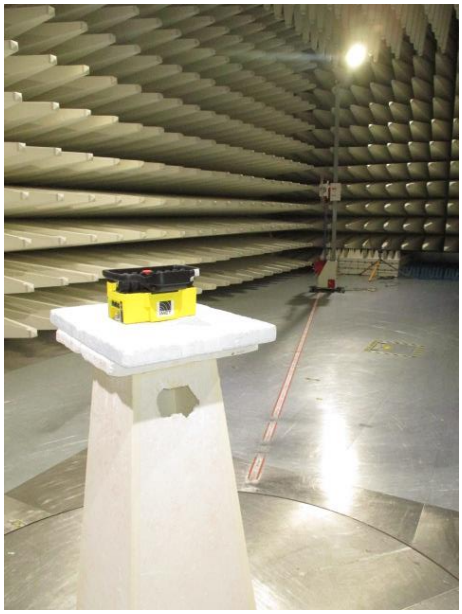
Test setup PR001_03				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	EMC receiver
1	CMC S287	Schwarzbeck	VUSLP 9111B	Broadband Antenna

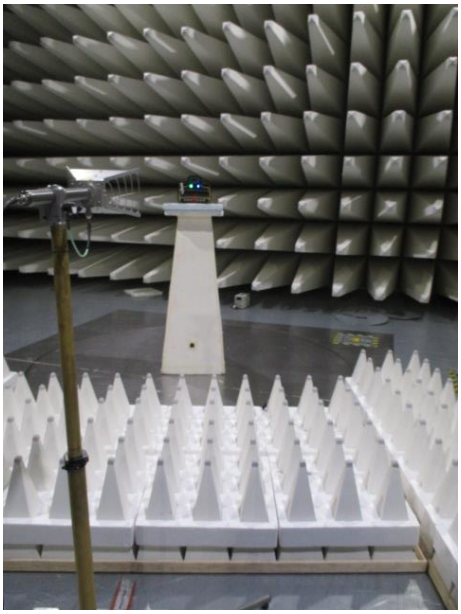
Test setup for extreme condition



Test setup PR003_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
3	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer
2	CMC S118	Hewlett Packard	E3632A	Power Supply
1	CMC B026	Angelantoni	UY 245 IU	Climatic chamber

Photograph(s) of setup





Result

Test conditions		Results referred to Fmin (MHz)		
			0 dBm / 1 kHz	-36 dBm / 1 kHz
T_{nom}(20)°C	V_{nom}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0680
		FH	Maximum peak of transmission is lower than 0 dBm	433,0819
T_{min}(-10)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0678
		FH	Maximum peak of transmission is lower than 0 dBm	433,0817
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0679
		FH	Maximum peak of transmission is lower than 0 dBm	433,0817
T_{max}(55)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0682
		FH	Maximum peak of transmission is lower than 0 dBm	433,0820
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0682
		FH	Maximum peak of transmission is lower than 0 dBm	433,0820
		FLMis	--	433,0678
		FHMis	--	433,0820
Limits		**FL**	**433,0625**	**433,0125**
		FH	**433,0875**	**433,1375**

Test conditions		Results referred to Fmax (MHz)		
			0 dBm / 1 kHz	-36 dBm / 1 kHz
T_{nom}(20)°C	V_{nom}(3,60) V	FL	434,7716	434,7667
		FH	434,7783	434,7832
T_{min}(-10)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	434,7665
		FH	Maximum peak of transmission is lower than 0 dBm	434,7829
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	434,7666
		FH	Maximum peak of transmission is lower than 0 dBm	434,7829
T_{max}(55)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	434,7669
		FH	Maximum peak of transmission is lower than 0 dBm	434,7833
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	434,7669
		FH	Maximum peak of transmission is lower than 0 dBm	434,7833
		FLMis	434,7716	434,7665
		FHMis	434,7783	434,7833
Limits		**FL**	**434,7625**	**434,7125**
		FH	**434,7875**	**434,8375**

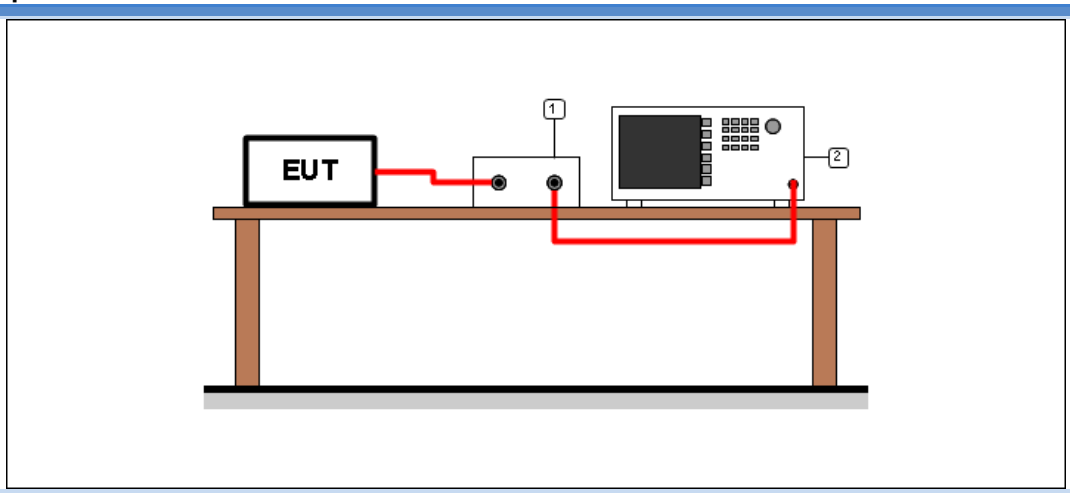
Test conditions		Results referred to Operating Frequency Band OFB (MHz)			
			0 dBm / 1 kHz	-36 dBm / 1 kHz	-36 dBm / 10 kHz
T_{nom}(20)°C	V_{nom}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0680	433,0555
		FH	434,7783	434,7832	434,7957
T_{min}(-10)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0678	433,0561
		FH	Maximum peak of transmission is lower than 0 dBm	434,7829	434,7952
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0679	433,0561
		FH	Maximum peak of transmission is lower than 0 dBm	434,7829	434,7954
T_{max}(55)°C	V_{max}(3,60) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0682	433,0563
		FH	Maximum peak of transmission is lower than 0 dBm	434,7833	434,7957
	V_{min}(3,06) V	FL	Maximum peak of transmission is lower than 0 dBm	433,0682	433,0563
		FH	Maximum peak of transmission is lower than 0 dBm	434,7833	434,7957
		FLMis	--	433,0678	433,0555
		FHMis	434,7783	434,7833	434,7957
Limits		**FL**	**433,0500**	**432,8500**	**432,6500**
		FH	**434,7900**	**434,9900**	**435,1900**

6.5 TX Adjacent channel power

Test specification
EN 300 220-2 cl. 4.3.7 ETSI EN 300 220-1 cl. 5.11 Measurement uncertainty: see attachment 1 Internal procedure PM001
EUT exercising
See clause 3.4 of this test report *Auxiliary equipment: See clause 3.3 of this test report*
Test setup
Test site: Laboratory
Acceptance limits

		Adjacent Channel power integrated over 0,7 x OCW	**Alternate Adjacent Channel power integrated over 0,7 x OCW**
OCW < 20 kHz	Normal test conditions	-20 dBm	-20 dBm
	Extreme test conditions	-15 dBm	-20 dBm
OCW ≥ 20 kHz	Normal test conditions	-37 dBm	-40 dBm
	Extreme test conditions	-32 dBm	-37 dBm

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
1	--	--	--	Attenuator
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz

Result

Fmin

RBW (kHz)	*Adjacent Channel Power ACP (dBm)*				***Limit (dBm)***
	-2 CH	-1 CH	+1 CH	+2 CH	
17,50	--	-64,70	-65,80	--	**-37,00**
17,50	-67,00	--	--	-67,10	**-40,00**

Fmax

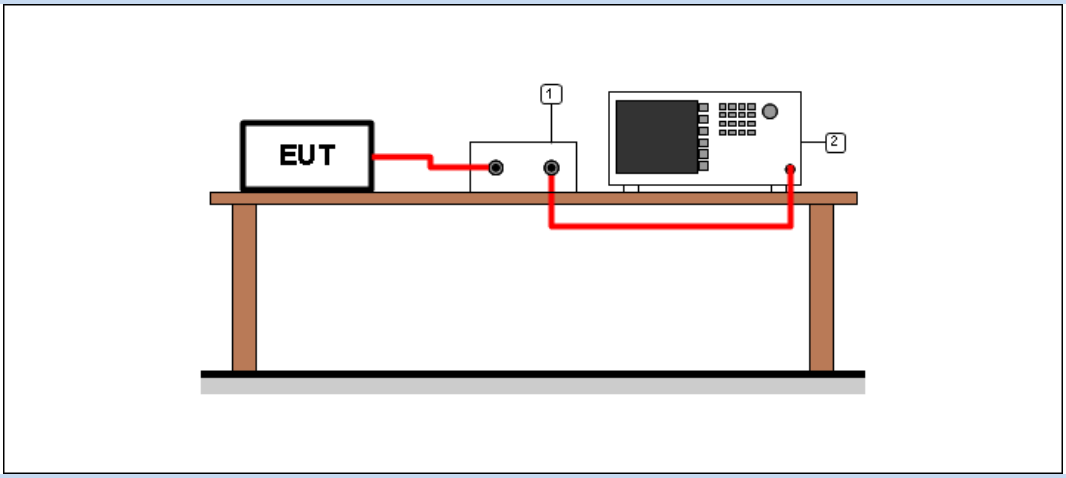
RBW (kHz)	*Adjacent Channel Power ACP (dBm)*				***Limit (dBm)***
	-2 CH	-1 CH	+1 CH	+2 CH	
17,50	--	-56,80	-58,50	--	**-37,00**
17,50	-63,50	--	--	-63,90	**-40,00**

6.6 TX Transient

Test specification
ETSI EN 300 220-2 cl. 4.3.6 ETSI EN 300 220-1 cl. 5.10 Measurement uncertainty: see attachment 1 Internal procedure PM001
EUT exercising
See clause 3.4 of this test report *Auxiliary equipment: See clause 3.3 of this test report*
Test setup
Test site: Laboratory
Acceptance limits

Absolute offset from centre frequency	*RBWREF*	*Peak power limit applicable at measurement points*
≤ 400 kHz	1 kHz	0 dBm
> 400 kHz	1 kHz	-27 dBm

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
1	--	--	--	Attenuator
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz

Result – Fmin

Fmin offset (kHz)		*RBW (kHz)*	*RBW_{REF} (kHz)*	*Δ_{RBW} (dB)*	*Results (dBm)*	***Limit (dBm)***
±OCW:	25	3	1	-4,8	-66,10	**0,00**
±(OCW/2+3)	15,5	1	1	0	-62,80	**0,00**
±(OCW/2+400)	412,5	100	1	-20,0	-87,20	**-27,00**
±(OCW/2+1200)	1212,5	300	1	-24,8	-99,00	**-27,00**

Result – Fmax

Fmax offset (kHz)		*RBW (kHz)*	*RBW_{REF} (kHz)*	*Δ_{RBW} (dB)*	*Results (dBm)*	***Limit (dBm)***
±OCW:	25	3	1	-4,8	-54,90	**0,00**
±(OCW/2+3)	15,5	1	1	0	-48,00	**0,00**
±(OCW/2+400)	412,5	100	1	-20,0	-75,40	**-27,00**
±(OCW/2+1200)	1212,5	300	1	-24,8	-87,40	**-27,00**

6.7 TX Behaviour under low voltage conditions

Test specification

ETSI EN 300 220-2 cl. 4.3.8
ETSI EN 300 220-1 cl. 5.12
Measurement uncertainty: see attachment 1
Internal procedure PM001

EUT exercising

See clause 3.4 of this test report

Auxiliary equipment: See clause 3.3 of this test report

Test setup

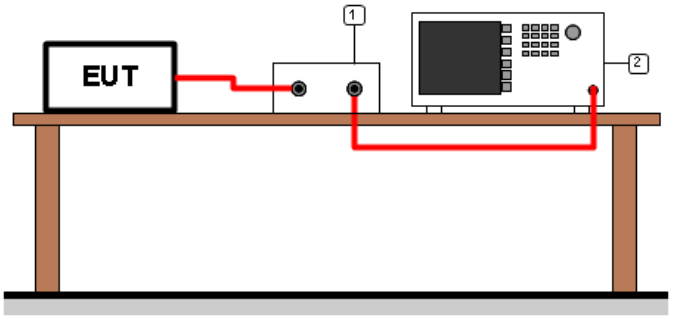
Test site: Laboratory

Acceptance limits

The equipment shall either:

a) remain in the Operating Channel OC without exceeding any applicable limits (e.g. Duty Cycle); or
b) reduce its effective radiated power below the Spurious Emission limits without exceeding any applicable limits (e.g. Duty Cycle); or
c) shut down, (ceasing function);as the voltage falls below the manufacturers declared operating voltage

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
1	--	--	--	Attenuator
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz

Result

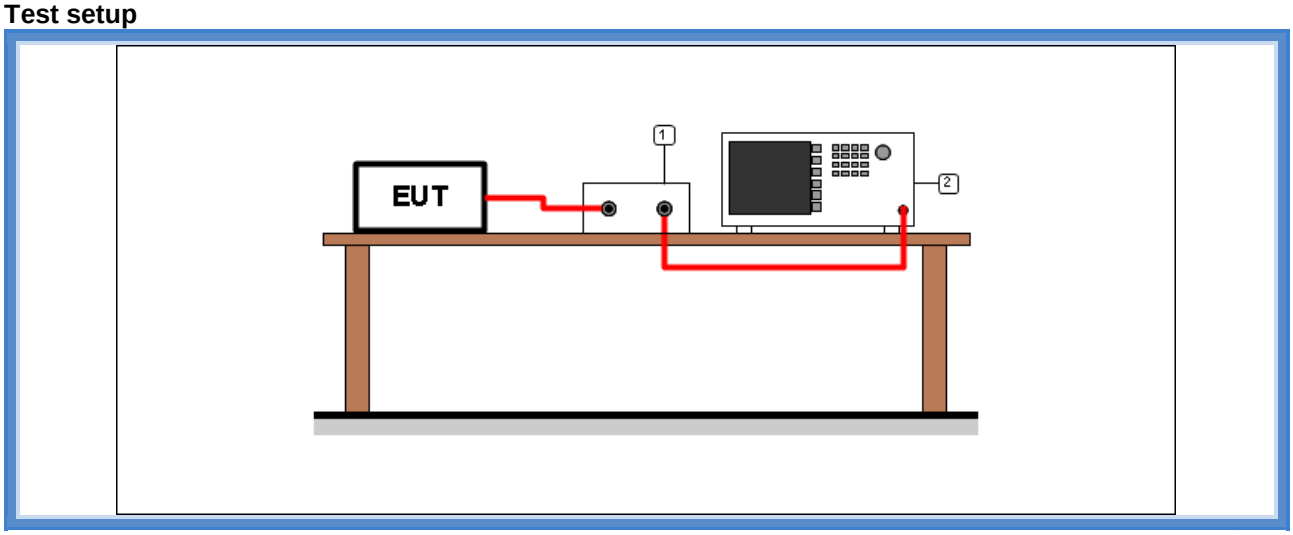
Voltage (V)	*Result*
3,6 → 0	Switching OFF for V < 2,7 V. Transmission does not exceed the channel and the applicable limits

6.8 RX Blocking

Test specification
ETSI EN 300 220-2 cl. 4.4.2 ETSI EN 300 220-1 cl. 5.18 Measurement uncertainty: see attachment 1 Internal procedure PM001
EUT exercising
See clause 3.4 of this test report *Auxiliary equipment: See clause 3.3 of this test report*
Test setup
Test site: Laboratory
Acceptance limits
The blocking levels at the specified frequency offsets shall be equal to or greater than the limits in the following table, except at frequencies where spurious responses are found

Blocking level parameters for RX category 2	
Requirement	***Limit***
Blocking at ±2 MHz from OC edge F_{High} and f_{Low}	≥ -69 dBm
Blocking at ±10 MHz from OC edge F_{High} and f_{Low}	≥ -44 dBm
Blocking at ±5% of Centre Frequency or 15 MHz, whichever is the greater	≥ -44 dBm
Blocking level parameters for RX category 1,5	
Requirement	***Limit***
Blocking at ±2 MHz from OC edge F_{High} and f_{Low}	≥ -43 dBm
Blocking at ±10 MHz from OC edge F_{High} and f_{Low}	≥ -33 dBm
Blocking at ±5% of Centre Frequency or 15 MHz, whichever is the greater	≥ -33 dBm
Blocking level parameters for RX category 1	
Requirement	***Limit***
Blocking at ±2 MHz from OC edge F_{High} and f_{Low}	≥ -20 dBm
Blocking at ±10 MHz from OC edge F_{High} and f_{Low}	≥ -20 dBm
Blocking at ±5% of Centre Frequency or 15 MHz, whichever is the greater	≥ -20 dBm

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
1	--	--	--	Attenuator
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz

Photograph(s) of setup

Result – Fmin

Frequency of unwanted signal offset	Offset from	Blocking level (dBm)	Blocking limit (dBm)
OC + 10 MHz	OC edge	-8	**-33**
OC + 2 MHz	OC edge	-21	**-43**
Fmin + 5%	Fmin	-3	**-33**
OC - 10 MHz	OC edge	-19	**-33**
OC - 2 MHz	OC edge	-8	**-43**
Fmin - 5%	Fmin	-6	**-33**

Result – Fmax

Frequency of unwanted signal offset	Offset from	Blocking level (dBm)	Blocking limit (dBm)
OC + 10 MHz	OC edge	-7	**-33**
OC + 2 MHz	OC edge	-18	**-43**
Fmin + 5%	Fmin	-5	**-33**
OC - 10 MHz	OC edge	-20	**-33**
OC - 2 MHz	OC edge	-7	**-43**
Fmin - 5%	Fmin	-2	**-33**

Attachment 1

Instruments list

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*
CMC S003	SCHAFFNER	NSG 2025-4	Burst Source with CDN	1010
CMC S006	Chauvin Arnoux	CA43	Field Meter	218541RLV
CMC S009	Rohde & Schwarz	ESH2-Z5	Artificial Network	839497/007
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	- - -
CMC S013	Rohde & Schwarz	EZ-17	Current Probe	840411/009
CMC S014	Rohde & Schwarz	ESH2-Z3	Passive Probe	- - -
CMC S016	Rohde & Schwarz	HK116	Broadband Antenna	839472/001
CMC S017	Rohde & Schwarz	HL223	Broadband Antenna	825584/009
CMC S018	SCHAFFNER	CDN 126	Coupling Clamp	128
CMC S019	FCC	FCC 801-M5-25	CDN Power Line	06
CMC S022	Teseo	LAS 1	Loop Antenna	3971
CMC S027	Amplifier Research	75A250	RF Amplifier	19349
CMC S028	FCC	FCC-203I	Injection Clamp	209
CMC S029	Keytek	Cemaster	Surge/Dip/Burst Generator	9609258
CMC S031	Tektronix	TDS 210	Digital Oscilloscope	B010552
CMC S032	SCHAFFNER	NSG 2050	Surge Source with CDN	200111-253AR
CMC S034	Schwarzbeck	UHA 9105	Dipole	UHA 91052234
CMC S035	Eutron	BVR 1800 30-50	DC Power Source	3004
CMC S037	Rohde & Schwarz	NRVS	Power Meter	845127/023
CMC S039	CMC	BI 01	Induction Coil	- - -
CMC S040	Walker Scientific	ELF 50-D	Magnetic Field Meter	K71484-290
CMC S042	Fluke	Fluke 73	Multimeter	67771510
CMC S076	Altitude	25438	Barometer	- - -
CMC S078	Amplifier Research	100W1000M1	RF Amplifier	21849
CMC S079	AH System, Inc	SAS-200/542	Broadband Antenna	504
CMC S080	AH System; Inc	SAS-200/510	Broadband Antenna	807
CMC S082	AH System; Inc	SAS-200/560	Loop Antenna	635
CMC S083	AH System; Inc	BCP-200/510	Current Probe	564
CMC S084	AH System; Inc	BCP-200/511	Current Probe	579
CMC S085	AH System; Inc	SAS-200/530	Broadband Dipole	504
CMC S086	CMC	RHCP01	Resistance 470Kohm	- - -
CMC S087	CMC	RHCP01	Resistance 470Kohm	- - -
CMC S091	CMC	DIPLP	Dipole for Loop Antenna control	- - -
CMC S093	LeCroy	9370	Digital oscilloscope	937001338
CMC S094	Schwarzbeck	NNBM 8126-A	LISN 5µH	8126A161
CMC S095	FCC	FCC 801-M3-16	CDN power line	9821
CMC S106	Gigatronix	900	RF Signal Generator	323001
CMC S107	Hewlett Packard	HP8563E	Spectrum Analyser	3846A09658
CMC S108	Emco	3115	Horn Antenna	9811-5622
CMC S109	Farnell	LFM4	LF Signal Generator	531
CMC S111	LEM HEME	PR 1001	Current Probes	- - -
CMC S112	Amplifier Research	DC3010	Directional Coupler	15238
CMC S114	Schwarzbeck	VHA 9103	Dipole	VHA 91031801
CMC S116	CMC	BCIP01	Calibration BCI-JIG	--
CMC S117	MARCONI	2019A	RF Signal Generator	118453/014
CMC S118	Hewlett Packard	E3632A	Programmable Power Supply	KR75301881
CMC S119	Hewlett Packard	HP8903B	Audio Analyzer	3011A09055
CMC S120	FCC	FC130-A	Current Injection Probe	118
CMC S121	Wavetek	LCR55	Bridge LCR	20104738
CMC S122	Fluke	336	Amperometric Clamp Meter	81754972
CMC S124	Spin	AMTP42-20	Horn Antenna	103
CMC S127	SCHAFFNER	HLA6120	Loop Antenna	1191
CMC S128	SCHAFFNER	CBA9428	RF Amplifier	1006
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004
CMC S130	SCHAFFNER	NSG 5000	Automotive Impulse Generator	02032579-1
CMC S131	SCHAFFNER	CDN 500	Capacitive Clamp	400-151/0128
CMC S132	CMC	OPS150	Open Strip Line 150mm	- - -
CMC S135	LEM HEME	PR 30	Current Probe	P04217832830
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205
CMC S138	Agilent	33220A	Function/Arbitrary Waveform Gener.	MY44003979

Attachment 1

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*
CMC S142	Narda	ELT-400+B-sensor	Exposure level tester	D-0034+D-0032
CMC S144	Rohde & Schwarz	URV5	Power Meter	881375/004
CMC S145	Hewlett Packard	778D	Directional Coupler	17237
CMC S146	Amplifier Research	10W1000B	RF Amplifier	18451
CMC S150	RKB	LOG3080	Broadband Antenna	- - -
CMC S151	CMC	CI 02	Induction Multi Coil	- - -
CMC S152	CMC	CDN100	Direct injection device	001
CMC S155	Chroma	61705	Power supply source	000000088
CMC S156	Yokogawa	DL9040	Digital Oscilloscope	91F643771
CMC S161	EM TEST	EFT 500 M4 S1	Burst source with CDN	V0739102946
CMC S162	FCC	FCC 801-M2-16	CDN power line	07047
CMC S163	NOISEKEN	ESS-2002+TC-815R	ESD simulator	ESS0787336
CMC S164	Rohde & Schwarz	ESU26	EMC receiver	100052
CMC S170	Amplifier Research	FL7006	Field meter	0327425
CMC S171	Schwarzbeck	BBHA 9120 LF(A)	Broadband Antenna	284
CMC S172	Schwarzbeck	VHBD9134+BBAL9136	Broadband Antenna	9134-037
CMC S173	Luthi	CDN L-801 AF4	CDN I/O line	2481
CMC S174	Luthi	CDN L-801 AF8	CDN I/O line	2482
CMC S175	Luthi	CDN L-801 T2	CDN I/O line	2473
CMC S176	Luthi	CDN L-801 T4	CDN I/O line	2475
CMC S177	Luthi	CDN L-801 T8	CDN I/O line	2476
CMC S178	Schwarzbeck	STLP 9128 C	Broadband Antenna	086
CMC S179	Frankonia	FLL-250A	RF Amplifier	1023
CMC S181	Milmega	AS0822-200	RF Amplifier	1031424
CMC S182	Milmega	AS0206-50	RF Amplifier	1031425
CMC S183	Minicircuits	PWR-SEN-6G+	USB Power Sensor	0809070042
CMC S184	ARRAY	3400A	Arbitrary Waveform Generation	TW00009164
CMC S185	EM TEST	OCS 500 M6 S4	Oscilatory compact simulator	V0915104789
CMC S186	Schwarzbeck	SBA 9119	Broadband Antenna	009
CMC S187	Rohde & Schwarz	SMB100A	RF signal generator	102572
CMC S189	Eutron	BVR 1800 300V5A	DC Power Source	9100
CMC S190	Spin	AMDR-10180	Horn Antenna	01-309-09
CMC S191	EM TEST	UCS 500 N5	Burst/Surge/PFQ compact simulator	V0947105547
CMC S193	Solar	6552-1A	BF Amplifier	- - -
CMC S194	CMC	CDN 16 PL	CDN Power line	- - -
CMC S195	Schwarzbeck	VULB 9118 E sp.	Broadband Antenna	827
CMC S196	EM TEST	BS 200N	Electronic switch	V100510506
CMC S197	EM TEST	UCS 200N	Pulse generator	V0825103901
CMC S198	FCC	F - 55	RF Current Probe	100999
CMC S199	EM TEST	CNI 503	CDN for Burst and Surge	V1026106843
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273
CMC S201	S.M. ELECTRONICS	SA3N150-06F	Attenuator	- - -
CMC S202	Rohde & Schwarz	CMU200	Universal radio communication tester	104099
CMC S203	CMC	VH	Van der Hoofden test-head	- - -
CMC S205	Schwarzbeck	NNBM 8124	LISN 5µH	065
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver	100781
CMC S207	AlphaLab	ASMGM	Milligauss meter	584
CMC S209	Elettrotest	TPS40K 30K60S	AC Source	002.11
CMC S210	EM TEST	PFS 200N30	Power Fail simulator	V1130110311
CMC S211	Luthi	CDN L-801 M1	CDN M line	2811
CMC S212	Luthi	CDN L-801 M2	CDN M line	2812
CMC S213	Luthi	CDN L-801 M3	CDN M line	2813
CMC S214	EM TEST	VDS200N10	Voltage drope simulator	V1150111222
CMC S215	FCC	F-130A-1	BCI Probe	112166
CMC S216	Luthi	MDS21	Absorbing Clamp	4101
CMC S217	Schwarzbeck	TK9420	Voltage Probe	458
CMC S218	RS	50WCW	50 ohm Load	- - -
CMC S219	EM TEST	CNV 504 N1.2	Box Surge	V1210112161
CMC S221	Minicircuits	BW-N20W5+	Attenuator	0612

Attachment 1

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*
CMC S222	A-INFOMW	ACB06-100SN	Attenuator	J3081111111003
CMC S223	Minicircuits	BW-N20W20+	Attenuator	1217
CMC S224	Fairview microwave	SMC4037-20	Directional Coupler	JSDF568-081
CMC S225	Fairview microwave	SA3550N	Step Attenator	201237026
CMC S226	Werlatone	C6021-10	Dual Directional Coupler	99019
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121
CMC S228	Agilent	U3401A	Digital Multimeter	MY52270047
CMC S229	Schwarzbeck	CAT5 8158	ISN 8-Wire	CAT5-8158-0074
CMC S230	Werlatone	C1795-10	Dual Directional Coupler	100140
CMC S234	Schwarzbeck	VTSD 9561-F	Pulse Limiter/Attenuator	9561-F023
CMC S235	Schwarzbeck	VUSLP 9111B	Broadband Antenna	9111B-118
CMC S236	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna	9124-672
CMC S237	EM TEST	DPA 503N	Harmonic & Flicker analyser	P1338124620
CMC S238	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11302250023
CMC S239	Schwarzbeck	UAH 9105	Dipole	9105-2599
CMC S240	CMC	ITF2	Three-phase Impedances cabinet	- - -
CMC S241	Schwarzbeck	BBV 9718	Broadband Preamplifer	9718-126
CMC S242	CMC	W-IM1	Shielded Cable	- - -
CMC S243	Minicircuits	ZX60-33LN-S+	Low Noise Amplifer	S F558500921
CMC S244	EM TEST	AutoWave	Automotive Waveforms Gen.	P1303110740
CMC S245	CMC	AEP1	Automotive ESD Plane	- - -
CMC S246	Minicircuits	ZFBT-6GW	Bias Tee	RF405100521
CMC S247	Minicircuits	ZFBT-6GW+	Bias Tee	RF476100846
CMC S249	Schwarzbeck	NNBM 8124	LISN 5µH	685
CMC S250	Pico Technology	PicoLog1216	USB Data Logger	CO117/017
CMC S251	Schwarzbeck	BBV 9745	Broadband Preamplifer	9745-0019
CMC S252	Agilent	34972A	Data Acquisition	MY49018010
CMC S253	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11405260039
CMC S254	Prana	DR220	RF Amplifier	1610
CMC S255	S.M.ELECTRONICS	SA3N100-03F	Attenuator	- - -
CMC S256	HAMEG	HM8135	RF signal generator	014759546
CMC S257	Schwarzbeck	VAMP 9243	Active Monopole Antenna	9243-468
CMC S259	Schwarzbeck	SBA 9113 B	Broadband Antenna	247
CMC S260	CMC	Wfr_N_white	Shielded Cable	Wfr_ant10-1
CMC S261	CMC	Wfr_N	Shielded Cable	Wfr_ant20-1
CMC S262	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix32-1
CMC S263	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix31-1
CMC S264	CMC	Wfr_N	Shielded Cable	Wfr_ext03-1
CMC S265	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix22-1
CMC S266	CMC	Wfr_N	Shielded Cable	Wfr_ext02-1
CMC S267	CMC	Wfr_N	Shielded Cable	Wfr_ant20-2
CMC S268	Schwarzbeck	HLC 27	Compact Dipole Antenna	005
CMC S269	Fairview microwave	FMCP1005	Dual Directional Coupler	1520
CMC S270	Schwarzbeck	SBA 9112	Broadband Antenna	295
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna	831
CMC S272	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11408040322
CMC S273	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11408040304
CMC S274	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11408040326
CMC S275	Schwarzbeck	NNHV 8123	LISN 5µH	8123-200#76
CMC S276	Schwarzbeck	NNHV 8123	LISN 5µH	8123-200#77
CMC S277	CMC	Wsac03_N_fix	Shielded Cable	Wsac03_fix21-1
CMC S278	CMC	Wsac03_N_fix	Shielded Cable	Wsac03_fix12-1
CMC S279	CMC	Wsac03_N_fix	Shielded Cable	Wsac03_fix12-2
CMC S280	CMC	Wsac03_N_white	Shielded Cable	Wsac03_ant10-1
CMC S281	CMC	Wsac03_N	Shielded Cable	Wsac03_ext02-1
CMC S282	CMC	Wsac03_N	Shielded Cable	Wsac03_int20-1
CMC S283	CMC	Wsac03_N_white	Shielded Cable	Wsac03_bci20-1

Attachment 1

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*
CMC S284	Rohde & Schwarz	SMB100A	RF signal generator	3.20.390.24
CMC S287	Schwarzbeck	VUSLP 9111B	Broadband Antenna	9111B-203
CMC S288	CMC	W_sma_white	Joint Shielded Cable	W_001
CMC S290	Schwarzbeck	BBHA 9170	Horn Antenna	733
CMC S291	Milmega	AS0860-40/25	RF Amplifier	1076710
CMC S292	BONN	BLWA 0310-300	RF Amplifier	1610818
CMC S293	Schwarzbeck	422NJ	Antenna Flat Elements	422NJ-051
CMC S294	TESEQ	NGS 437	ESD Simulator	899
CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer	104059
CMC S296	Milmega	80RF1000-300	RF Amplifier	1078225
CMC S298	RIGOL	DSG3060	RF signal generator	DSG3A183600076
CMC S299	CMC	Wfr_sma	Shielded Cable	Wfr_ant20-2
CMC S300	CMC	Wfr_sma_fix	Shielded Cable	Wfr_fix32-3
CMC S301	CMC	Wfr_sma	Shielded Cable	Wfr_ext03-2
CMC S302	Testo	175H1	Data Logger	40370182 610
CMC S303	Schwarzbeck	VHBD 9134 + BBAE 9179	Broadband Antenna	9134-037 + 00020
CMC S304	Rohde & Schwarz	CMW290	Functional radio communication tester	101637
CMC S308	CMC	CDN100	Direct injection device	002
CMC S309	EM TEST	compact NX5	Burst/Surge/PFQ compact simulator	P1640185047
CMC S310	TESEQ	CDN M432	CDN M line	48108
CMC S311	Rohde & Schwarz	BBA150	RF Amplifier	103021
CMC S312	EM TEST	coupling NX5	CDN for Burst and Surge	P1737203098
CMC S313	EM TEST	NetWave 30-400	AC Source	P1751211689
CMC S318	RIGOL	DSG815	RF signal generator	DSG8A202600203
CMC S319	TESEQ	KEMZ 801A	Injection Clamp	51292
CMC S322	Werlatone	C5960-10	Dual Directional Coupler	117666
CMC S323	Vectawave	VBA250-800	RF Amplifier	123091
CMC S324	CMC	CCC01	Coupling Clamp	001
CMC S326	RIGOL	DSG3060	RF signal generator	DSG3A204600091
CMC S327	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11901020110
CMC S328	Minicircuits	PWR-SEN-6GHS	USB Power Sensor	11901020127
CMC S329	Schwarzbeck	BBHA 9120 J	Horn Antenna	9120J-0167
CMC S331	Bruel & Kjaer	2260 + 4231	Phonometer	1847463 + 2095024
CMC S332	Schwarzbeck	STLP 9128 D	Double Log-periodic Antenna	91028 D 049
CMC S333	CMC	Wfr_sma_fix	Shielded Cable	Wfr_fix32-4
CMC S334	Wainwright Instruments	WHKX12-935-1000-15000-40SS	High Pass Filter	46
CMC S335	Wainwright Instruments	WHKX12-2487.1-2660-18000-40SS	High Pass Filter	01
CMC S336	Narda	EP601	Field Meter	711WX90802
CMC S337	Milmega	AS0860A-100/50	RF Amplifier	1087595
CMC S338	RIGOL	DSG815	RF signal generator	DSG8A212700221
CMC A001	Sispe	F5123	Shield chamber	- - -
CMC A002	SIDT	951130	Anechoic chamber	- - -
CMC A007	CMC	10707	Semi-anechoic chamber	- - -
CMC A008	CMC	BPA	Track for absorbing clamp	- - -
CMC A013	CMC	TR01	Rotary motorized table	- - -
CMC A014	CMC	PM01	Antenna positionning Mast	- - -
CMC A070	Frankonia	SAC10	Semi-anechoic chamber	F159003
CMC A071	Frankonia	FC06	Controller Turntable & Antennamast	FC06-2014-015
CMC A072	Frankonia	FAM2-4	Antenna mast	- - -
CMC A073	Frankonia	FTM 3-3	Turntable	FC062015029
CMC A075	Schwarzbeck	AM9144	Modular Antenna Mast	- - -
CMC A076	Frankonia	SAC03	Semi-anechoic chamber	F159002
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78
CMC B069	Angelantoni	CH 600C	Climatic Chamber	41973
CMC B087	Yokogawa	WT3000	Precision Power analyzer	91JB15155

Attachment 1

Measurement uncertainty

Test	*Test Setup*	*Expanded uncertainty*	*Note*
Conducted emission CISPR 16 LISN 50uH 0,009-0,0150 MHz	PE001_01	3,4 dB	1
Conducted emission CISPR 16 LISN 50uH 0,150-30,0 MHz	PE001_01	3,0 dB	1
Conducted emission CISPR 16 Voltage Probe 0,15-30 MHz	PE001_02	2,9 dB	1
Conducted emission CISPR 16 Current Probe 0,15-30 MHz	PE001_03	2,6 dB	1
Conducted emission CISPR 16 ISN 0,15-30 MHz	PE001_04	4,7 dB	1
Clic CISPR 16 LISN 50uH 0,150-30,0 MHz	PE001_05	2,9 dB	1
Radiated Emission CDNE 30-300 MHz	PE001_06	3,3 dB	1
Disturbance Power 30-300 MHz	PE002_01	3,6 dB	1
Radiated Emission LAS 0,15-30 MHz	PE003_01	2,0 dB	1
Radiated Emission CISPR 16 Loop Ant. 0,15-30 MHz	PE004_01	4,0 dB	1
Radiated Emission CISPR 16 Bicon. Ant. 30-300 MHz	PE004_02	3,9 dB	1
Radiated Emission CISPR 16 LogP. Ant. 300-1000 MHz	PE004_03	3,8 dB	1
Radiated Emission CISPR 16 Horn Ant. 1-18 GHz	PE004_04	4,2 dB	1
Human Exposure to electromagnetic fields	PE005_01	23,6 %	1
Harmonics	PE006_01	10 mA + 2,6 %	1
Flicker	PE007_01	4,79 %	1
Radiated Immunity 80 MHz - 6 GHz	PE102_XX	1,95 dB 0,75 V/m a 3V/m	1
Conducted Immunity 0,15 - 230 MHz	PE105_XX	1,20 dB 0,44 V a 3V	1
AC Magnetic field	PE106_01	1,55 % 0,15 A/m a 10A/m	1
Pulse Magnetic field	PE107_01	6,25 % 18,7 A/m a 300A/m	1
Dumped Magnetic field	PE108_01	6,25 % 1,87 A/m a 30A/m	1
Common mode conducted immunity	PE112_01	2,21 % 0,22 V a 10V	1

Attachment 1

Test	*Test Setup*	*Expanded uncertainty*	*Note*
Power/Spurious 9kHz-30MHz	PR001_01	4,0 dB	1
Power/Spurious ERP 30-1000MHz d=10m	PR001_02+03	4,7 dB	1
Misura della potenza EiRP 1-18GHz d=3m	PR001_04+05	4,7 dB	1
Misura della potenza EiRP 18-40GHz d=3m	PR001_06	5,4 dB	1
Frequency error	PR002_01+02	< 1x10-7	1
Timing zero span (1001pts.)	PR002_01+02	0,2 % SWT	1
Modulation bandwidth	PR002_01+02	< 1x10-7	1
Conducted RF power and spurious emission	PR002_01+02	1,1 dB	1
Adjacent channel power	PR002_01+02	1,1 dB	1
Blocking	PR002_01+02	1,1 dB	1

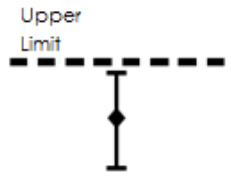
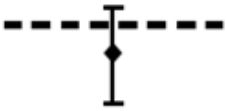
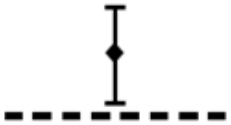
Test	*Test Setup*	*Expanded uncertainty*	*Note*
Electrostatic discharge immunity test	PE101_0X		2
Electrical fast transients / burst immunity test	PE103_0X		2
Surge immunity test	PE104_0X		2
Short interruption immunity test	PE109_01		2
Ring Wave immunity test	PE110_01		2
Low frequency immunity test	PE111_01		2
Dumped Oscillotary immunity test	PE113_01		2
Rev_20_02 date 24/02/2020			

Note 1:
The expanded uncertainty reported according to the document EA-4-02 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:
It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k=2

Attachment 1

Judgement of compliance

Case 1	Case 2	Case 3	Case 4
			
The sample complies with the requirements. The measurement results is within the specification limit when the measurement uncertainty is taken into account.	The sample complies with the requirements. It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.	The sample does not comply with the requirements. It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.	The sample does not comply with the requirements. The measurement results is outside the specification limit when the measurement uncertainty is taken into account.

In agreement with ILAC-G8: 03/2009 Guidelines on the Reporting of Compliance with Specification

Quality manual references – Internal procedure

Internal Procedure PM001 rev. 3.0 (Quality Manual)	Measure procedure
Internal Procedure INC_M rev. 9.1 (Quality Manual)	Measurement uncertainty calculation