CMC Centro Misure Compatibilità S.r.l.
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LAB N° 0168

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

TEST REPORT nr. R18044701

Federal Communication Commission (FCC)

Test item

Description .....: DIGITAL CONTROLLER WITH ADVANCED ENERGY SAVING MANAGEMENT AND BLUETOOTH CONNECTIVITY

Trademark .....: EMERSON

Model/Type .....: XR30CHC 16+8A 110V

FCC ID .....: ZG501XRCHC

Test Specification

Standard.....: FCC Rules & Regulations, Title 47:2017
Part 15 paragraph(s): 209

Client's name .....: DIXELL S.r.l.

Address .....: Via dell'Industria, 27 – 32016 Alpago (BL) – ITALY

Manufacturer's name : Same as client

Address .....: --

Report

Tested by .....: C. Panozzo .....

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

Date of issue .....: 28.06.18

Contents.....: 57 pages

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1. Summary

Standard:

FCC Rules & Regulations, Title 47:2017
Part 15 paragraph(s): 209

Test specifications	*Environmental Phenomena*	*Tests sequence*	*Result*
Part 15.209	Emissions in restricted frequency bands and in unrestricted frequency bands	1	Complies
Part 15.209	Spurious emission	2	Complies

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

2. Description of Equipment under test (EUT)

Power supply	:	120 V ~ 60 Hz single-phase + earth
Type of equipment	:	☑ Transmitter Unit
		☑ Receiver Unit
Type of station	:	☑ Fixed station
		❑ Portable station
		❑ Mobile station
Frequency band	:	2400 – 2483,5 MHz
Nominal frequencies	:	F_L: 2402 MHz F_M: 2439 MHz F_H: 2479 MHz

2.1 *Test Site*

Company	:	CMC Centro Misure Compatibilità S.r.l.
Address	:	Via della Fisica, 20
		36016 Thiene (VI) – ITALY
Test site facility's FCC registration number	:	182474

3. Testing and sampling

Date of receipt of test item	:	22.02.18
Testing start date	:	20.06.18
Testing end date	:	20.06.18
Samples tested nr.	:	1
Sampling procedure.	:	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 P180234

4. Operative conditions

EUT exercising	:	EUT in continuous transmission at maximum power
Test configuration	:	EUT classified as table top equipment

5. Equipment list

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*	*Last calibration*	*Due date calibration*
CMC S108	EMCO	3115	Horn Antenna	9811-5622	June '16	June '19
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '18	January '19
CMC S241	Schwarzbeck	BBV 9718	Broadband Preamplifer (0,5-18GHz)	9718-126	January '18	January '19
CMC S251	Schwarzbeck	BBV 9745	Broadband Preamplifer (9kHz - 2GHz)	9745-0019	September '17	September '18
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Biconical Antenna (30-300MHz)	831	June '16	June '19
CMC S287	Schwarzbeck	VUSLP 9111B	Log-periodic Antenna (200 MHz-3Ghz)	9111B-203	June '16	June '19
CMC S290	Schwarzbeck	BBHA 9170	Horn Antenna (15-26,5 GHz)	9170-043	October '16	October '19
CMC S298	RIGOL	DSG3060	RF Signal Generator (9kHz-6GHz)	DSG3A183600076	November '17	November '18

6. Measurement uncertainty

Test	Test Setup	Expanded uncertainty	Note
Conducted emission CISPR 16 LISN 50uH 0,009-0,0150MHz	PE001_01	3,4 dB	1
Conducted emission CISPR 16 LISN 50uH 0,150-30,0MHz	PE001_01	2,8 dB	1
Conducted emission CISPR 16 Voltage Probe 0,15-30MHz	PE001_02	2,6 dB	1
Conducted emission CISPR 16 Current Probe 0,15-30MHz	PE001_03	2,2 dB	1
Conducted emission CISPR 16 ISN 0,15-30MHz	PE001_04	4,5 dB	1
Clic CISPR 16 LISN 50uH 0,150-30,0MHz	PE001_05	3,1 dB	1
Disturbance Power 30-300 MHz	PE002_01	3,4 dB	1
Radiated Emission LAS 0,15-30MHz	PE003_01	1,5 dB	1
Radiated Emission CISPR 16 Loop Ant. 0,15-30MHz	PE004_01	3,8 dB	1
Radiated Emission CISPR 16 Bicon. Ant. 30-300MHz	PE004_02	3,3 dB	1
Radiated Emission CISPR 16 LogP. Ant. 300-1000MHz	PE004_03	3,1 dB	1
Radiated Emission CISPR 16 Horn Ant. 1-18GHz	PE004_04	3,6 dB	1
Human Exposure to electromagnetic fields	PE005_01	15,0 %	1
Harmonic current emissions test	PE006_01	10 mA + 1,6 %	1
Voltage fluctuation and flicker test	PE007_01	4,2 %	1
Radiated Immunity 80MHz-6GHz	PE102_XX	2,1 dB 0,82 V/m a 3V/m	1
Conducted Immunity 0,15-230MHz	PE105_XX	1,2 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	6,24 % 18,7 A/m a 300A/m	1
Dumped Magnetic field	PE108_01	6,24 % 1,87 A/m a 30A/m	1
Common mode conducted immunity	PE112_01	2,20 % 0,22 V a 10V	1

Test	Test Setup	Expanded uncertainty	Note
Power/Spurious 9kHz-30MHz	PR001_01	3,8 dB	1
Power/Spurious ERP 30-1000MHz d=10m	PR001_02+03	4,3 dB	1
Misura della potenza EiRP 1-18GHz d=3m	PR001_04	4,3 dB	1
Misura della potenza EiRP 18-40GHz d=3m	PR001_05	5,5 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	1,2 dB	1
Adjacent channel power	PR002_01+02	1,2 dB	1
Blocking	PR002_01+02	1,2 dB	1

Note 1:
The expanded uncertainty reported according to EN55016-4-2:2011 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

7. Reference documents

Reference no.	*Description*
FCC Rules and Regulation Title 47 part 15:2017	--
ANSI C63.4:2014	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz
ANSI C63.10:2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 DTS Meas Guidance v04	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
Internal Procedure PM001 rev. 3.0 (Quality Manual)	Measure Procedure
Internal procedure INC_M rev. 9.0 (Quality Manual)	Measurement uncertainty calculation

8. Deviation from test specification

None

9. Test case verdicts

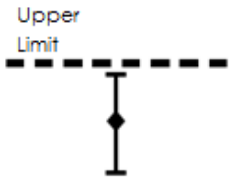
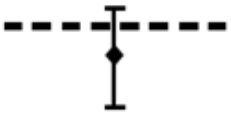
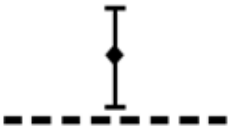
Test case does not apply to the test object	:	N.A.
Test item does meet the requirement	:	Complies
Test item does not meet the requirement	:	Does not comply
Test not performed	:	N.E.

10. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 9.0.

Judgement of compliance:

Case 1	Case 2	Case 3	Case 4
			
The sample complies with the requirement.	The sample complies with the requirement.	The sample does not comply with the requirement.	The sample does not comply with the requirement.
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.

10.1 Emissions in restricted frequency bands and in unrestricted frequency bands

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 date: June 20th, 2018
- Technician: C. Panozzo

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 6 of this test report

Test specification

Port: Enclosure
Frequency range: 30 – 26000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT height about the floor:
80 cm for frequencies ≤ 1000 MHz
150 cm for frequencies > 1000 MHz
EUT – Antenna distance:
10 m for frequencies ≤ 1000 MHz
3 m for frequencies > 1000 MHz

Environmental conditions

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

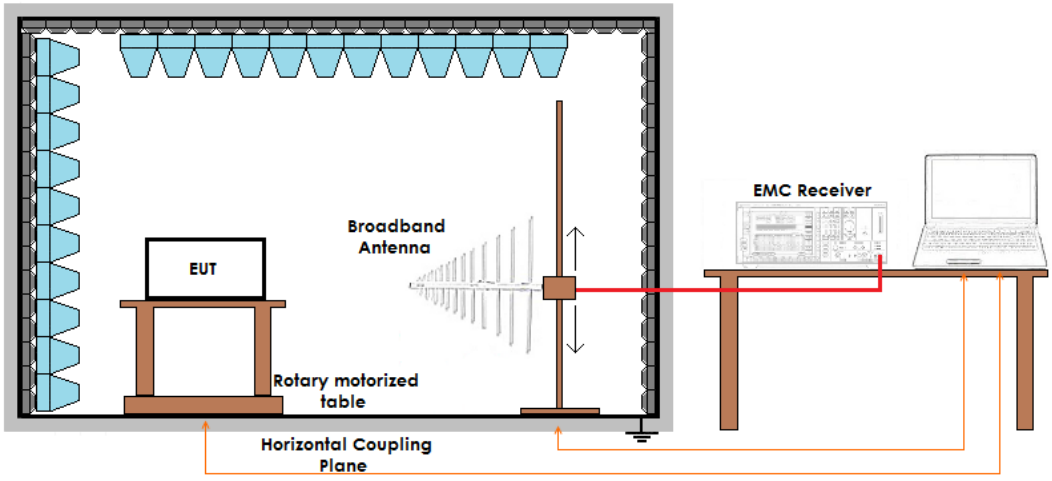
Acceptance limits

Frequency range (MHz)	*Test distance (m)*	*Limits [dB(µV/m)]*	
30 to 88	3	40	
88 to 216	3	43,5	
216 to 960	3	46,0	
Above 960	3	53,9	
	Test distance (m)	*Linear average detector [dB(µV/m)]*	*Peak detector [dB(µV/m)]*
Above 1000	3	53,9	73,9

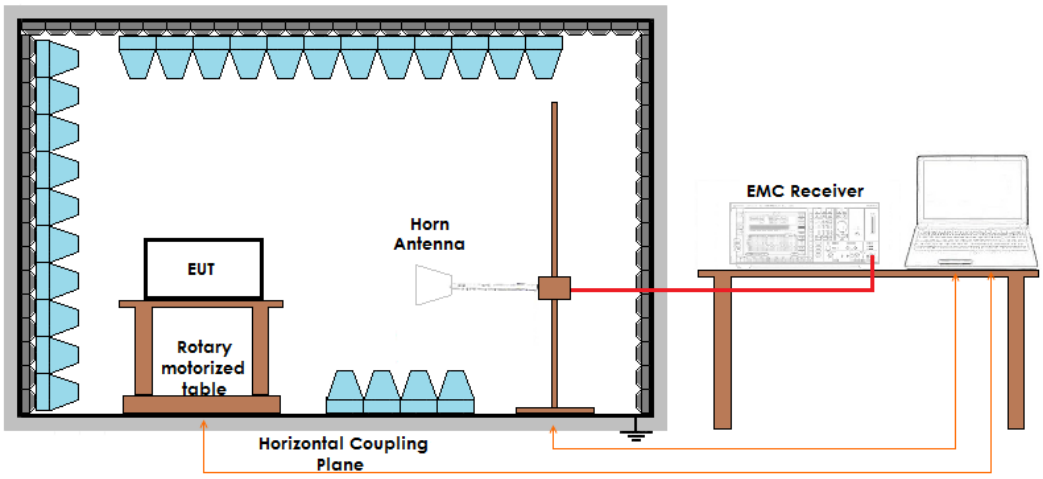
Remarks: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Setup

Frequency ≤ 1 GHz



Frequency > 1 GHz



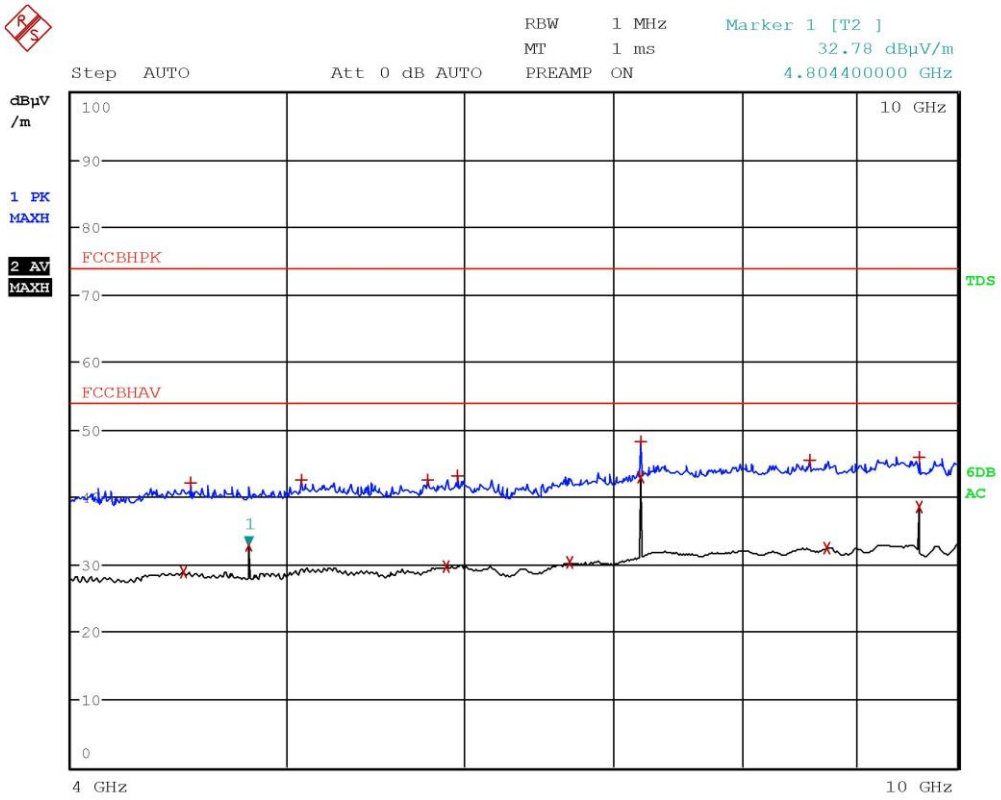
Result

Polarization	*Frequency Range (MHz)*	*Graphs*	*Remarks*	*Result*
H	4000 – 10000	G18044701	Lowest channel	Complies
V	4000 – 10000	G18044702	Lowest channel	Complies
V	4000 – 10000	G18044703	Medium channel	Complies
H	4000 – 10000	G18044704	Medium channel	Complies
H	4000 – 10000	G18044705	Highest channel	Complies
V	4000 – 10000	G18044706	Highest channel	Complies
V	1000 – 4000	G18044707	Highest channel	Complies
H	1000 – 4000	G18044708	Highest channel	Complies
H	1000 – 4000	G18044709	Medium channel	Complies
V	1000 – 4000	G18044710	Medium channel	Complies
V	1000 – 4000	G18044711	Lowest channel	Complies
H	1000 – 4000	G18044712	Lowest channel	Complies
H	10000 – 18000	G18044713	Worst case	Complies
V	10000 – 18000	G18044714	Worst case	Complies
V	18000 – 26000	G18044715	Worst case	Complies
H	18000 – 26000	G18044716	Worst case	Complies
V	30 – 300	G18044717	Worst case	Complies
H	30 – 300	G18044718	Worst case	Complies
H	300 – 1000	G18044719	Worst case	Complies
V	300 – 1000	G18044720	Worst case	Complies

Remarks: Measurements at frequencies lower than 1000 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with different conversion factors, based on the measuring distance provided by the standard. Peaks above the limits are caused by the nominal transmitting frequencies

Graphs Legend
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a x

Graphs



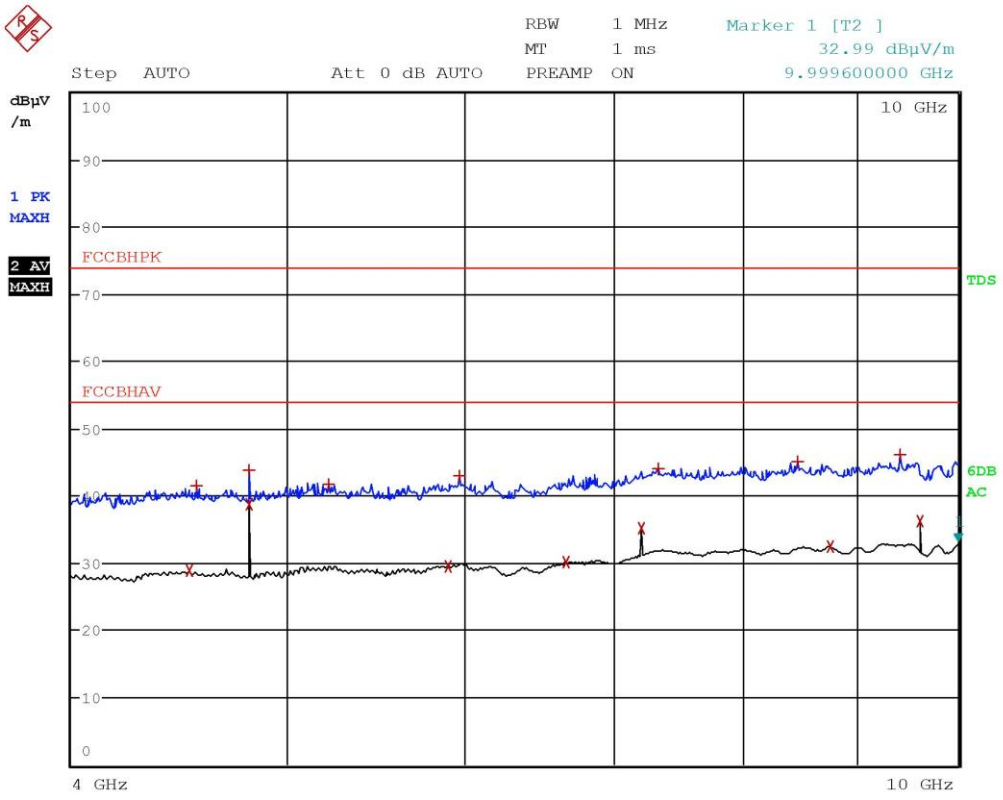
Panozzo 18044701 Horiz. In funzione Tx Ch42

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	4.4892 GHz	28.91	-25.06
1 Max Peak	4.5268 GHz	42.08	-31.89
2 Average	4.8044 GHz	32.77	-21.20
1 Max Peak	5.072 GHz	42.60	-31.37
1 Max Peak	5.7864 GHz	42.48	-31.49
2 Average	5.898 GHz	29.66	-24.31
1 Max Peak	5.9664 GHz	43.08	-30.89
2 Average	6.6964 GHz	30.26	-23.71
1 Max Peak	7.2068 GHz	48.19	-25.78
2 Average	7.2068 GHz	42.88	-11.09
1 Max Peak	8.5812 GHz	45.48	-28.49
2 Average	8.7376 GHz	32.47	-21.50
1 Max Peak	9.6088 GHz	45.97	-28.00
2 Average	9.6088 GHz	38.47	-15.50

Panozzo 18044701 Horiz. In funzione Tx Ch42



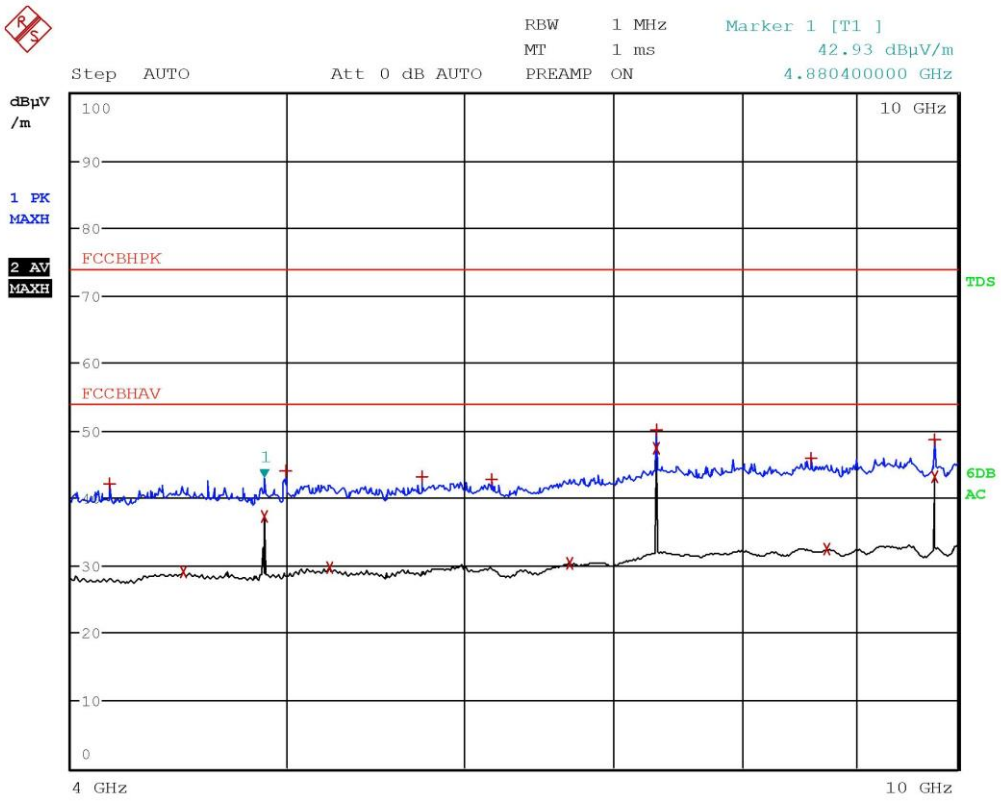
Panozzo 18044702 Vert. In funzione Tx Ch42

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	4.5148 GHz	28.90	-25.08
1 Max Peak	4.5508 GHz	41.40	-32.57
1 Max Peak	4.8044 GHz	43.86	-30.11
2 Average	4.8044 GHz	38.85	-15.12
1 Max Peak	5.2184 GHz	41.79	-32.18
2 Average	5.8996 GHz	29.60	-24.37
1 Max Peak	5.9744 GHz	43.00	-30.97
2 Average	6.6668 GHz	30.18	-23.79
2 Average	7.2068 GHz	35.26	-18.71
1 Max Peak	7.3376 GHz	43.94	-30.04
1 Max Peak	8.4648 GHz	45.06	-28.91
2 Average	8.7556 GHz	32.38	-21.59
1 Max Peak	9.4168 GHz	46.11	-27.86
2 Average	9.6088 GHz	36.34	-17.63

Panozzo 18044702 Vert. In funzione Tx Ch42



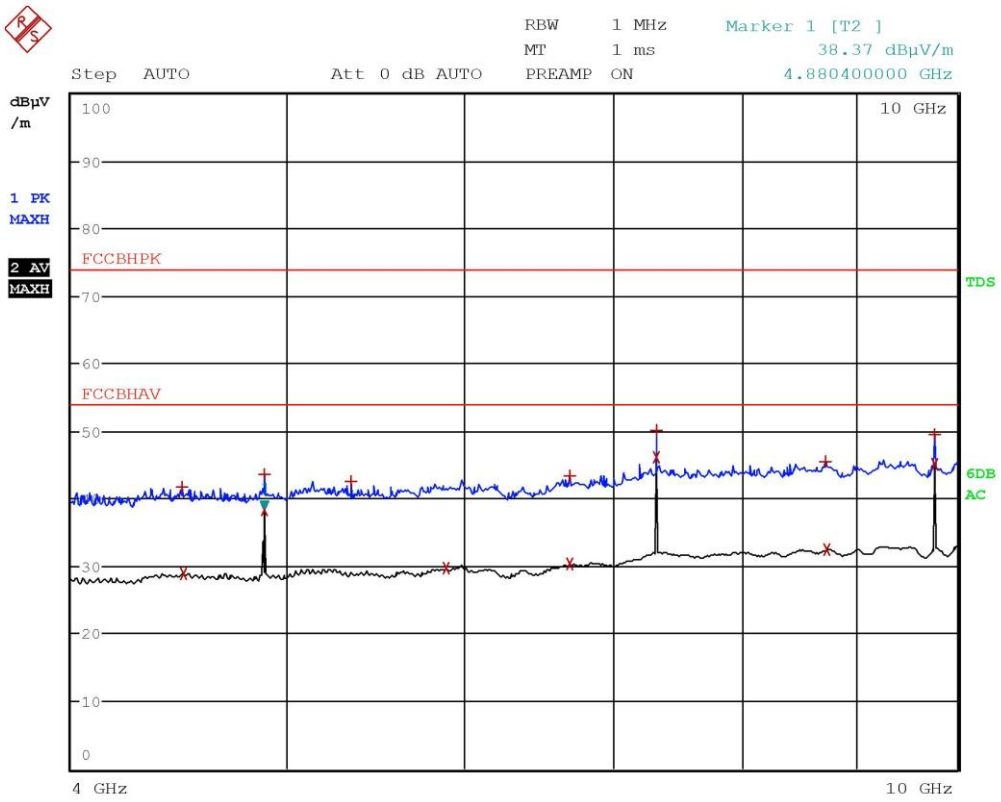
Panozzo 18044703 Vert. In funzione Tx Ch61

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

	TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1	Max Peak	4.1592 GHz	42.07	-31.90
2	Average	4.4904 GHz	28.99	-24.98
2	Average	4.8804 GHz	37.24	-16.73
1	Max Peak	4.9928 GHz	44.09	-29.88
2	Average	5.2248 GHz	29.62	-24.35
1	Max Peak	5.7512 GHz	43.13	-30.84
1	Max Peak	6.1764 GHz	42.84	-31.13
2	Average	6.6944 GHz	30.28	-23.69
1	Max Peak	7.3208 GHz	50.11	-23.86
2	Average	7.3208 GHz	47.35	-6.62
1	Max Peak	8.6012 GHz	45.87	-28.10
2	Average	8.7356 GHz	32.48	-21.49
1	Max Peak	9.7608 GHz	48.69	-25.28
2	Average	9.7608 GHz	43.08	-10.89

Panozzo 18044703 Vert. In funzione Tx Ch61



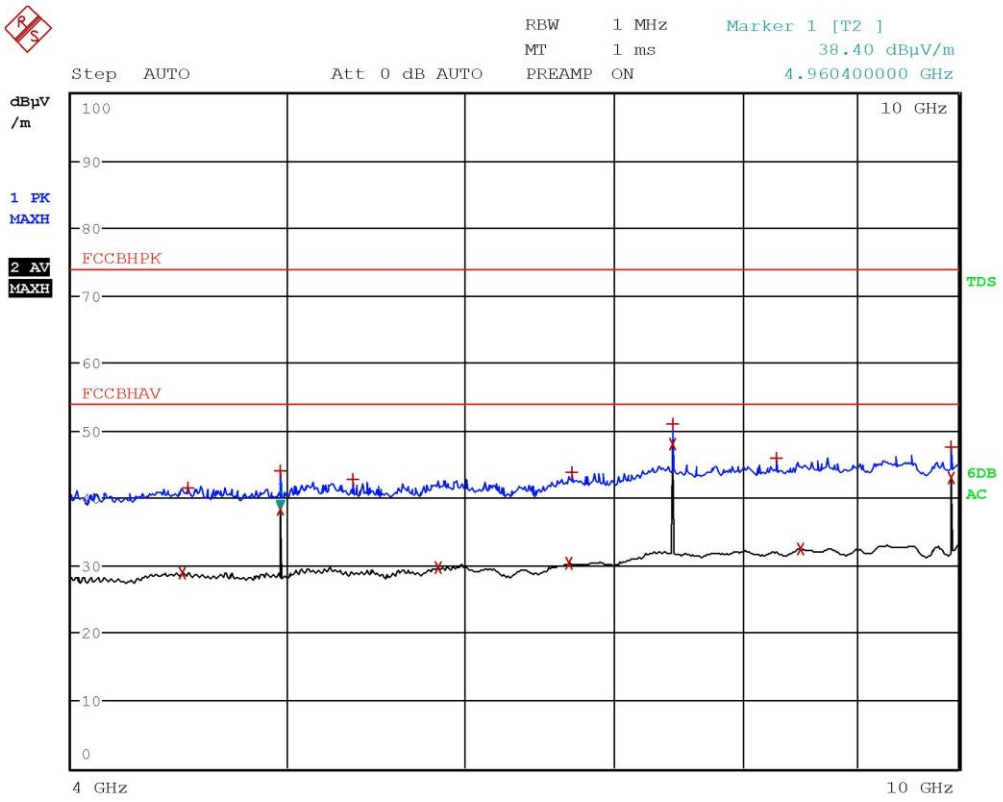
Panozzo 18044704 Horiz. In funzione Tx Ch61

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	4.4832 GHz	41.74	-32.23
2 Average	4.4896 GHz	28.93	-25.04
1 Max Peak	4.8804 GHz	43.48	-30.49
2 Average	4.8804 GHz	38.37	-15.60
1 Max Peak	5.3428 GHz	42.50	-31.47
2 Average	5.8976 GHz	29.66	-24.31
2 Average	6.6944 GHz	30.31	-23.66
1 Max Peak	6.7004 GHz	43.35	-30.62
1 Max Peak	7.3208 GHz	50.13	-23.84
2 Average	7.3208 GHz	46.06	-7.91
1 Max Peak	8.7236 GHz	45.39	-28.58
2 Average	8.7412 GHz	32.44	-21.53
1 Max Peak	9.7608 GHz	49.45	-24.52
2 Average	9.7608 GHz	45.08	-8.89

Panozzo 18044704 Horiz. In funzione Tx Ch61



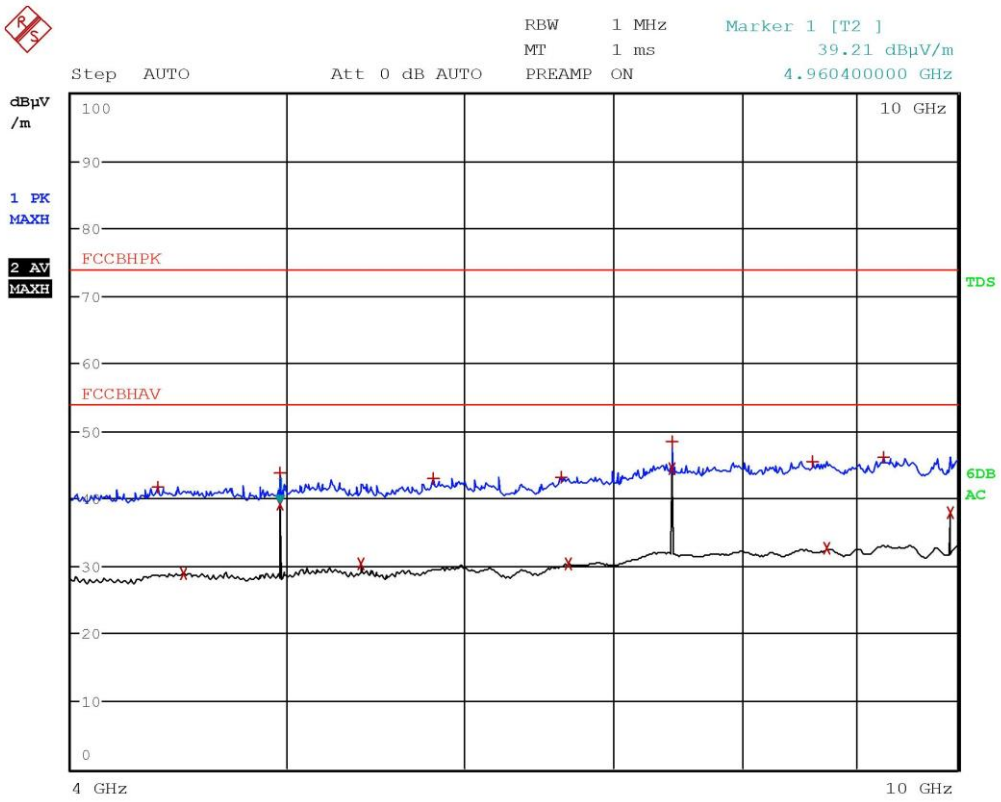
Panozzo 18044705 Horiz. In funzione Tx Ch81

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	4.488 GHz	28.95	-25.02
1 Max Peak	4.5092 GHz	41.51	-32.46
1 Max Peak	4.9604 GHz	43.94	-30.03
2 Average	4.9604 GHz	38.40	-15.58
1 Max Peak	5.3492 GHz	42.83	-31.14
2 Average	5.8396 GHz	29.70	-24.27
2 Average	6.6896 GHz	30.32	-23.65
1 Max Peak	6.7056 GHz	43.72	-30.25
1 Max Peak	7.4408 GHz	50.88	-23.09
2 Average	7.4408 GHz	47.91	-6.06
1 Max Peak	8.2868 GHz	45.97	-28.00
2 Average	8.4964 GHz	32.49	-21.48
1 Max Peak	9.9208 GHz	47.54	-26.43
2 Average	9.9208 GHz	43.00	-10.97

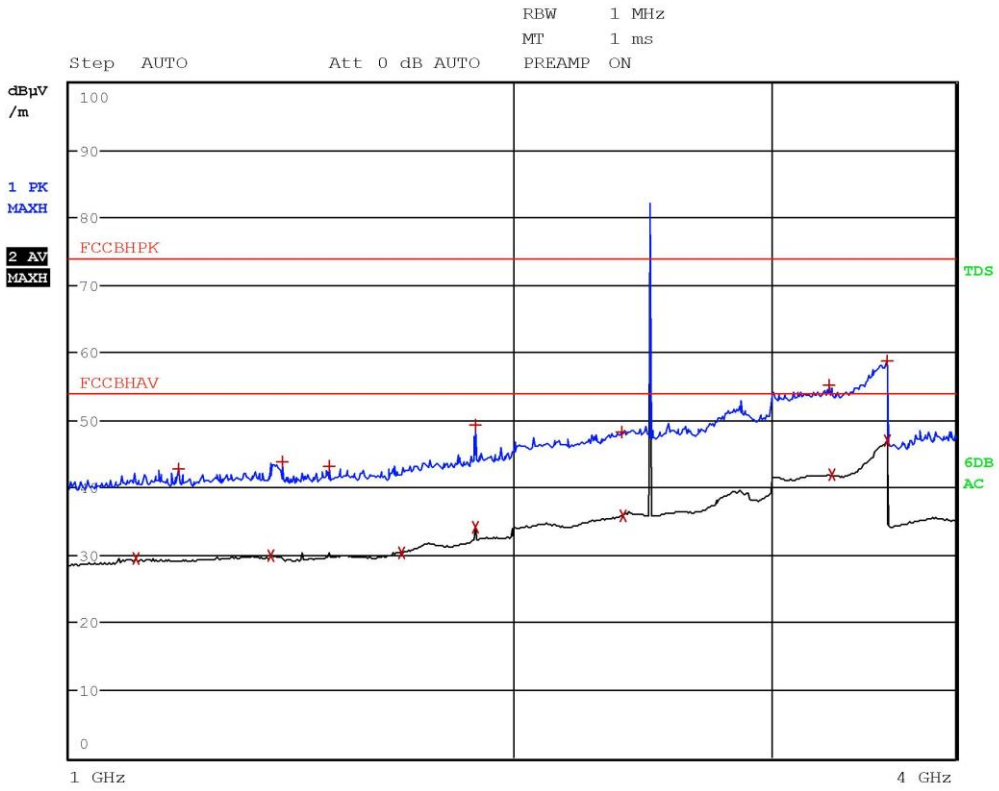
Panozzo 18044705 Horiz. In funzione Tx Ch81



Panozzo 18044706 Vert. In funzione Tx Ch81

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	4.372 GHz	41.75	-32.23
2 Average	4.4892 GHz	28.95	-25.02
1 Max Peak	4.9604 GHz	43.89	-30.08
2 Average	4.9604 GHz	39.20	-14.77
2 Average	5.4 GHz	30.30	-23.67
1 Max Peak	5.8196 GHz	43.05	-30.92
1 Max Peak	6.6404 GHz	43.26	-30.71
2 Average	6.6904 GHz	30.31	-23.66
1 Max Peak	7.4408 GHz	48.44	-25.53
2 Average	7.4408 GHz	44.49	-9.48
1 Max Peak	8.6048 GHz	45.58	-28.39
2 Average	8.7404 GHz	32.56	-21.41
1 Max Peak	9.26 GHz	46.15	-27.82
2 Average	9.9208 GHz	37.88	-16.09

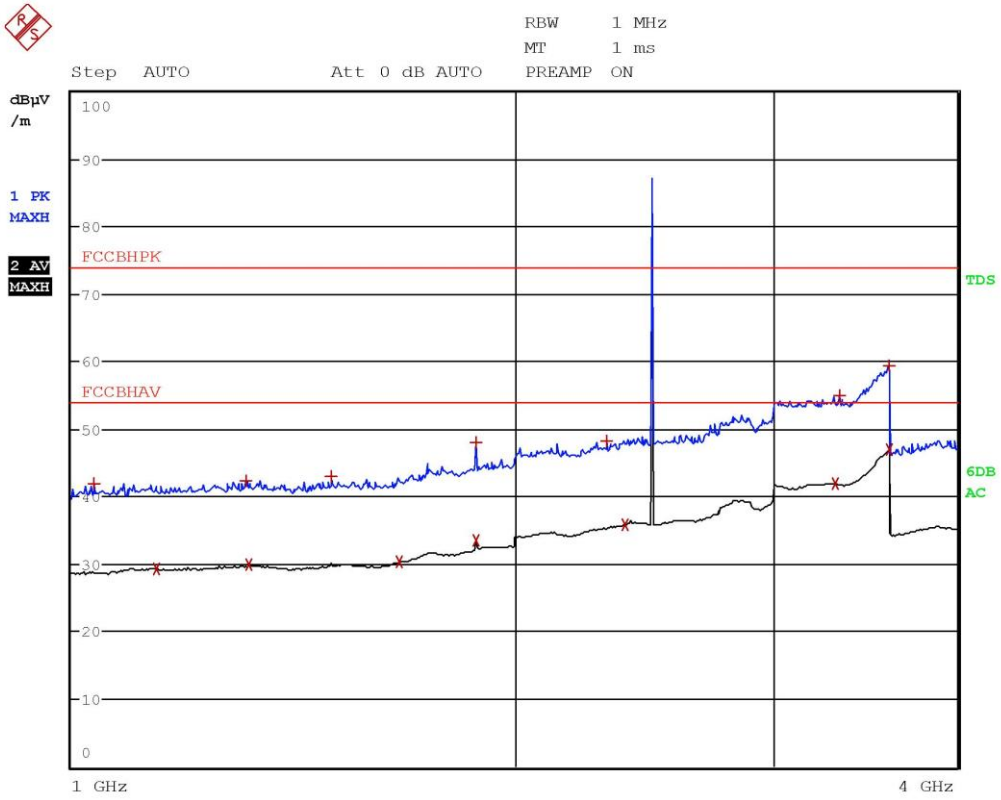
Panozzo 18044706 Vert. In funzione Tx Ch81



Panozzo 18044707 Vert. In funzione Tx Ch81

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	1.11 GHz	29.55	-24.42
1 Max Peak	1.1852 GHz	42.68	-31.29
2 Average	1.3712 GHz	29.98	-23.99
1 Max Peak	1.3948 GHz	43.88	-30.09
1 Max Peak	1.5 GHz	43.23	-30.74
2 Average	1.6804 GHz	30.37	-23.60
1 Max Peak	1.8856 GHz	49.18	-24.79
2 Average	1.8856 GHz	34.12	-19.85
1 Max Peak	2.3736 GHz	48.29	-25.68
2 Average	2.3776 GHz	35.84	-18.13
1 Max Peak	3.2816 GHz	55.07	-18.90
2 Average	3.2964 GHz	42.00	-11.97
1 Max Peak	3.5968 GHz	58.64	-15.33
2 Average	3.5968 GHz	46.85	-7.12

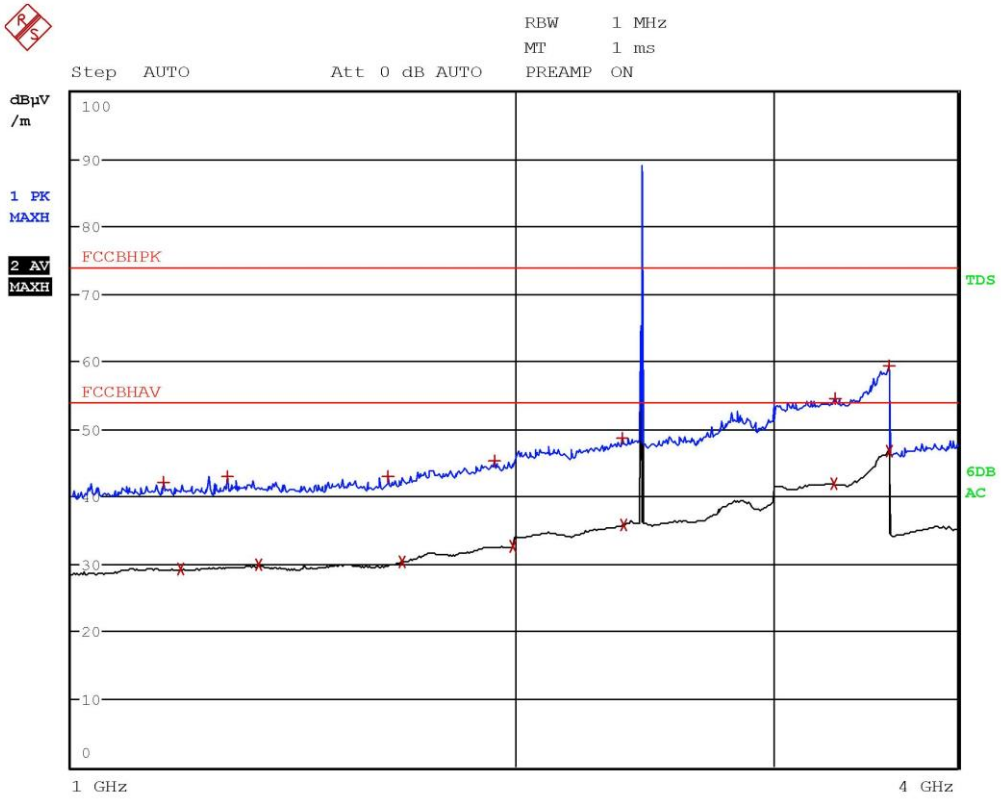
Panozzo 18044707 Vert. In funzione Tx Ch81



Panozzo 18044708 Horiz. In funzione Tx Ch81

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.0364 GHz	41.91	-32.06
2 Average	1.1424 GHz	29.33	-24.65
1 Max Peak	1.3152 GHz	42.40	-31.57
2 Average	1.32 GHz	29.89	-24.08
1 Max Peak	1.5004 GHz	42.94	-31.03
2 Average	1.6712 GHz	30.32	-23.65
1 Max Peak	1.8848 GHz	48.06	-25.91
2 Average	1.8852 GHz	33.44	-20.53
1 Max Peak	2.3124 GHz	48.30	-25.67
2 Average	2.3772 GHz	35.90	-18.07
2 Average	3.3012 GHz	41.94	-12.03
1 Max Peak	3.3264 GHz	55.00	-18.97
1 Max Peak	3.592 GHz	59.26	-14.71
2 Average	3.6 GHz	46.90	-7.07

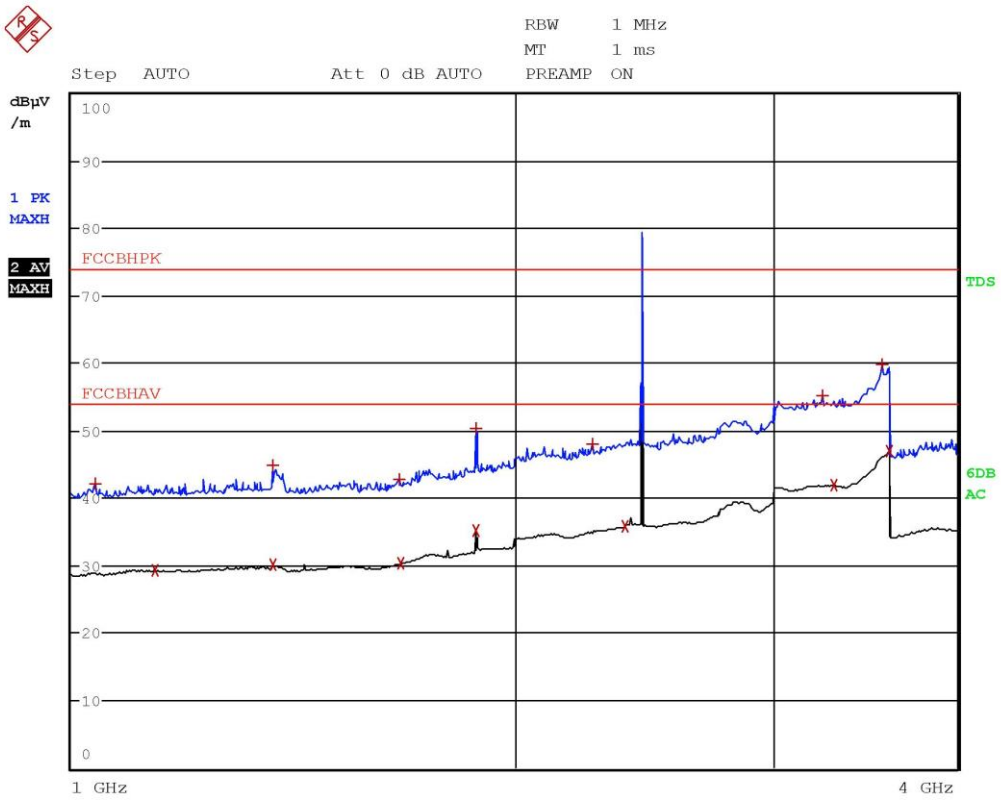
Panozzo 18044708 Horiz. In funzione Tx Ch81



Panozzo 18044709 Horiz. In funzione Tx C61

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.154 GHz	42.19	-31.78
2 Average	1.1864 GHz	29.34	-24.63
1 Max Peak	1.2776 GHz	42.95	-31.03
2 Average	1.34 GHz	29.90	-24.07
1 Max Peak	1.6392 GHz	43.04	-30.93
2 Average	1.6764 GHz	30.38	-23.59
1 Max Peak	1.9368 GHz	45.23	-28.74
2 Average	1.9964 GHz	32.62	-21.35
1 Max Peak	2.3696 GHz	48.73	-25.24
2 Average	2.3744 GHz	35.82	-18.15
2 Average	3.2964 GHz	41.89	-12.08
1 Max Peak	3.3068 GHz	54.49	-19.48
1 Max Peak	3.5948 GHz	59.39	-14.58
2 Average	3.5988 GHz	46.82	-7.15

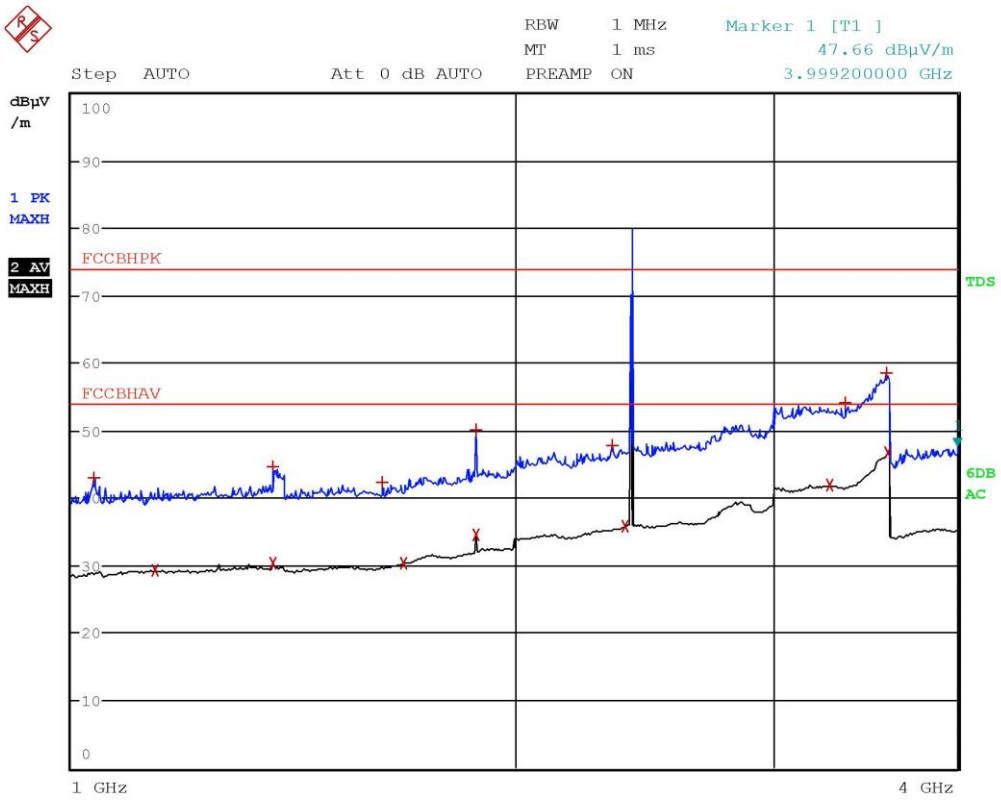
Panozzo 18044709 Horiz. In funzione Tx C61



Panozzo 18044710 Vert. In funzione Tx C61

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.038 GHz	42.05	-31.93
2 Average	1.14 GHz	29.35	-24.62
2 Average	1.3696 GHz	30.08	-23.90
1 Max Peak	1.3704 GHz	44.88	-29.09
1 Max Peak	1.672 GHz	42.82	-31.15
2 Average	1.6736 GHz	30.41	-23.56
1 Max Peak	1.8852 GHz	50.37	-23.60
2 Average	1.8852 GHz	35.29	-18.68
1 Max Peak	2.2592 GHz	48.06	-25.91
2 Average	2.3764 GHz	35.81	-18.16
1 Max Peak	3.2416 GHz	55.23	-18.74
2 Average	3.2948 GHz	41.88	-12.09
1 Max Peak	3.5528 GHz	59.68	-14.29
2 Average	3.6 GHz	46.85	-7.12

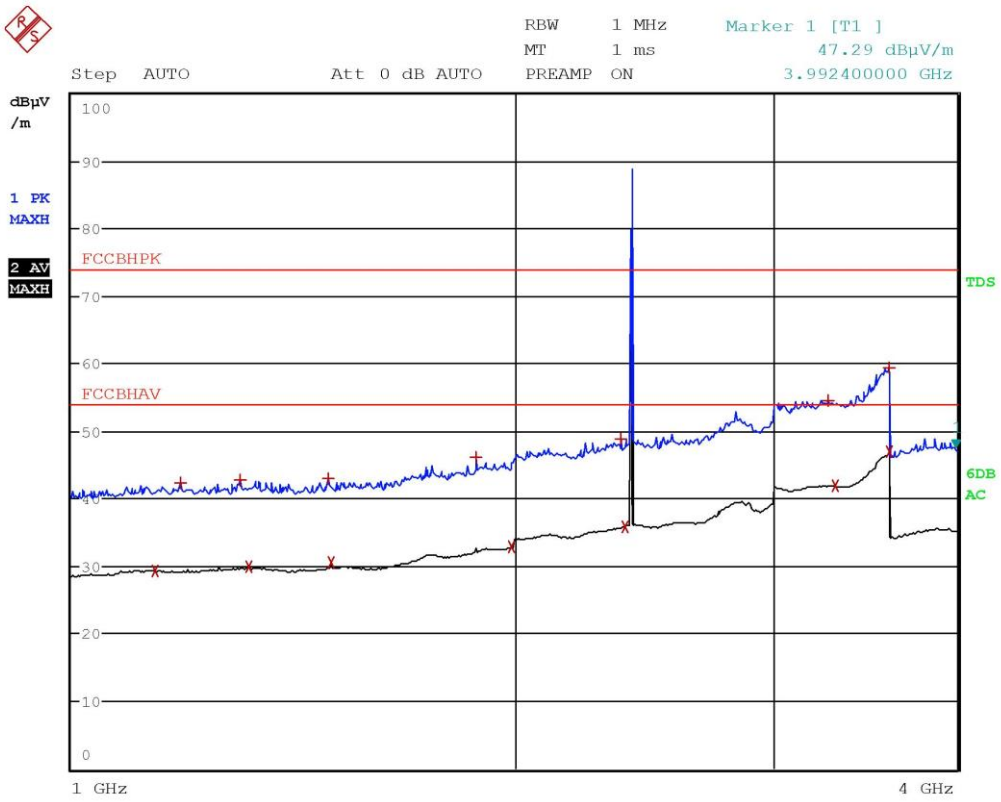
Panozzo 18044710 Vert. In funzione Tx C61



Panozzo 18044711 Vert. In funzione Tx C42

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.0368 GHz	43.02	-30.95
2 Average	1.1396 GHz	29.38	-24.59
1 Max Peak	1.3704 GHz	44.63	-29.34
2 Average	1.372 GHz	30.27	-23.70
1 Max Peak	1.628 GHz	42.23	-31.74
2 Average	1.6812 GHz	30.27	-23.70
1 Max Peak	1.8852 GHz	50.03	-23.94
2 Average	1.8852 GHz	34.56	-19.42
1 Max Peak	2.3332 GHz	47.88	-26.10
2 Average	2.3784 GHz	35.82	-18.15
2 Average	3.2712 GHz	41.89	-12.08
1 Max Peak	3.354 GHz	54.09	-19.88
1 Max Peak	3.5776 GHz	58.40	-15.57
2 Average	3.5908 GHz	46.70	-7.27

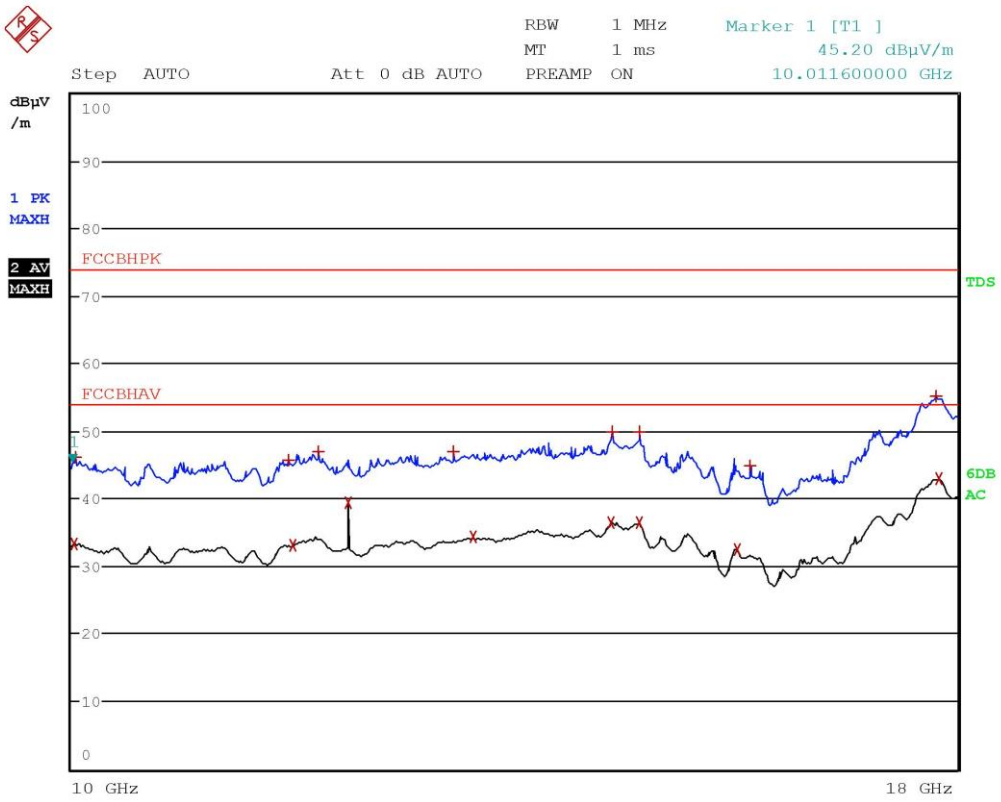
Panozzo 18044711 Vert. In funzione Tx C42



Panozzo 18044712 Horiz. In funzione Tx C42

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	1.1392 GHz	29.36	-24.61
1 Max Peak	1.1864 GHz	42.37	-31.60
1 Max Peak	1.3036 GHz	42.74	-31.23
2 Average	1.32 GHz	29.93	-24.04
1 Max Peak	1.4952 GHz	43.02	-30.95
2 Average	1.5 GHz	30.46	-23.51
1 Max Peak	1.8848 GHz	46.16	-27.81
2 Average	1.9928 GHz	32.81	-21.17
1 Max Peak	2.362 GHz	48.80	-25.18
2 Average	2.376 GHz	35.91	-18.06
1 Max Peak	3.2648 GHz	54.60	-19.37
2 Average	3.3004 GHz	41.96	-12.01
1 Max Peak	3.592 GHz	59.24	-14.73
2 Average	3.5996 GHz	46.89	-7.08

Panozzo 18044712 Horiz. In funzione Tx C42



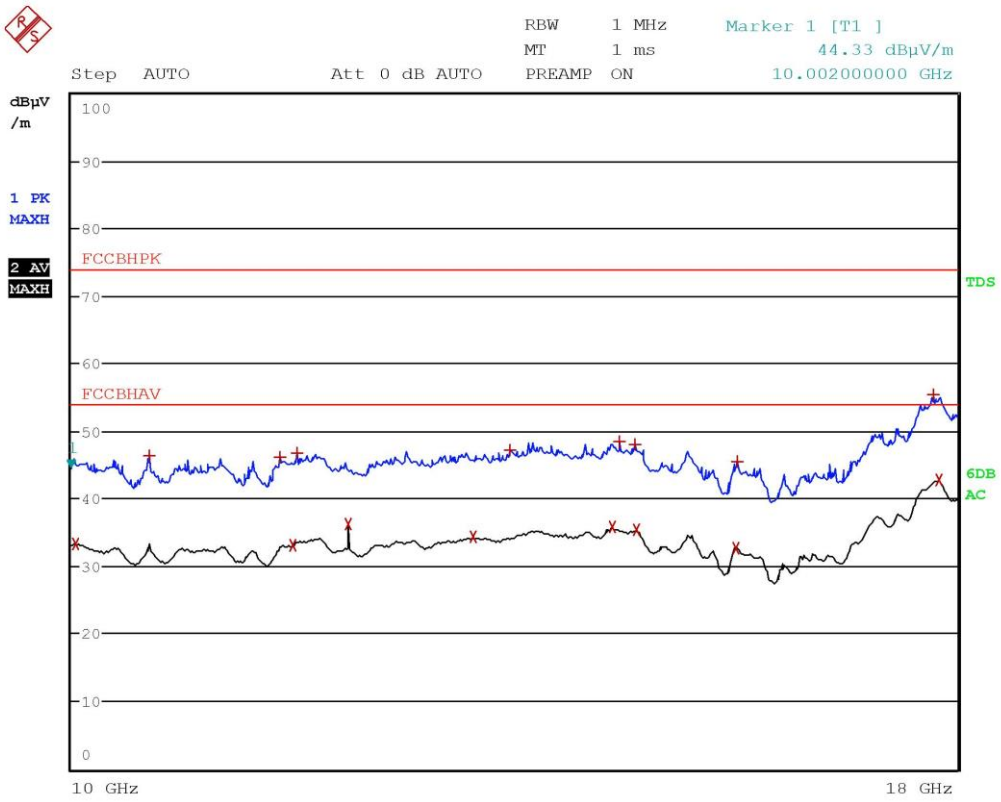
Panozzo 18044713 Horiz. In funzione Worst Case

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	10.0228 GHz	33.30	-20.67
1	Max Peak	10.0268 GHz	46.01	-27.96
1	Max Peak	11.554 GHz	45.64	-28.33
2	Average	11.58 GHz	33.12	-20.86
1	Max Peak	11.7808 GHz	47.01	-26.96
2	Average	12.0112 GHz	39.36	-14.61
1	Max Peak	12.8864 GHz	46.95	-27.02
2	Average	13.0548 GHz	34.26	-19.71
2	Average	14.31 GHz	36.49	-17.48
1	Max Peak	14.3176 GHz	49.84	-24.13
2	Average	14.5732 GHz	36.37	-17.61
1	Max Peak	14.5772 GHz	49.79	-24.19
2	Average	15.5432 GHz	32.41	-21.56
1	Max Peak	15.6932 GHz	44.79	-29.18
1	Max Peak	17.7412 GHz	55.07	-18.90
2	Average	17.7796 GHz	42.96	-11.01

Panozzo 18044713 Horiz. In funzione Worst Case



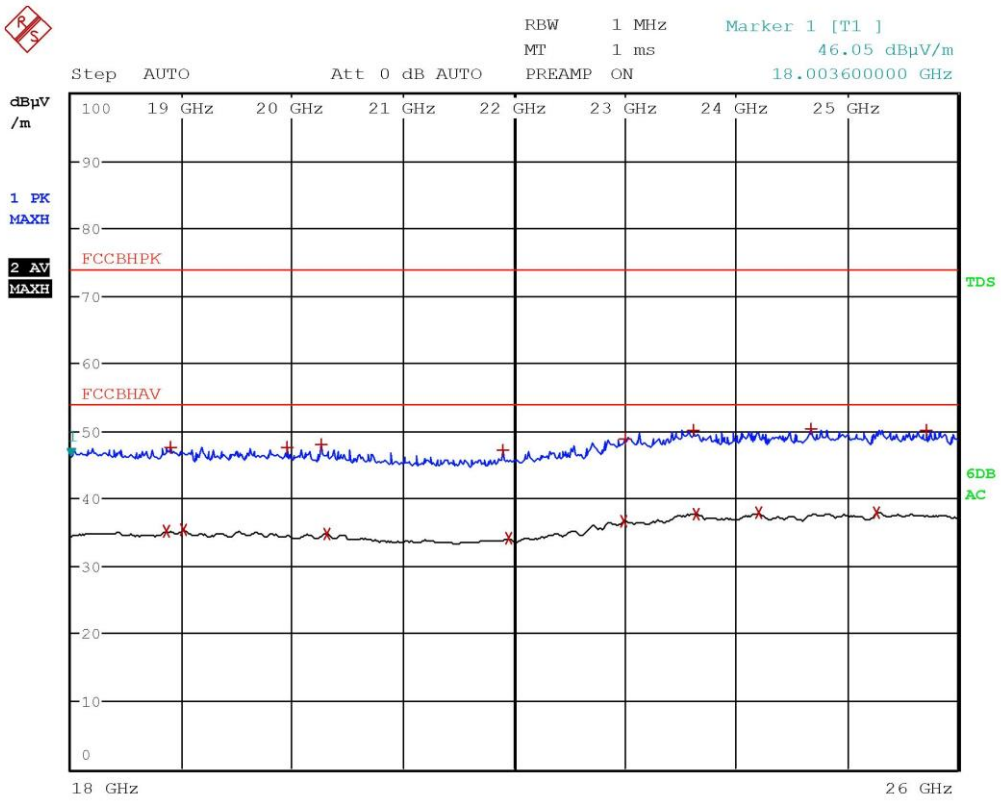
Panozzo 18044714 Vert. In funzione Worst Case

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	10.0244 GHz	33.33	-20.64
1 Max Peak	10.5264 GHz	46.35	-27.62
1 Max Peak	11.4876 GHz	46.03	-27.94
2 Average	11.5804 GHz	33.19	-20.78
1 Max Peak	11.6204 GHz	46.73	-27.24
2 Average	12.0112 GHz	36.13	-17.84
2 Average	13.05 GHz	34.32	-19.65
1 Max Peak	13.3832 GHz	47.23	-26.74
2 Average	14.3144 GHz	35.86	-18.11
1 Max Peak	14.3908 GHz	48.45	-25.52
1 Max Peak	14.5396 GHz	47.91	-26.06
2 Average	14.5416 GHz	35.31	-18.66
2 Average	15.5432 GHz	32.69	-21.28
1 Max Peak	15.5512 GHz	45.51	-28.46
1 Max Peak	17.7128 GHz	55.30	-18.67
2 Average	17.7796 GHz	42.66	-11.31

Panozzo 18044714 Vert. In funzione Worst Case



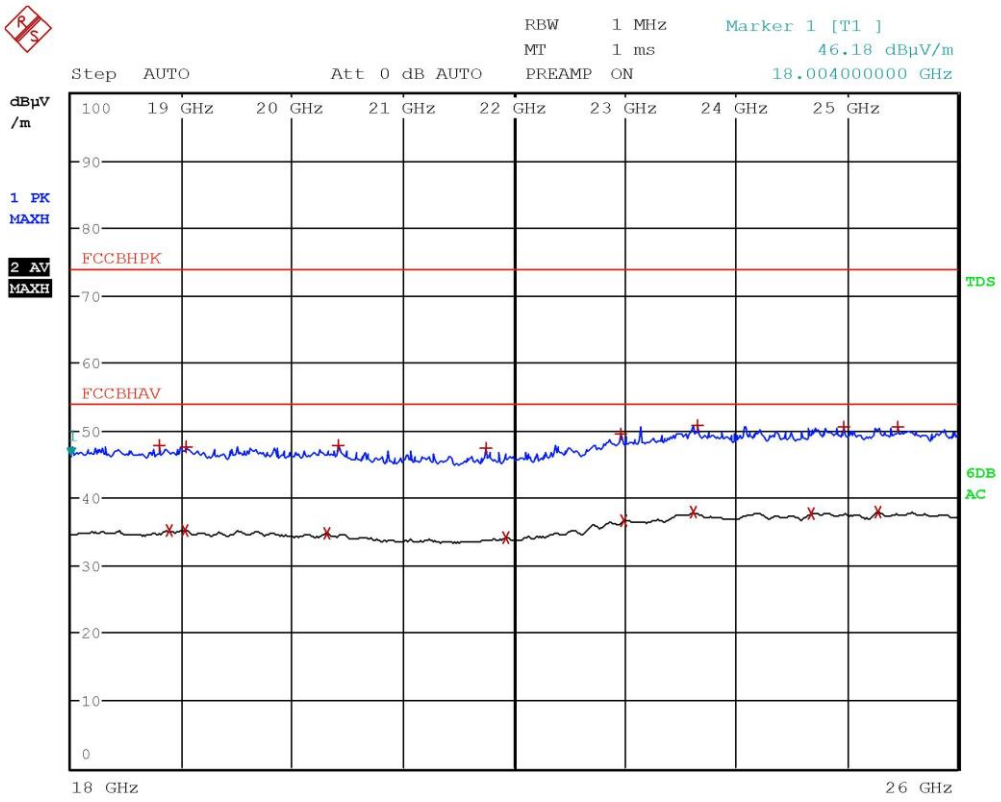
Panozzo 18044715 Vert. In funzione Worst Case

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2 Average	18.8648 GHz	35.12	-18.85
1 Max Peak	18.8908 GHz	47.68	-26.29
2 Average	19.0172 GHz	35.34	-18.63
1 Max Peak	19.9436 GHz	47.63	-26.34
1 Max Peak	20.2612 GHz	47.92	-26.05
2 Average	20.3052 GHz	34.75	-19.22
1 Max Peak	21.8996 GHz	47.26	-26.71
2 Average	21.9448 GHz	34.04	-19.93
2 Average	22.9924 GHz	36.58	-17.40
1 Max Peak	22.998 GHz	48.86	-25.11
1 Max Peak	23.6172 GHz	50.03	-23.94
2 Average	23.6424 GHz	37.77	-16.20
2 Average	24.2036 GHz	37.83	-16.15
1 Max Peak	24.6848 GHz	50.38	-23.59
2 Average	25.2736 GHz	37.95	-16.02
1 Max Peak	25.7216 GHz	50.20	-23.77

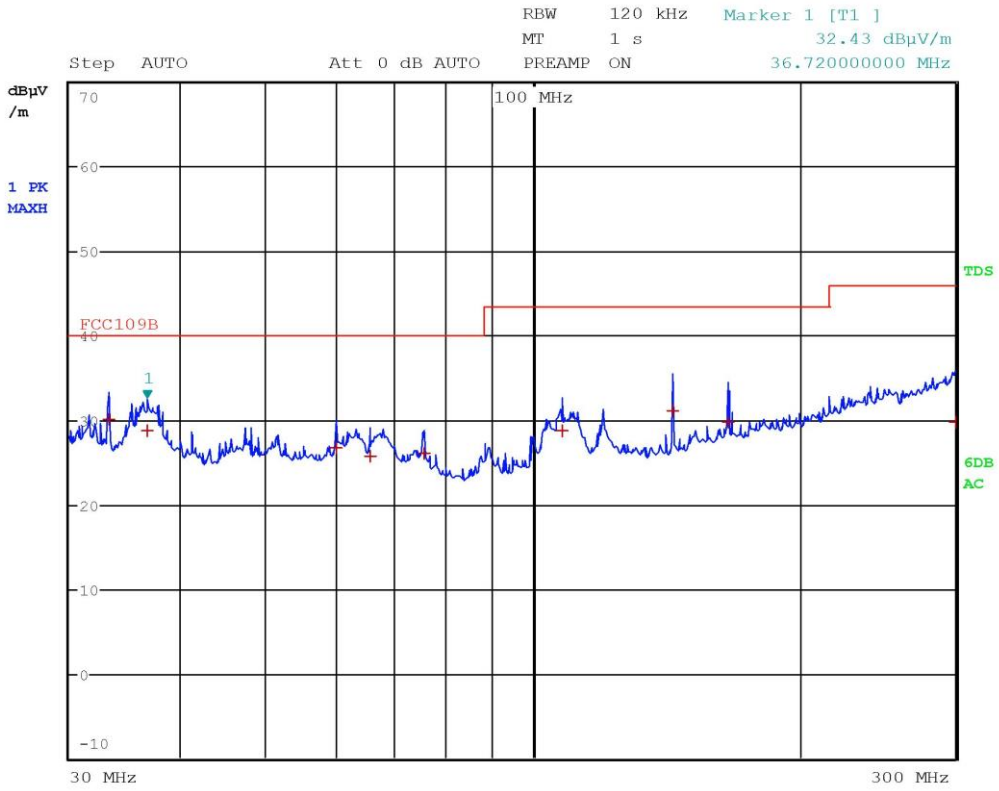
Panozzo 18044715 Vert. In funzione Worst Case



Panozzo 18044716 Horiz. In funzione Worst Case

EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	18.7972 GHz	47.79	-26.18
2 Average	18.8836 GHz	35.15	-18.82
2 Average	19.0236 GHz	35.23	-18.74
1 Max Peak	19.0324 GHz	47.67	-26.30
2 Average	20.3128 GHz	34.74	-19.23
1 Max Peak	20.4072 GHz	47.82	-26.15
1 Max Peak	21.7448 GHz	47.46	-26.51
2 Average	21.9248 GHz	34.04	-19.93
1 Max Peak	22.964 GHz	49.42	-24.55
2 Average	22.9836 GHz	36.59	-17.38
2 Average	23.618 GHz	37.86	-16.11
1 Max Peak	23.6552 GHz	50.66	-23.31
2 Average	24.682 GHz	37.79	-16.18
1 Max Peak	24.9764 GHz	50.55	-23.42
2 Average	25.2828 GHz	37.89	-16.08
1 Max Peak	25.46 GHz	50.47	-23.50

Panozzo 18044716 Horiz. In funzione Worst Case



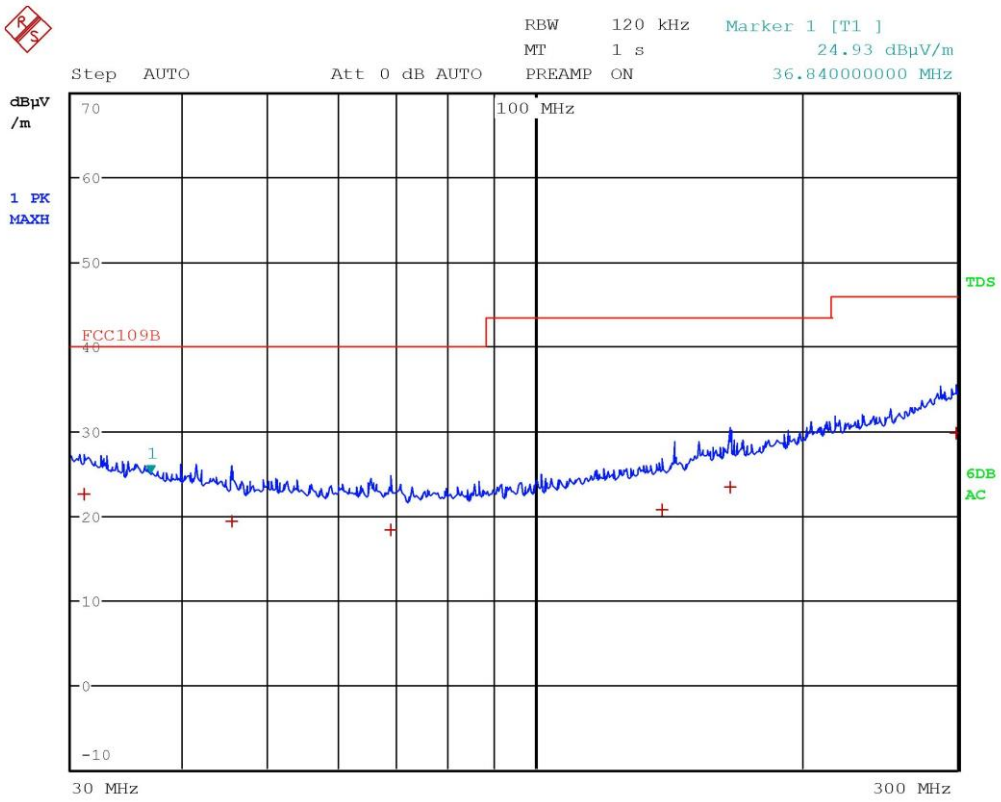
Panozzo 18044717 Vert. In funzione Worst Case

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC109B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	33.2 MHz	30.05	-9.94
1 Quasi Peak	36.72 MHz	28.78	-11.21
1 Quasi Peak	60 MHz	26.70	-13.29
1 Quasi Peak	65.64 MHz	25.69	-14.30
1 Quasi Peak	75.52 MHz	26.01	-13.98
1 Quasi Peak	108 MHz	28.70	-14.81
1 Quasi Peak	144 MHz	31.12	-12.39
1 Quasi Peak	166.48 MHz	29.75	-13.76
1 Quasi Peak	299.88 MHz	29.82	-16.19

Panozzo 18044717 Vert. In funzione Worst Case



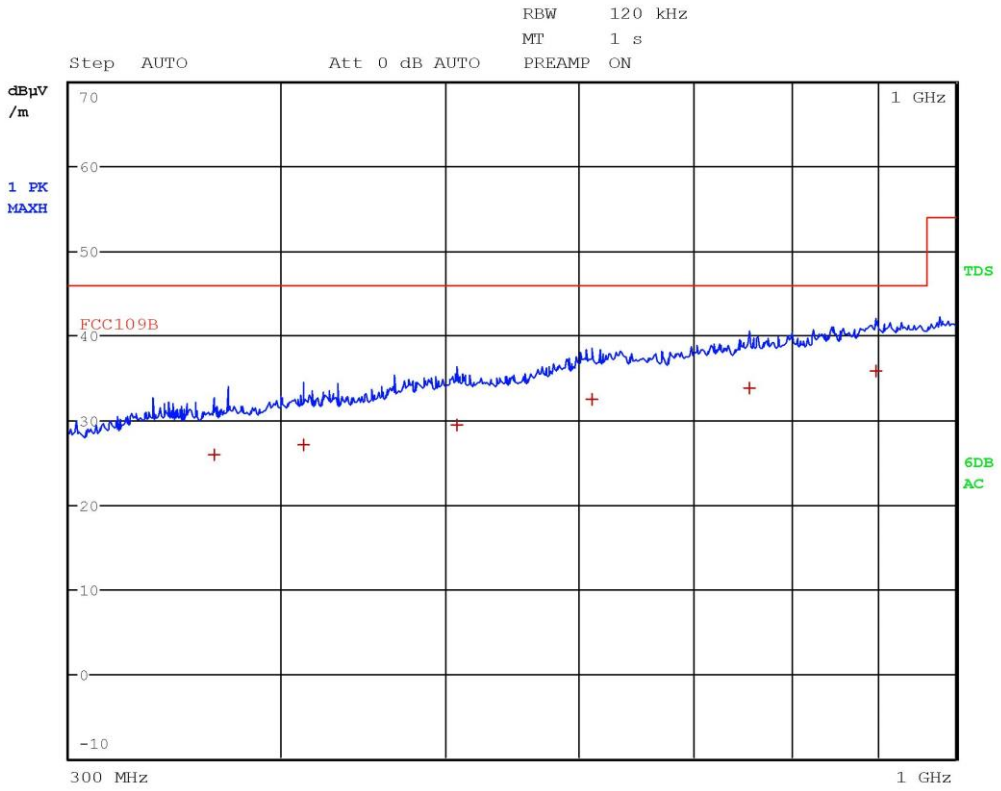
Panozzo 18044718 Horiz. In funzione Worst Case

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC109B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	30.96 MHz	22.50	-17.49
1 Quasi Peak	45.56 MHz	19.34	-20.65
1 Quasi Peak	68.84 MHz	18.28	-21.71
1 Quasi Peak	139.16 MHz	20.70	-22.82
1 Quasi Peak	166.48 MHz	23.29	-20.22
1 Quasi Peak	298.96 MHz	29.70	-16.32

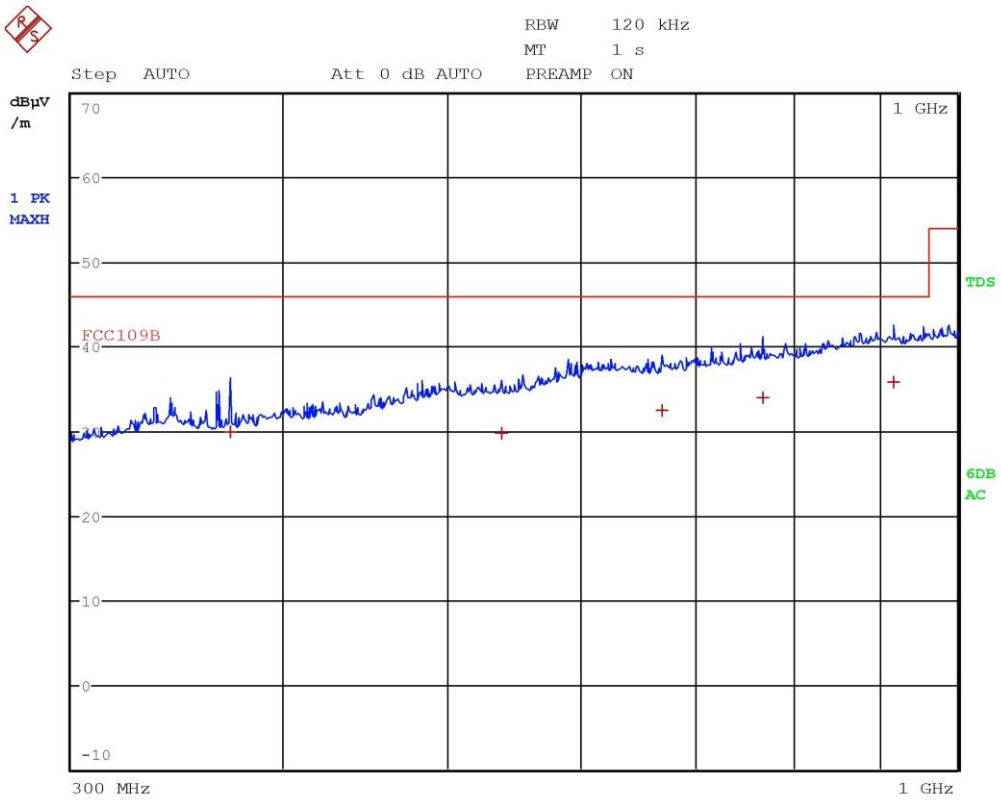
Panozzo 18044718 Horiz. In funzione Worst Case



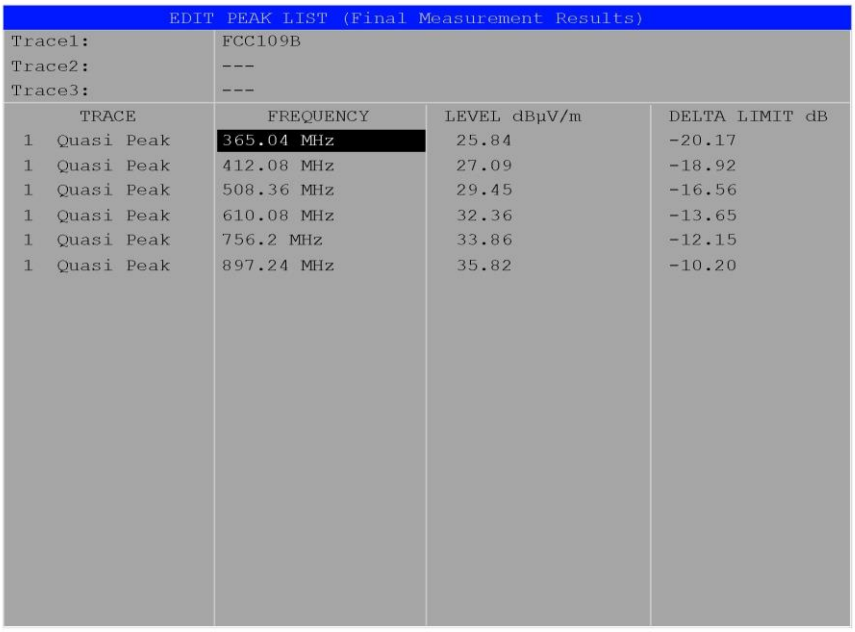
Panozzo 18044719 Horiz. In funzione Worst Case

EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC109B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	365.04 MHz	25.84	-20.17
1 Quasi Peak	412.08 MHz	27.09	-18.92
1 Quasi Peak	508.36 MHz	29.45	-16.56
1 Quasi Peak	610.08 MHz	32.36	-13.65
1 Quasi Peak	756.2 MHz	33.86	-12.15
1 Quasi Peak	897.24 MHz	35.82	-10.20

Panozzo 18044719 Horiz. In funzione Worst Case



Panozzo 18044720 Vert. In funzione Worst Case



EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC109B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	365.04 MHz	25.84	-20.17
1 Quasi Peak	412.08 MHz	27.09	-18.92
1 Quasi Peak	508.36 MHz	29.45	-16.56
1 Quasi Peak	610.08 MHz	32.36	-13.65
1 Quasi Peak	756.2 MHz	33.86	-12.15
1 Quasi Peak	897.24 MHz	35.82	-10.20

Panozzo 18044720 Vert. In funzione Worst Case

Result: The requirements are met

10.2 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. 6.6
- Internal procedure PM001
- See clause 4 of this test report
- Test date: June 19th, 2018
- Technician: C. Panozzo

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 6 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

The restricted frequency bands are listed in the following table

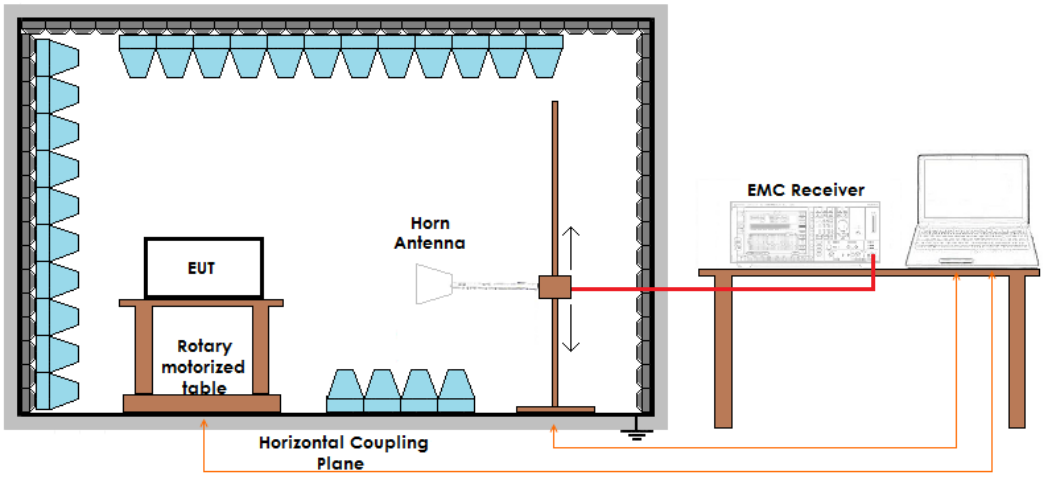
MHz	***MHz***	***MHz***	***GHz***
0,09 – 0,110	16,42 – 16,423	399,9 – 410	4,5 – 5,15
0,495 – 0,505	16,69475 – 16,69525	608 – 614	5,35 – 5,46
2,1735 – 2,1905	16,80425 – 16,80475	960 – 1240	7,25 – 7,75
4,125 – 4,128	25,5 – 25,67	1300 – 1427	8,025 – 8,5
4,17725 – 4,17775	37,5 – 38,25	1435 – 1626,5	9,0 – 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

Setup



Result – AV detector

Harmonic	*Limits (dBµV/m)*	*Level (dBµV/m)*			*Results*
		Lowest channel	*Medium channel*	*Highest channel*	
II	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
III	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IV	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
V	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VI	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VII	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VIII	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IX	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
X	54	More than 20 dB below limit	More than 20 dB below limit	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.

Result – Peak detector

Harmonic	*Limits (dBµV/m)*	*Level (dBµV/m)*			*Results*
		Lowest channel	*Medium channel*	*Highest channel*	
II	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
III	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IV	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
V	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VI	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VII	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VIII	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IX	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
X	74	More than 20 dB below limit	More than 20 dB below limit	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