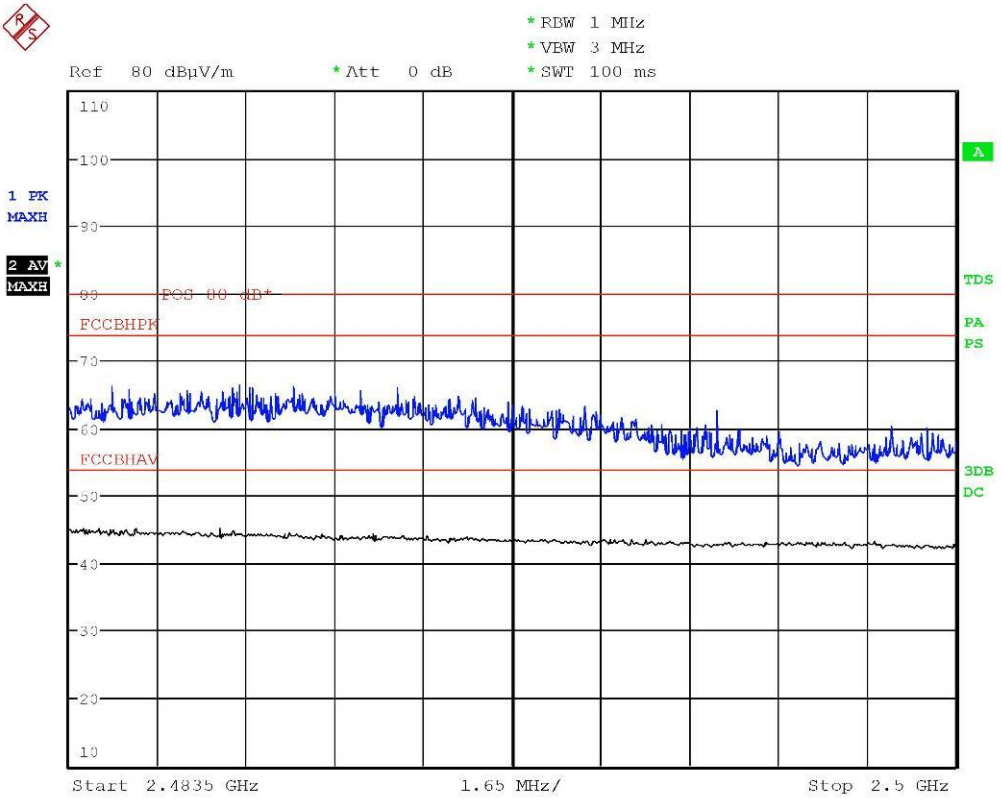


De Rosso 202462135

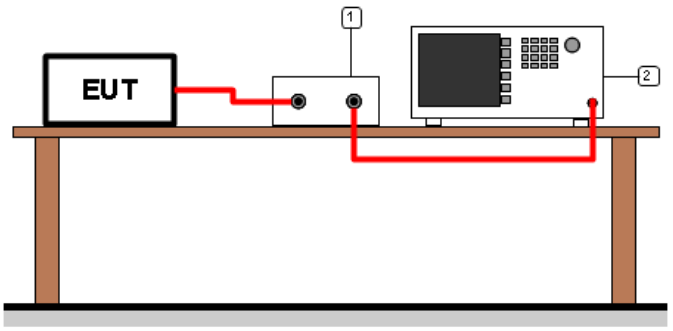
CMC Centro Misure Compatibilità S.r.l.

9.7 Fundamental emission output power

Tested by ..... :	A. Bertezzolo
Test date ..... :	27.01.2021
Test location (stand) ..... :	Laboratory
Reference standards ..... :	FCC Rules and Regulation; Titles 47 Part 15.247 (b) (3) ANSI C63.10 cl. 11.9.1.1 KDB 558074 D01 DTS Meas Guidance v05r02 cl. 8.3.1.1
Supplementary information..... :	--

Acceptance limits
For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz
1	--	--	--	Cable + attenuator (calibrated before the test)

Result – WiFi mode B

Frequency (MHz)	*Graphs*	*Peak Output Power (dBm)*	*Peak Output Power (mW)*	*Limit (mW)*
2412	G20246241	20,29	106,91	1000
2437	G20246248	19,86	96,83	1000
2462	G20246255	19,34	85,90	1000

Result – WiFi mode G

Frequency (MHz)	*Graphs*	*Peak Output Power (dBm)*	*Peak Output Power (mW)*	*Limit (mW)*
2412	G20246262	24,99	315,50	1000
2437	G20246268	24,87	306,90	1000
2462	G20246274	24,96	313,33	1000

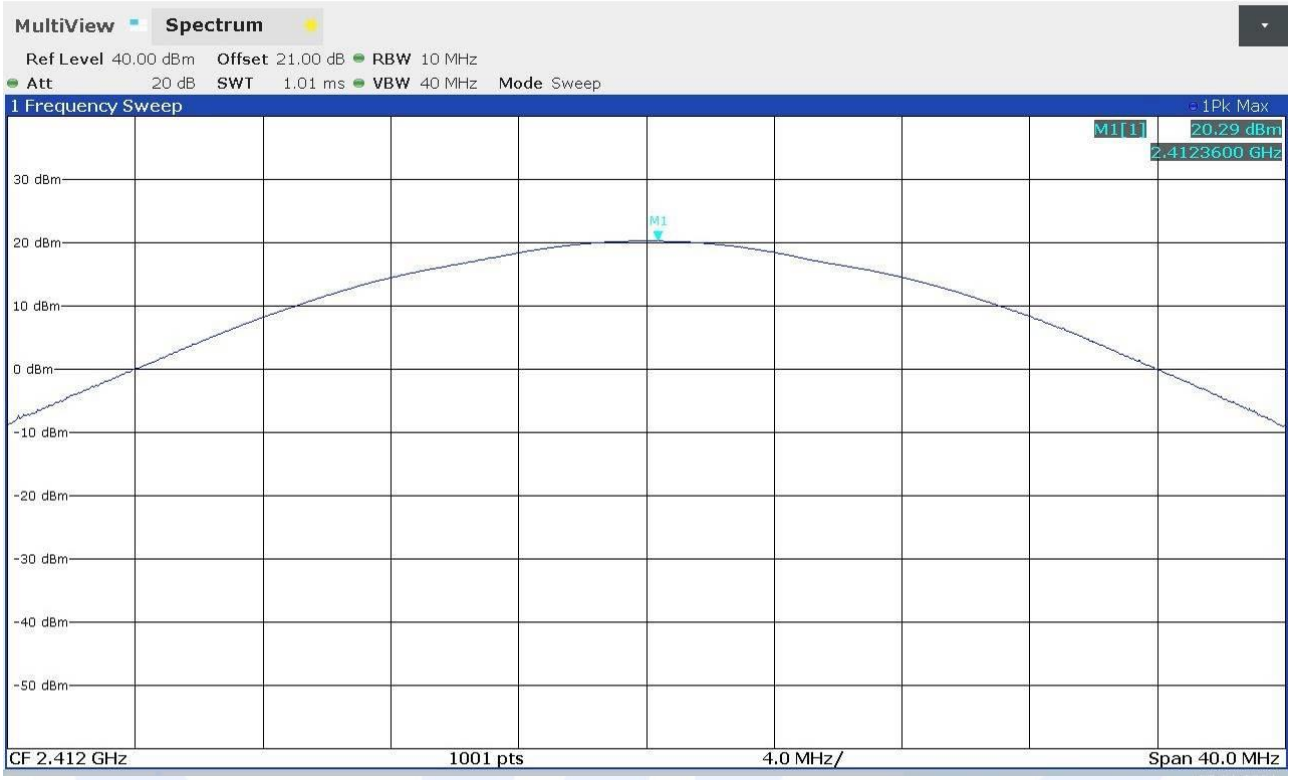
Result – WiFi mode N

Frequency (MHz)	*Graphs*	*Peak Output Power (dBm)*	*Peak Output Power (mW)*	*Limit (mW)*
2412	G20246280	24,67	293,09	1000
2437	G20246286	24,60	288,40	1000
2462	G20246292	25,20	331,13	1000

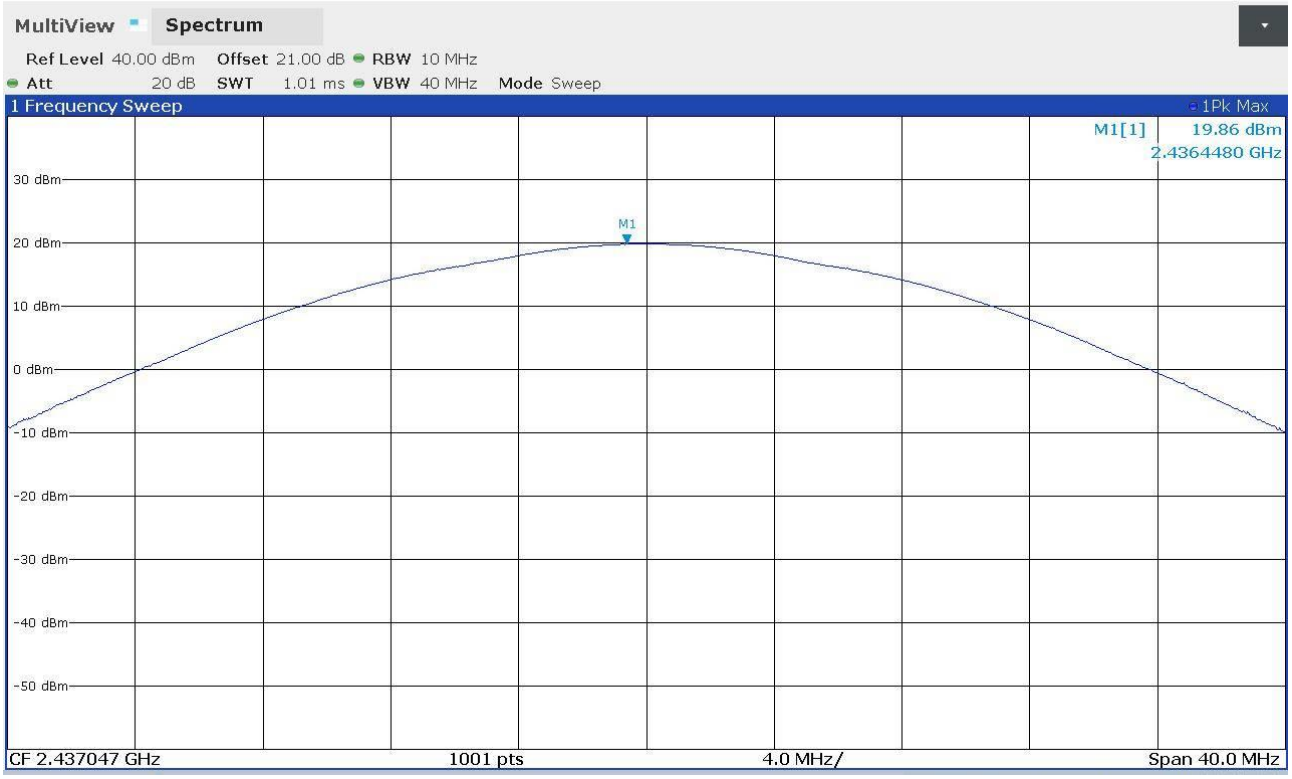
CMC Centro Misure Compatibilità S.r.l.

Graphs

De Rosso 20246241

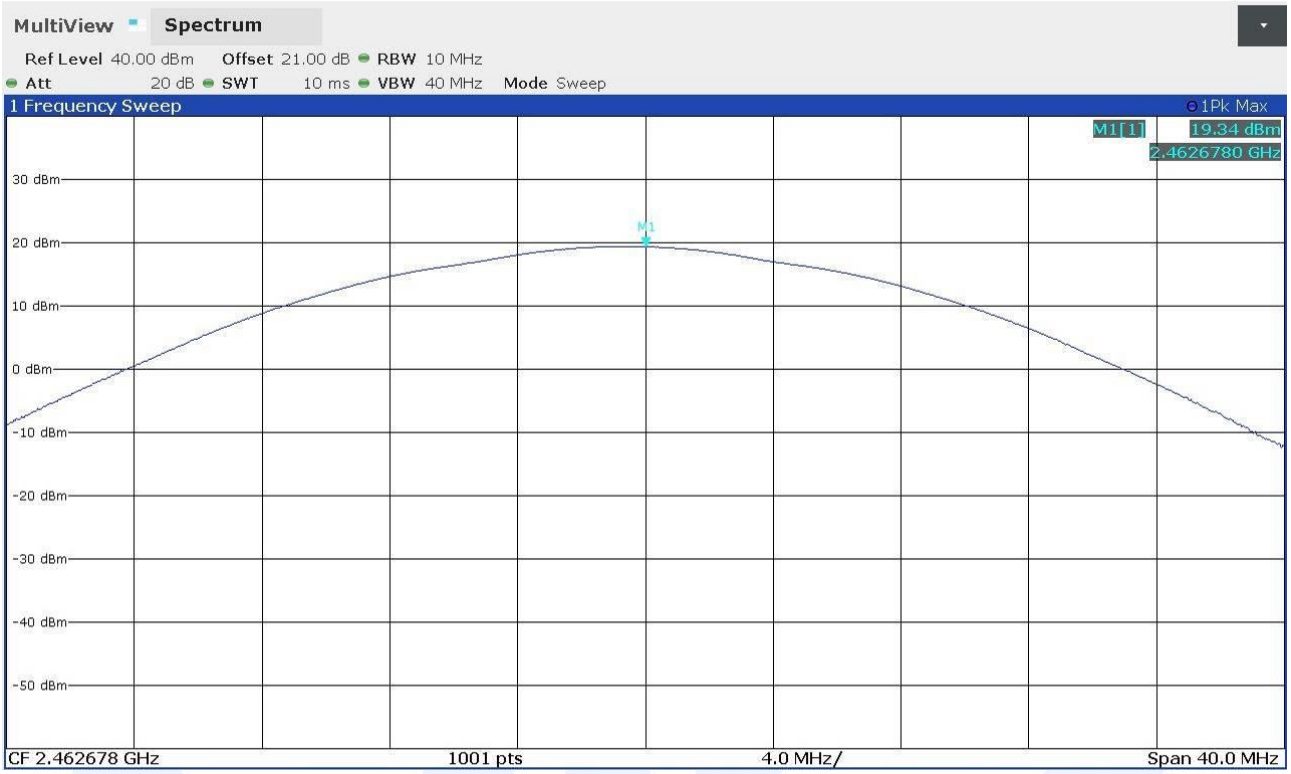


De Rosso 20246248

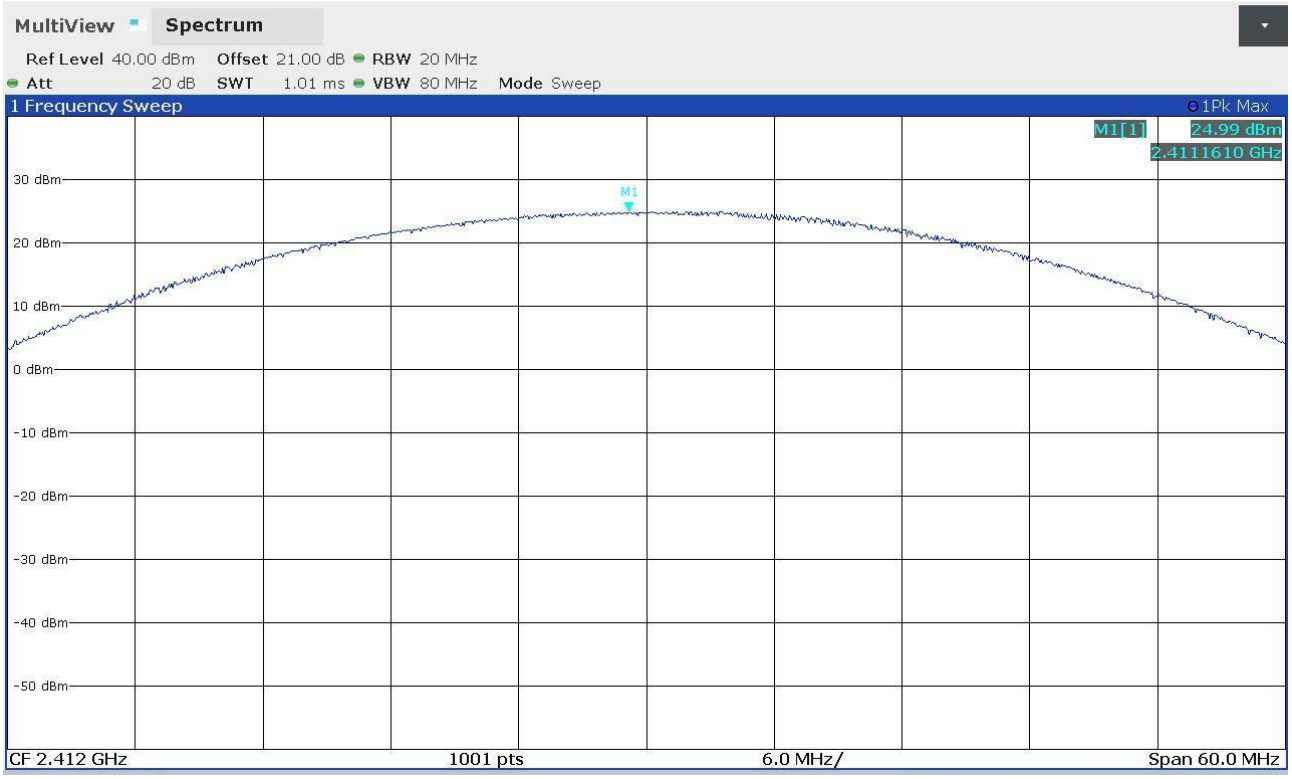


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246255

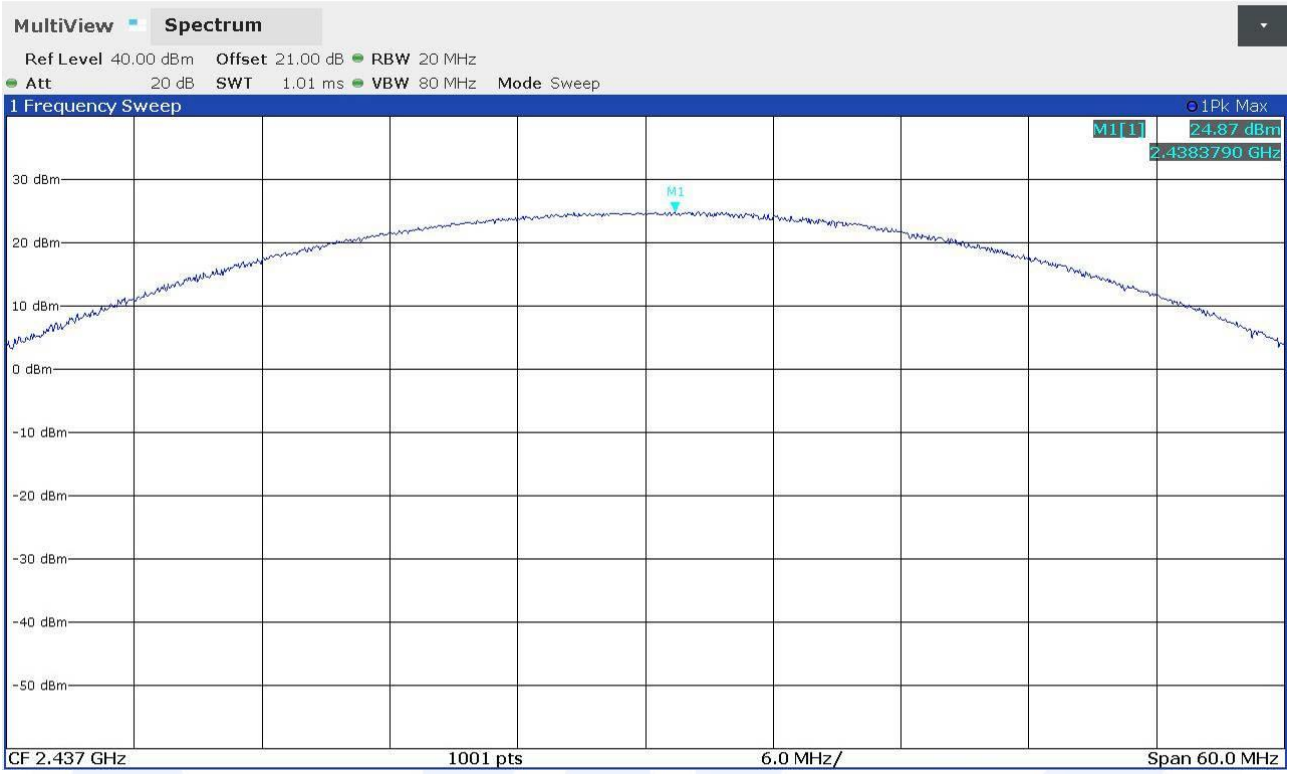


De Rosso 20246262

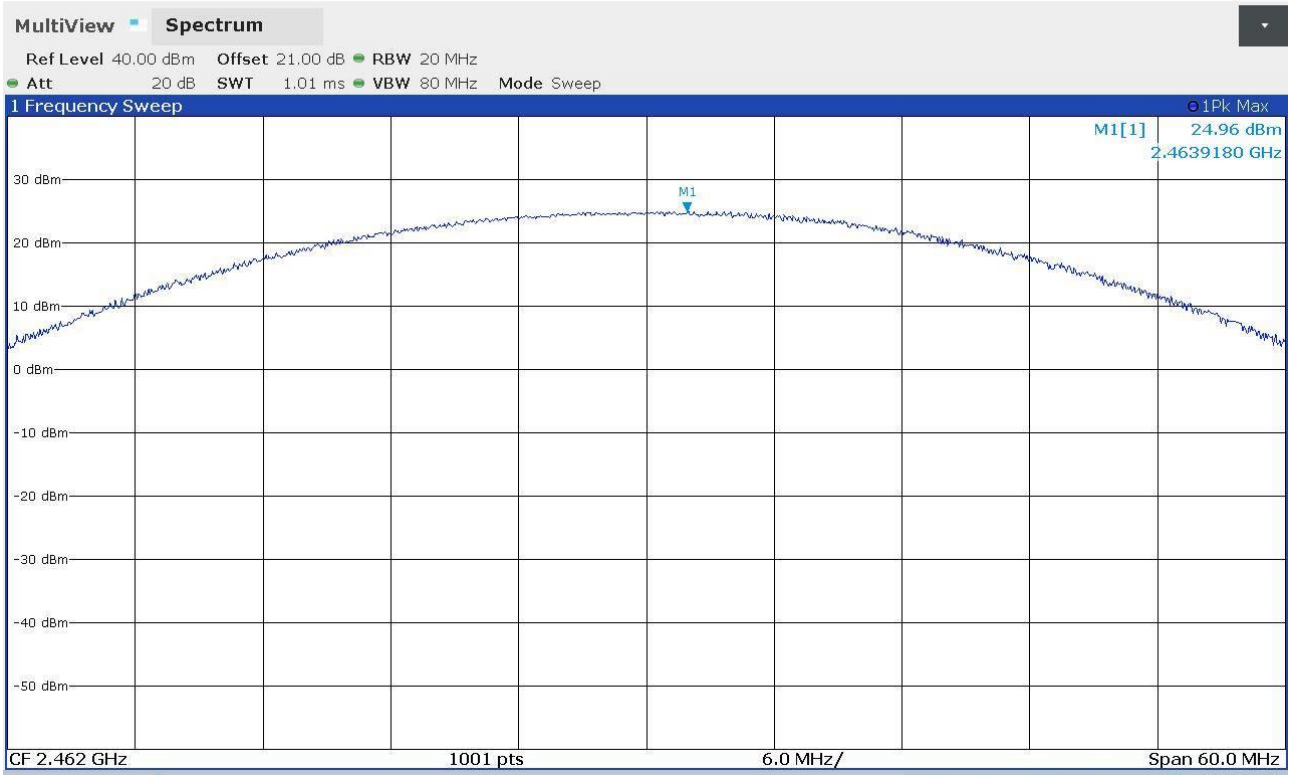


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246268

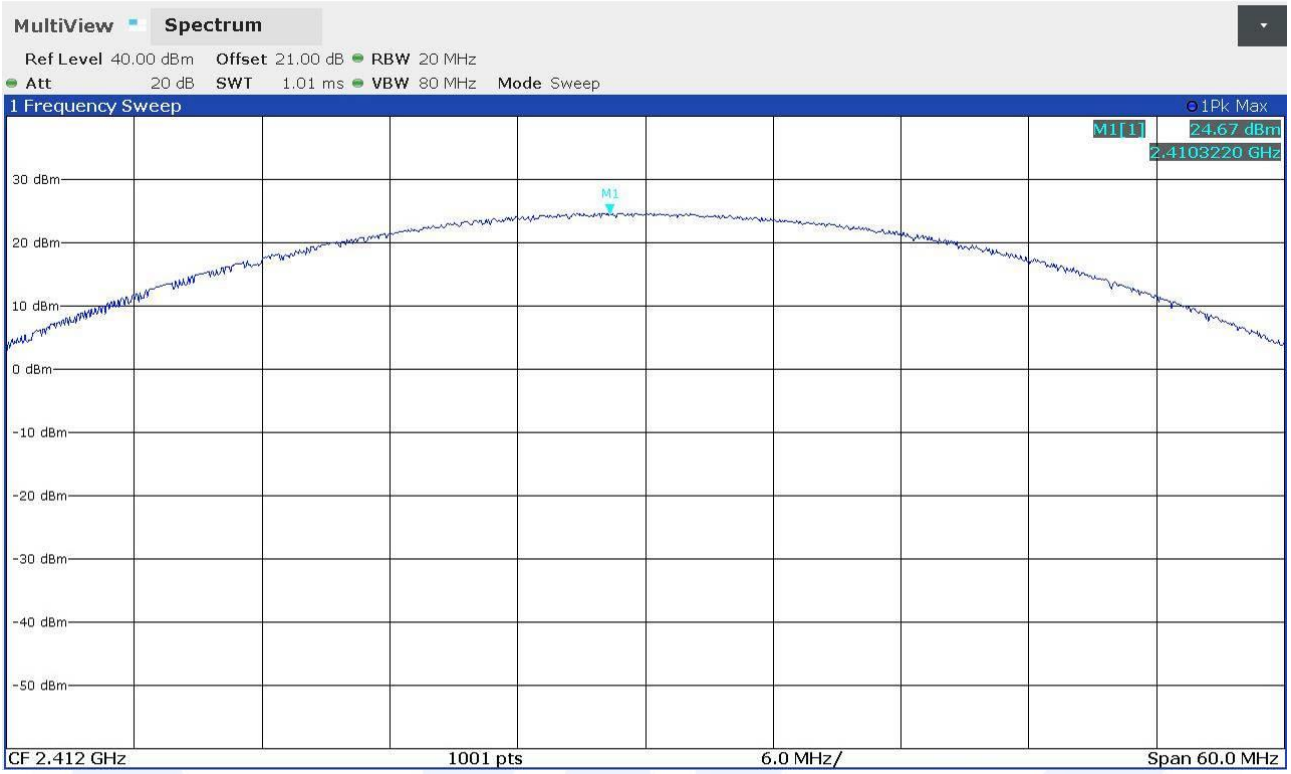


De Rosso 20246274

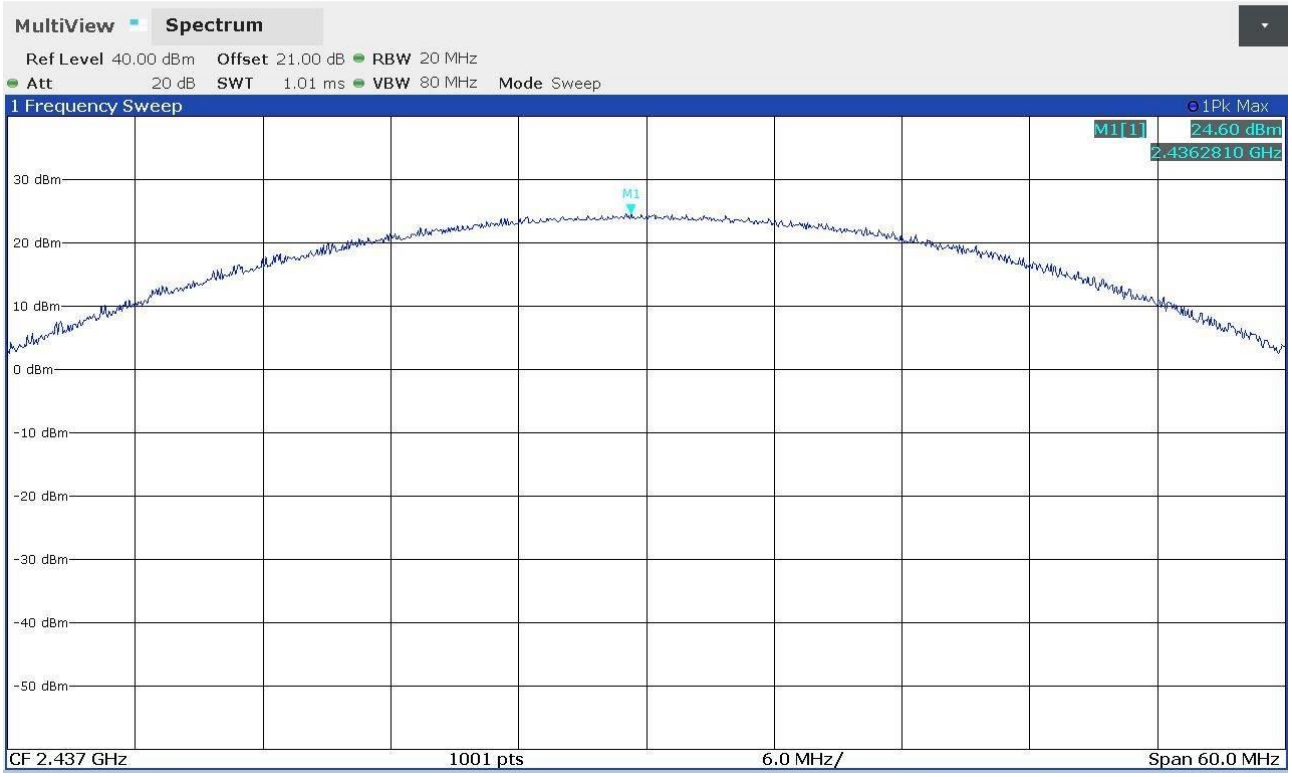


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246280

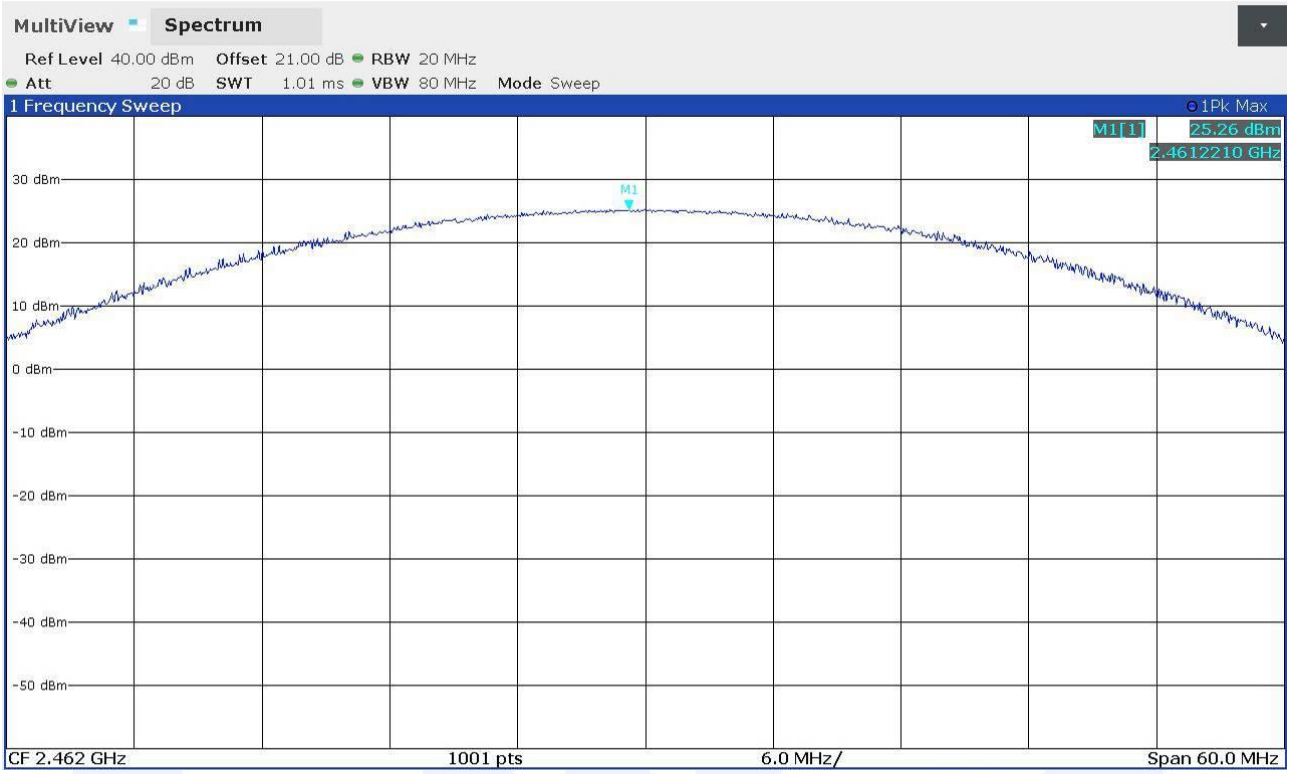


De Rosso 20246286



CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246292



CMC Centro Misure Compatibilità S.r.l.

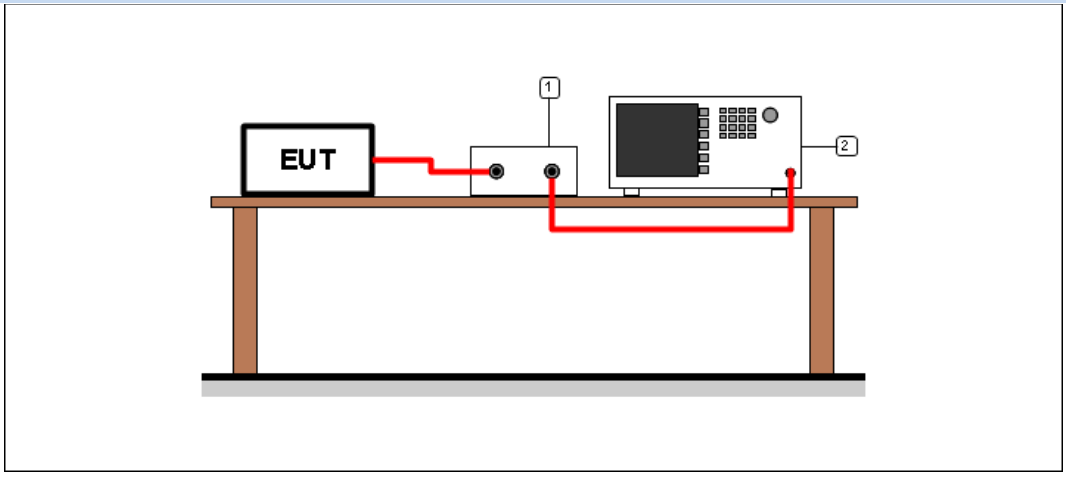
9.8 Maximum power spectral density level in the fundamental emission

Tested by ..... :	A. Bertezzolo
Test date ..... :	27.01.2021
Test location (stand) ..... :	Laboratory
Reference standards ..... :	FCC Rules and Regulation; Titles 47 Part 15.247 (e) ANSI C63.10 cl. 11.10.2 KDB 558074 D01 DTS Meas Guidance v05r02 cl. 8.4
Supplementary information..... :	--

Acceptance limits

Frequency Range	*Power Spectral Density*
2400 – 2483,5 MHz	8 dBm/3 kHz 6,31 mW/3 kHz

Test setup



Test setup PR002_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz
1	--	--	--	Cable + attenuator (calibrated before the test)

Result – WiFi mode B

Frequency (MHz)	*Graphs*	*Measured level (dBm/3 kHz)*	*Limits (dBm/3 kHz)*
2412	G20246242	-5,83	8,00
2437	G20246249	-4,99	8,00
2462	G20246256	-5,91	8,00

CMC Centro Misure Compatibilità S.r.l.

Result – WiFi mode G

Frequency (MHz)	*Graphs*	*Measured level (dBm/3 kHz)*	*Limits (dBm/3 kHz)*
2412	G20246263	-9,52	8,00
2437	G20246269	-9,62	8,00
2462	G20246275	-8,89	8,00

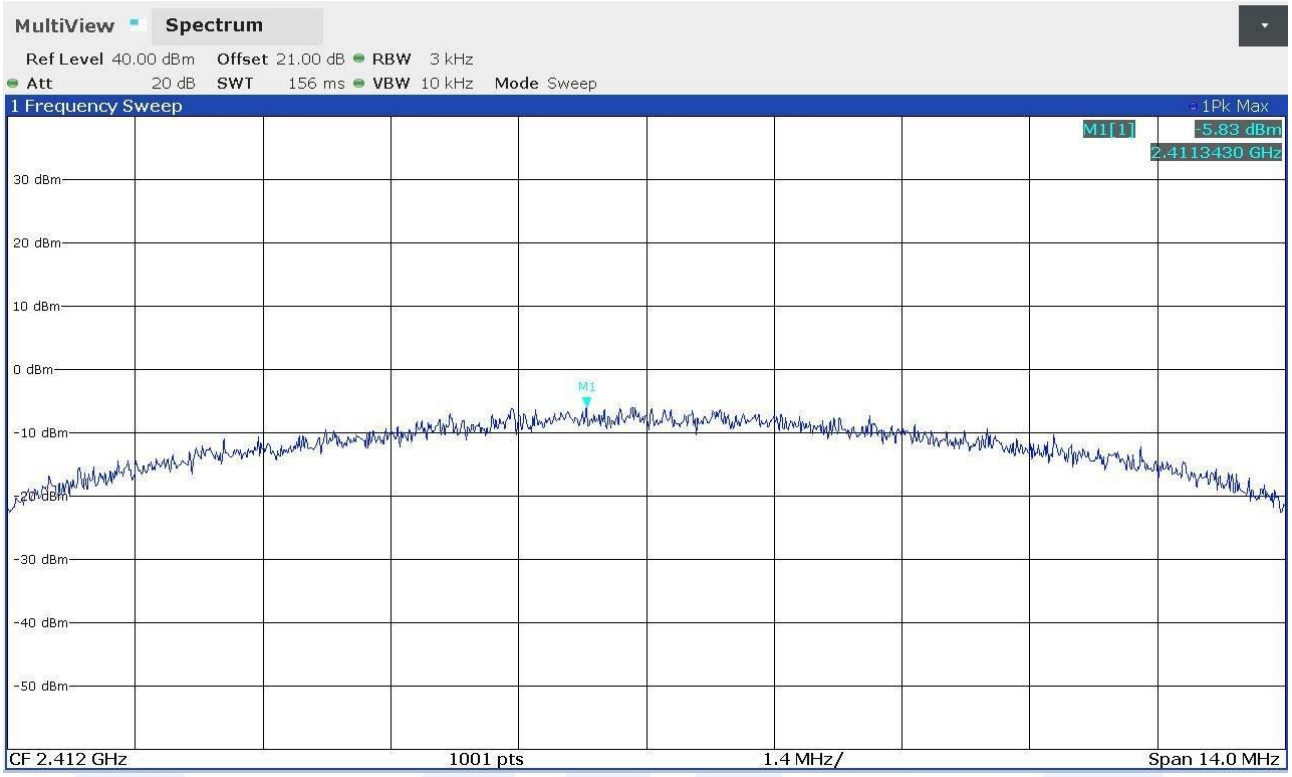
Result – WiFi mode N

Frequency (MHz)	*Graphs*	*Measured level (dBm/3 kHz)*	*Limits (dBm/3 kHz)*
2412	G20246281	-9,79	8,00
2437	G20246287	-10,49	8,00
2462	G20246293	-9,70	8,00

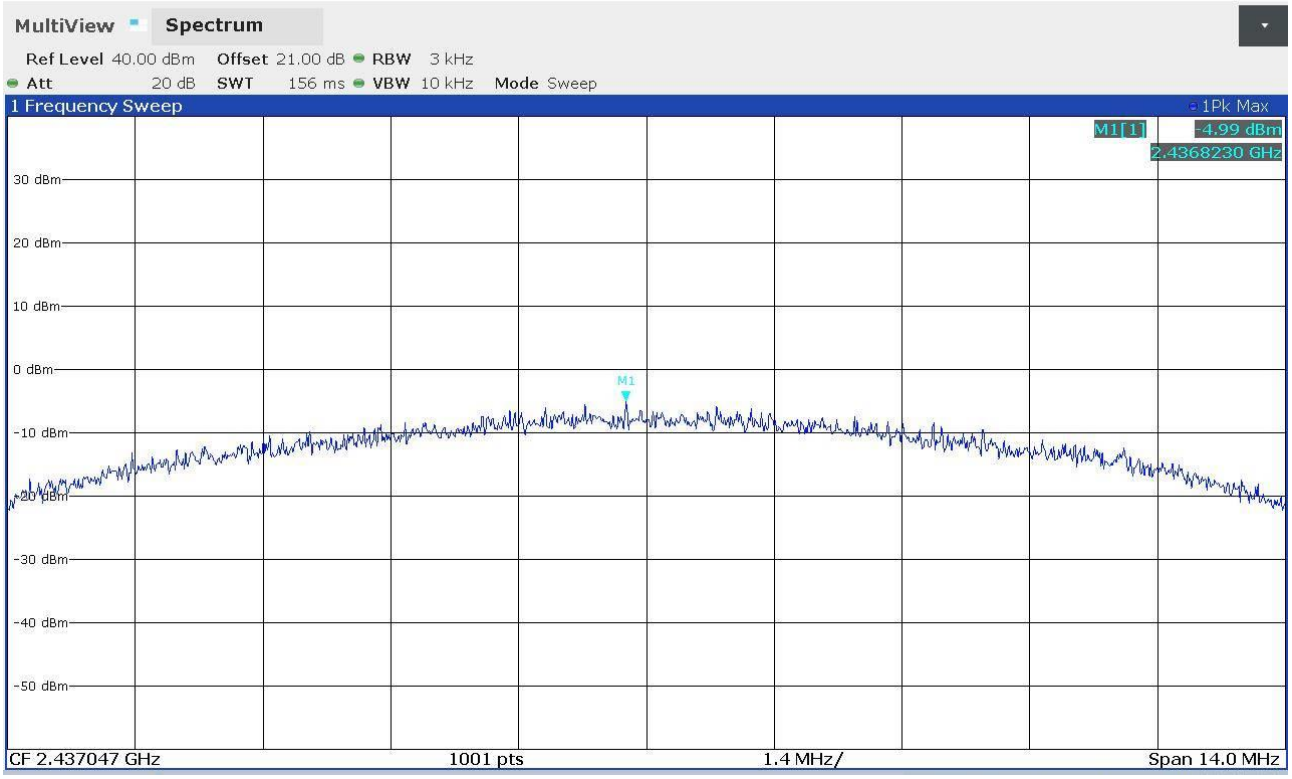
CMC Centro Misure Compatibilità S.r.l.

Graphs

De Rosso 20246242

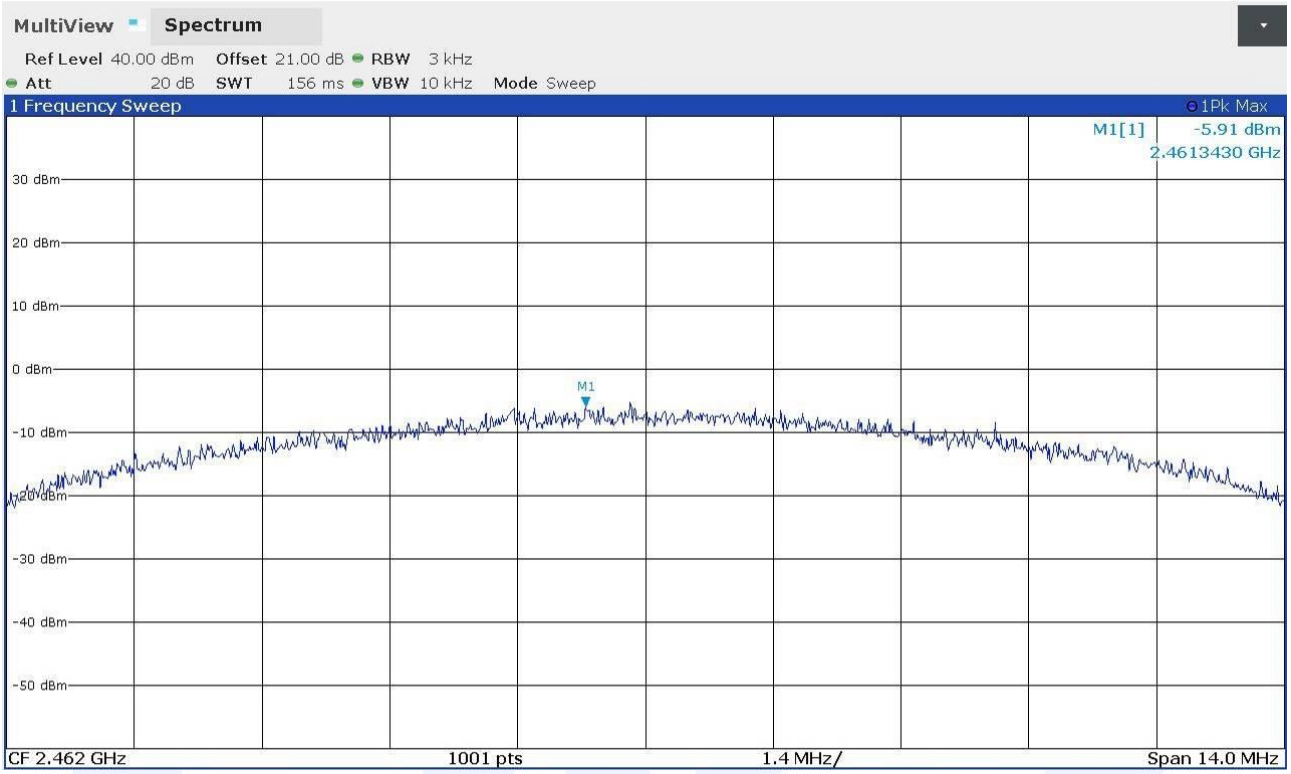


De Rosso 20246249

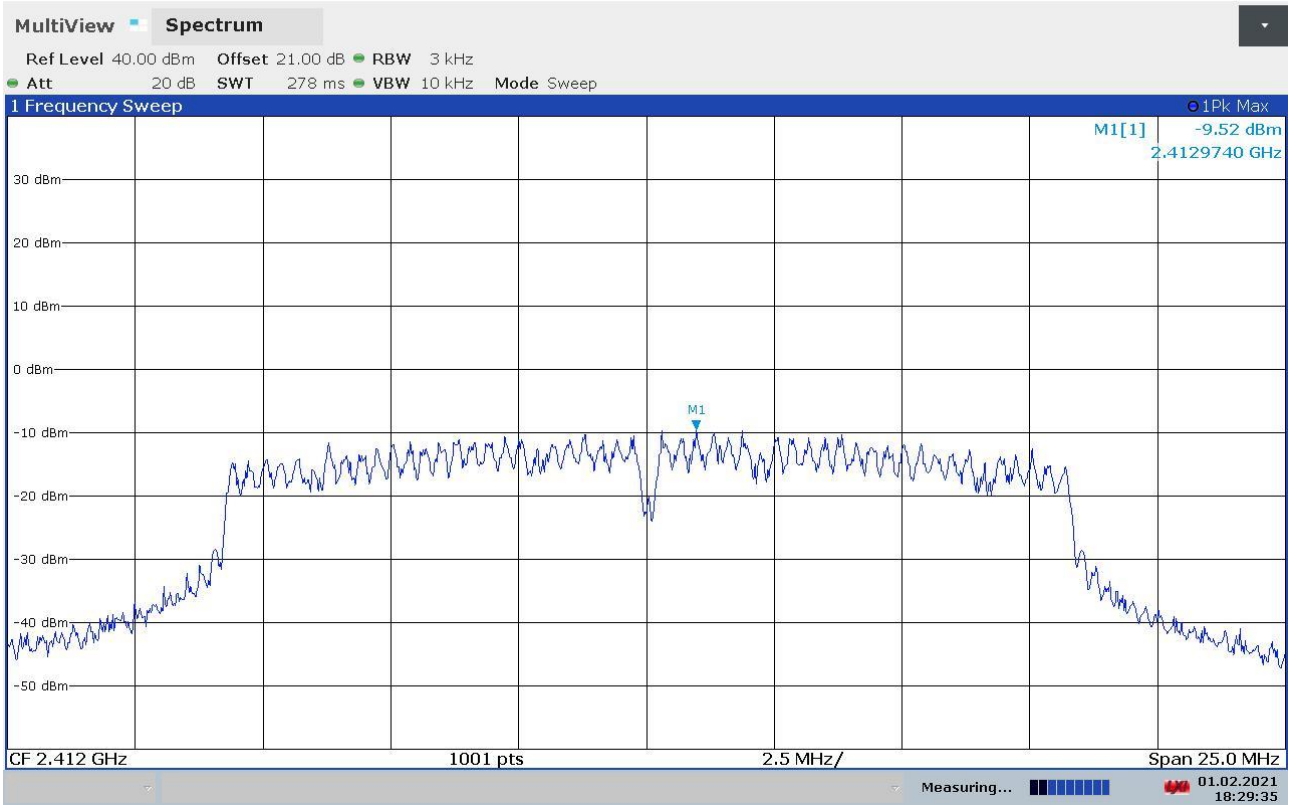


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246256

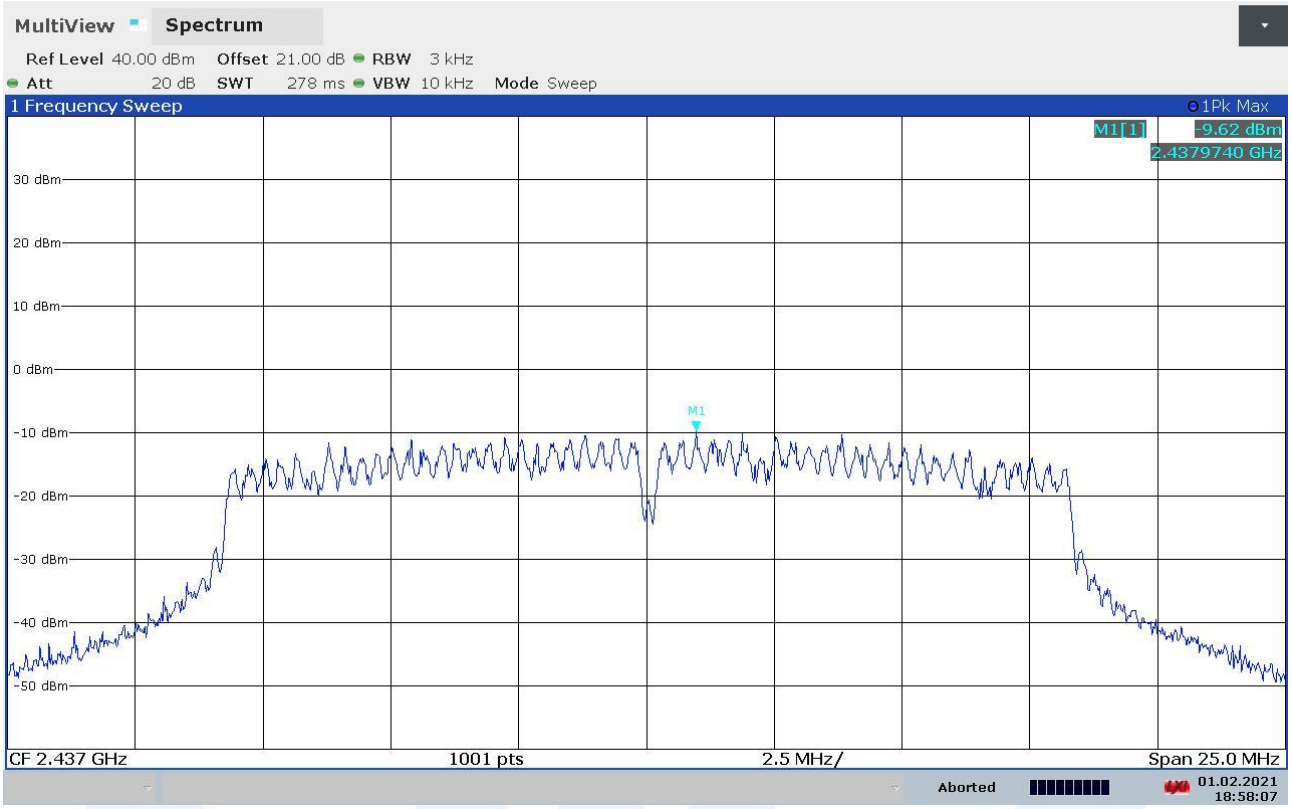


De Rosso 20246263

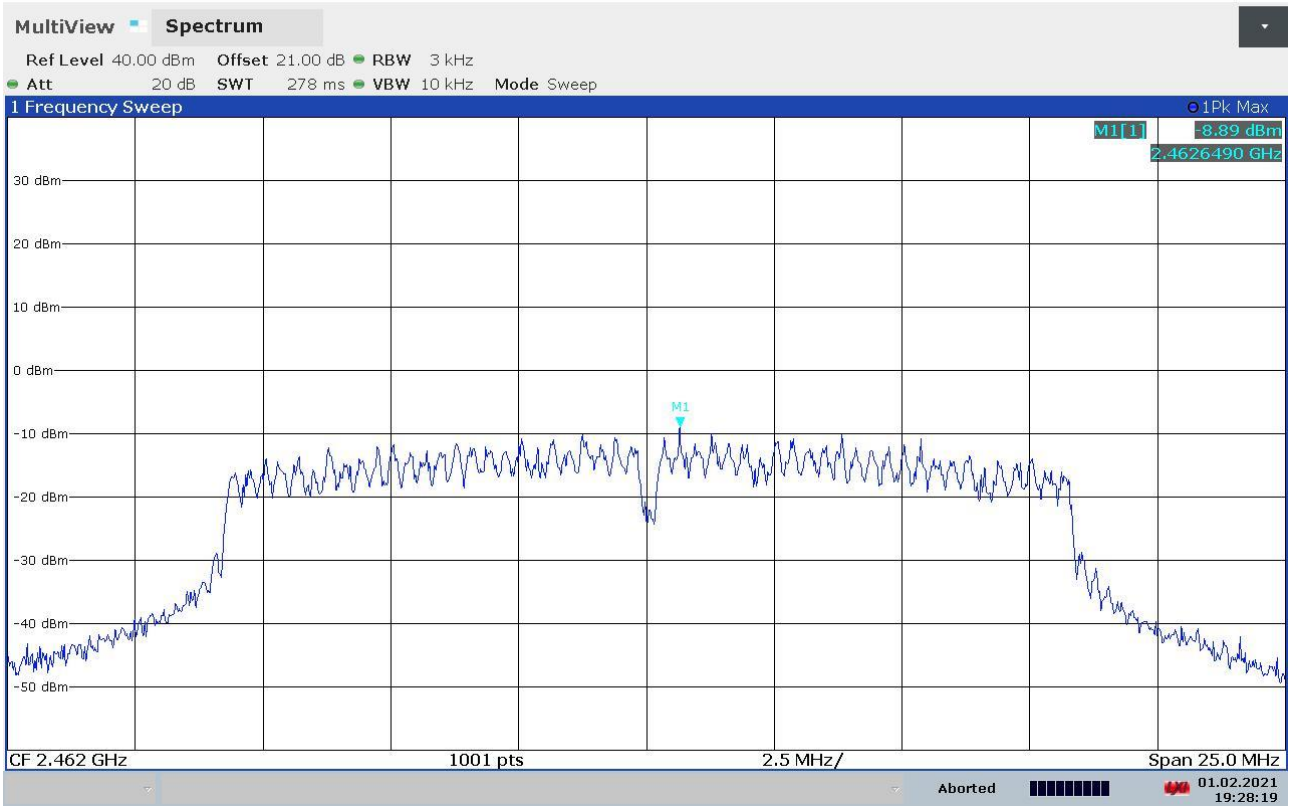


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246269

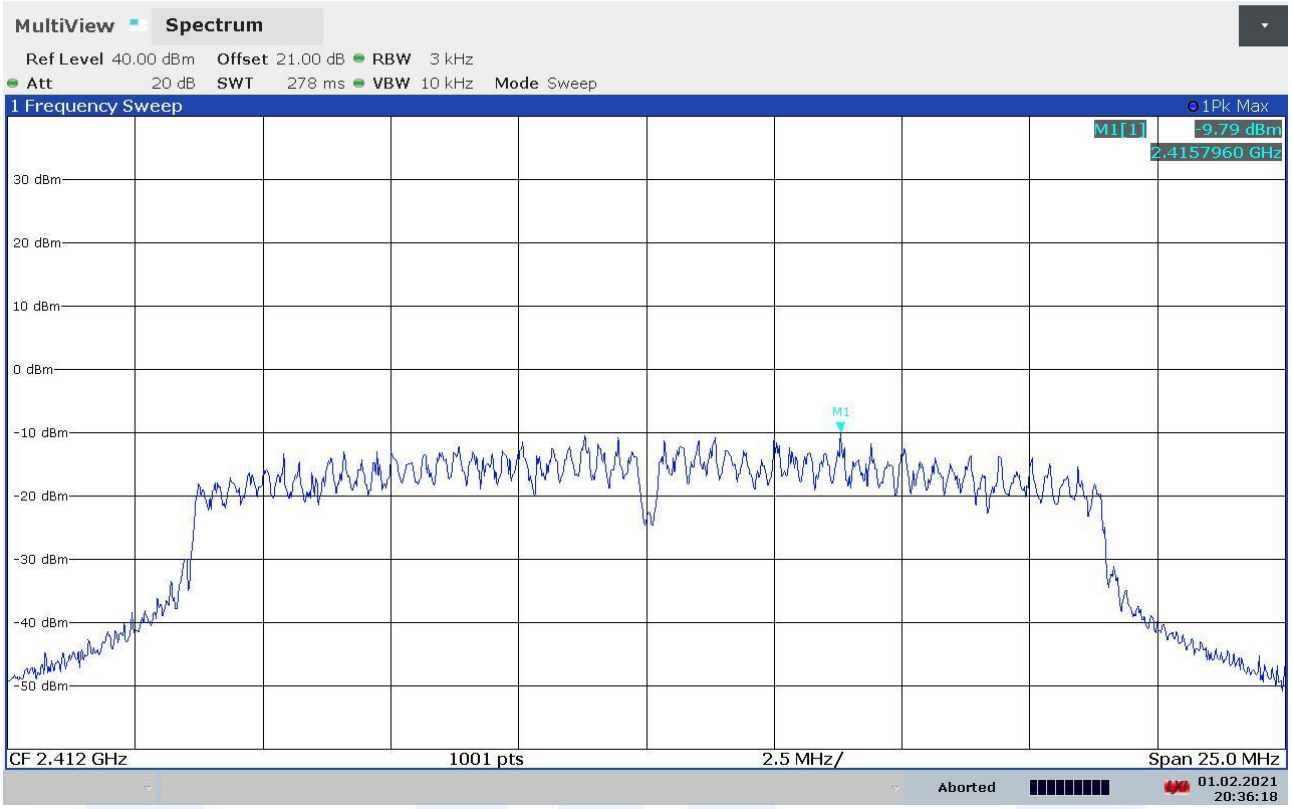


De Rosso 20246275

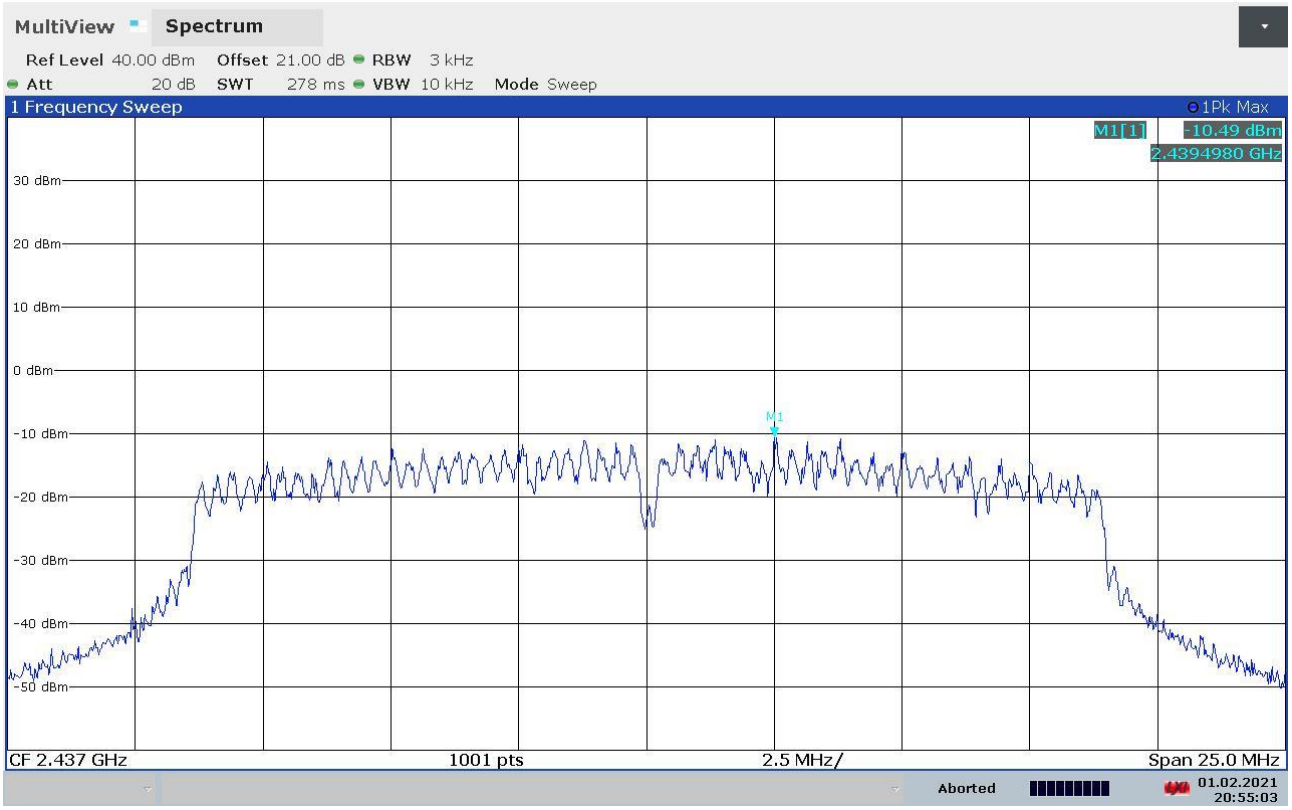


CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246281

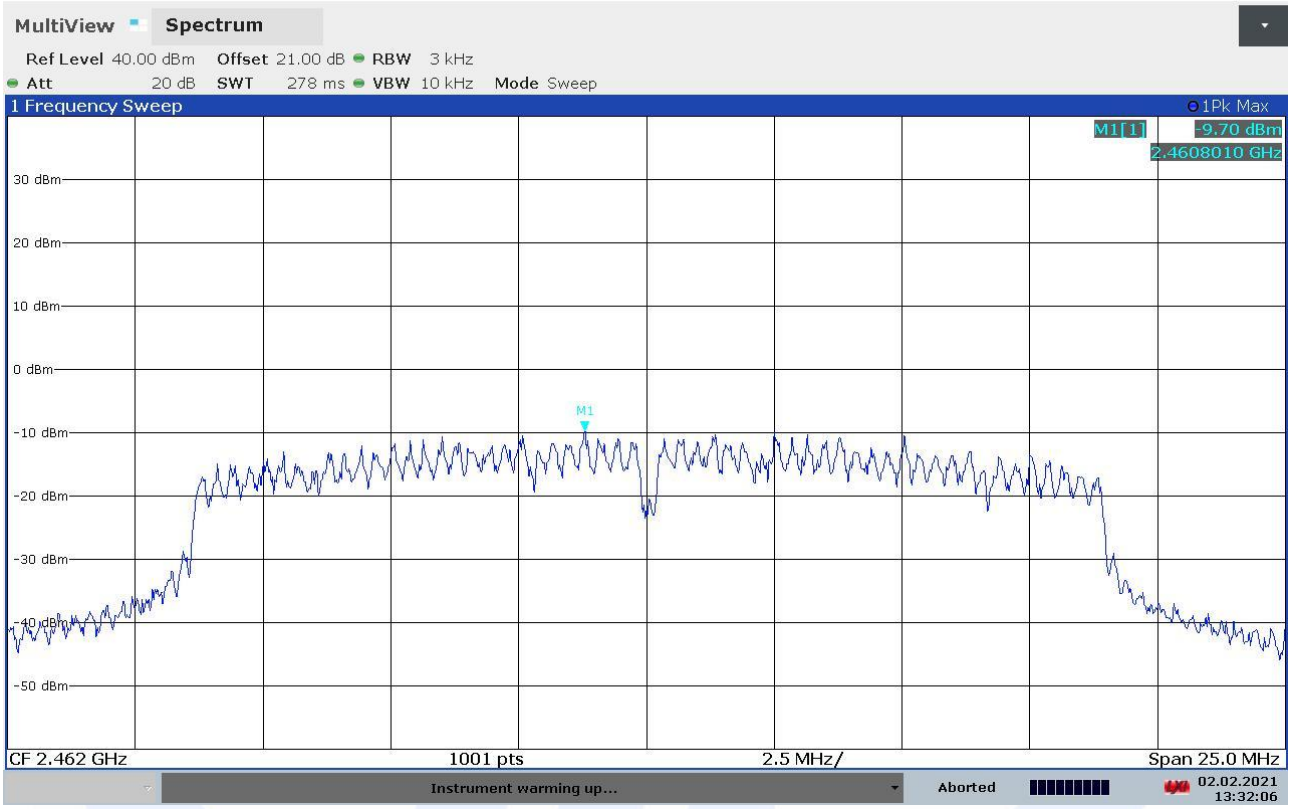


De Rosso 20246287



CMC Centro Misure Compatibilità S.r.l.

De Rosso 20246293



Attachment 1

Instruments list

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*	*Last calibration*	*Due date calibration*
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	- - -	January '21	January '22
CMC S108	EMCO	3115	Horn Antenna	9811-5622	June '19	June '22
CMC S127	Schaffner	HLA6120	Loop Antenna	1191	November '18	November '23
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '21	January '22
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273	January '21	January '22
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver 9KHz-7GHz	100781	January '21	January '22
CMC S260	CMC	Wfr_N	Shielded Cable	Wfr_ant10-1	November '20	November '21
CMC S261	CMC	Wfr_N	Shielded Cable	Wfr_ant20-1	November '20	November '21
CMC S262	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix32-1	November '20	November '21
CMC S263	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix31-1	November '20	November '21
CMC S264	CMC	Wfr_N	Shielded Cable	Wfr_ext03-1	November '20	November '21
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Biconical Antenna (30-300MHz)	831	June '19	June '22
CMC S287	Schwarzbeck	VUSLP 9111B	Log-periodic Antenna (200 MHz-3Ghz)	9111B-203	June '19	June '22
CMC S288	CMC	W_sma_white	Joint Shielded Cable	W_001	November '20	November '21
CMC S290	Schwarzbeck	BBHA 9170	Horn Antenna (15-40 GHz)	733	October '16	October '21
CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz	104059	November '19	November '22
CMC S353	Rohde & Schwarz	ESW26	EMI Test Receiver 1 Hz - 26.5 GHz	101492	September '20	September '22

CMC Centro Misure Compatibilità S.r.l.

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

CMC Centro Misure Compatibilità S.r.l.

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%

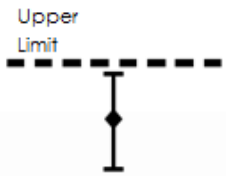
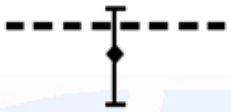
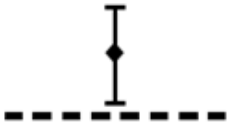
Note 2:

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

CMC Centro Misure Compatibilità S.r.l.

Attachment 1

Judgement of compliance

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

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