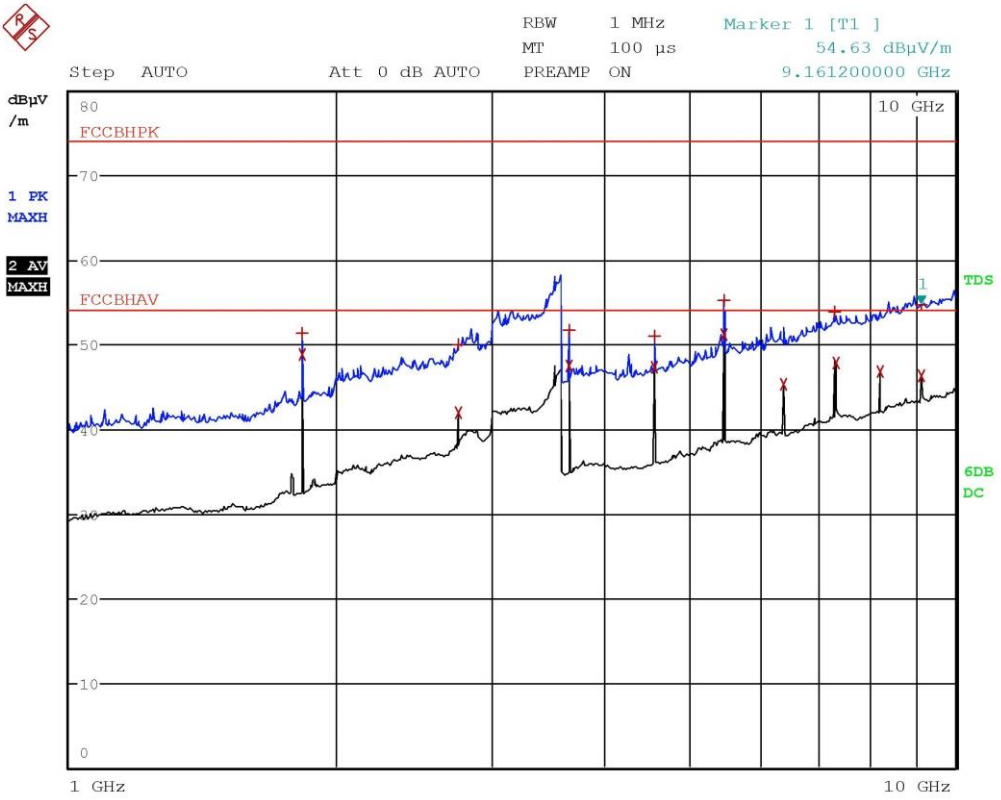


Bertezzolo 17220259

CMC Centro Misure Compatibilità S.r.l.

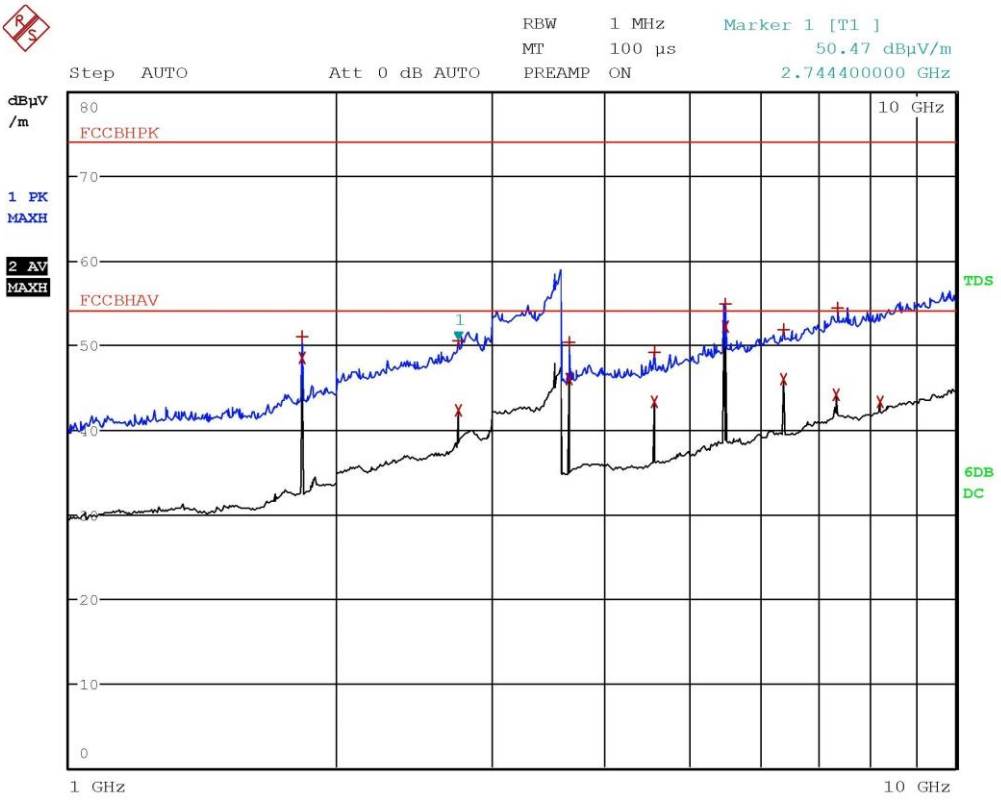
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.8296 GHz	51.36	-22.61
2 Average	1.8296 GHz	48.87	-5.10
2 Average	2.7444 GHz	41.93	-12.05
1 Max Peak	2.7488 GHz	50.00	-23.97
1 Max Peak	3.6592 GHz	51.63	-22.34
2 Average	3.6592 GHz	47.55	-6.42
1 Max Peak	4.5756 GHz	50.93	-23.05
2 Average	4.5756 GHz	47.29	-6.68
1 Max Peak	5.4892 GHz	55.14	-18.83
2 Average	5.4892 GHz	51.13	-2.84
2 Average	6.404 GHz	45.22	-8.75
1 Max Peak	7.3188 GHz	53.93	-20.05
2 Average	7.3212 GHz	47.86	-6.11
2 Average	8.2364 GHz	46.75	-7.22
2 Average	9.1516 GHz	46.24	-7.73
1 Max Peak	9.1612 GHz	54.62	-19.35

Bertezzolo 17220259

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220260

CMC Centro Misure Compatibilità S.r.l.

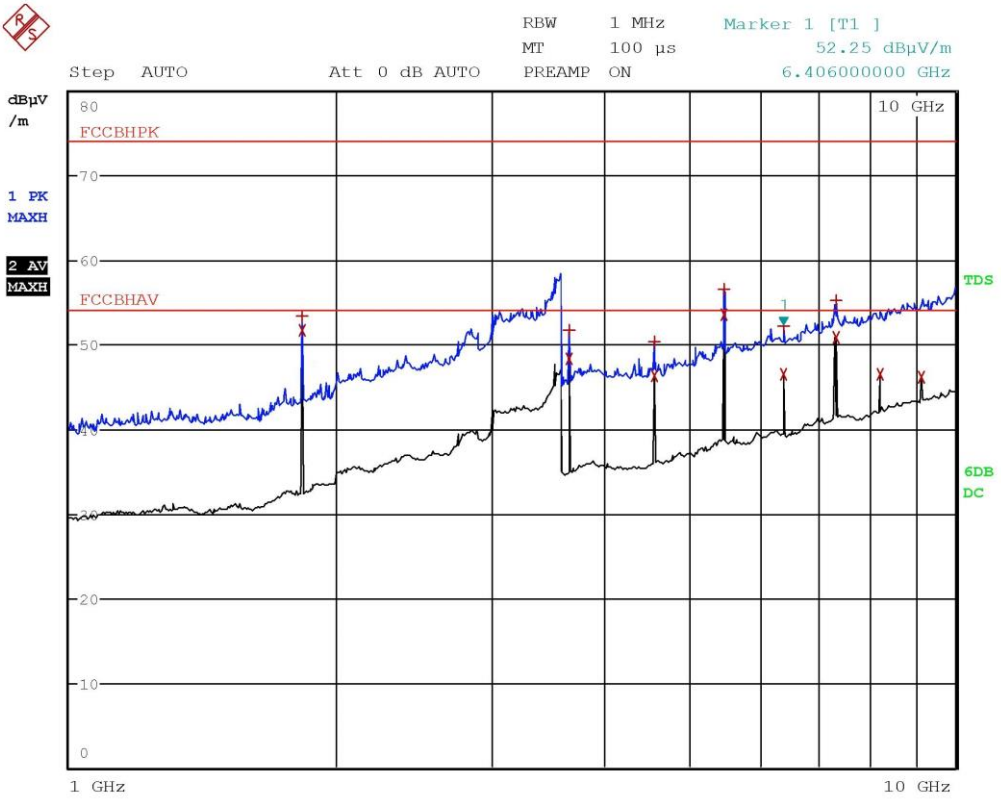
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.8304 GHz	51.07	-22.90
2 Average	1.8304 GHz	48.42	-5.55
2 Average	2.7444 GHz	42.30	-11.67
1 Max Peak	2.7444 GHz	50.46	-23.51
2 Average	3.6592 GHz	46.01	-7.96
1 Max Peak	3.6608 GHz	50.29	-23.68
1 Max Peak	4.5756 GHz	49.21	-24.76
2 Average	4.576 GHz	43.29	-10.68
1 Max Peak	5.4908 GHz	54.94	-19.03
2 Average	5.4908 GHz	52.25	-1.72
2 Average	6.404 GHz	45.91	-8.06
1 Max Peak	6.406 GHz	51.83	-22.14
2 Average	7.3212 GHz	44.14	-9.83
1 Max Peak	7.3712 GHz	54.35	-19.62
2 Average	8.2336 GHz	43.20	-10.77

Bertezzolo 17220260

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220261

CMC Centro Misure Compatibilità S.r.l.

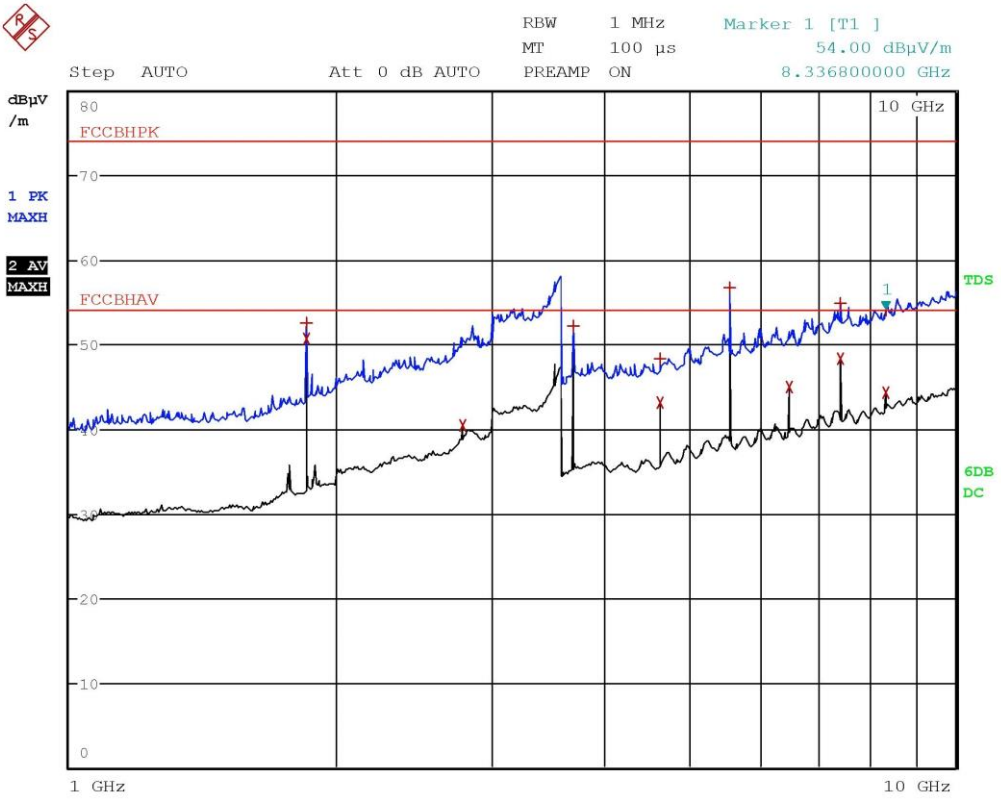
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	1.8296 GHz	51.60	-2.37
1	Max Peak	1.8296 GHz	53.31	-20.66
2	Average	3.6592 GHz	48.28	-5.69
1	Max Peak	3.6592 GHz	51.76	-22.21
1	Max Peak	4.5756 GHz	50.40	-23.57
2	Average	4.5756 GHz	46.32	-7.65
1	Max Peak	5.4892 GHz	56.54	-17.43
2	Average	5.4892 GHz	53.60	-0.37
1	Max Peak	6.406 GHz	52.24	-21.73
2	Average	6.406 GHz	46.47	-7.51
1	Max Peak	7.3212 GHz	55.23	-18.74
2	Average	7.3212 GHz	50.78	-3.19
2	Average	8.2364 GHz	46.44	-7.53
2	Average	9.1484 GHz	46.10	-7.87

Bertezzolo 17220261

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220262

CMC Centro Misure Compatibilità S.r.l.

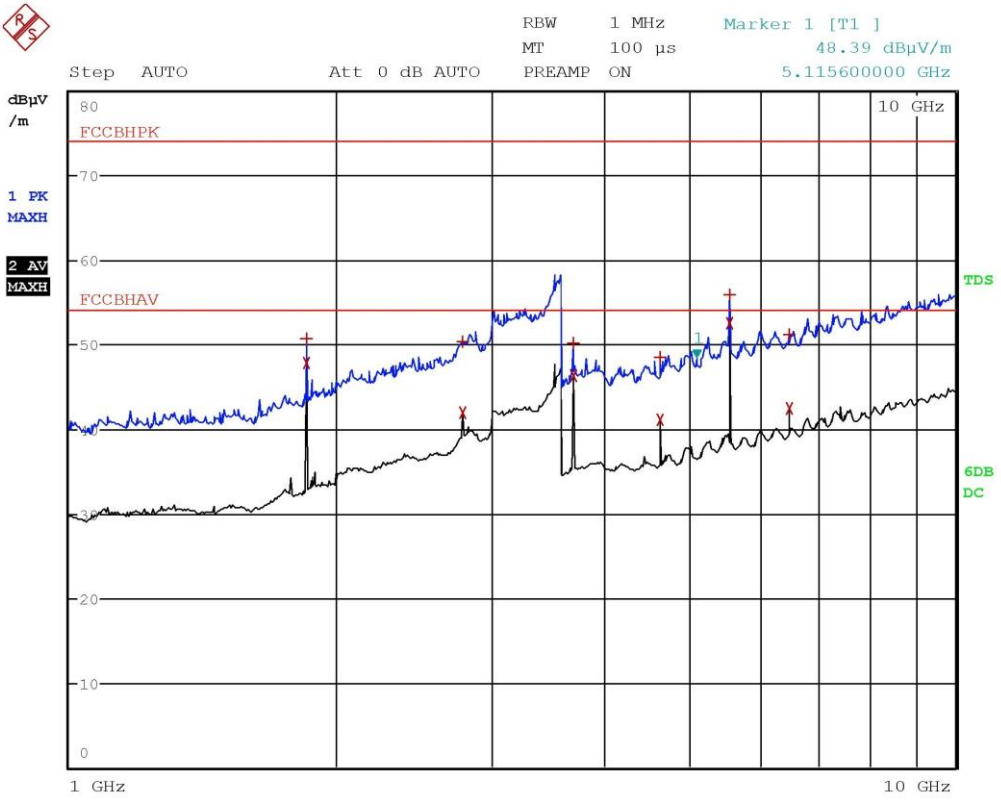
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.8544 GHz	52.44	-21.53
2 Average	1.8544 GHz	50.61	-3.36
2 Average	2.7816 GHz	40.46	-13.51
1 Max Peak	3.7084 GHz	52.24	-21.73
1 Max Peak	4.634 GHz	48.37	-25.60
2 Average	4.6356 GHz	43.17	-10.80
1 Max Peak	5.5628 GHz	56.80	-17.17
2 Average	6.488 GHz	45.03	-8.94
1 Max Peak	7.4172 GHz	54.84	-19.13
2 Average	7.4172 GHz	48.25	-5.72
1 Max Peak	8.3368 GHz	53.99	-19.98
2 Average	8.3444 GHz	44.27	-9.70

Bertezzolo 17220262

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220263

CMC Centro Misure Compatibilità S.r.l.

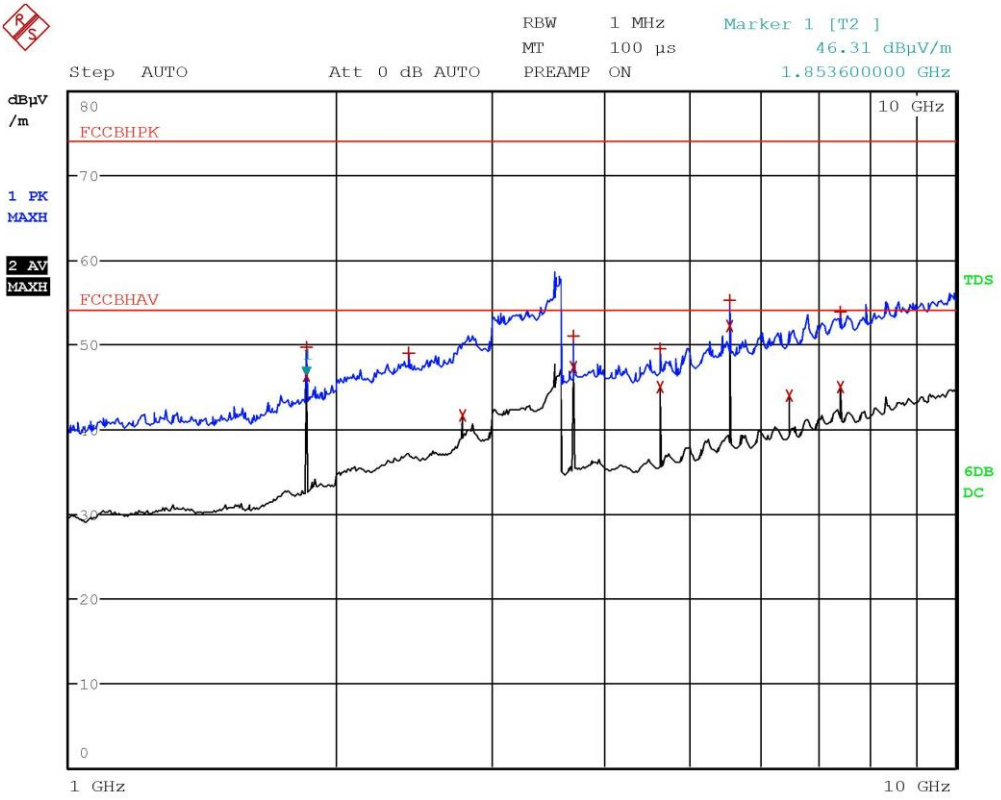
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	1.8544 GHz	47.81	-6.16
1	Max Peak	1.8544 GHz	50.75	-23.22
2	Average	2.7804 GHz	41.93	-12.04
1	Max Peak	2.7836 GHz	50.28	-23.69
2	Average	3.7072 GHz	46.29	-7.68
1	Max Peak	3.7072 GHz	50.18	-23.79
1	Max Peak	4.6344 GHz	48.50	-25.47
2	Average	4.6356 GHz	41.13	-12.84
2	Average	5.5612 GHz	52.58	-1.39
1	Max Peak	5.5628 GHz	55.90	-18.08
2	Average	6.488 GHz	42.37	-11.60
1	Max Peak	6.4984 GHz	51.16	-22.81

Bertezzolo 17220263

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220264

CMC Centro Misure Compatibilità S.r.l.

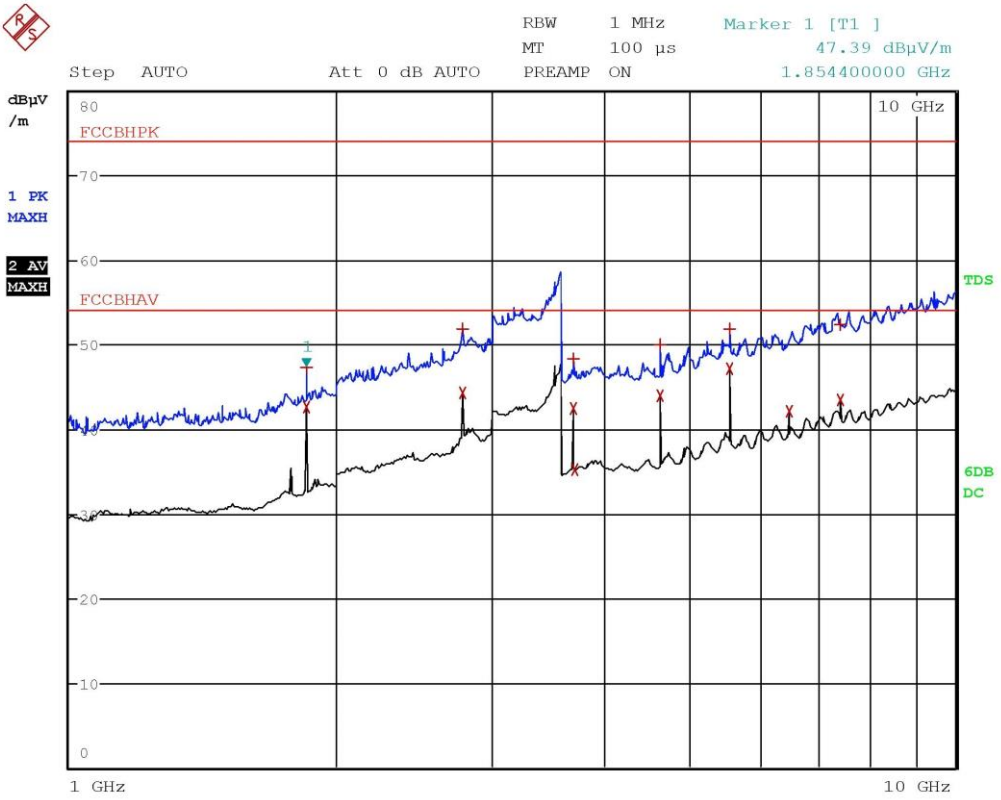
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1	Max Peak	1.8536 GHz	49.67	-24.30
2	Average	1.8536 GHz	46.30	-7.67
1	Max Peak	2.4184 GHz	48.95	-25.02
2	Average	2.7816 GHz	41.66	-12.31
1	Max Peak	3.7088 GHz	50.95	-23.03
2	Average	3.7088 GHz	47.23	-6.74
2	Average	4.6356 GHz	44.92	-9.05
1	Max Peak	4.636 GHz	49.42	-24.55
2	Average	5.5628 GHz	52.22	-1.75
1	Max Peak	5.5628 GHz	55.28	-18.69
2	Average	6.488 GHz	43.99	-9.98
2	Average	7.4144 GHz	45.00	-8.97
1	Max Peak	7.4172 GHz	53.86	-20.11

Bertezzolo 17220264

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220265

CMC Centro Misure Compatibilità S.r.l.

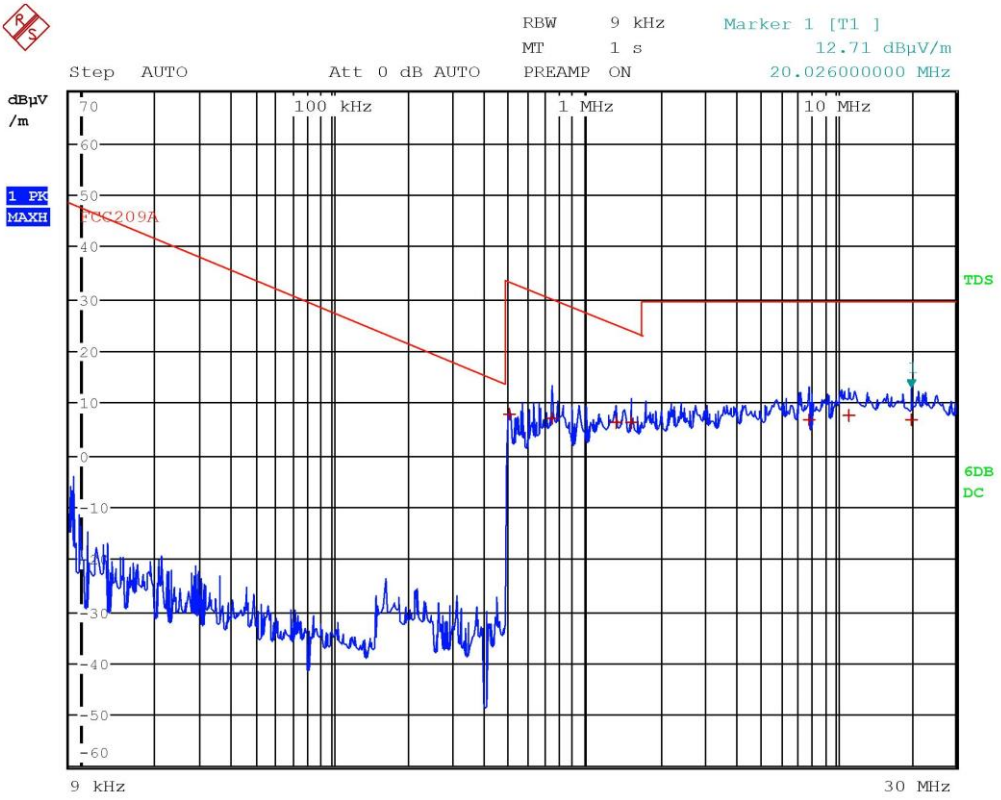
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	1.8544 GHz	42.58	-11.39
1	Max Peak	1.8544 GHz	47.39	-26.58
2	Average	2.7804 GHz	44.21	-9.76
1	Max Peak	2.7812 GHz	51.80	-22.17
2	Average	3.7072 GHz	42.42	-11.55
1	Max Peak	3.7088 GHz	48.24	-25.73
2	Average	3.7236 GHz	35.27	-18.70
1	Max Peak	4.6344 GHz	49.97	-24.00
2	Average	4.6344 GHz	43.93	-10.04
1	Max Peak	5.5628 GHz	51.90	-22.08
2	Average	5.5628 GHz	47.15	-6.82
2	Average	6.49 GHz	42.13	-11.84
2	Average	7.4172 GHz	43.42	-10.56
1	Max Peak	7.4236 GHz	52.28	-21.69

Bertezzolo 17220265

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 17220266

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209A
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	502 kHz	7.96	-25.62
1 Quasi Peak	742 kHz	6.94	-23.25
1 Quasi Peak	1.334 MHz	6.30	-18.79
1 Quasi Peak	1.55 MHz	6.29	-17.50
1 Quasi Peak	7.934 MHz	6.87	-22.66
1 Quasi Peak	11.258 MHz	7.58	-21.95
1 Quasi Peak	20.026 MHz	6.76	-22.77

Bertezzolo 17220266

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.3 DTS bandwidth

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- ANSI C63.10 cl. 11.8
- KDB 558074 D01 DTS Meas Guidance v04 cl. 8
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S287, CMC S295
Measurement uncertainty: See clause 7 of this test report

Test specification

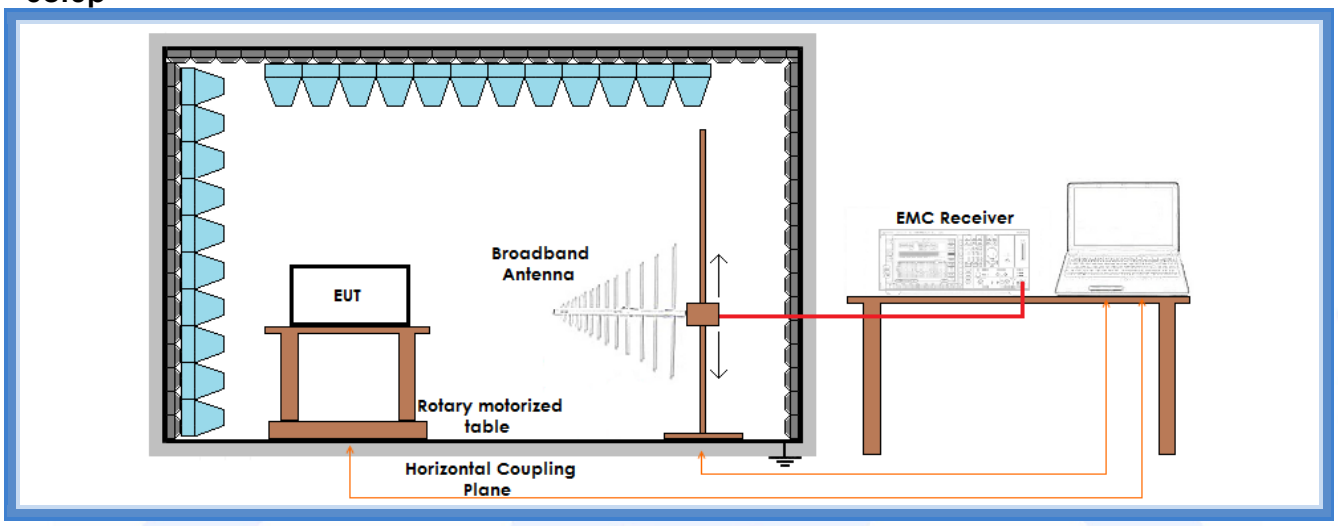
Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	45

CMC Centro Misure Compatibilità S.r.l.

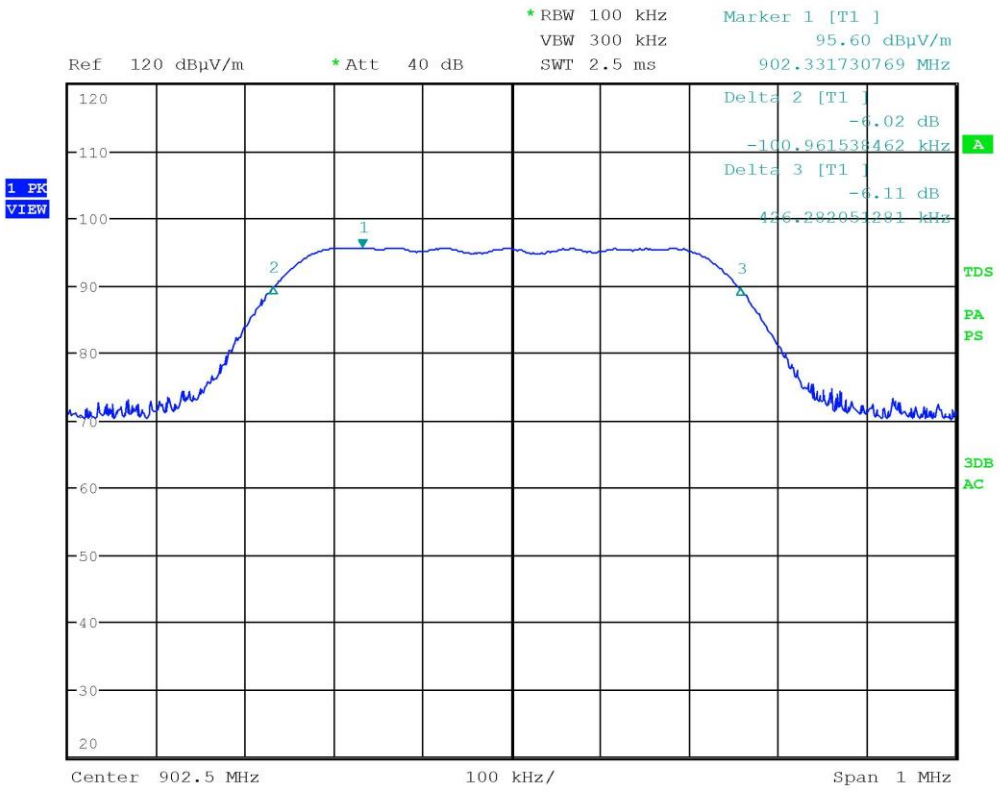
Setup



Result

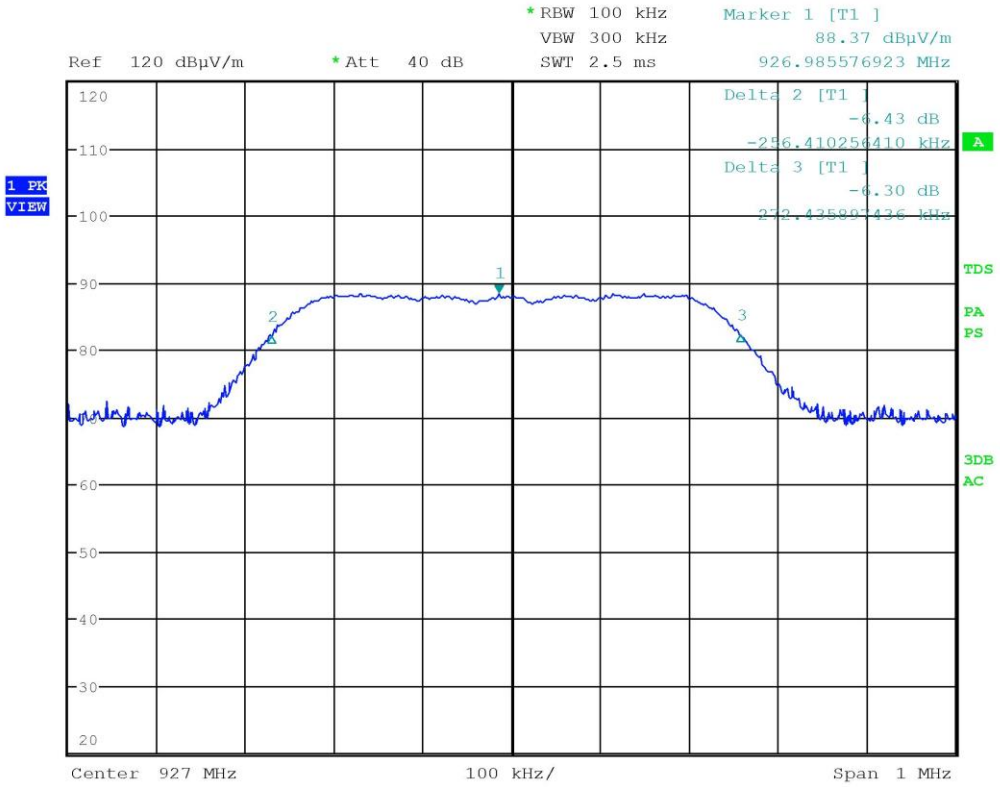
Transmission channel (MHz)	*Graphs*	*6 dB bandwidth (kHz)*	*Limits (kHz)*	*Results*
902,50	G172202A03	527,243	At least 500	Complies
915,00	G172202A07	528,245	At least 500	Complies
927,00	G172202A13	527,243	At least 500	Complies

Graphs



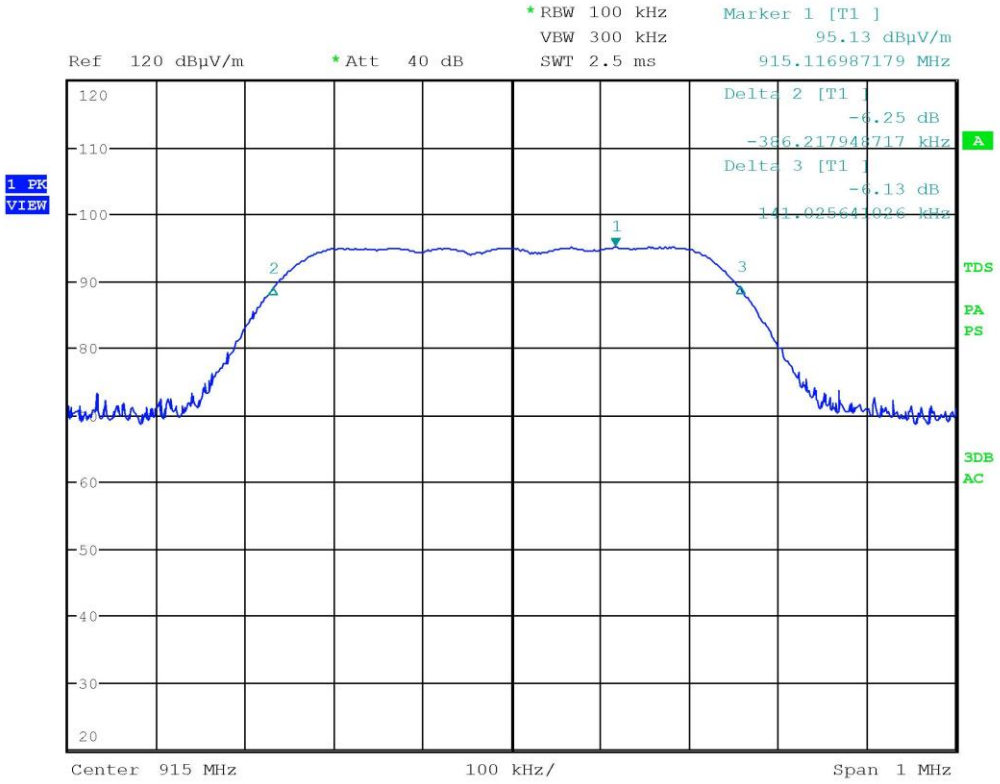
Bertezzolo 172202A03

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A07

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A13

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.4 Band edge

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247 (d)
- ANSI C63.10 cl. 11.13
- KDB 558074 D01 DTS Meas Guidance v04 cl. 13
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S287, CMC S295
Measurement uncertainty: See clause 7 of this test report

Test specification

See FCC Part 15.247
EUT height about the floor: 150 cm
EUT – Antenna distance: 10 m

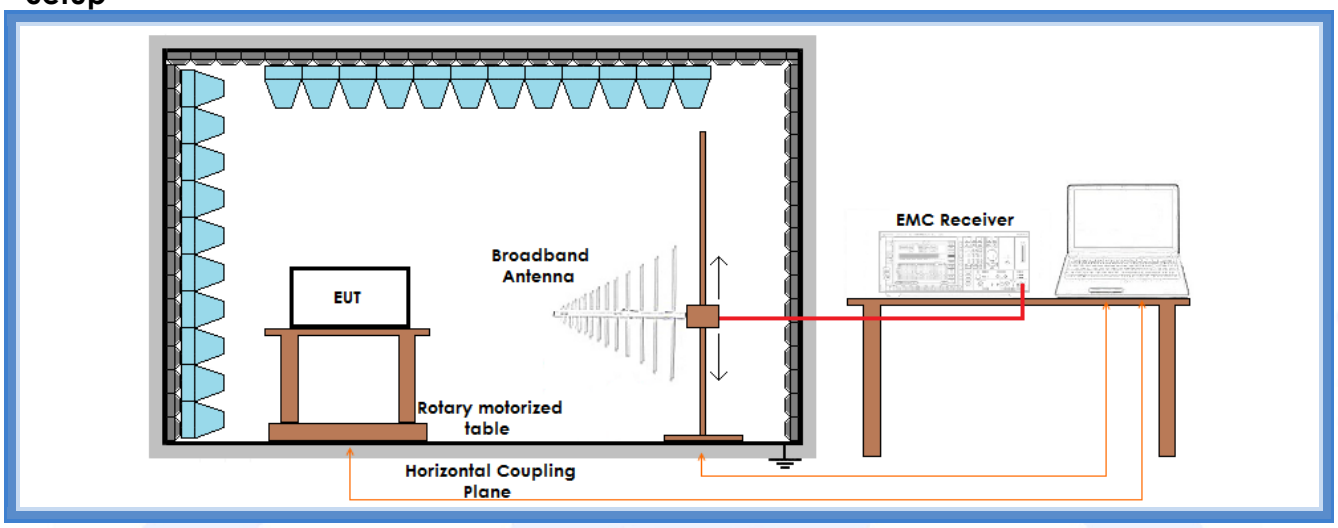
Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
21	100	45

Acceptance limits: operation within the band 900 – 928 MHz

CMC Centro Misure Compatibilità S.r.l.

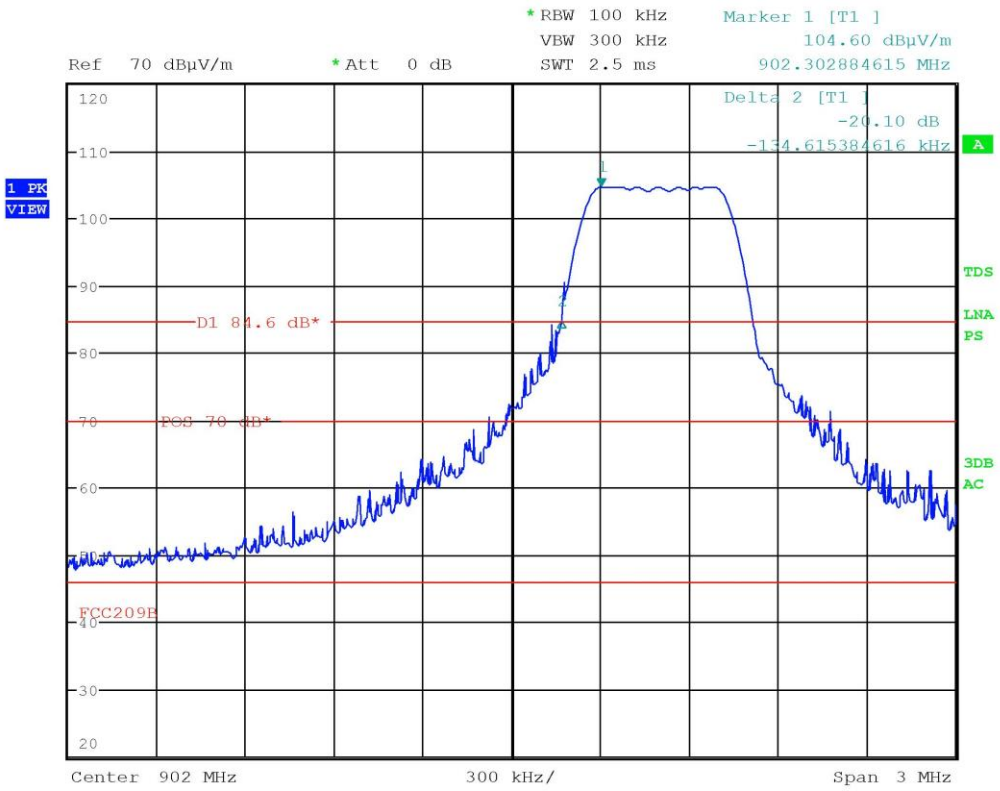
Setup



Result

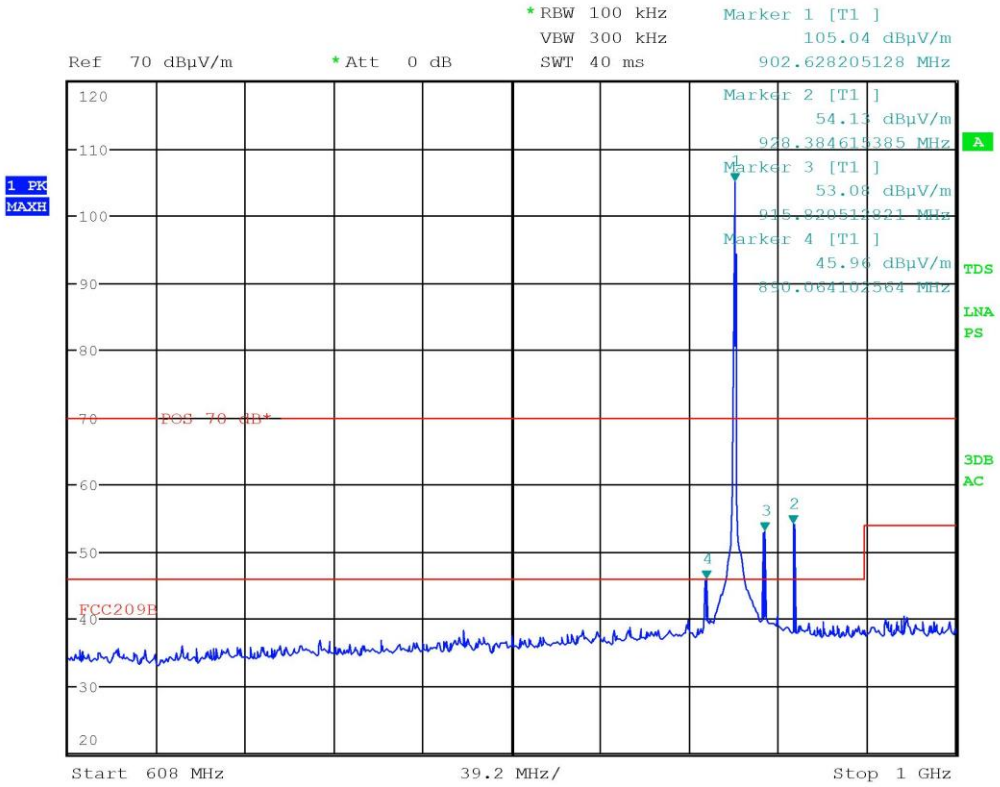
Transmission channel (MHz)	*Bandwidth*	*Graph(s)*	*Results*	
902,50	100 kHz	G172202A02	902,168269 MHz	Complies
	100 kHz	G172202A05		
927,00	100 kHz	G172202A09	927,317306 MHz	Complies
	100 kHz	G172202A10		
	100 kHz	G172202A11		
Remarks:	For peaks around the transmitting frequency that are above the limits, the peaks fall into a non-restricted frequency band. The compliance is demonstrated by the margin from the level of transmission frequency (margin higher than 20 dB)			

Graphs



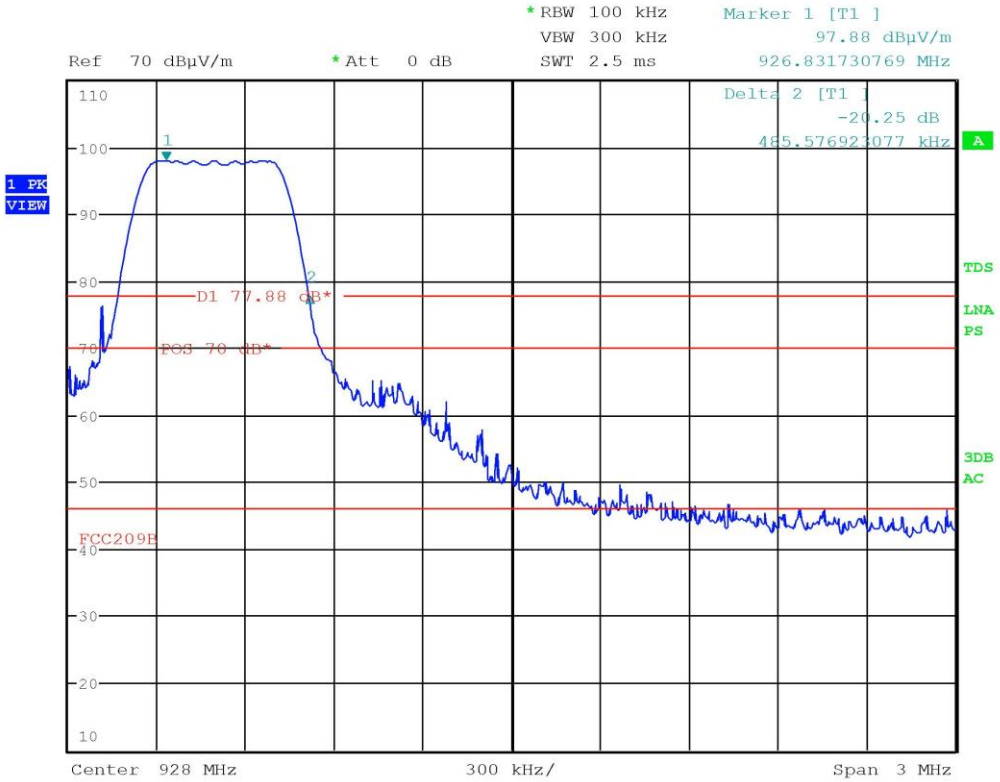
Bertezzolo 172202A02

CMC Centro Misure Compatibilità S.r.l.



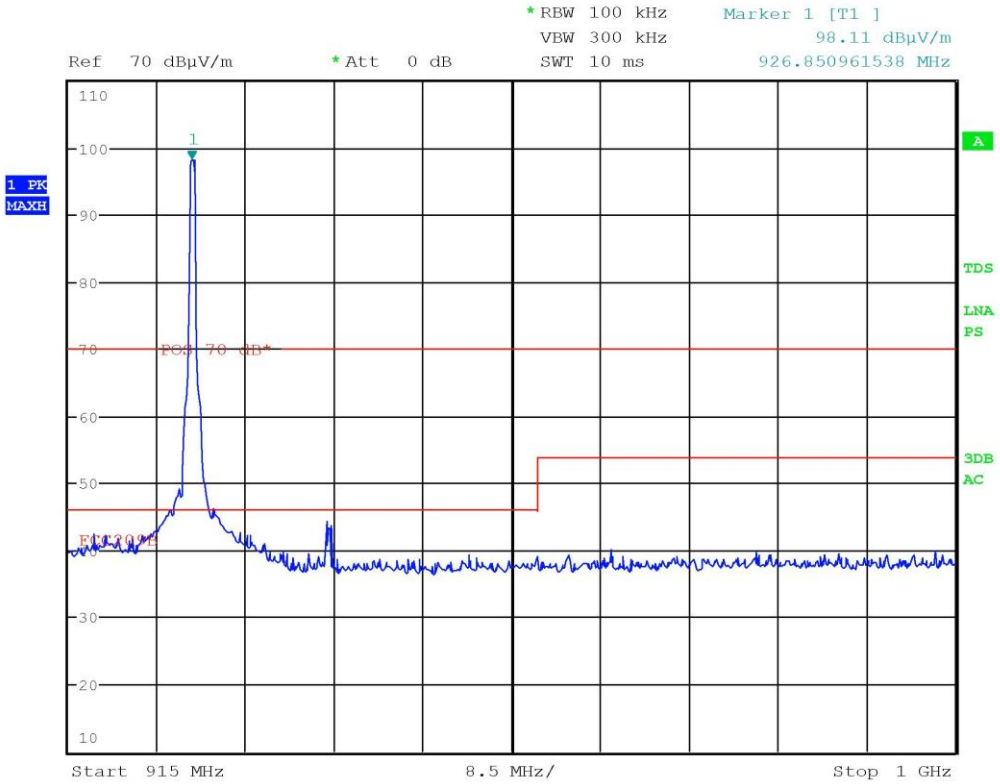
Bertezzolo 172202A05

CMC Centro Misure Compatibilità S.r.l.



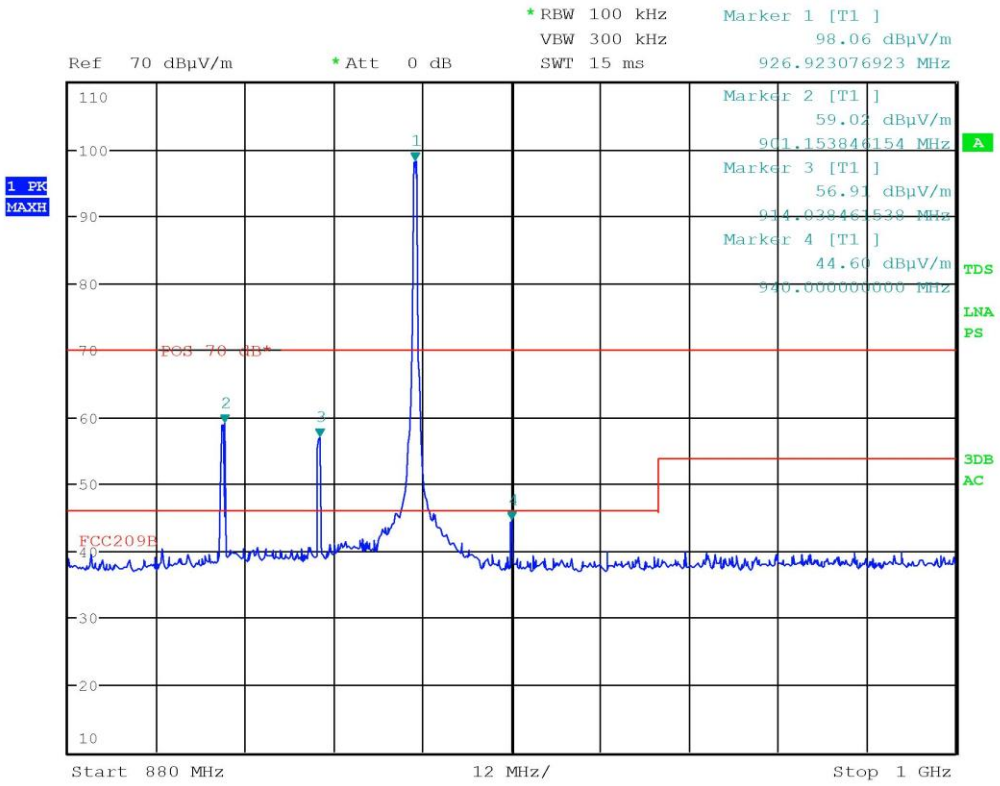
Bertezzolo 172202A09

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A10

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A11

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.5 Fundamental emission output power

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- ANSI C63.10 cl. 11.9.1.1
- KDB 558074 D01 DTS Meas Guidance v04 cl. 9.1.1
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S206, CMC S287
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure (conducted measurements are not applicable because the antenna connector is not available, see also cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v03r02)
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 10 m
EUT height about the floor: 80 cm

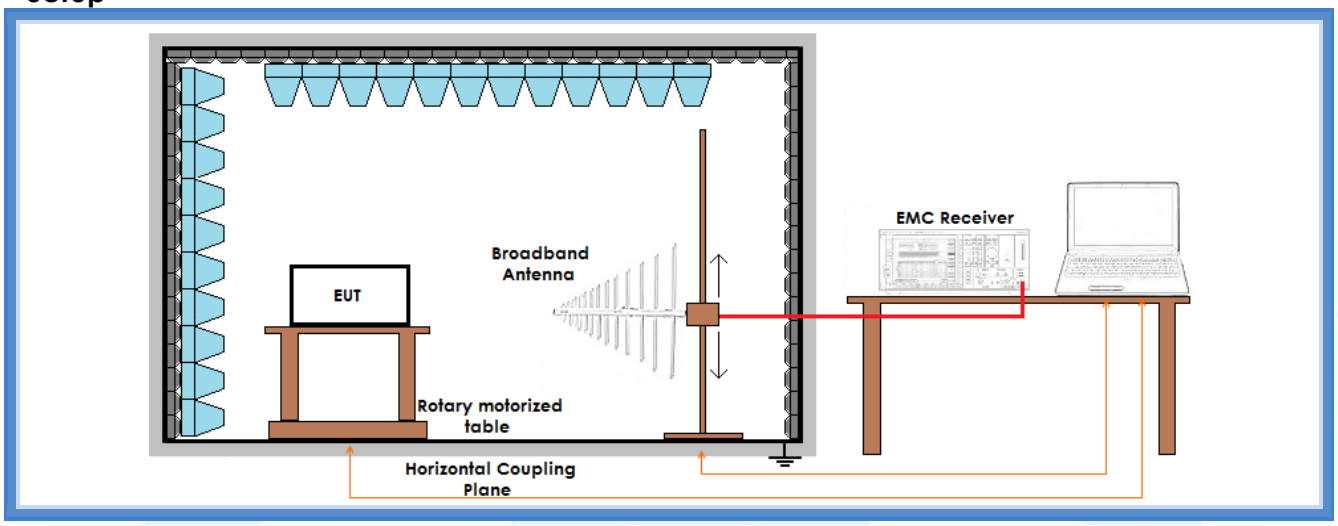
Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	42

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

CMC Centro Misure Compatibilità S.r.l.

Setup



Result

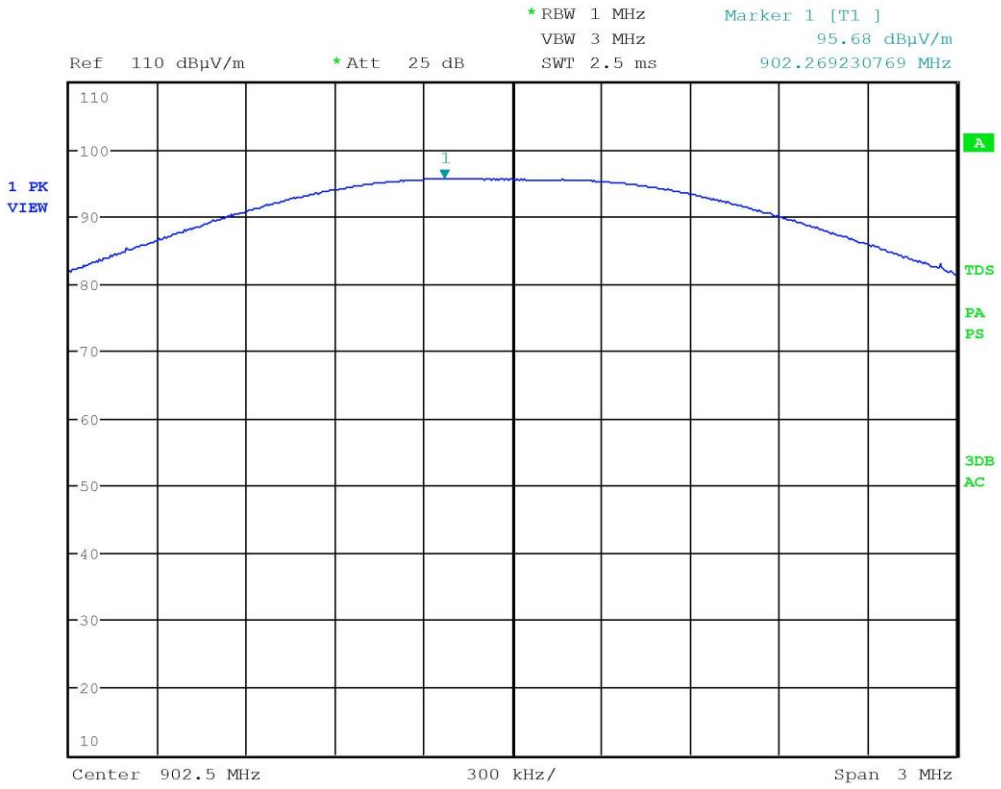
Transmission channel (MHz)	*Antenna polarization*	*Graphs*	*Measured level (dBµV/m)*	*Peak Output Conducted Power (mW)*
902,50	Worst case	G172202A01	95,68	5,900
915,00	Worst case	G172202A06	87,98	1,002
927,00	Worst case	G172202A12	95,09	5,151

Remarks: the above table shows the results of radiated measurements, in agreement with cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v04.
Conducted measurements are not applicable because the antenna connector is not available.
The following formula, provided in document DA 00-705, has been used for the conversion between radiated to conducted values:

Conducted value = $(E \times d)^2 / (30 \times G)$

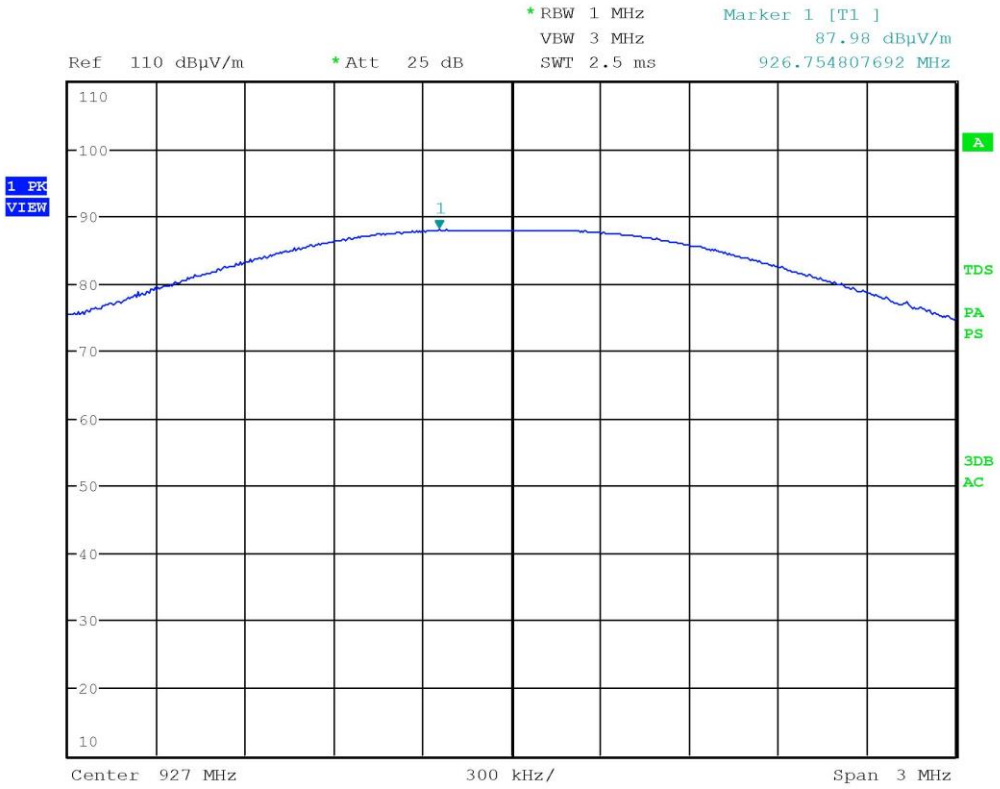
Where:
$E = (10^{(dB\mu V/m)/20})/1000000$, the maximum measured fundamental field strength in V/m
$G = 10^{dBi/10}$, the numeric gain of the transmitting antenna: 2,089 (3,2 dBi)
d = the distance in meters from which the field strength was measured (10 m)
P = the power in watts

Graphs



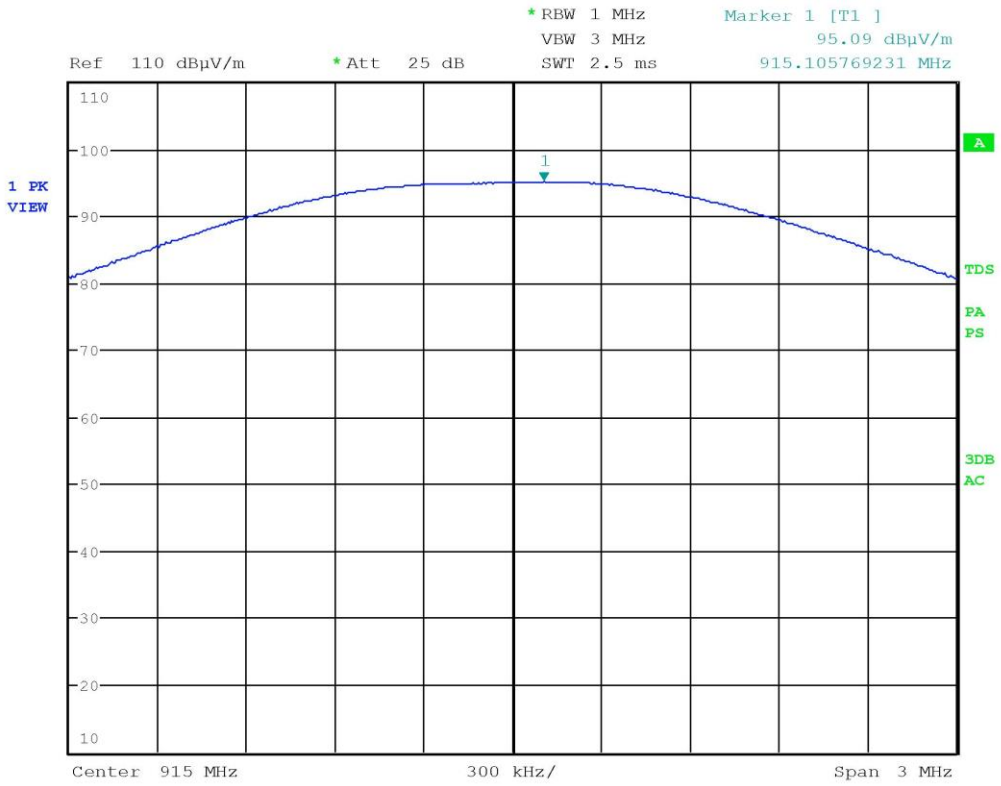
Bertezzolo 172202A01

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A06

CMC Centro Misure Compatibilità S.r.l.



Bertezzolo 172202A12

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.6 Maximum power spectral density level in the fundamental emission

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- ANSI C63.10 cl. 11.10
- KDB 558074 D01 DTS Meas Guidance v04 cl. 10
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S206, CMC S287
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 10 m

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	42

Acceptance limits:

Frequency Range	*Power Spectral Density*
900 – 928 MHz	8 dBm/3 kHz 6,31 mW/3 kHz

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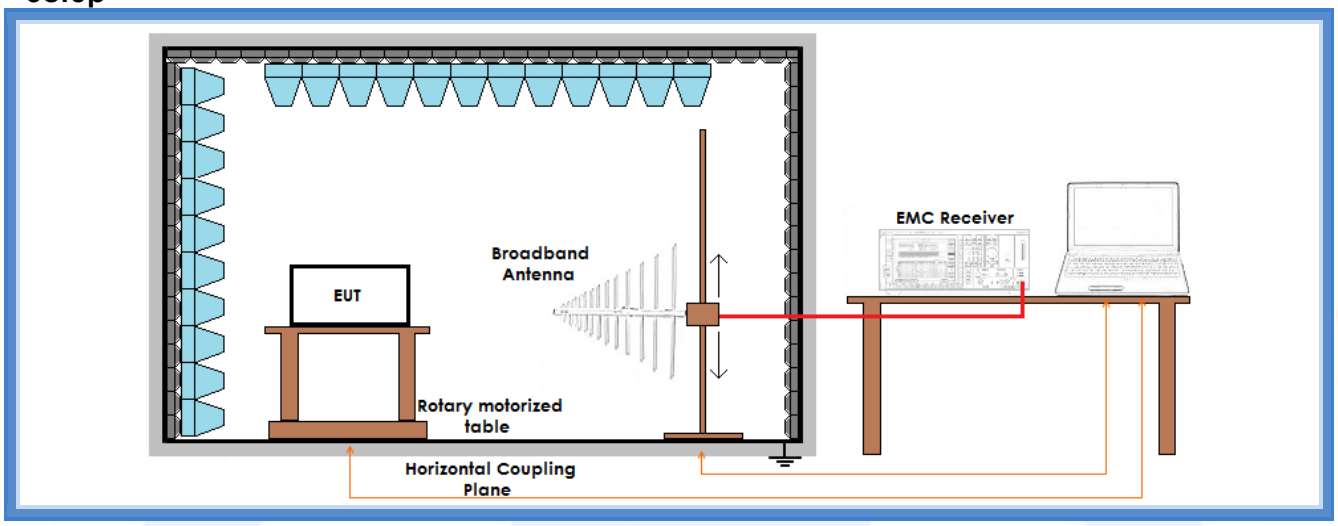
Setup



Result

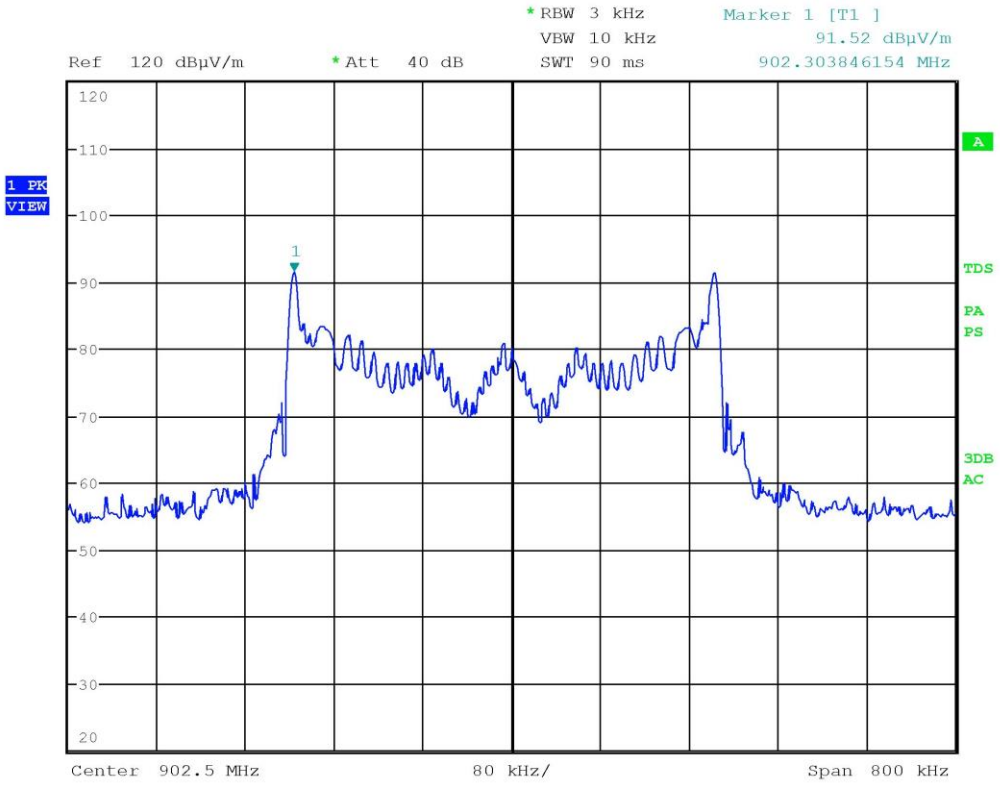
Transmission channel (MHz)	*Antenna polarization*	*Graphs*	*RBW (kHz)*	*Measured PK level (dBµV/m / 3 kHz)*	*Power Spectral Density (mW/3 kHz)*	*Limits (mW/3 kHz)*	*Verdict*
902,50	Worst case	G172202A04	3	91,52	2,26	6,31	Pass
915,00	Worst case	G172202A08	3	83,54	0,36	6,31	Pass
927,00	Worst case	G172202A14	3	91,05	2,03	6,31	Pass

Remarks: the above table shows the results of radiated measurements, in agreement with cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v04.
Conducted measurements are not applicable because the antenna connector is not available.
The following formula, provided in document DA 00-705, has been used for the conversion between radiated to conducted values:

Conducted value = $(E \times d)^2 / (30 \times G)$

Where:
$E = (10^{(dB\mu V/m)/20})/1000000$, the maximum measured fundamental field strength in V/m
$G = 10^{dBi/10}$, the numeric gain of the transmitting antenna: 2,089 (3,2 dBi)
d = the distance in meters from which the field strength was measured (10 m)
P = the power in watts

Graphs



Bertezzolo 172202A04

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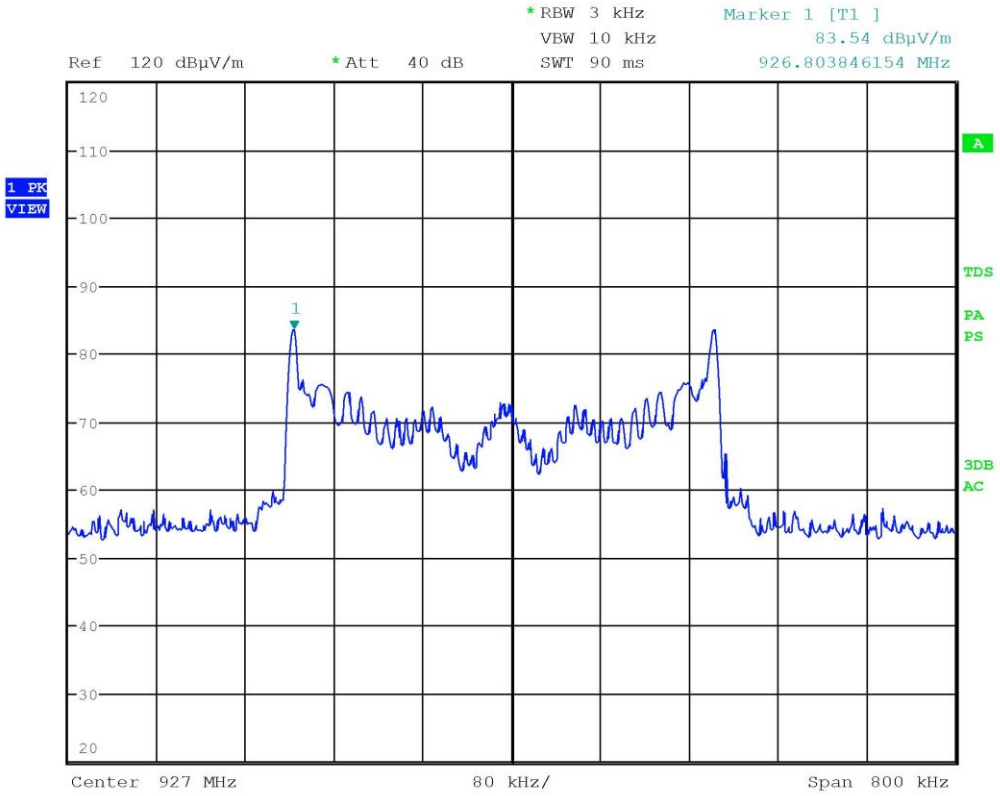

Bertezzolo 172202A08

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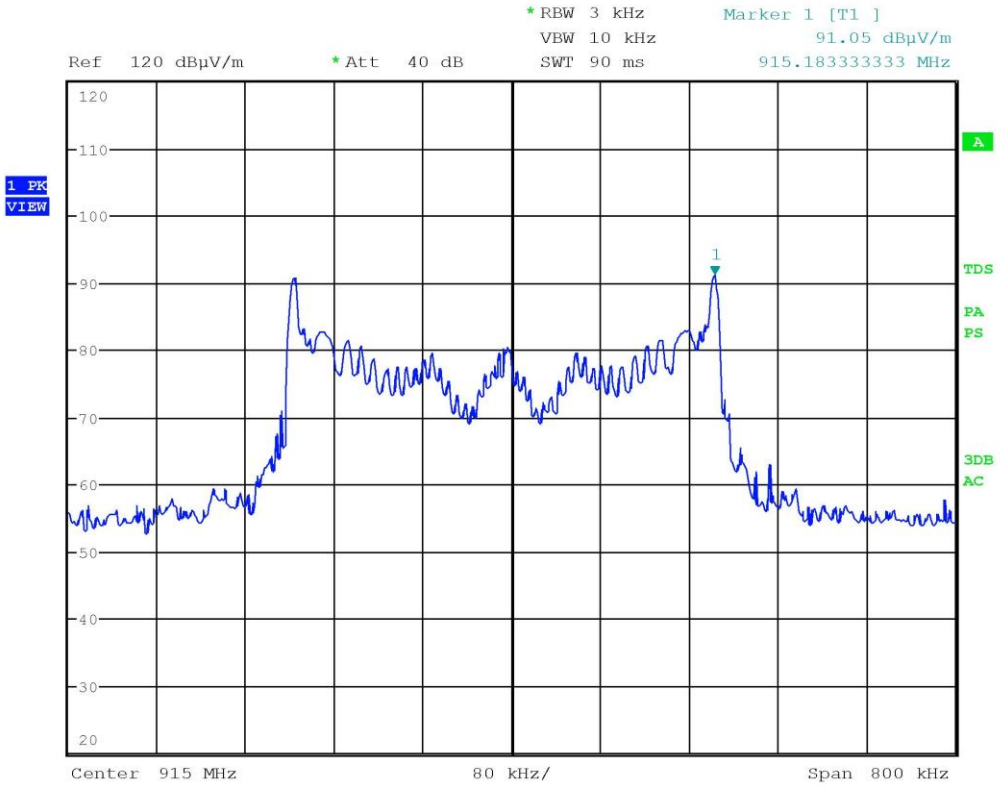

Bertezzolo 172202A14

Result: The requirements are met

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11.7 Spurious Emission

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.209
- KDB 558074 D01 DTS Meas Guidance v04 cl. 11 and 12
- ANSI C63.10 cl. 6.4, 6.5 and 6.6
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S164, CMC S241, CMC S251, CMC S290, CMC S298
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Antenna polarization: Horizontal (H) – Vertical (V)
EUT height about the floor: 150 cm
EUT – Antenna distance: 3 m
Detector AV + Peak

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	45

Acceptance limits

Acceptance limits for emissions in restricted frequency bands		
Frequency (MHz)	*AV limits [dB(µV/m)]*	*Peak limits [dB(µV/m)]*
> 1000	54	74

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The restricted frequency bands are listed in the following table

MHz	***MHz***	***MHz***	***GHz***
0,09 – 0,110	16,42 – 16,423	399,9 – 410	4,5 – 5,15
0,495 – 0,505	16,69475 – 16,69525	608 – 614	5,35 – 5,46
2,1735 – 2,1905	16,80425 – 16,80475	960 – 1240	7,25 – 7,75
4,125 – 4,128	25,5 – 25,67	1300 – 1427	8,025 – 8,5
4,17725 – 4,17775	37,5 – 38,25	1435 – 1626,5	9,0 – 9,2
4,20725 – 4,20775	73 – 74,6	1645,5 – 1646,5	9,3 – 9,5
6,215 – 6,218	74,8 – 75,2	1660 – 1710	10,6 – 12,7
6,26775 – 6,26825	108 – 121,94	1718,8 – 1722,2	13,25 – 13,4
6,31175 – 6,31225	123 – 138	2200 – 2300	14,47 – 14,5
8,291 – 8,294	149,9 – 150,05	2310 – 2390	15,35 – 16,2
8,362 – 8,366	156,52475 – 156,52525	2483,5 – 2500	17,7 – 21,4
8,41425 – 8,41475	162,0125 – 167,17	3260 – 3267	23,6 – 24
12,29 – 12,293	167,72 – 173,2	3332 – 3339	31,2 – 31,8
12,57675 – 12,57725	322 – 335,4	3600 – 4400	Above 38,6
13,36 – 13,41			

Acceptance limits for emissions in non-restricted frequency bands

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz
b) If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.
c) In either case, attenuation to levels below the 15.209 general radiated emissions limits is not required

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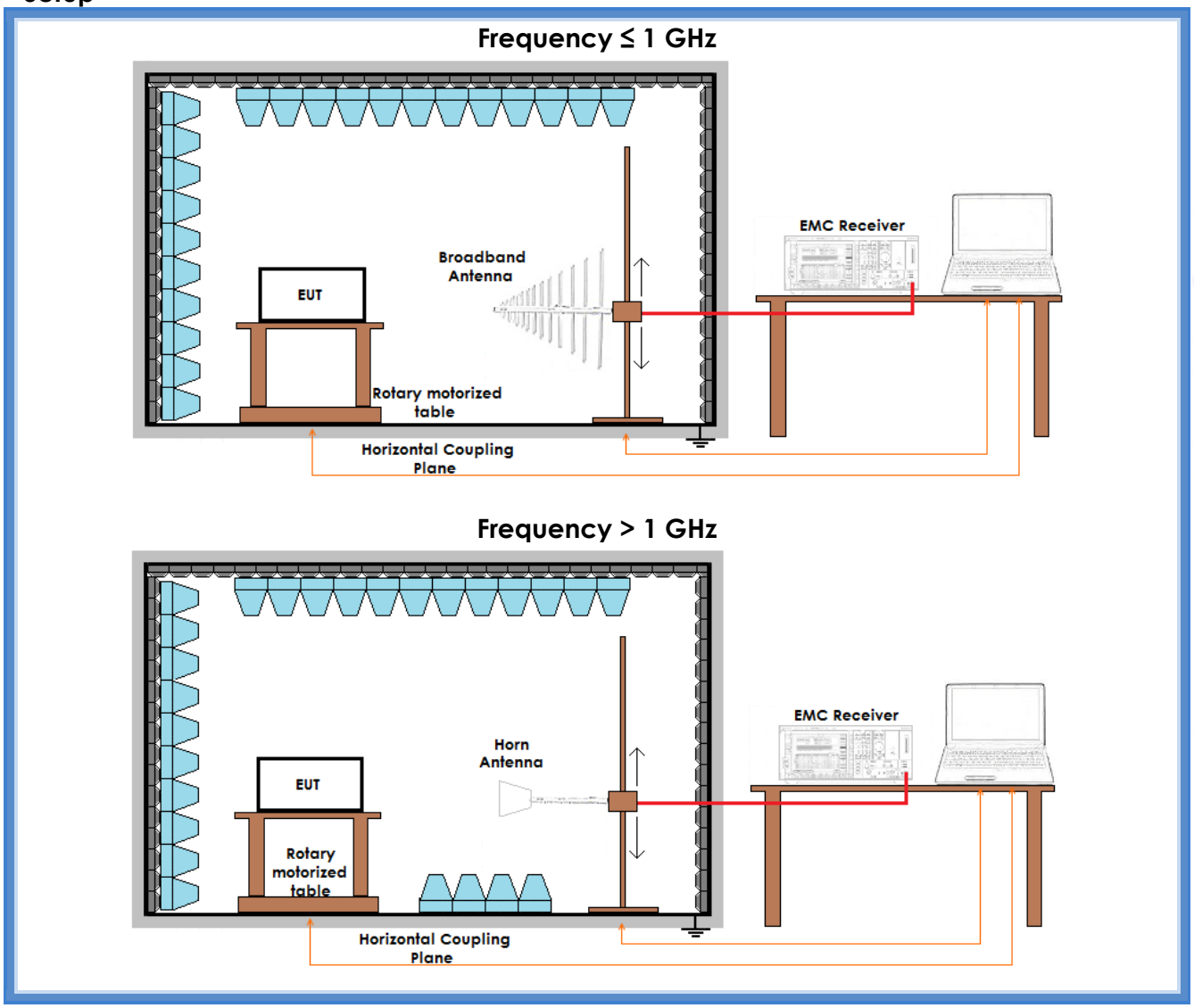
Setup



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Result

AV detector

Harmonic	Limits (dBµV/m)	Level (dBµV/m)			Results
		902,50 MHz channel	915,00 MHz channel	927,00 MHz channel	
II	54	47,22	51,60	50,61	Complies
III	54	45,19	44,10	44,21	Complies
IV	54	47,36	48,28	47,23	Complies
V	54	48,65	47,29	44,92	Complies
VI	54	50,99	53,60	52,58	Complies
VII	54	44,31	47,87	45,03	Complies
VIII	54	49,21	47,86	48,25	Complies
IX	54	46,68	46,75	44,27	Complies
X	54	45,62	46,24	More than 20 dB below limit	Complies

Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values. No spurious other then harmonics have been found. The results have been extrapolated to the specified distance using an extrapolation factor. For all harmonics it was considered the limit of 54 dBµV/m as a worst case.

Peak detector

Harmonic	Limits (dBµV/m)	Level (dBµV/m)			Results
		902,50 MHz channel	915,00 MHz channel	927,00 MHz channel	
II	74	49,70	53,31	52,44	Complies
III	74	50,78	50,88	51,80	Complies
IV	74	50,91	51,76	50,95	Complies
V	74	52,02	50,93	49,42	Complies
VI	74	54,68	56,54	55,90	Complies
VII	74	50,51	53,93	51,20	Complies
VIII	74	54,61	53,93	54,84	Complies
IX	74	54,77	54,80	53,99	Complies
X	74	54,30	54,62	More than 20 dB below limit	Complies

Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values. No spurious other then harmonics have been found. The results have been extrapolated to the specified distance using an extrapolation factor. For all harmonics it was considered the limit of 74 dBµV/m as a worst case.

Result: The requirements are met

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