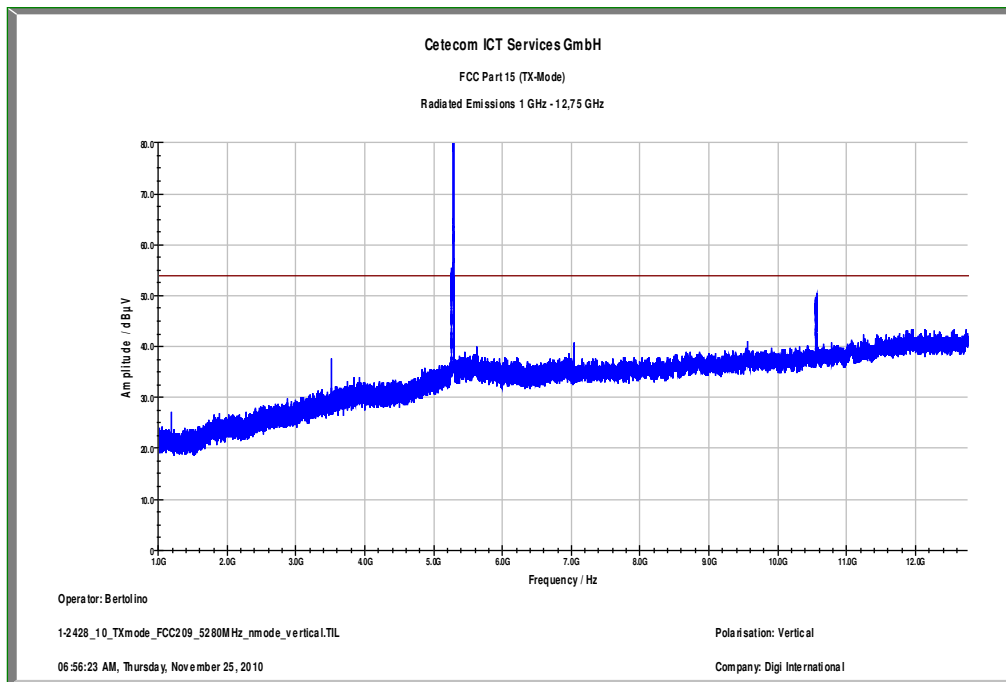


**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

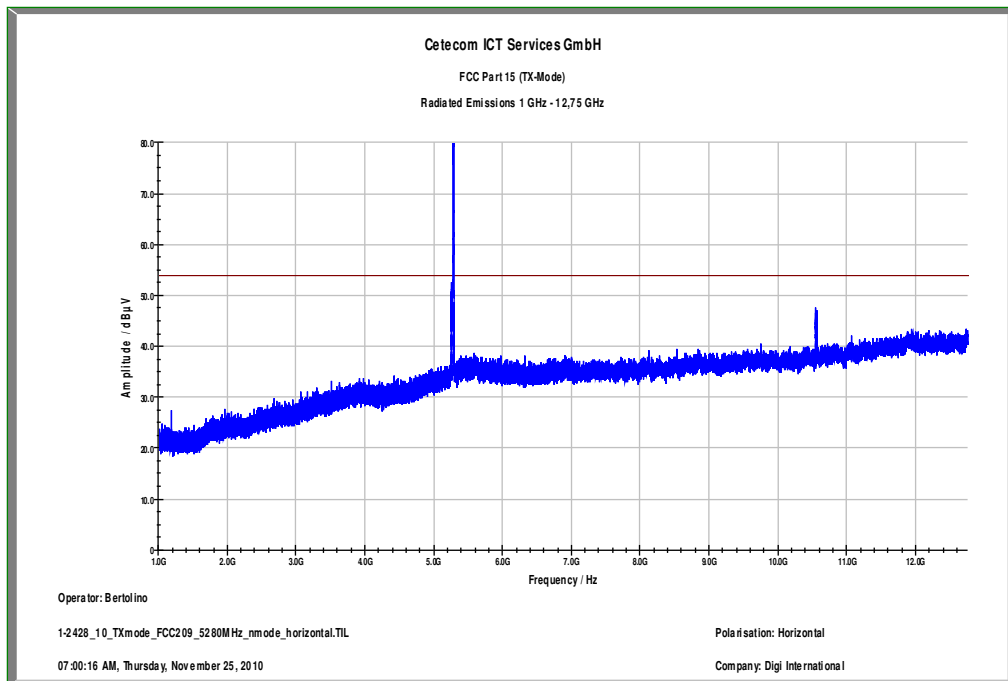
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

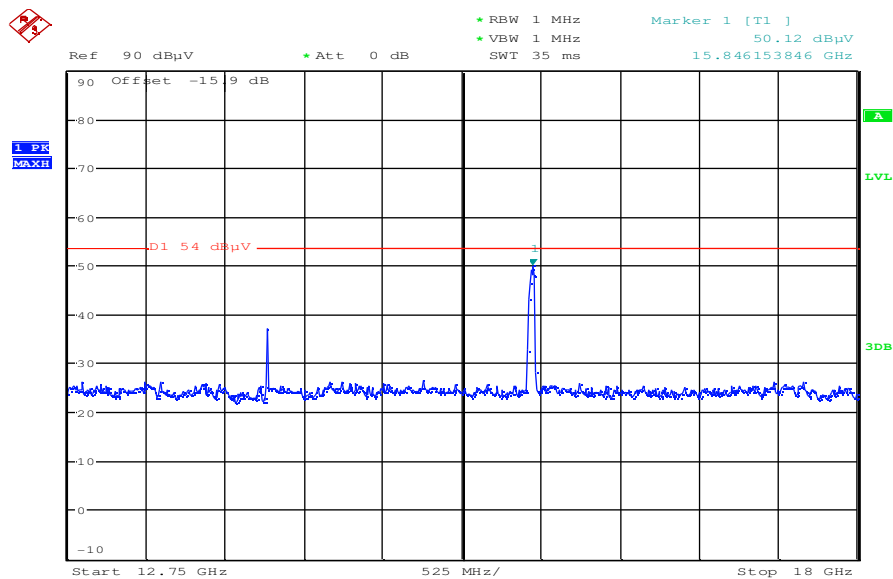
**Plot 13:** middle channel; power index 28; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 14: middle channel; power index 28; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

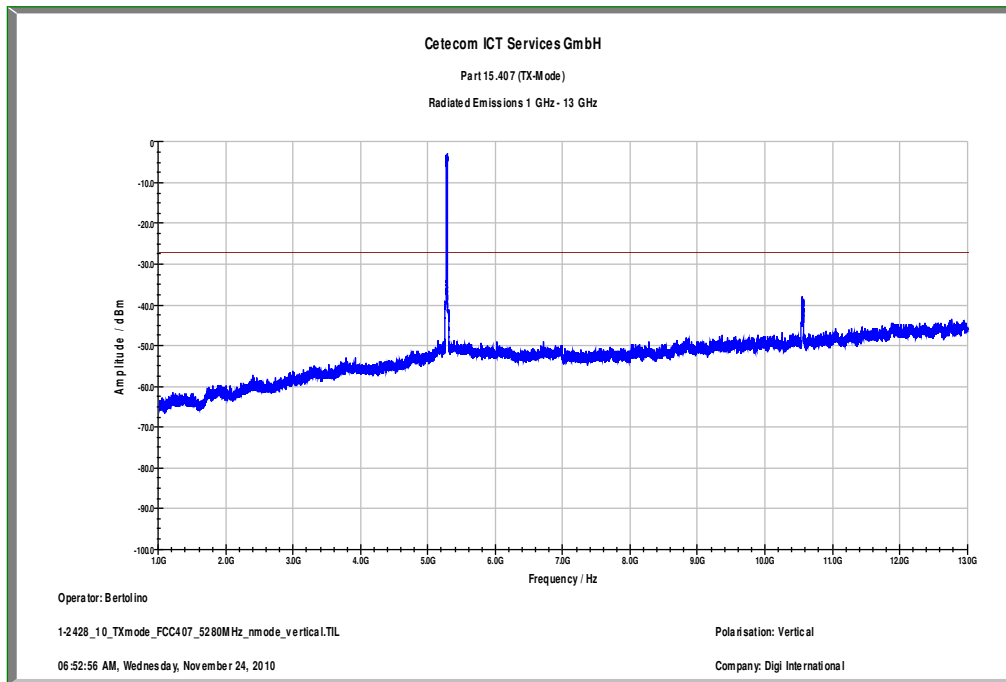


Plot 15: middle channel; power index 28; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209

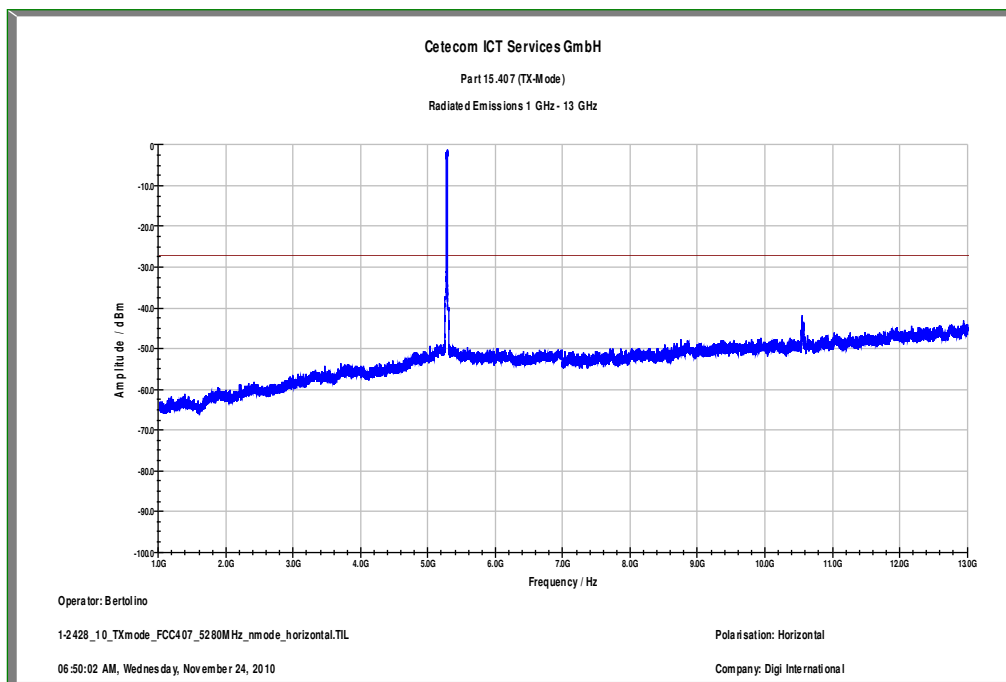




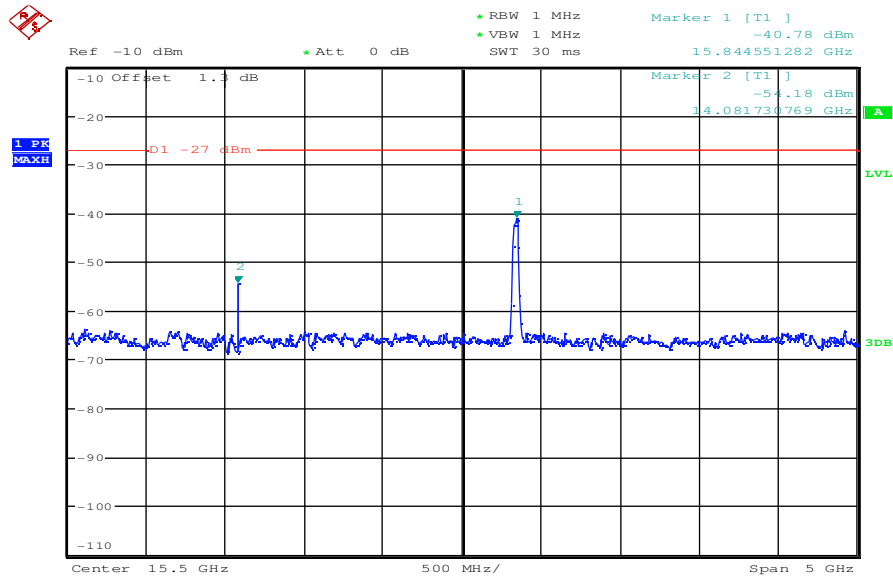
Plot 18: middle channel; power index 28; 1 GHz to 13 GHz – vertical polarization, Part 15.407



Plot 19: middle channel; power index 28; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

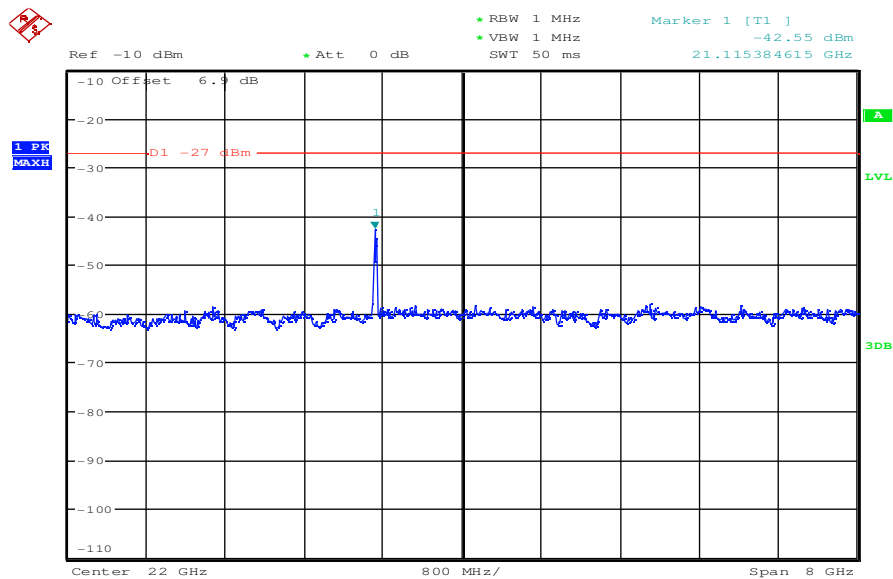


Plot 20: middle channel; power index 28; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



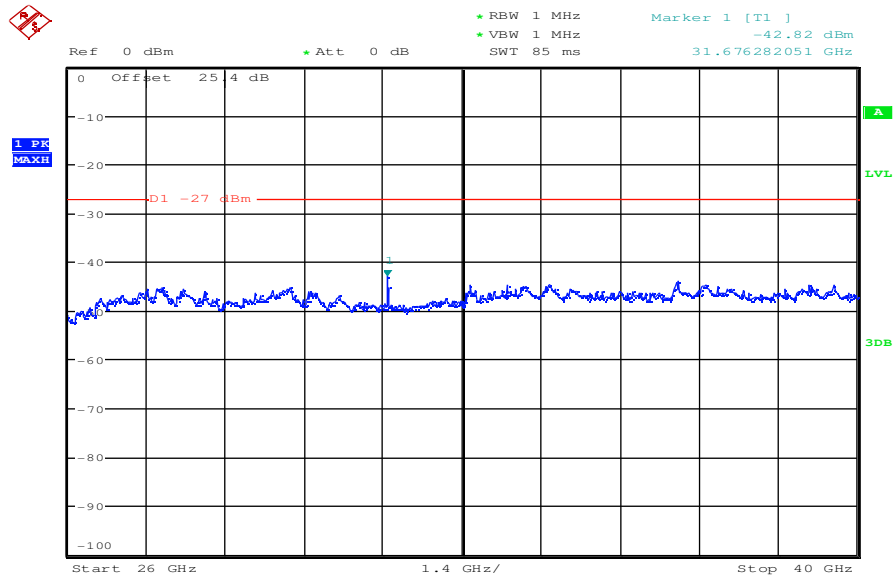
Date: 25.NOV.2010 11:45:29

Plot 21: middle channel; power index 28; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:22:04

Plot 22: middle channel; power index 28; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:51:53

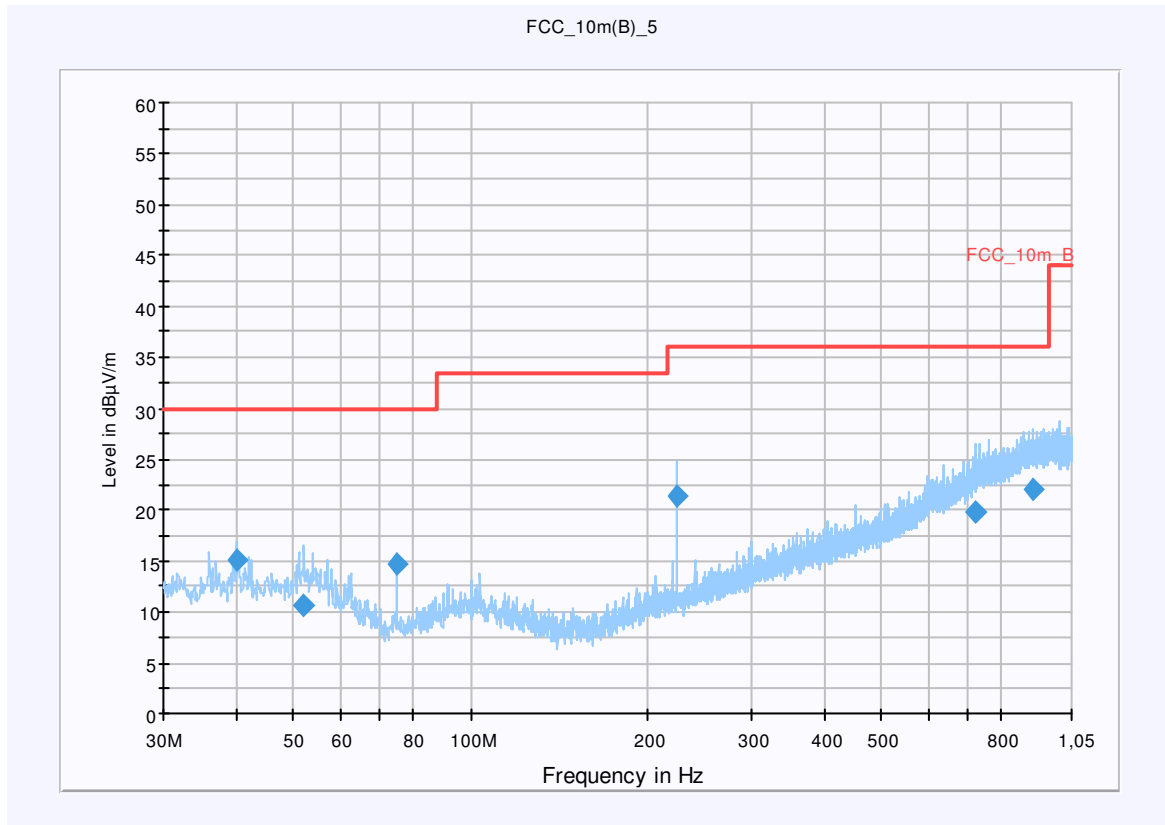
Plot 23: highest channel; power index 28; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

**Common Information**

EUT: WLAN computer embex  
 Serial Number: Proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5320 MHz, n mode  
 Operator Name: HNA  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dBµV/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



**Final Result 1**

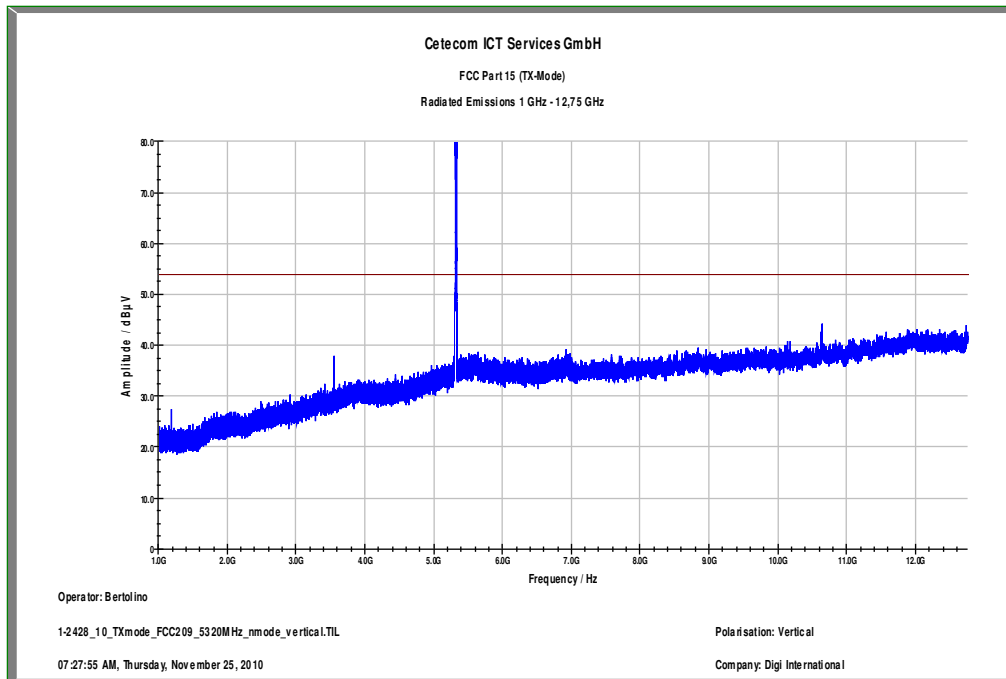
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.960000	15.2	15000.000	120.000	106.0	V	106.0	13.4	14.8	30.0	
52.080000	10.5	15000.000	120.000	174.0	V	-2.0	13.2	19.5	30.0	
75.000000	14.8	15000.000	120.000	189.0	V	163.0	9.2	15.2	30.0	
224.880000	21.5	15000.000	120.000	120.0	V	-2.0	12.5	14.5	36.0	
721.680000	19.9	15000.000	120.000	270.0	H	-2.0	23.0	16.1	36.0	
908.040000	22.1	15000.000	120.000	270.0	H	180.0	25.2	13.9	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

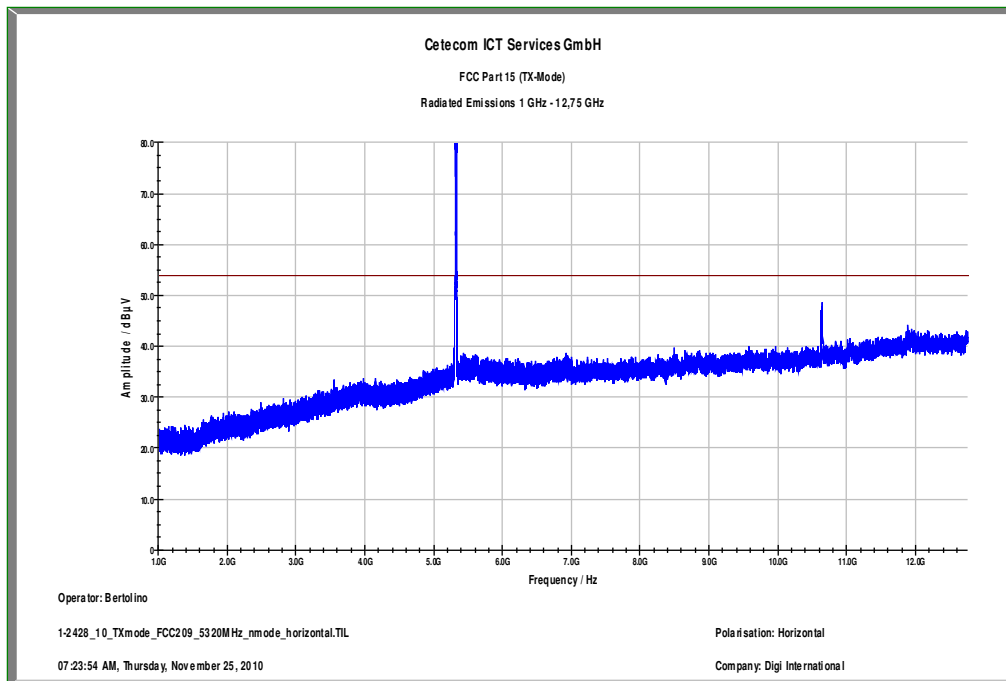
EMC 32 Version 8.10.00

**Plot 24:** highest channel; power index 28; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209

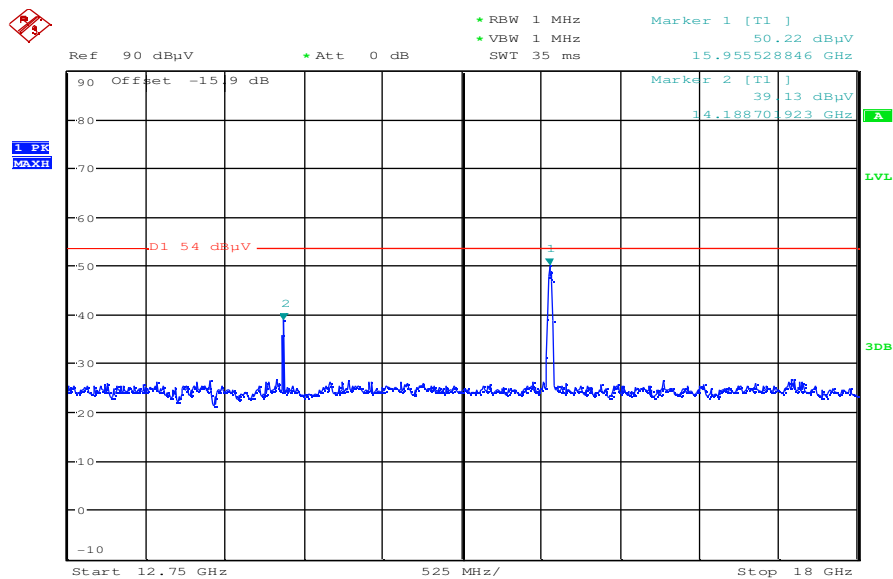




Plot 25: highest channel; power index 28; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209



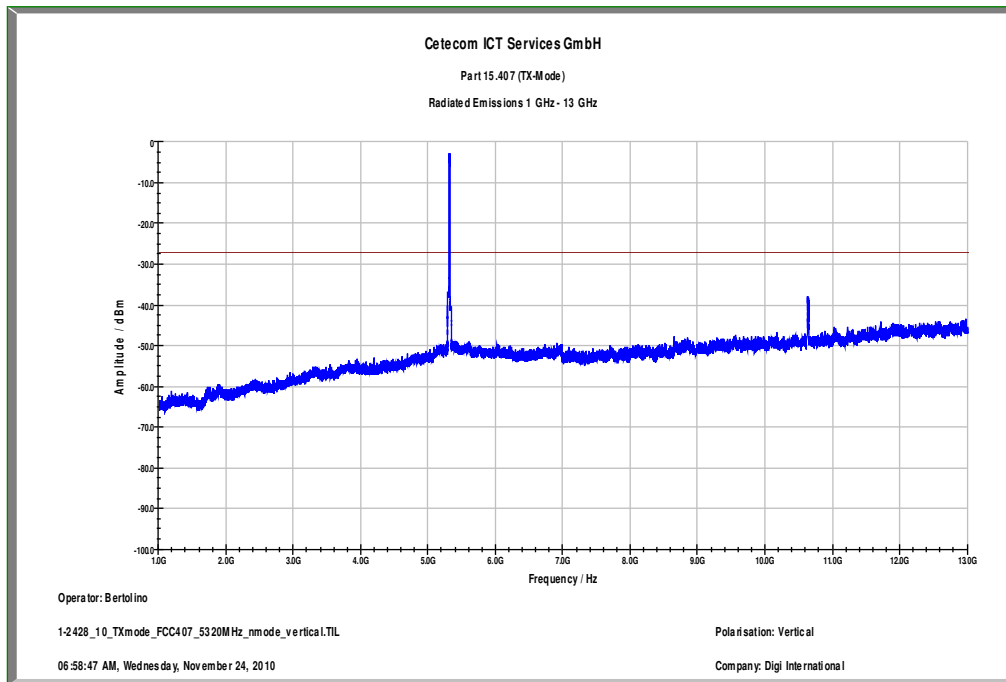
Plot 26: highest channel; power index 28; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



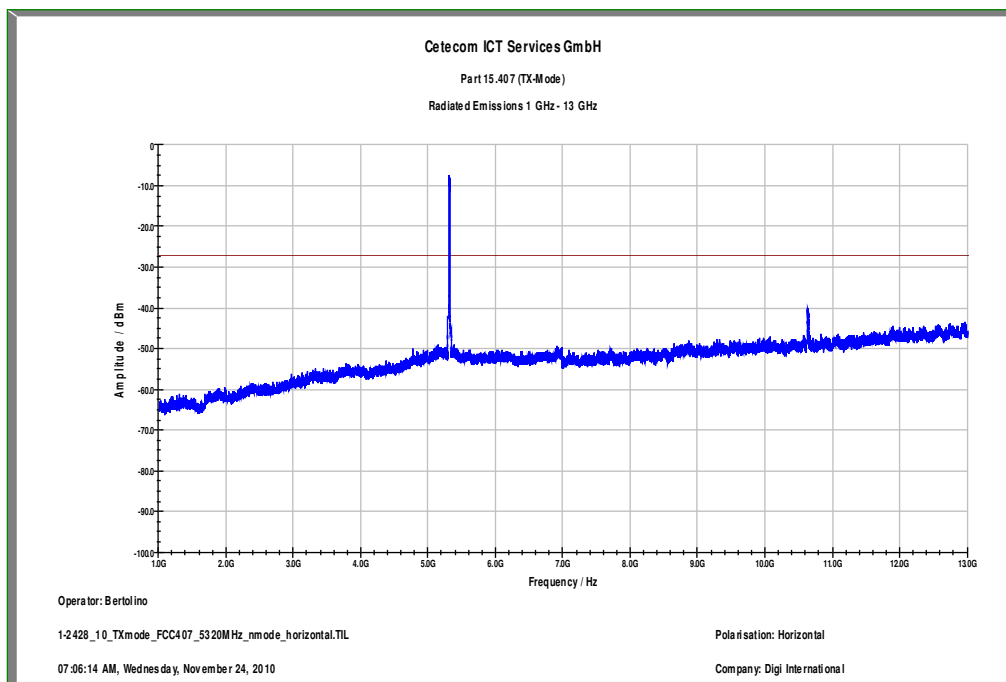
Date: 24.NOV.2010 13:37:35



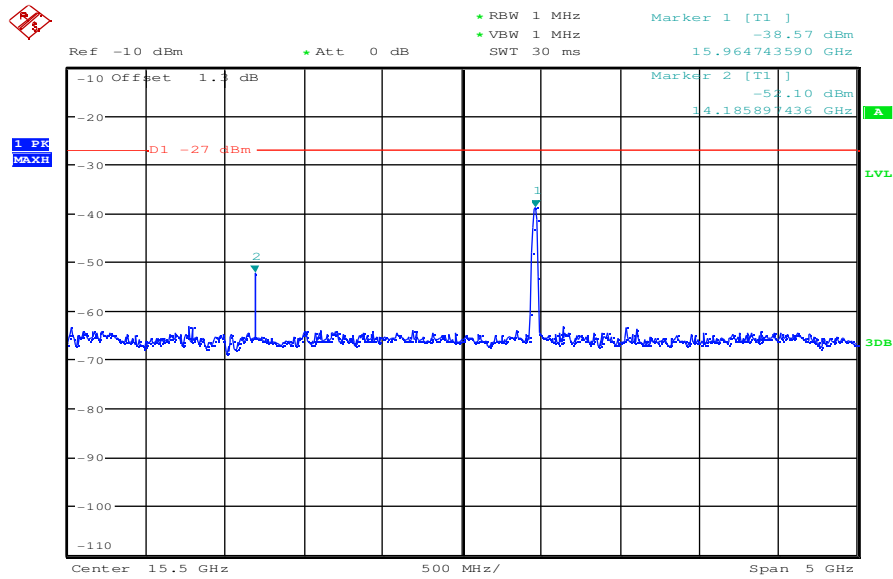
Plot 29: highest channel; power index 28; 1 GHz to 13 GHz – vertical polarization, Part 15.407



Plot 30: highest channel; power index 28; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

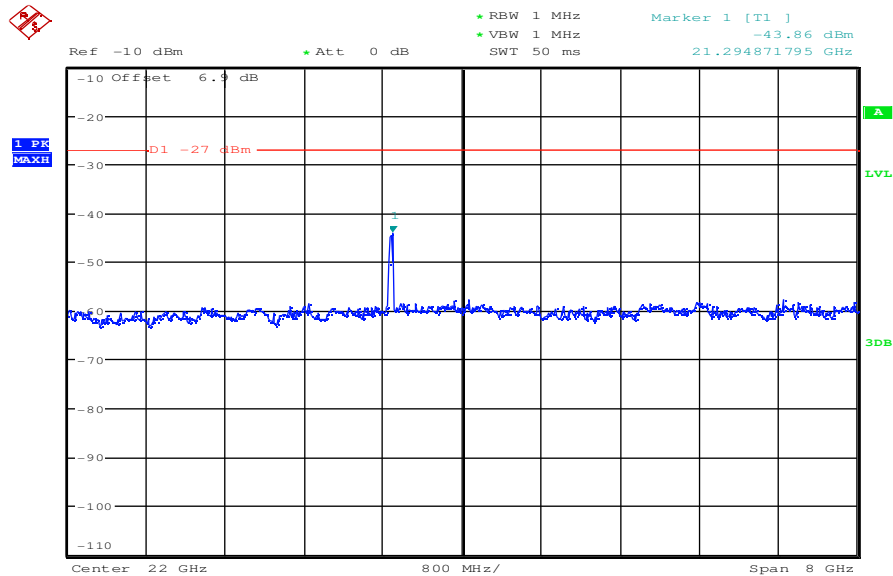


Plot 31: highest channel; power index 28; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



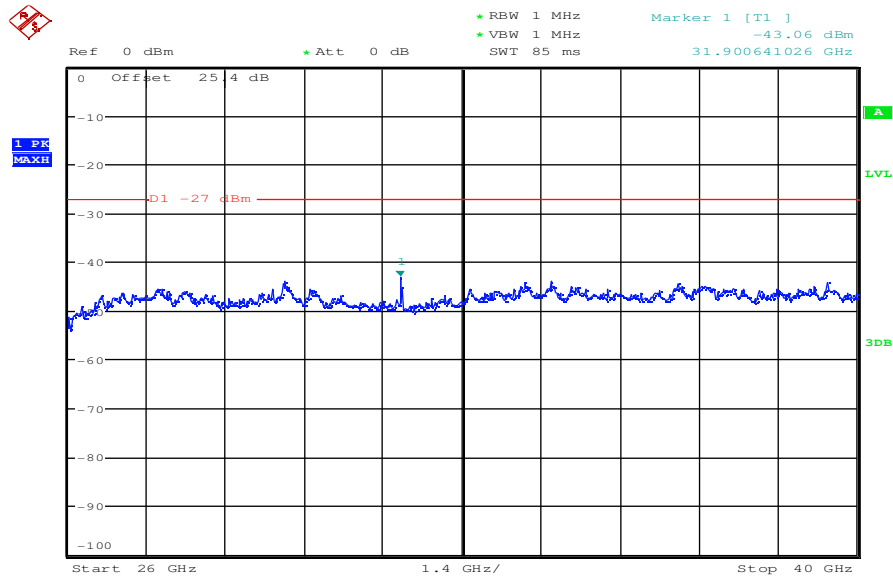
Date: 25.NOV.2010 11:46:32

Plot 32: highest channel; power index 28; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:22:57

Plot 33: highest channel; power index 28; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:53:13

**Band 1: 5470 MHz to 5725 MHz**

**OFDM – mode / a – mode (54 MBit/s):**

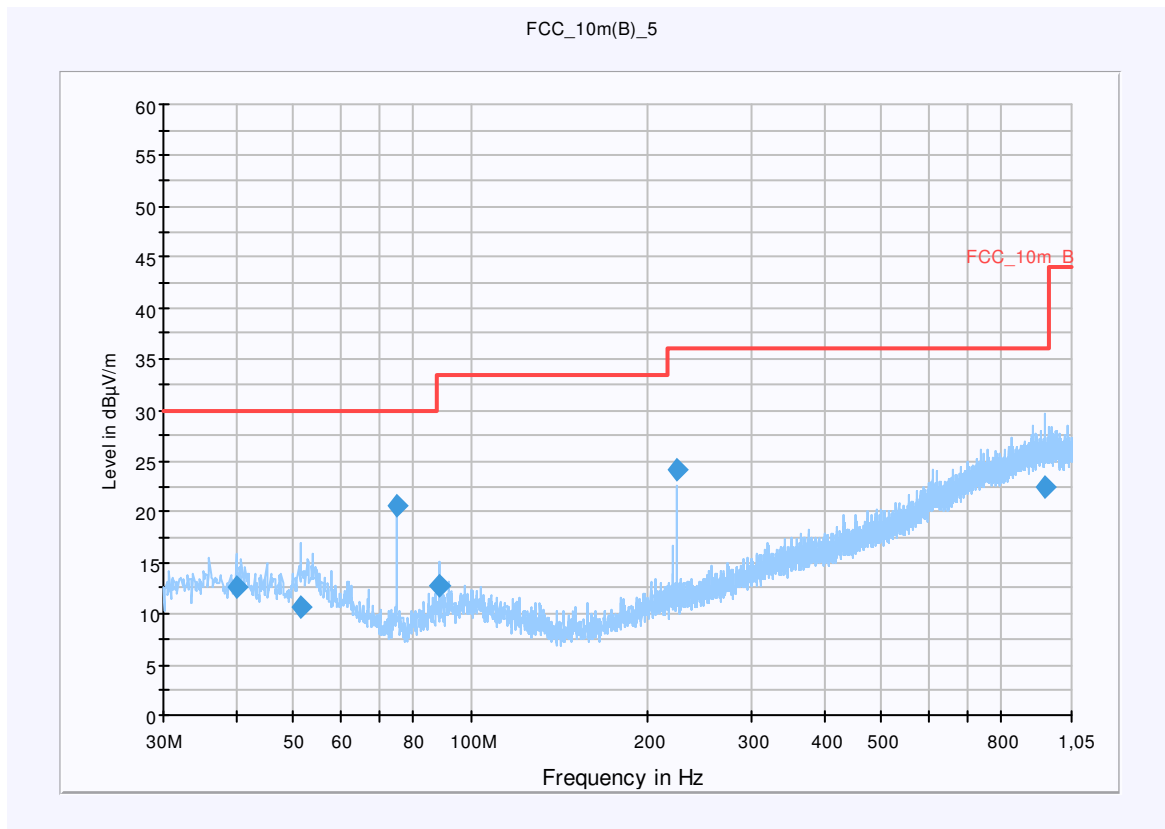
**Plot 1:** lowest channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

**Common Information**

EUT: WLAN computer embex  
 Serial Number: Proto  
 Test Description: FCC part 15 @ 10 mm  
 Operating Conditions: TX, 5500 MHz, channel 100, 54Mbps, a mode  
 Operator Name: HNA  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dBµV/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



**Final Result 1**

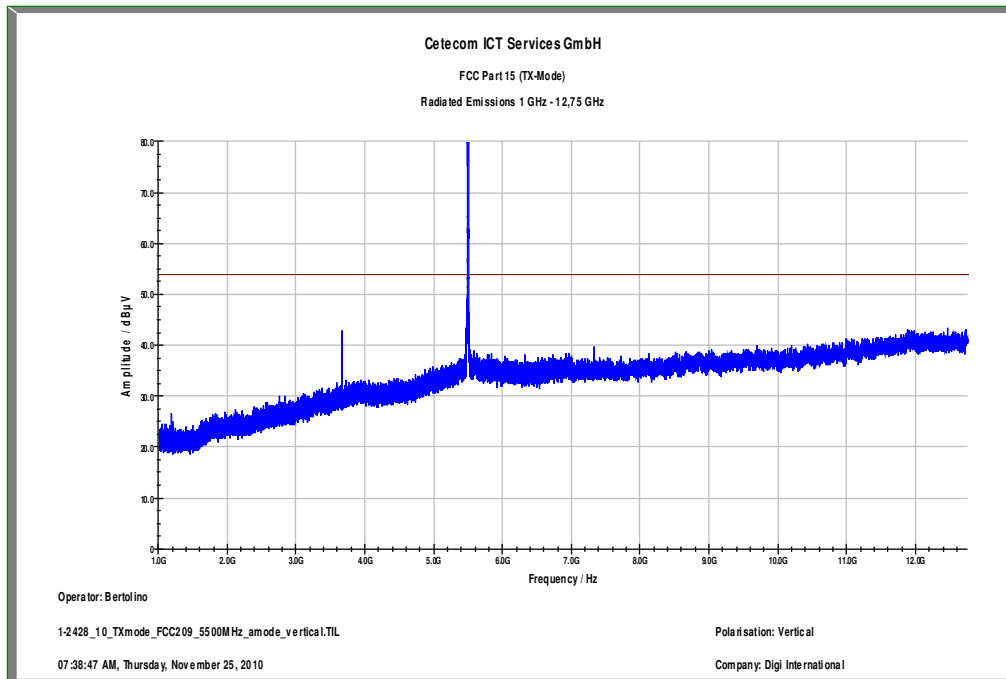
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.960000	12.7	15000.000	120.000	120.0	V	43.0	13.4	17.3	30.0	
51.480000	10.6	15000.000	120.000	98.0	V	43.0	13.2	19.4	30.0	
75.000000	20.7	15000.000	120.000	204.0	V	263.0	9.2	9.3	30.0	
88.440000	12.9	15000.000	120.000	270.0	V	321.0	10.3	20.6	33.5	
224.880000	24.2	15000.000	120.000	125.0	V	299.0	12.5	11.8	36.0	
945.960000	22.4	15000.000	120.000	229.0	V	112.0	25.3	13.6	36.0	

**Hardware Setup:** EMI radiated\Electric Field (NOS) - [EMI radiated]

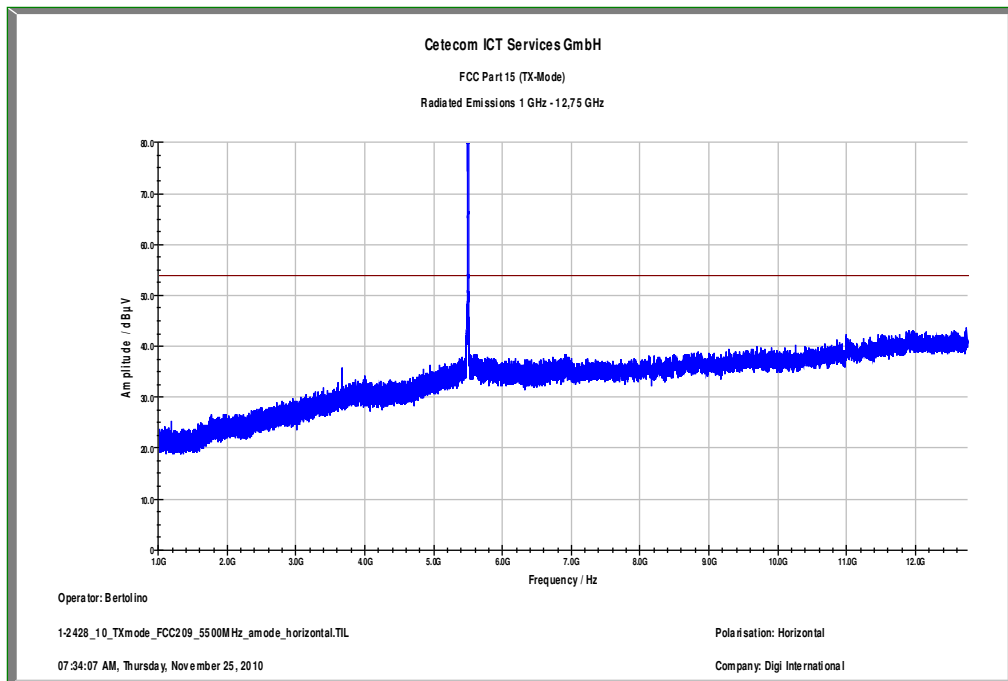
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

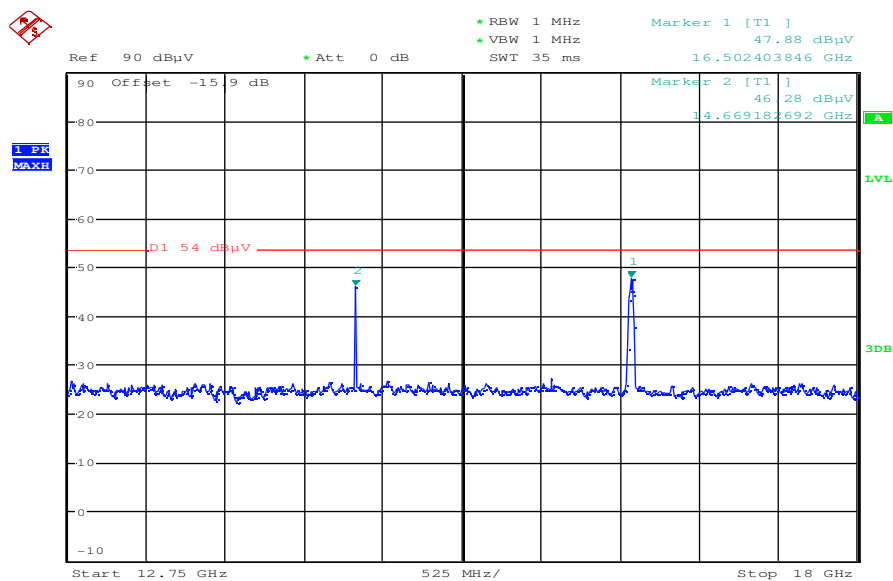
**Plot 2:** lowest channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 3: lowest channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209



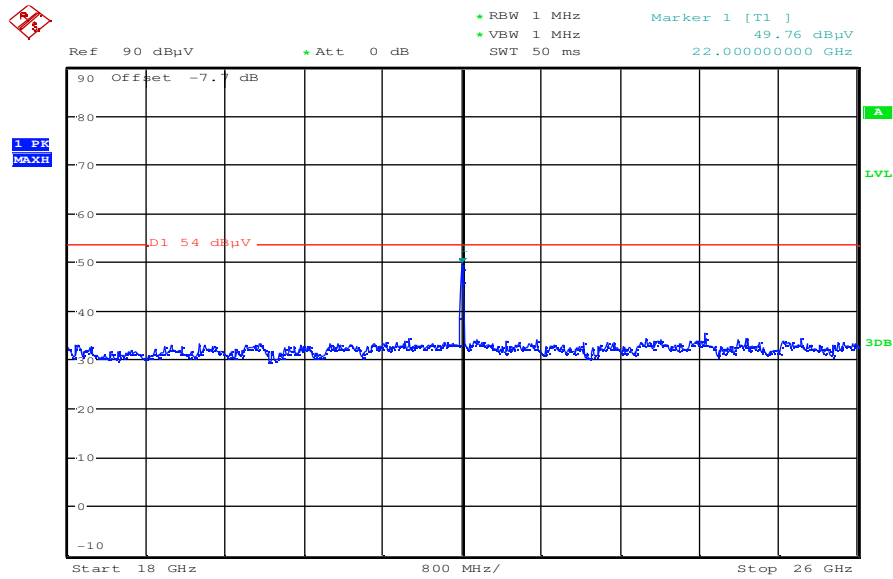
Plot 4: lowest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



Date: 24.NOV.2010 13:25:45

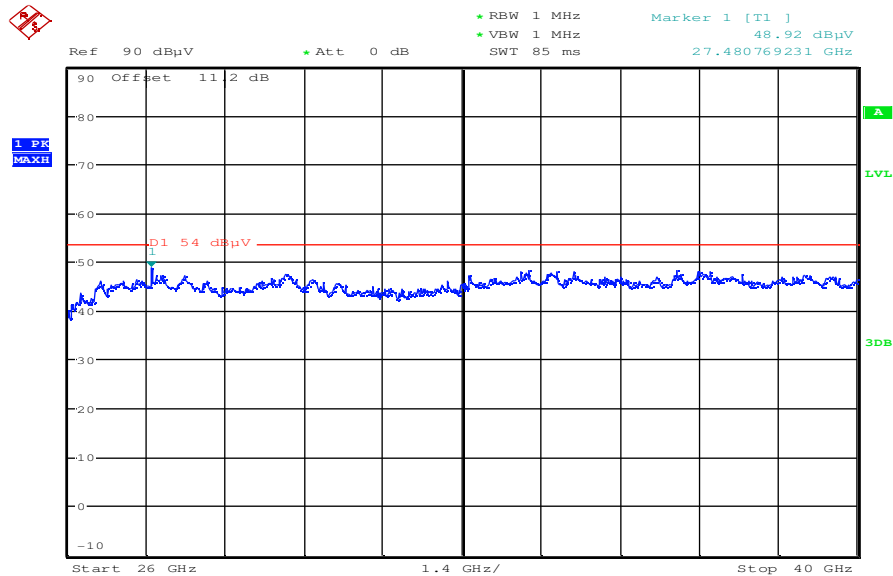


Plot 5: lowest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



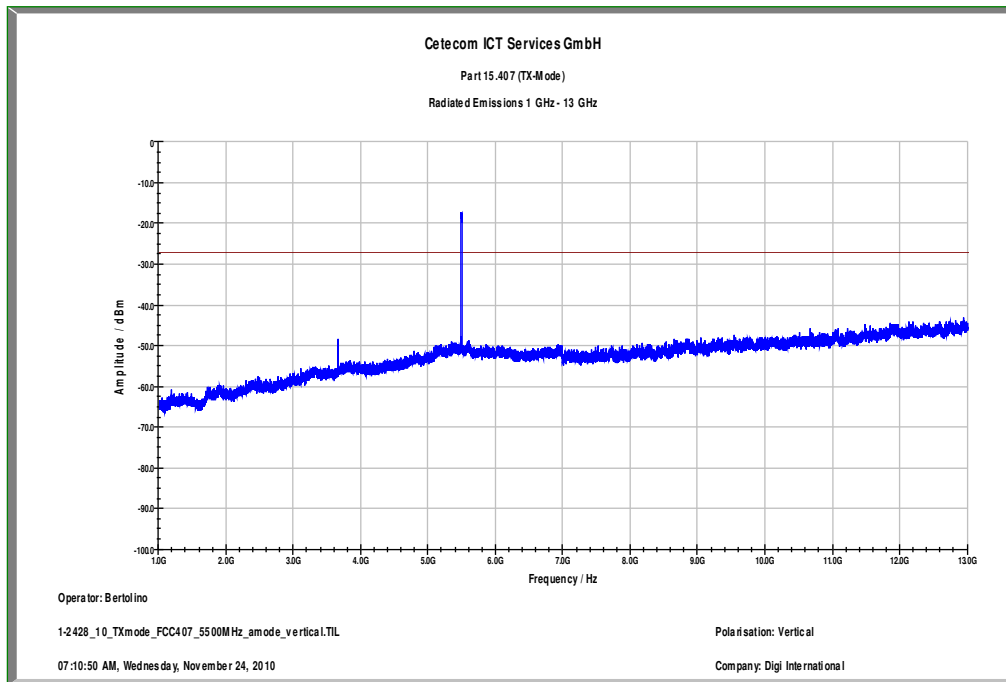
Date: 24.NOV.2010 13:52:56

Plot 6: lowest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

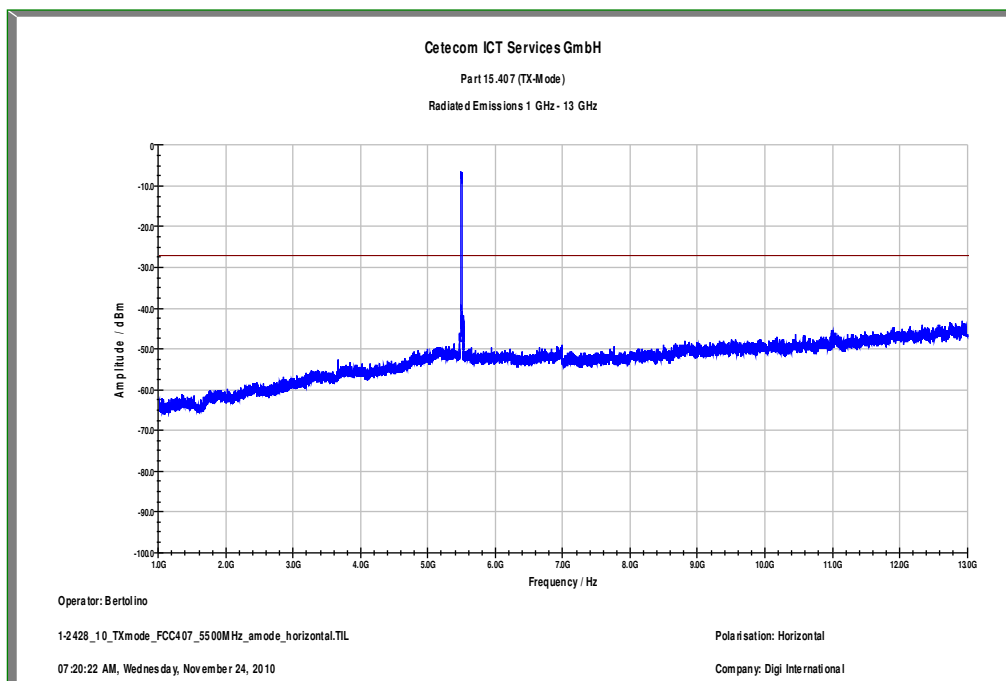


Date: 24.NOV.2010 14:20:30

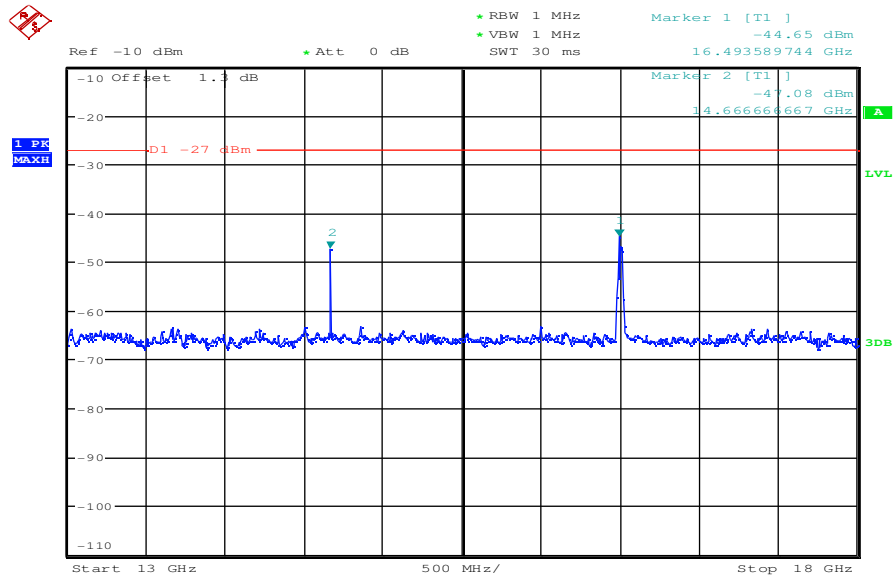
**Plot 7:** lowest channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407



**Plot 8:** lowest channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

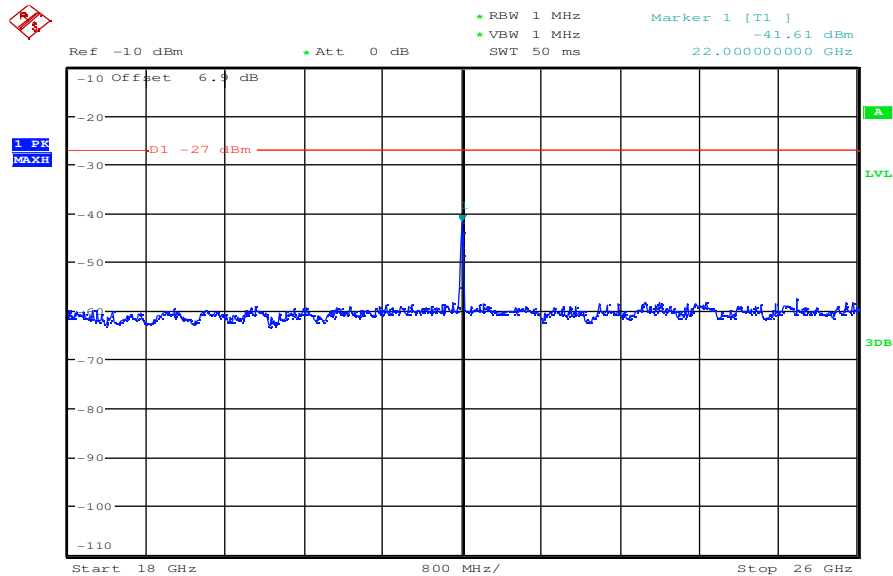


Plot 9: lowest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



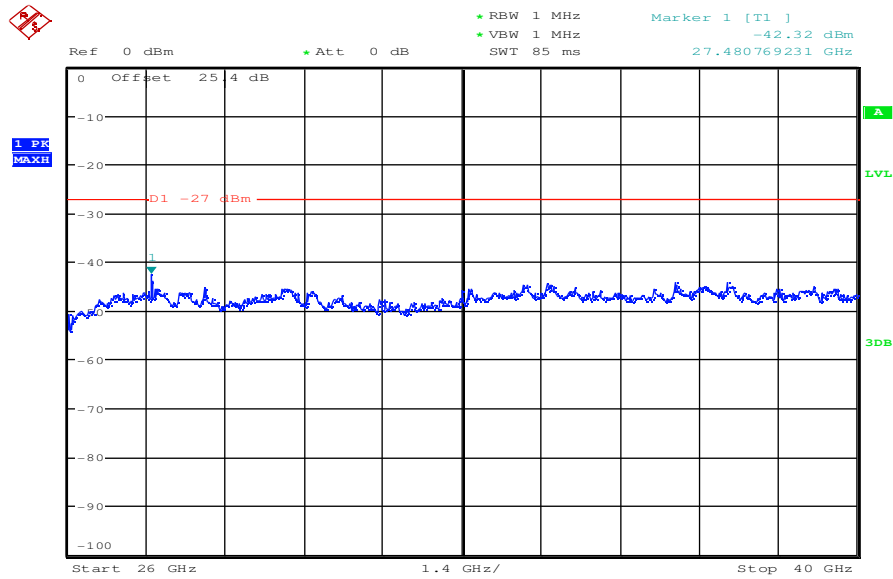
Date: 25.NOV.2010 11:37:14

Plot 10: lowest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 12:57:47

Plot 11: lowest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:43:35

**Plot 12:** middle channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

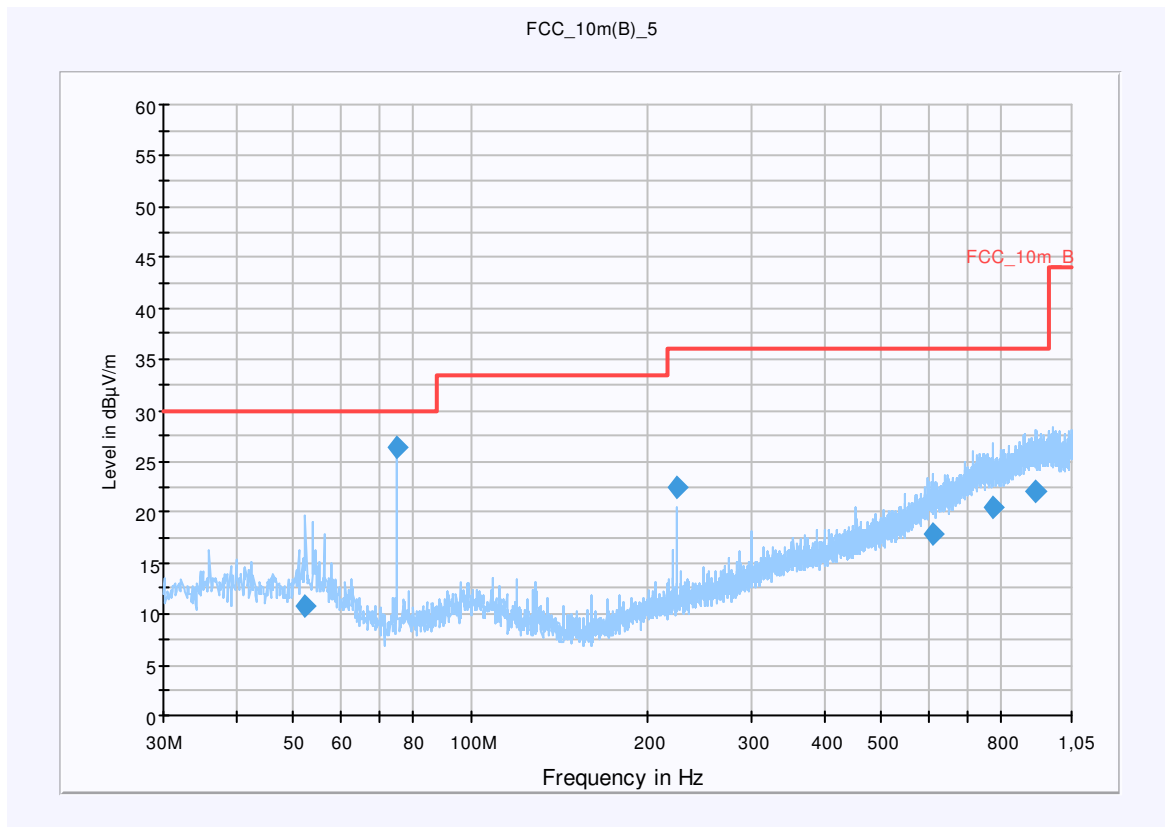
**Common Information**

EUT: WLAN computer embex  
 Serial Number: proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5600 MHz, channel 120, 54Mbps, a mode  
 Operator Name: LAN  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Level Unit: dBµV/m

**ubrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



**Final Result 1**

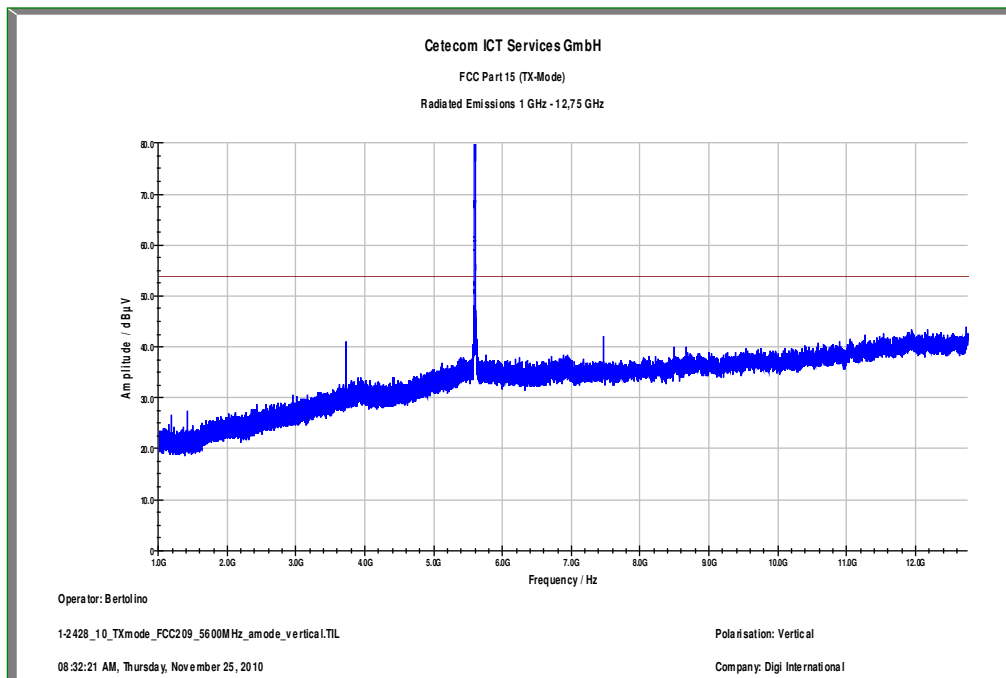
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
52.440000	10.7	15000.000	120.000	98.0	V	-2.0	13.1	19.3	30.0	
75.000000	26.5	15000.000	120.000	197.0	V	44.0	9.2	3.5	30.0	
224.880000	22.5	15000.000	120.000	135.0	V	-2.0	12.5	13.5	36.0	
609.480000	17.8	15000.000	120.000	106.0	V	276.0	20.9	18.2	36.0	
772.200000	20.4	15000.000	120.000	205.0	H	-2.0	23.7	15.6	36.0	
910.920000	22.1	15000.000	120.000	177.0	H	276.0	25.2	13.9	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

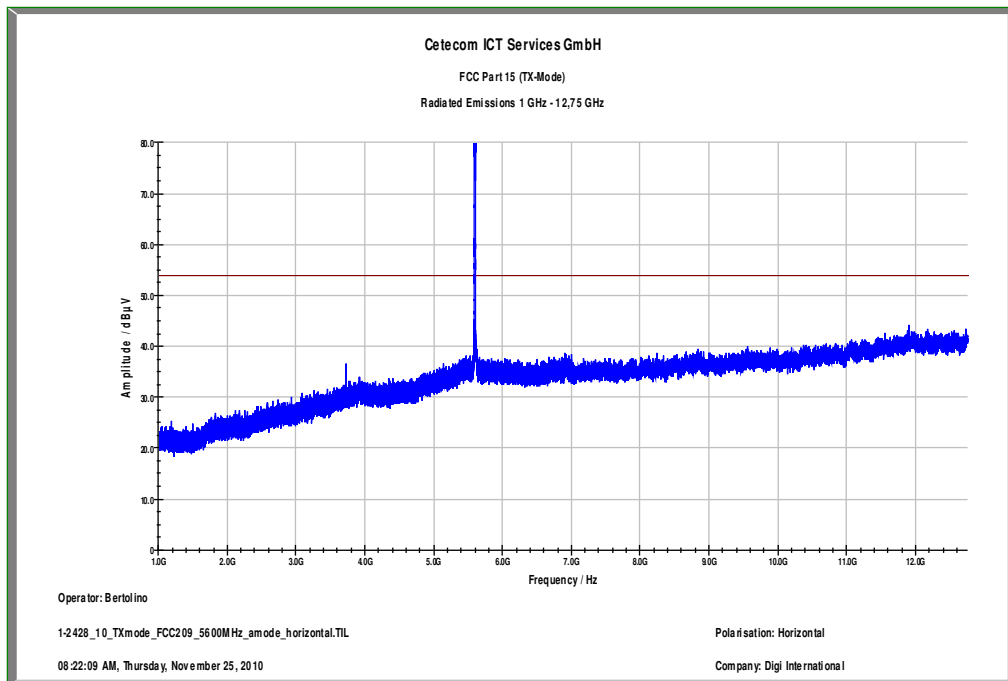
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

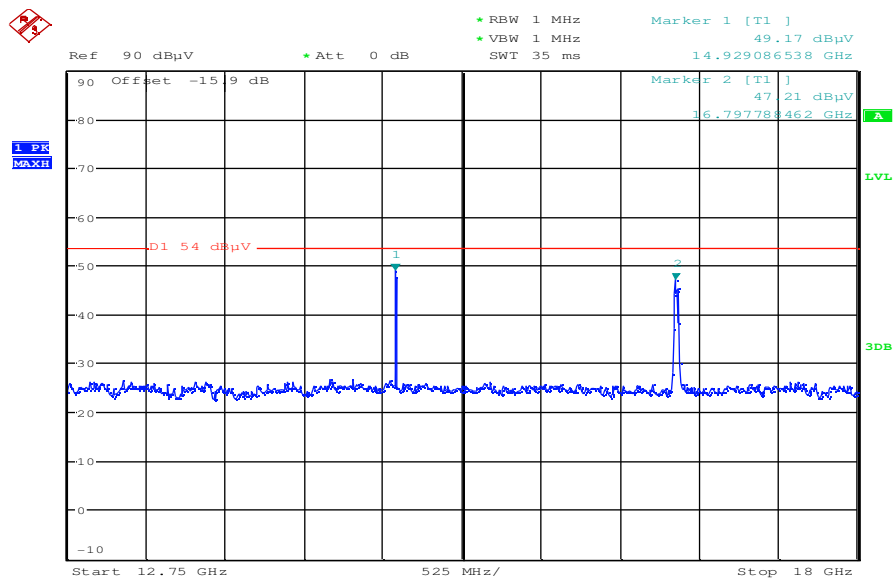
**Plot 13:** middle channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 14: middle channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

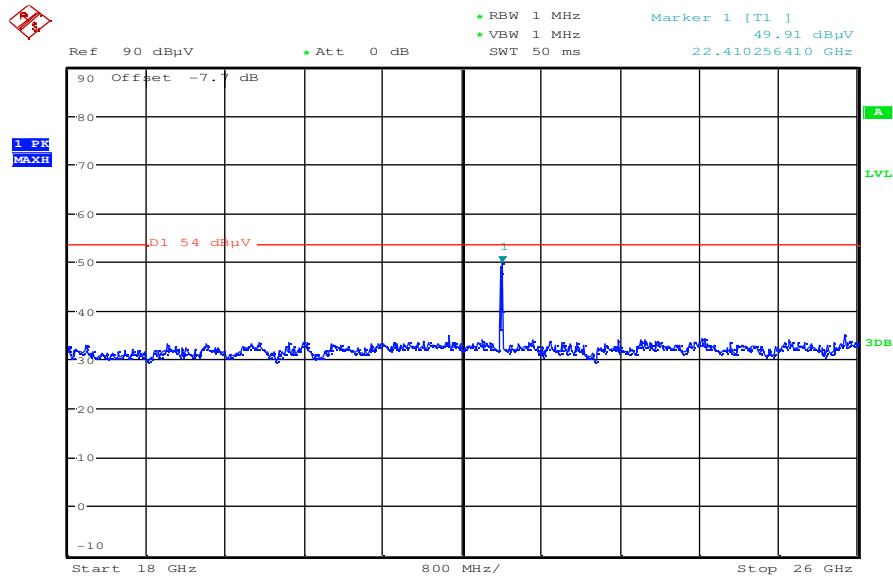


Plot 15: middle channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



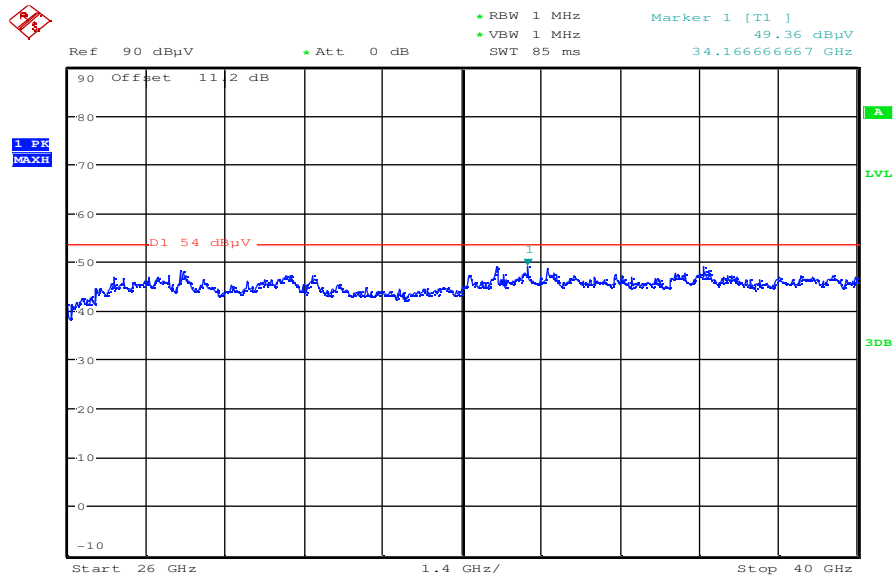
Date: 24.NOV.2010 13:27:12

Plot 16: middle channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



Date: 24.NOV.2010 13:53:58

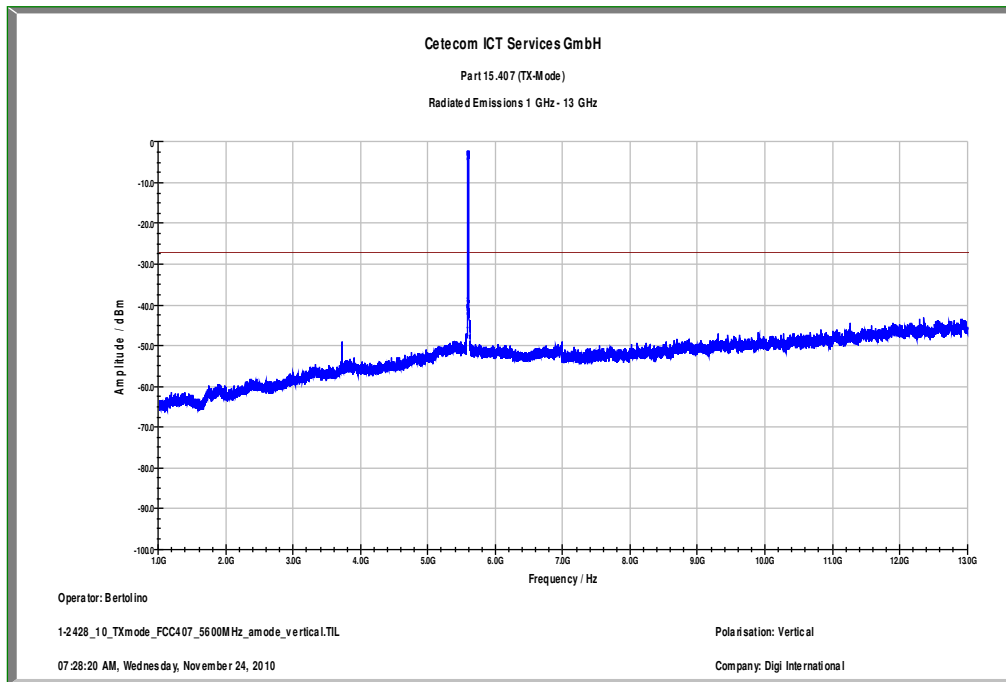
Plot 17: middle channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209



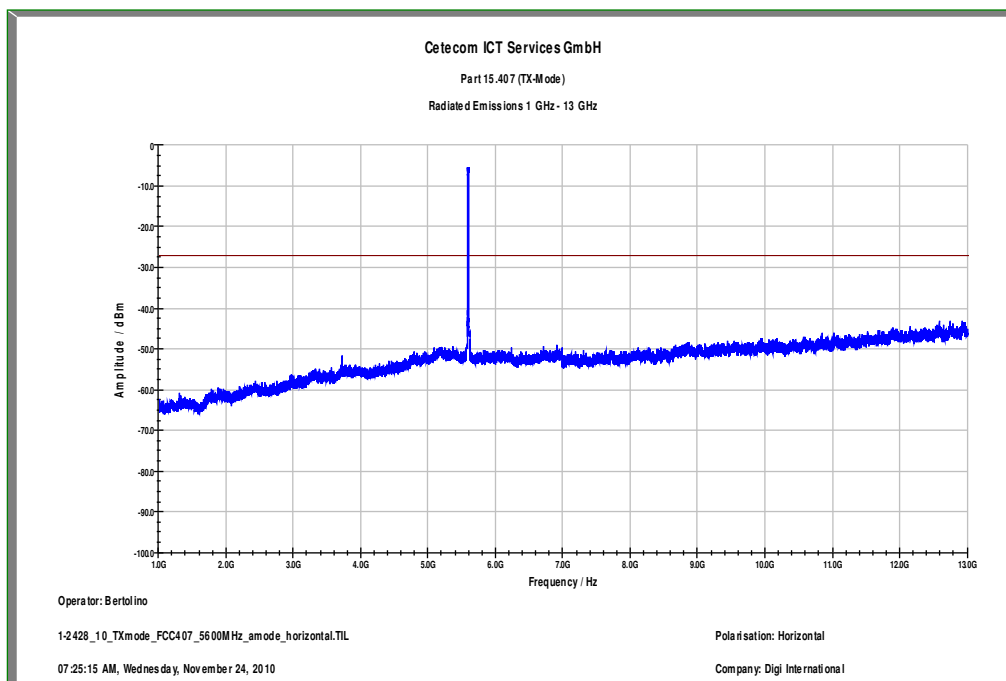
Date: 24.NOV.2010 14:21:31



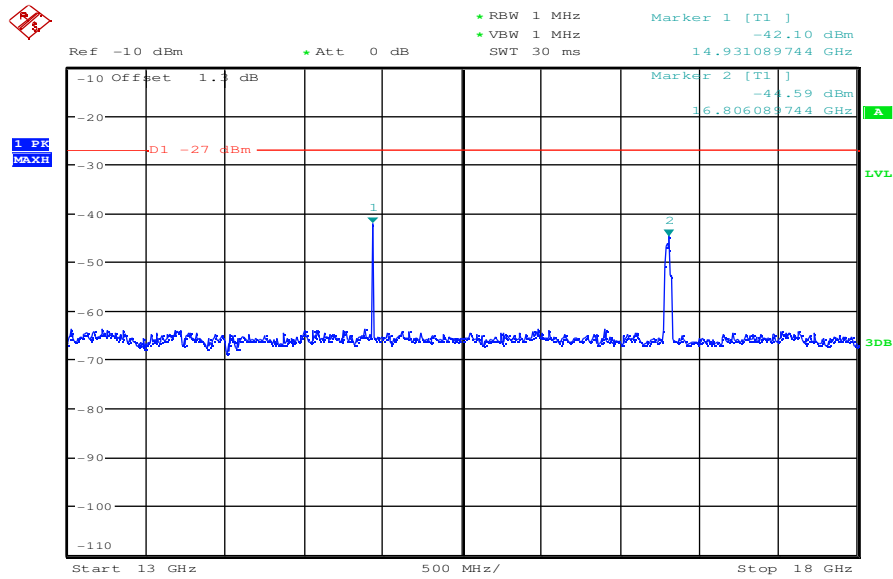
**Plot 18:** middle channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407



**Plot 19:** middle channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

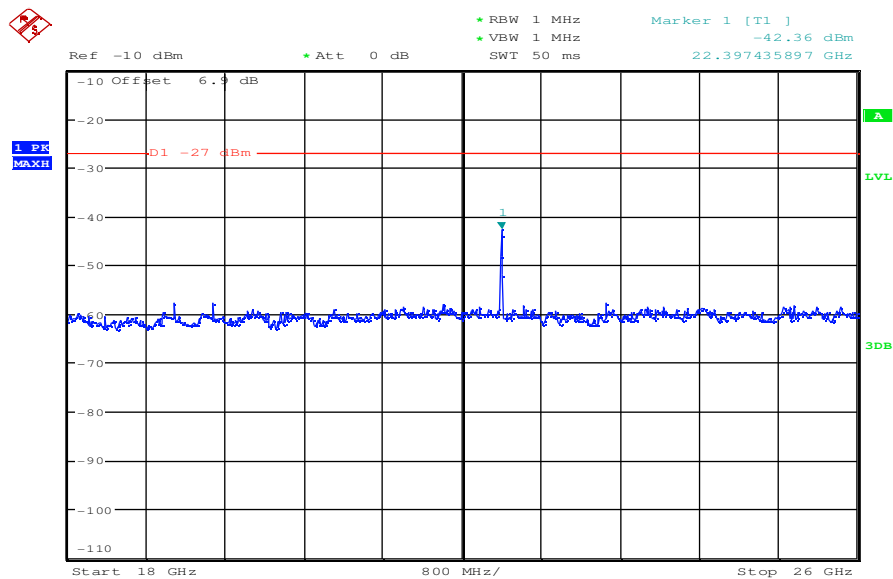


Plot 20: middle channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



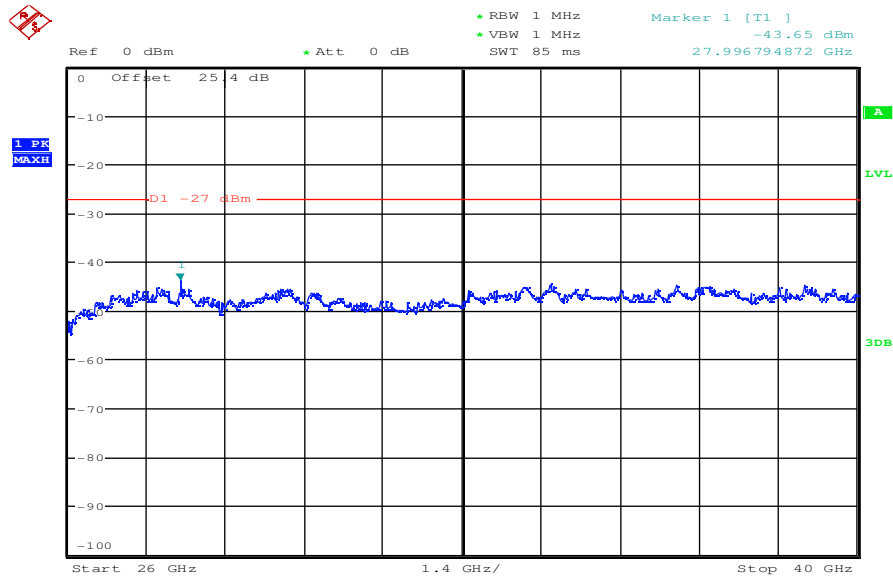
Date: 25.NOV.2010 11:38:29

Plot 21: middle channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 12:58:54

Plot 22: middle channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:44:58

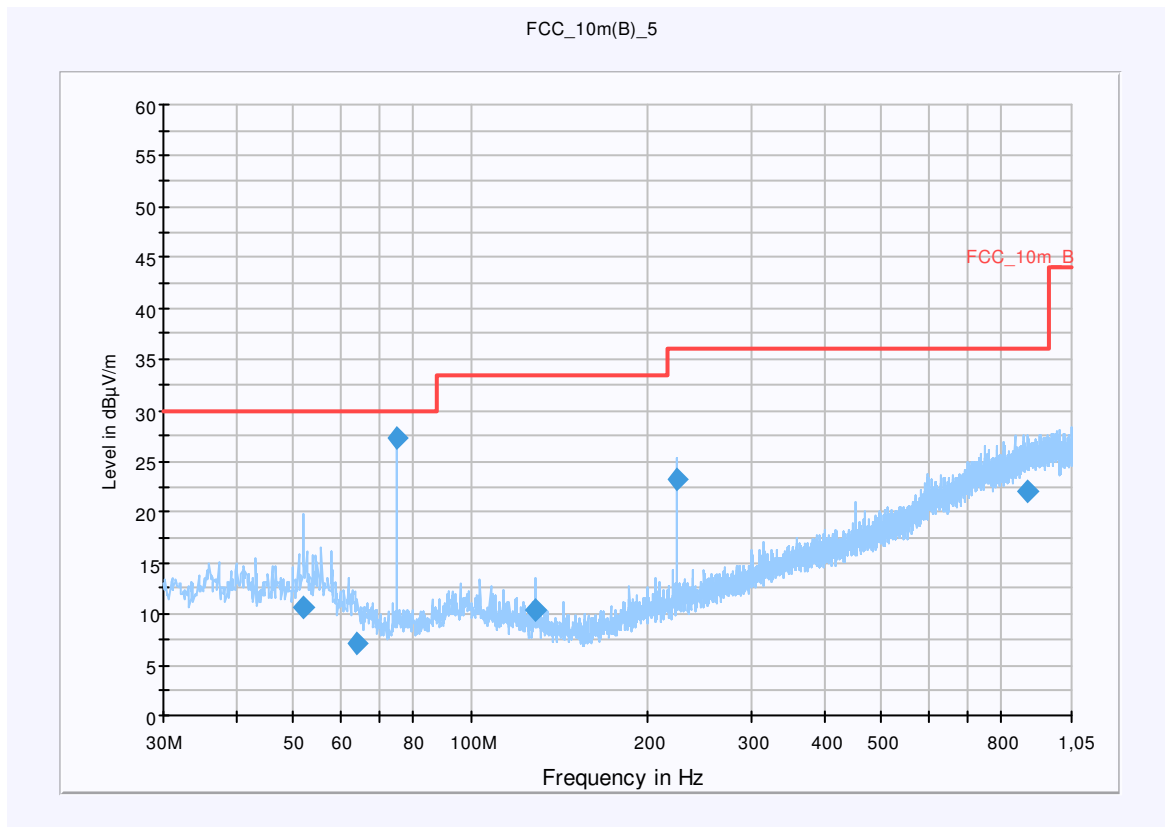
Plot 23: highest channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

### Common Information

EUT: WLAN computer embex  
 Serial Number: proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5700 MHz, channel 140, 54Mbps, a mode  
 Operator Name: LAN  
 Comment: 3.3V DC

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



### Final Result 1

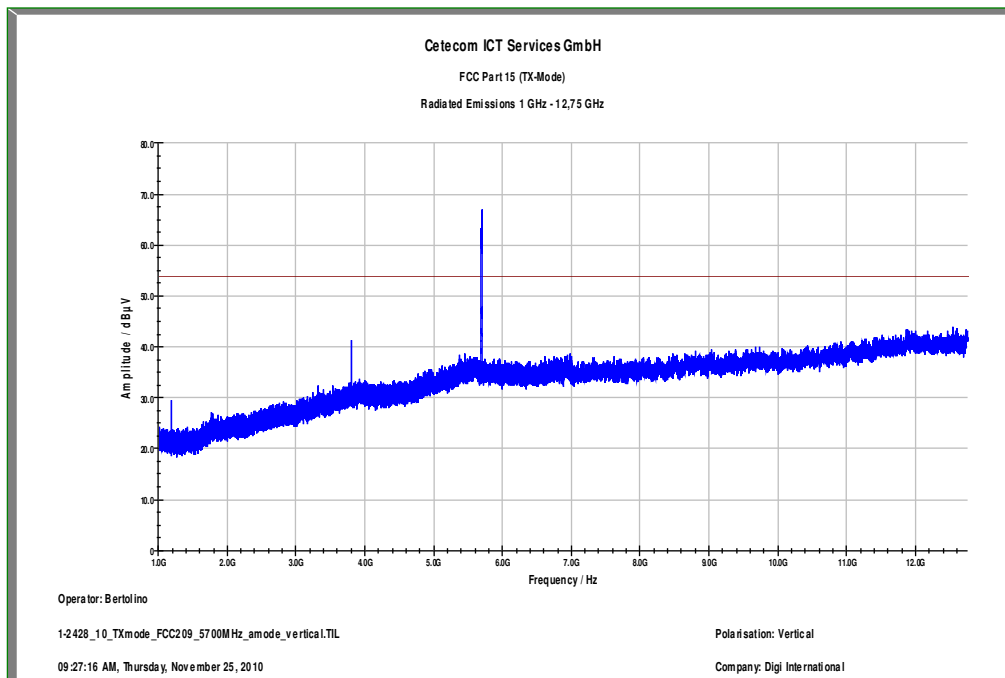
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
51.840000	10.6	15000.000	120.000	162.0	V	117.0	13.2	19.4	30.0	
64.320000	7.1	15000.000	120.000	270.0	V	289.0	10.6	22.9	30.0	
75.000000	27.3	15000.000	120.000	198.0	V	36.0	9.2	2.7	30.0	
129.000000	10.4	15000.000	120.000	149.0	V	60.0	9.5	23.1	33.5	
224.880000	23.3	15000.000	120.000	98.0	V	-2.0	12.5	12.7	36.0	
881.160000	22.0	15000.000	120.000	270.0	V	317.0	25.0	14.0	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

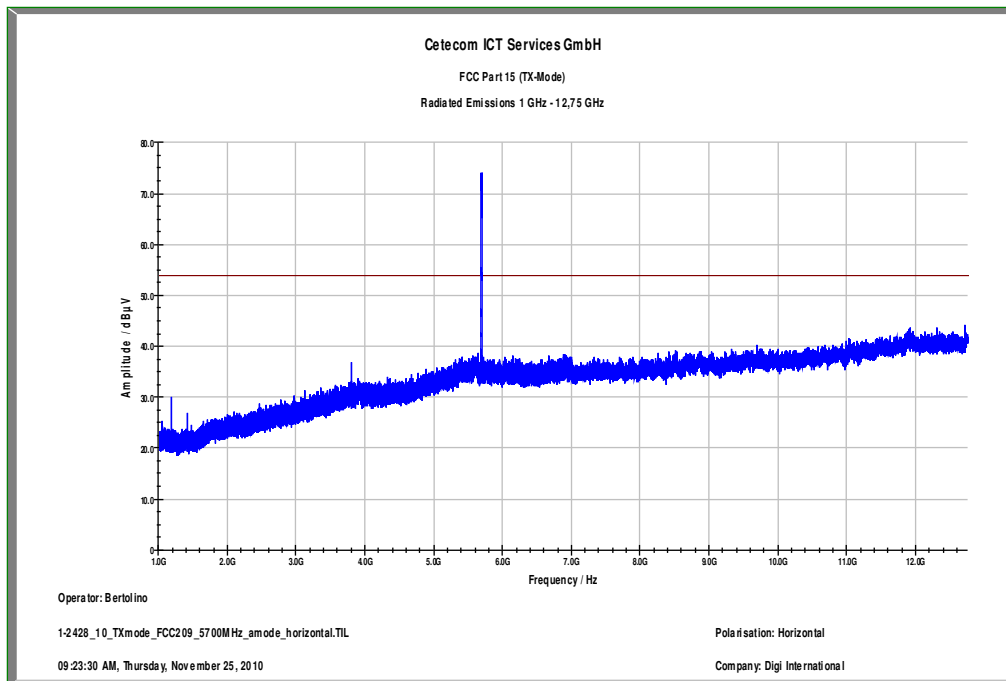
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

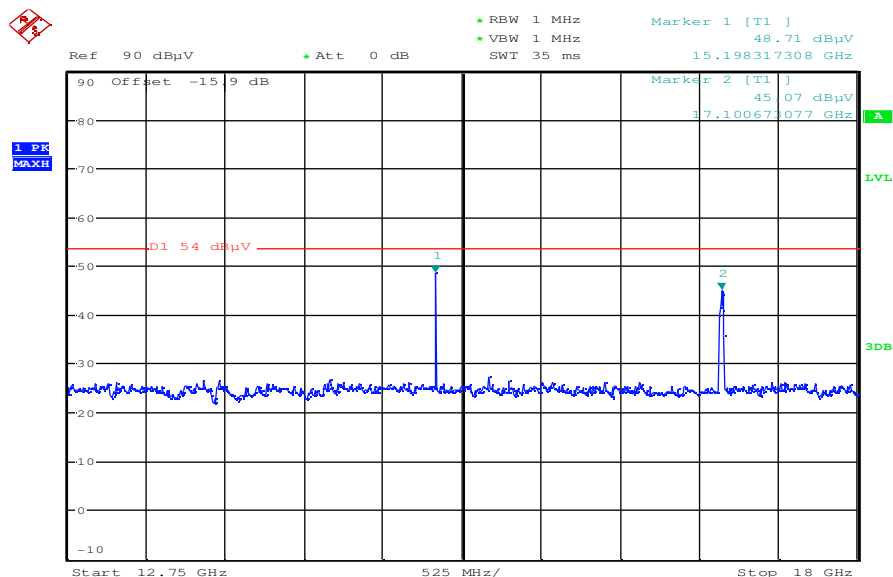
**Plot 24:** highest channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 25: highest channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

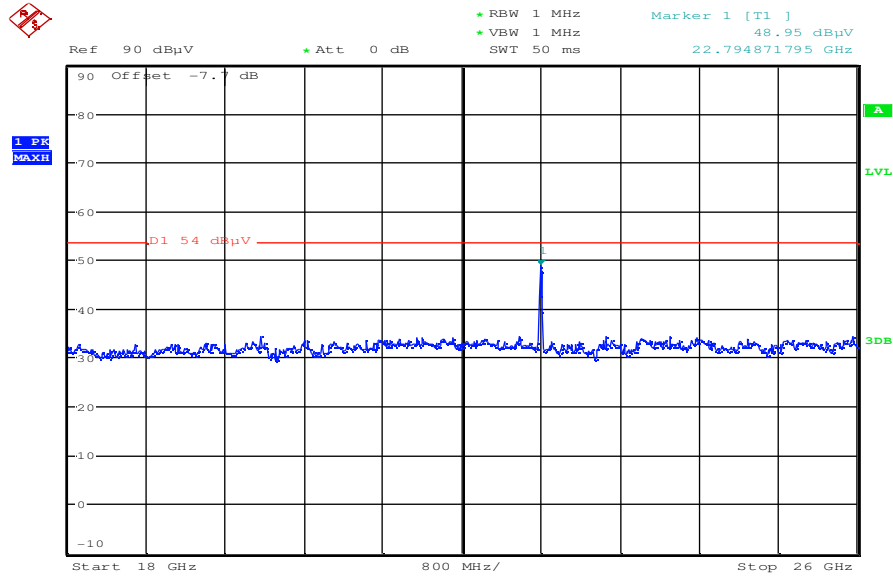


Plot 26: highest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



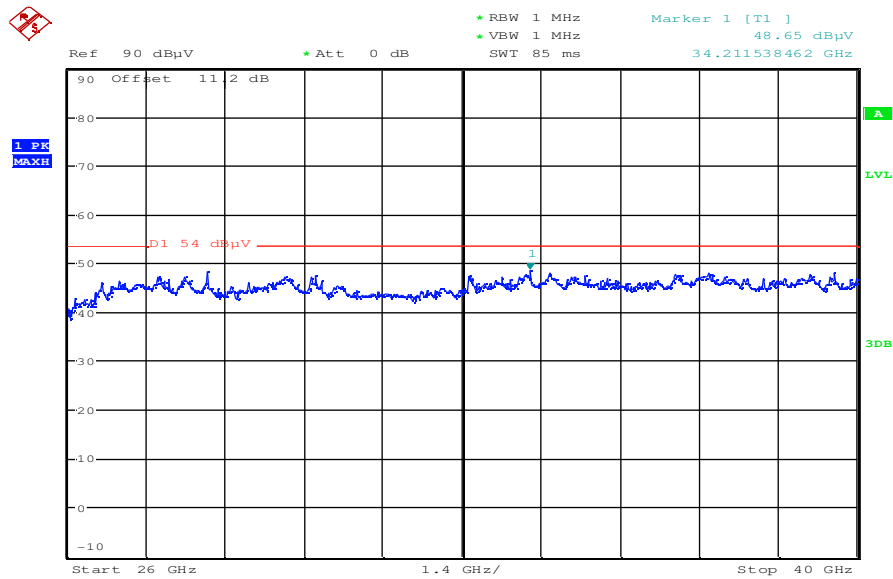
Date: 24.NOV.2010 13:28:34

Plot 27: highest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



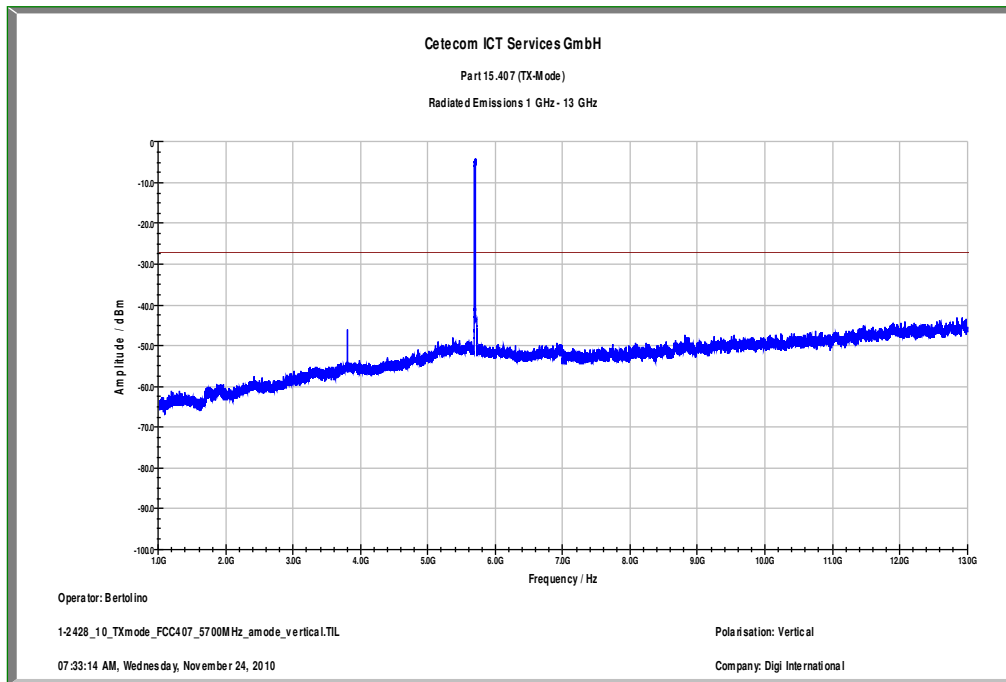
Date: 24.NOV.2010 13:55:23

Plot 28: highest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

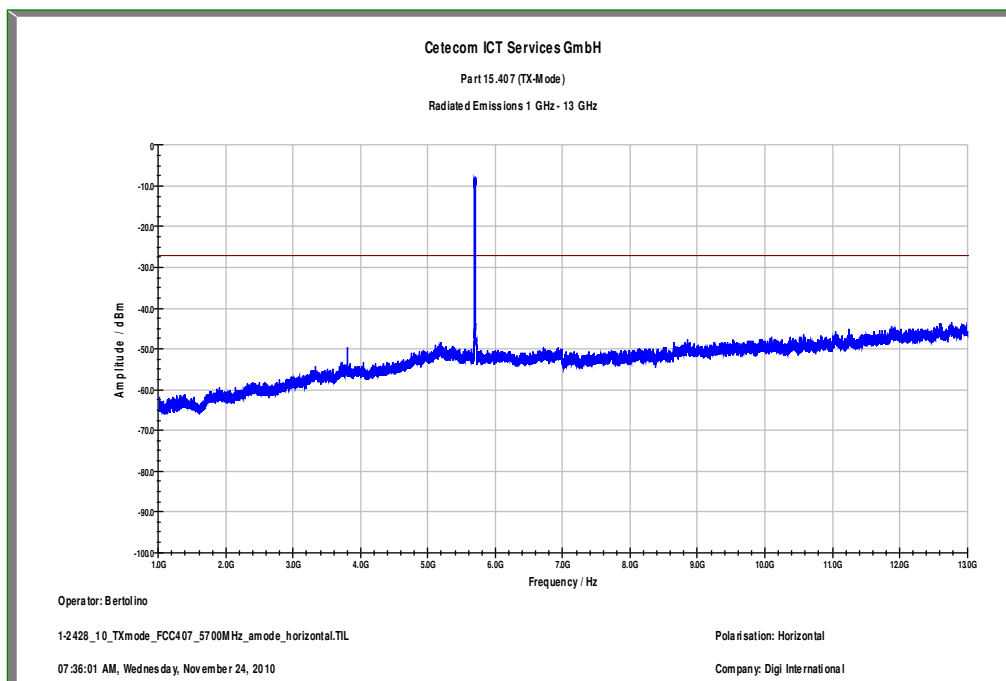


Date: 24.NOV.2010 14:22:48

Plot 29: highest channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407



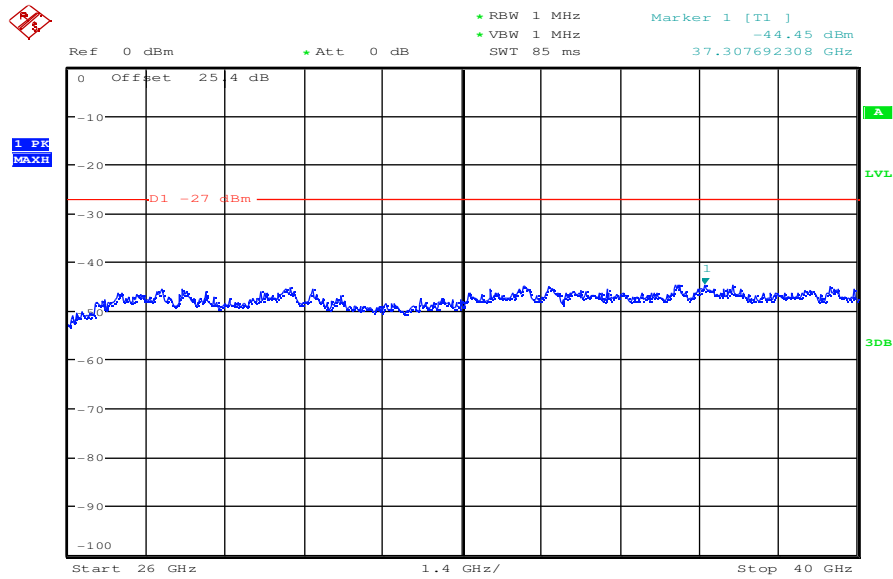
Plot 30: highest channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407







Plot 33: highest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:45:48

**OFDM – mode / n – mode (mcs7):**

**Plot 1:** lowest channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

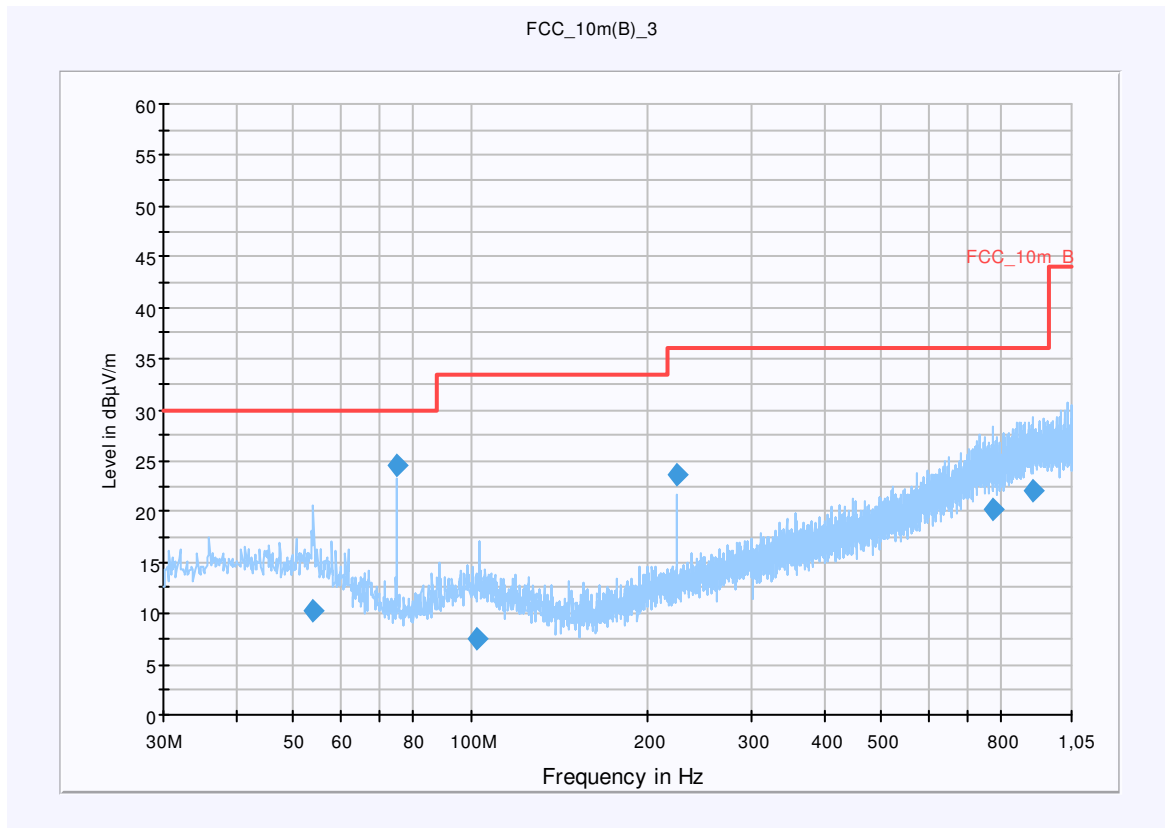
**Common Information**

EUT: WLAN computer embex  
 Serial Number: proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5500 MHz, n mode  
 Operator Name: MET  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



**Final Result 1**

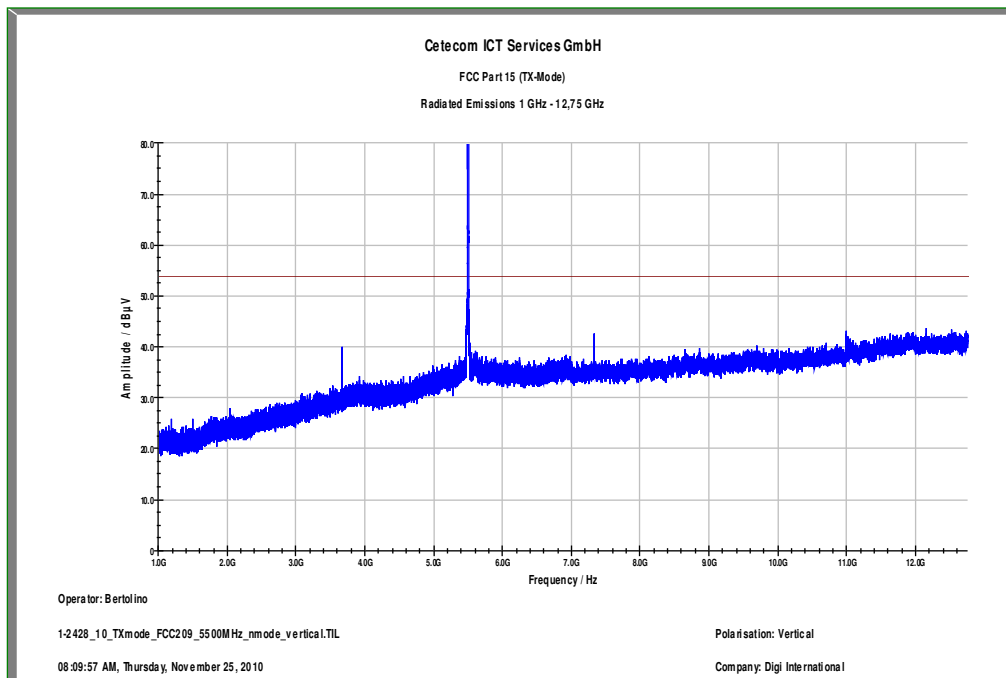
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
54.119100	10.3	15000.000	120.000	203.0	V	277.0	13.0	19.7	30.0	
74.961300	24.7	15000.000	120.000	210.0	V	325.0	9.2	5.3	30.0	
102.897150	7.5	15000.000	120.000	189.0	H	325.0	11.6	26.0	33.5	
224.891250	23.6	15000.000	120.000	109.0	V	325.0	12.5	12.4	36.0	
773.749650	20.4	15000.000	120.000	105.0	V	223.0	23.7	15.6	36.0	
902.061900	22.1	15000.000	120.000	132.0	H	36.0	25.2	13.9	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

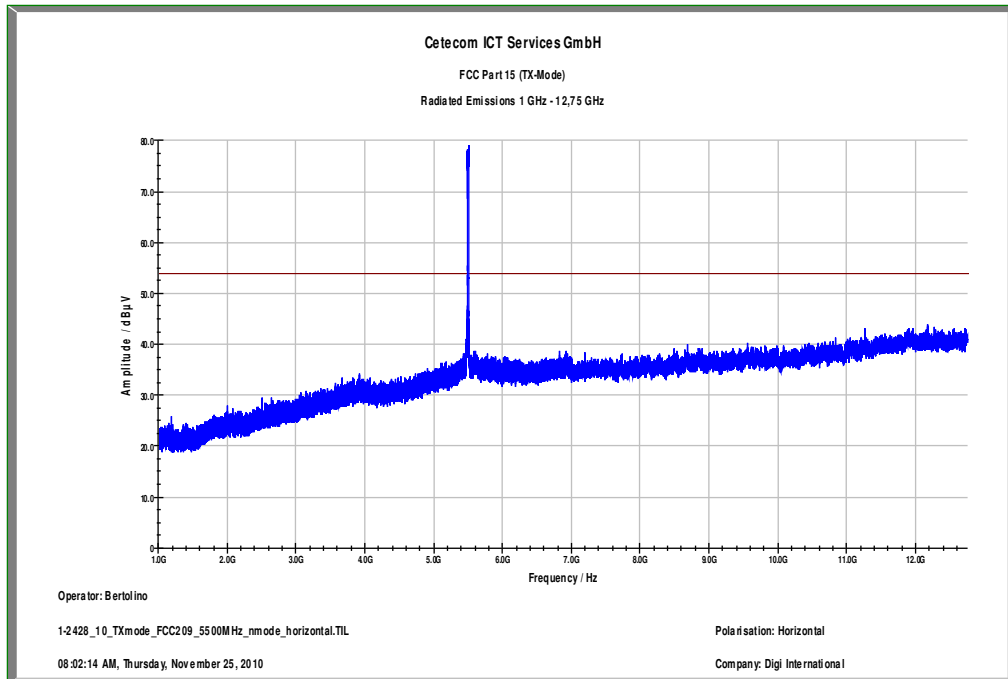
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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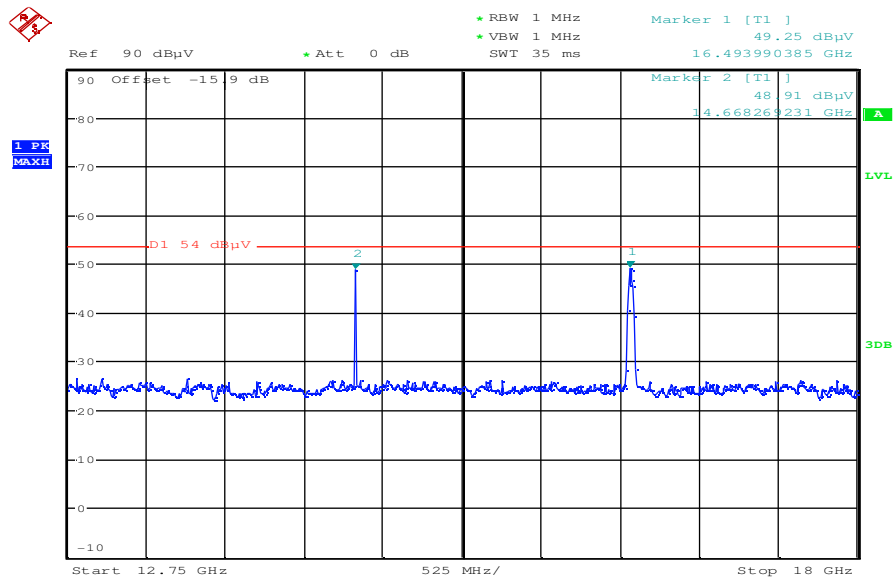
**Plot 2:** lowest channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 3: lowest channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

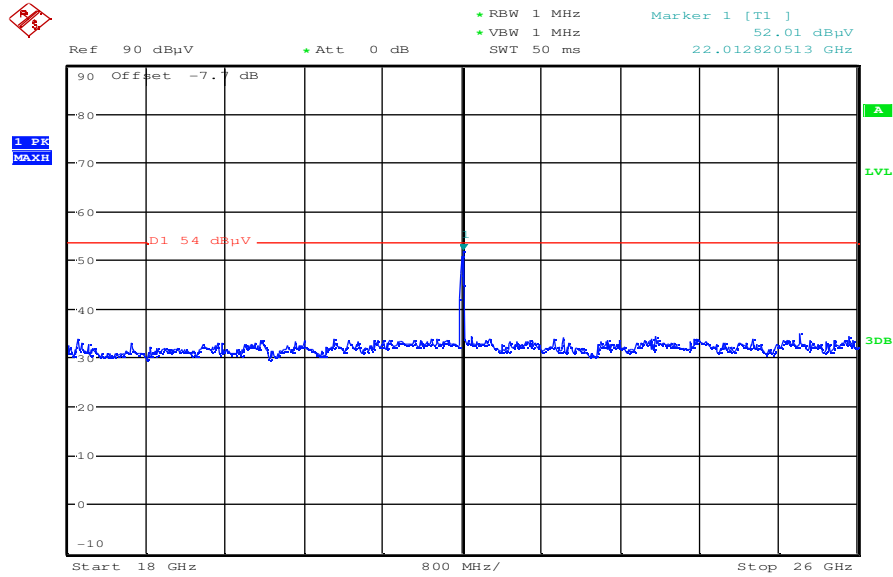


Plot 4: lowest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



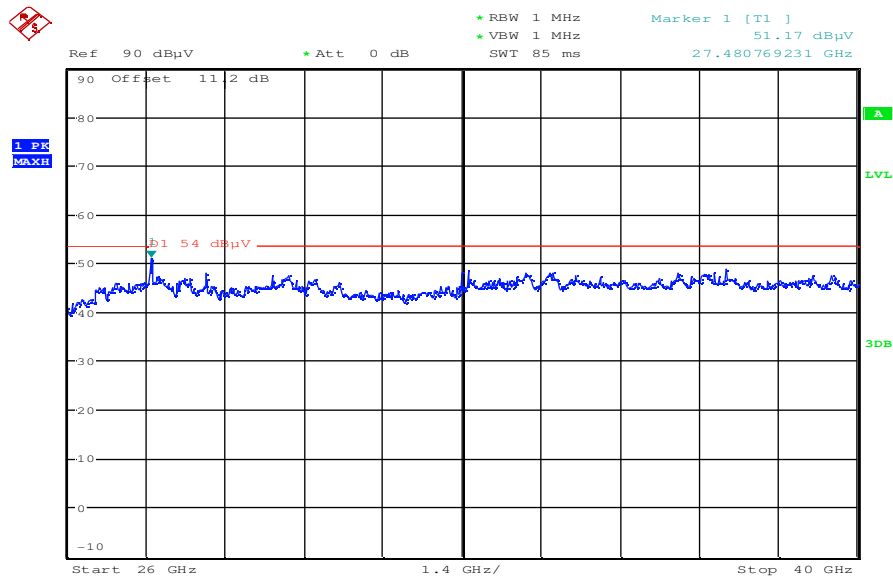
Date: 24.NOV.2010 13:38:45

Plot 5: lowest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



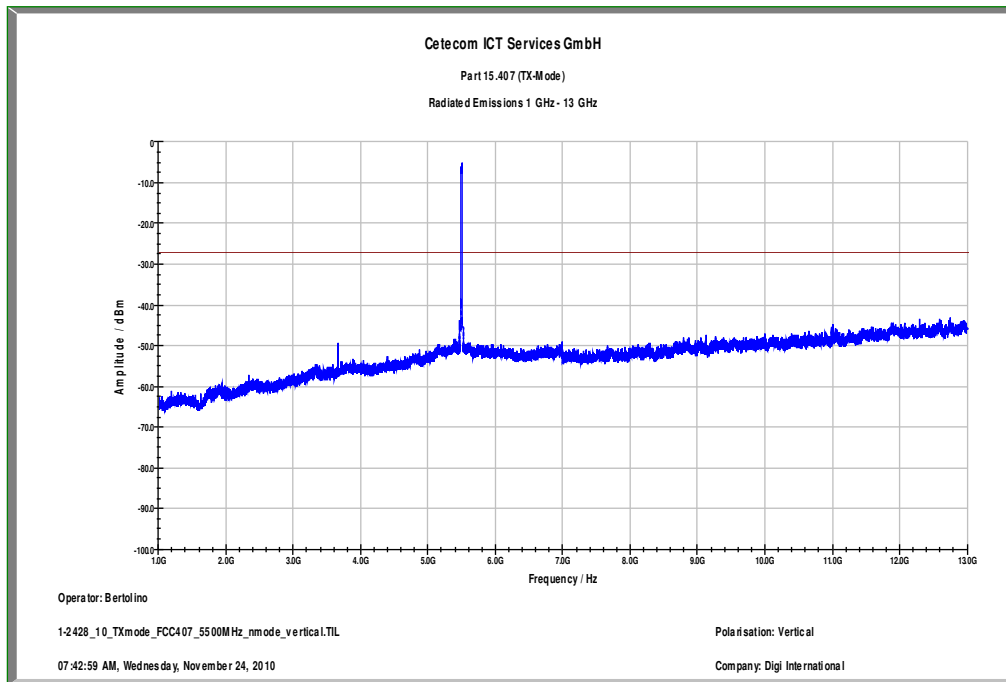
Date: 24.NOV.2010 14:02:56

Plot 6: lowest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

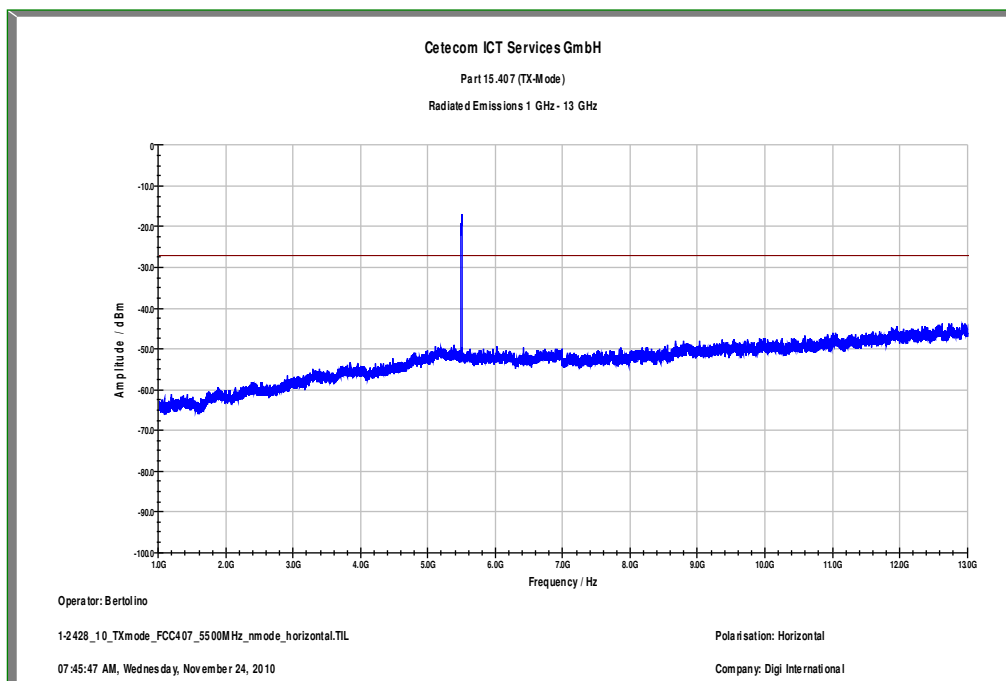


Date: 24.NOV.2010 14:29:39

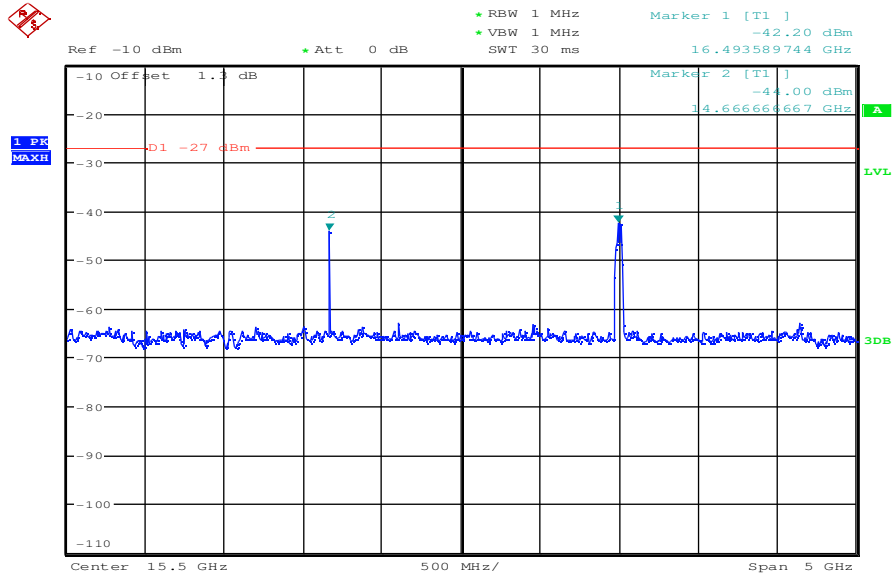
**Plot 7:** lowest channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407



**Plot 8:** lowest channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

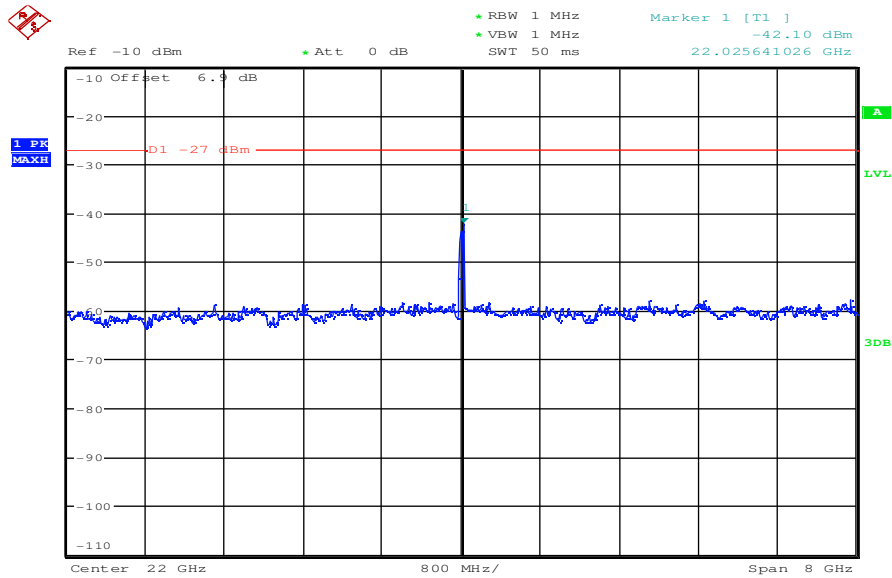


Plot 9: lowest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 11:47:30

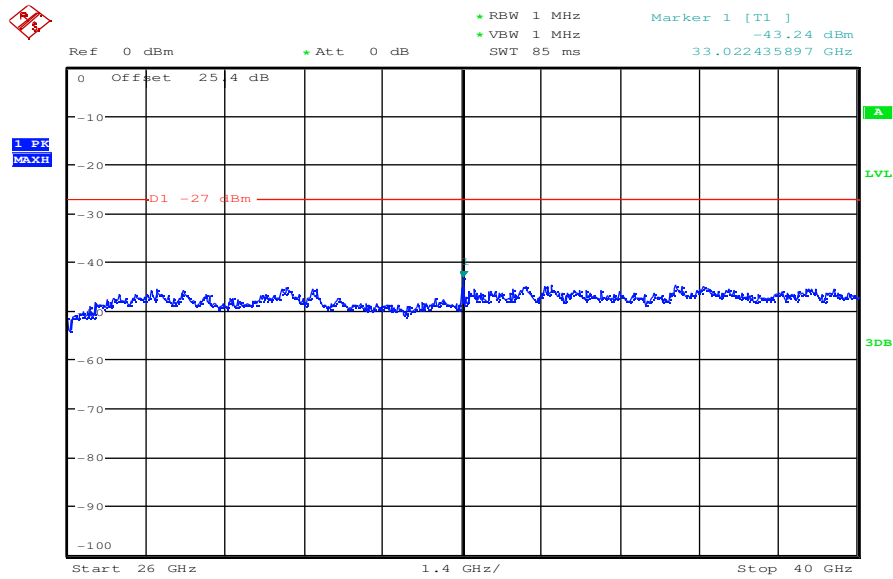
Plot 10: lowest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:23:43



Plot 11: lowest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:54:03

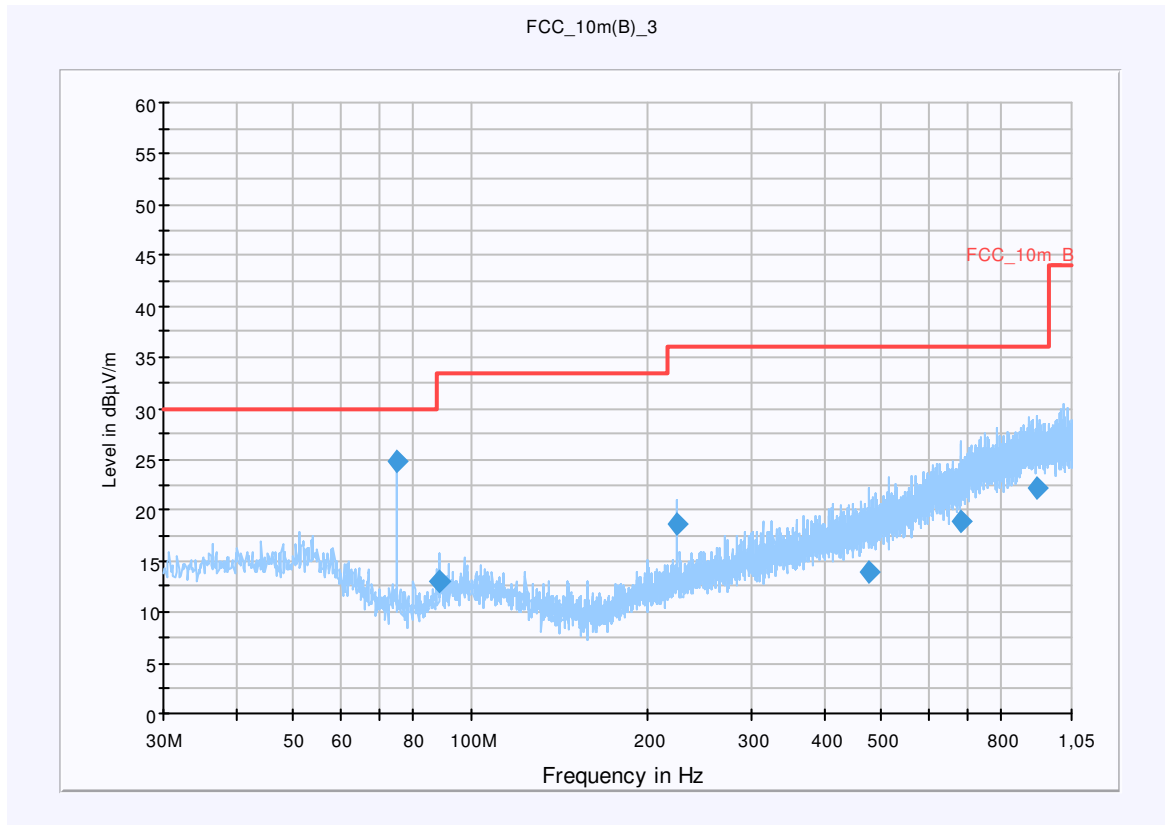
Plot 12: middle channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

**Common Information**

EUT: WLAN computer embex  
 Serial Number: proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5600 MHz, n mode  
 Operator Name: MET  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dBµV/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



**Final Result 1**

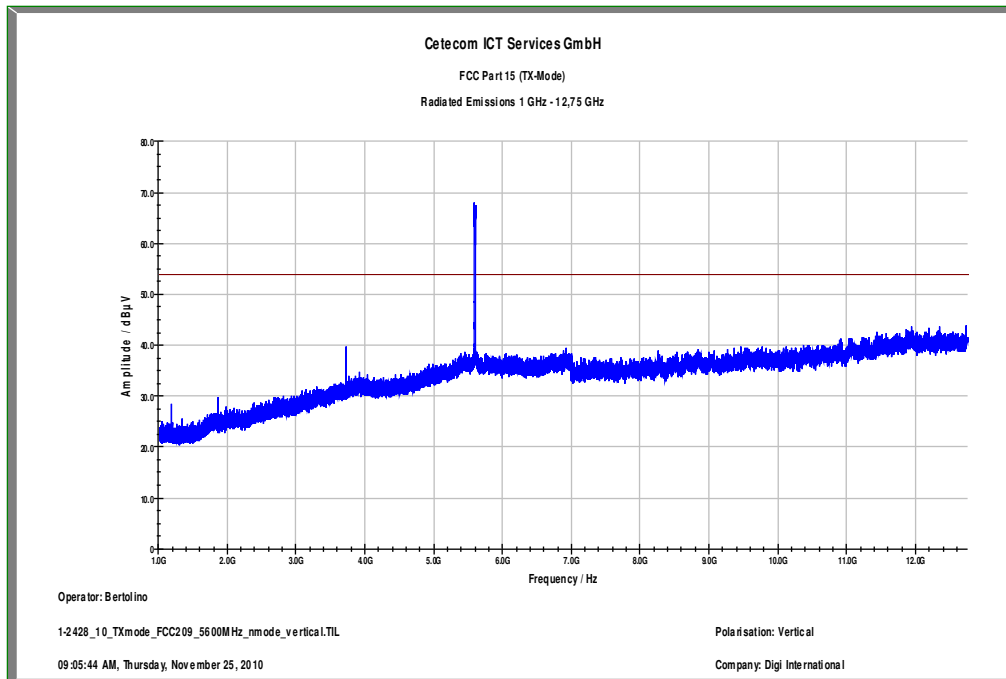
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
74.969700	24.7	15000.000	120.000	179.0	V	85.0	9.2	5.3	30.0	
88.480200	12.9	15000.000	120.000	220.0	V	304.0	10.3	20.6	33.5	
224.928600	18.7	15000.000	120.000	116.0	V	36.0	12.5	17.3	36.0	
475.733700	14.0	15000.000	120.000	220.0	H	40.0	18.2	22.0	36.0	
684.271950	18.9	15000.000	120.000	220.0	H	289.0	22.1	17.1	36.0	
921.053400	22.2	15000.000	120.000	220.0	H	136.0	25.3	13.8	36.0	

**Hardware Setup:** EMI radiated\Electric Field (NOS) - [EMI radiated]

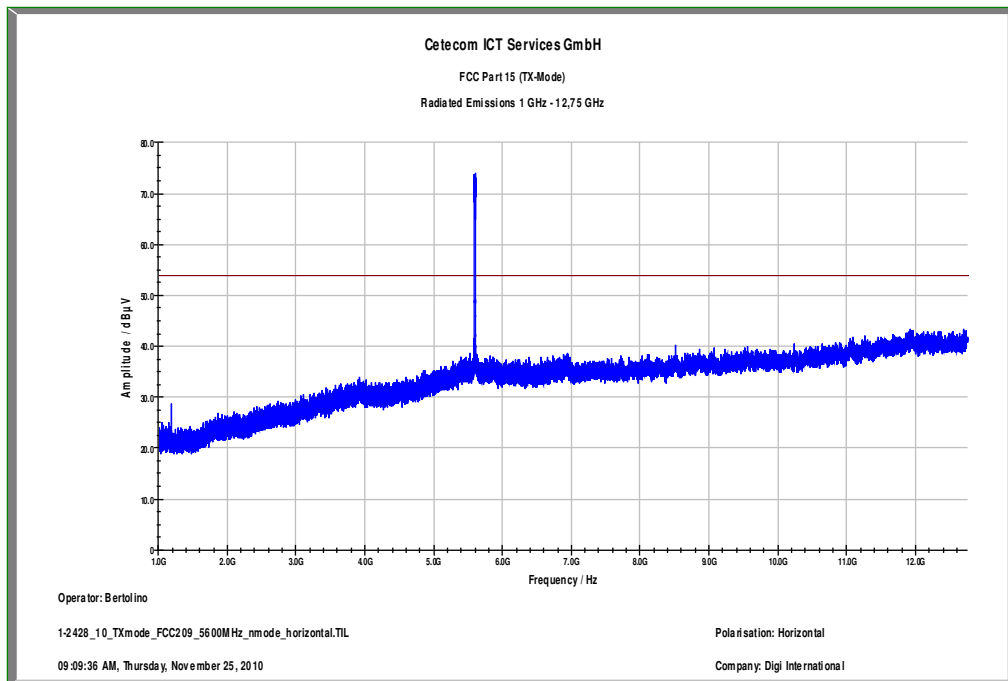
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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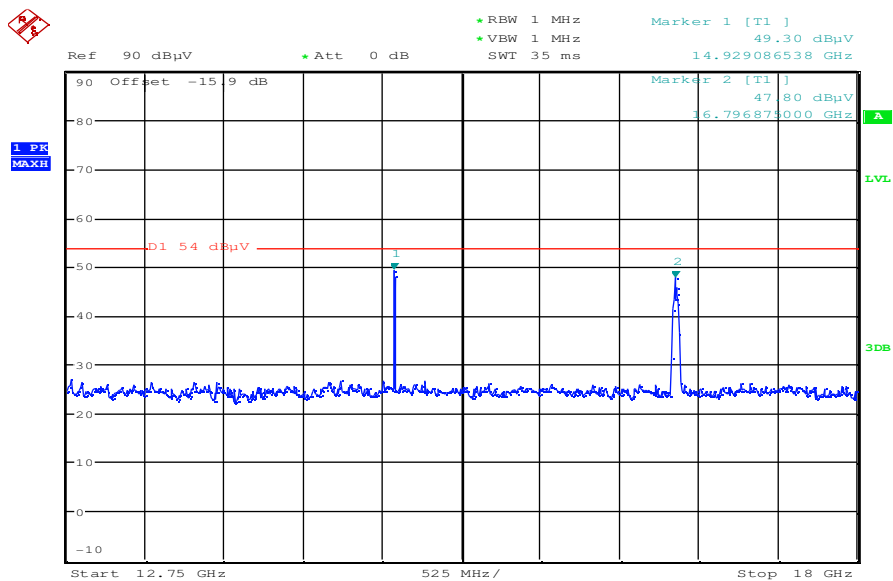
**Plot 13:** middle channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



Plot 14: middle channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

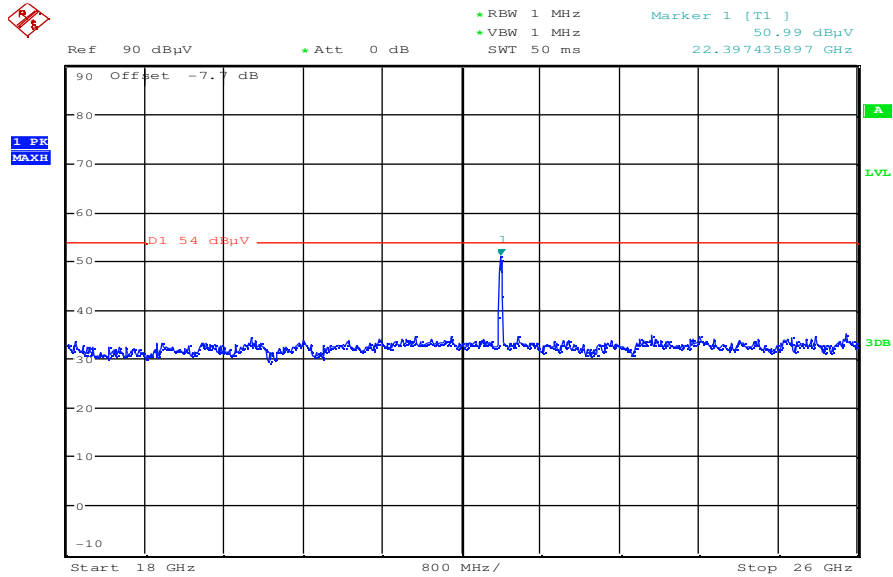


Plot 15: middle channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



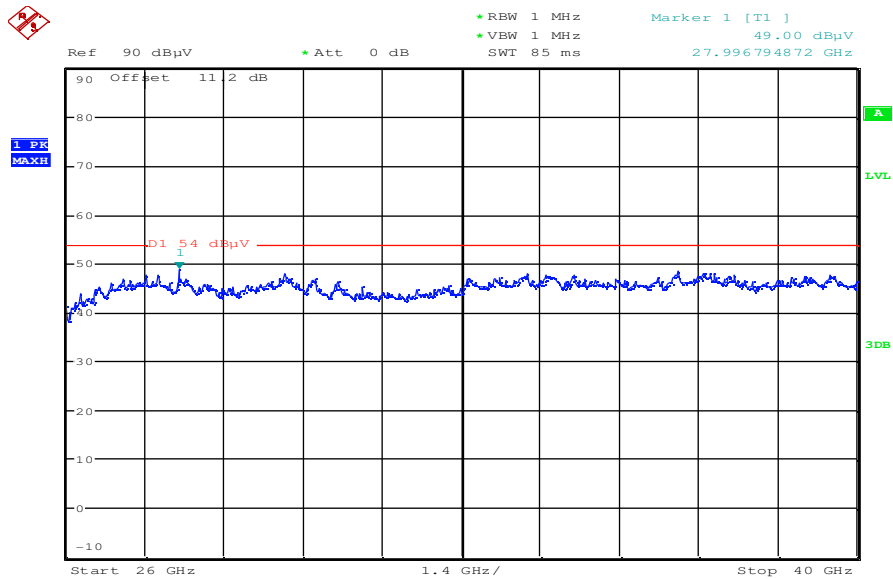
Date: 24.NOV.2010 13:39:53

Plot 16: middle channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



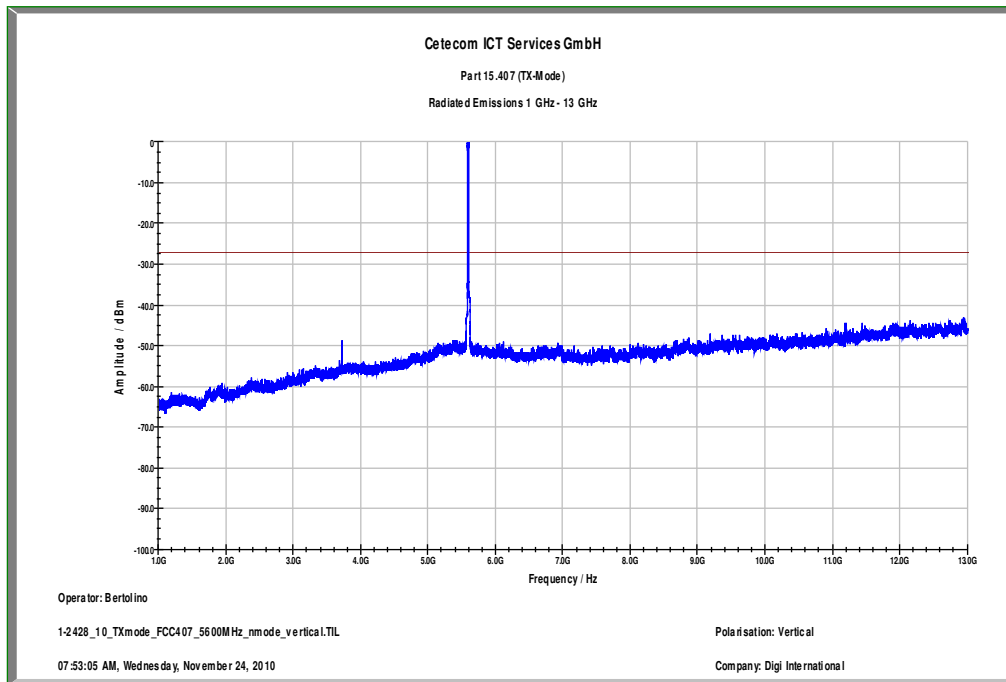
Date: 24.NOV.2010 14:04:28

Plot 17: middle channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

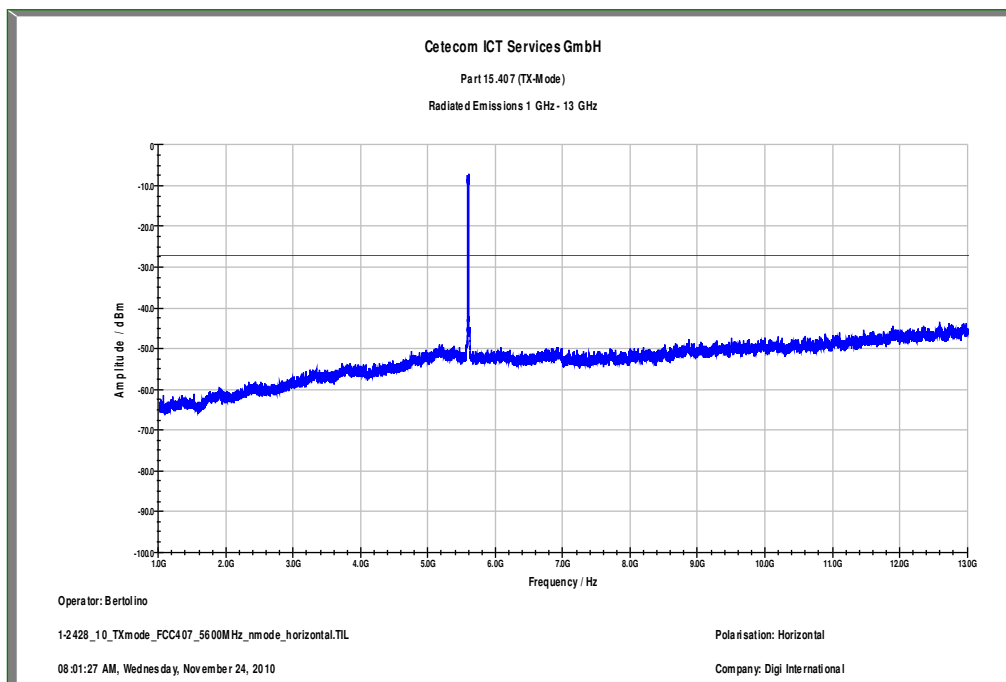


Date: 24.NOV.2010 14:31:12

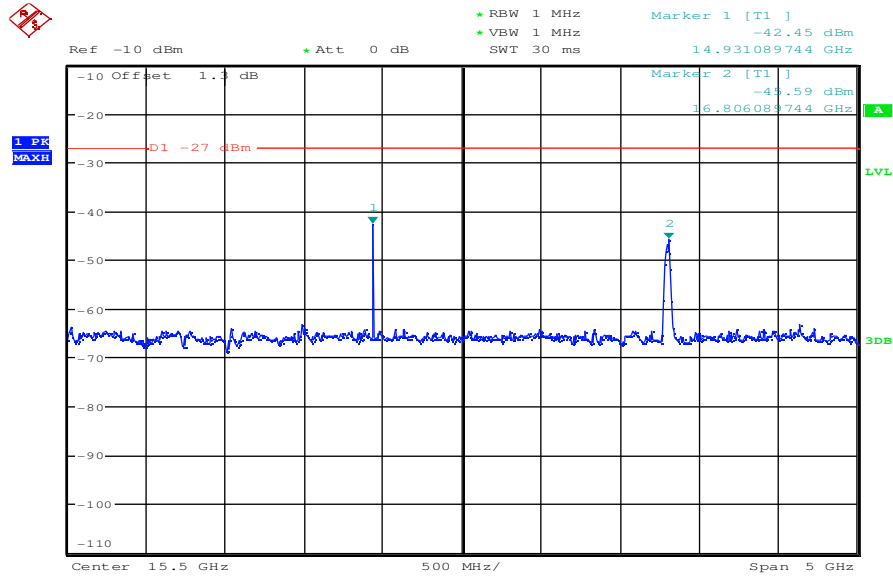
Plot 18: middle channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407



Plot 19: middle channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407

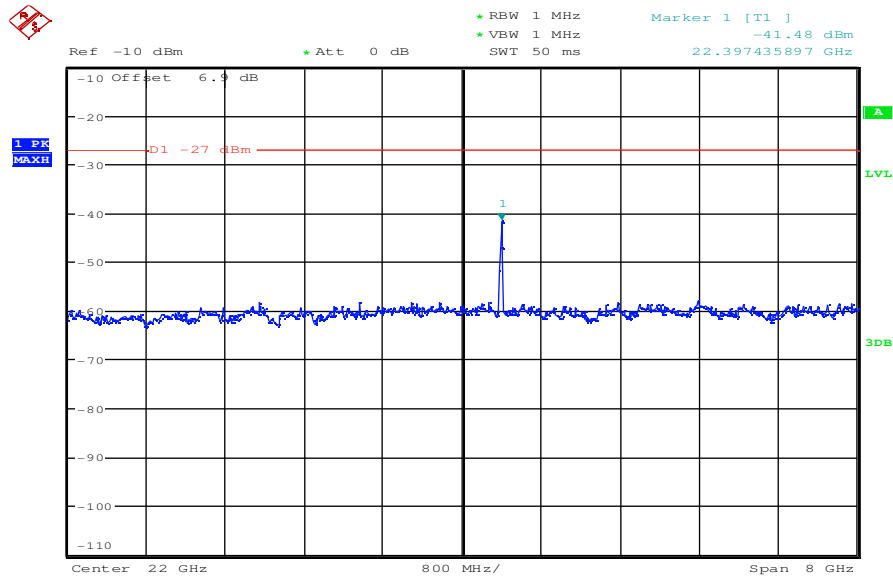


Plot 20: middle channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



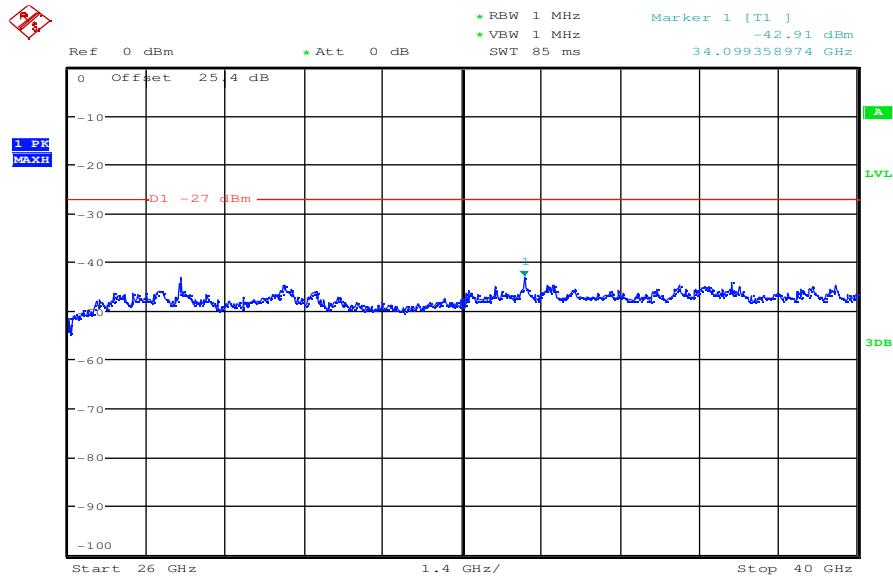
Date: 25.NOV.2010 11:48:37

Plot 21: middle channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:24:25

Plot 22: middle channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:55:00



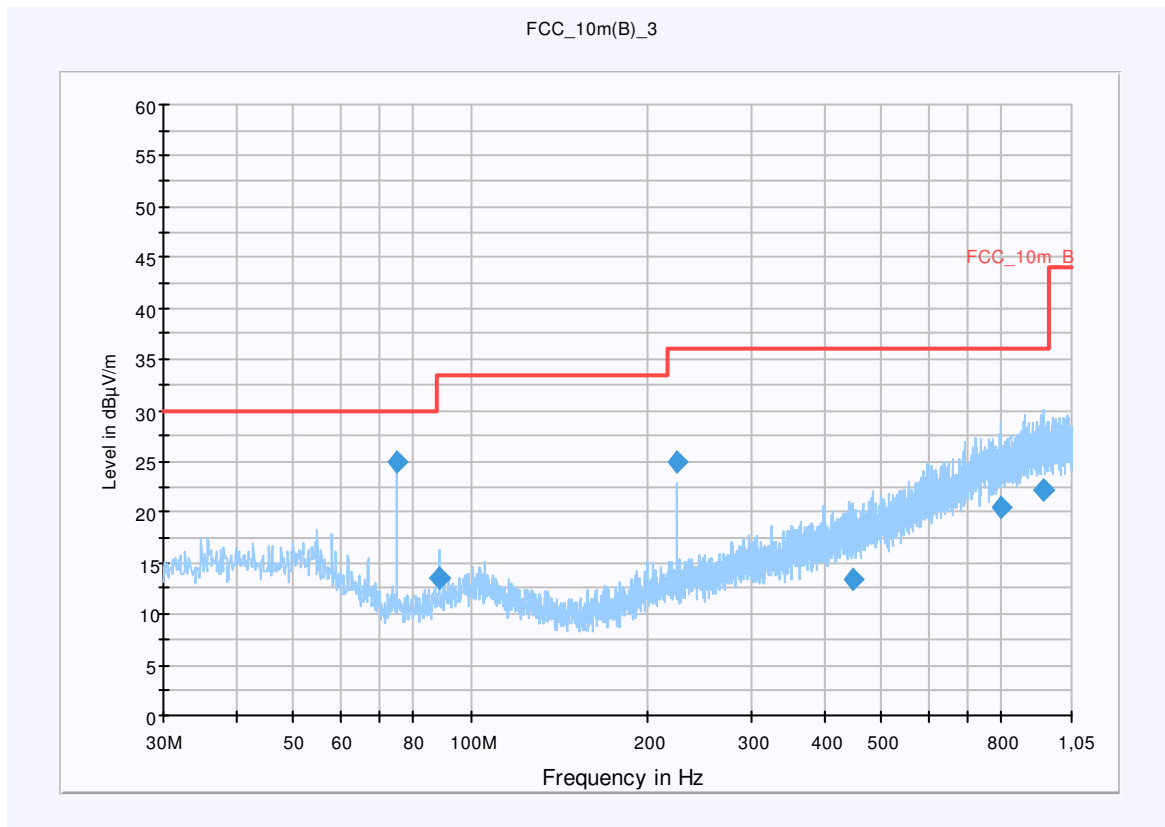
Plot 23: highest channel; power index 30; 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209

### Common Information

EUT: WLAN computer embex  
 Serial Number: proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: TX, 5700 MHz, n mode  
 Operator Name: MET  
 Comment: 3.3V DC

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



### Final Result 1

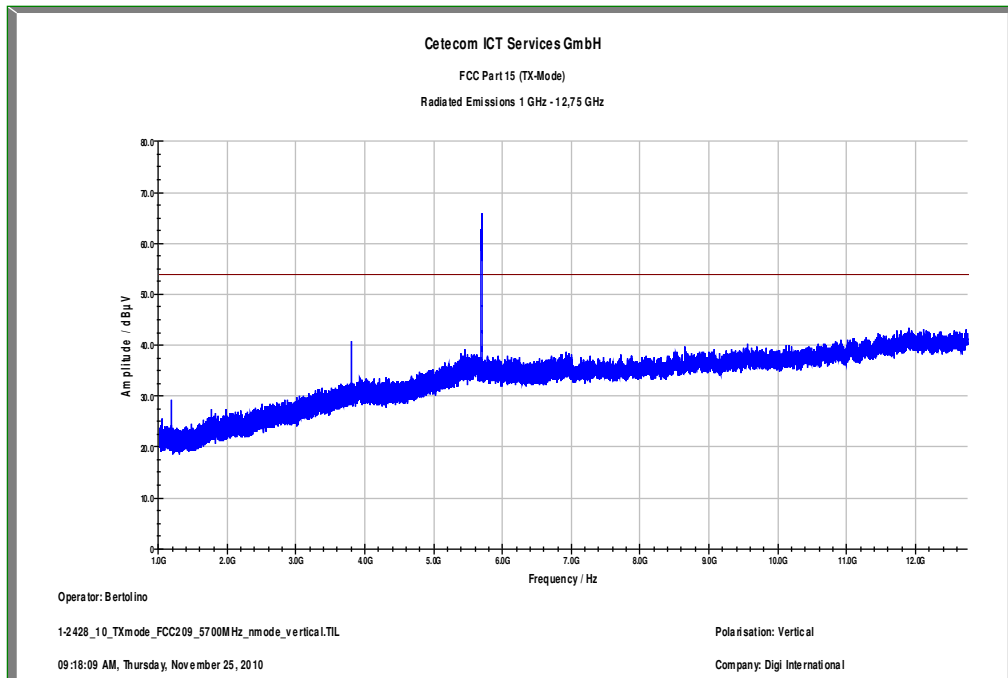
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
74.955450	25.1	15000.000	120.000	181.0	V	108.0	9.2	4.9	30.0	
88.463250	13.6	15000.000	120.000	112.0	V	230.0	10.3	19.9	33.5	
224.869350	24.9	15000.000	120.000	98.0	V	53.0	12.5	11.1	36.0	
445.601250	13.4	15000.000	120.000	220.0	V	294.0	17.6	22.6	36.0	
800.139600	20.5	15000.000	120.000	220.0	V	10.0	23.8	15.5	36.0	
939.211500	22.2	15000.000	120.000	220.0	H	47.0	25.3	13.8	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

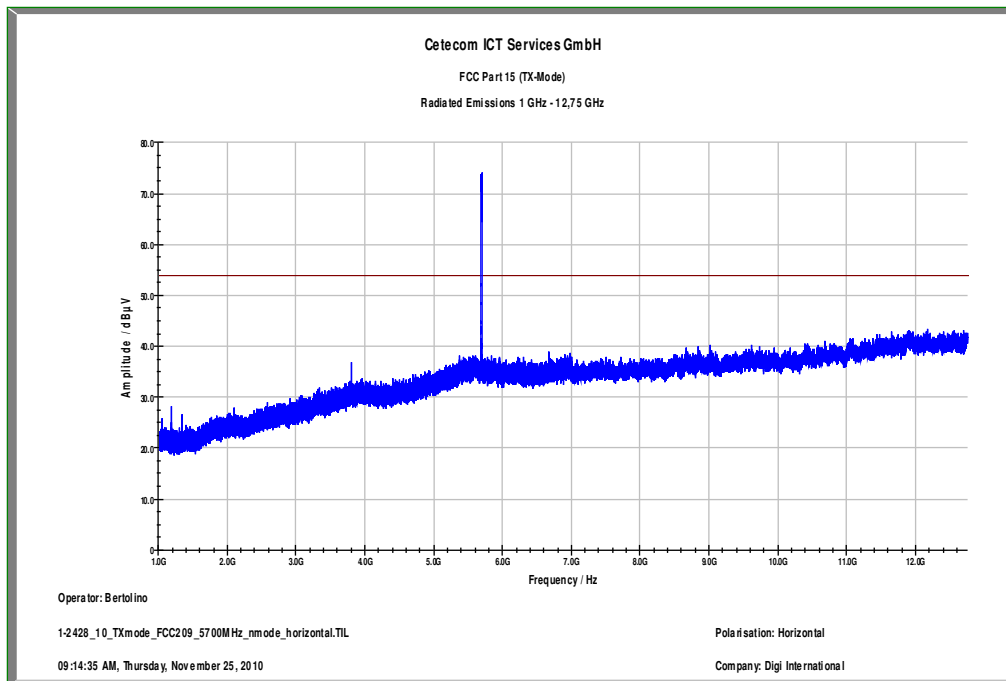
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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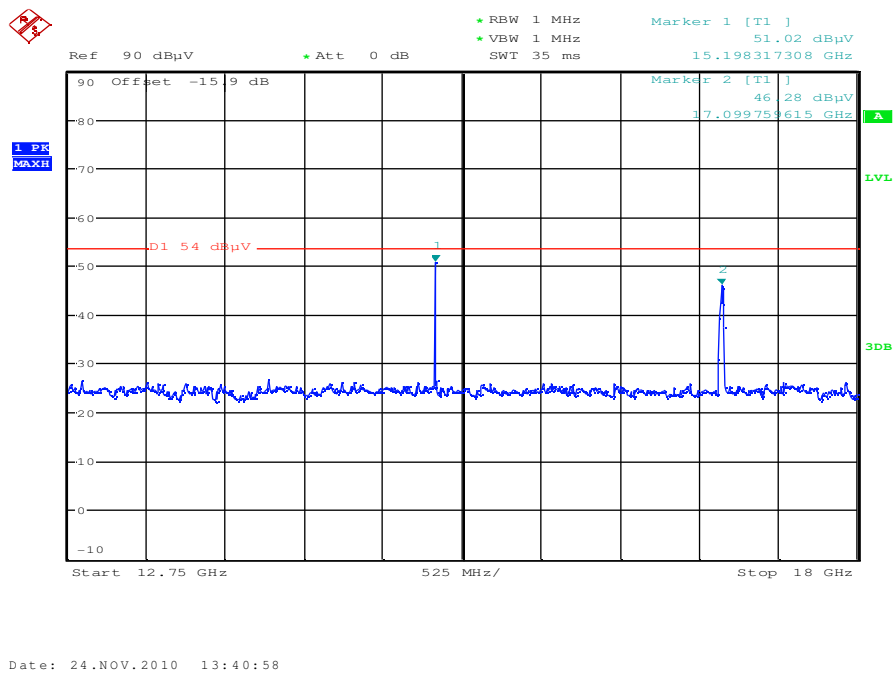
**Plot 24:** highest channel; power index 30; 1 GHz to 12.75 GHz – vertical polarization, Part 15.209



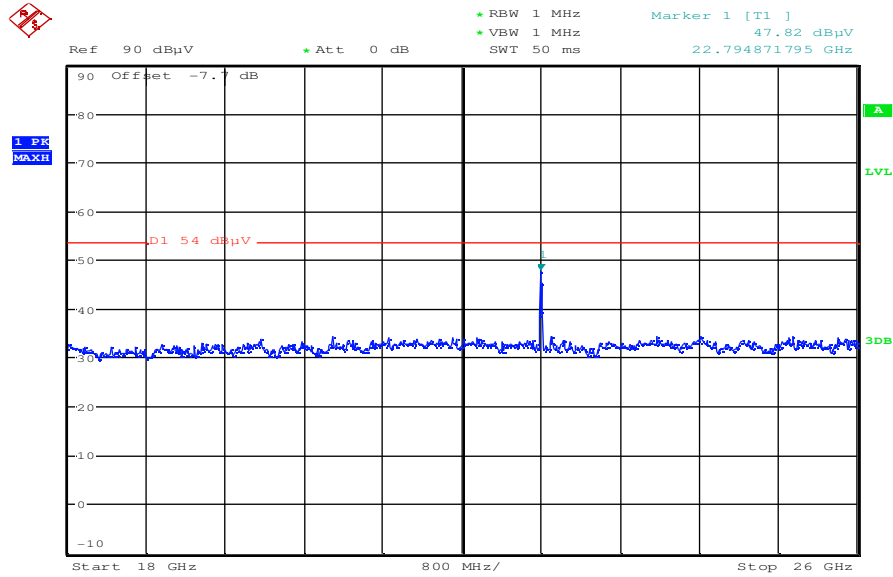
Plot 25: highest channel; power index 30; 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209



Plot 26: highest channel; power index 30; 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209

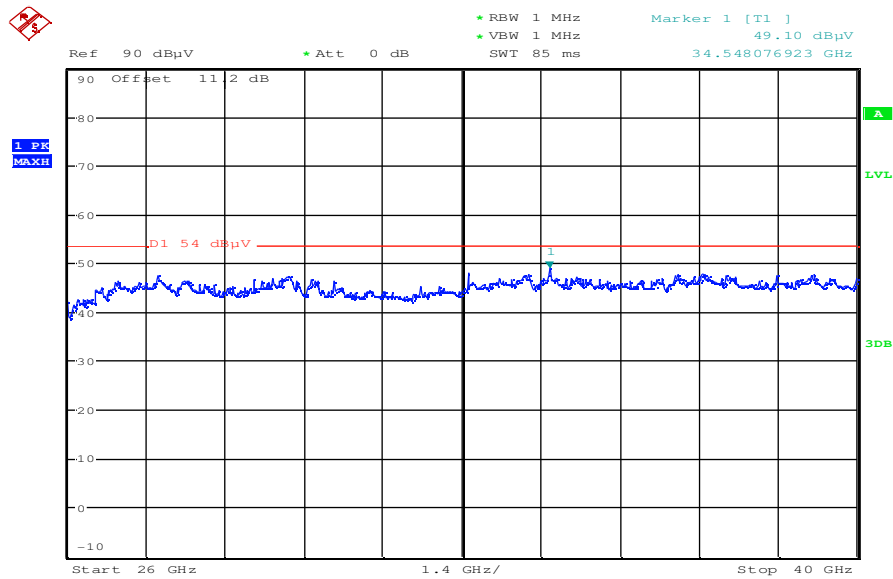


Plot 27: highest channel; power index 30; 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



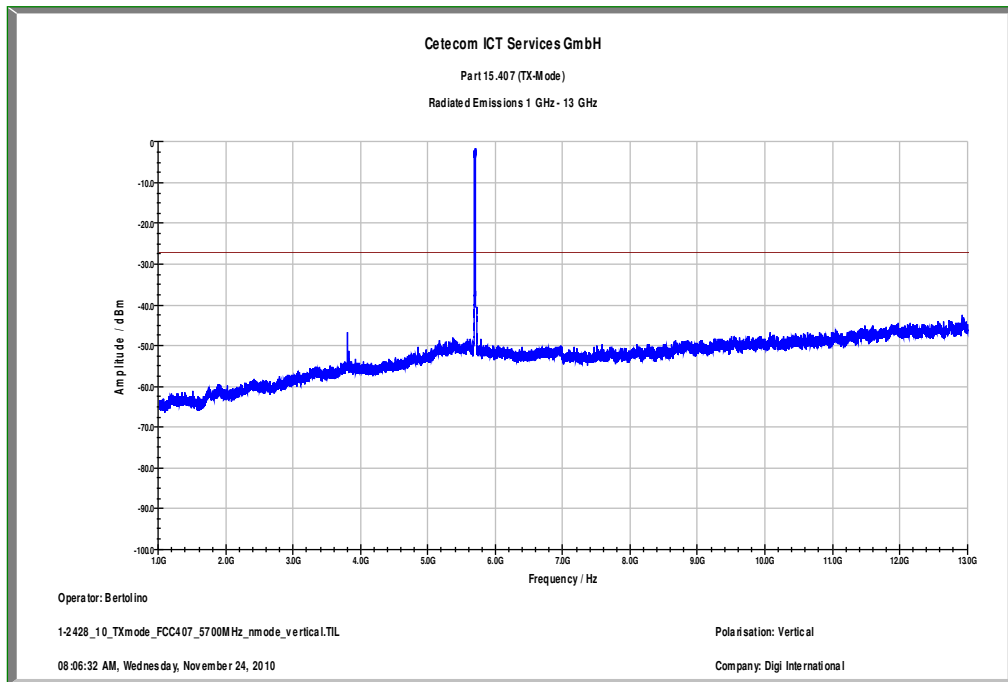
Date: 24.NOV.2010 14:06:09

Plot 28: highest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

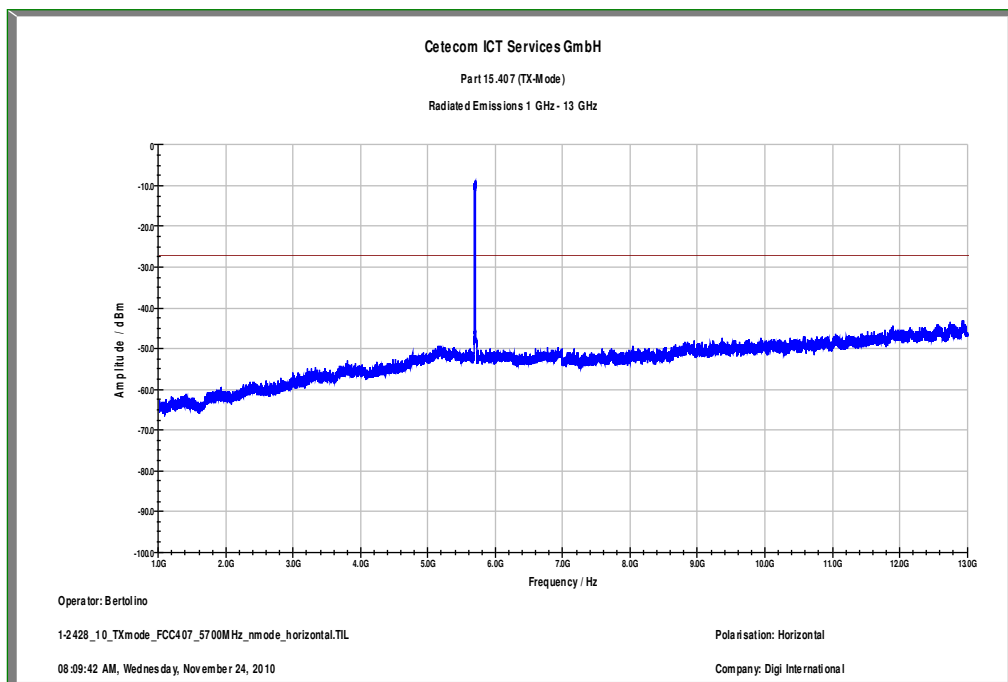


Date: 24.NOV.2010 14:32:02

Plot 29: highest channel; power index 30; 1 GHz to 13 GHz – vertical polarization, Part 15.407

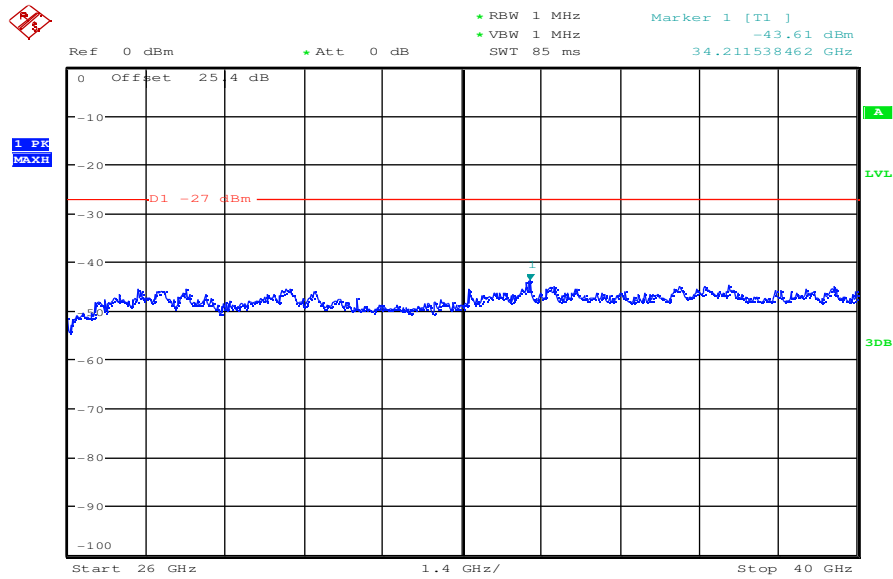


Plot 30: highest channel; power index 30; 1 GHz to 13 GHz – horizontal polarization, Part 15.407





Plot 33: highest channel; power index 30; 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:55:40

## 1.2 RX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in idle/receive mode. The results are valid for both modes.

### Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold

### Limits:

FCC		IC
CFR Part 15.109		RSS Gen, Issue 2, 4.10
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dB $\mu$ V/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

### Result: Also see plots

RX Spurious Emissions Radiated [dB $\mu$ V/m]		
F [MHz]	Detector	Level [dB $\mu$ V/m]
For emissions below 1 GHz – please take a look at the table below the 1 GHz plot.		
4970.0 MHz	1 MHz / 10 Hz PP	43.19 dB $\mu$ V/m vertical 41.77 dB $\mu$ V/m horizontal
9748.0 MHz	1 MHz / 10 Hz PP	47.61 dB $\mu$ V/m vertical 44.58 dB $\mu$ V/m horizontal
For emissions above 13 GHz – please take a look at the plots.		
Measurement uncertainty	± 3 dB	

**Result: The result of the measurement is passed.**



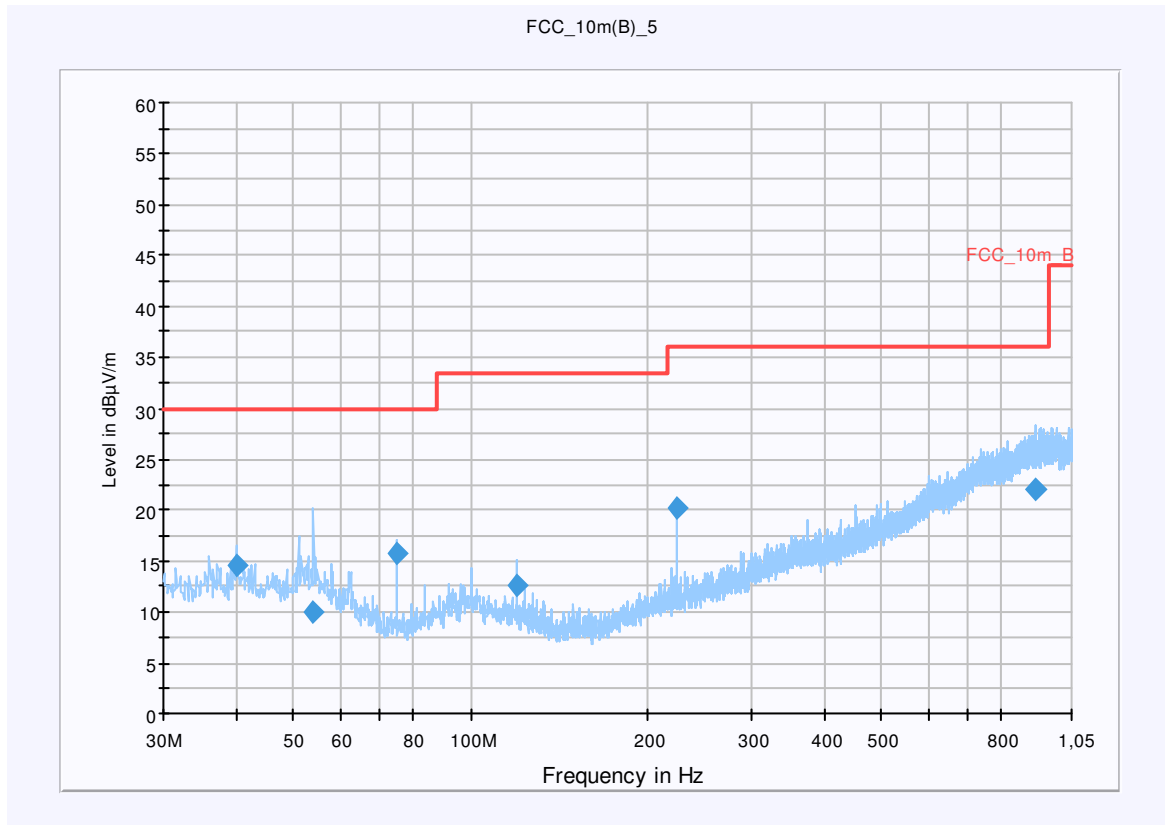
**Plot 1: 30 MHz to 1 GHz – vertical & horizontal polarization, Part 15.209**

**Common Information**

EUT: WLAN computer embex  
 Serial Number: Proto  
 Test Description: FCC part 15 @ 10 m  
 Operating Conditions: RX  
 Operator Name: HNA  
 Comment: 3.3V DC

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m  
**Subrange**                      **Detectors**                      **IF Bandwidth**                      **Meas. Time**                      **Receiver**  
 30 MHz - 1,05 GHz              QuasiPeak                      120 kHz                      15 s                      Receiver



**Final Result 1**

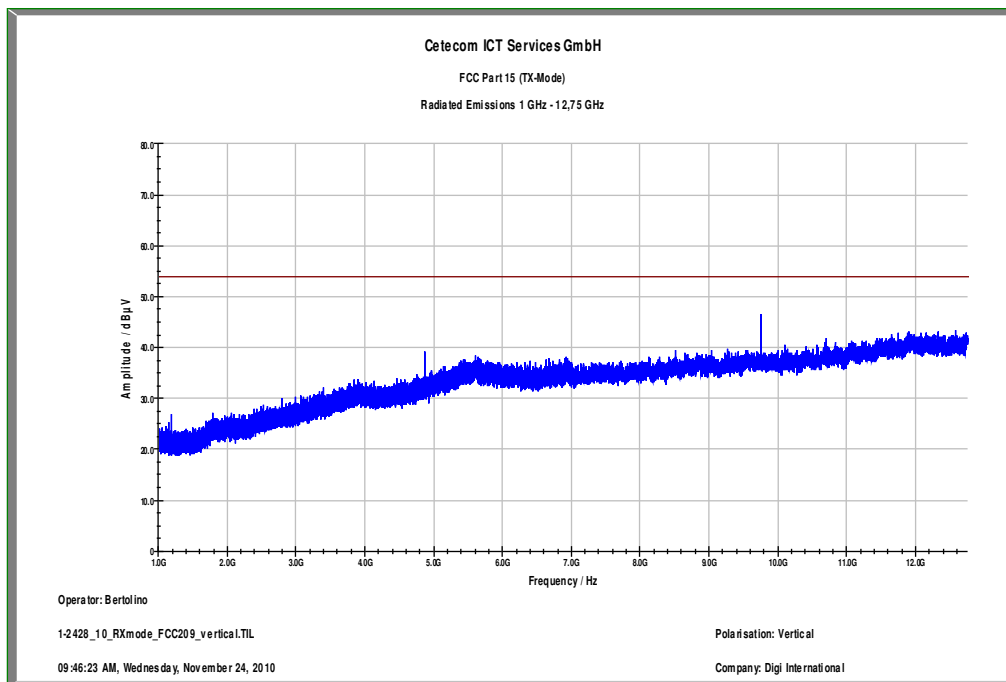
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)	Comment
39.960000	14.6	15000.000	120.000	98.0	V	91.0	13.4	15.4	30.0	
54.120000	10.0	15000.000	120.000	133.0	V	345.0	13.0	20.0	30.0	
75.000000	15.8	15000.000	120.000	186.0	V	118.0	9.2	14.2	30.0	
120.000000	12.6	15000.000	120.000	135.0	V	28.0	10.2	20.9	33.5	
224.880000	20.3	15000.000	120.000	105.0	V	37.0	12.5	15.7	36.0	
911.880000	22.1	15000.000	120.000	212.0	V	118.0	25.2	13.9	36.0	

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

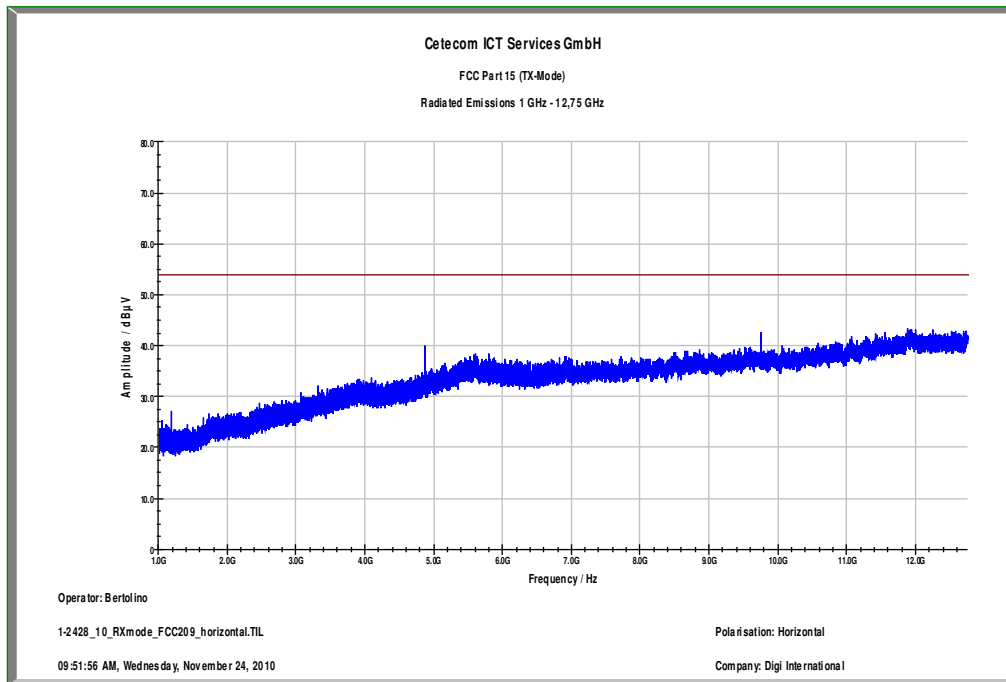
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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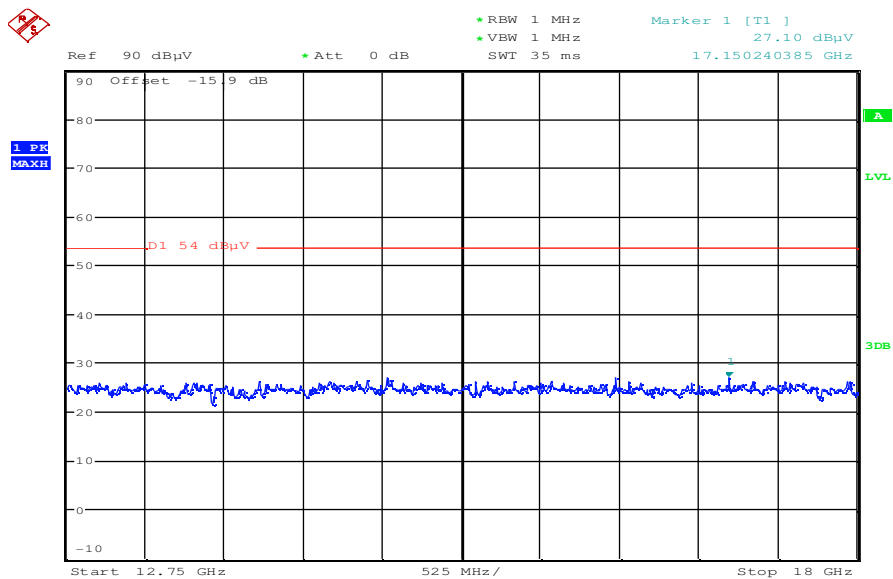
**Plot 2: 1 GHz to 12.75 GHz – vertical polarization, Part 15.209**



Plot 3: 1 GHz to 12.75 GHz – horizontal polarization, Part 15.209

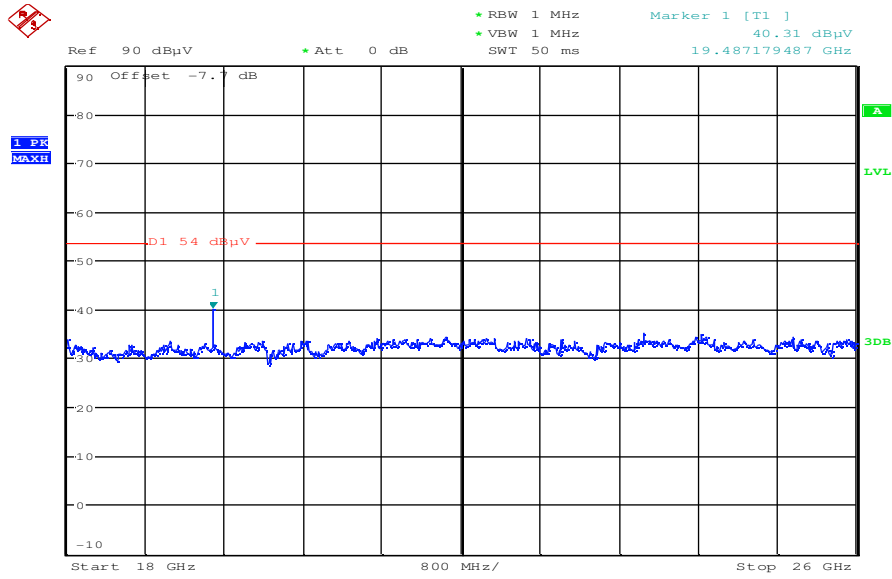


Plot 4: 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.209



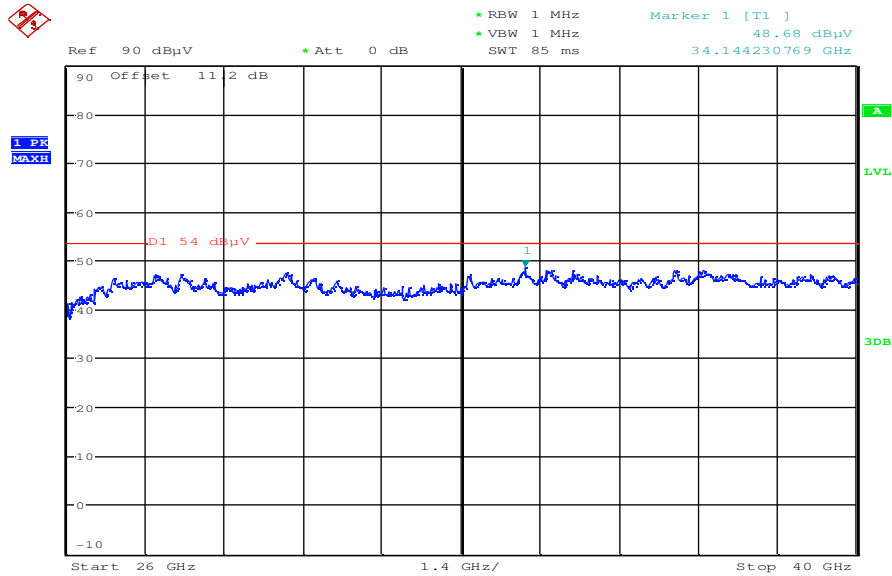
Date: 24.NOV.2010 13:42:06

Plot 5: 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.209



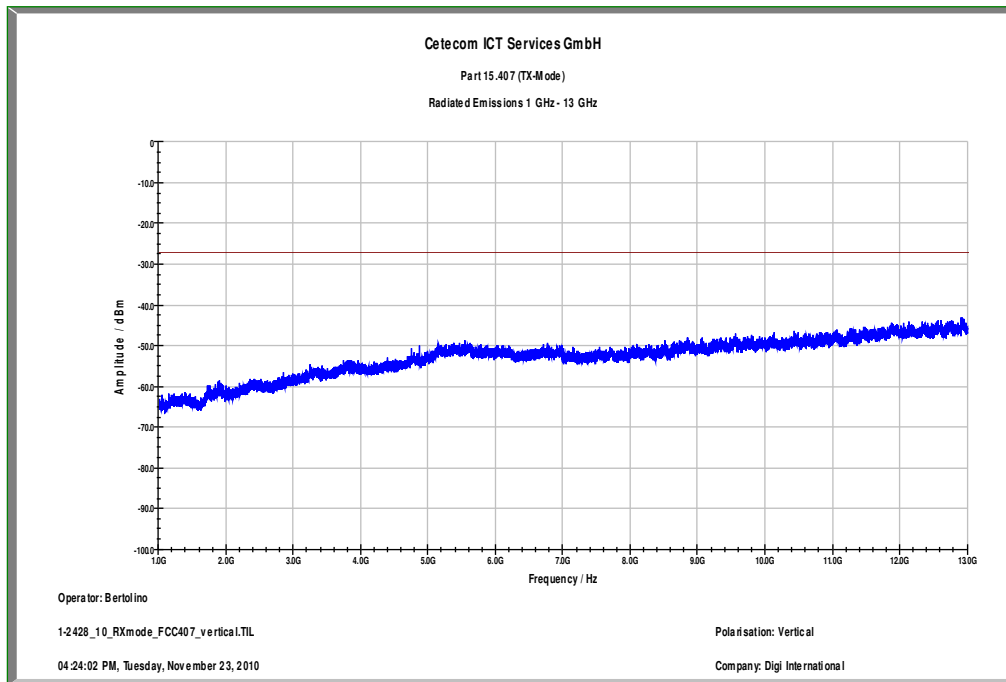
Date: 24.NOV.2010 13:44:19

Plot 6: 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.209

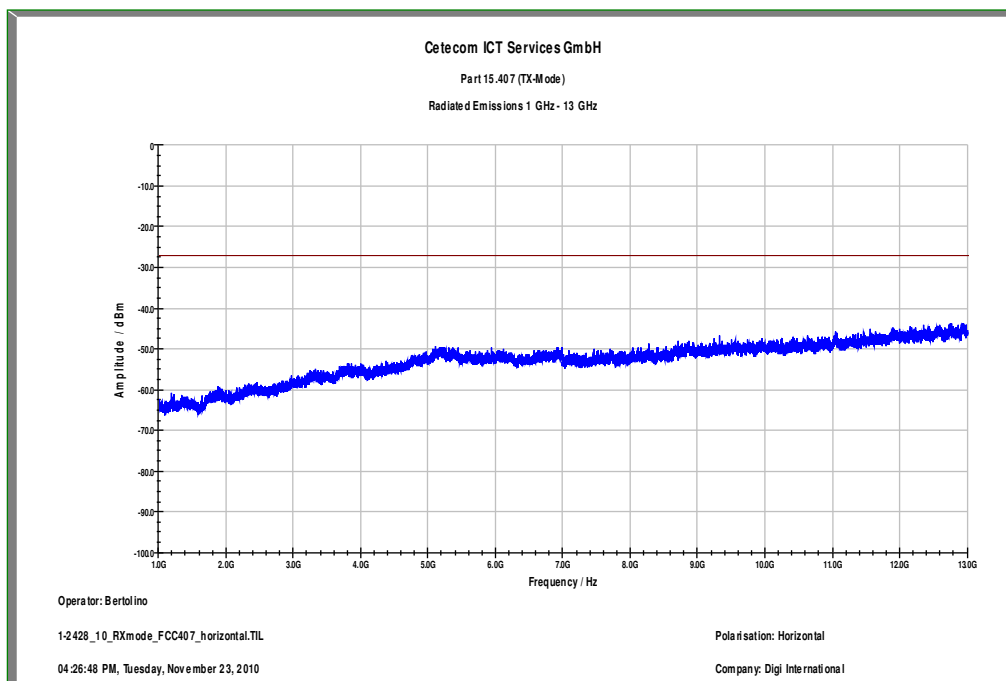


Date: 24.NOV.2010 14:32:41

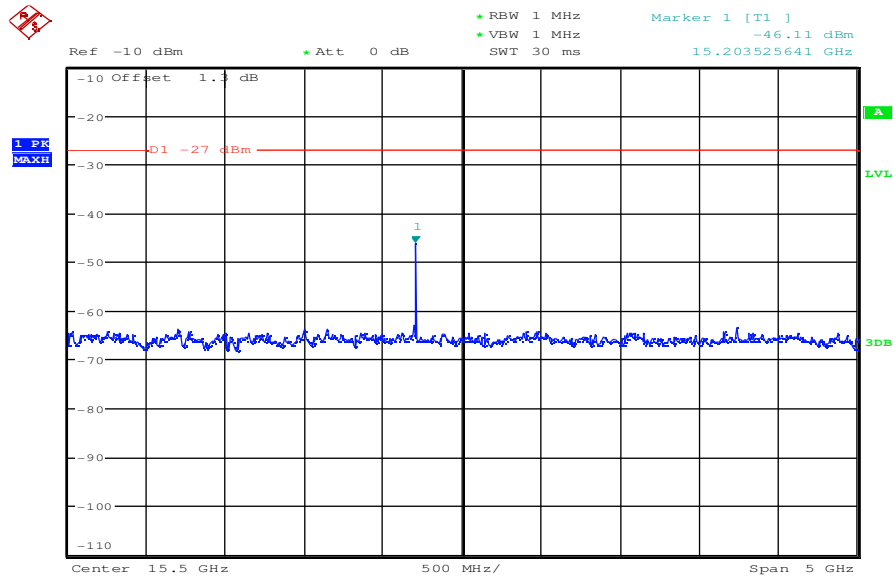
Plot 7: 1 GHz to 13 GHz – vertical polarization, Part 15.407



Plot 8: 1 GHz to 13 GHz – horizontal polarization, Part 15.407

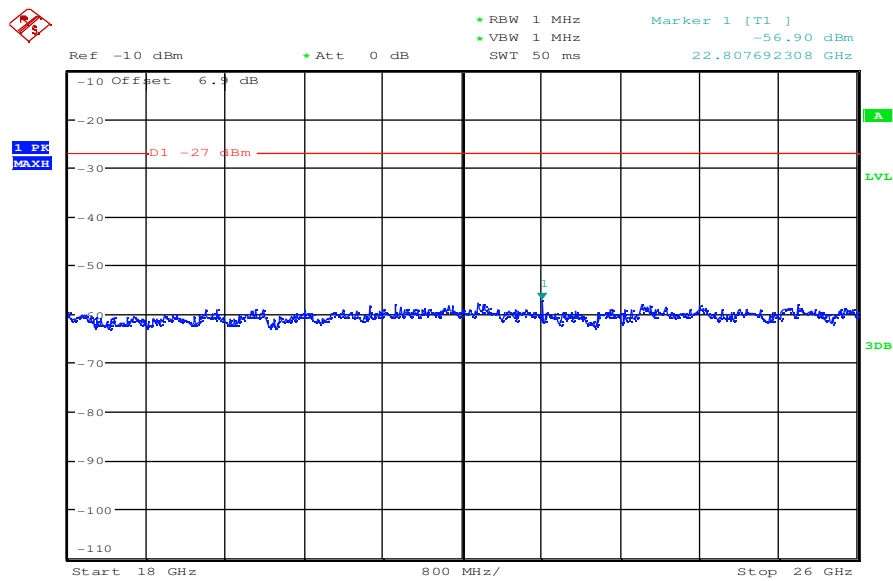


Plot 9: 12.75 GHz to 18 GHz – vertical & horizontal polarization, Part 15.407



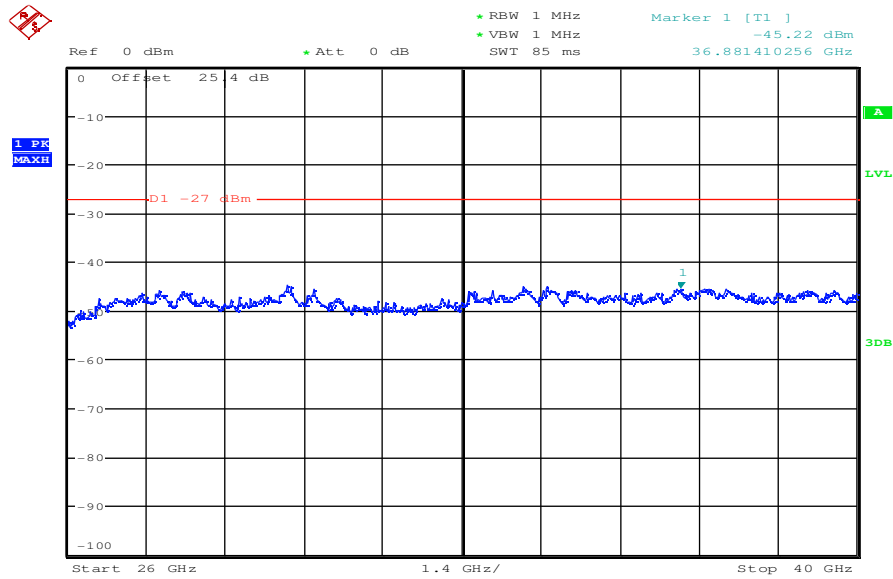
Date: 25.NOV.2010 11:51:47

Plot 10: 18 GHz to 26 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 11:53:41

Plot 11: 26 GHz to 40 GHz – vertical & horizontal polarization, Part 15.407



Date: 25.NOV.2010 13:56:02

### 1.3 TX spurious emissions radiated < 30 MHz

**Description:**

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is representative for all channels and modes. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. The limits are recalculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

**Measurement:**

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

**Limits:**

FCC		IC	
CFR Part 15.209(a)		RSS –Gen	
TX Spurious Emissions Radiated < 30 MHz			
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance	
0.009 – 0.490	2400/F(kHz)	300	
0.490 – 1.705	24000/F(kHz)	30	
1.705 – 30.0	30	30	

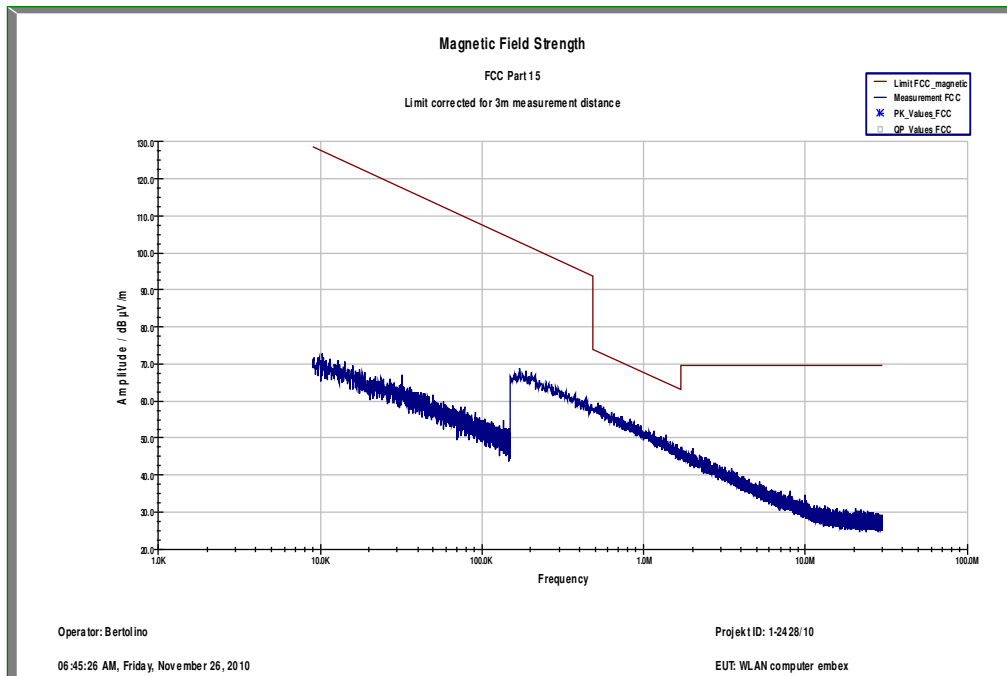


**Result:** Also see plots

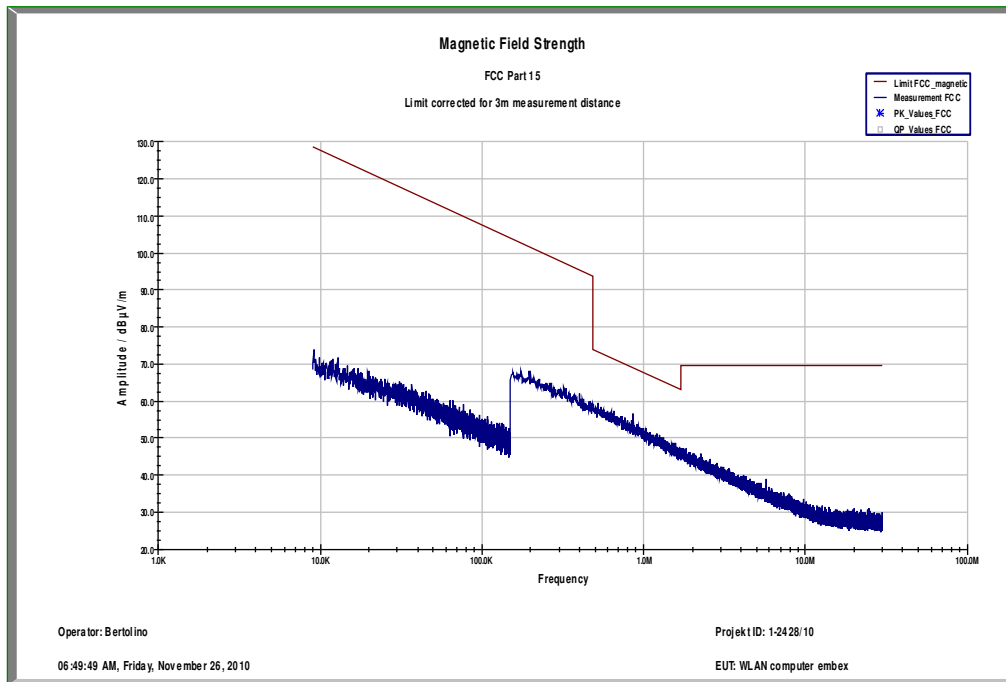
TX Spurious Emissions Radiated < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No peaks found!		
Measurement uncertainty	± 3 dB	

**Result:** The result of the measurement is passed.

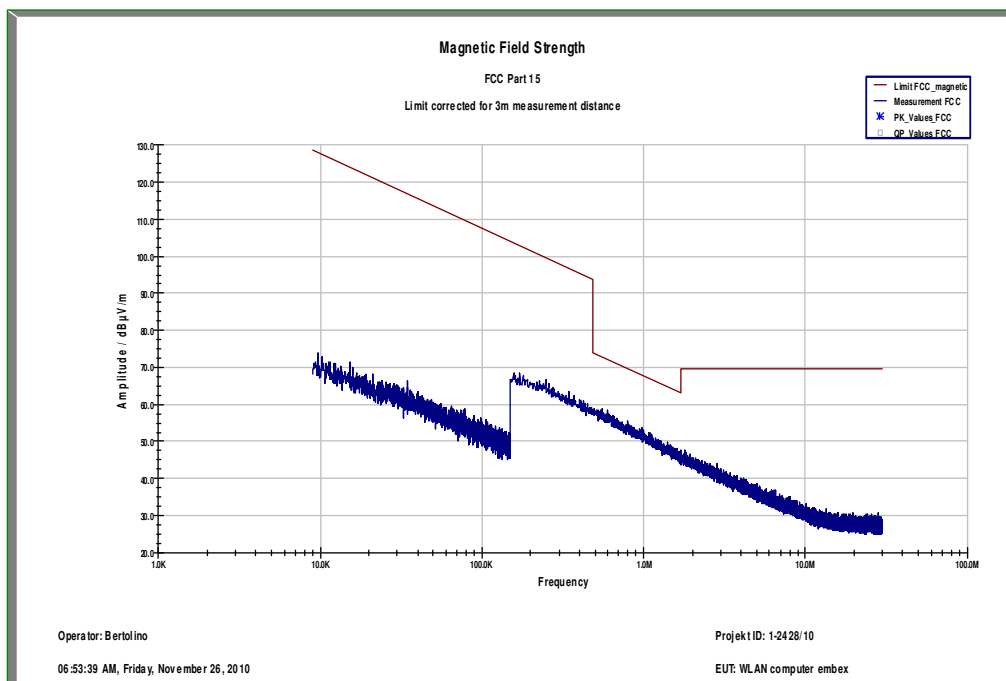
**Plot 1:** 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, a – mode; magnetic (valid for all channels)



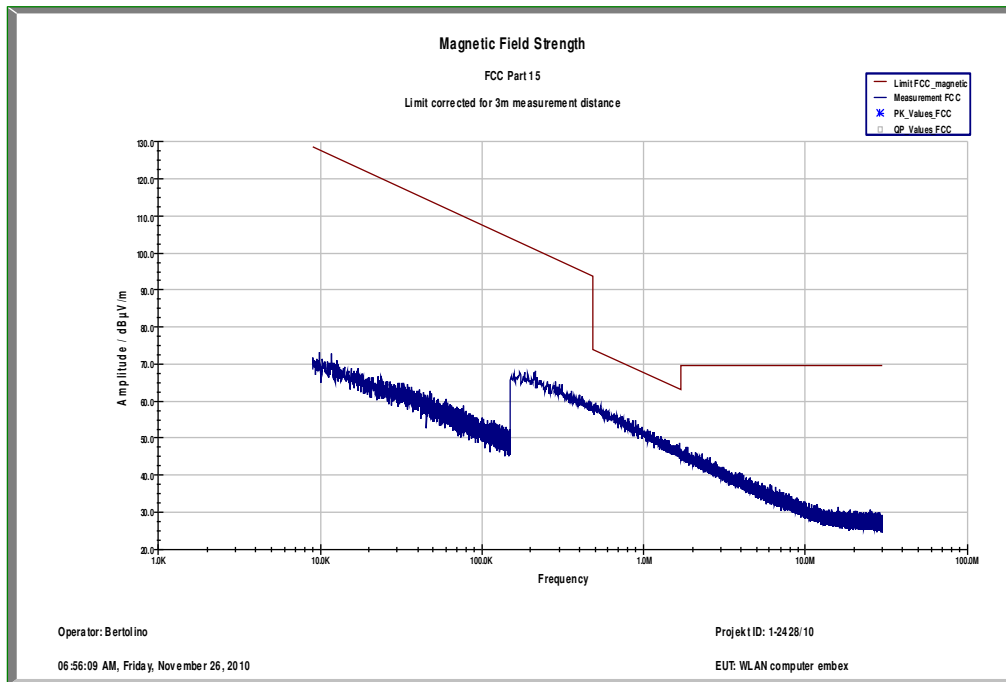
Plot 2: 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, n – mode; magnetic (valid for all channels)



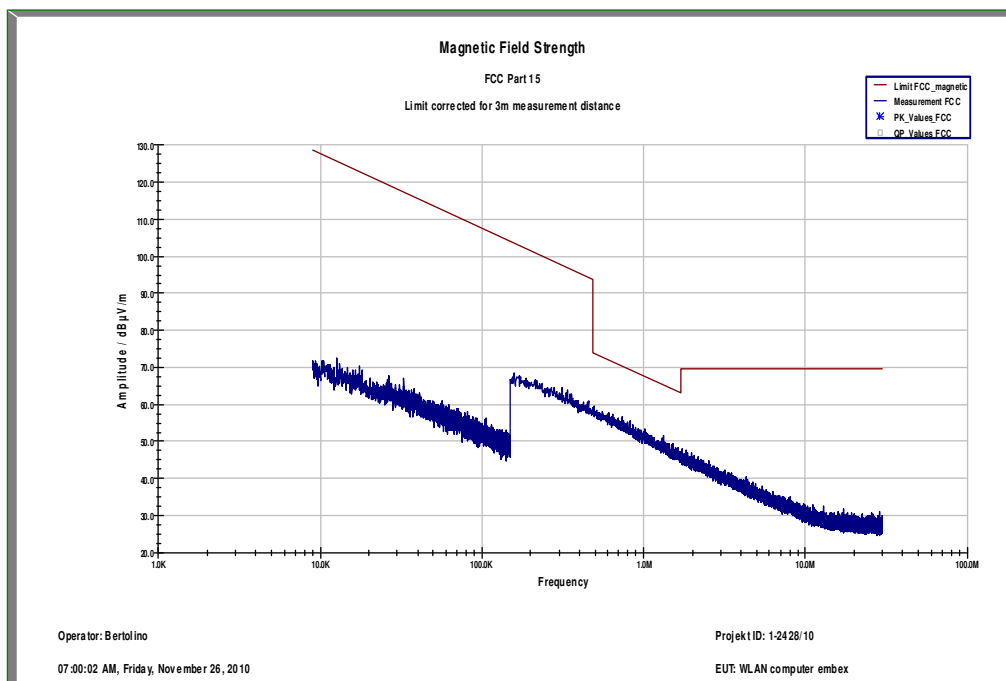
Plot 3: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, a – mode; magnetic (valid for all channels)



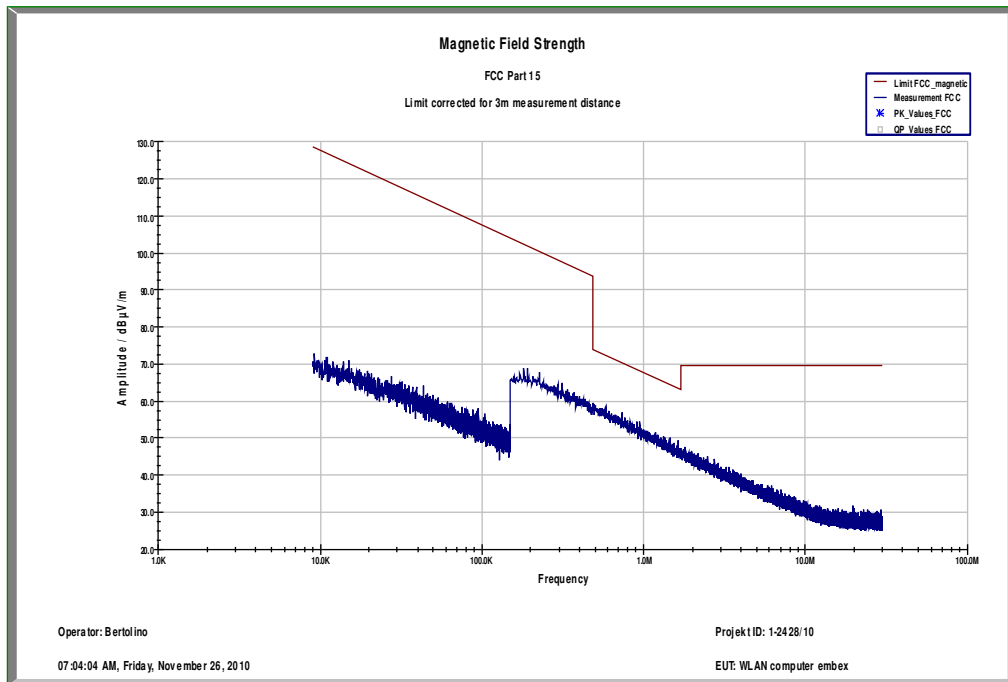
Plot 4: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, n – mode; magnetic (valid for all channels)



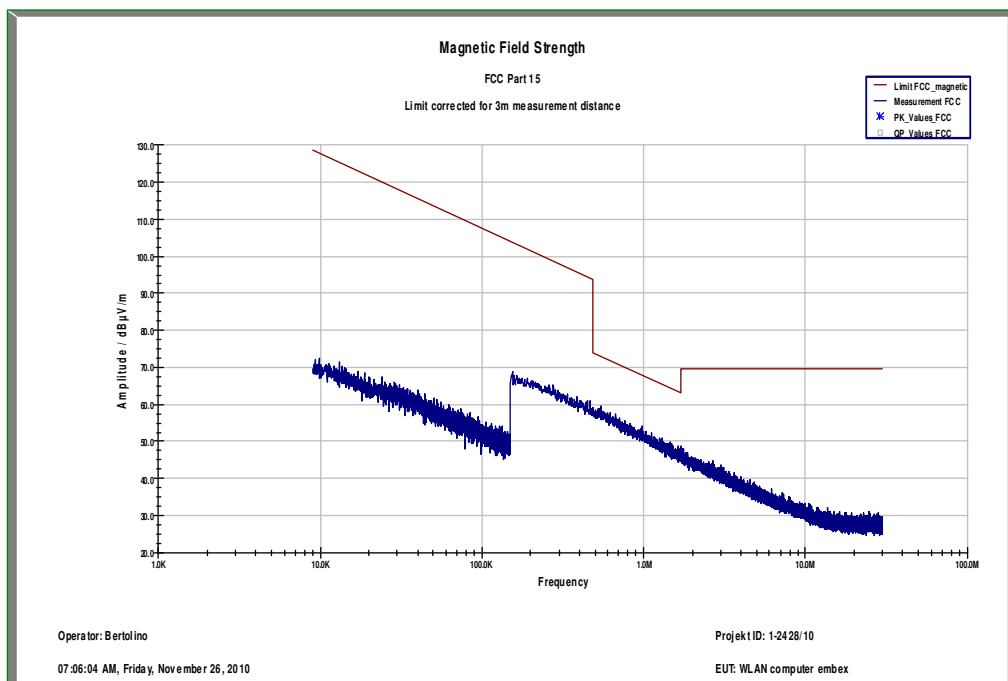
Plot 5: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, a – mode; magnetic (valid for all channels)



Plot 6: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, n – mode; magnetic (valid for all channels)



Plot 7: 9 kHz to 30 MHz, RX mode; magnetic



## 1.4 TX spurious emissions conducted < 30 MHz

### Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is repeated for OFDM and OFDM modulation. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

### Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

### Limits:

FCC		IC	
CFR Part 15.107(a)		ICES-003, Issue 4	
TX Spurious Emissions Conducted < 30 MHz			
Frequency (MHz)	Quasi-Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

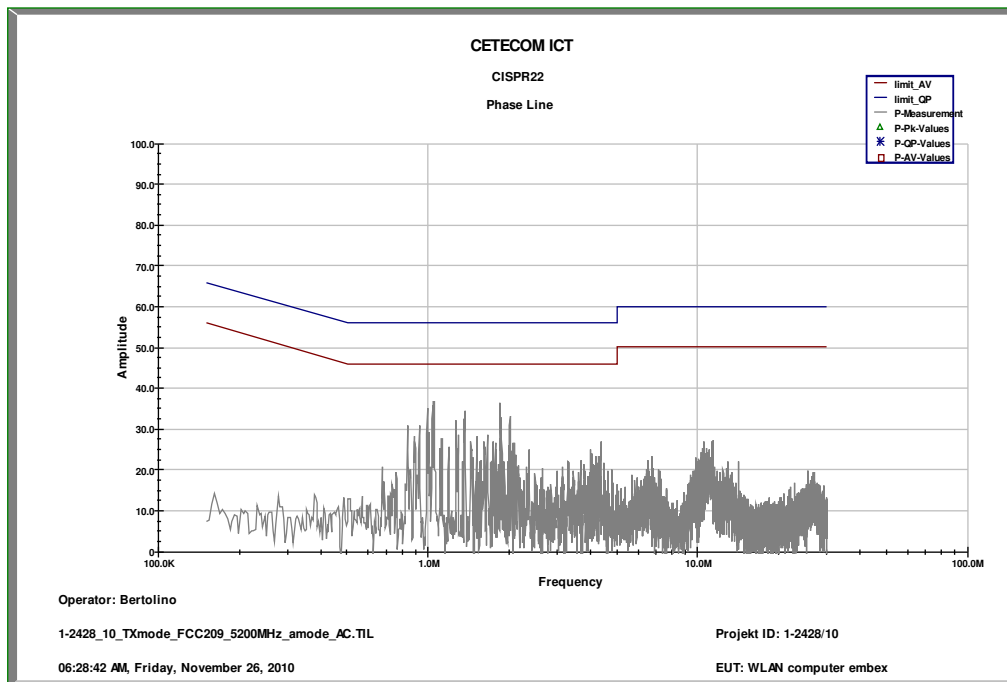
\*Decreases with the logarithm of the frequency

**Result:** Also see plots

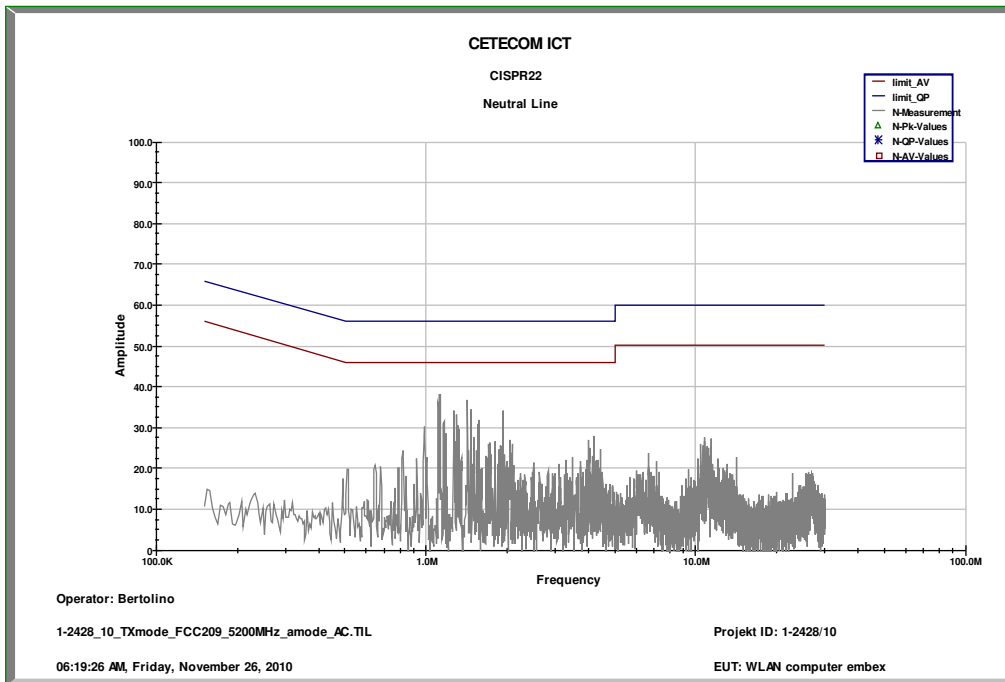
TX Spurious Emissions Conducted < 30 MHz [dBμV/m]		
F [MHz]	Detector	Level [dBμV/m]
No critical peaks found		
Measurement uncertainty	± 3 dB	

**Result:** The result of the measurement is passed.

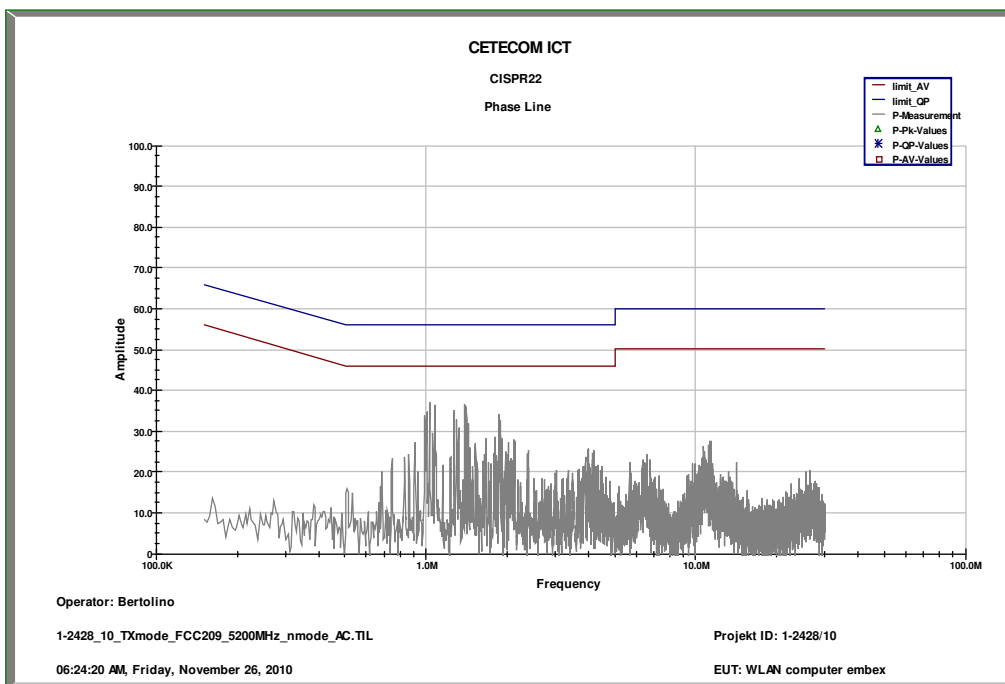
**Plot 1:** 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, a – mode; (valid for all channels); phase line



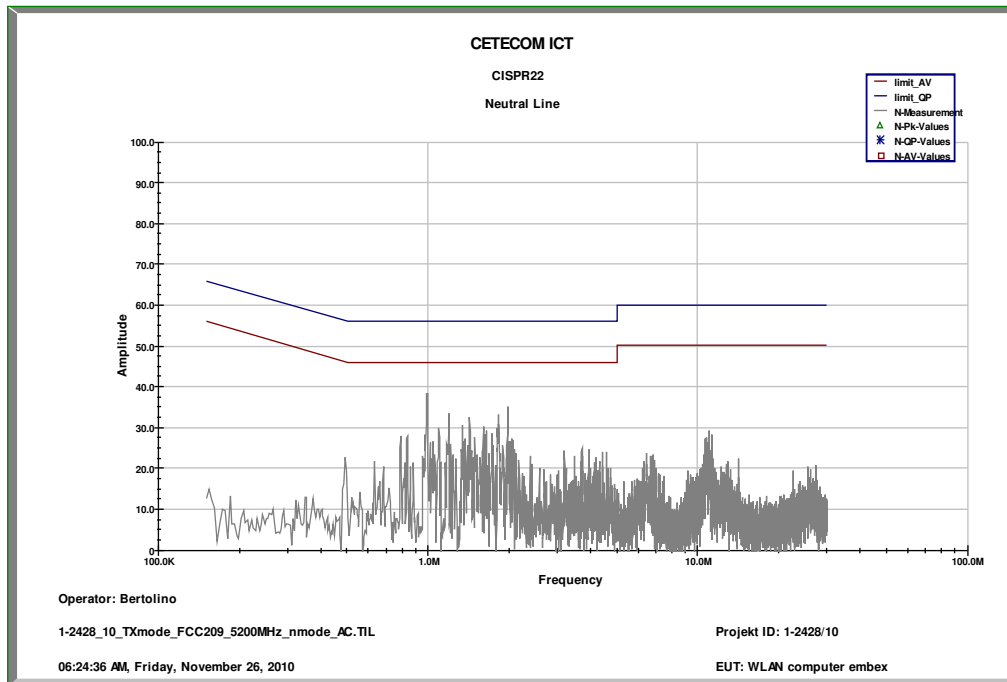
Plot 2: 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, a – mode; (valid for all channels); neutral line



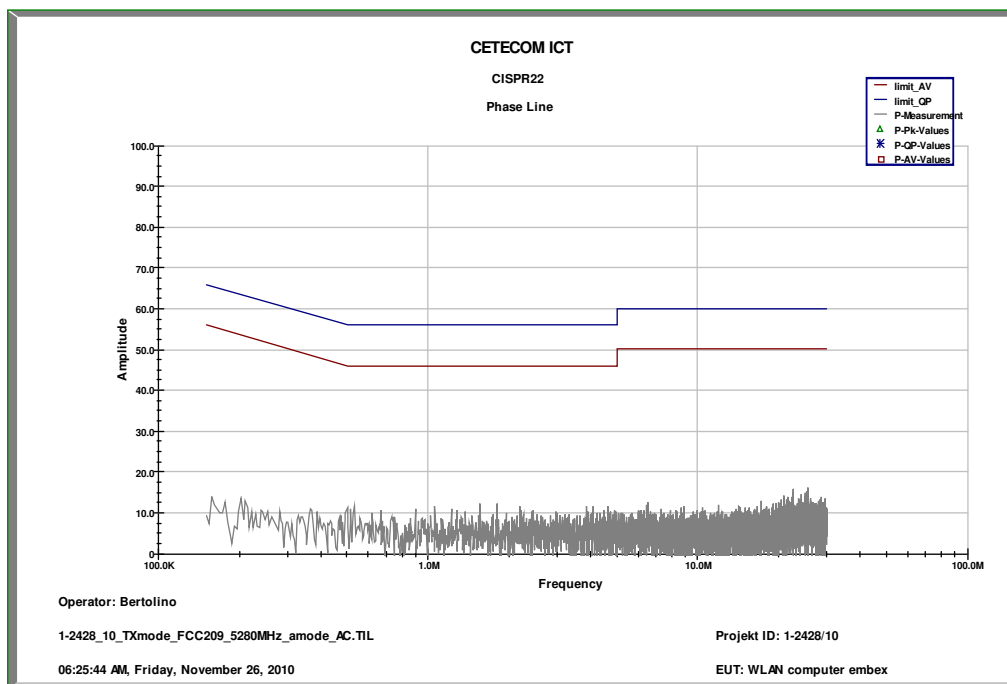
Plot 3: 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, n – mode; (valid for all channels); phase line



Plot 4: 9 kHz to 30 MHz, middle channel – band 1; 5200 MHz, n – mode; (valid for all channels); neutral line

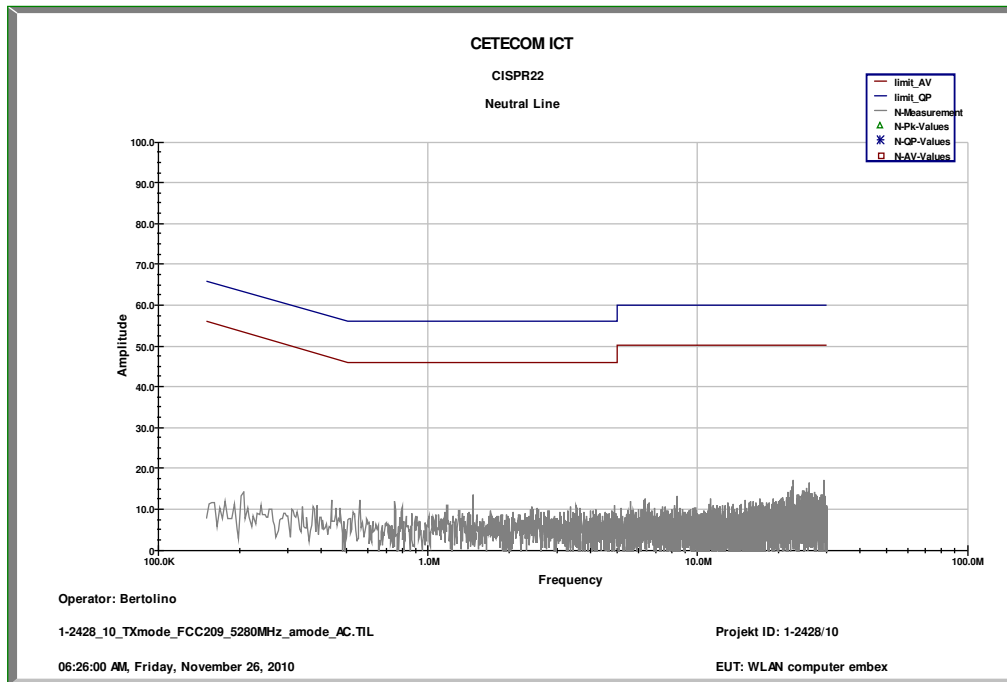


Plot 5: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, a – mode; (valid for all channels); phase line

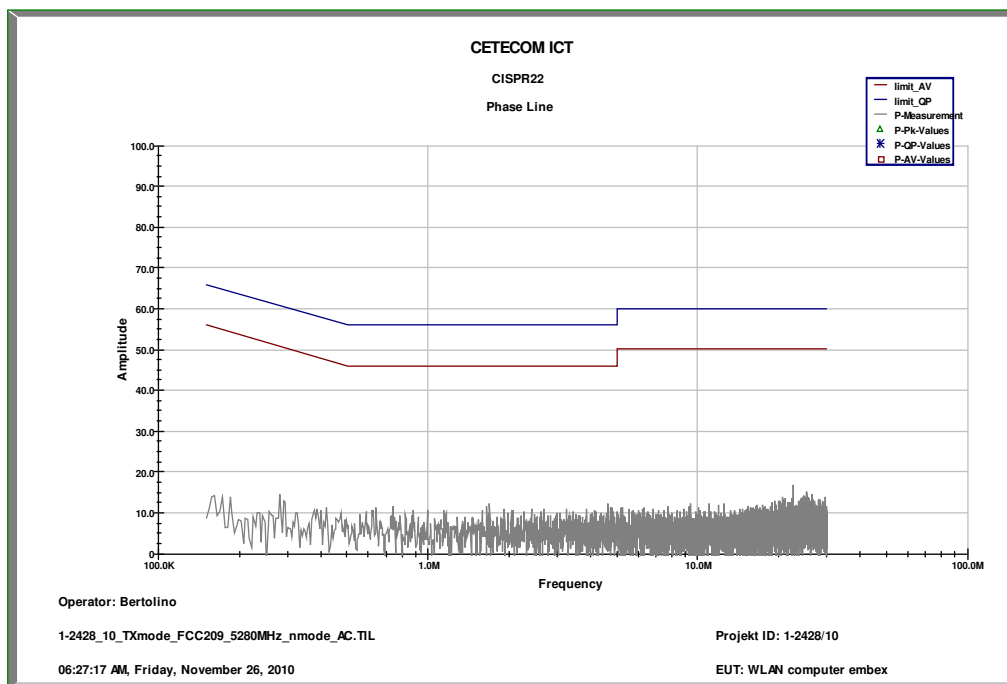




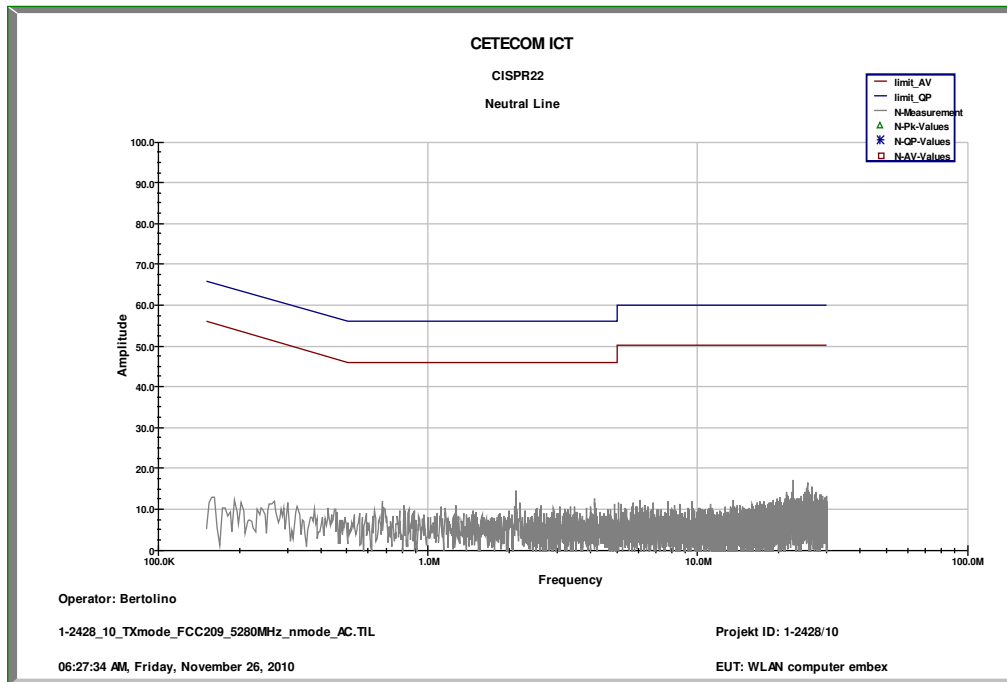
Plot 6: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, a – mode; (valid for all channels); neutral line



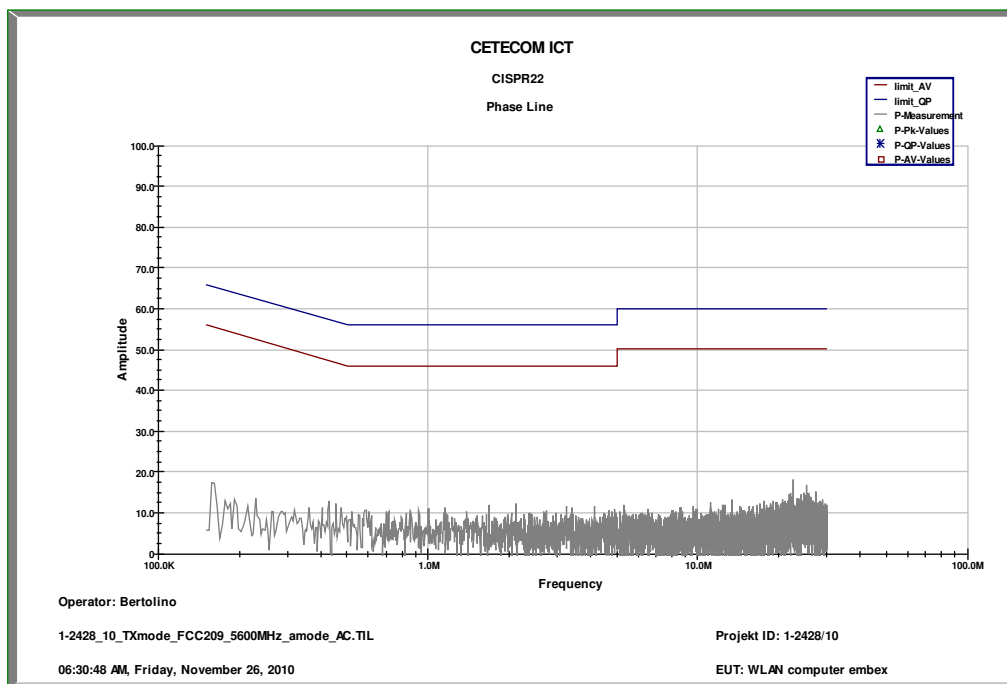
Plot 7: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, n – mode; (valid for all channels); phase line



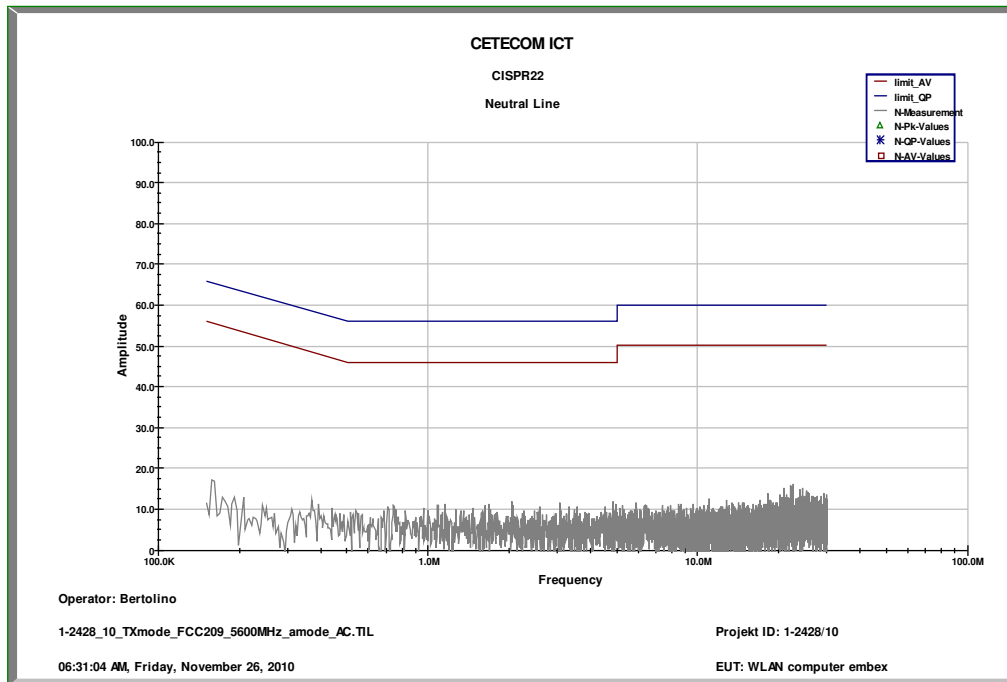
Plot 8: 9 kHz to 30 MHz, middle channel – band 2; 5280 MHz, n – mode; (valid for all channels); neutral line



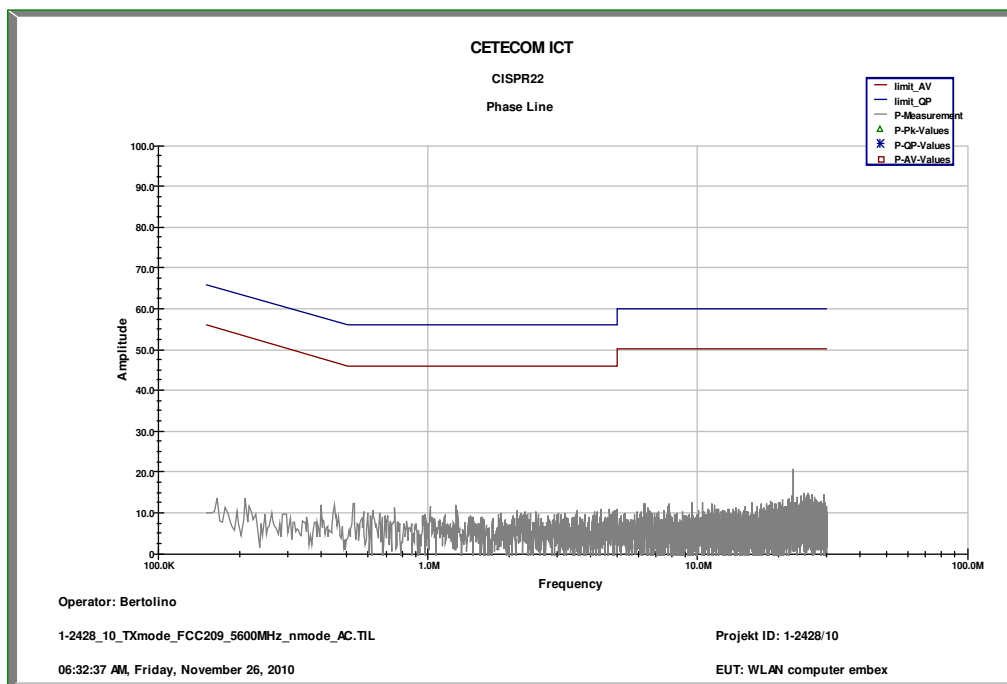
Plot 9: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, a – mode; (valid for all channels); phase line



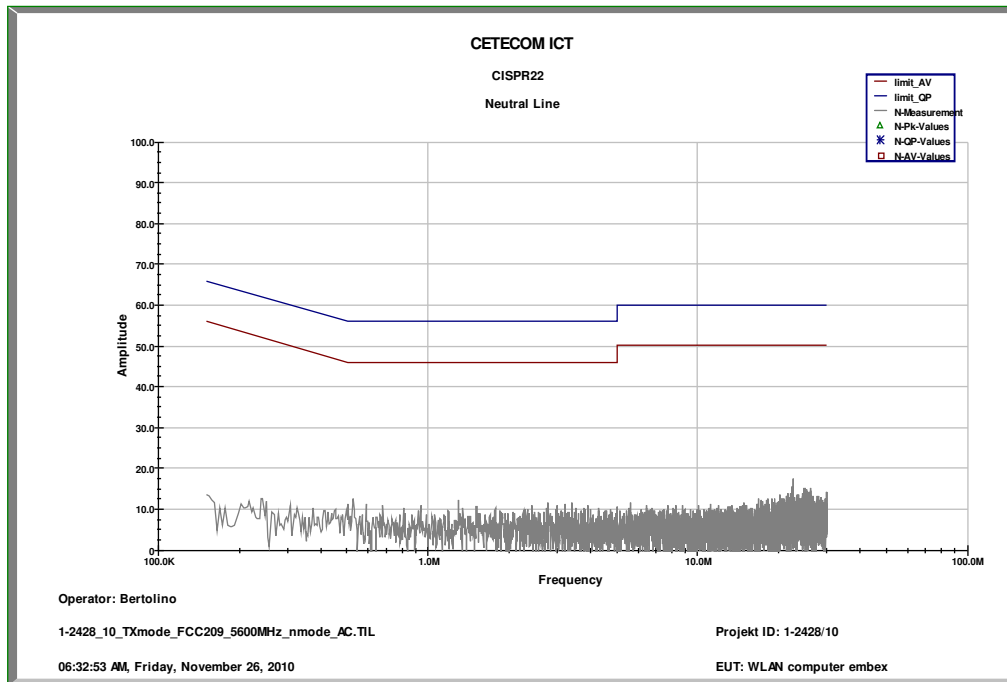
Plot 10: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, a – mode; (valid for all channels); neutral line



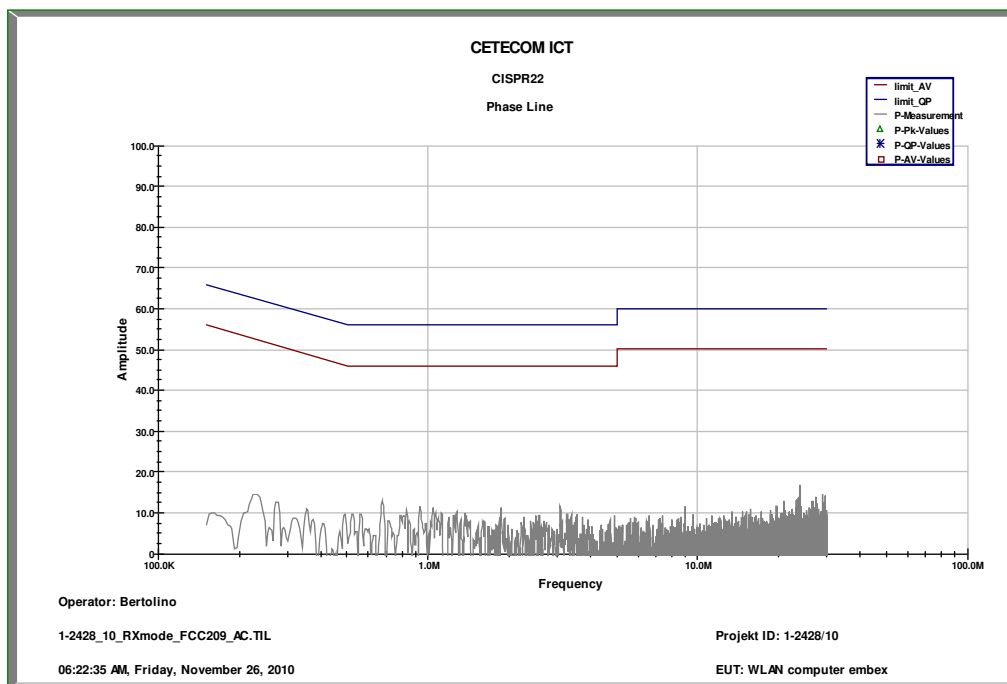
Plot 11: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, n – mode; (valid for all channels); phase line



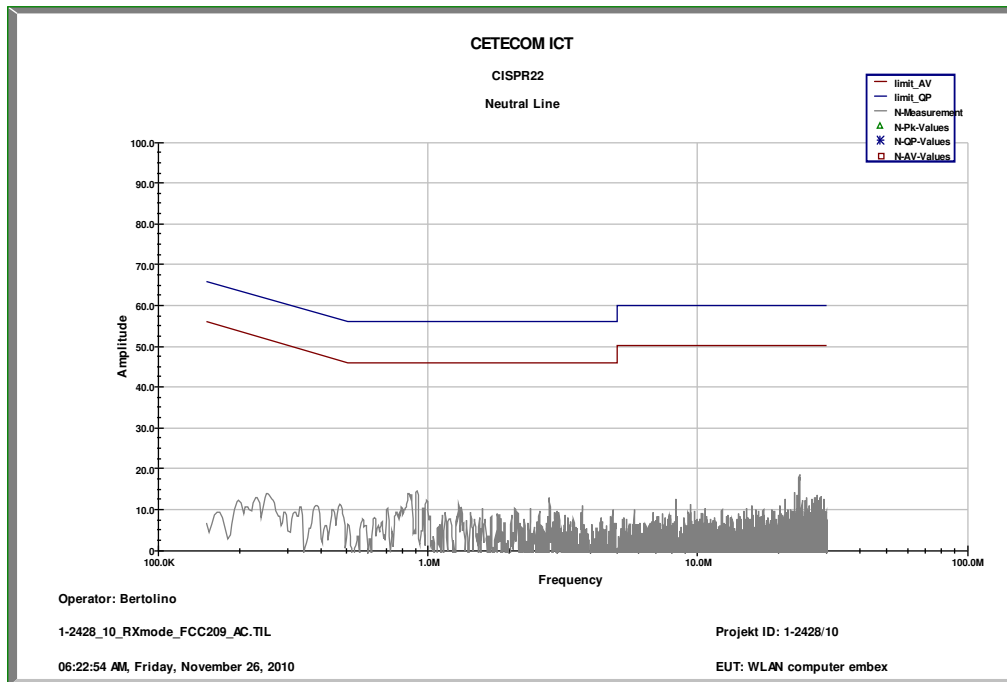
Plot 12: 9 kHz to 30 MHz, middle channel – band 3; 5600 MHz, n – mode; (valid for all channels); neutral line



Plot 13: 9 kHz to 30 MHz; RX mode; phase line



Plot 14: 9 kHz to 30 MHz; RX mode; neutral line



## 2 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Labor / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
5	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	01.06.2009	01.06.2011
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
12	n. a.	PowerAttenuator	8325	Byrd	1530	300001595	ev		
13	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKI!	05.03.2009	05.03.2011
14	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
15	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
16	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
17	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
18	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
19	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
20	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
21	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
22	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
23	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
24	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	viKI!	08.09.2010	08.09.2012
25	n. a.	TRILOG Broadband Test-	VULB9163	Schwarzbeck	371	300003854	viKI!	17.12.2008	17.12.2010

		Antenna 30 MHz - 3 GHz							
26	CR 79	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751	ne		
27	11b	Microwave System Amplifier, 0.5-26.5 GHz; 25 dB gain	83017A	HP Meßtechnik	3123A00105	300002268	ev		
28	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
29	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
30	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
31	n. a.	Power Supply	LA30/5GA	Zentro Elektronik	2046	300000711	NK!		

**Agenda:** Kind of Calibration

k calibration / calibrated  
 ne not required (k, ev, izw, zw not required)  
 ev periodic self verification  
 Ve long-term stability recognized  
 vlk! Attention: extended calibration interval  
 NK! Attention: not calibrated

EK limited calibration  
 zw cyclical maintenance (external cyclical maintenance)  
 izw internal cyclical maintenance  
 g blocked for accredited testing  
 \*) next calibration ordered / currently in progress