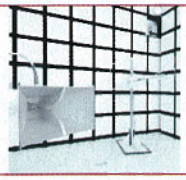
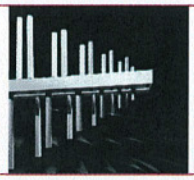
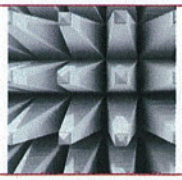

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consulting - testing - certification

TEST REPORT

Test report no.: 1-4254/12-59-13

DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
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Phone: + 49 681 5 98 - 0
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Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

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Phone: +46 46 19 35 59

Manufacturer

Sony Mobile Communications AB
Nya Vattentornet
22188 Lund / SWEDEN

Test standard/s

47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD 1/19/21; WLAN a/b/g/n; BT 3.1; BT LE; RFID; FM Rx; GPS**
Model name:	**PM-0220-BV**
FCC ID:	**PY7PM-0220**
IC:	**-/-**
Frequency:	ISM band 5150 MHz to 5250 MHz ISM band 5250 MHz to 5350 MHz ISM band 5470 MHz to 5725 MHz
Technology tested:	WLAN (OFDM a, n HT20 & n HT40)
Antenna:	Integrated antenna
Power Supply:	3.7 V DC by Li - polymer battery
Temperature Range:	-20°C to +55 °C

Test report authorised:

2012-10-26 Andreas Luckenbill

Test performed:

2012-10-26 Marco Bertolino
Testing Manager

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2 General information

2.1 Notes and disclaimer

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In no case this test report can be considered as a Letter of Approval.

2.2 Application details

Date of receipt of order:	2012-10-12
Date of receipt of test item:	2012-10-12
Start of test:	2012-10-15
End of test:	2012-10-25
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices

3.1 Measurement guidance

UNII: KDB 789033	2011-10	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E

4 Test environment

Temperature:	T_{nom}	+22 °C	during room temperature tests
	T_{max}	+55 °C	during high temperature tests
	T_{min}	-20 °C	during low temperature tests
Relative humidity content:		48 %	
Barometric pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	3.7 V	DC by Li - polymer battery
	V_{max}	4.2 V	
	V_{min}	3.3 V	

5 Test item

Kind of test item	**:**	**GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD 1/19/21; WLAN a/b/g/n; BT 3.1; BT LE; RFID; FM Rx; GPS**
Type identification	**:**	**PM-0220-BV**
S/N serial number	**:**	**Radiated units: CB5A1LN5WE, CB5A1LN60G** **Conducted units: CB5A1LN60V, CB5A1LN60F**
HW hardware status	**:**	**AP1**
SW software status	**:**	**10.1.D.0.51**
Frequency band [MHz]	**:**	**ISM bands:** **- 5150 MHz to 5250 MHz** **- 5250 MHz to 5350 MHz** **- 5470 MHz to 5725 MHz**
Type of radio transmission **Use of frequency spectrum**	**:** **:**	**OFDM**
Channel access method	**:**	**FDMA**
Type of modulation	**:**	**QPSK, 16 – QAM & 64 – QAM**
Number of channels	**:**	**19**
Antenna	**:**	**Integrated antenna**
Power supply	**:**	**3.7 V DC by Li - polymer battery**
Temperature range	**:**	**-20°C to +55 °C**

6 Test laboratories sub-contracted

None

7 Summary of measurement results

☒	**No deviations from the technical specifications were ascertained**
☐	There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15	Passed	2012-12-12	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Results (max.)
-/-	Output power verification (conducted)	Nominal	Nominal	☐	☐	☐	☐	No passed / fail criteria!
-/-	Gain	Nominal	Nominal	☐	☐	☐	☐	No passed / fail criteria!
U-NII Part 15	Duty cycle	Nominal	Nominal	☐	☐	☐	☐	No passed / fail criteria!
§15.407(a)	Maximum output power (conducted & radiated)	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a)	Power spectral density	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a)	Spectrum bandwidth 26dB bandwidth	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a)	Peak excursion measurements	Nominal	Nominal	☒	☐	☐	☐	complies
§15.205	Band edge compliance radiated	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(b)	TX spurious emissions radiated	Nominal	Nominal	☒	☐	☐	☐	complies
§15.109	RX spurious emissions radiated	Nominal	Nominal	☒	☐	☐	☐	complies
§15.209(a)	Spurious emissions radiated < 30 MHz	Nominal	Nominal	☒	☐	☐	☐	complies
§15.107(a)	Spurious emissions conducted emissions < 30 MHz	Nominal	Nominal	☒	☐	☐	☐	complies

Note: NA = Not Applicable; NP = Not Performed

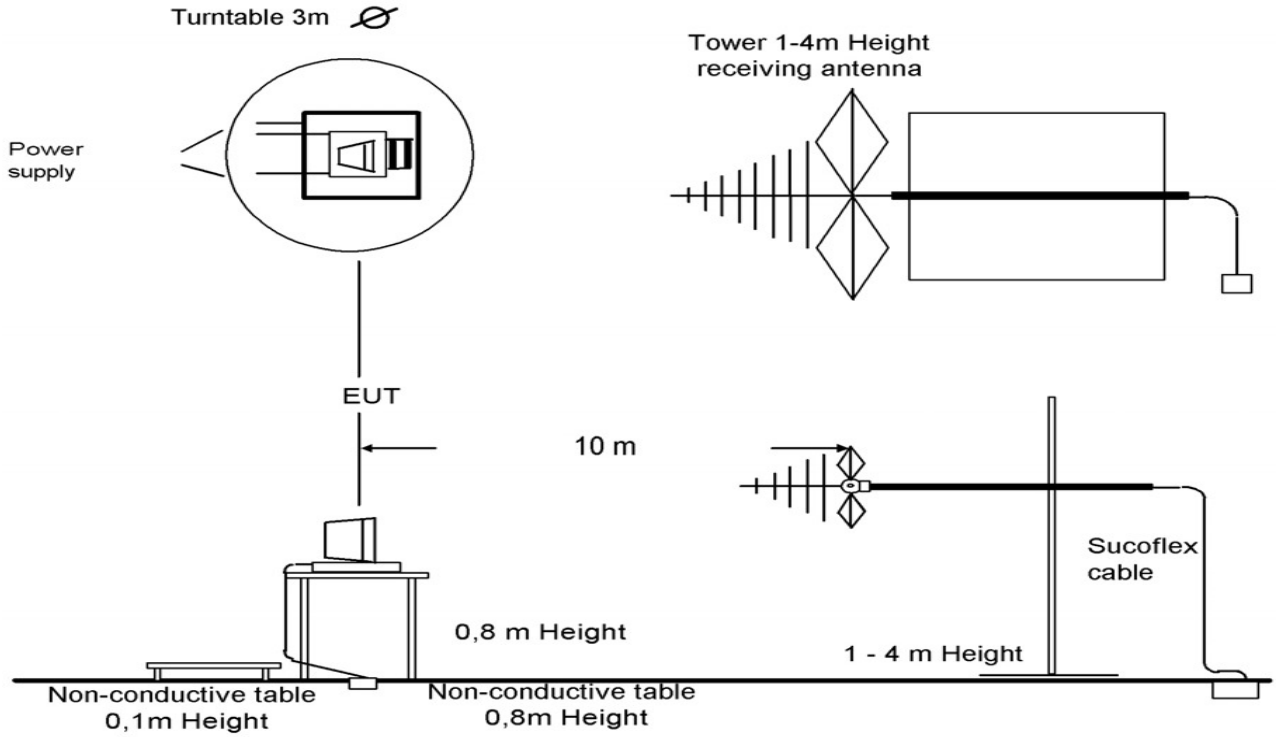
8 RF measurements

8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.
Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



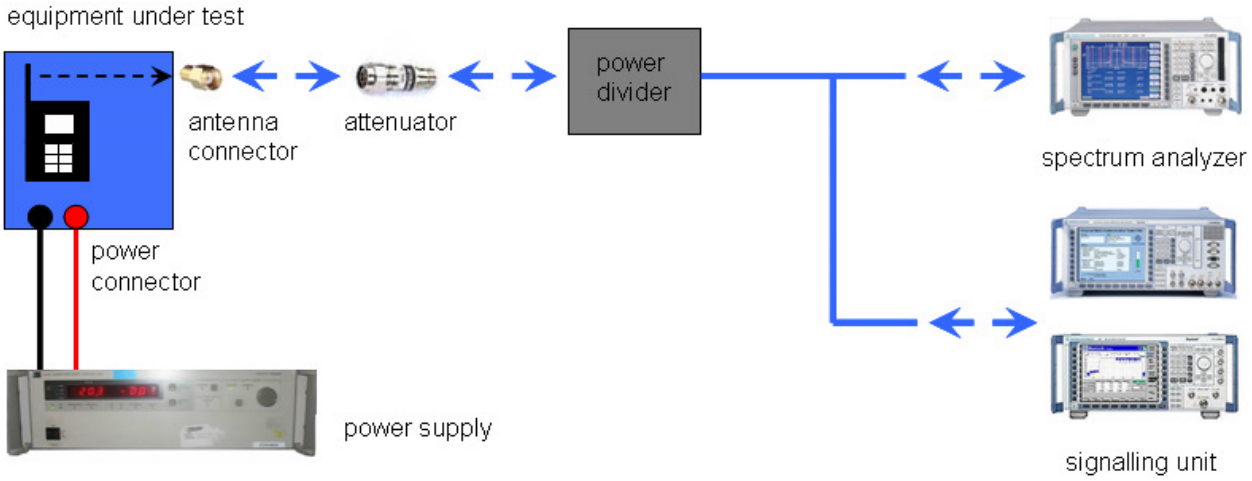
Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode: ☐ No test mode available.

☒ Special software is used.
EUT is transmitting pseudo random data by itself

9 Measurement results

9.1 Output power verification (conducted)

Description:

Measurement of the maximum output power conducted. This measurement is performed only at the middle channel in all modes and all data rates to determine the data rate per mode which results in the highest output power. This mode will be selected for all further measurements.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	5s
Resolution bandwidth:	> EBW
Video bandwidth:	≥ 3 x RBW (or the maximum of the analyzer)
Span:	Zero span
Trace-Mode:	Max hold (allow trace to fully stabilize)

Results:

OFDM / a – mode	Maximum Output Power Conducted [dBm]							
Data Rate [MBit/s]	6	9	12	18	24	36	48	54
Ch 48 - 5240 MHz	17.26	17.44	17.60	17.64	17.35	17.57	17.34	17.74
Measurement uncertainty	± 0.5 dB							

OFDM / n – mode HT 20	Maximum Output Power Conducted [dBm]							
Data Rate [MBit/s]	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 48 - 5240 MHz	17.22	16.69	17.22	16.76	16.35	17.20	16.37	16.83
Measurement uncertainty	± 0.5 dB							

OFDM / n – mode HT40	Maximum Output Power Conducted [dBm]							
Data Rate [MBit/s]	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 44 - 5230 MHz	16.92	16.80	15.40	15.44	16.52	14.50	14.77	14.98
Measurement uncertainty	± 0.5 dB							

Result: **Selected data rate for all measurements:**

OFDM / a – mode: **54 MBit/s**
OFDM / n – mode HT20: **MCS0**
OFDM / n – mode HT40: **MCS0**

9.2 Gain

Description:

Measurement of the maximum output power conduced and radiated

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	15s
Resolution bandwidth:	3 MHz
Video bandwidth:	8 MHz / 10 MHz
Span:	40 MHz
Trace-Mode:	Max Hold

Limits:

Antenna Gain
Maximum 6 dBi

Result:

OFDM Band 5150 MHz to 5250 MHz Channel	**Gain**		
	Lowest 5180 MHz	-/-	Highest 5240 MHz
Radiated power for gain calculation	7.54	-/-	7.27
Conducted power for gain calculation	10.97	-/-	11.73
Gain	-3.43	-/-	-4.46
Measurement uncertainty	± 3 dB		

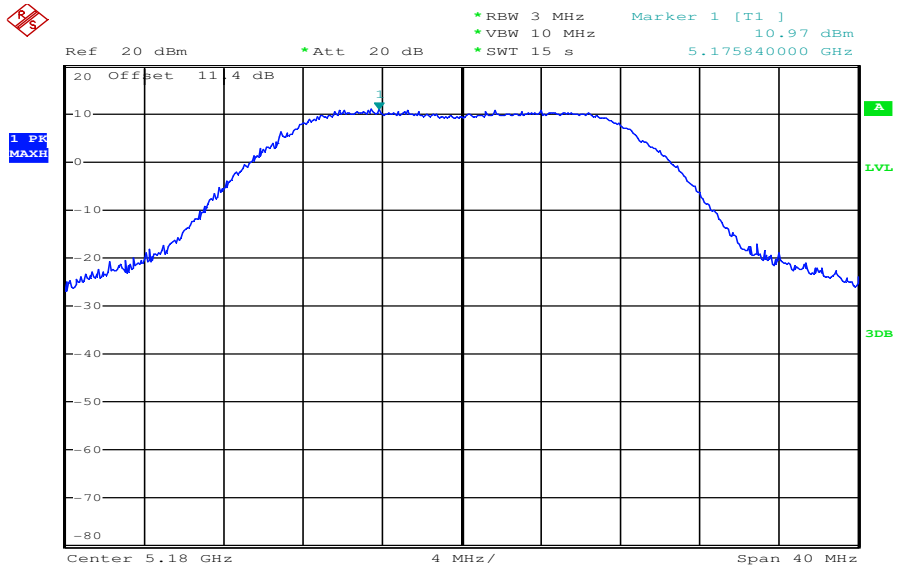
OFDM Band 5250 MHz to 5350 MHz Channel	**Gain**		
	Lowest 5260 MHz	-/-	Highest 5320 MHz
Radiated power for gain calculation	7.65	-/-	7.88
Conducted power for gain calculation	11.03	-/-	11.58
Gain	-3.38	-/-	-3.70
Measurement uncertainty	± 3 dB		

OFDM Band 5470 MHz to 5725 MHz Channel	**Gain**		
	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz
Radiated power for gain calculation	9.89	8.70	8.04
Conducted power for gain calculation	12.46	12.03	12.13
Gain	-2.57	-3.33	-4.09
Measurement uncertainty	± 3 dB		

Result: **Passed**

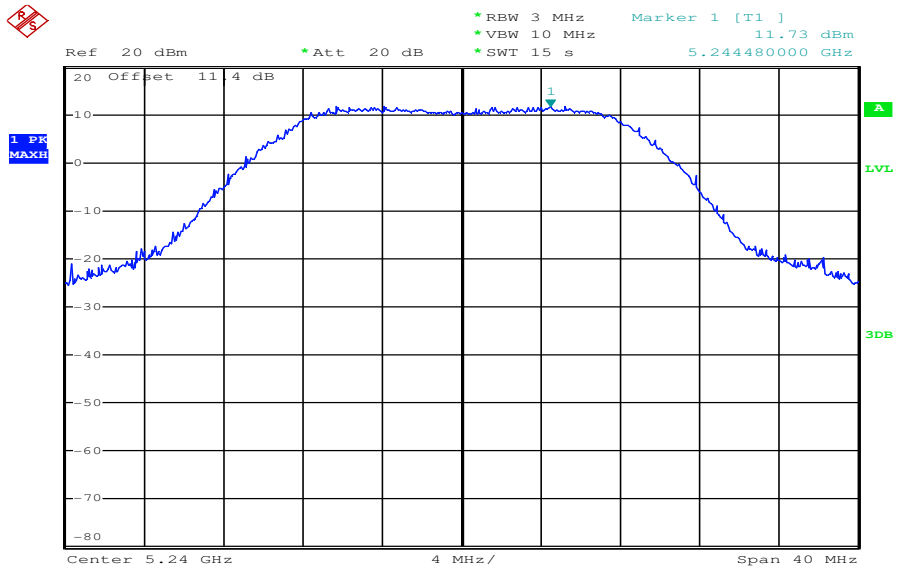
Plots: conducted power for gain calculation

Plot 1: OFDM / a – mode, 5180 MHz



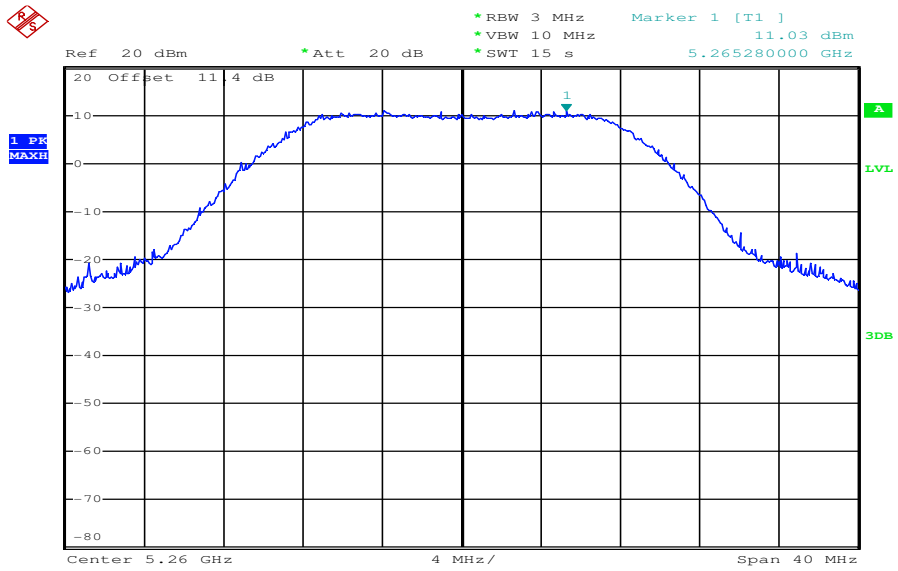
Date: 15.OCT.2012 14:24:23

Plot 2: OFDM / a – mode, 5240 MHz



Date: 15.OCT.2012 14:25:24

Plot 3: OFDM / a – mode, 5260 MHz



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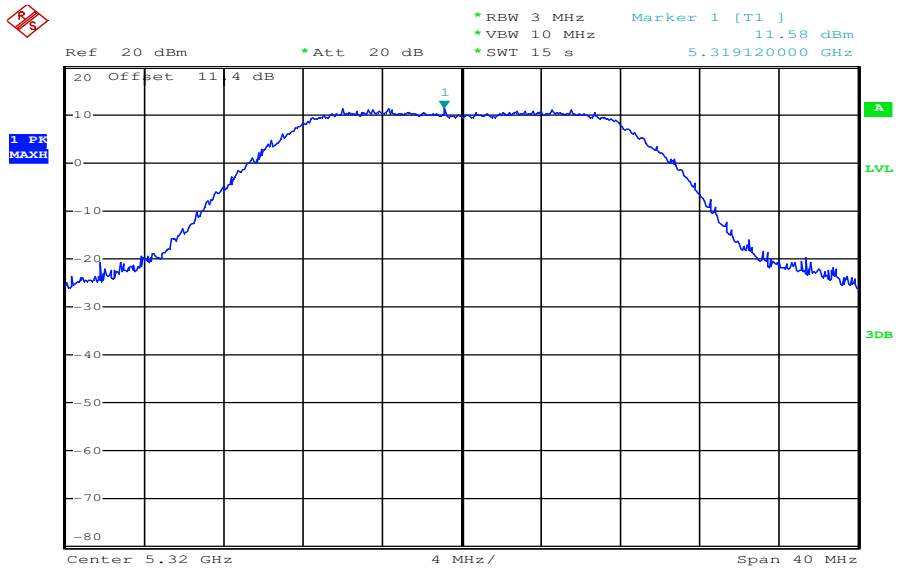
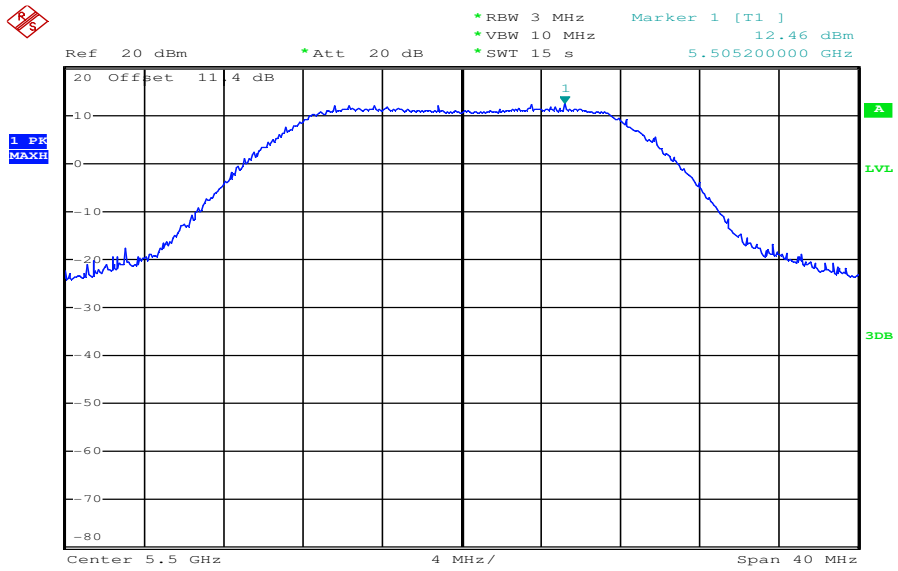
Plot 4: OFDM / a – mode, 5320 MHz



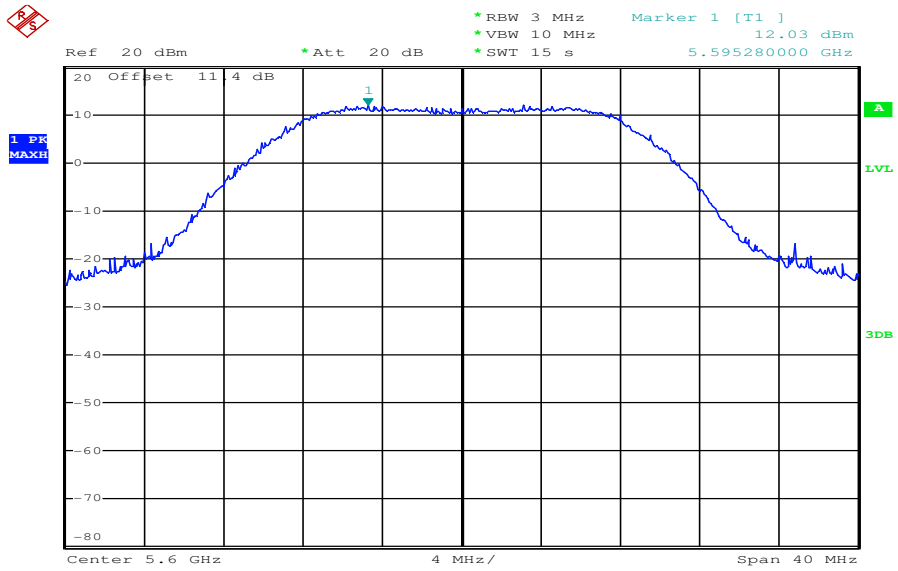
Date: 15.OCT.2012 14:27:34

Plot 5: OFDM / a – mode, 5500 MHz



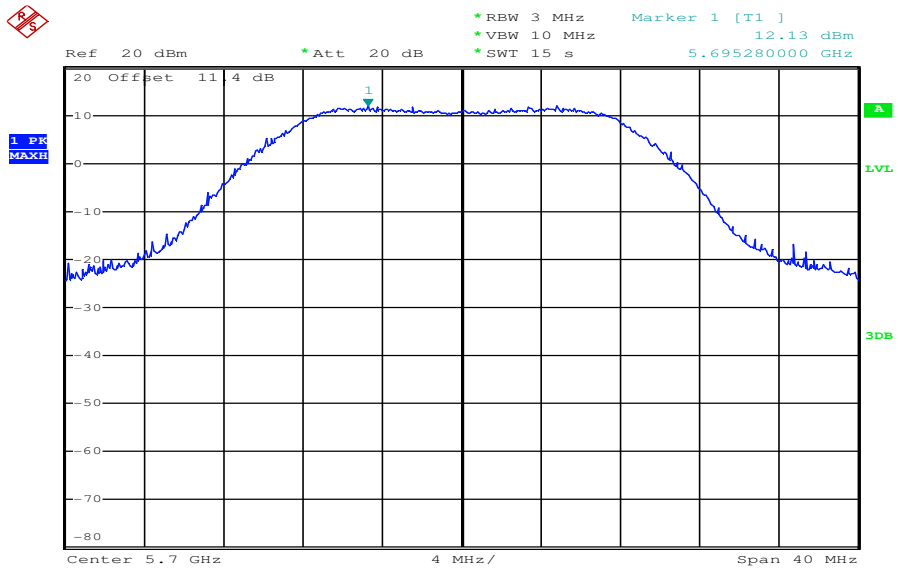
Date: 15.OCT.2012 14:29:41

Plot 6: OFDM / a – mode, 5600 MHz



Date: 15.OCT.2012 14:30:54

Plot 7: OFDM / a – mode, 5700 MHz



9.3 Duty cycle

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	10 MHz
Video bandwidth:	10 MHz
Span:	Zero
Trace-Mode:	Video trigger / view / single sweep

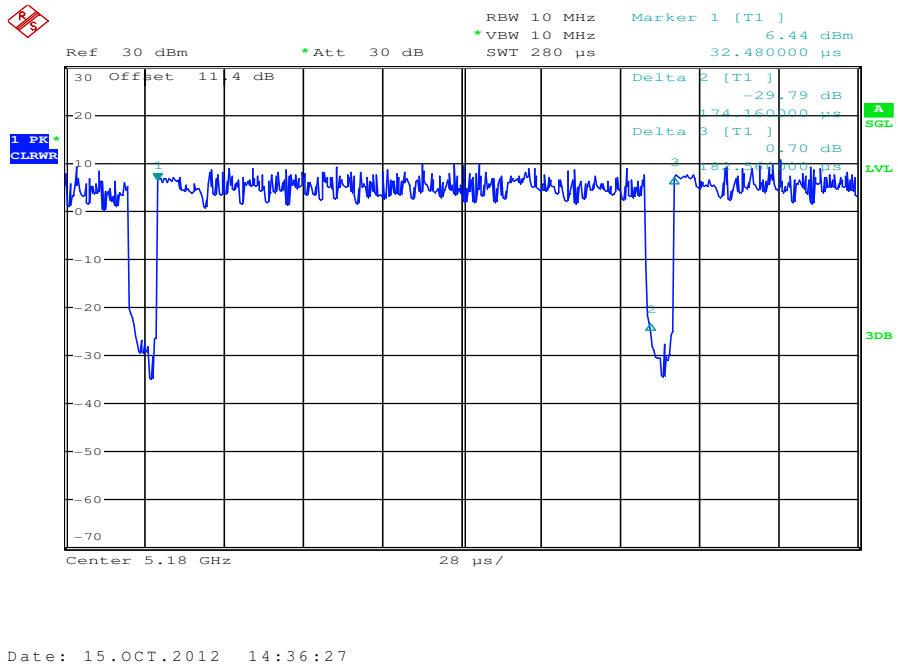
Results:

Duty cycle and correction factor:

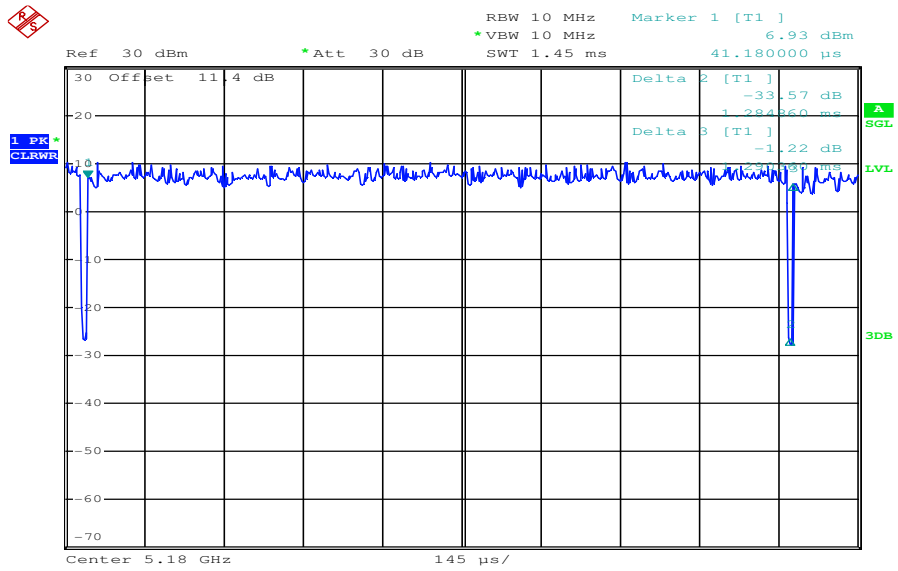
OFDM / a – mode:	95.40 % duty cycle	=>	0.20 dB
OFDM / n – mode HT20:	99.57 % duty cycle	=>	0.02 dB
OFDM / n – mode HT40:	99.13 % duty cycle	=>	0.04 dB

Plots:

Plot 1: duty cycle of the transmitter – OFDM / a – mode

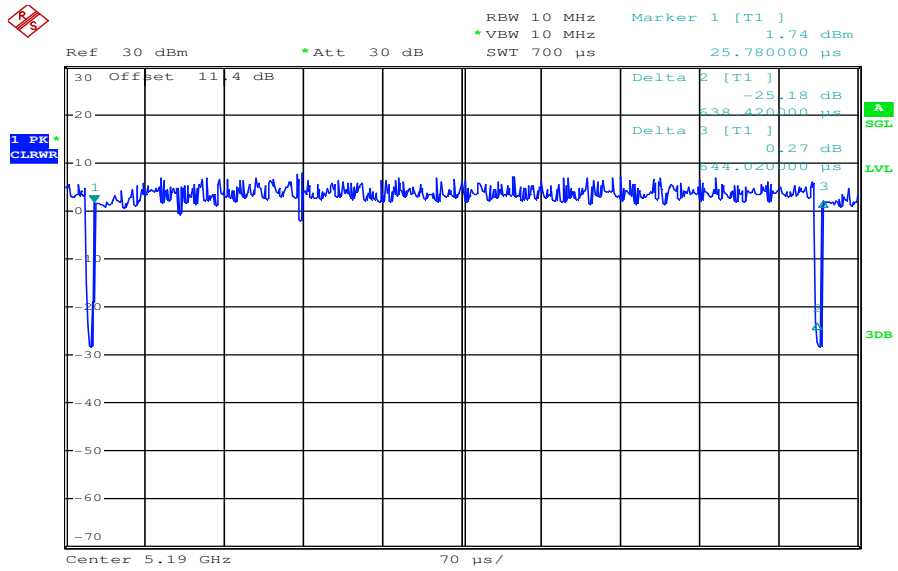


Plot 2: duty cycle of the transmitter – OFDM / n – mode HT20



Date: 15.OCT.2012 14:39:06

Plot 3: duty cycle of the transmitter – OFDM / n – mode HT40



Date: 15.OCT.2012 14:42:04

9.4 Maximum output power conducted and radiated

Description:

Measurement of the maximum output power conduced and radiated

Measurement:

Measurement parameter	
Detector:	RMS
Sweep time:	5s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> EBW
Trace-Mode:	Max hold
Analyzer function	Band power / channel power Interval > 26 dB EBW

Limits:

Radiated output power	Conducted output power
Conducted power + 6dBi antenna gain	The lesser one of 50mW or 4 dBm + 10 log Bandwidth 5.15-5.25 GHz 250mW or 11 dBm + 10 log Bandwidth 5.25-5.35 GHz 250mW or 11 dBm + 10 log Bandwidth 5.47-5.725 GHz 1W or 17 dBm + 10 log Bandwidth 5.47-5.725 GHz (where Bandwidth is the 26dB Bandwidth))

Result: OFDM / a – mode

OFDM / a – mode	Maximum output power conducted [dBm]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.20 dB duty cycle correction	6.02	6.95	6.09	6.14
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.20 dB duty cycle correction	6.95	6.89	7.11	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

OFDM / a – mode	Maximum output power radiated - EIRP [dBm]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.20 dB duty cycle correction	2.59	2.49	2.71	2.44
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.20 dB duty cycle correction	4.38	3.56	3.02	-/-
Measurement uncertainty	± 3 dB			

Result: Passed

Result: OFDM / n – mode HT20

OFDM / n – mode HT20	Maximum output power conducted [dBm]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.02 dB duty cycle correction	6.05	7.16	6.10	6.44
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.02 dB duty cycle correction	7.11	6.97	7.15	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

OFDM / n – mode HT20	Maximum output power radiated - EIRP [dBm]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.02 dB duty cycle correction	2.62	2.70	2.72	2.74
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.02 dB duty cycle correction	4.54	3.64	3.06	-/-
Measurement uncertainty	± 3 dB			

Result: Passed

Result: OFDM / n – mode HT40

OFDM / n – mode HT40	Maximum output power conducted [dBm]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
+0.04 dB duty cycle correction	5.19	6.96	6.30	6.60
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.04 dB duty cycle correction	6.26	6.16	6.25	-/-
Measurement uncertainty	± 1 dB			

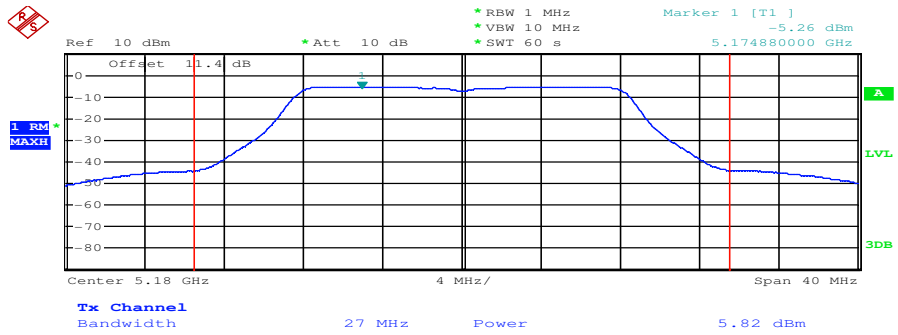
Result: Passed

OFDM / n – mode HT40	Maximum output power radiated - EIRP [dBm]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
+0.04 dB duty cycle correction	1.76	2.50	2.92	2.90
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.04 dB duty cycle correction	3.69	2.83	2.16	-/-
Measurement uncertainty	± 3 dB			

Result: Passed

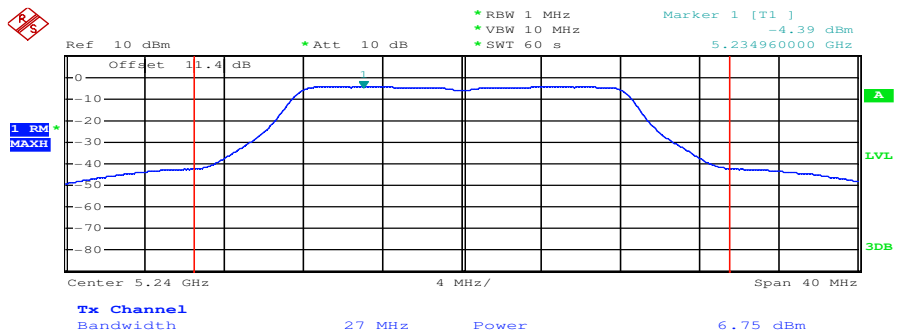
Plots: OFDM / a – mode

Plot 1: 5180 MHz



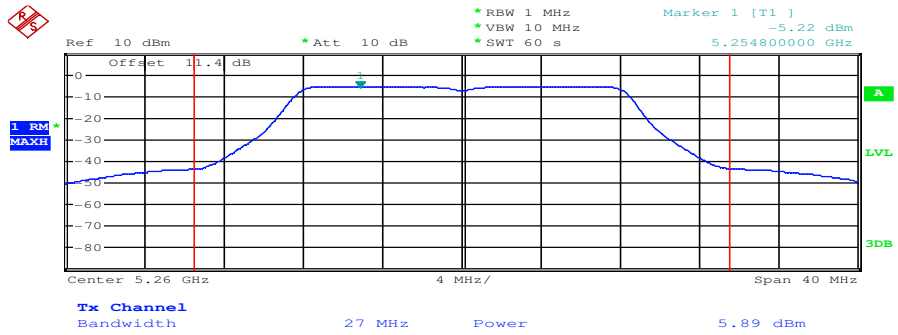
Date: 16.OCT.2012 08:30:48

Plot 2: 5240 MHz



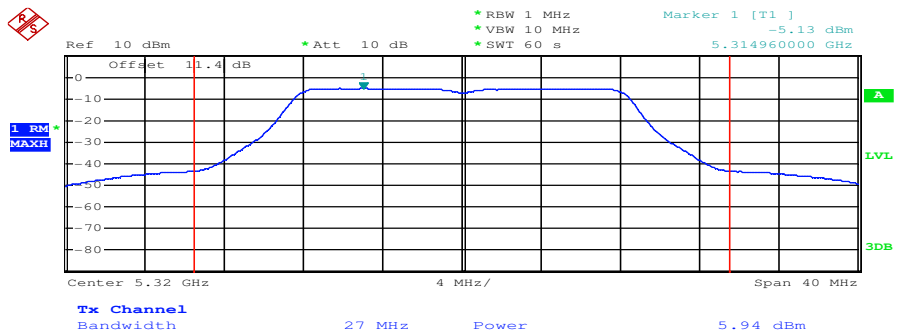
Date: 16.OCT.2012 08:32:08

Plot 3: 5260 MHz



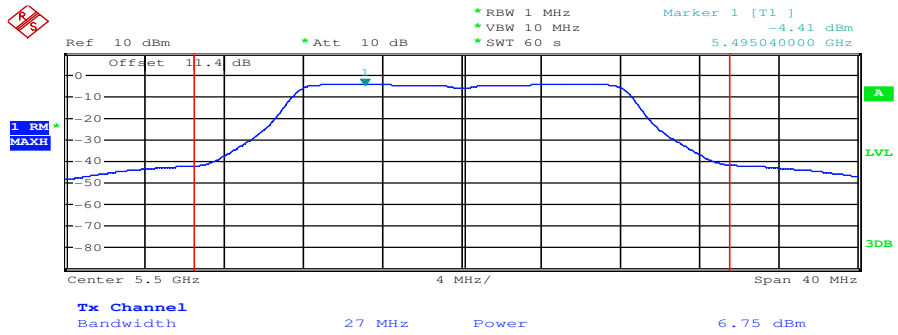
Date: 16.OCT.2012 08:33:30

Plot 4: 5320 MHz



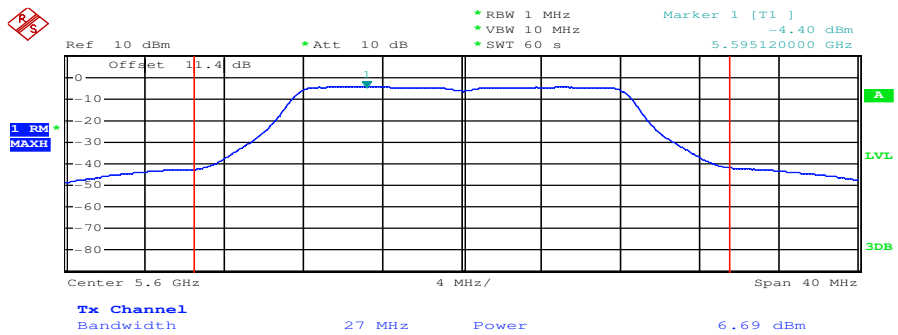
Date: 16.OCT.2012 08:34:54

Plot 5: 5500 MHz



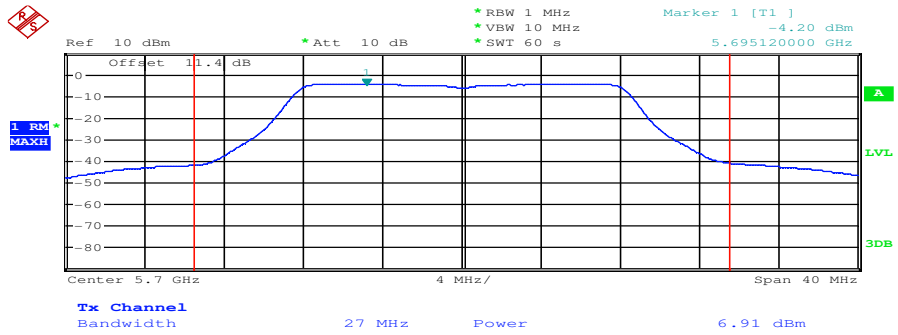
Date: 16.OCT.2012 08:36:18

Plot 6: 5600 MHz



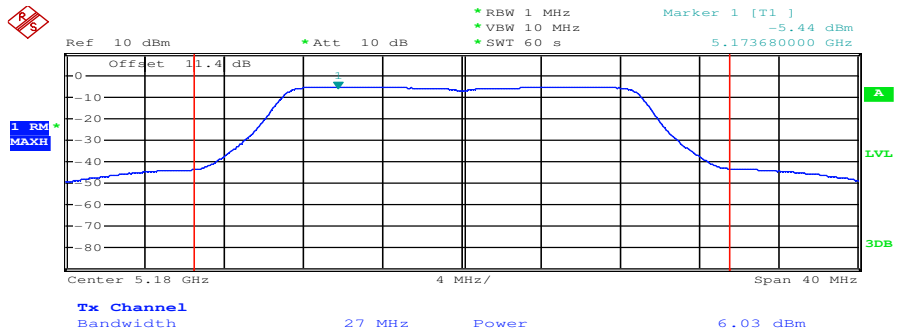
Date: 16.OCT.2012 08:37:39

Plot 7: 5700 MHz



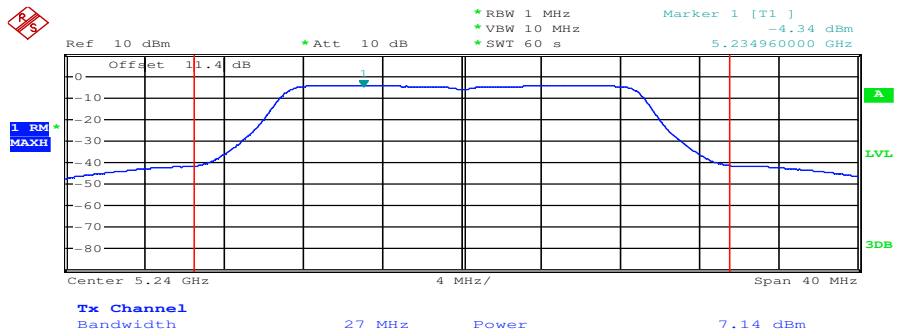
Plots: OFDM / n – mode HT20

Plot 1: 5180 MHz



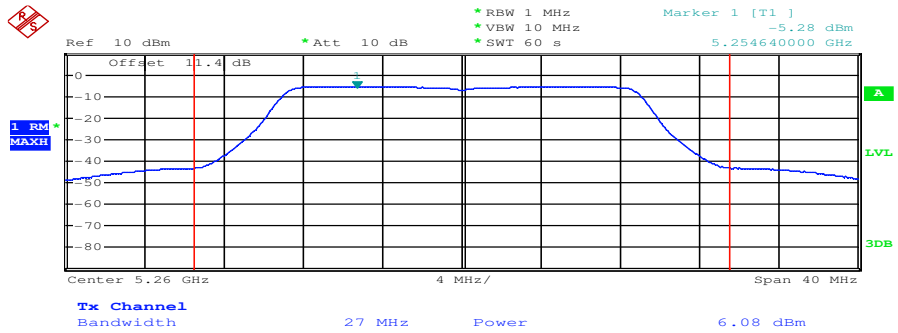
Date: 16.OCT.2012 08:49:11

Plot 2: 5240 MHz



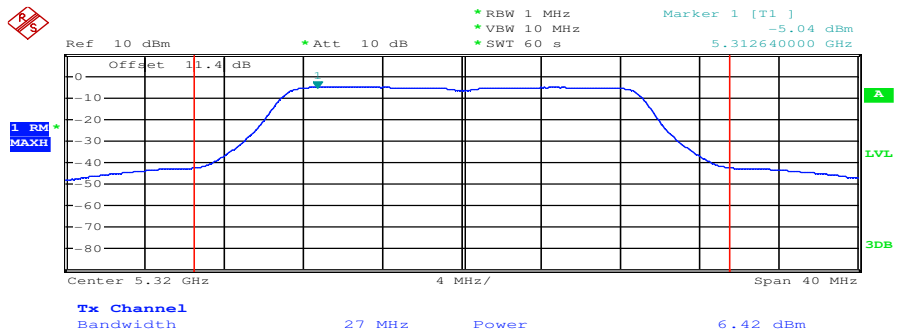
Date: 16.OCT.2012 08:47:48

Plot 3: 5260 MHz



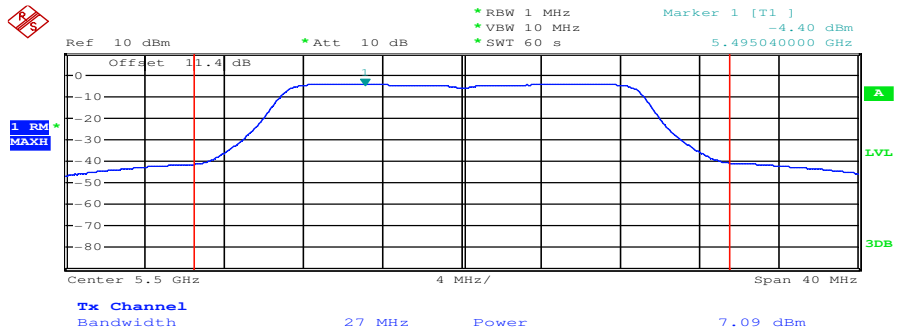
Date: 16.OCT.2012 08:46:26

Plot 4: 5320 MHz



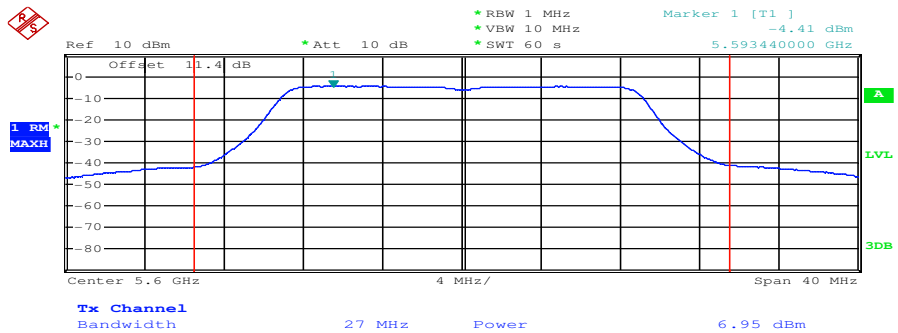
Date: 16.OCT.2012 08:44:46

Plot 5: 5500 MHz



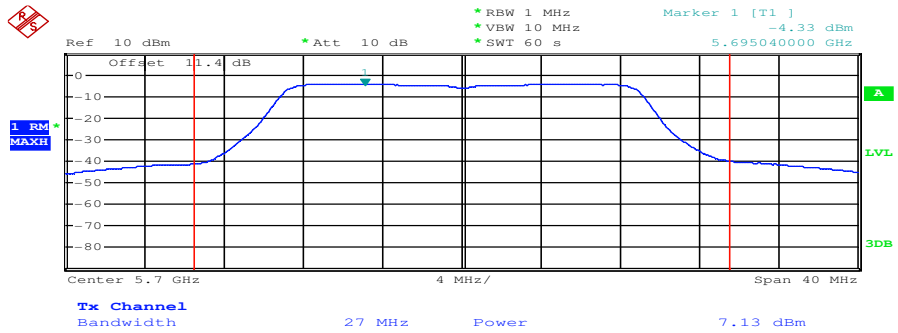
Date: 16.OCT.2012 08:43:18

Plot 6: 5600 MHz



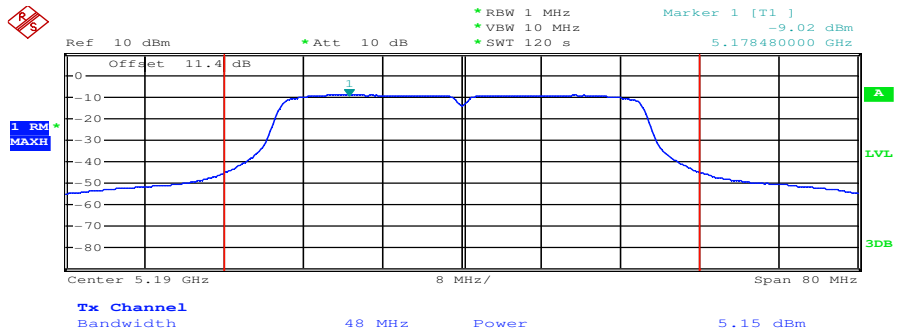
Date: 16.OCT.2012 08:41:54

Plot 7: 5700 MHz



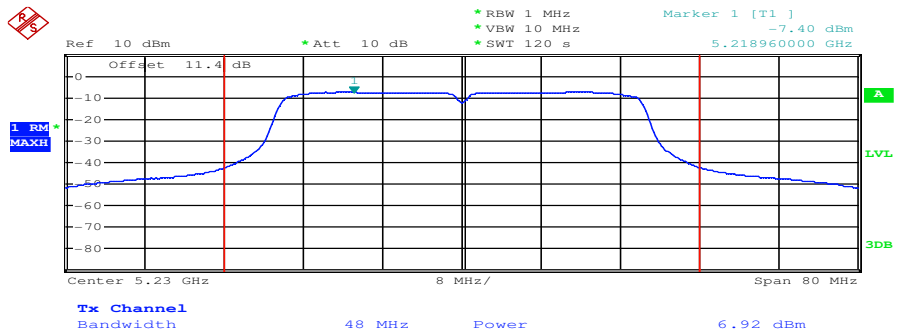
Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz



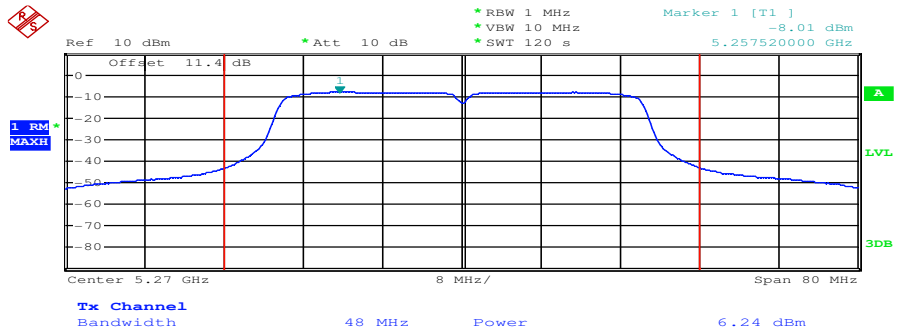
Date: 16.OCT.2012 08:52:24

Plot 2: 5230 MHz



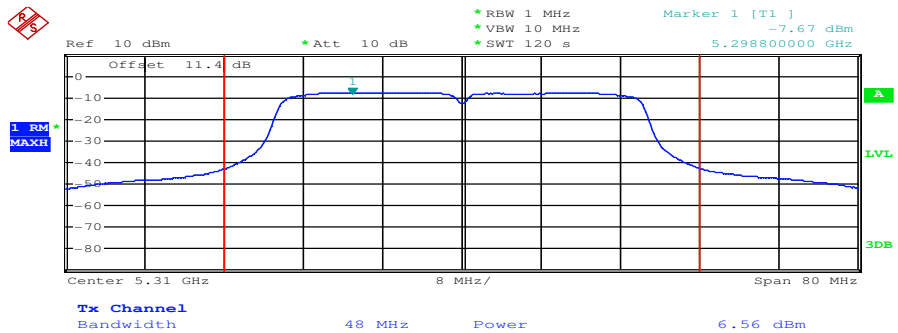
Date: 16.OCT.2012 08:55:01

Plot 3: 5270 MHz



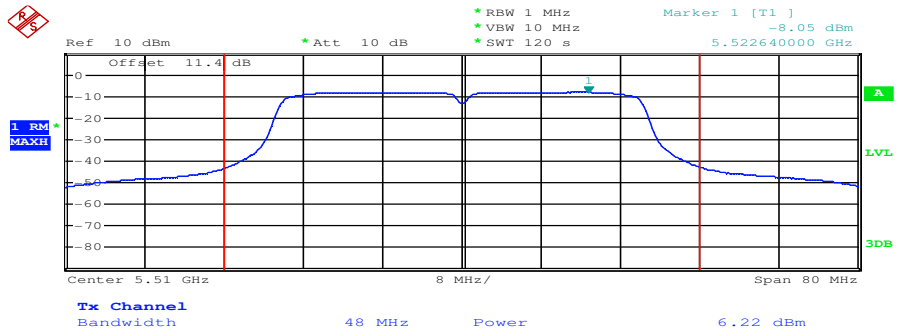
Date: 16.OCT.2012 08:58:20

Plot 4: 5310 MHz



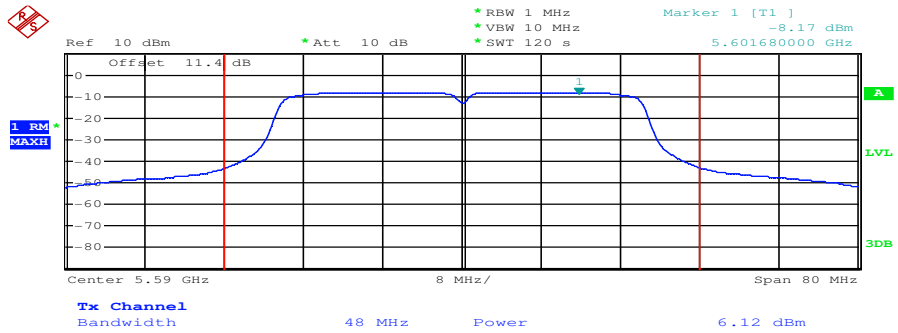
Date: 16.OCT.2012 09:01:04

Plot 5: 5510 MHz



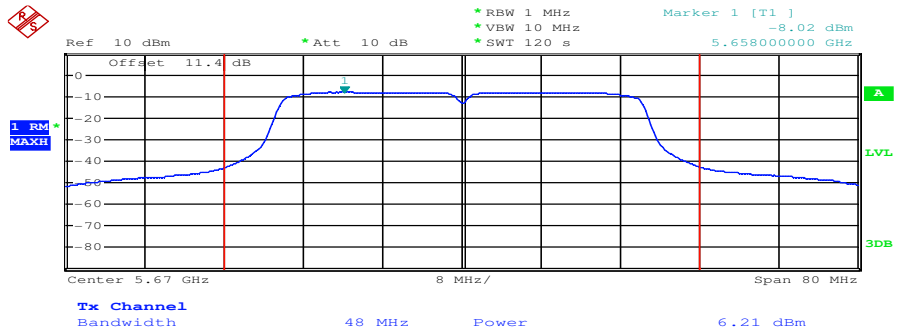
Date: 16.OCT.2012 09:03:30

Plot 6: 5590 MHz



Date: 16.OCT.2012 09:06:02

Plot 7: 5670 MHz



Date: 16.OCT.2012 09:08:27

9.5 Power spectral density

Description:

Measurement of the power spectral density of a digital modulated system. The measurement is repeated at the lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	RMS
Sweep time:	60 s / 120 s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> EBW
Trace-Mode:	Max hold

Limits:

Power Spectral Density
power spectral density conducted ≤ 4 dBm in any 1 MHz band (band 5150 – 5250 MHz) power spectral density conducted ≤ 11 dBm in any 1 MHz band (band 5250 – 5350 MHz) power spectral density conducted ≤ 11 dBm in any 1 MHz band (band 5470 – 5725 MHz)

Result: OFDM / a – mode

OFDM / a – mode	Power Spectral density [dBm/MHz]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.20 dB duty cycle correction	-6.06	-5.11	-5.31	-5.74
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.20 dB duty cycle correction	-5.21	-5.08	-4.84	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

Result: OFDM / n – mode HT20

OFDM / n – mode HT20	Power Spectral density [dBm/MHz]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
+0.02 dB duty cycle correction	-5.86	-4.81	-5.60	-5.49
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
+0.02 dB duty cycle correction	-4.65	-4.46	-4.49	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

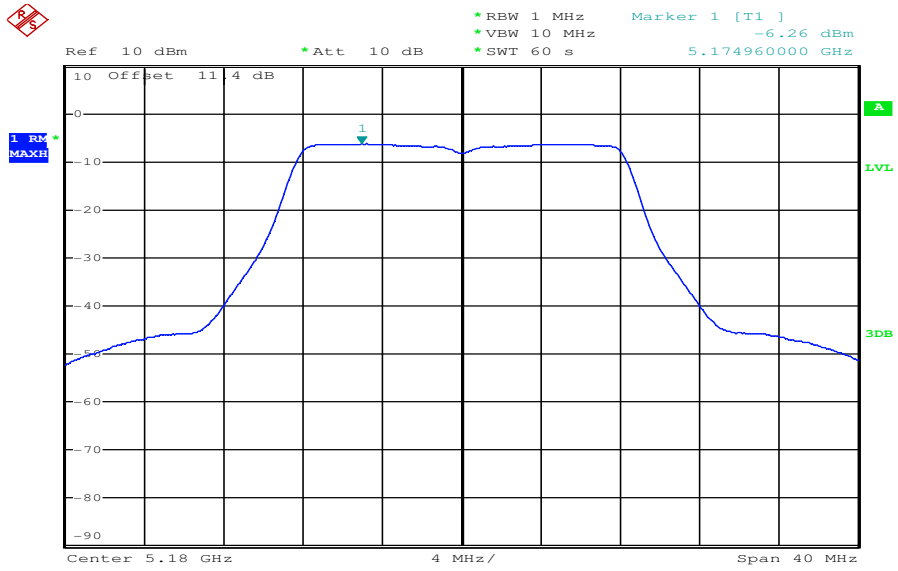
Result: OFDM / n – mode HT40

OFDM / n – mode HT40	Power Spectral density [dBm/MHz]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
+0.04 dB duty cycle correction	-9.45	-7.44	-8.70	-8.34
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.04 dB duty cycle correction	-7.57	-7.60	-7.34	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

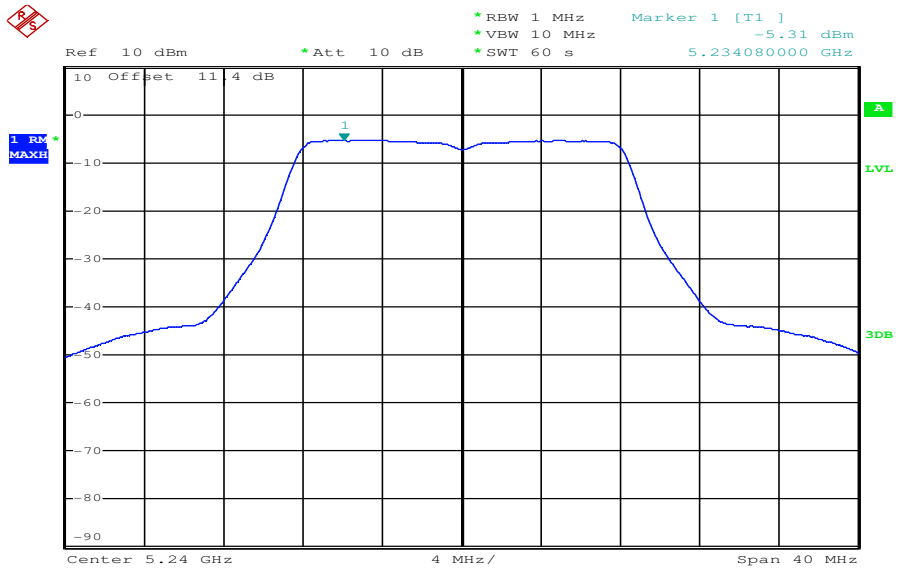
Plots: OFDM / a – mode

Plot 1: 5180 MHz



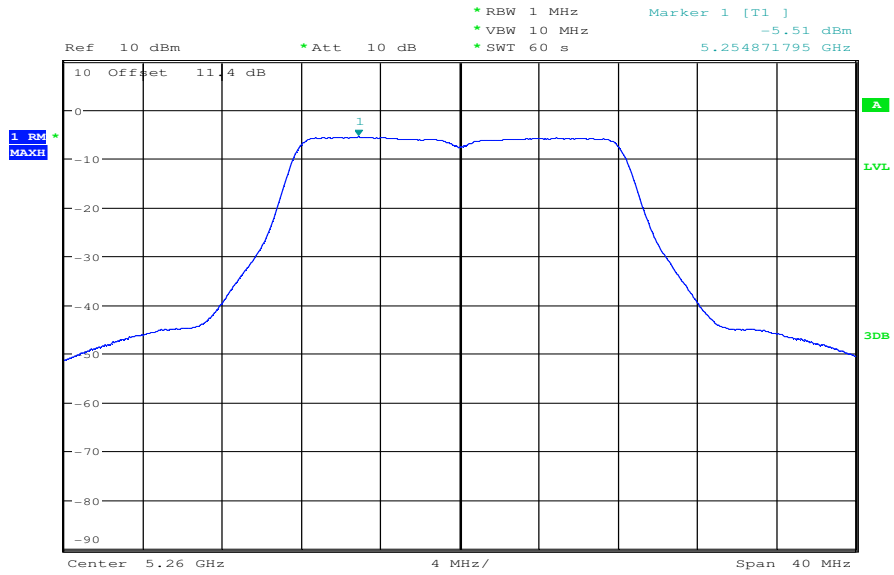
Date: 15.OCT.2012 14:45:59

Plot 2: 5240 MHz

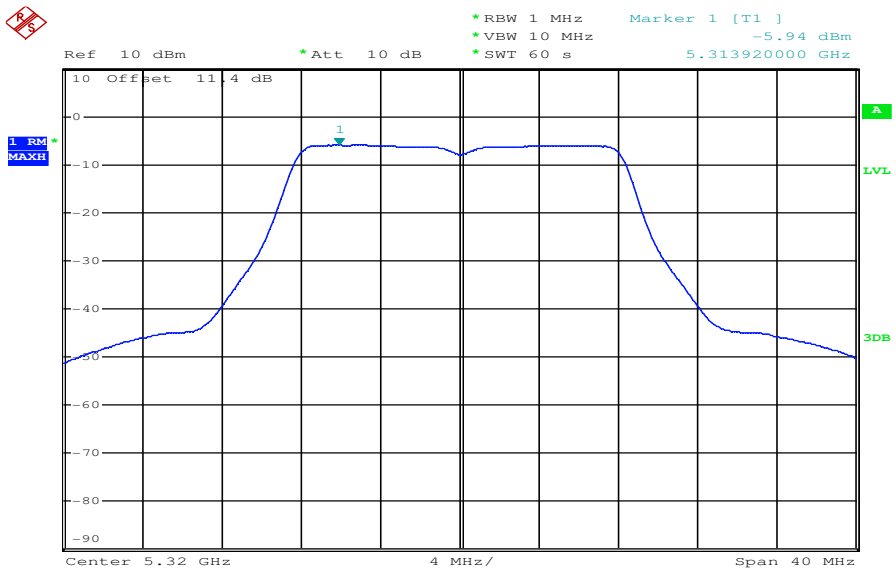


Date: 15.OCT.2012 14:47:50

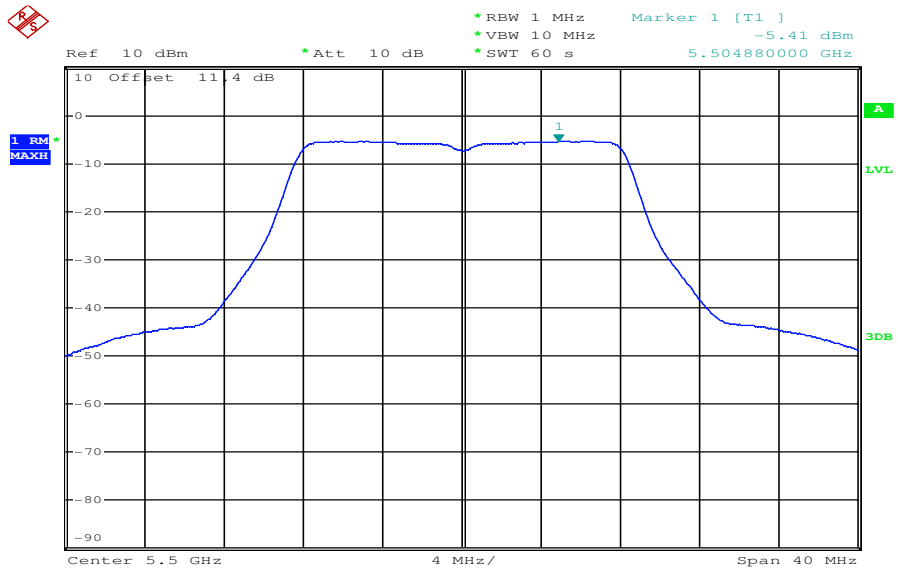
Plot 3: 5260 MHz



Plot 4: 5320 MHz

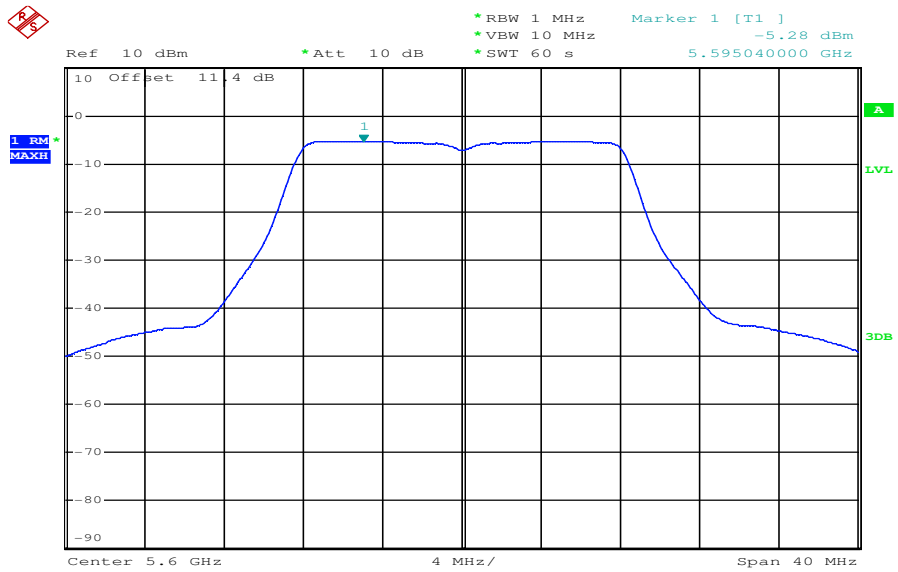


Plot 5: 5500 MHz



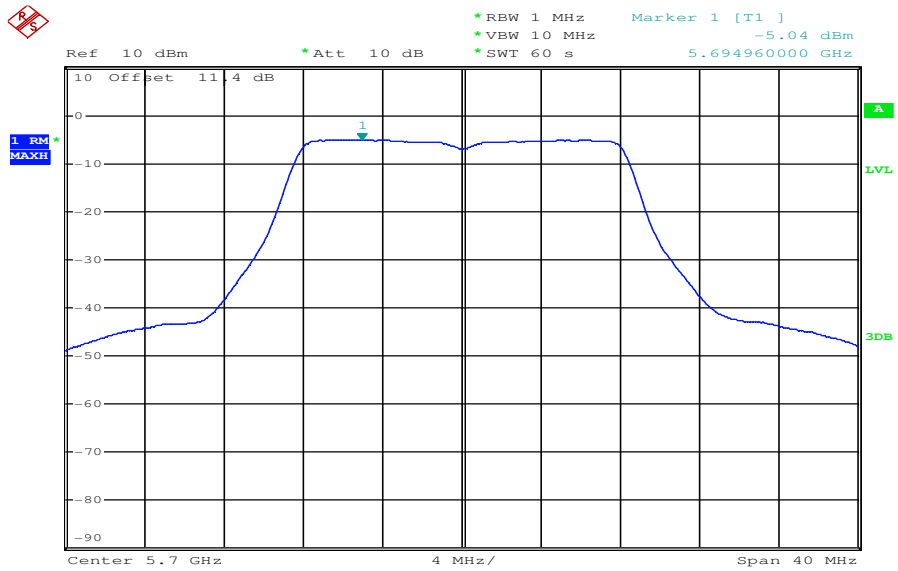
Date: 15.OCT.2012 15:05:00

Plot 6: 5600 MHz



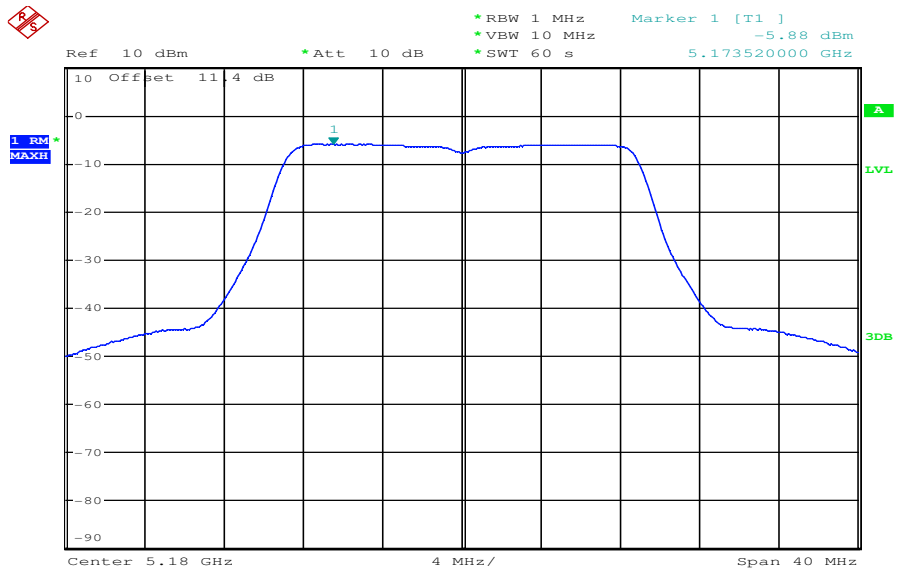
Date: 15.OCT.2012 15:06:27

Plot 7: 5700 MHz



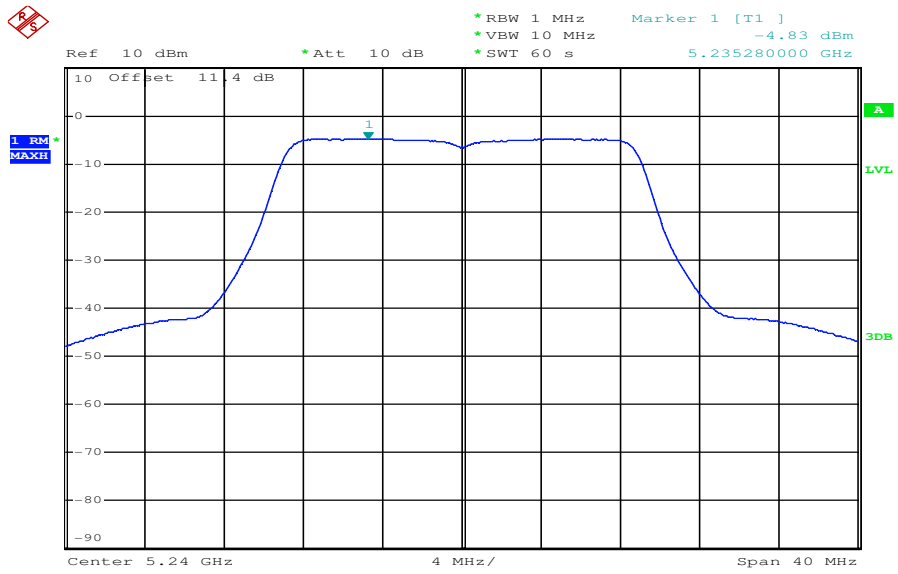
Plots: OFDM / n – mode HT20

Plot 1: 5180 MHz



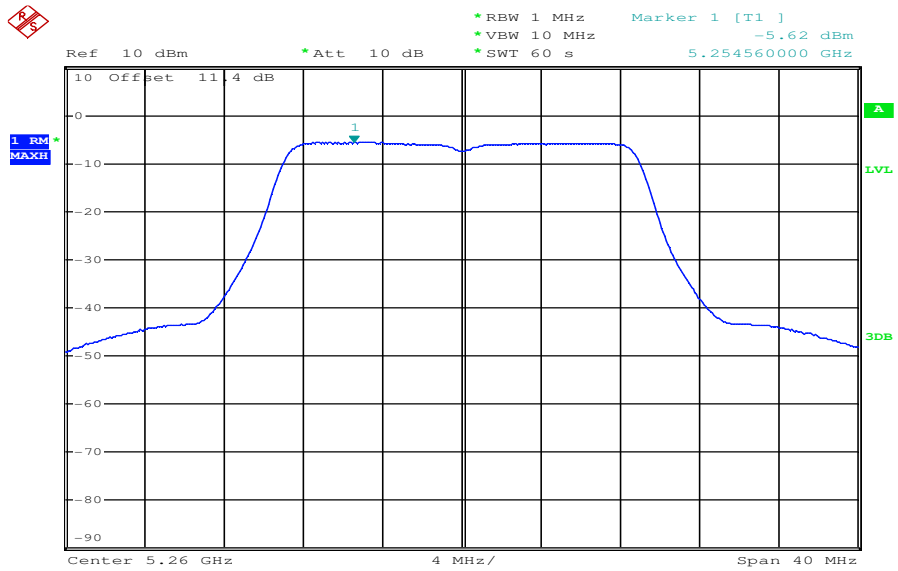
Date: 15.OCT.2012 15:18:48

Plot 2: 5240 MHz



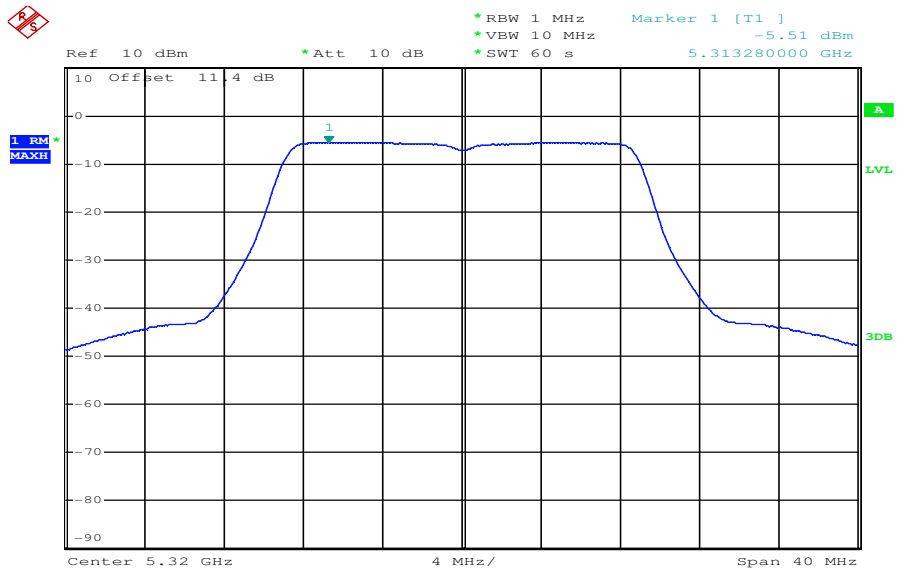
Date: 15.OCT.2012 15:16:50

Plot 3: 5260 MHz



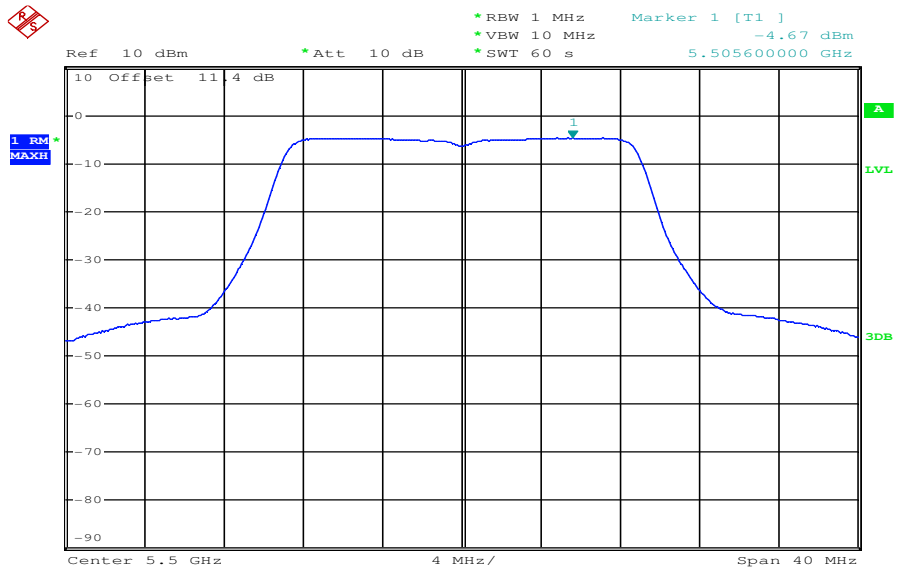
Date: 15.OCT.2012 15:15:14

Plot 4: 5320 MHz



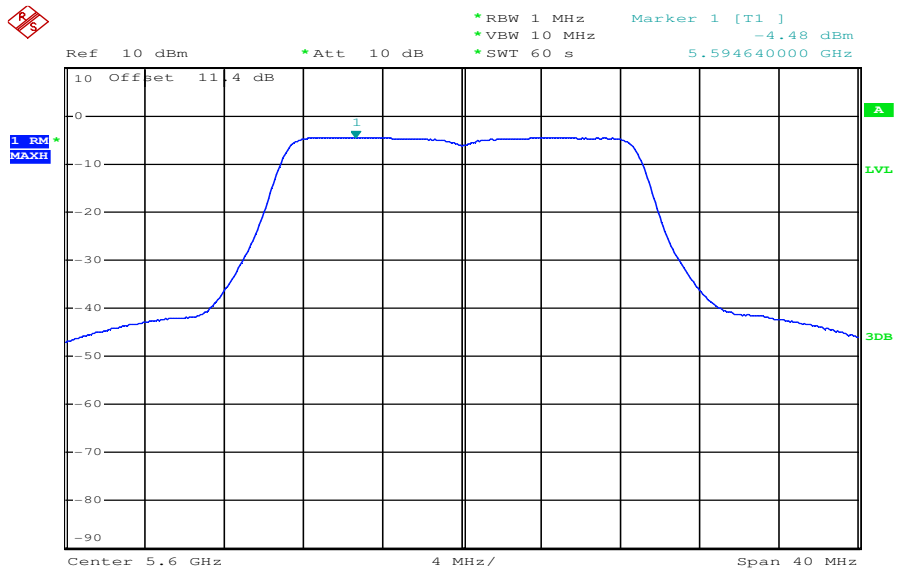
Date: 15.OCT.2012 15:13:41

Plot 5: 5500 MHz



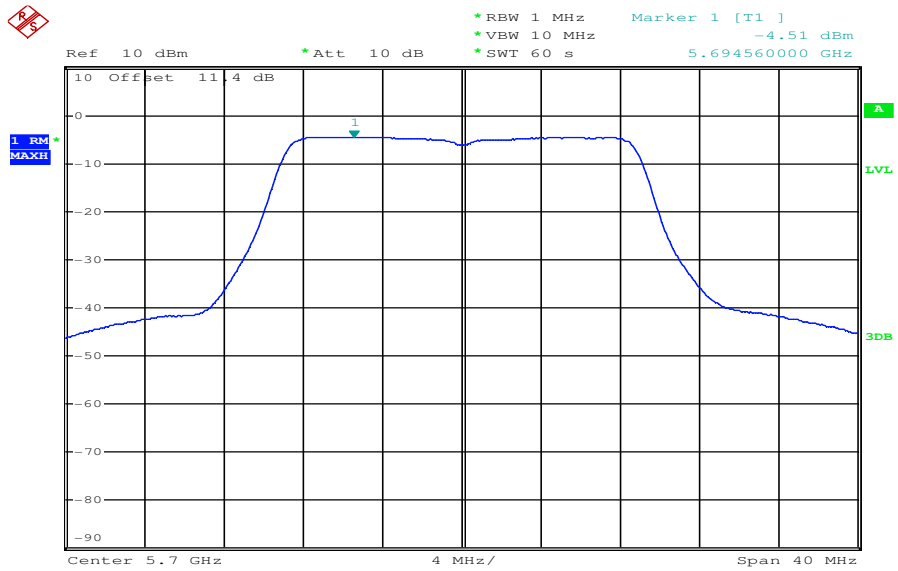
Date: 15.OCT.2012 15:12:11

Plot 6: 5600 MHz



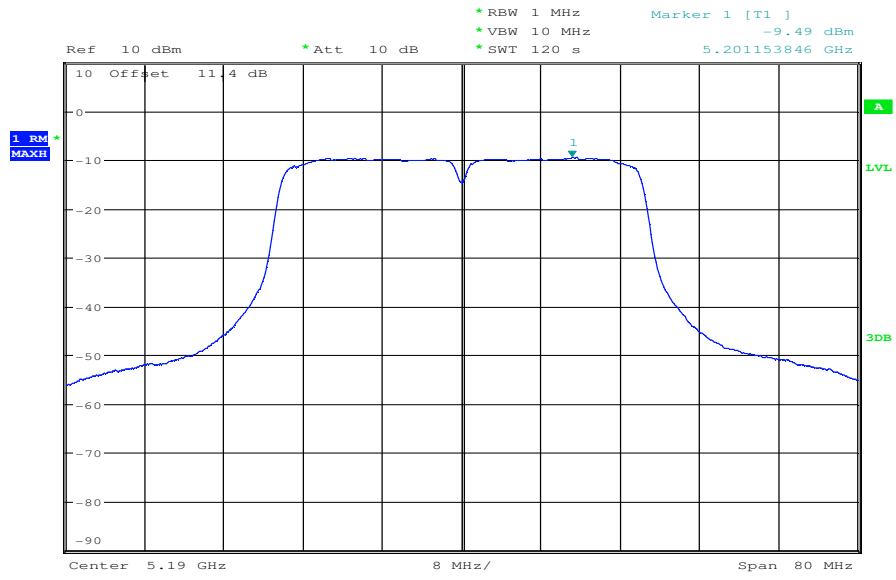
Date: 15.OCT.2012 15:10:48

Plot 7: 5700 MHz



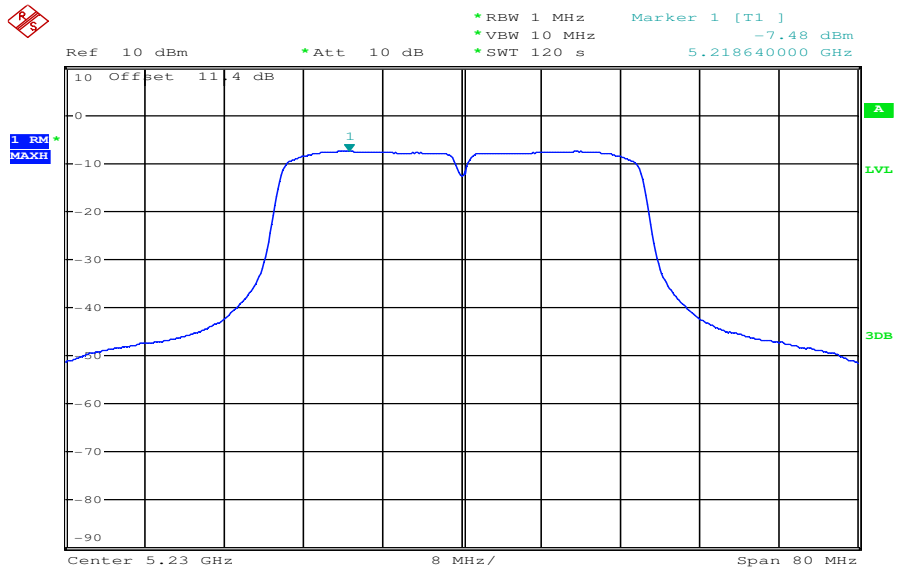
Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz



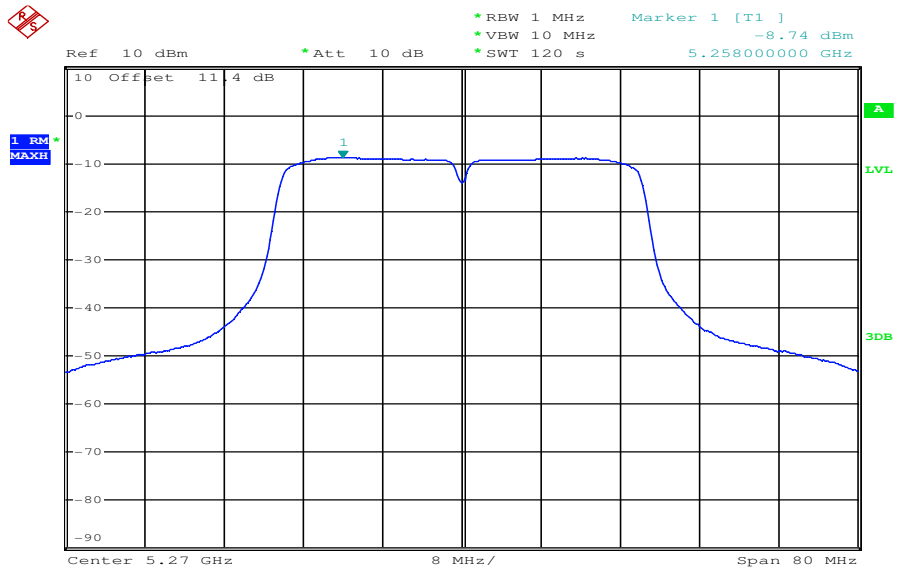
Date: 25.OCT.2012 08:05:54

Plot 2: 5230 MHz



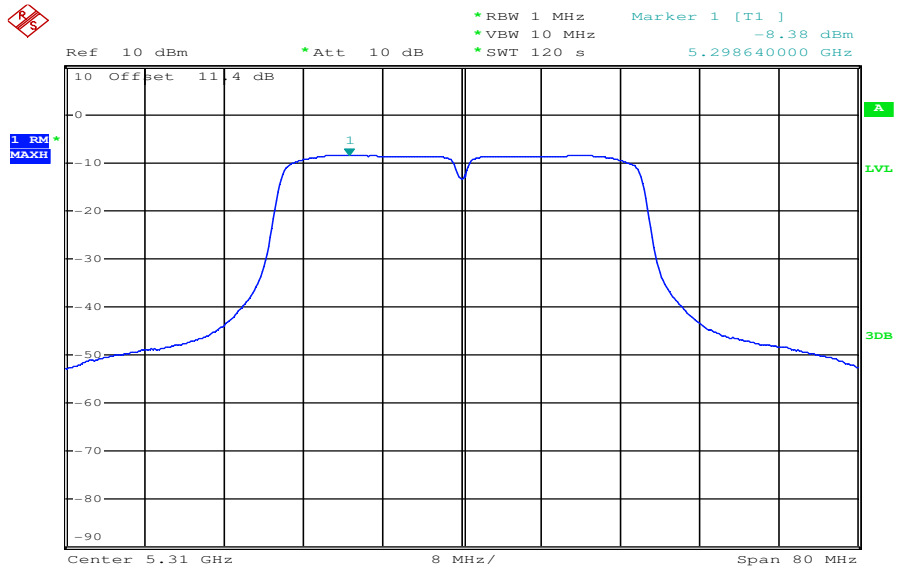
Date: 15.OCT.2012 15:24:58

Plot 3: 5270 MHz



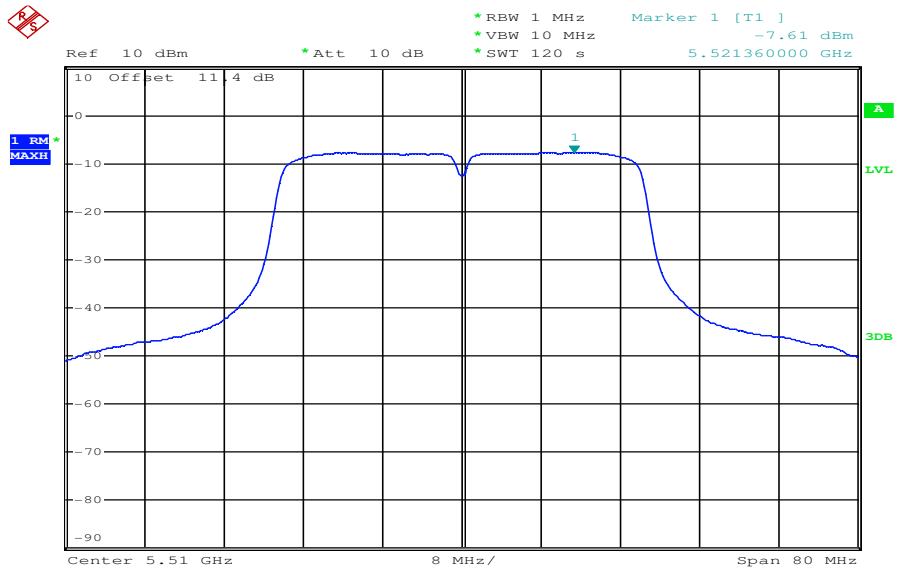
Date: 15.OCT.2012 15:27:54

Plot 4: 5310 MHz

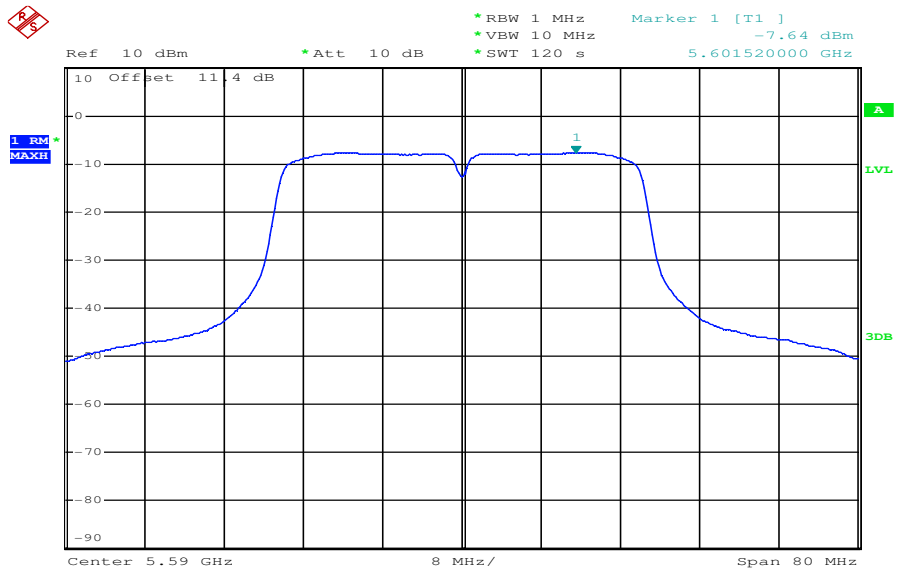


Date: 15.OCT.2012 15:30:37

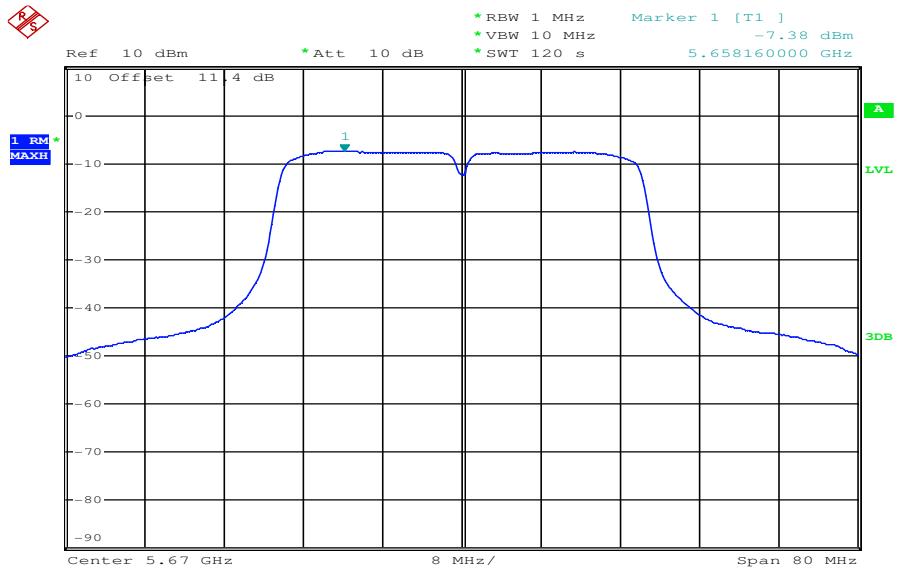
Plot 5: 5510 MHz



Plot 6: 5590 MHz



Plot 7: 5670 MHz



9.6 Spectrum bandwidth – 26 dB bandwidth

Description:

Measurement of the 26 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1% EBW
Video bandwidth:	≥ RBW
Span:	> complete signal!
Trace-Mode:	Max hold

Limits:

Spectrum Bandwidth – 26 dB Bandwidth
-/-

Result: OFDM / a – mode

OFDM / a – mode	26 dB BANDWIDTH [MHz]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
	22.08	22.16	22.40	22.56
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
	22.32	22.40	22.24	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

Result: OFDM / n – mode HT20

OFDM / n – mode HT20	26 dB BANDWIDTH [MHz]			
Channel	Lowest 5180 MHz	Highest 5240 MHz	Lowest 5260 MHz	Highest 5320 MHz
	23.44	23.52	23.04	23.20
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	-/-
	23.28	23.20	23.44	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

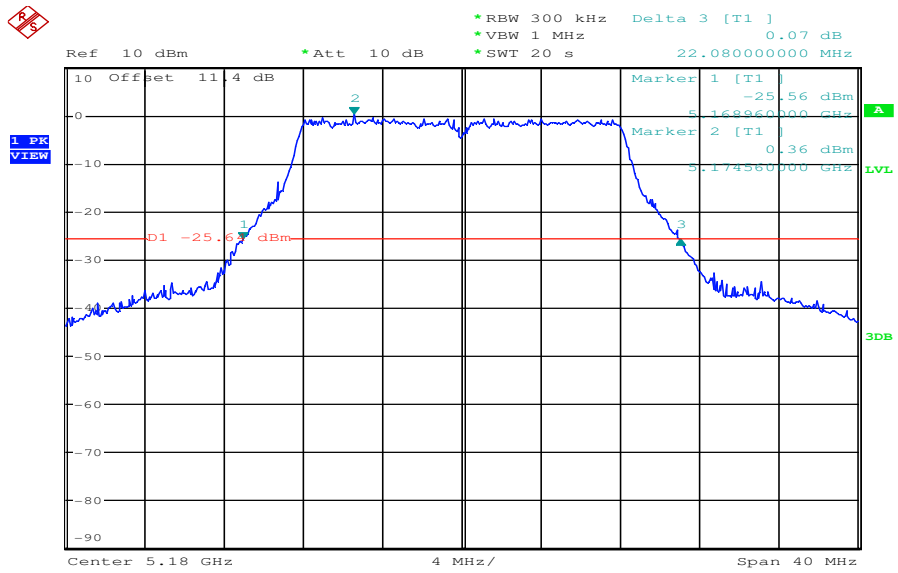
Result: OFDM / n – mode HT40

OFDM / n – mode HT40	26 dB BANDWIDTH [MHz]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
	43.52	43.84	43.90	44.00
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
	44.16	44.16	44.48	-/-
Measurement uncertainty	± 1 dB			

Result: Passed

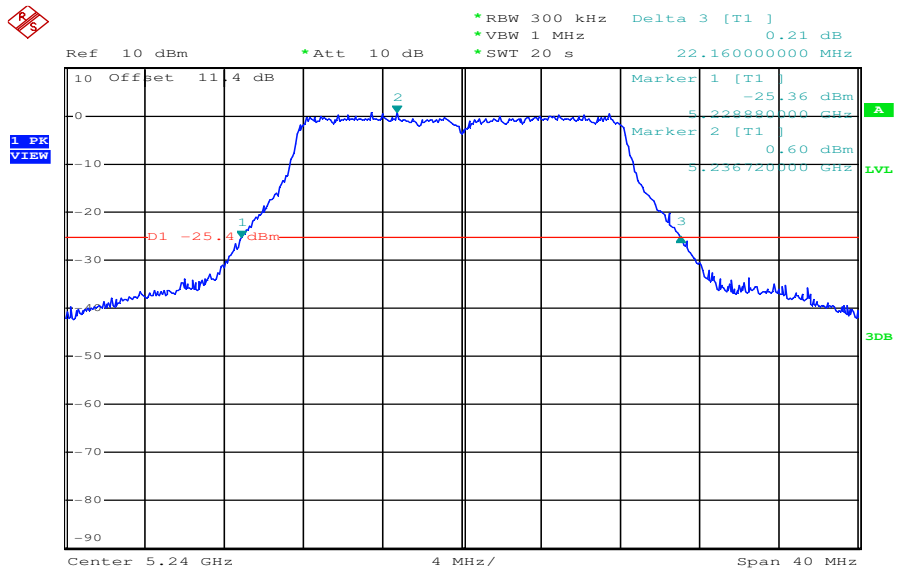
Plots: OFDM / a – mode

Plot 1: 5180 MHz



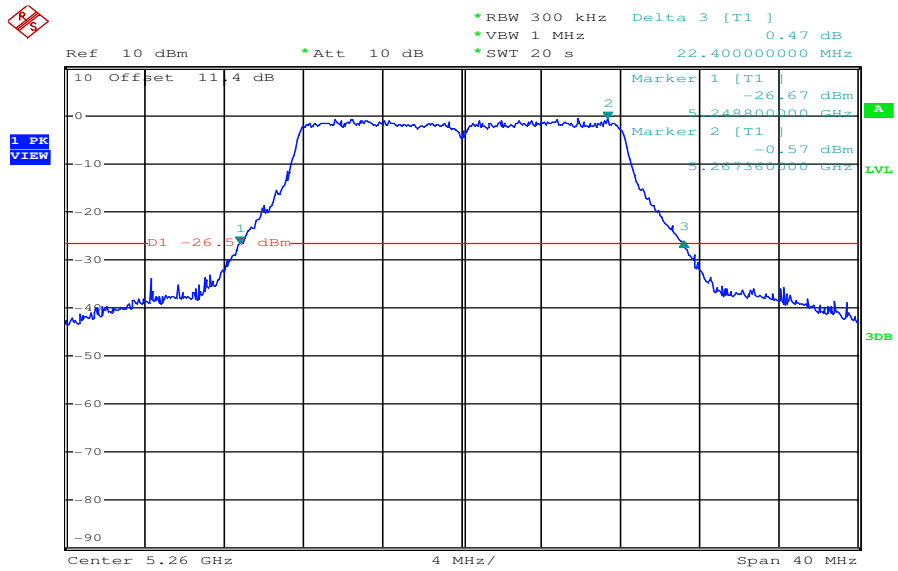
Date: 16.OCT.2012 08:02:11

Plot 2: 5240 MHz



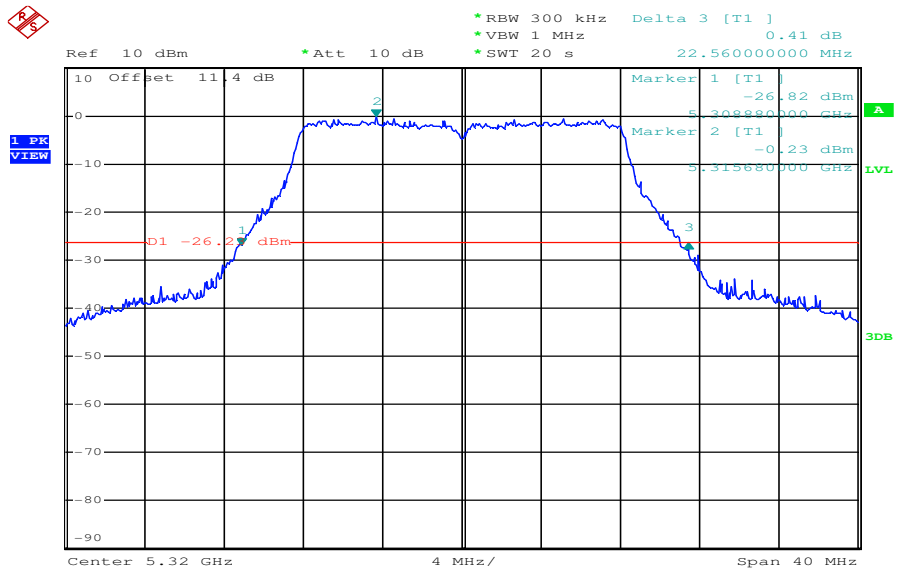
Date: 16.OCT.2012 08:03:46

Plot 3: 5260 MHz



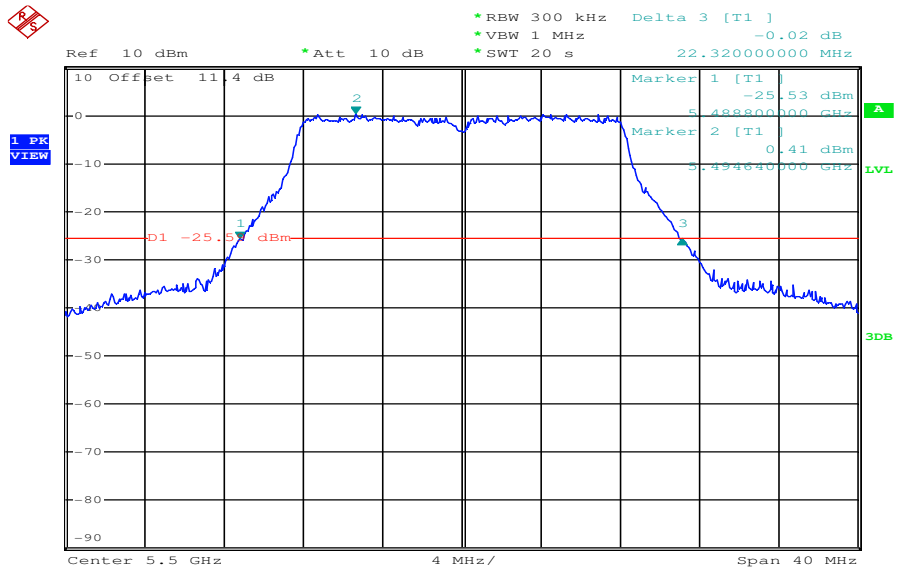
Date: 16.OCT.2012 08:05:24

Plot 4: 5320 MHz



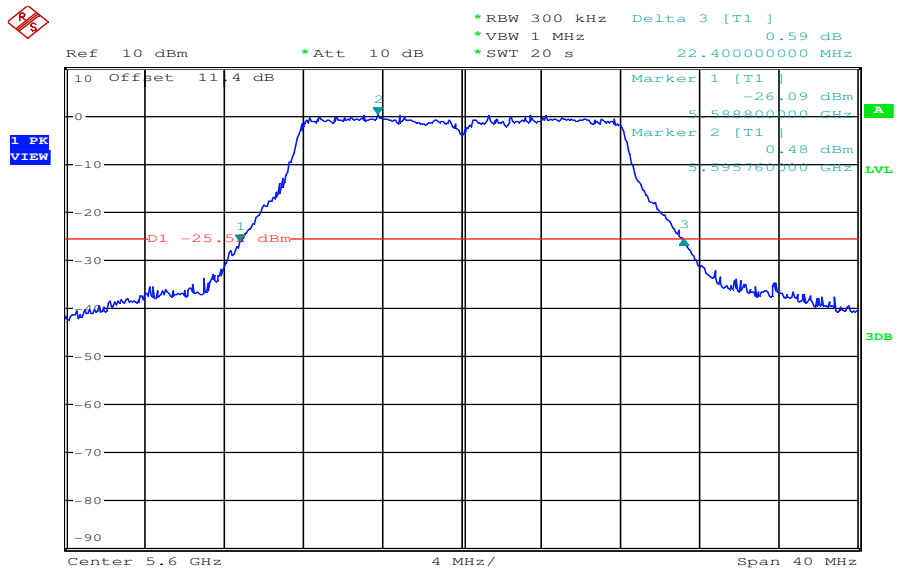
Date: 16.OCT.2012 08:07:01

Plot 5: 5500 MHz



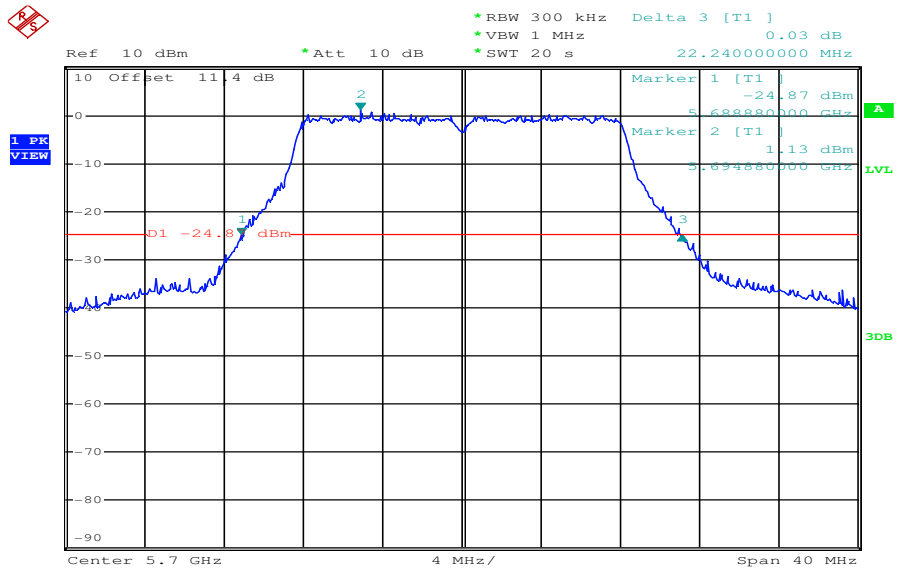
Date: 16.OCT.2012 08:08:33

Plot 6: 5600 MHz



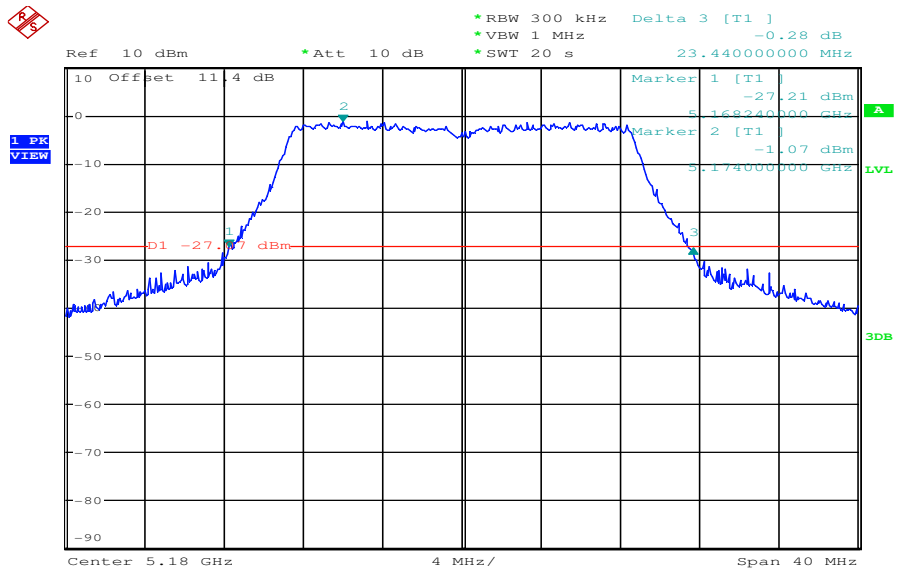
Date: 16.OCT.2012 08:10:12

Plot 7: 5700 MHz



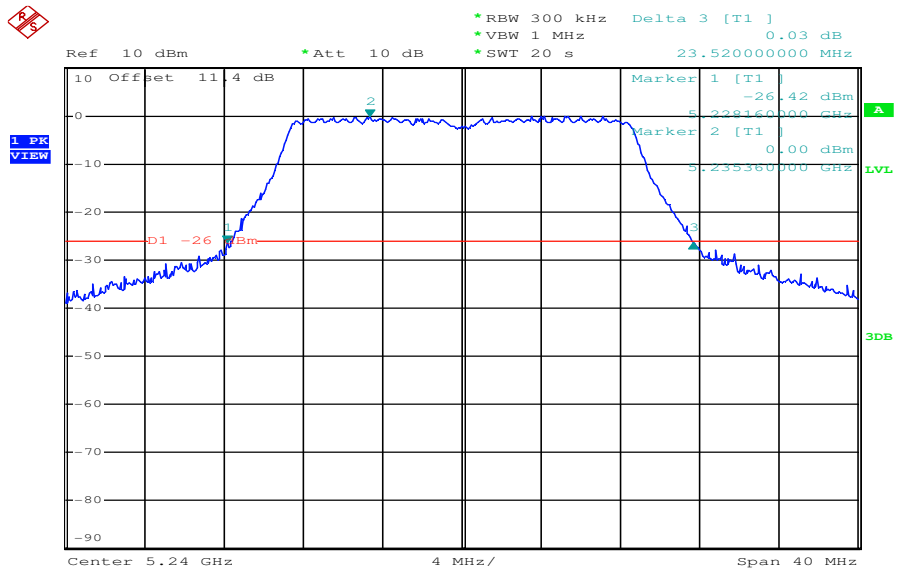
Plots: OFDM / n – mode HT20

Plot 1: 5180 MHz



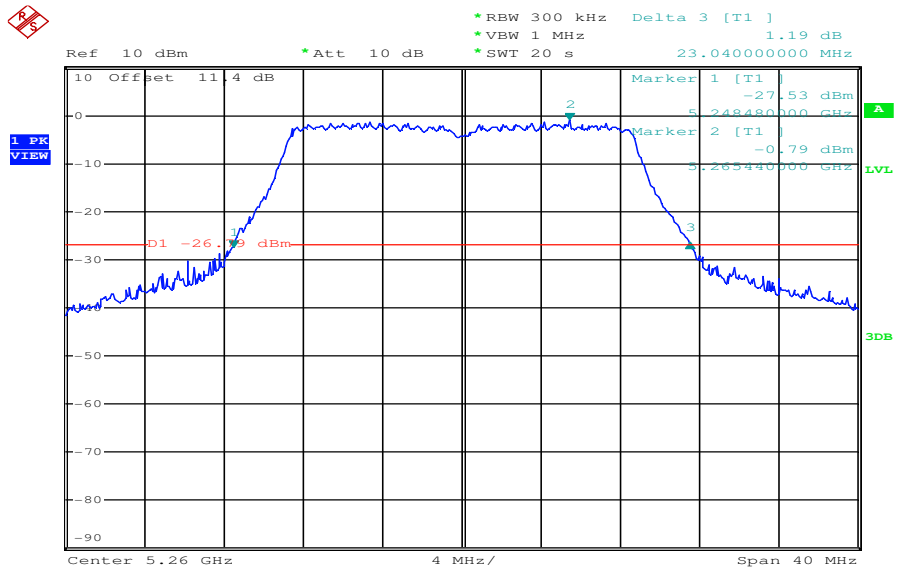
Date: 16.OCT.2012 08:25:34

Plot 2: 5240 MHz



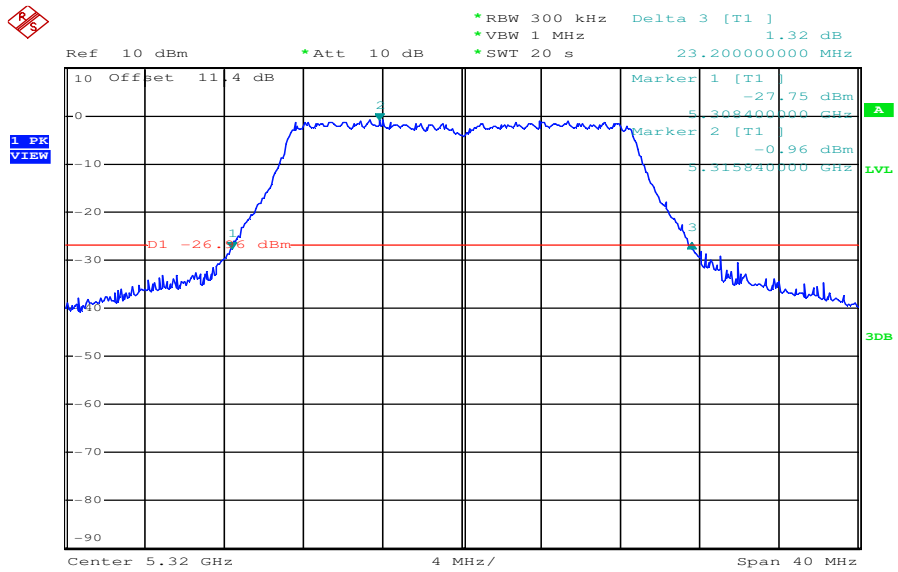
Date: 16.OCT.2012 08:24:23

Plot 3: 5260 MHz



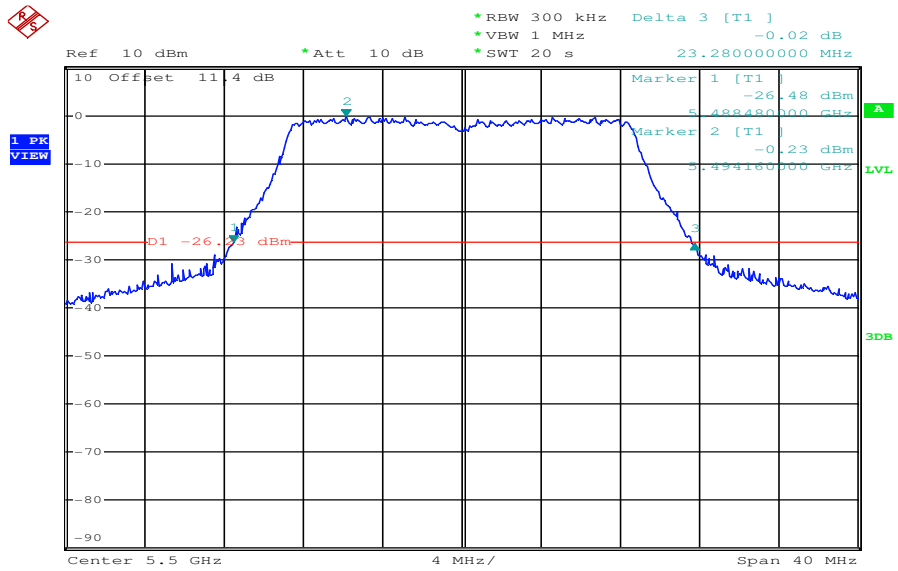
Date: 16.OCT.2012 08:20:10

Plot 4: 5320 MHz



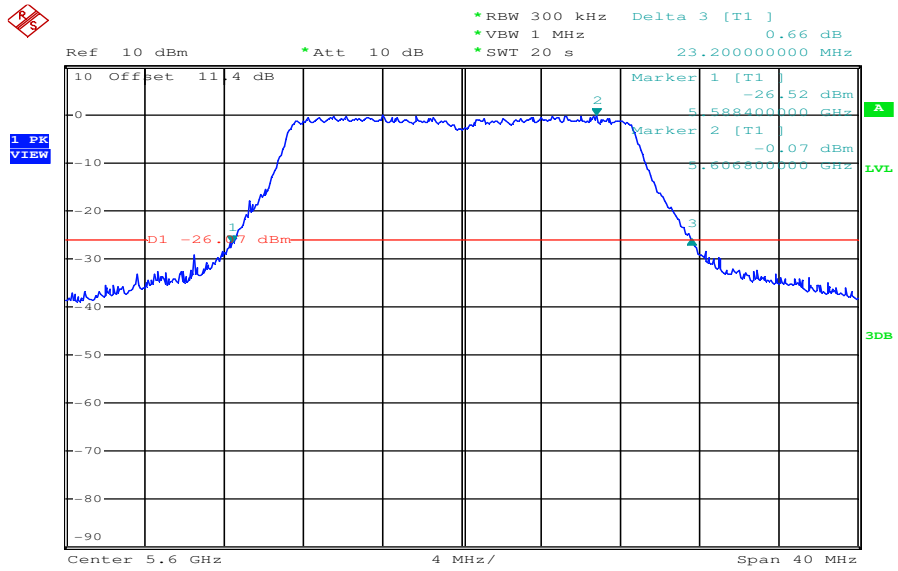
Date: 16.OCT.2012 08:18:31

Plot 5: 5500 MHz



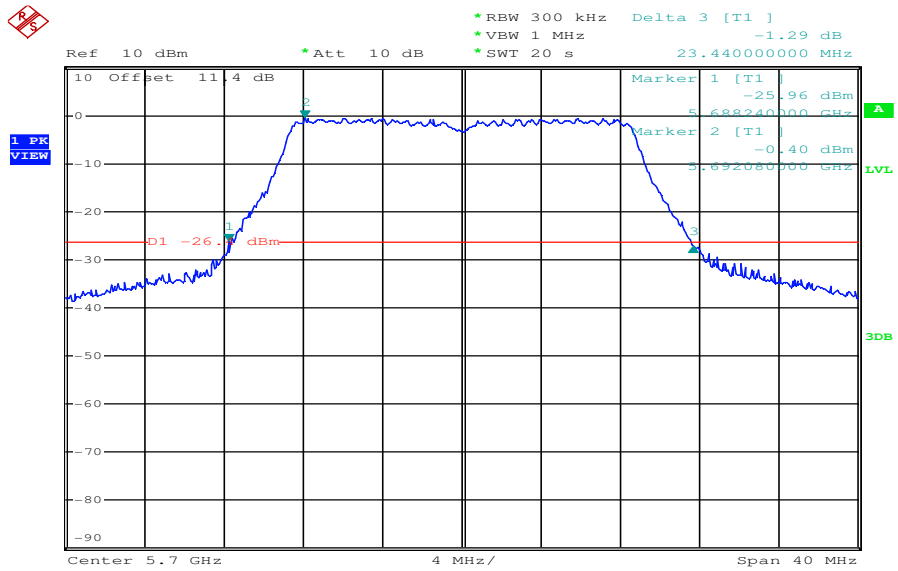
Date: 16.OCT.2012 08:16:54

Plot 6: 5600 MHz



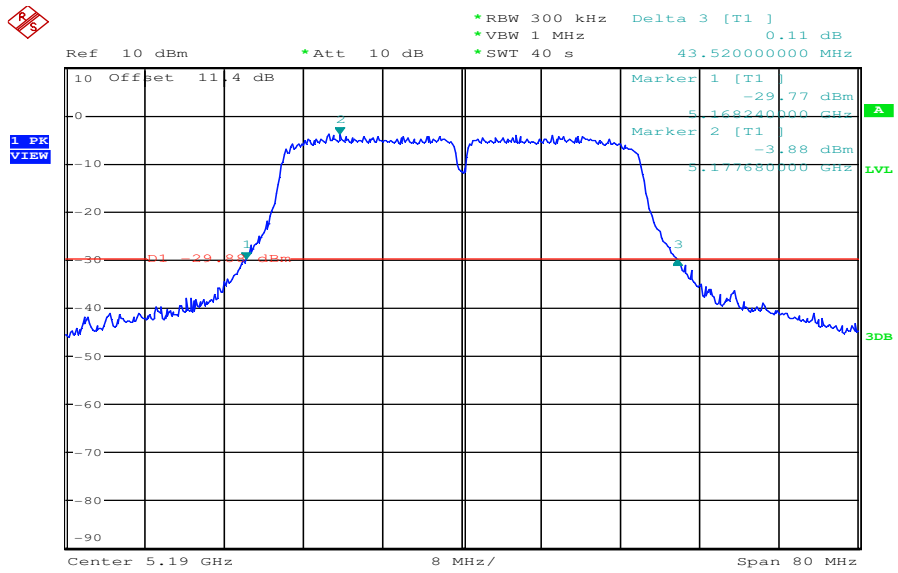
Date: 16.OCT.2012 08:15:16

Plot 7: 5700 MHz



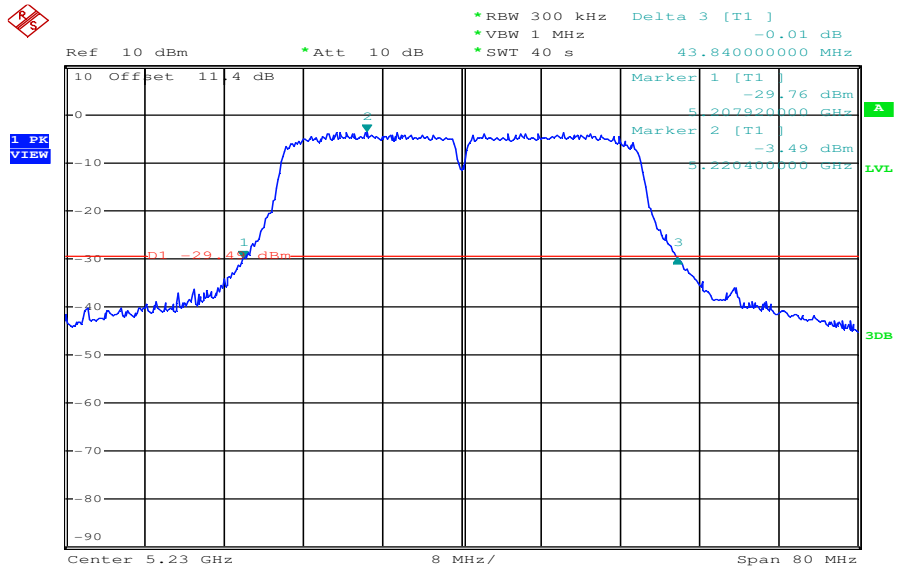
Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz



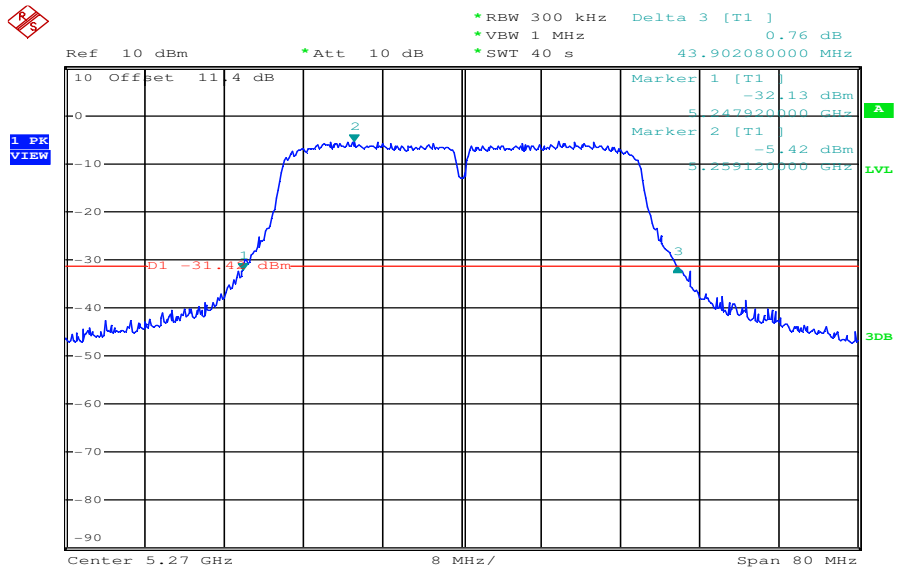
Date: 16.OCT.2012 08:00:05

Plot 2: 5230 MHz



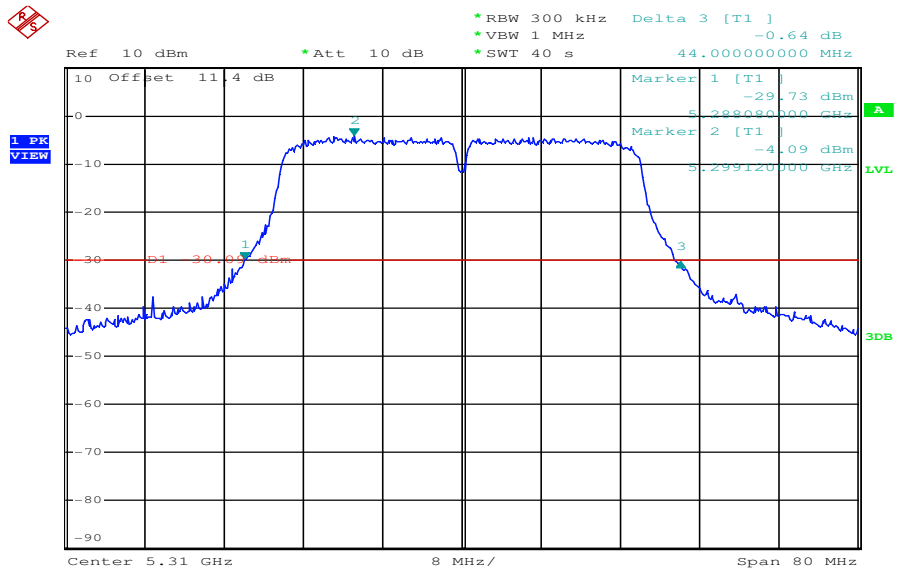
Date: 16.OCT.2012 07:58:10

Plot 3: 5270 MHz



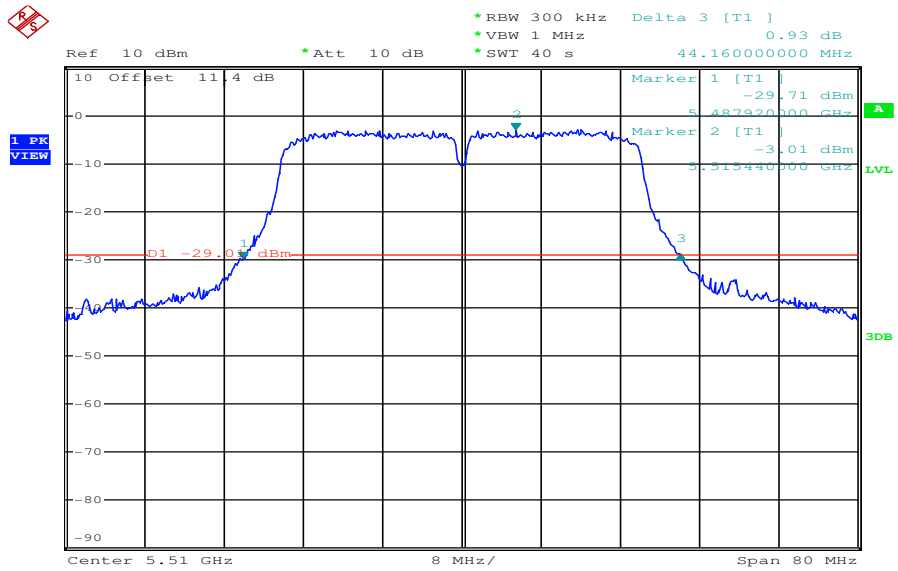
Date: 16.OCT.2012 07:55:52

Plot 4: 5310 MHz



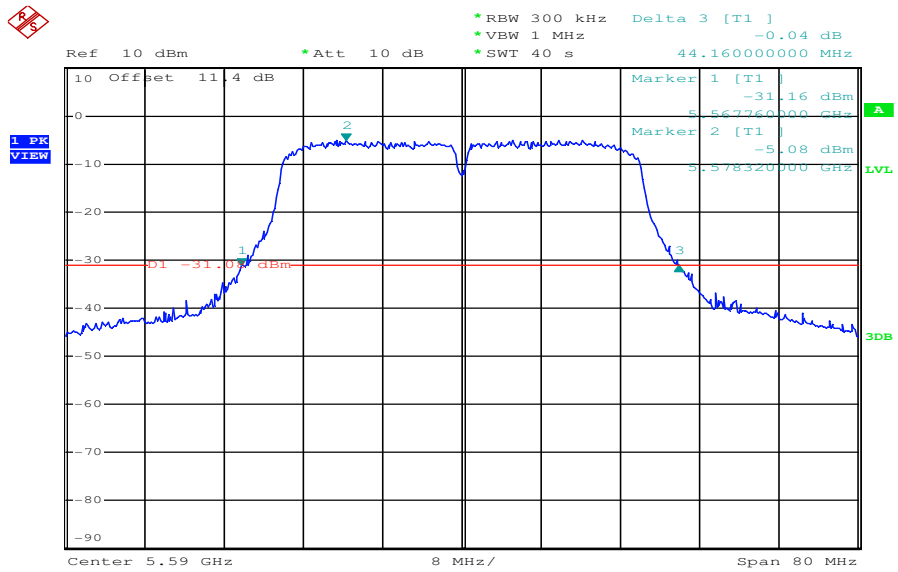
Date: 16.OCT.2012 07:53:28

Plot 5: 5510 MHz



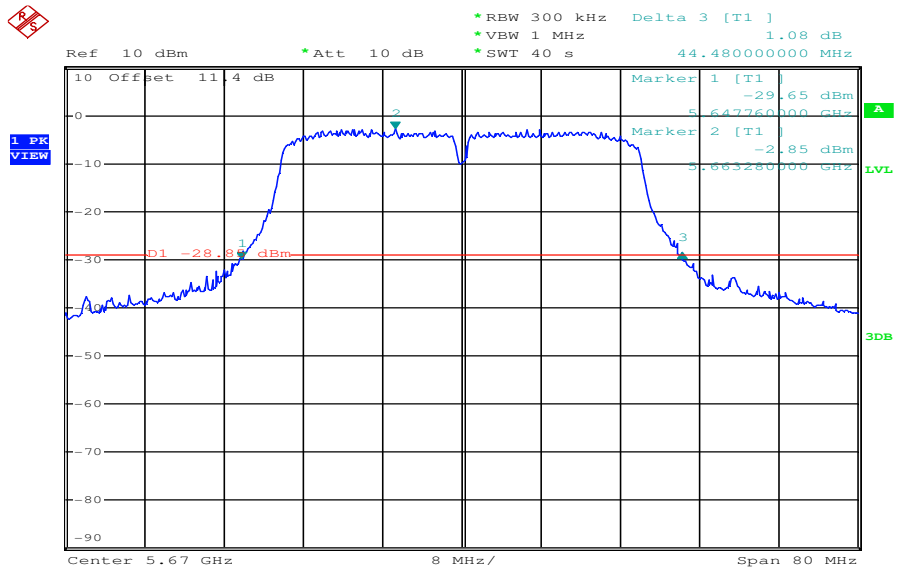
Date: 16.OCT.2012 07:51:22

Plot 6: 5590 MHz



Date: 16.OCT.2012 07:49:14

Plot 7: 5670 MHz



Date: 16.OCT.2012 07:47:05

9.7 Peak excursion measurements

Description:

Peak to average value.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	60 s / 120 s
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 MHz
Span:	> Complete signal
Trace-Mode:	Max hold

Limits:

Peak excursion value
Does not exceed 13 dB.

Results:

Modulation OFDM / a – mode	Peak excursion value		
Channel	5180 MHz	-/-	5240 MHz
RMS	-6.06	-/-	-5.11
Peak	6.48	-/-	7.58
Peak excursion value	12.54	-/-	12.69
Channel	5260 MHz	-/-	5320 MHz
RMS	-5.31	-/-	-5.74
Peak	6.82	-/-	7.21
Peak excursion value	12.13	-/-	12.95
Channel	5500 MHz	5600 MHz	5700 MHz
RMS	-5.21	-5.08	-4.84
Peak	7.36	7.58	7.33
Peak excursion value	12.57	12.66	12.17
Measurement uncertainty	± 1 dB		

Result: Passed

Results:

Modulation OFDM / n – mode HT20	Peak excursion value		
Channel	5180 MHz	-/-	5240 MHz
RMS	-5.86	-/-	-4.81
Peak	5.32	-/-	6.42
Peak excursion value	11.18	-/-	11.23
Channel	5260 MHz	-/-	5320 MHz
RMS	-5.60	-/-	-5.49
Peak	5.38	-/-	6.36
Peak excursion value	10.98	-/-	11.85
Channel	5500 MHz	5600 MHz	5700 MHz
RMS	-4.65	-4.46	-4.49
Peak	6.75	6.75	7.12
Peak excursion value	11.40	11.21	11.61
Measurement uncertainty	± 1 dB		

Result: Passed

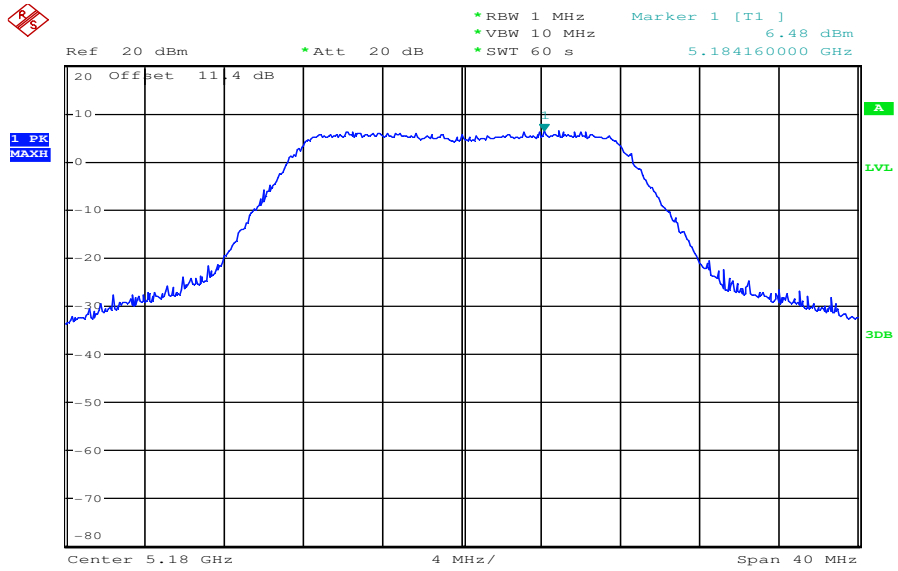
Results:

Modulation OFDM / n – mode HT40	Peak excursion value		
Channel	5190 MHz	5230 MHz	5270 MHz
RMS	-9.45	-7.44	-8.70
Peak	2.79	2.39	0.41
Peak excursion value	12.24	9.83	9.11
Channel	5310 MHz	5510 MHz	5590 MHz
RMS	-8.34	-7.57	-7.60
Peak	1.84	1.75	1.81
Peak excursion value	10.18	9.32	9.41
Channel	5670 MHz	-/-	-/-
RMS	-7.34	-/-	-/-
Peak	3.61	-/-	-/-
Peak excursion value	10.95	-/-	-/-
Measurement uncertainty	± 1 dB		

Result: **Passed**

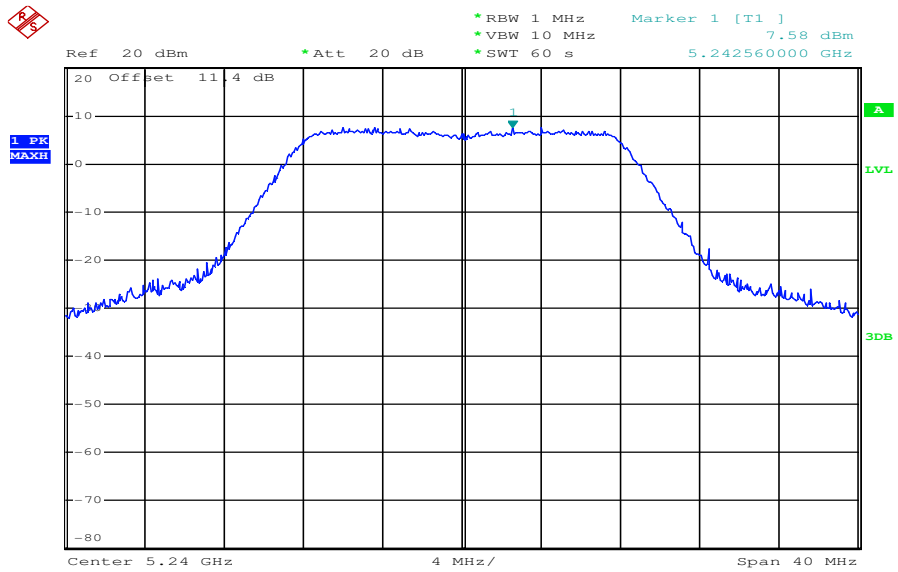
Plots: OFDM / a – mode

Plot 1: 5180 MHz



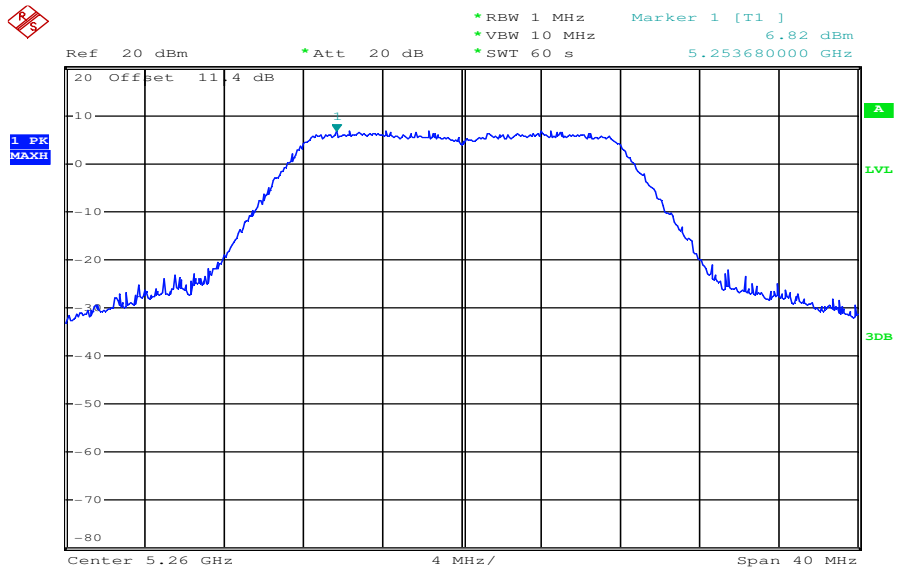
Date: 16.OCT.2012 06:58:55

Plot 2: 5240 MHz



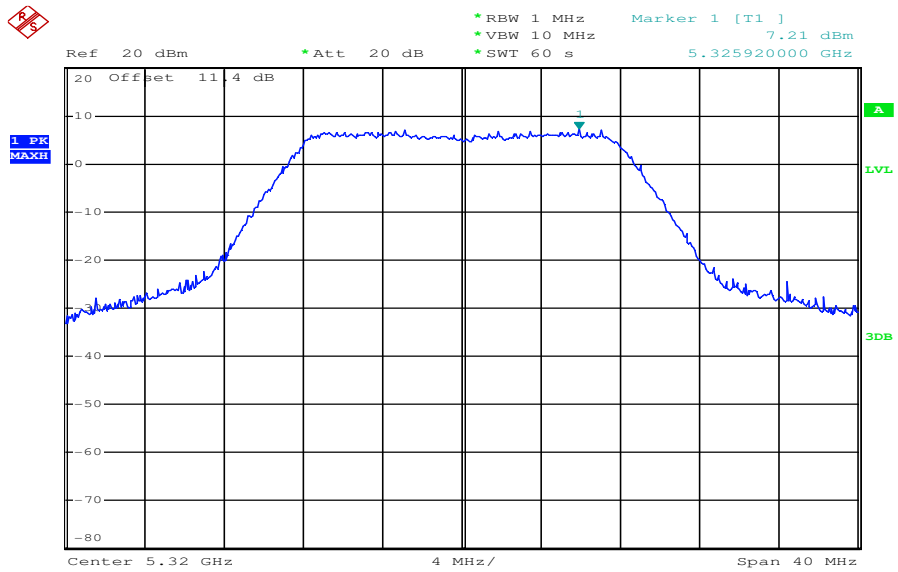
Date: 16.OCT.2012 07:00:59

Plot 3: 5260 MHz



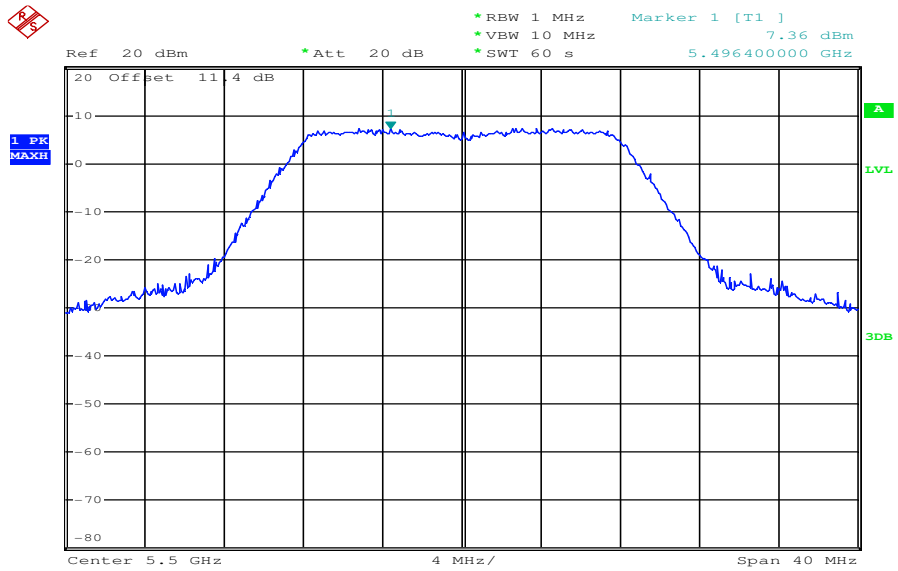
Date: 16.OCT.2012 07:02:55

Plot 4: 5320 MHz



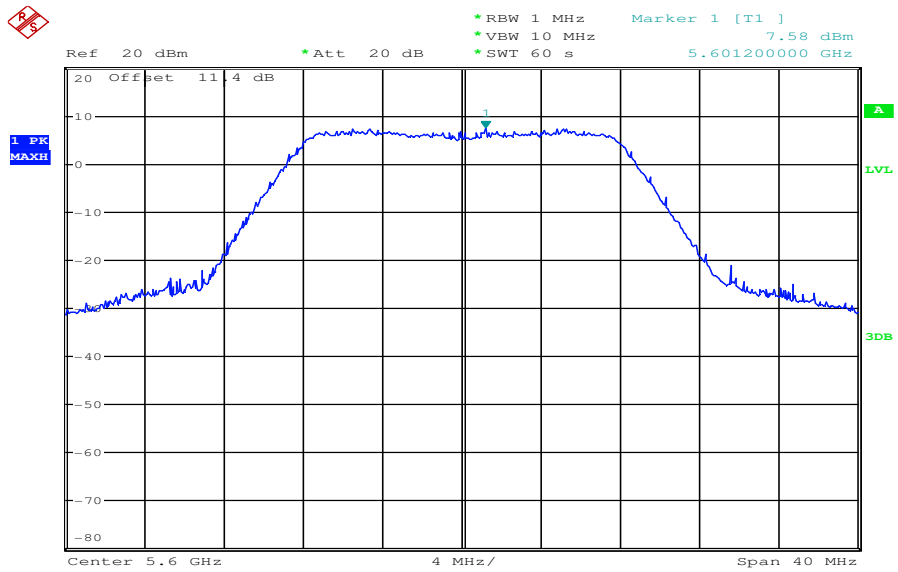
Date: 16.OCT.2012 07:04:47

Plot 5: 5500 MHz



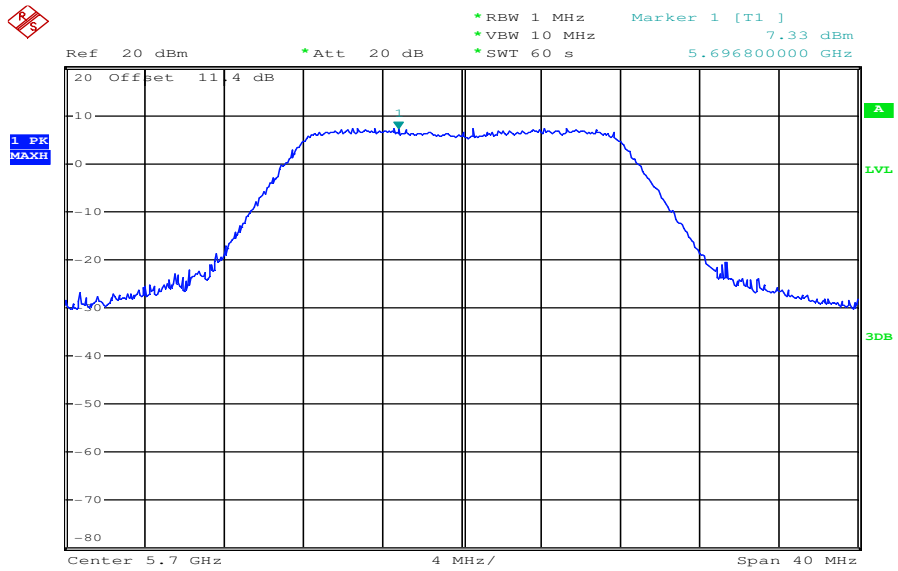
Date: 16.OCT.2012 07:06:08

Plot 6: 5600 MHz



Date: 16.OCT.2012 07:07:29

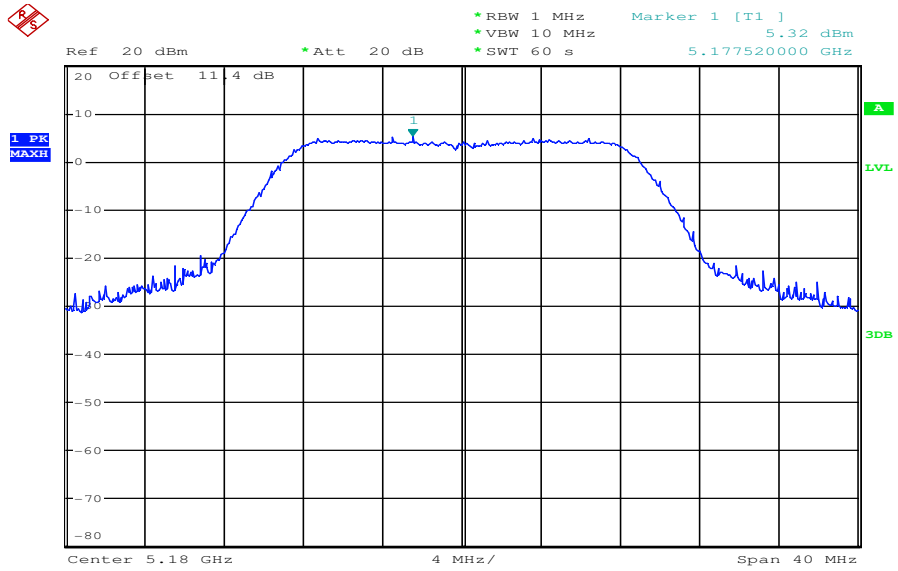
Plot 7: 5700 MHz



Date: 16.OCT.2012 07:09:43

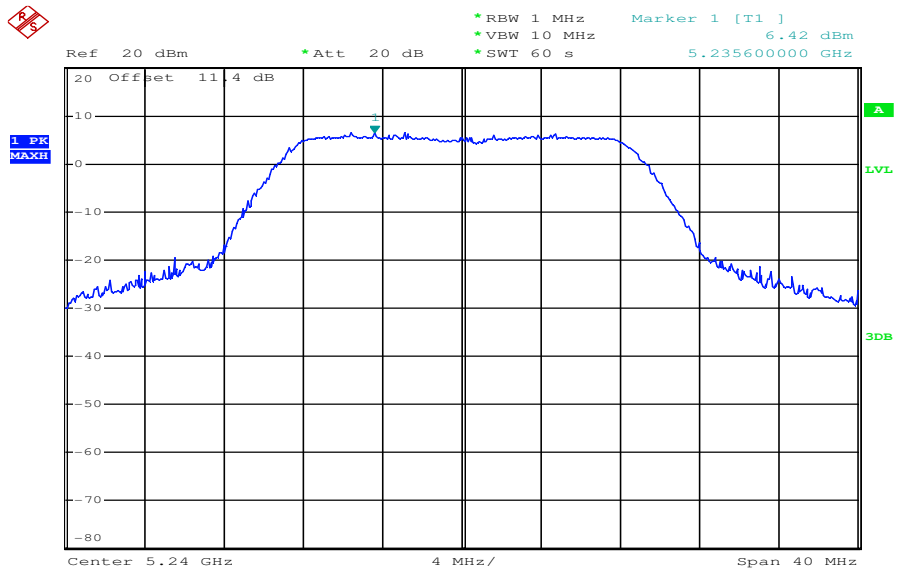
Plots: OFDM / n – mode HT20

Plot 1: 5180 MHz



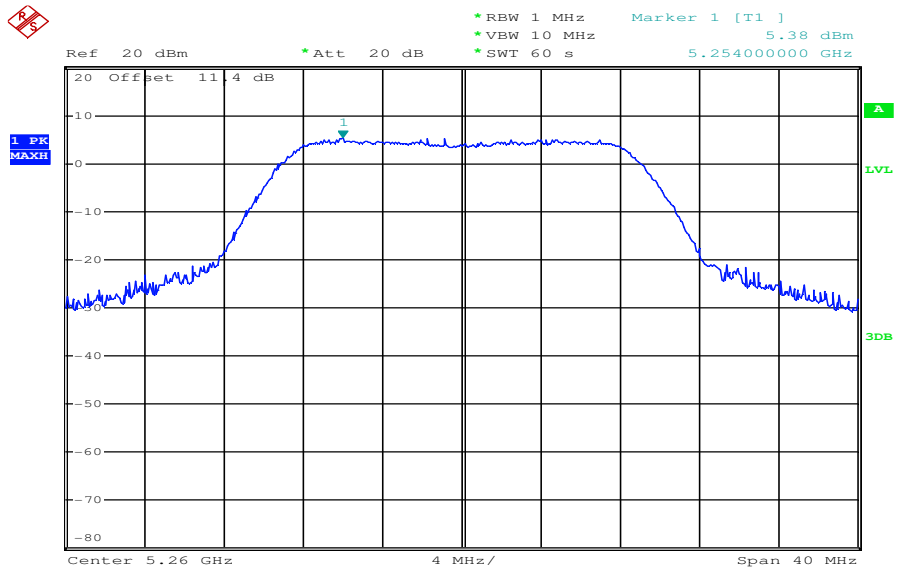
Date: 16.OCT.2012 07:22:47

Plot 2: 5240 MHz



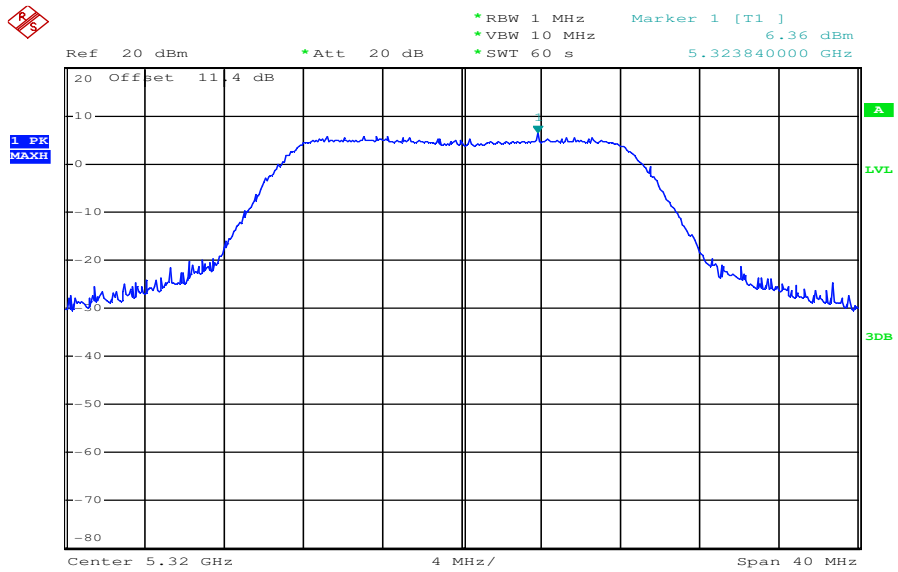
Date: 16.OCT.2012 07:21:23

Plot 3: 5260 MHz



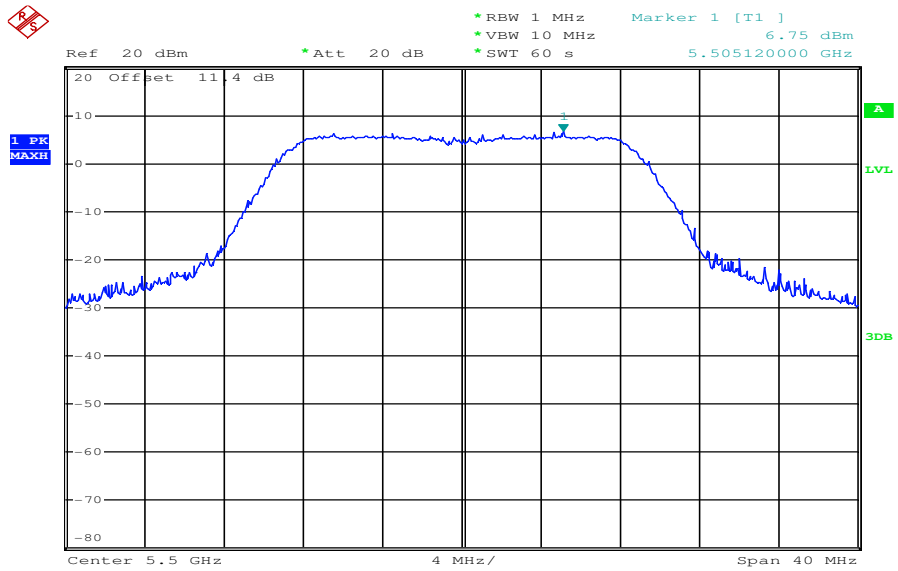
Date: 16.OCT.2012 07:19:57

Plot 4: 5320 MHz



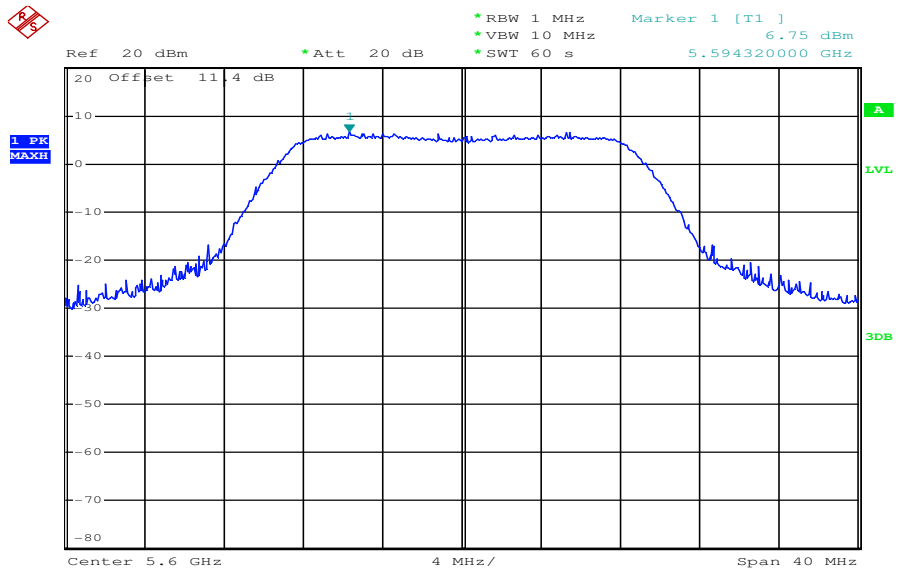
Date: 16.OCT.2012 07:18:34

Plot 5: 5500 MHz



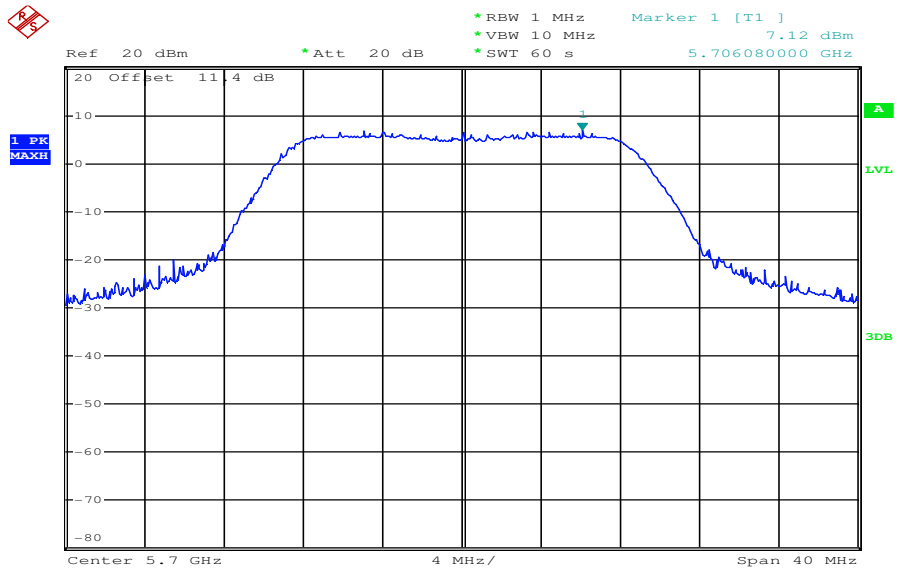
Date: 16.OCT.2012 07:17:11

Plot 6: 5600 MHz



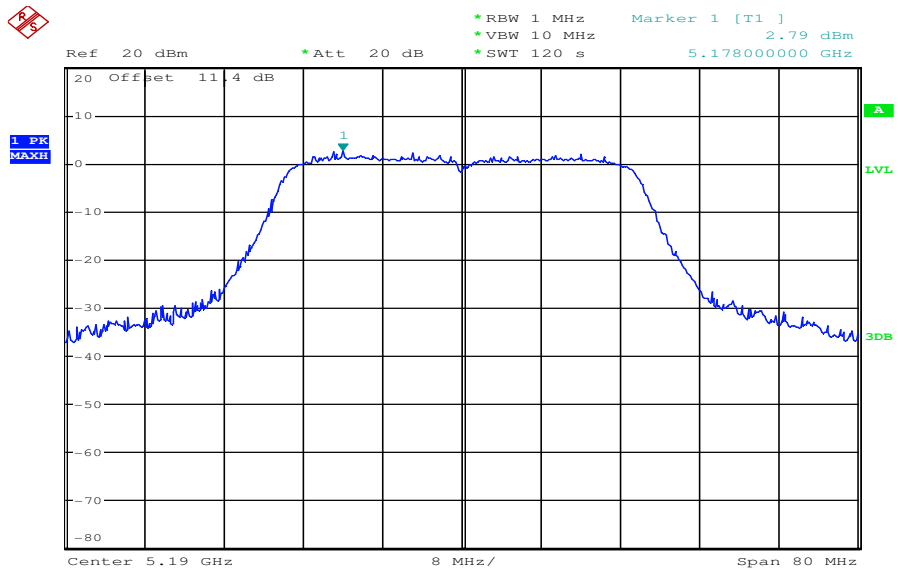
Date: 16.OCT.2012 07:15:37

Plot 7: 5700 MHz



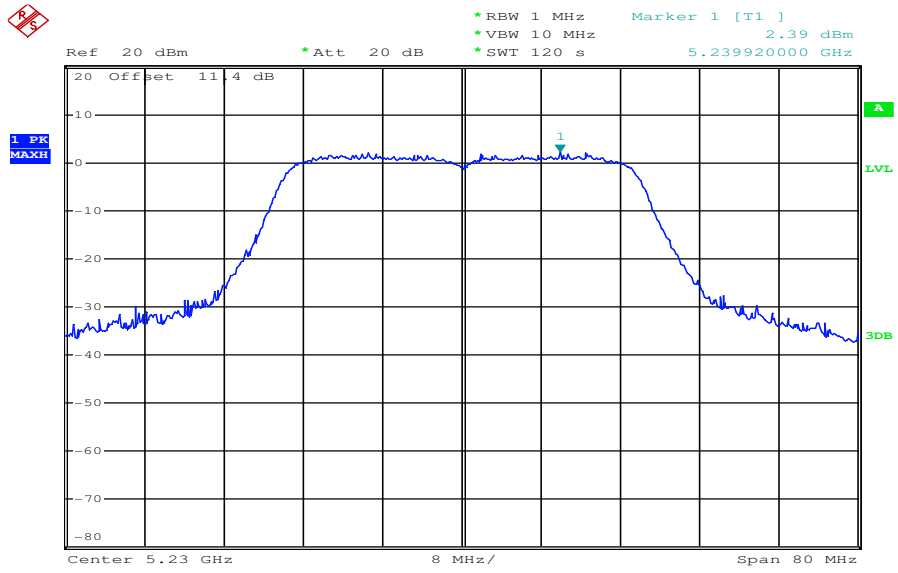
Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz



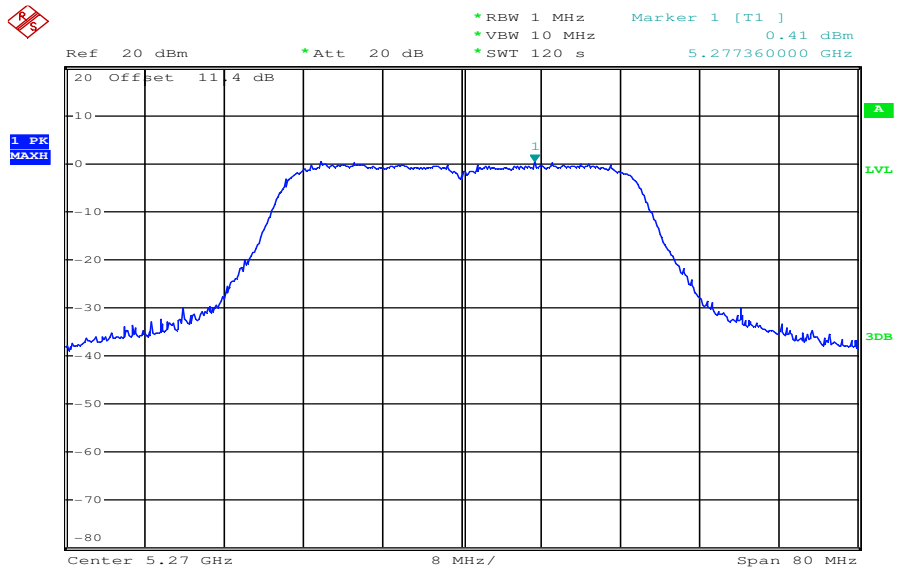
Date: 16.OCT.2012 07:26:20

Plot 2: 5230 MHz



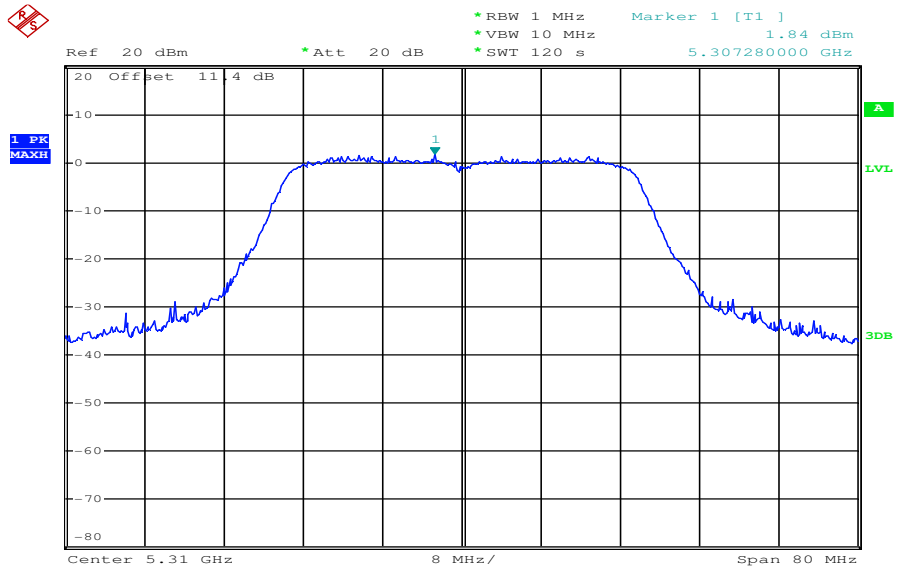
Date: 16.OCT.2012 07:29:12

Plot 3: 5270 MHz



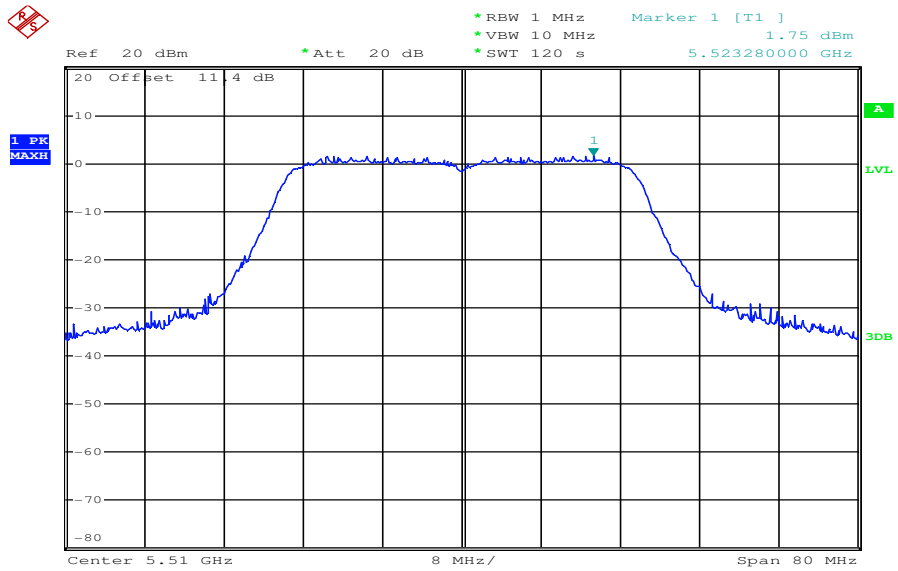
Date: 16.OCT.2012 07:31:58

Plot 4: 5310 MHz



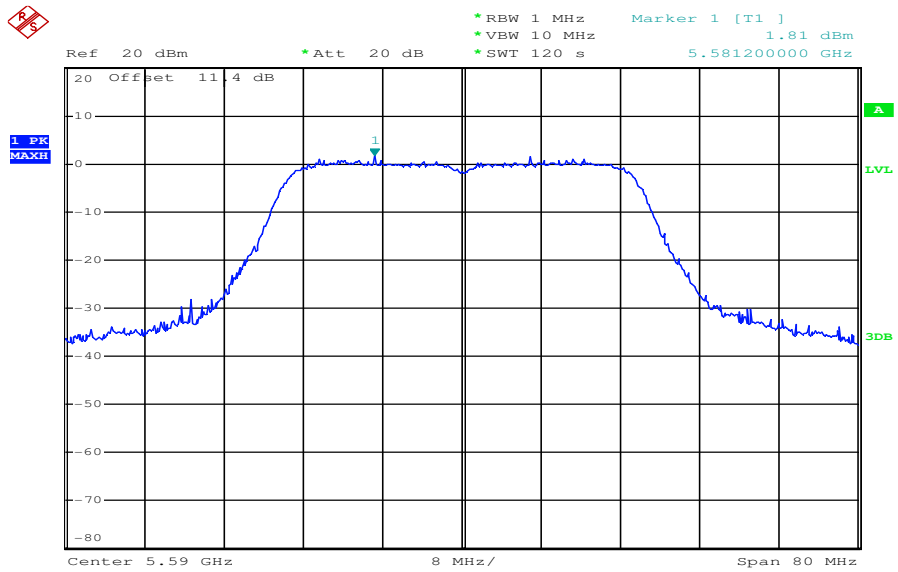
Date: 16.OCT.2012 07:34:34

Plot 5: 5510 MHz



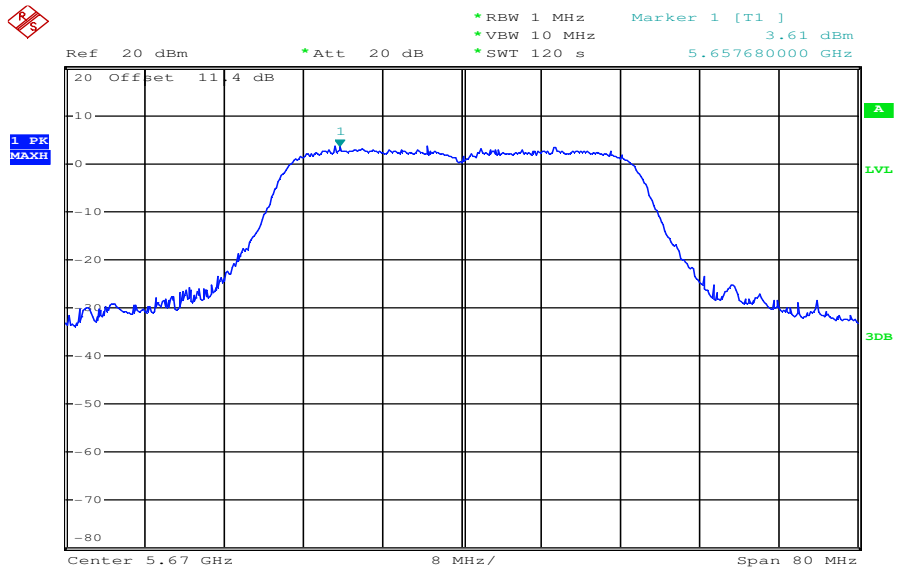
Date: 16.OCT.2012 07:37:12

Plot 6: 5590 MHz



Date: 16.OCT.2012 07:39:48

Plot 7: 5670 MHz



9.8 Band edge compliance radiated

Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to the lowest channel for the lower restricted band and to the highest channel for the upper restricted band. Measurement distance is 3m.

Measurement:

Measurement parameter	
Detector:	Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	10 Hz / 1 MHz
Span:	See plots!
Trace-Mode:	Max Hold

Limits:

Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).
54 dBµV/m AVG

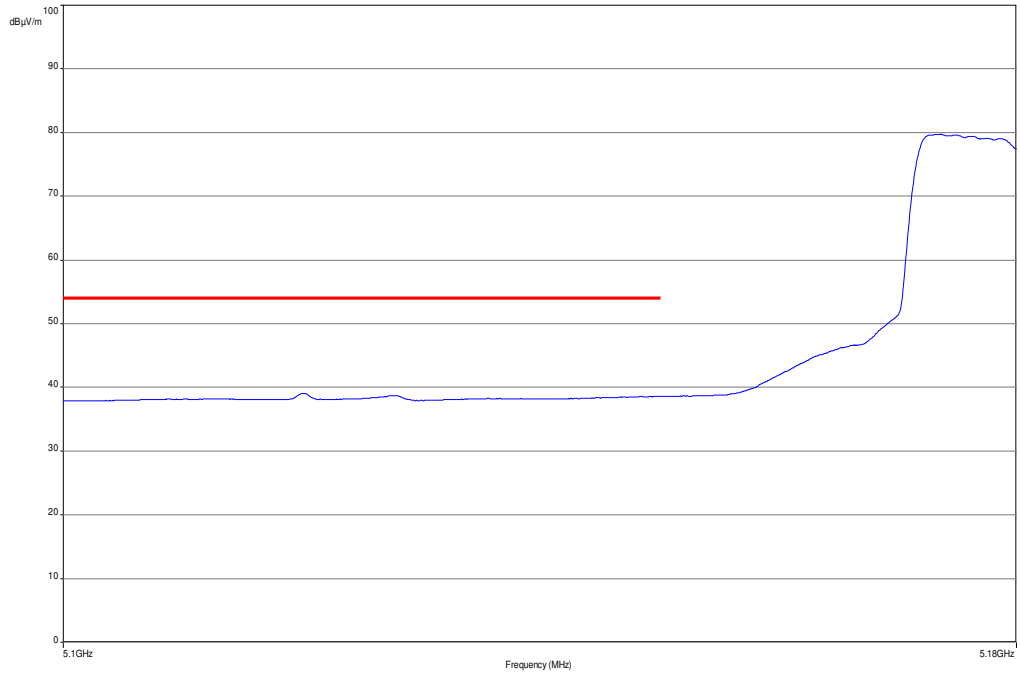
Result:

Scenario	Band Edge Compliance Radiated [dBµV/m]
band edge	< 54 dBµV/m (see plots 1-6)
Measurement uncertainty	± 3 dB

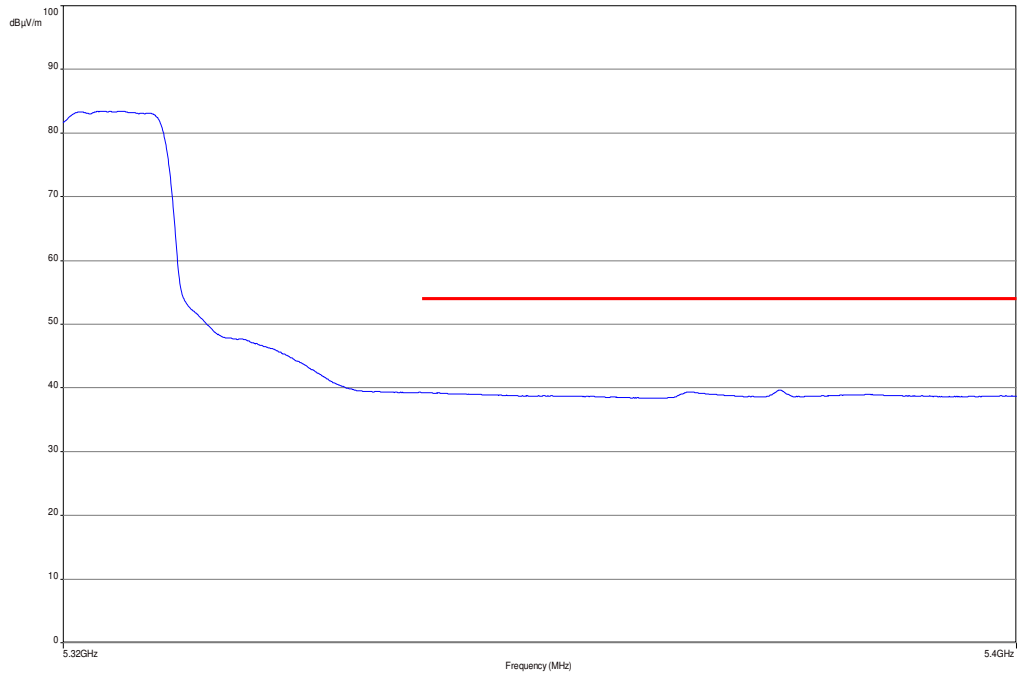
Results of the OFDM / a – mode and n HT40 – mode are added to show the behaviour of the EUT.

Plots:

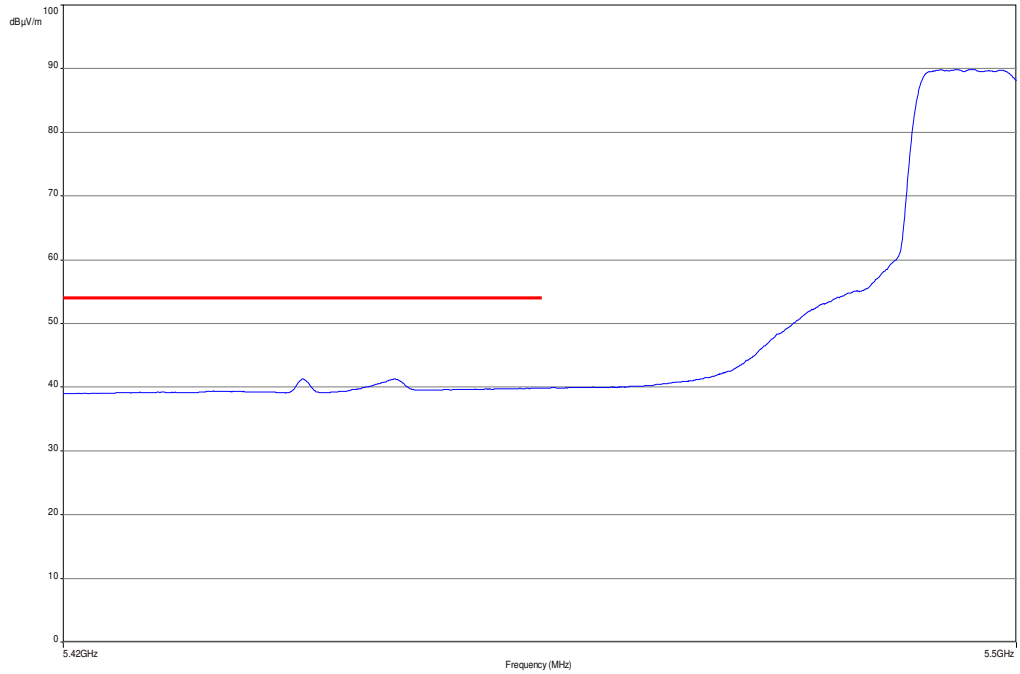
Plot 1: lower band edge, vertical & horizontal polarization (a mode), channel 36



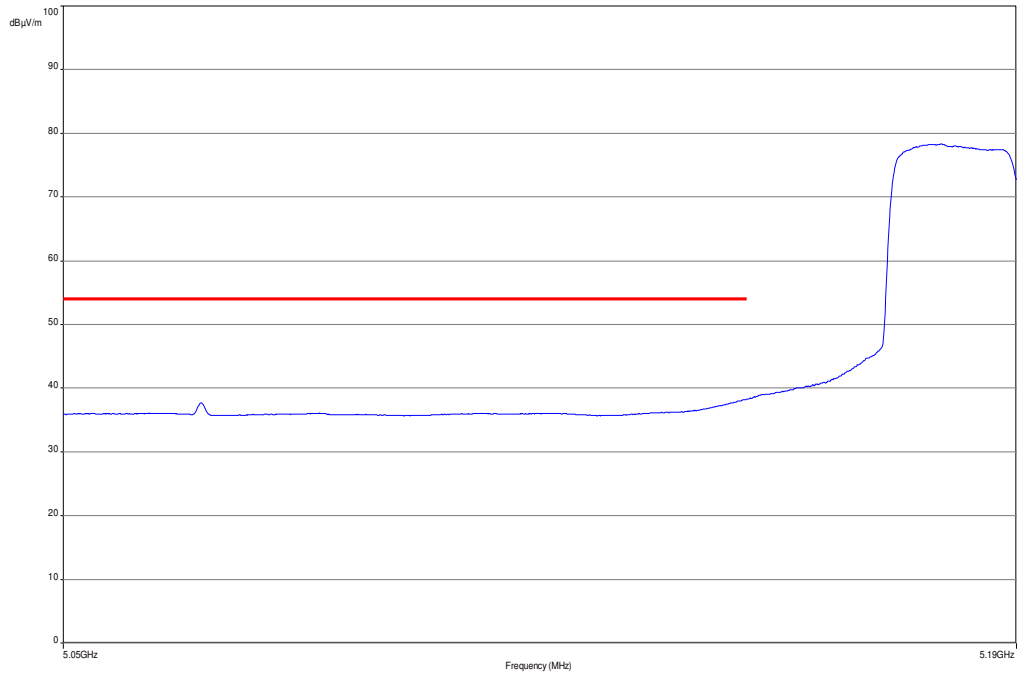
Plot 2: upper band edge, vertical & horizontal polarization (a mode), channel 64



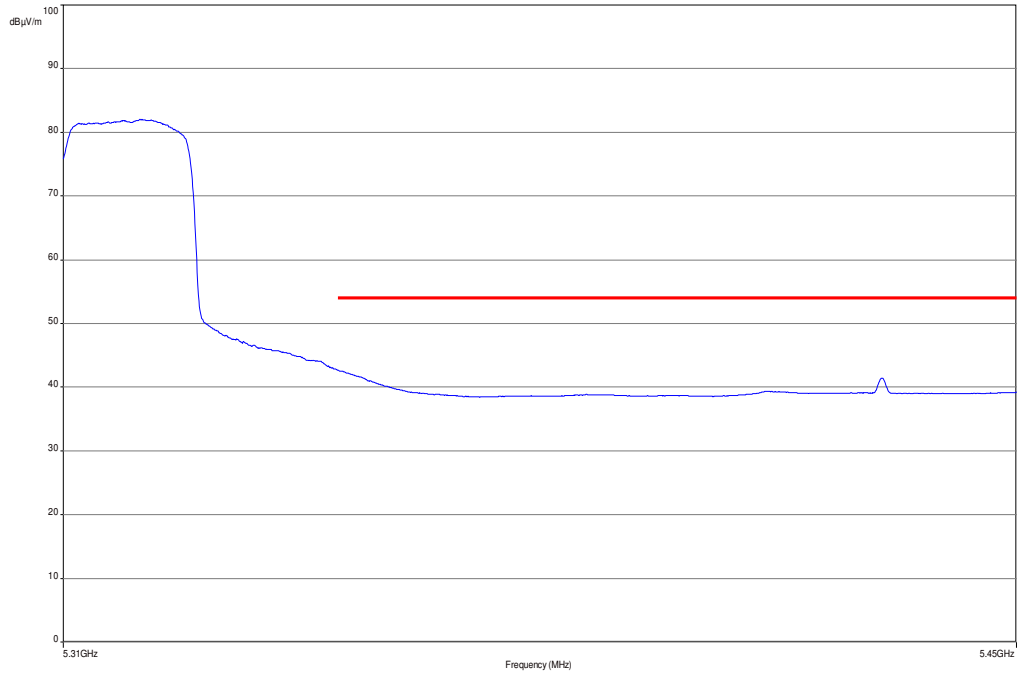
Plot 3: lower band edge, vertical & horizontal polarization (a mode), channel 100



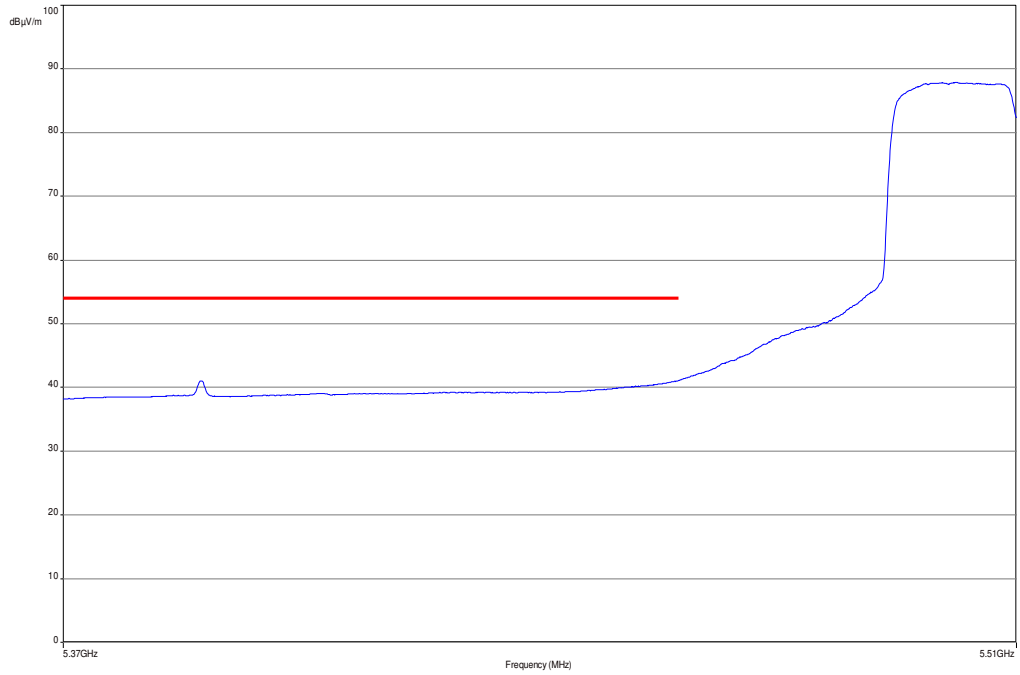
Plot 4: lower band edge, vertical & horizontal polarization (n HT 40 mode), channel 38



Plot 5: upper band edge, vertical & horizontal polarization (n HT 40 mode), channel 62



Plot 6: lower band edge, vertical & horizontal polarization (n HT 40 mode), channel 102



Result: **Passed**

9.9 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz /10 Hz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold / Average with 100 counts + 20 log (1 / X) for duty cycle lower than 100 %

Limits:

TX Spurious Emissions Radiated		
§15.209		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3
§15.407		
Outside the restricted bands!	-27 dBm / MHz	

Results: OFDM / a – mode

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM a – mode								
Lowest 5180 MHz			-/-			Highest 5240 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			-/-			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM a – mode								
Lowest 5260 MHz			-/-			Highest 5320 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			-/-			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM a – mode								
Lowest 5500 MHz			Middle 5600 MHz			Highest 5700 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

Result: Passed

Results: OFDM / n – modeHT20

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT20								
Lowest 5180 MHz			-/-			Highest 5240 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT20								
Lowest 5260 MHz			-/-			Highest 5320 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT20								
Lowest 5500 MHz			Middle 5600 MHz			Highest 5700 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

Result: Passed

Results: OFDM / n – modeHT40

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT40								
Lowest 5190 MHz			Highest 5230 MHz			Lowest 5270 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT40								
Highest 5310 MHz			Lowest 5510 MHz			Middle 5590 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found.			No peaks found.			No peaks found.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode HT40								
Highest 5670 MHz								
F [MHz]	Detector	Level [dBµV/m]						
No peaks found.								
Measurement uncertainty			± 3 dB					

Result: **Passed**

Note:

Results of the OFDM / a – mode and n HT40 – mode are added to show the behaviour of the EUT.

Plots: OFDM / a – mode

Plot 1: 30 MHz to 1 GHz, 5180 MHz, vertical & horizontal polarization

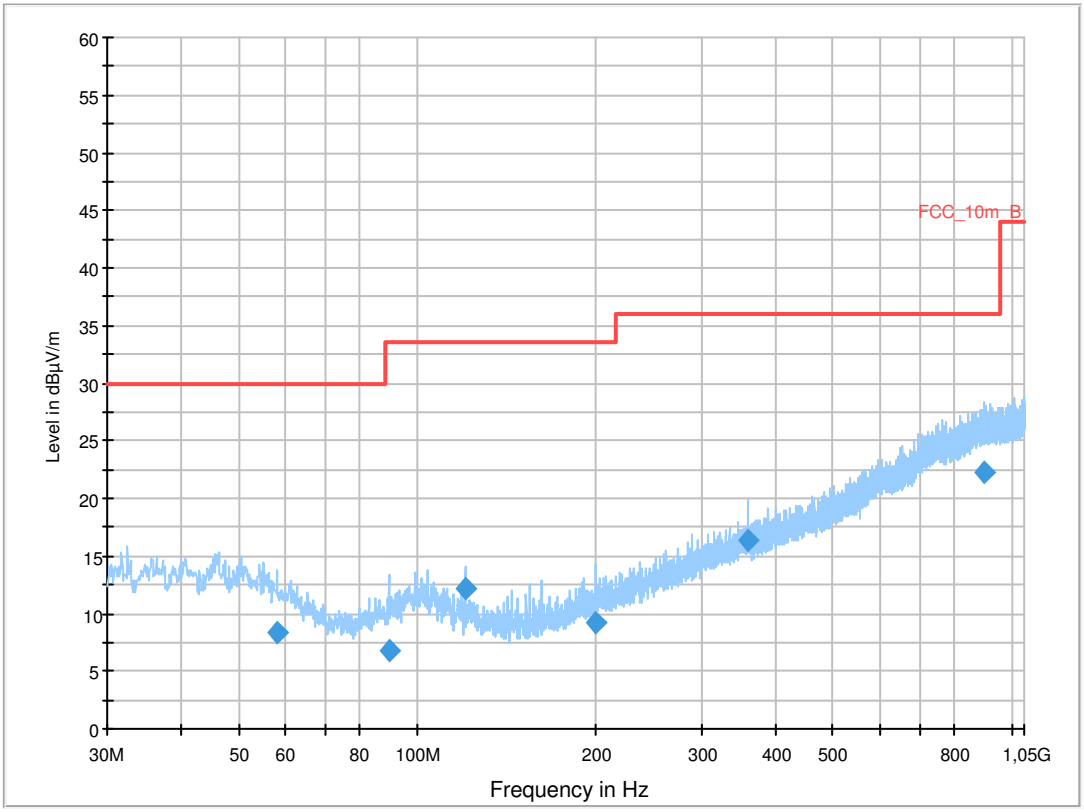
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 36 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

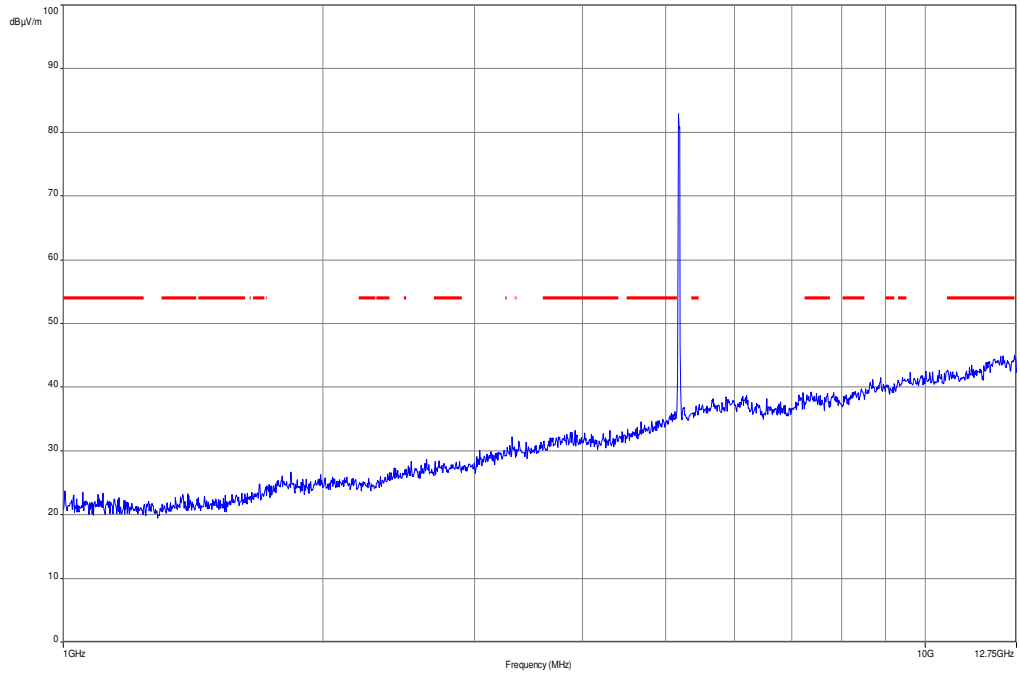
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



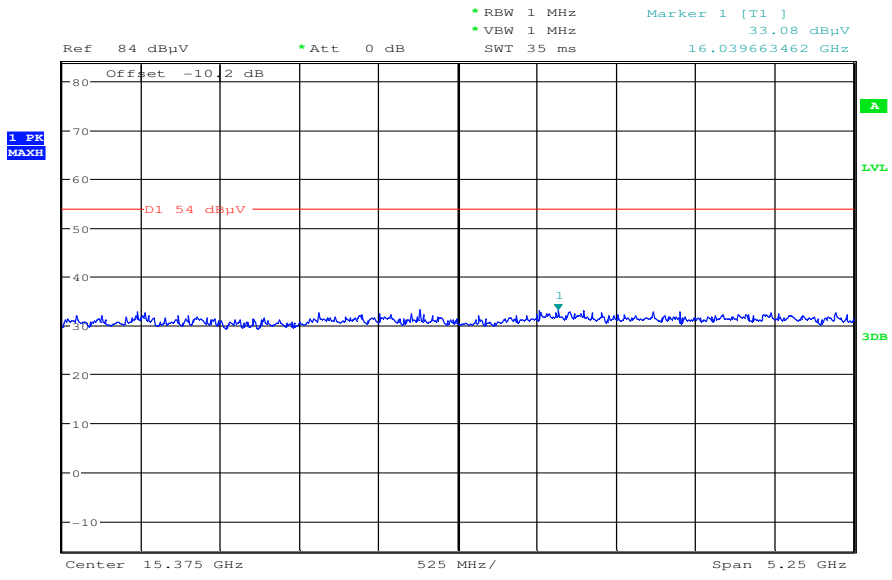
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
57.960000	8.3	1000.0	120.000	270.0	H	118.0	12.1	21.7	30.0	
89.400000	6.7	1000.0	120.000	98.0	V	38.0	10.5	26.8	33.5	
120.000000	12.3	1000.0	120.000	98.0	V	228.0	10.2	21.2	33.5	
200.040000	9.3	1000.0	120.000	181.0	V	118.0	11.7	24.2	33.5	
360.000000	16.4	1000.0	120.000	236.0	V	162.0	16.2	19.6	36.0	
897.840000	22.3	1000.0	120.000	270.0	H	84.0	25.2	13.7	36.0	

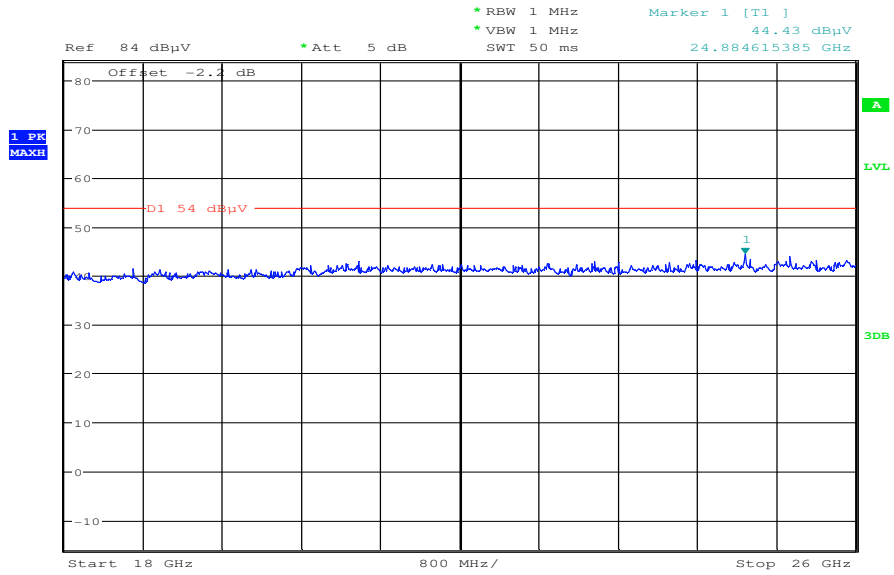
Plot 2: 1 GHz to 12.75 GHz, 5180 MHz, vertical & horizontal polarization



Plot 3: 12 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization

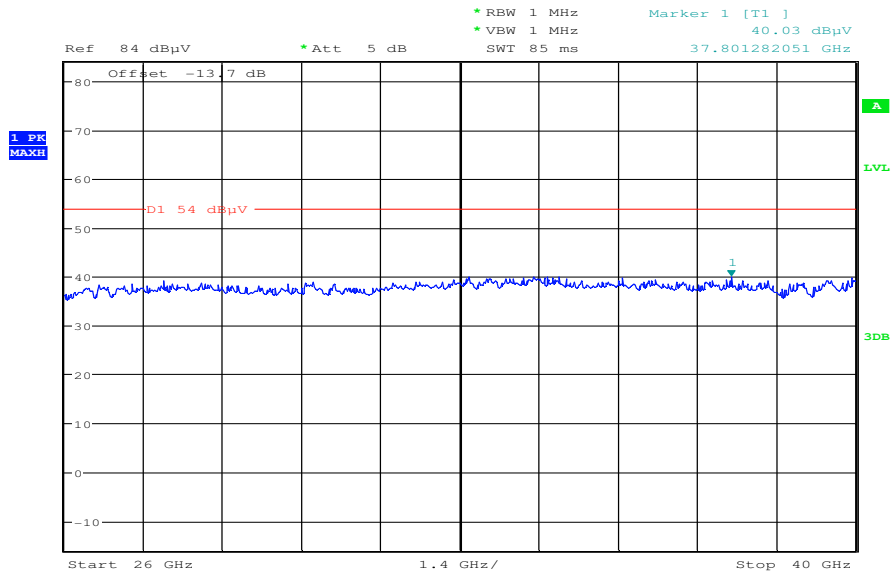


Plot 4: 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:53:16

Plot 5: 26 GHz to 40 GHz, 5180 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:49:03

Plot 6: 30 MHz to 1 GHz, 5240 MHz, vertical & horizontal polarization

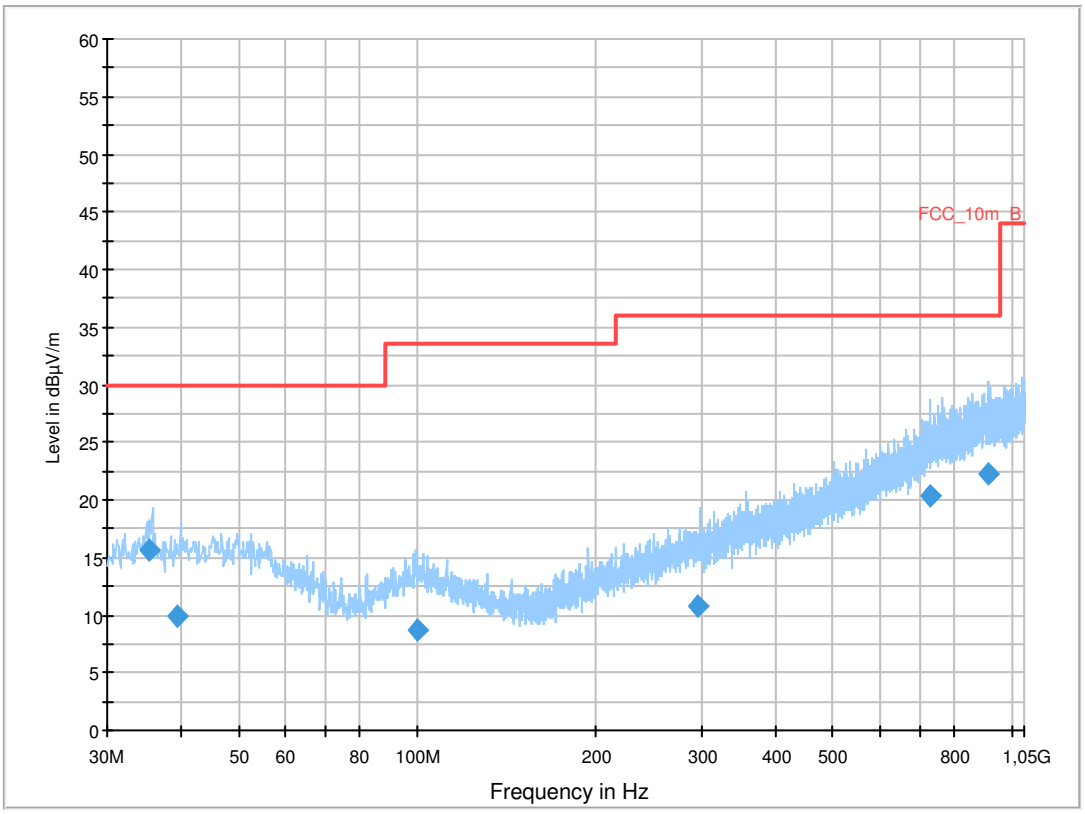
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 48 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

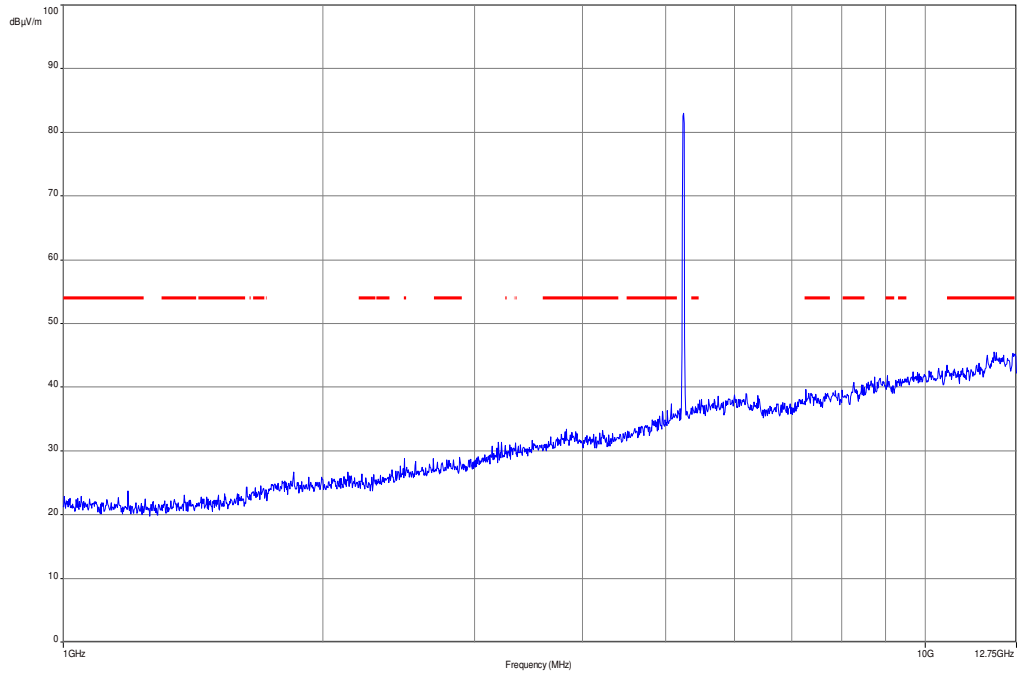
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



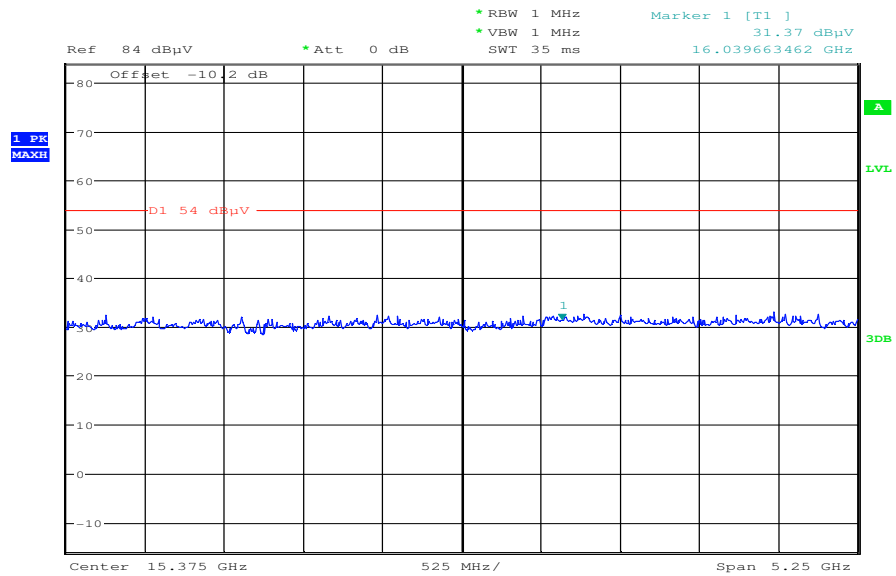
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.363700	15.6	1000.0	120.000	111.0	V	100.0	13.1	14.4	30.0	
39.408600	9.9	1000.0	120.000	98.0	V	175.0	13.4	20.1	30.0	
100.025100	8.8	1000.0	120.000	170.0	V	3.0	11.9	24.7	33.5	
297.315750	10.8	1000.0	120.000	170.0	V	190.0	14.4	25.2	36.0	
726.856050	20.3	1000.0	120.000	170.0	H	100.0	23.1	15.7	36.0	
915.213150	22.2	1000.0	120.000	170.0	H	180.0	25.2	13.8	36.0	

Plot 7: 1 GHz to 12.75 GHz, 5240 MHz, vertical & horizontal polarization

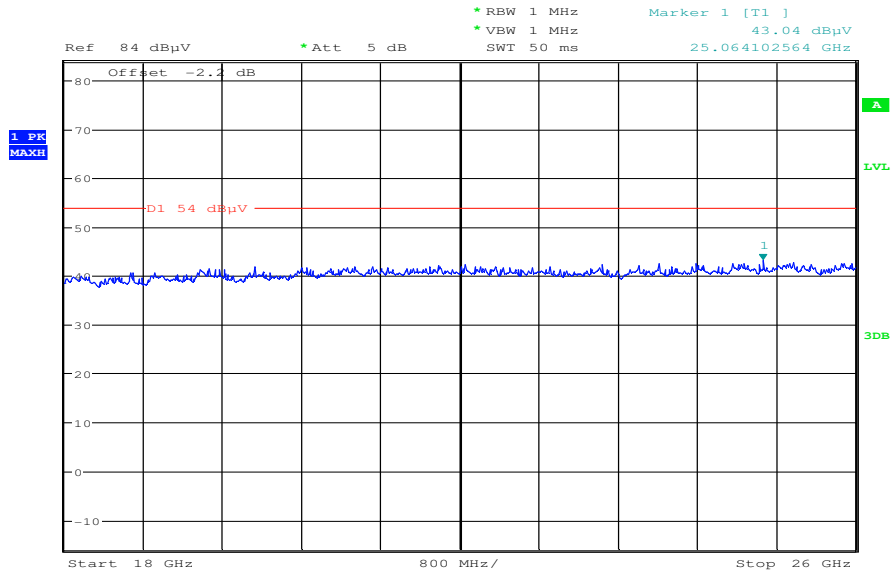


Plot 8: 12 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization



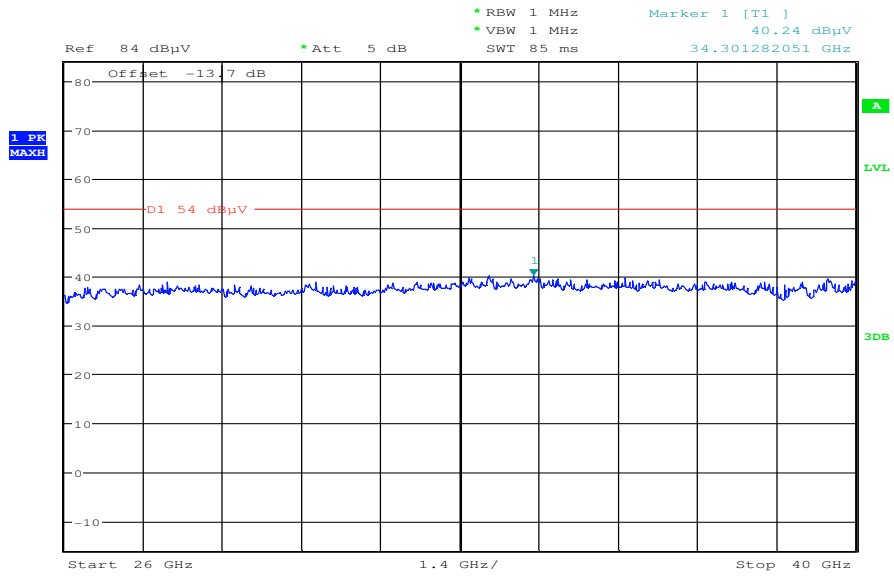
Date: 25.OCT.2012 09:33:11

Plot 9: 18 GHz to 26 GHz, 5240 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:54:47

Plot 10: 26 GHz to 40 GHz, 5240 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:50:45

Plot 11: 30 MHz to 1 GHz, 5260 MHz, vertical & horizontal polarization

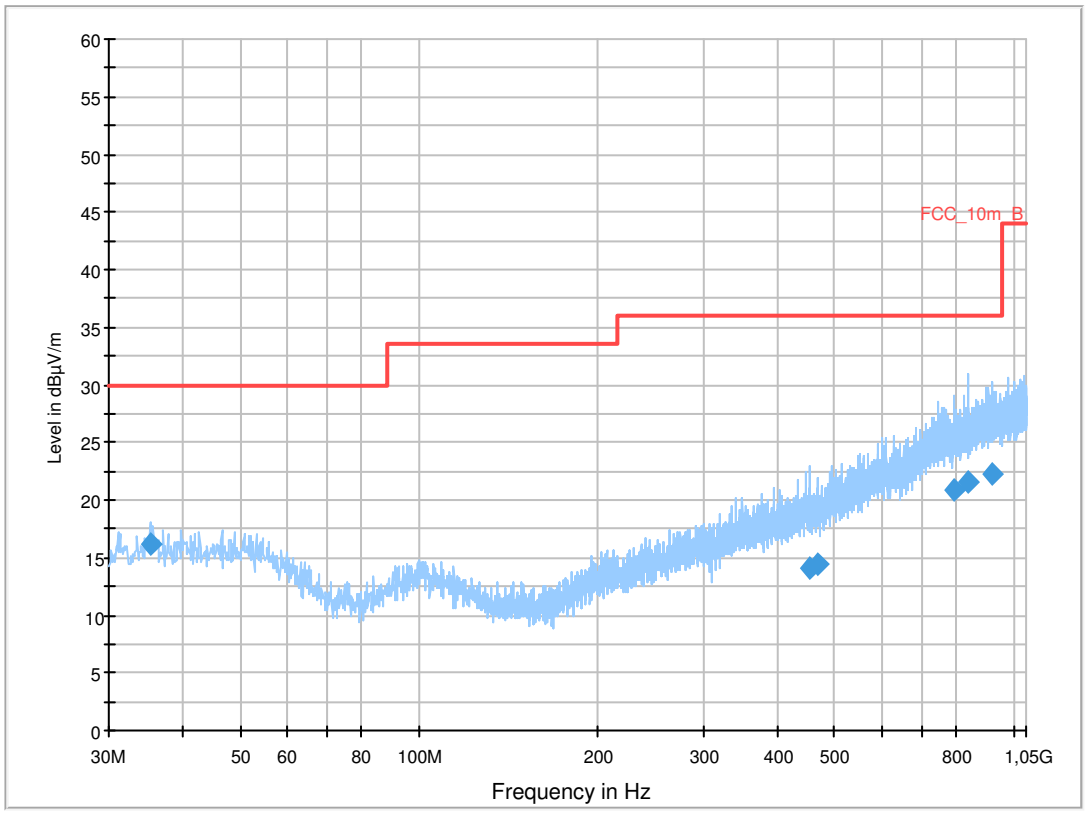
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 52 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

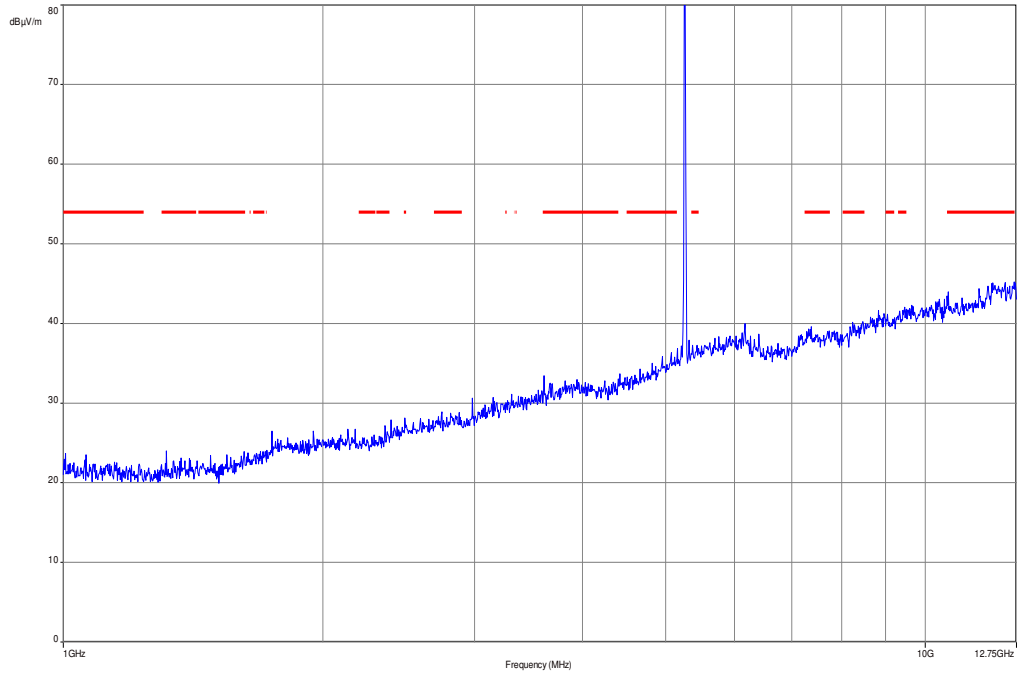
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



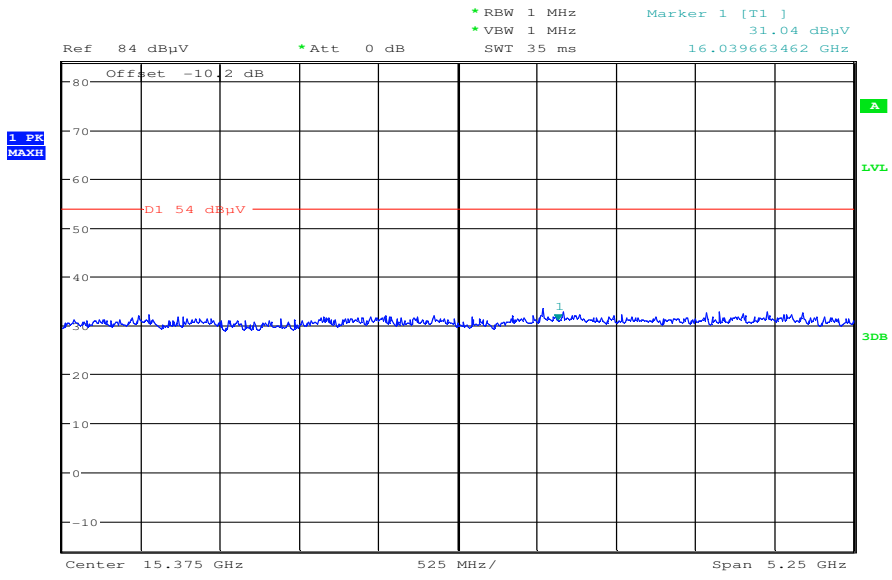
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.329800	16.1	1000.0	120.000	98.0	V	280.0	13.1	13.9	30.0	
453.045900	14.1	1000.0	120.000	170.0	V	190.0	17.7	21.9	36.0	
467.563650	14.5	1000.0	120.000	145.0	H	-2.0	18.0	21.5	36.0	
796.030650	20.8	1000.0	120.000	170.0	V	270.0	23.8	15.2	36.0	
836.489700	21.5	1000.0	120.000	170.0	V	10.0	24.4	14.5	36.0	
921.724950	22.2	1000.0	120.000	120.0	V	190.0	25.3	13.8	36.0	

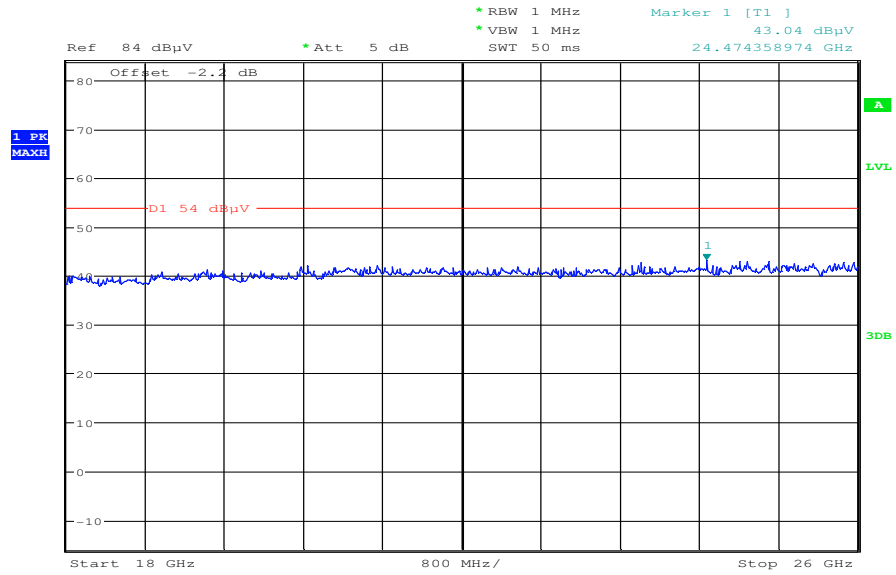
Plot 12: 1 GHz to 12.75 GHz, 5260 MHz, vertical & horizontal polarization



Plot 13: 12 GHz to 18 GHz, 5260 MHz, vertical & horizontal polarization

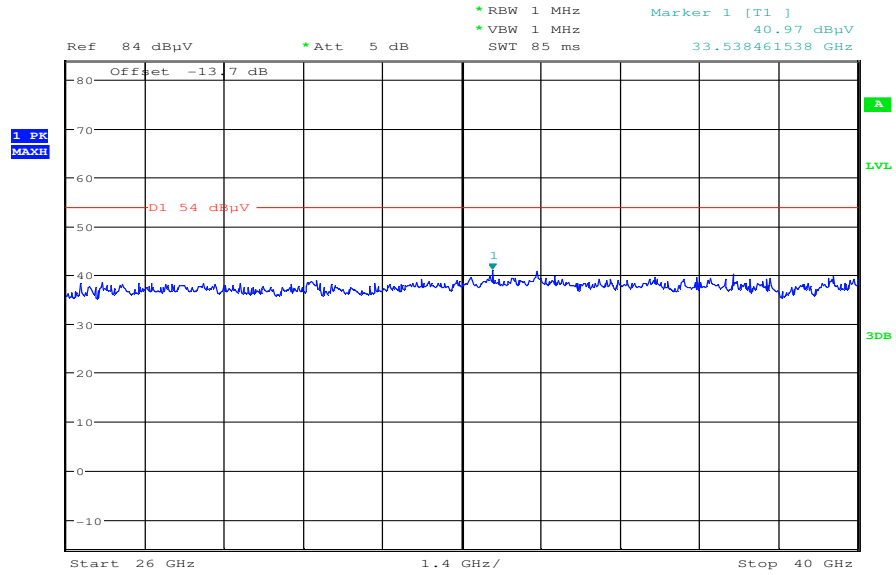


Plot 14: 18 GHz to 26 GHz, 5260 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:56:57

Plot 15: 26 GHz to 40 GHz, 5260 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:52:17

Plot 16: 30 MHz to 1 GHz, 5320 MHz, vertical & horizontal polarization

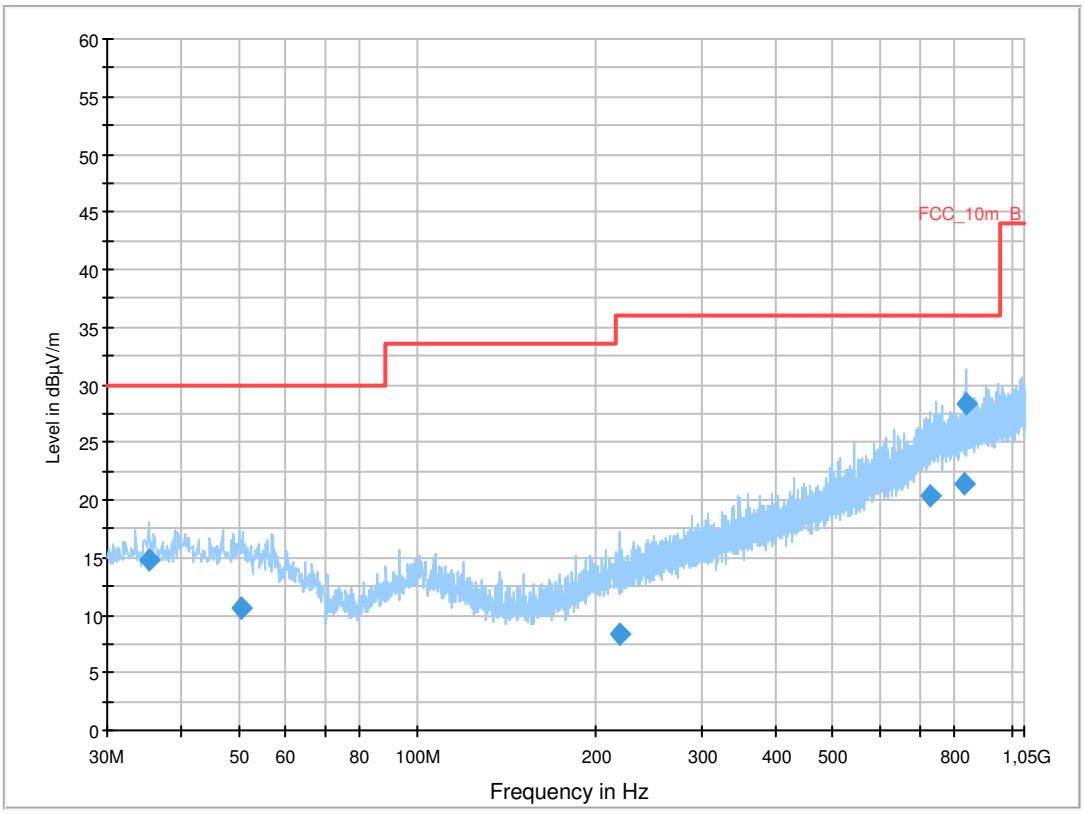
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 64 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

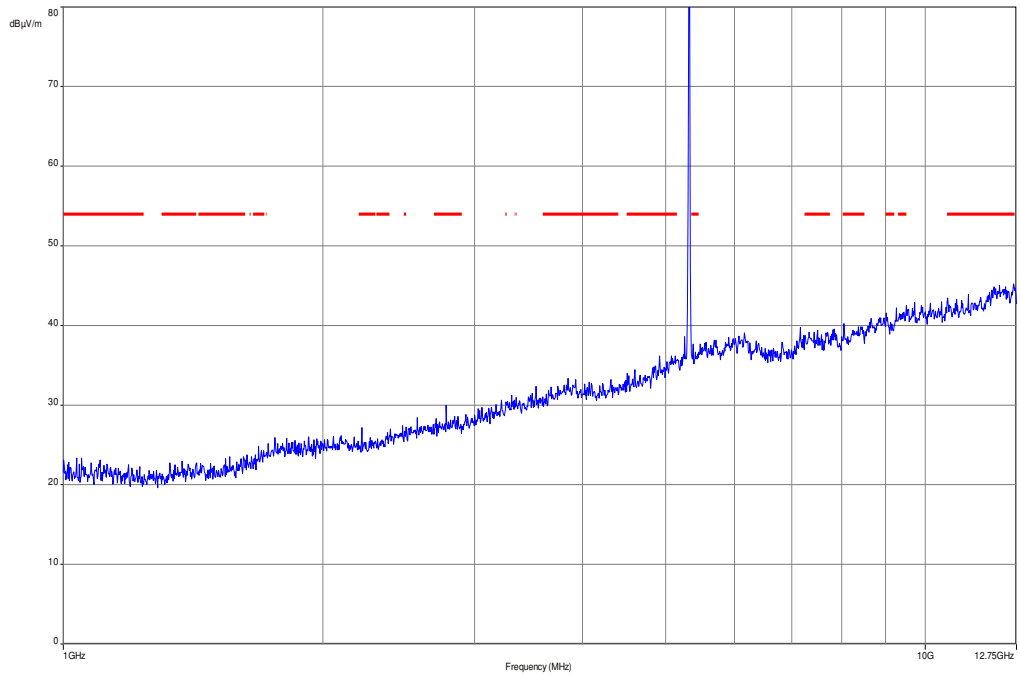
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



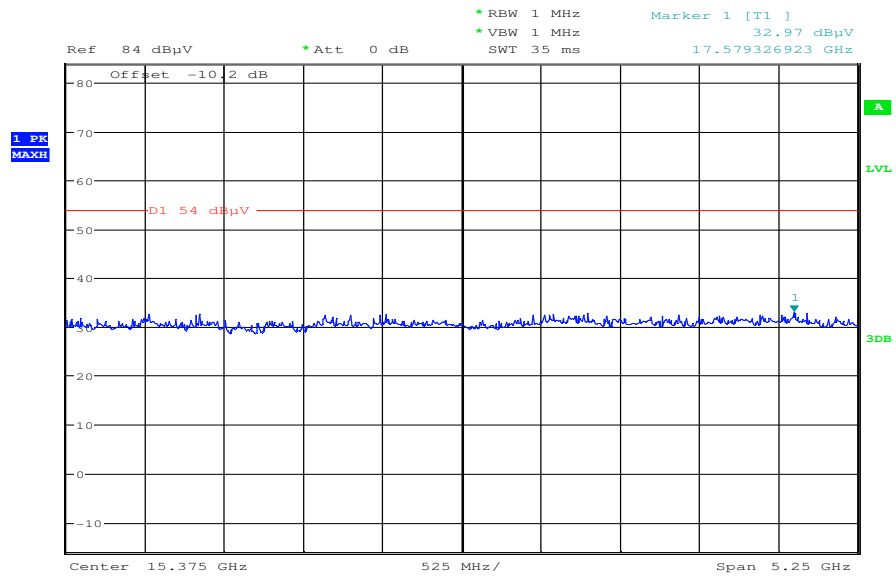
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.391450	14.8	1000.0	120.000	170.0	V	0.0	13.1	15.2	30.0	
50.483550	10.7	1000.0	120.000	170.0	V	190.0	13.3	19.3	30.0	
219.234600	8.3	1000.0	120.000	170.0	V	100.0	12.4	27.7	36.0	
728.123400	20.3	1000.0	120.000	170.0	H	-10.0	23.2	15.7	36.0	
833.086050	21.5	1000.0	120.000	170.0	H	280.0	24.3	14.5	36.0	
836.653050	28.4	1000.0	120.000	170.0	V	85.0	24.4	7.6	36.0	

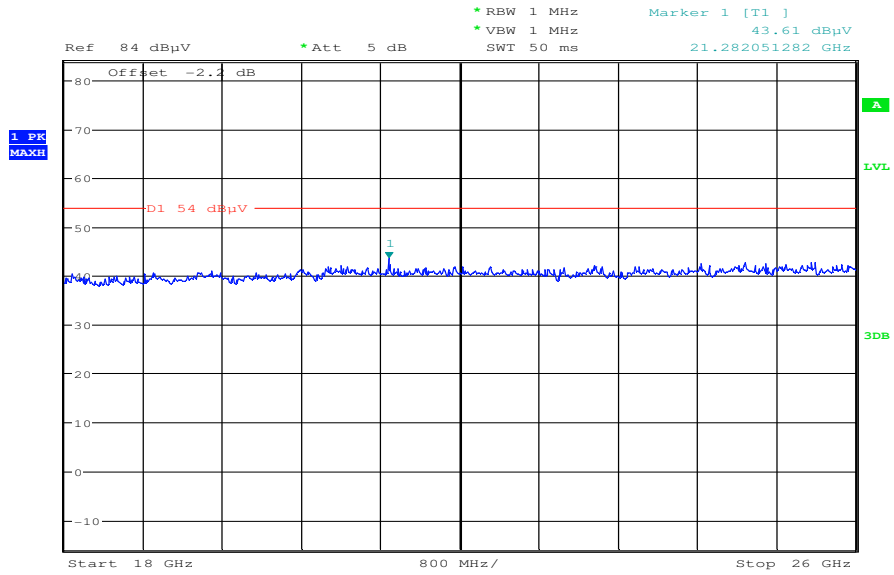
Plot 17: 1 GHz to 12.75 GHz, 5320 MHz, vertical & horizontal polarization



Plot 18: 12 GHz to 18 GHz, 5320 MHz, vertical & horizontal polarization

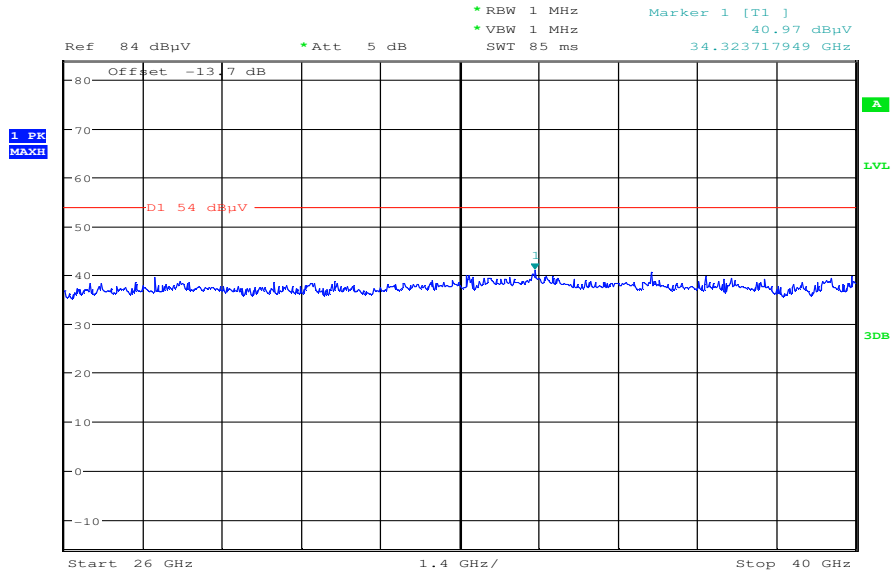


Plot 19: 18 GHz to 26 GHz, 5320 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:58:15

Plot 20: 26 GHz to 40 GHz, 5320 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:53:37

Plot 21: 30 MHz to 1 GHz, 5500 MHz, vertical & horizontal polarization

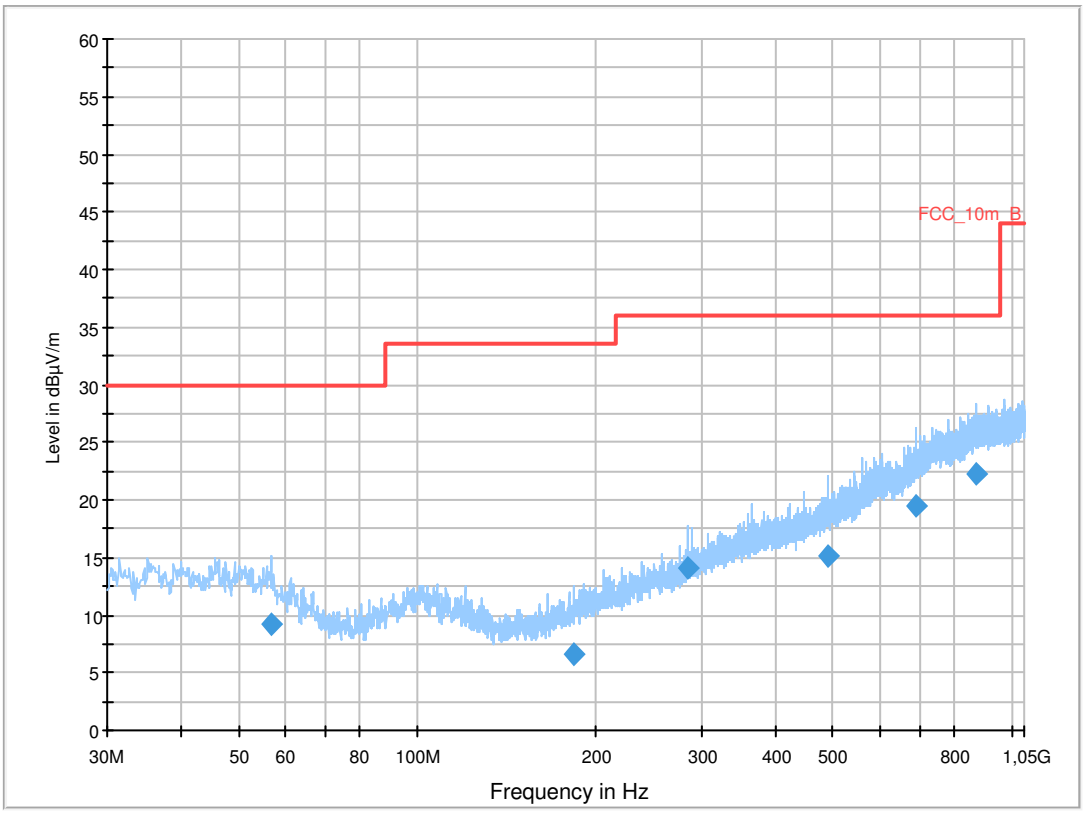
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 100 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

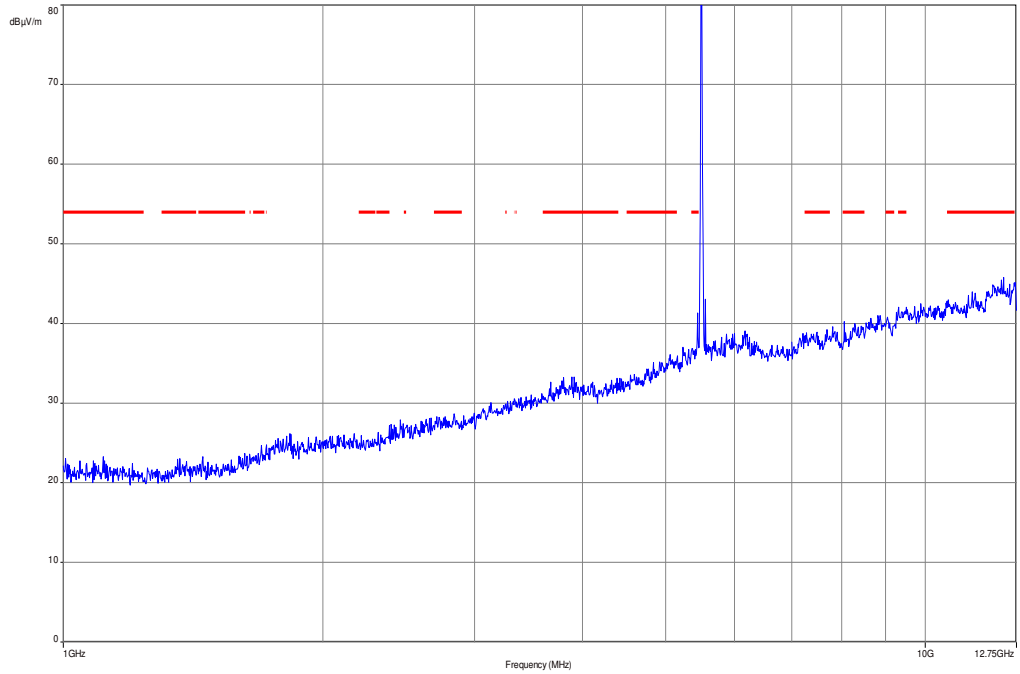
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



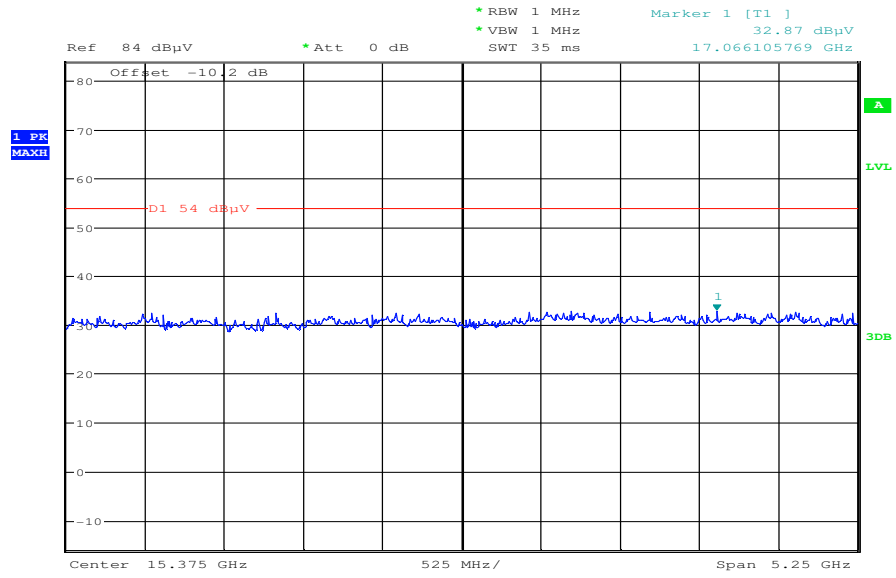
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
56.640000	9.2	1000.0	120.000	197.0	H	0.0	12.5	20.8	30.0	
182.520000	6.6	1000.0	120.000	98.0	H	141.0	10.6	26.9	33.5	
285.000000	14.1	1000.0	120.000	170.0	V	265.0	14.2	21.9	36.0	
491.880000	15.2	1000.0	120.000	157.0	V	70.0	18.5	20.8	36.0	
692.880000	19.5	1000.0	120.000	98.0	V	122.0	22.3	16.5	36.0	
873.240000	22.2	1000.0	120.000	114.0	V	0.0	24.9	13.8	36.0	

Plot 22: 1 GHz to 12.75 GHz, 5500 MHz, vertical & horizontal polarization

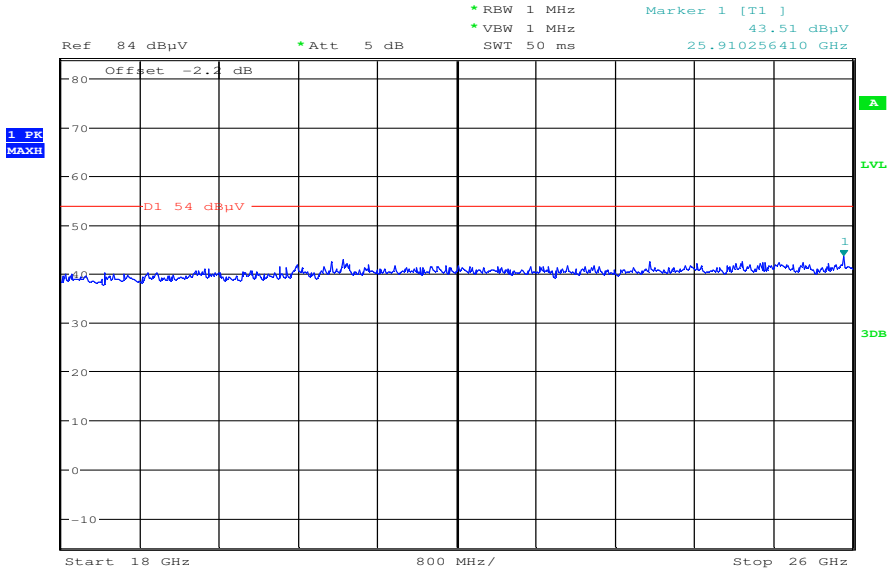


Plot 23: 12 GHz to 18 GHz, 5500 MHz, vertical & horizontal polarization



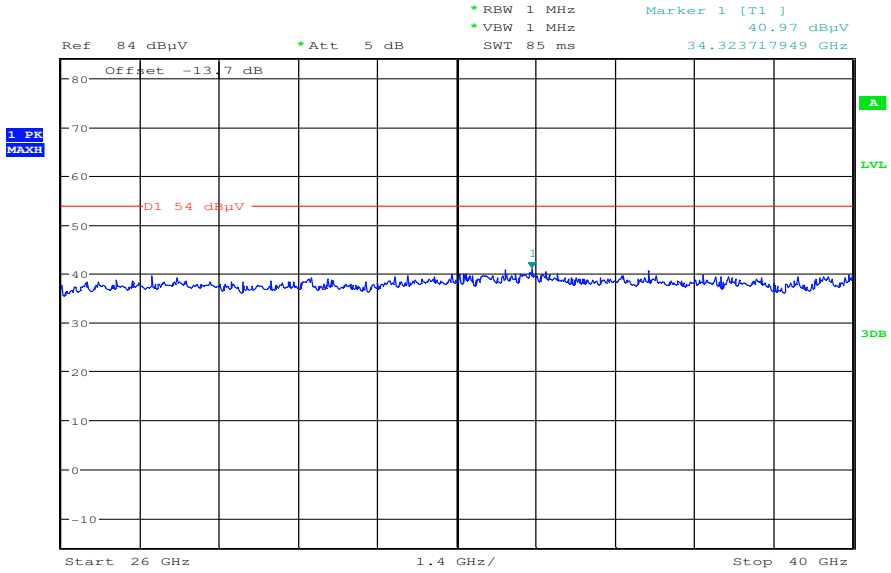
Date: 25.OCT.2012 09:37:54

Plot 24: 18 GHz to 26 GHz, 5500 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:59:28

Plot 25: 26 GHz to 40 GHz, 5500 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:55:58

Plot 26: 30 MHz to 1 GHz, 5600 MHz, vertical & horizontal polarization

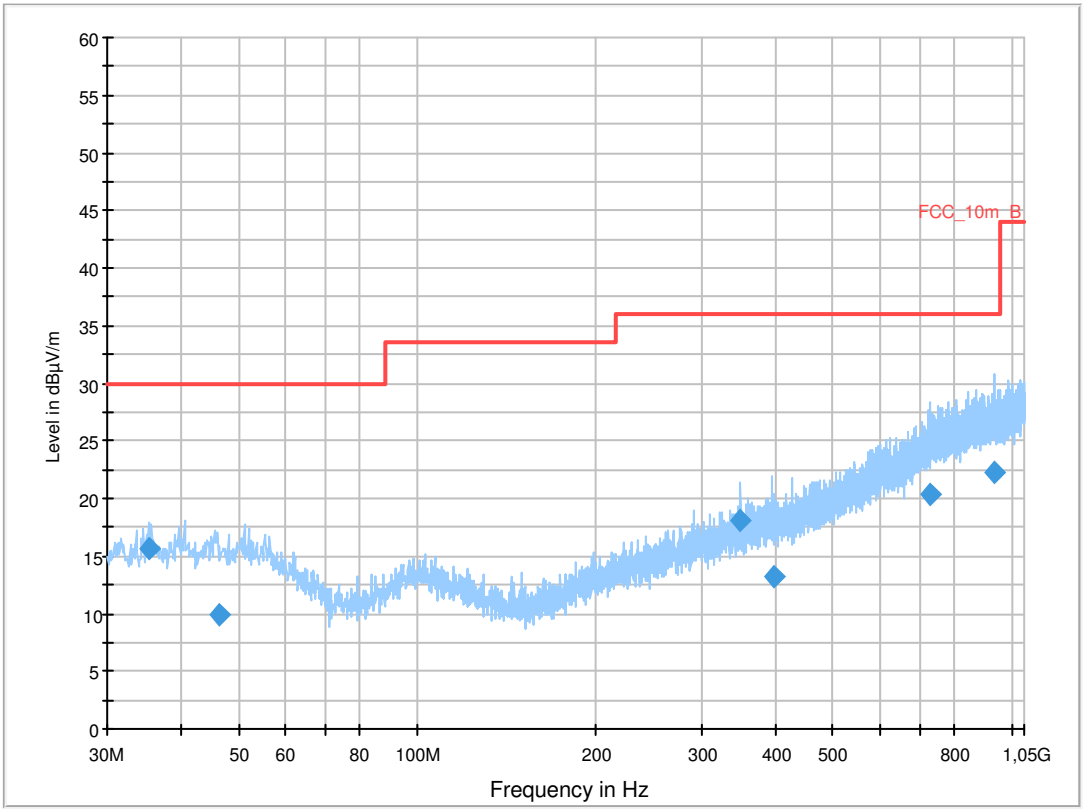
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 120 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

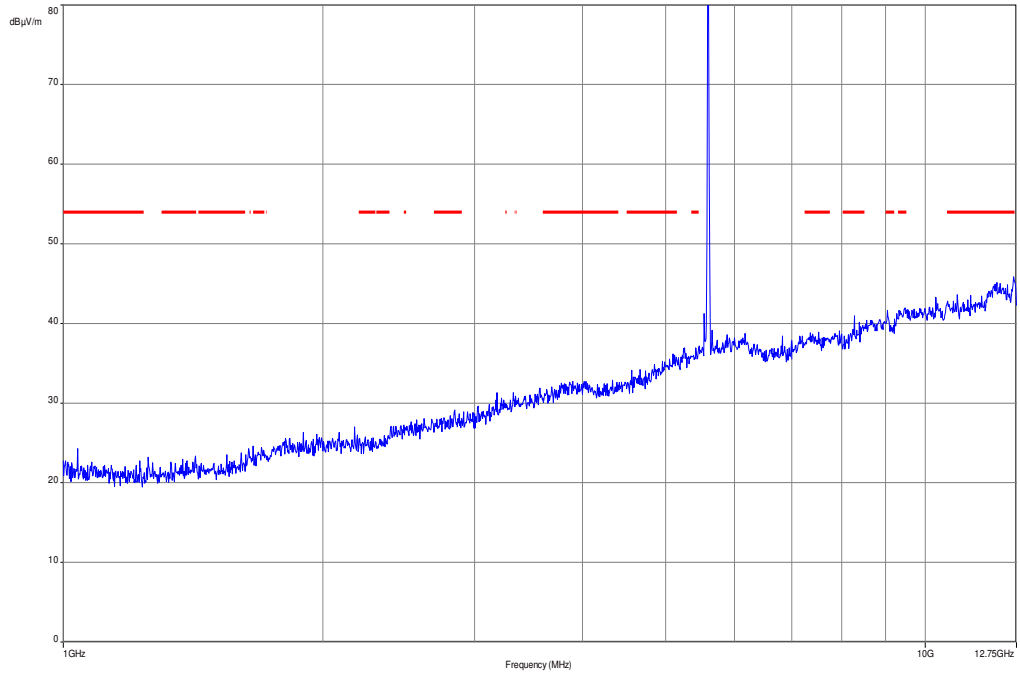
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



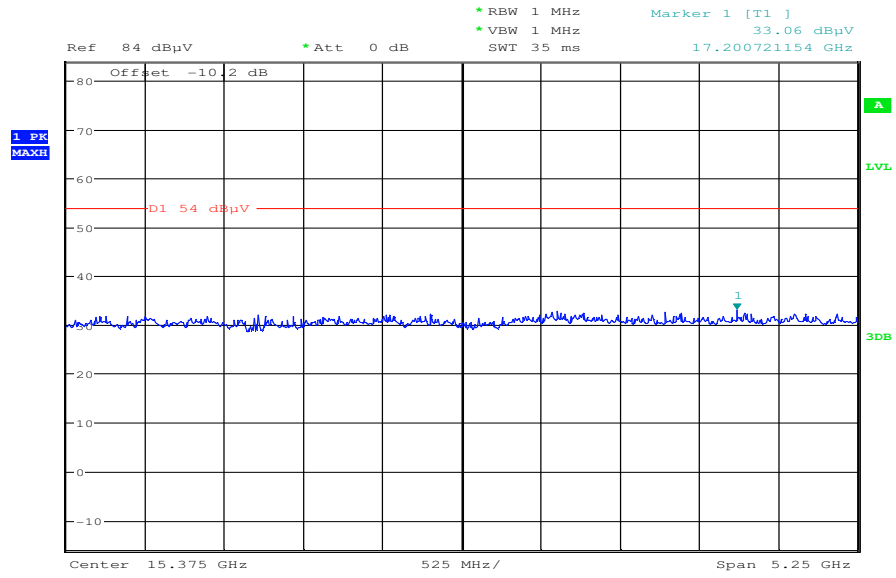
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.326950	15.7	1000.0	120.000	111.0	V	10.0	13.1	14.3	30.0	
46.452900	9.9	1000.0	120.000	170.0	H	-3.0	13.3	20.1	30.0	
349.992750	18.0	1000.0	120.000	170.0	V	175.0	16.1	18.0	36.0	
396.442500	13.2	1000.0	120.000	170.0	H	10.0	16.8	22.8	36.0	
726.855900	20.3	1000.0	120.000	170.0	H	190.0	23.1	15.7	36.0	
935.216100	22.3	1000.0	120.000	153.0	H	268.0	25.3	13.7	36.0	

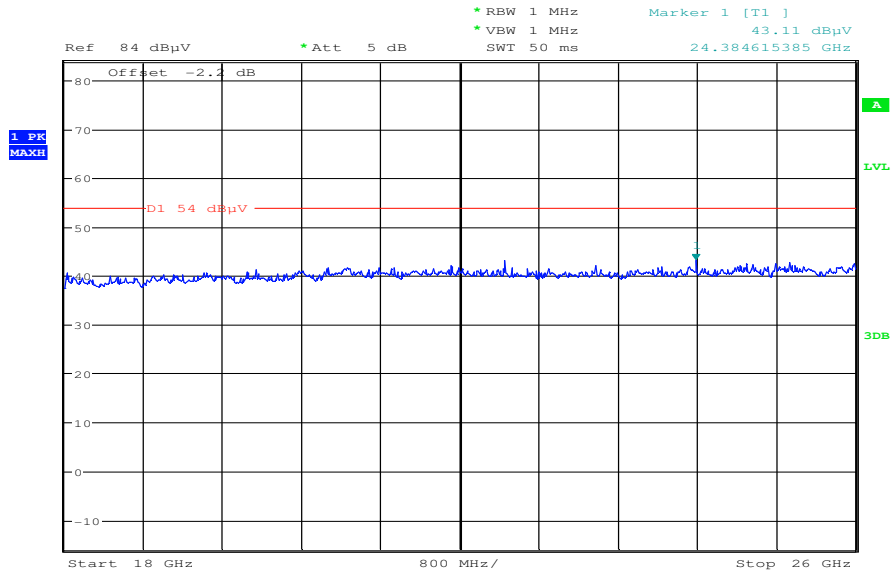
Plot 27: 1 GHz to 12.75 GHz, 5600 MHz, vertical & horizontal polarization



Plot 28: 12 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization

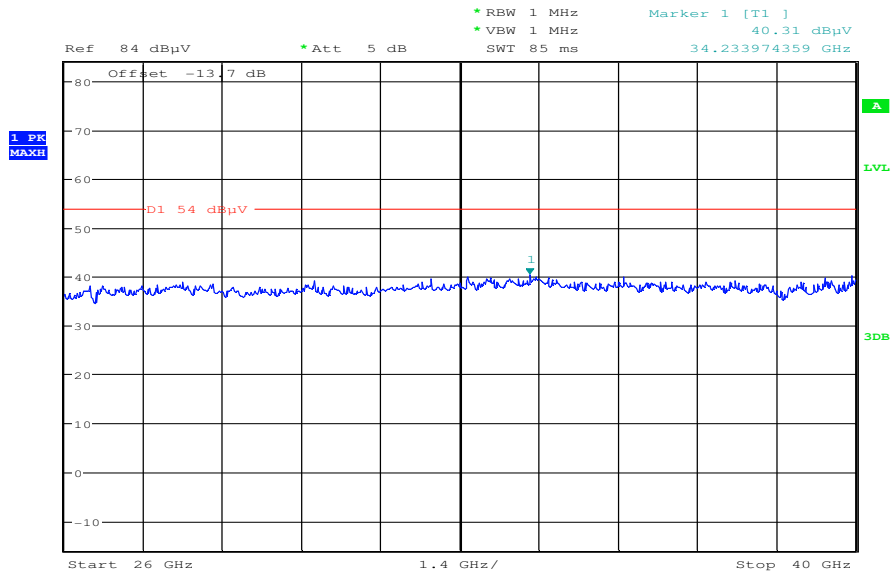


Plot 29: 18 GHz to 26 GHz, 5600 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:00:39

Plot 30: 26 GHz to 40 GHz, 5600 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:57:21

Plot 31: 30 MHz to 1 GHz, 5700 MHz, vertical & horizontal polarization

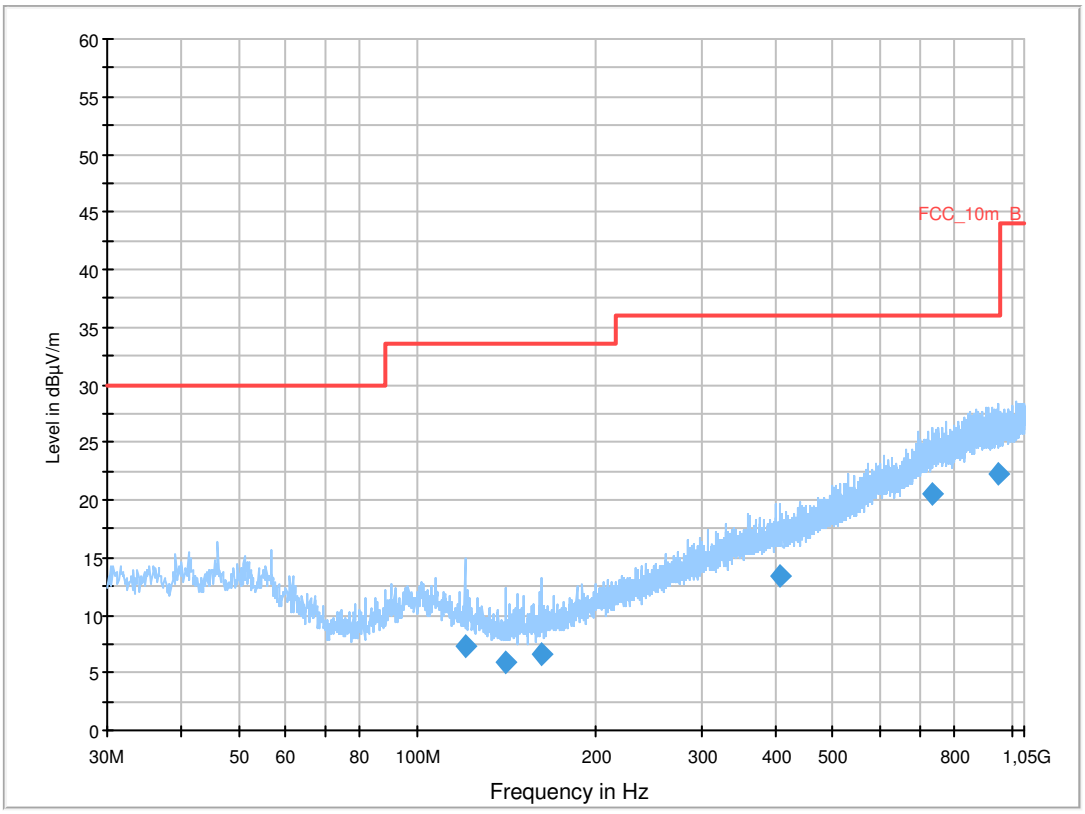
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan a-mode, CH 140 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

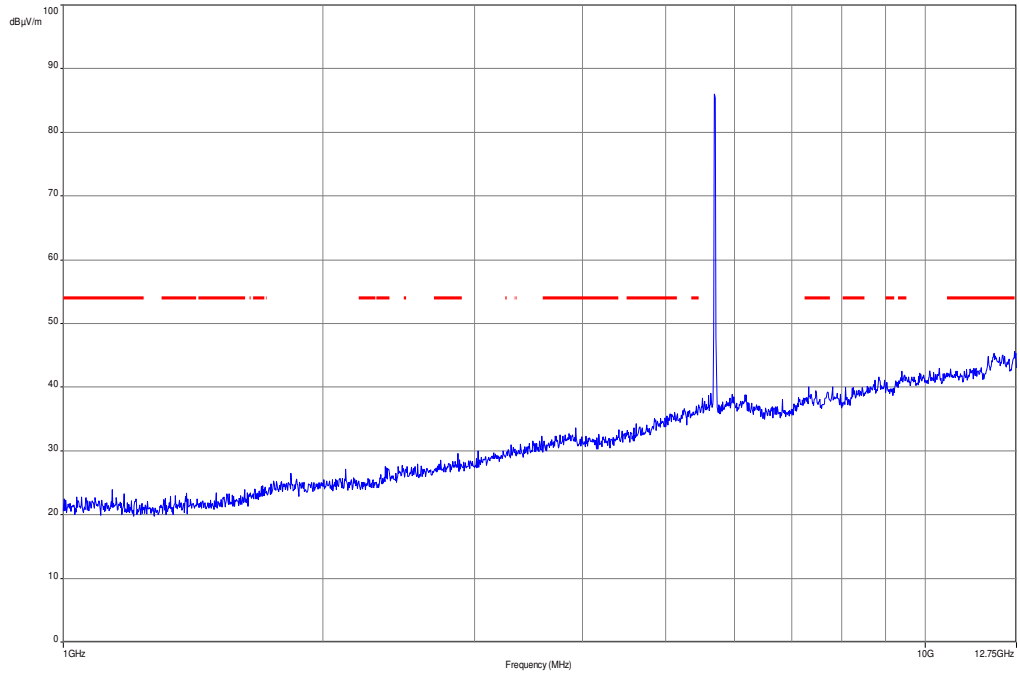
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



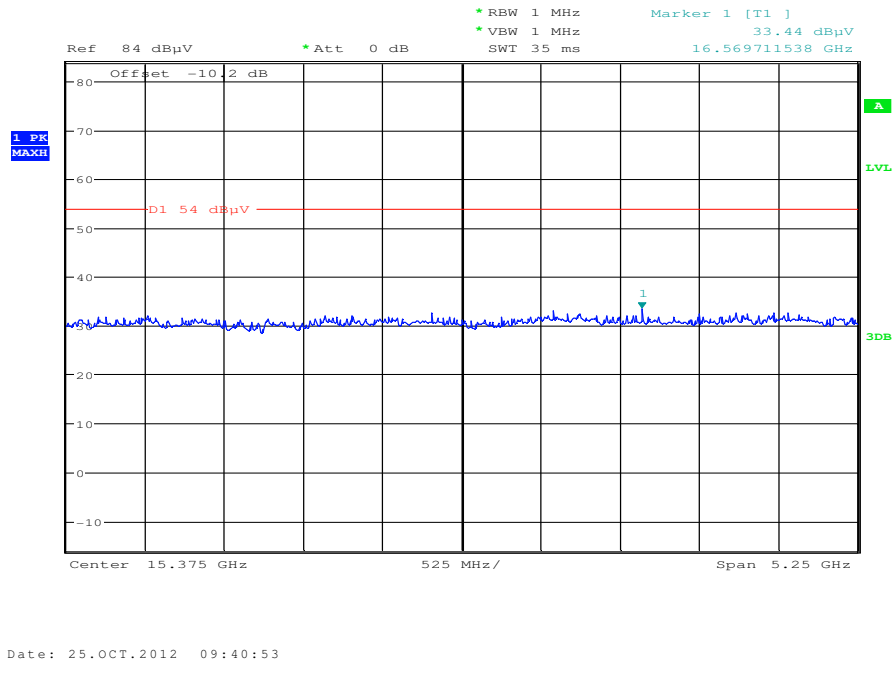
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
120.000000	7.4	1000.0	120.000	104.0	V	338.0	10.2	26.1	33.5	
140.400000	5.9	1000.0	120.000	120.0	V	229.0	8.7	27.6	33.5	
162.000000	6.6	1000.0	120.000	223.0	V	41.0	9.3	26.9	33.5	
408.240000	13.4	1000.0	120.000	270.0	H	87.0	17.0	22.6	36.0	
734.400000	20.4	1000.0	120.000	270.0	V	200.0	23.3	15.6	36.0	
949.560000	22.3	1000.0	120.000	145.0	V	323.0	25.4	13.7	36.0	

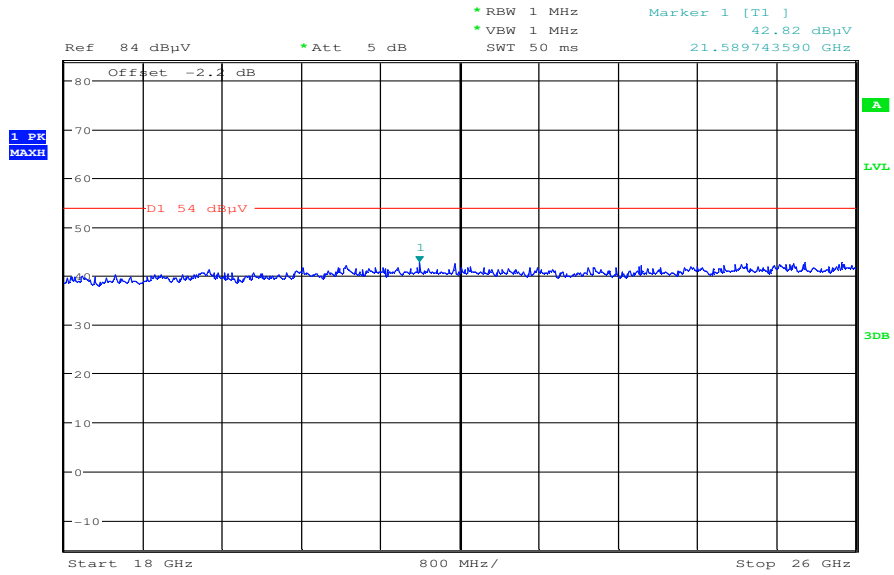
Plot 32: 1 GHz to 12.75 GHz, 5700 MHz, vertical & horizontal polarization



Plot 33: 12 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization

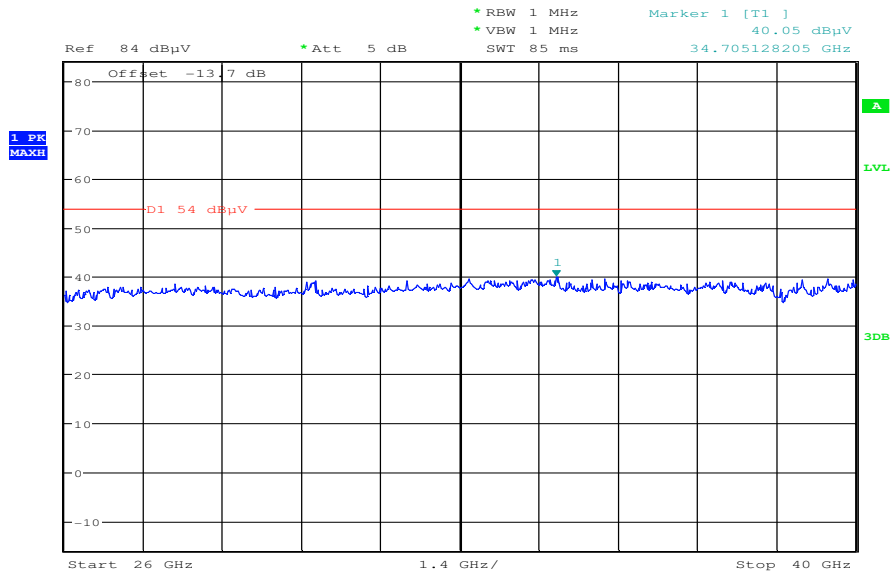


Plot 34: 18 GHz to 26 GHz, 5700 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:02:15

Plot 35: 26 GHz to 40 GHz, 5700 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:58:31

Plots: OFDM / n – mode HT40

Plot 1: 30 MHz to 1 GHz, 5190 MHz, vertical & horizontal polarization

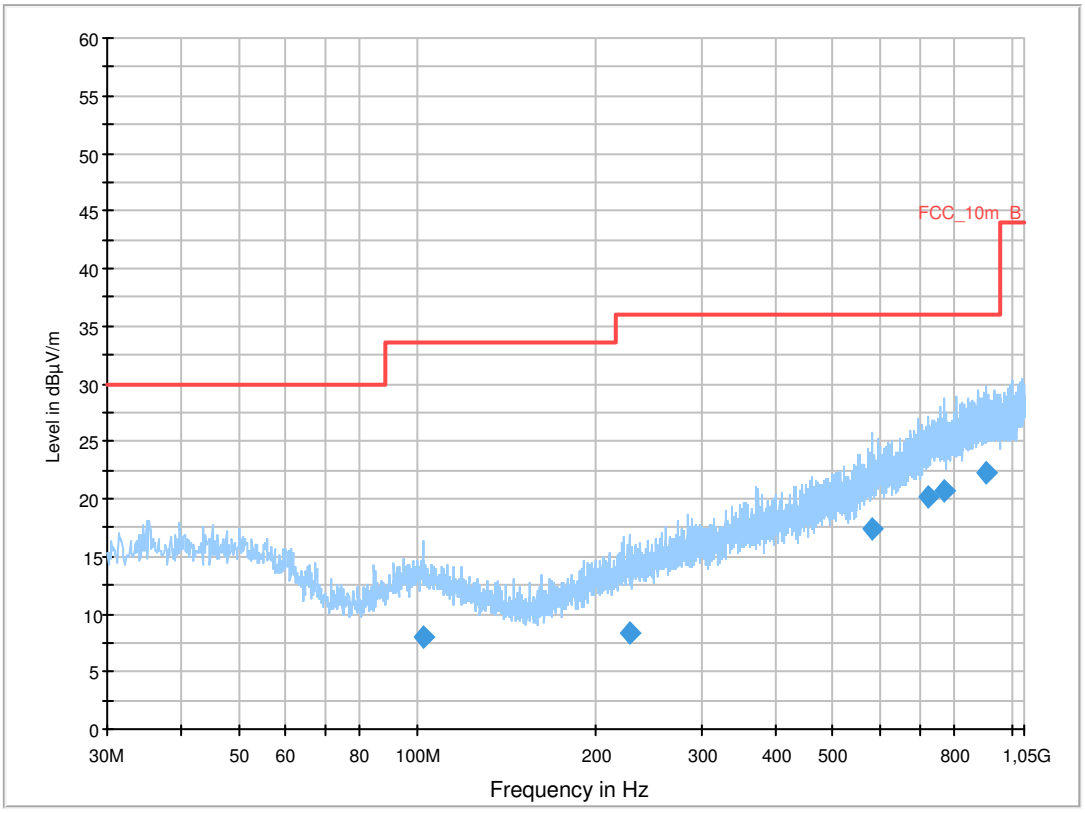
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 38, HT40 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

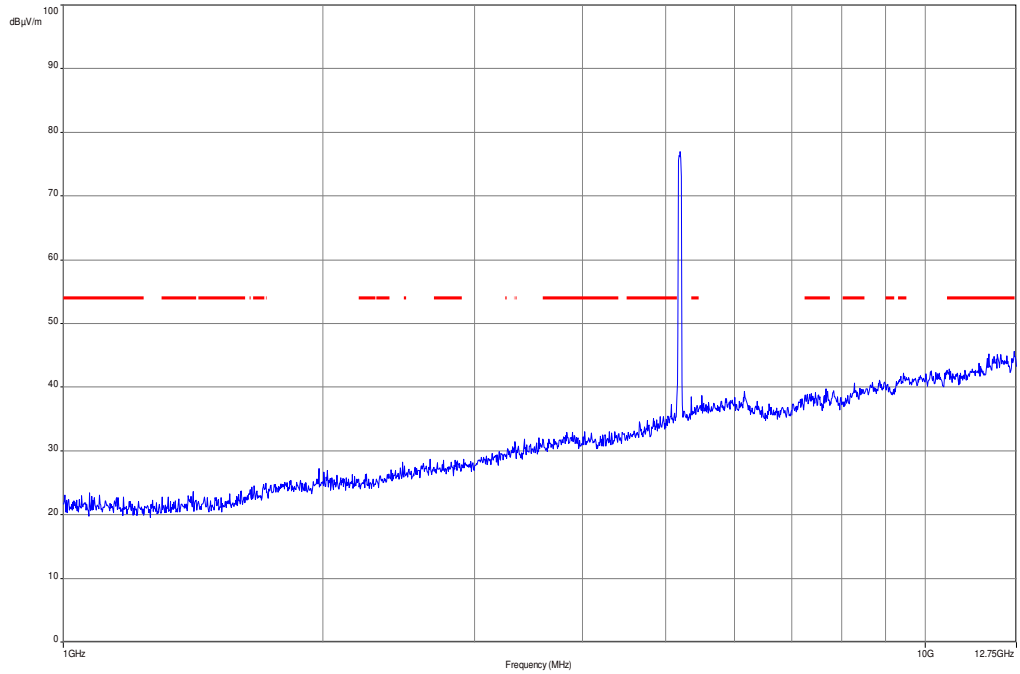
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



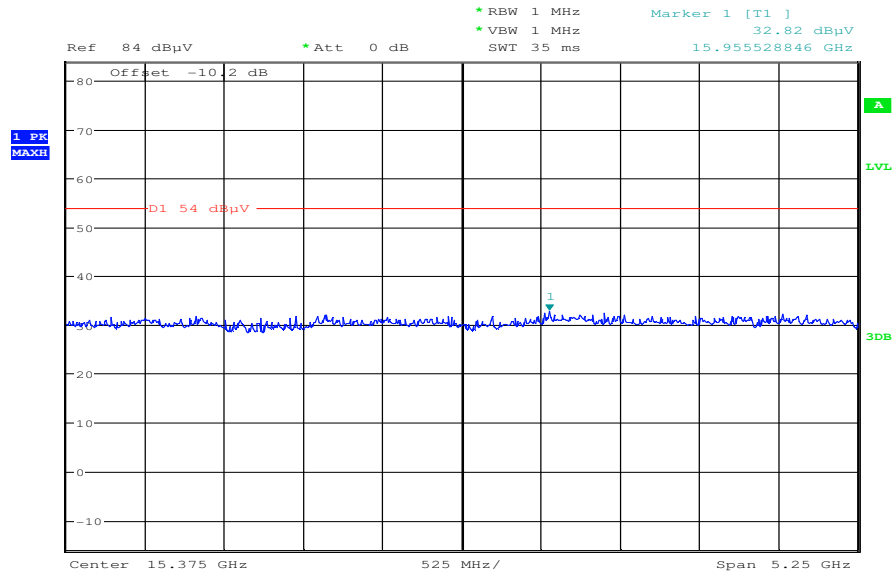
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
102.369600	8.0	1000.0	120.000	132.0	V	190.0	11.7	25.5	33.5	
227.676600	8.4	1000.0	120.000	170.0	V	171.0	12.6	27.6	36.0	
582.639900	17.5	1000.0	120.000	121.0	H	175.0	20.3	18.5	36.0	
724.357050	20.1	1000.0	120.000	121.0	H	175.0	23.1	15.9	36.0	
770.817300	20.7	1000.0	120.000	153.0	V	267.0	23.7	15.3	36.0	
905.374050	22.3	1000.0	120.000	170.0	V	100.0	25.2	13.7	36.0	

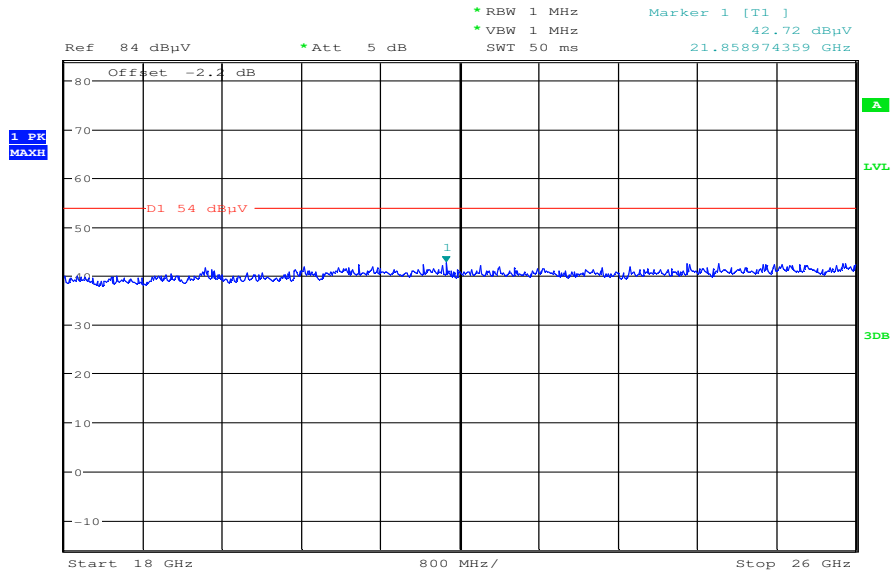
Plot 2: 1 GHz to 12.75 GHz, 5190 MHz, vertical & horizontal polarization



Plot 3: 12 GHz to 18 GHz, 5190 MHz, vertical & horizontal polarization

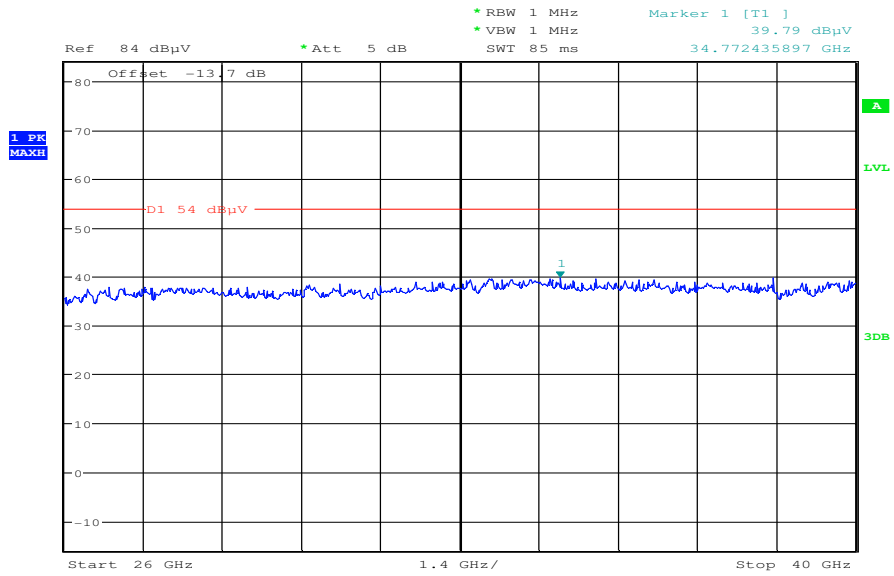


Plot 4: 18 GHz to 26 GHz, 5190 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:27:40

Plot 5: 26 GHz to 40 GHz, 5190 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:23:16

Plot 6: 30 MHz to 1 GHz, 5230 MHz, vertical & horizontal polarization

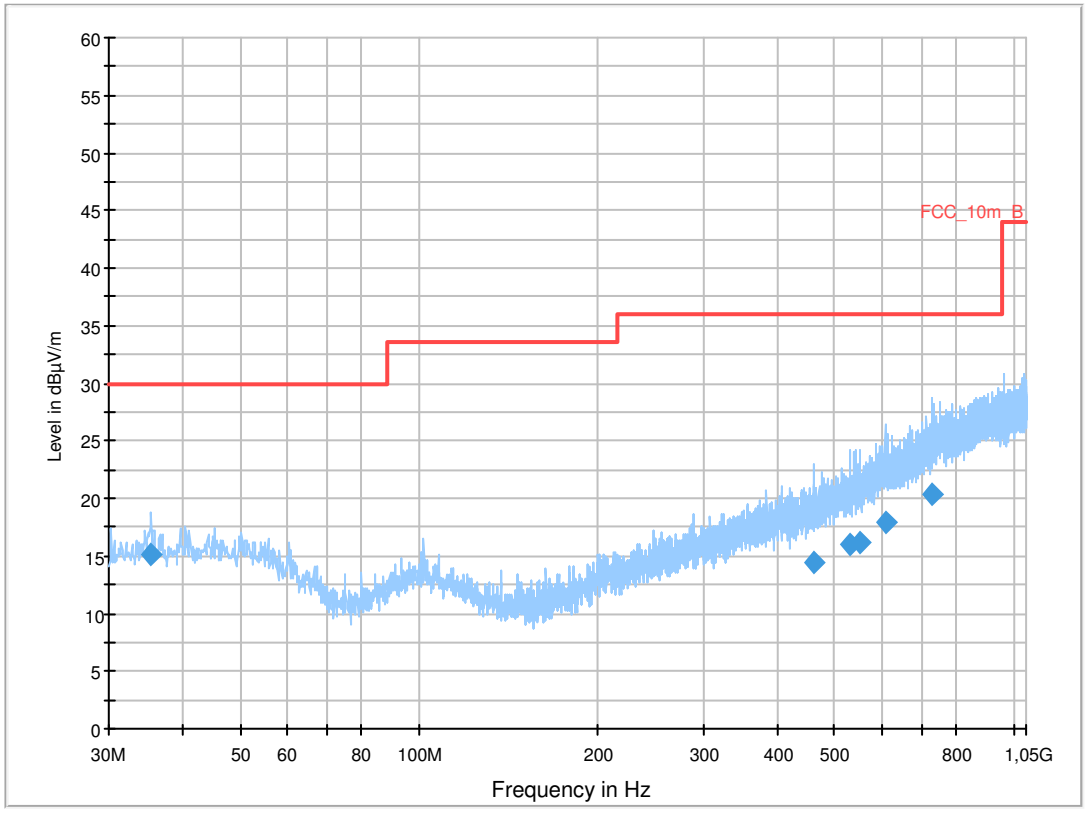
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 46, HT40 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

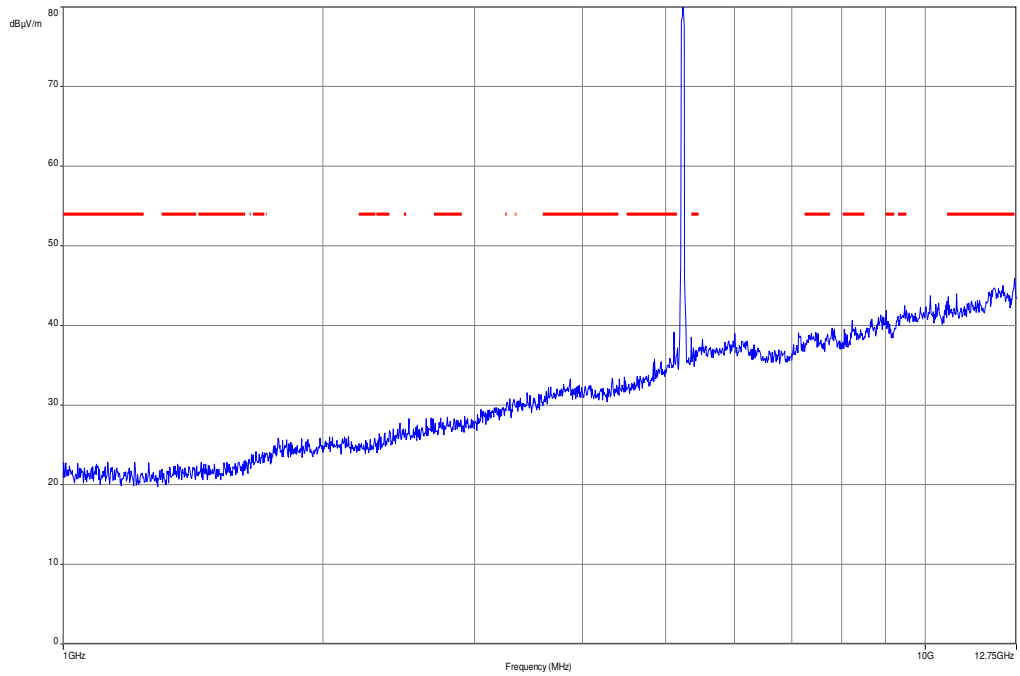
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



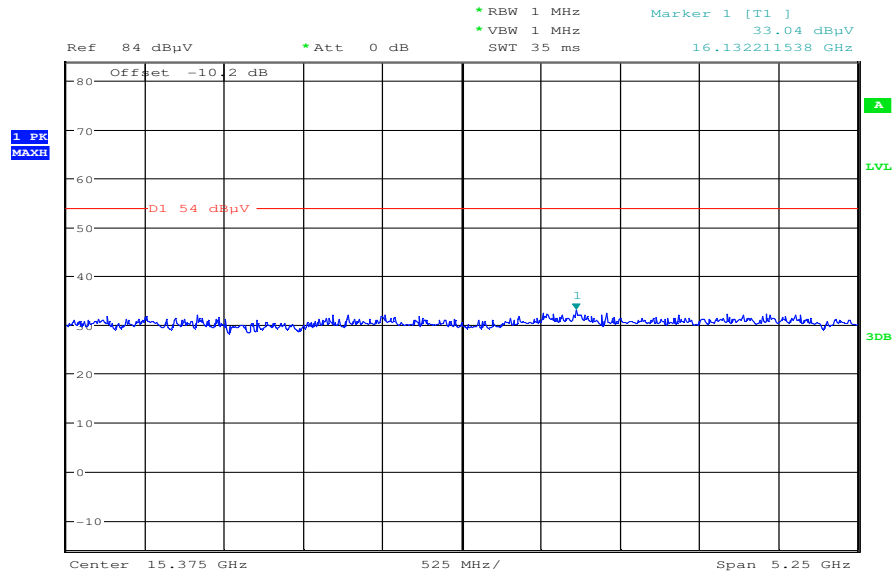
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.349000	15.1	1000.0	120.000	170.0	V	265.0	13.1	14.9	30.0	
462.288000	14.4	1000.0	120.000	170.0	H	10.0	17.9	21.6	36.0	
529.338300	15.9	1000.0	120.000	170.0	H	100.0	19.1	20.1	36.0	
550.670700	16.2	1000.0	120.000	170.0	V	266.0	19.4	19.8	36.0	
607.882950	17.9	1000.0	120.000	170.0	V	10.0	20.8	18.1	36.0	
730.550400	20.3	1000.0	120.000	170.0	H	190.0	23.2	15.7	36.0	

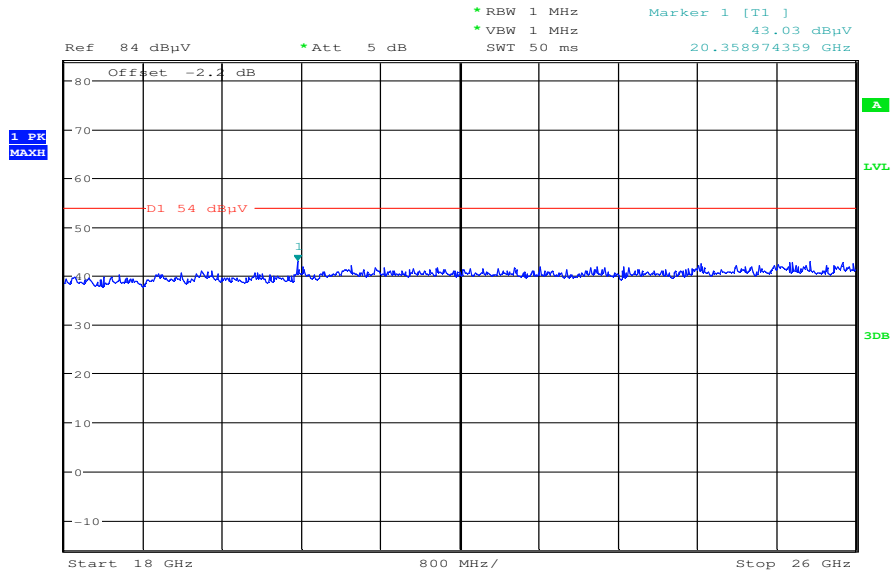
Plot 7: 1 GHz to 12.75 GHz, 5230 MHz, vertical & horizontal polarization



Plot 8: 12 GHz to 18 GHz, 5230 MHz, vertical & horizontal polarization

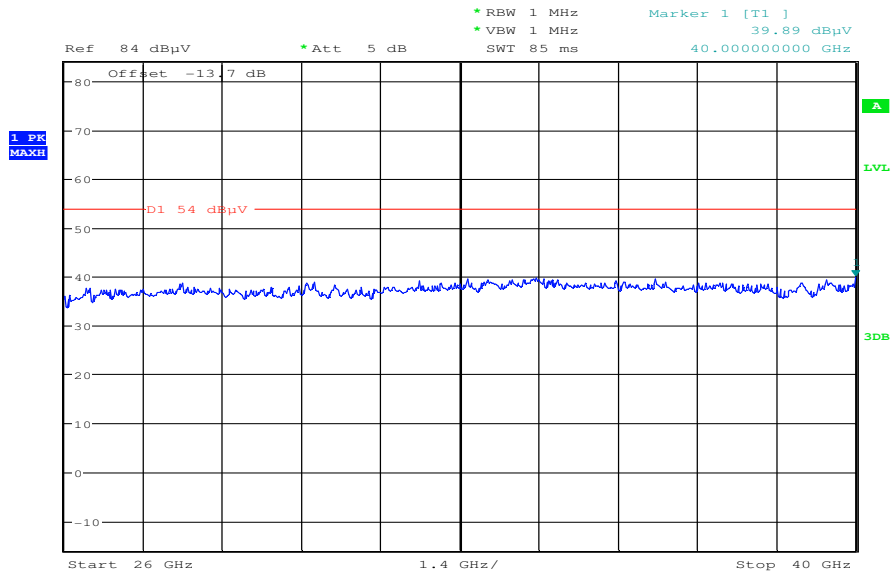


Plot 9: 18 GHz to 26 GHz, 5230 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:28:39

Plot 10: 26 GHz to 40 GHz, 5230 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:24:23

Plot 11: 30 MHz to 1 GHz, 5270 MHz, vertical & horizontal polarization

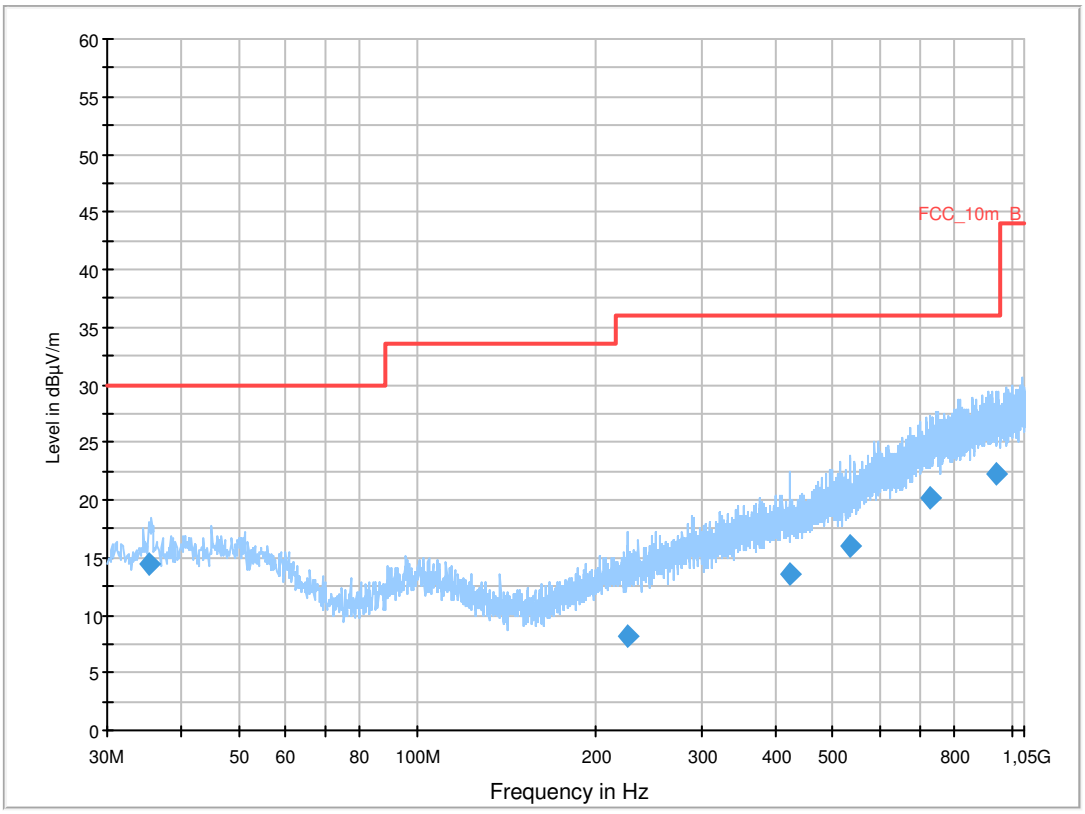
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 54, HT40 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

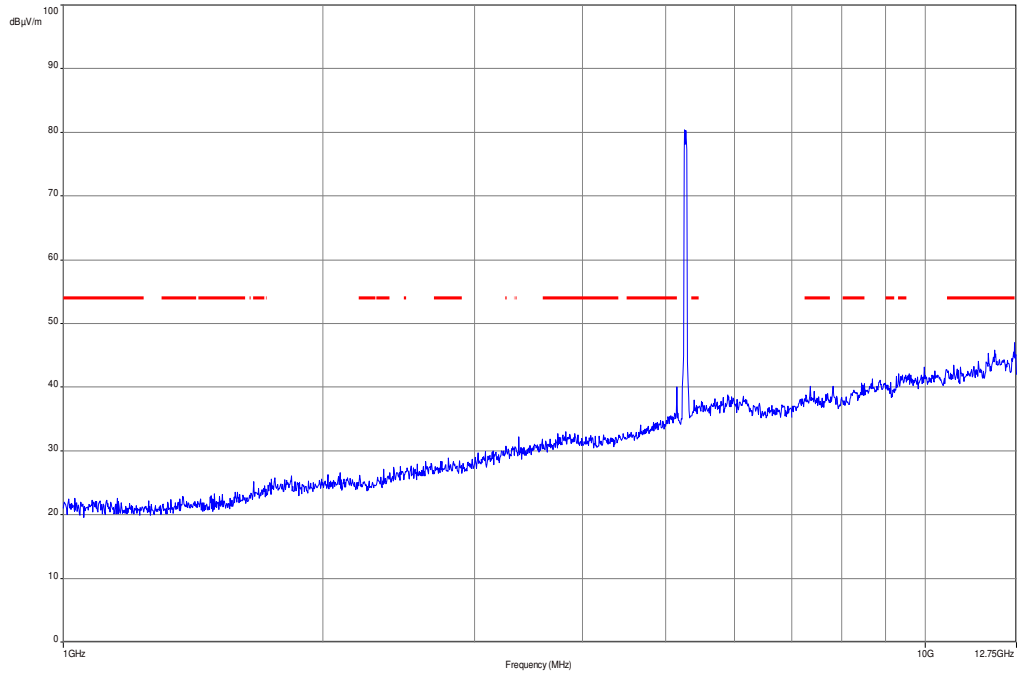
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



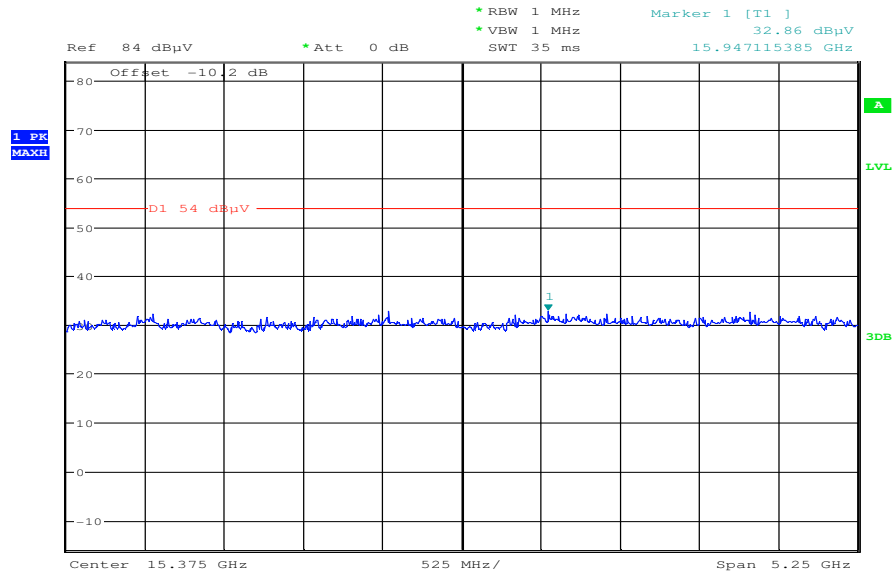
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.359650	14.5	1000.0	120.000	170.0	V	190.0	13.1	15.6	30.0	
226.325850	8.2	1000.0	120.000	170.0	H	175.0	12.6	27.8	36.0	
422.819850	13.6	1000.0	120.000	170.0	V	261.0	17.3	22.4	36.0	
535.917000	15.9	1000.0	120.000	170.0	V	80.0	19.2	20.1	36.0	
728.531850	20.3	1000.0	120.000	170.0	H	2.0	23.2	15.7	36.0	
939.700350	22.3	1000.0	120.000	104.0	H	81.0	25.3	13.7	36.0	

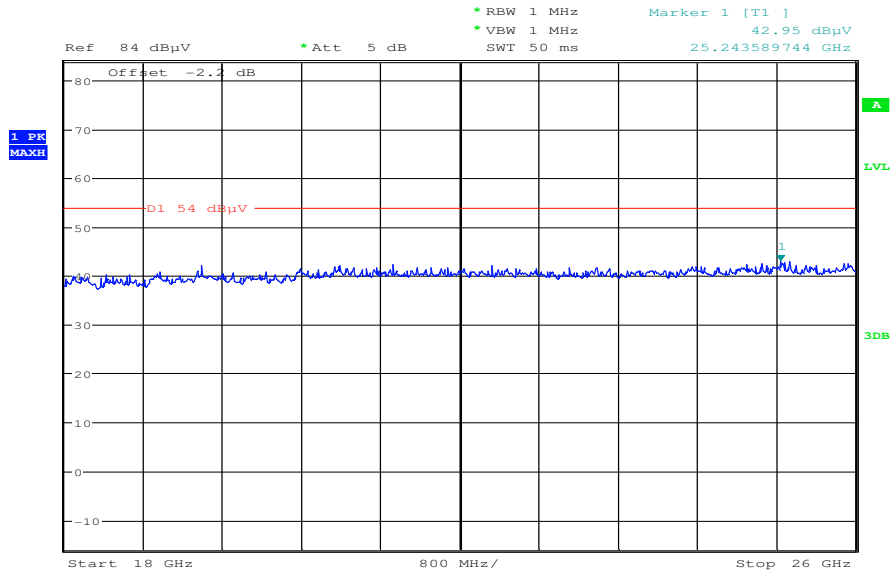
Plot 12: 1 GHz to 12.75 GHz, 5270 MHz, vertical & horizontal polarization



Plot 13: 12 GHz to 18 GHz, 5270 MHz, vertical & horizontal polarization

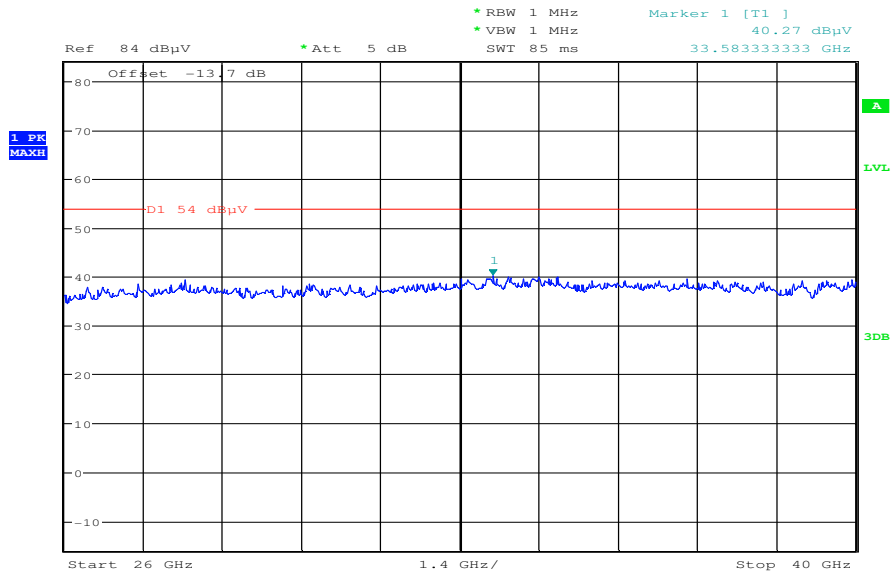


Plot 14: 18 GHz to 26 GHz, 5270 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:29:38

Plot 15: 26 GHz to 40 GHz, 5270 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:25:39

Plot 16: 30 MHz to 1 GHz, 5310 MHz, vertical & horizontal polarization

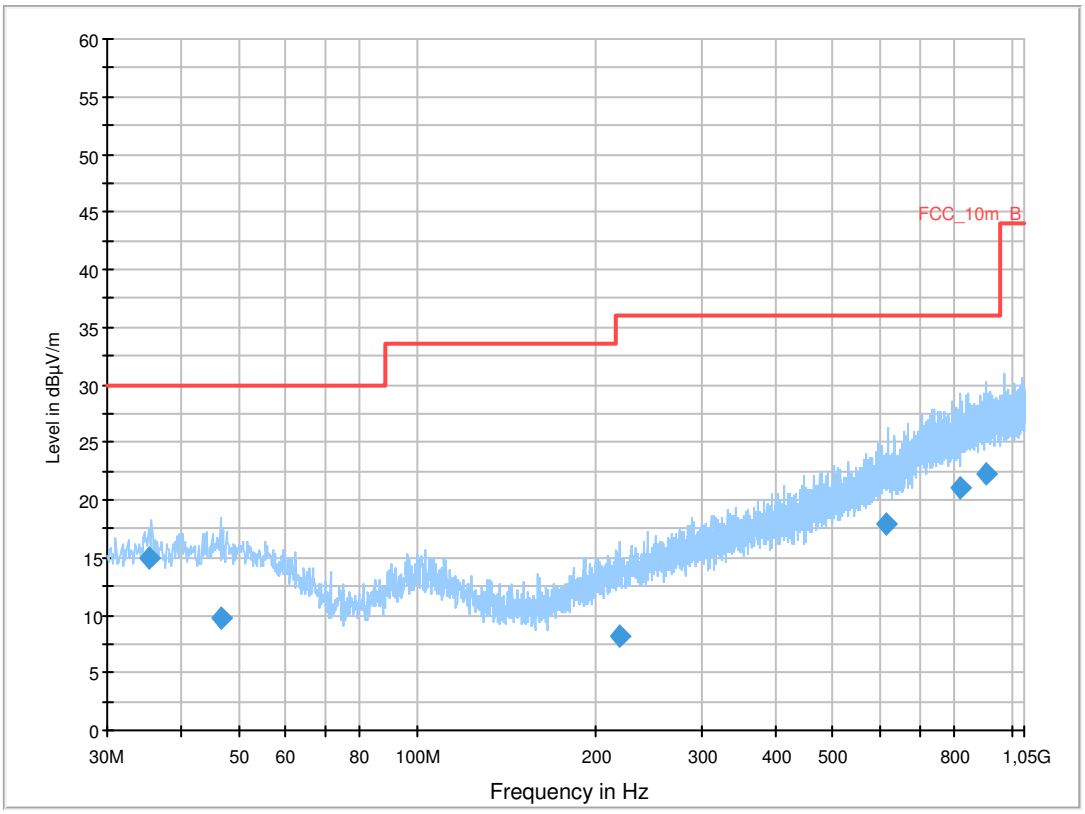
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 62, HT40 + charging
Operator Name:	Wolsdorfer
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

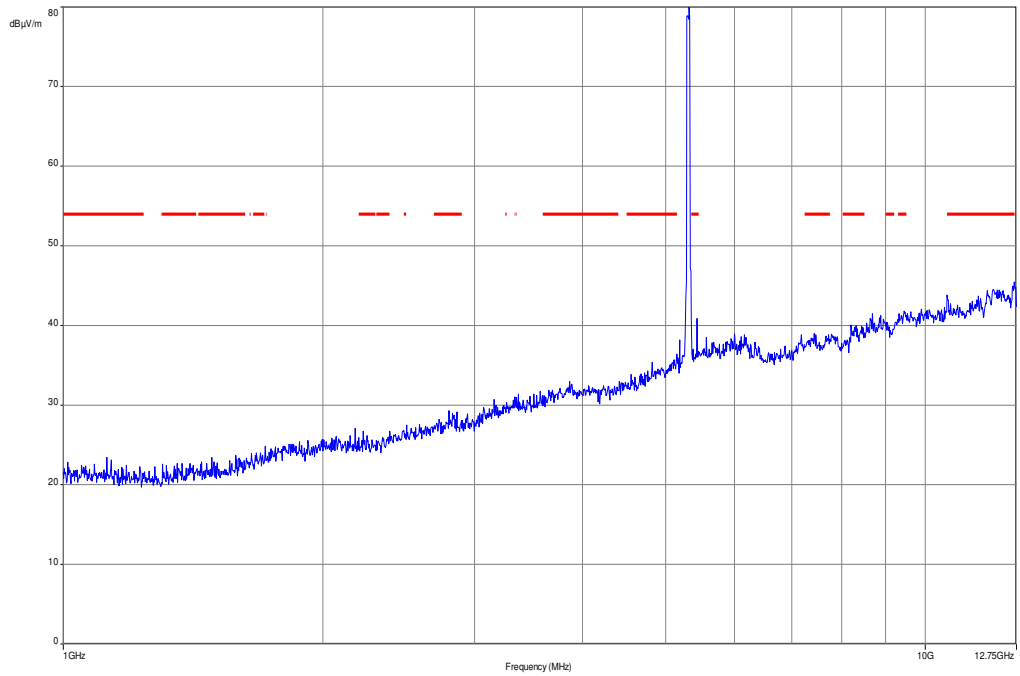
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



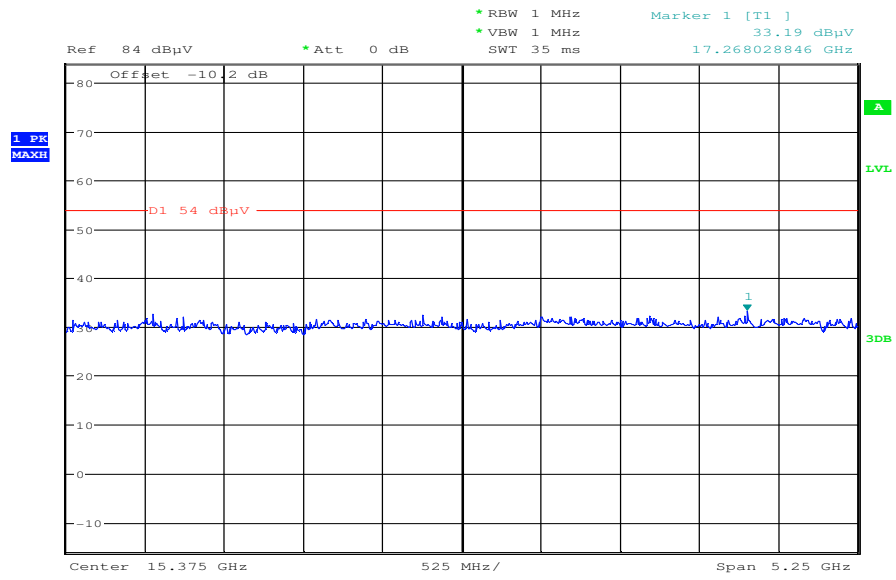
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.324250	15.0	1000.0	120.000	170.0	V	100.0	13.1	15.0	30.0	
46.579800	9.8	1000.0	120.000	170.0	H	10.0	13.3	20.2	30.0	
219.229650	8.2	1000.0	120.000	170.0	V	100.0	12.4	27.8	36.0	
616.899750	17.9	1000.0	120.000	160.0	V	91.0	20.9	18.1	36.0	
817.732950	21.0	1000.0	120.000	170.0	H	3.0	24.1	15.0	36.0	
907.914900	22.2	1000.0	120.000	170.0	V	80.0	25.2	13.8	36.0	

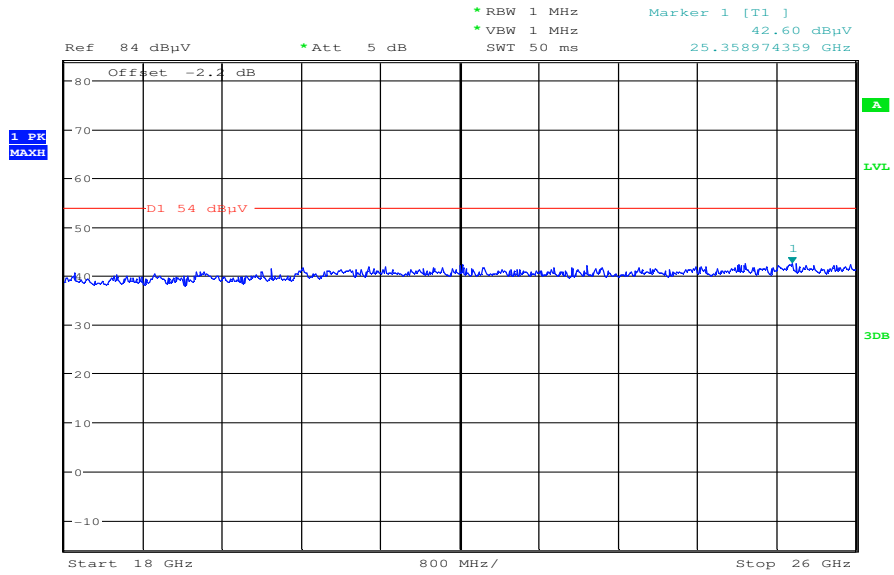
Plot 17: 1 GHz to 12.75 GHz, 5310 MHz, vertical & horizontal polarization



Plot 18: 12 GHz to 18 GHz, 5310 MHz, vertical & horizontal polarization

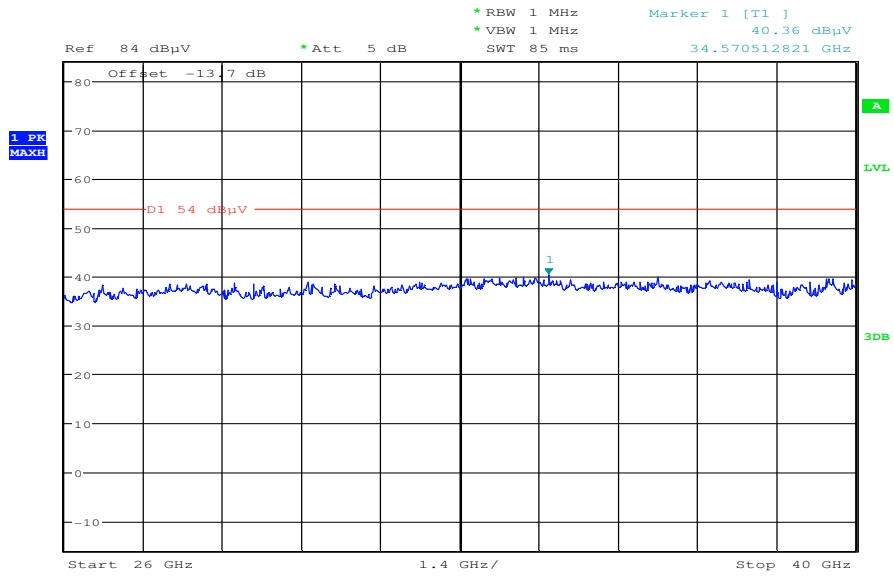


Plot 19: 18 GHz to 26 GHz, 5310 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:30:43

Plot 20: 26 GHz to 40 GHz, 5310 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:27:10

Plot 21: 30 MHz to 1 GHz, 5510 MHz, vertical & horizontal polarization

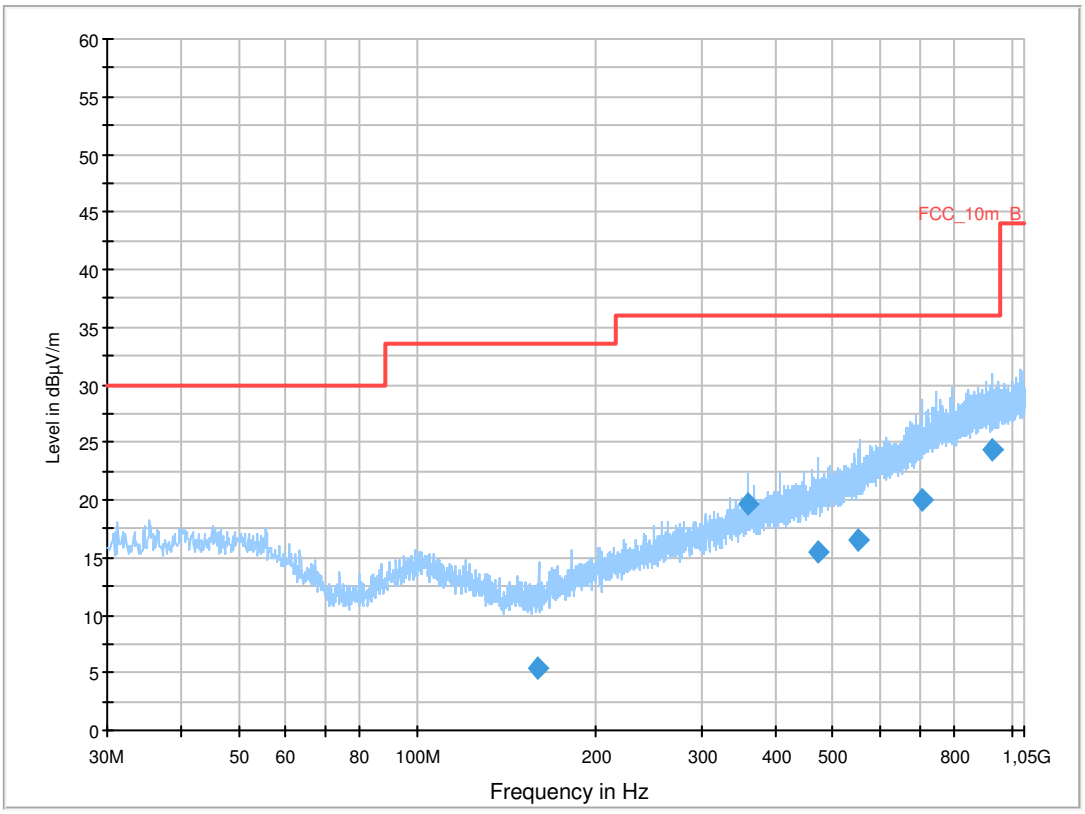
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 102, HT40 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz,

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

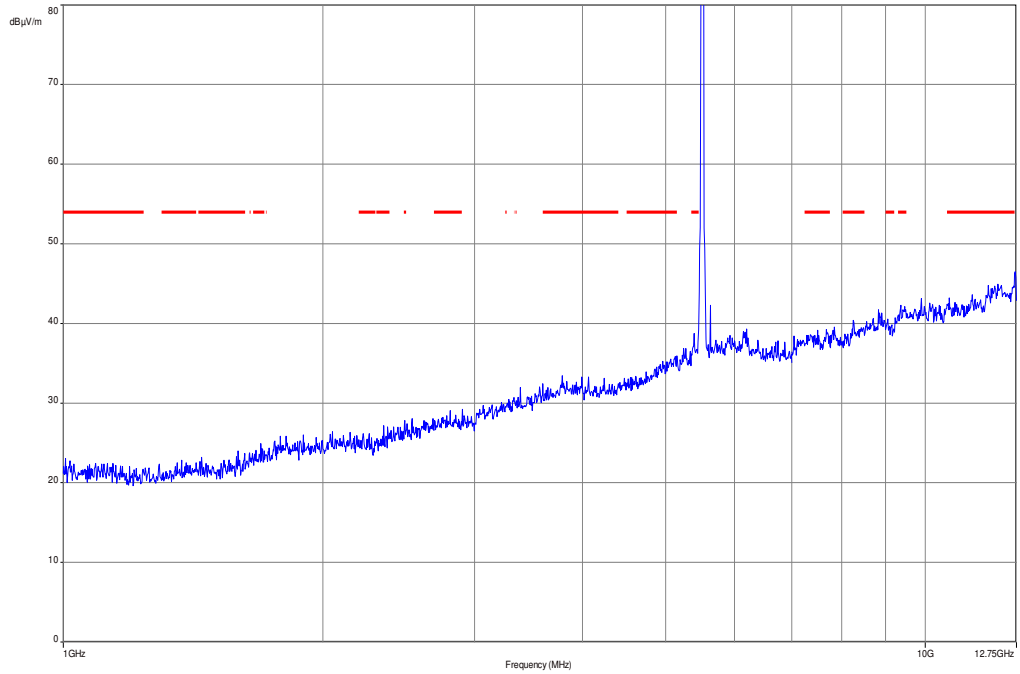
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



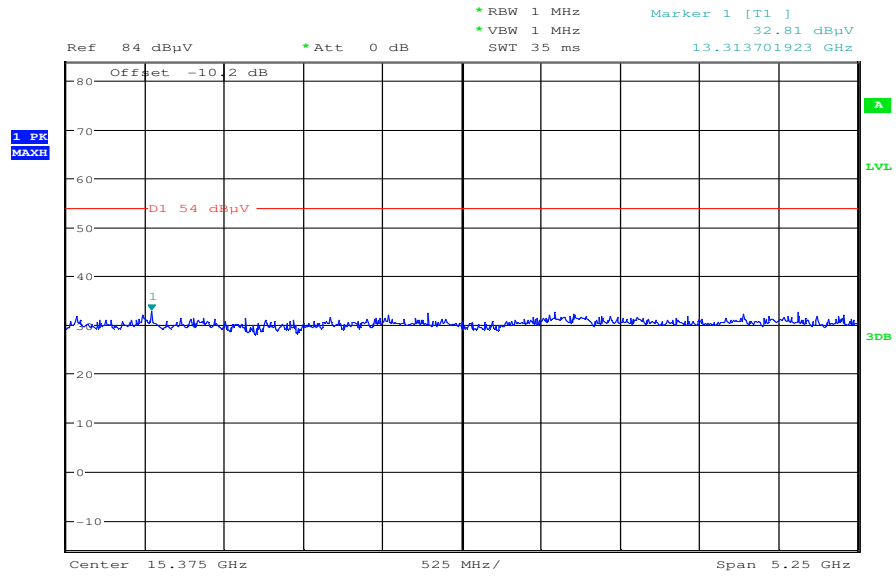
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
159.456450	5.5	1000.0	120.000	200.0	H	174.0	9.2	28.0	33.5	
360.007800	19.6	1000.0	120.000	100.0	V	337.0	16.2	16.4	36.0	
472.416450	15.4	1000.0	120.000	172.0	H	-44.0	18.1	20.6	36.0	
552.997200	16.5	1000.0	120.000	179.0	V	-24.0	19.4	19.5	36.0	
709.149600	20.0	1000.0	120.000	168.0	H	288.0	22.7	16.0	36.0	
927.454200	24.4	1000.0	120.000	200.0	V	75.0	25.3	11.6	36.0	

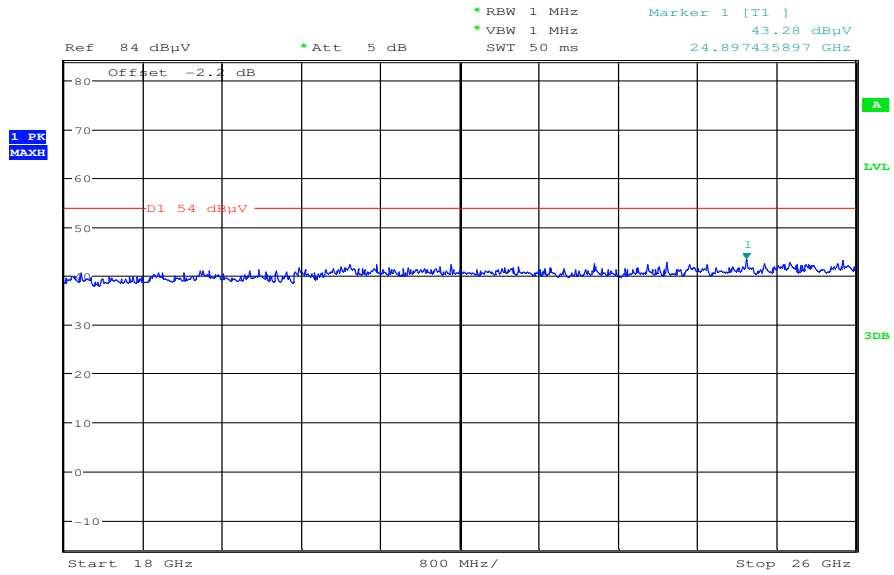
Plot 22: 1 GHz to 12.75 GHz, 5510 MHz, vertical & horizontal polarization



Plot 23: 12 GHz to 18 GHz, 5510 MHz, vertical & horizontal polarization

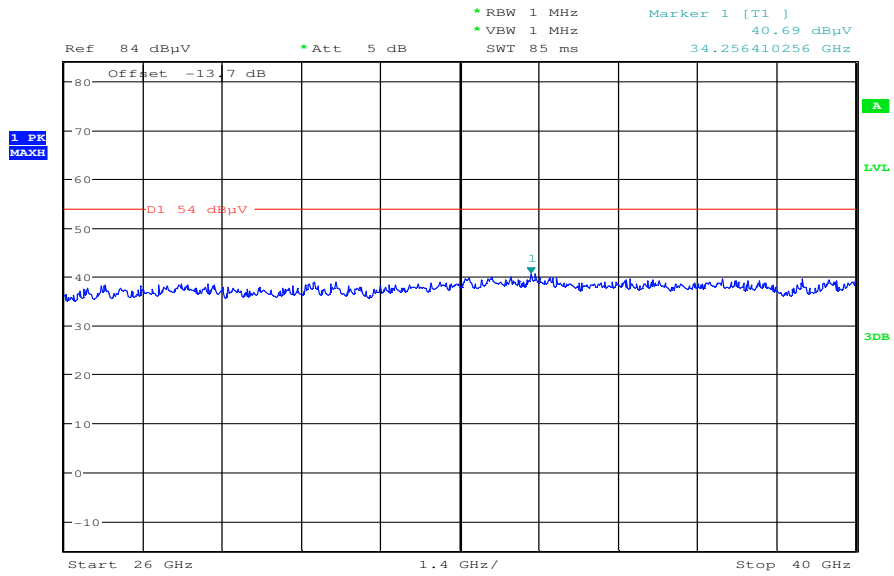


Plot 24: 18 GHz to 26 GHz, 5510 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:32:04

Plot 25: 26 GHz to 40 GHz, 5510 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:29:01

Plot 26: 30 MHz to 1 GHz, 5590 MHz, vertical & horizontal polarization

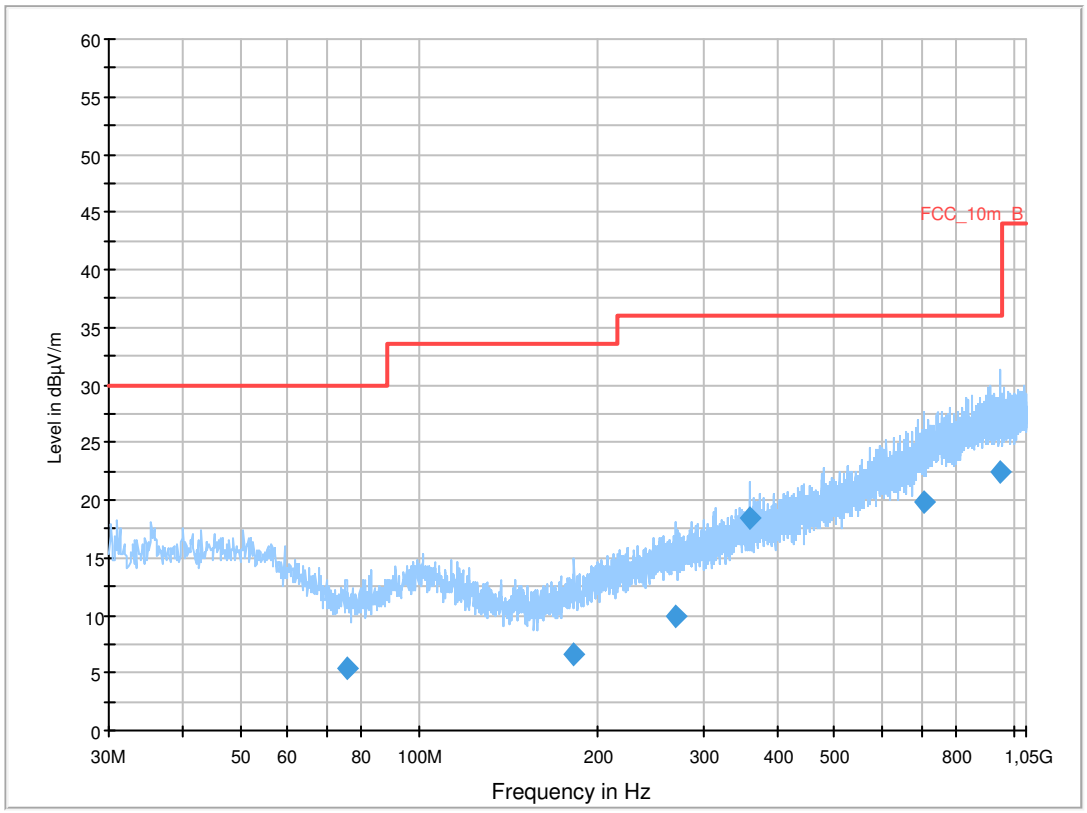
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 118, HT40 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

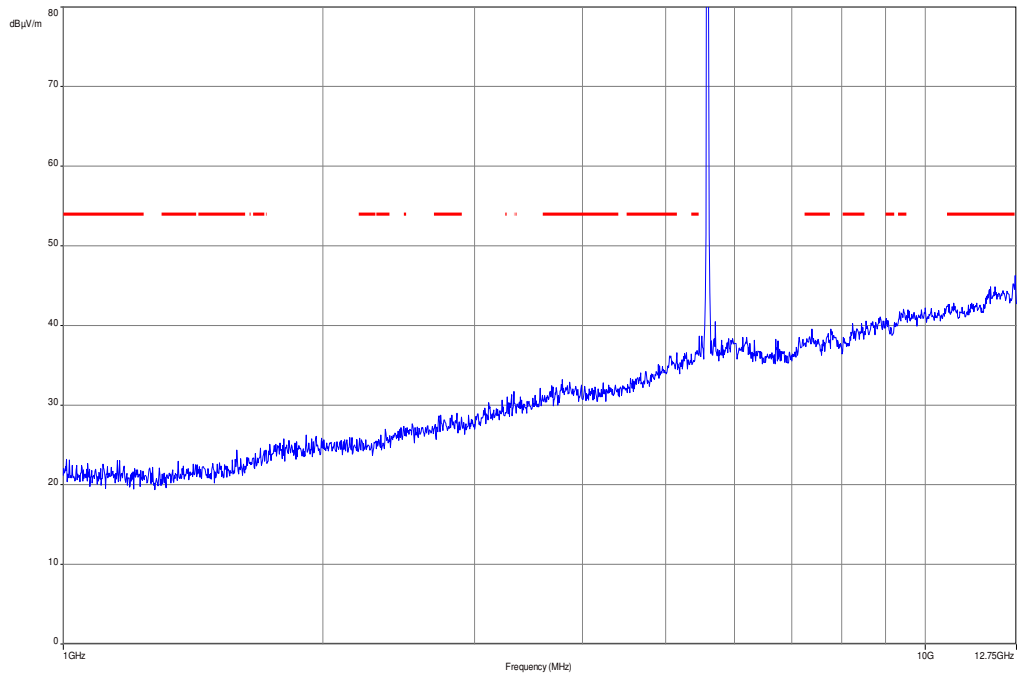
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



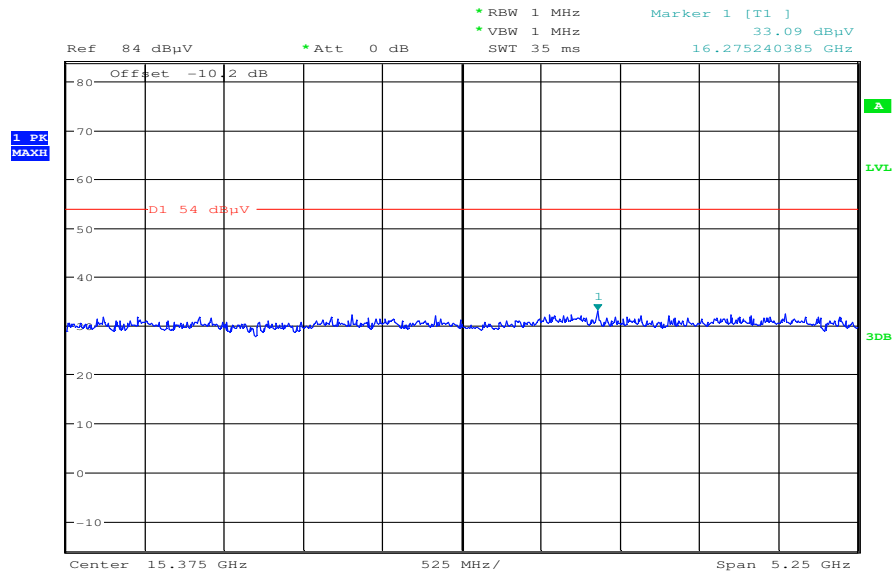
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
75.854400	5.4	1000.0	120.000	170.0	V	280.0	9.2	24.6	30.0	
181.769100	6.6	1000.0	120.000	170.0	H	2.0	10.5	26.9	33.5	
270.101700	10.0	1000.0	120.000	170.0	V	81.0	13.8	26.0	36.0	
360.001500	18.4	1000.0	120.000	98.0	V	260.0	16.2	17.6	36.0	
706.103550	19.9	1000.0	120.000	98.0	V	171.0	22.6	16.1	36.0	
949.179300	22.4	1000.0	120.000	98.0	H	80.0	25.3	13.6	36.0	

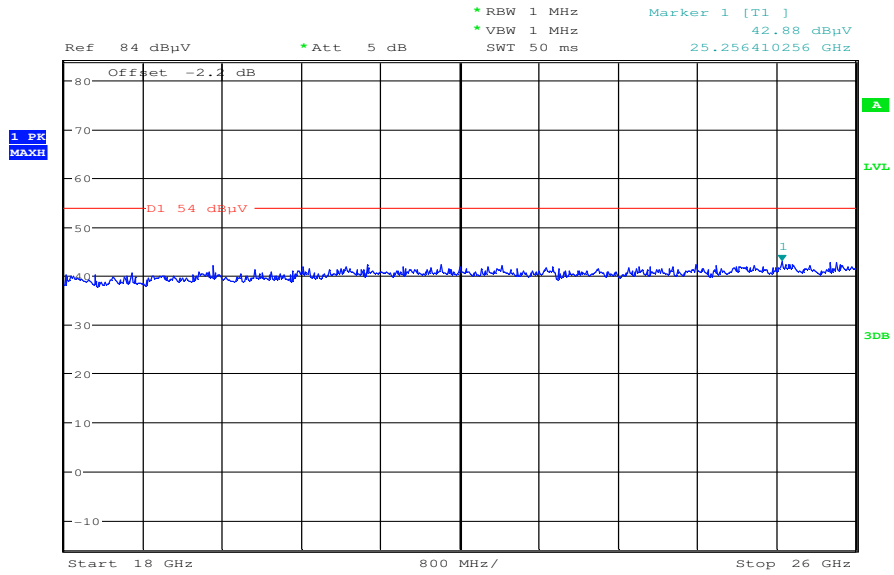
Plot 27: 1 GHz to 12.75 GHz, 5590 MHz, vertical & horizontal polarization



Plot 28: 12 GHz to 18 GHz, 5590 MHz, vertical & horizontal polarization

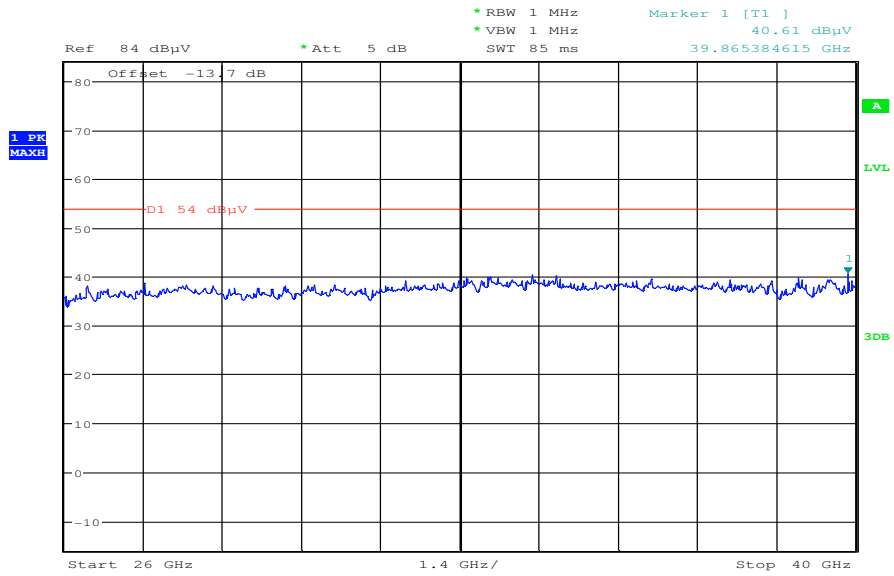


Plot 29: 18 GHz to 26 GHz, 5590 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:33:09

Plot 30: 26 GHz to 40 GHz, 5590 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:30:12

Plot 31: 30 MHz to 1 GHz, 5670 MHz, vertical & horizontal polarization

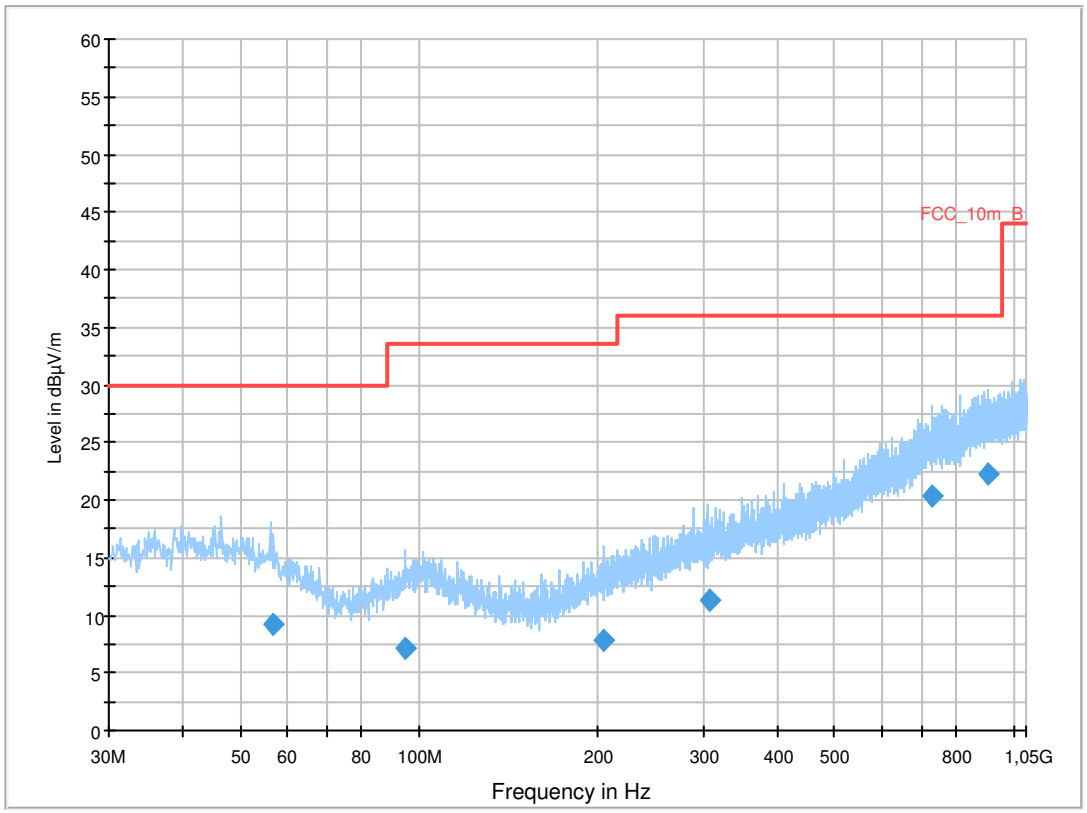
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	w-lan n-mode, CH 134, HT40 + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

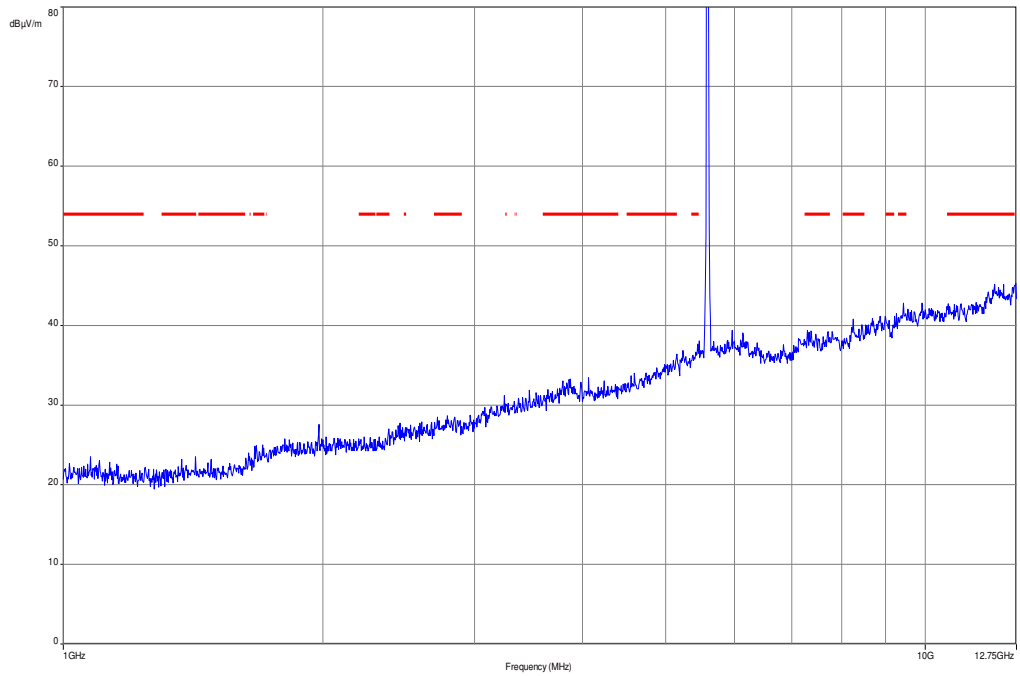
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



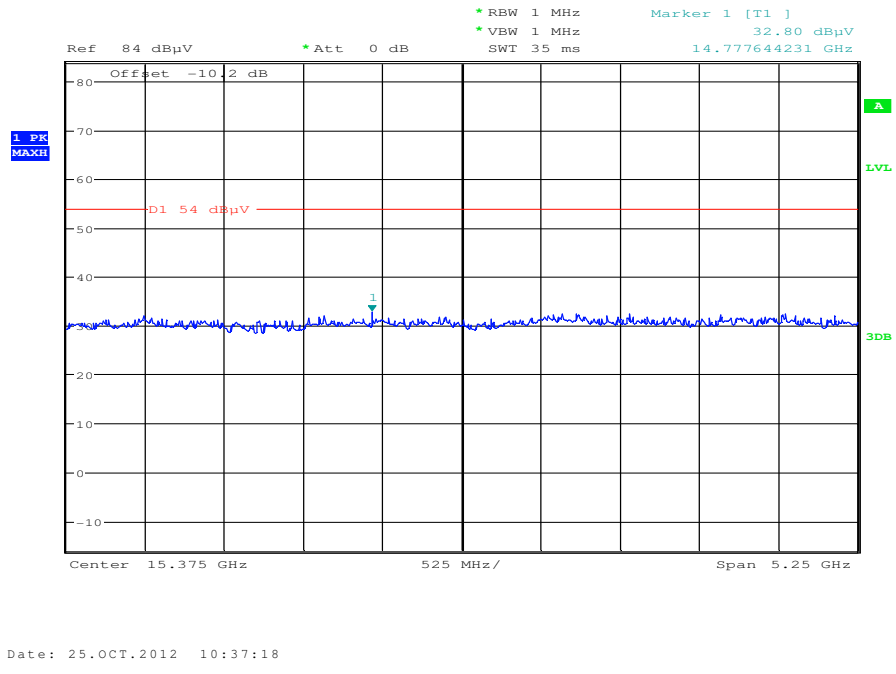
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
56.585250	9.3	1000.0	120.000	170.0	H	100.0	12.5	20.7	30.0	
94.662150	7.2	1000.0	120.000	170.0	V	171.0	11.2	26.3	33.5	
204.397650	7.8	1000.0	120.000	170.0	V	81.0	11.9	25.7	33.5	
307.100400	11.3	1000.0	120.000	170.0	V	270.0	14.7	24.7	36.0	
728.943150	20.3	1000.0	120.000	170.0	H	280.0	23.2	15.7	36.0	
904.634850	22.3	1000.0	120.000	170.0	V	270.0	25.2	13.7	36.0	

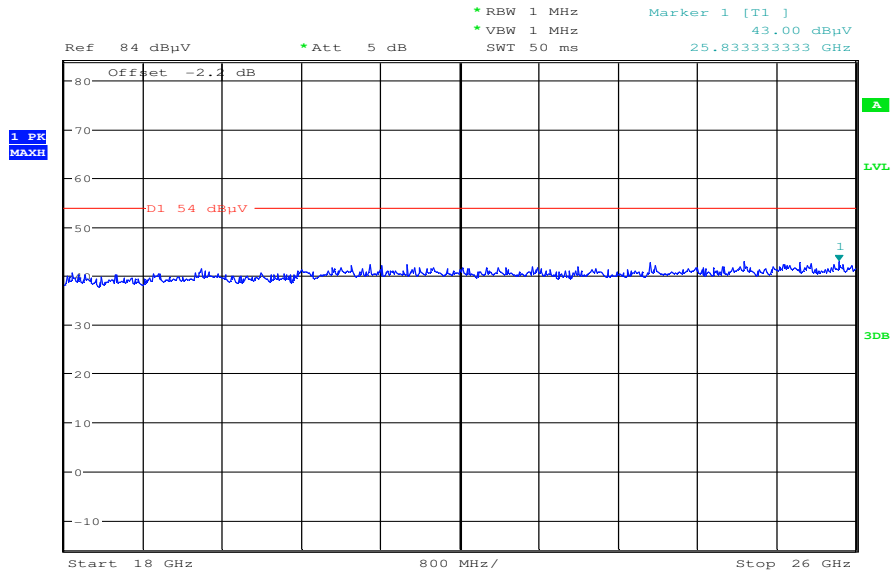
Plot 32: 1 GHz to 12.75 GHz, 5670 MHz, vertical & horizontal polarization



Plot 33: 12 GHz to 18 GHz, 5670 MHz, vertical & horizontal polarization

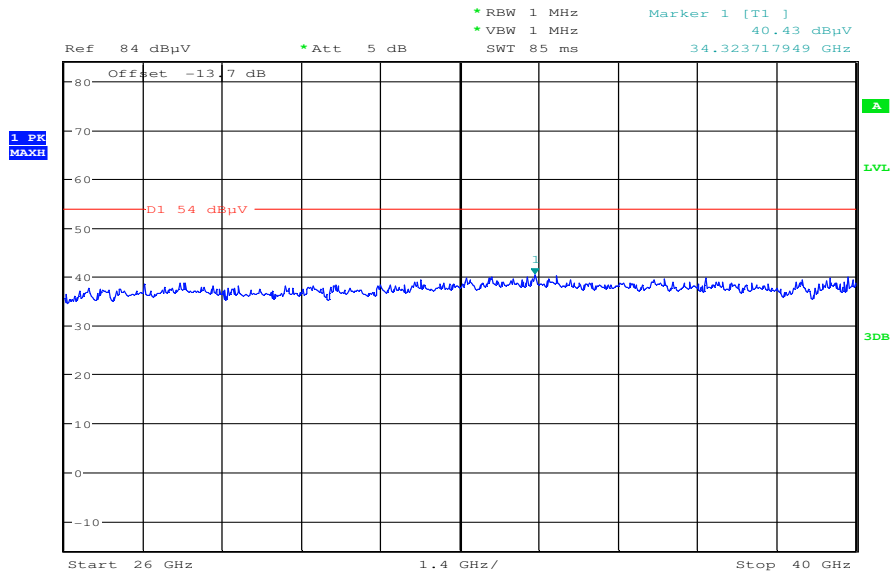


Plot 34: 18 GHz to 26 GHz, 5670 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:34:07

Plot 35: 26 GHz to 40 GHz, 5670 MHz, vertical & horizontal polarization



Date: 25.OCT.2012 12:31:19

9.10 RX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in idle/receive mode.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz /10 Hz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold / Average with 100 counts + 20 log (1 / X) for duty cycle lower than 100 %

Limits:

RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

RX Spurious Emissions Radiated [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks found		
Measurement uncertainty	± 3 dB	

Result: Passed

Plots: RX / Idle – mode

Plot 1: 30 MHz to 1 GHz, vertical & horizontal polarization

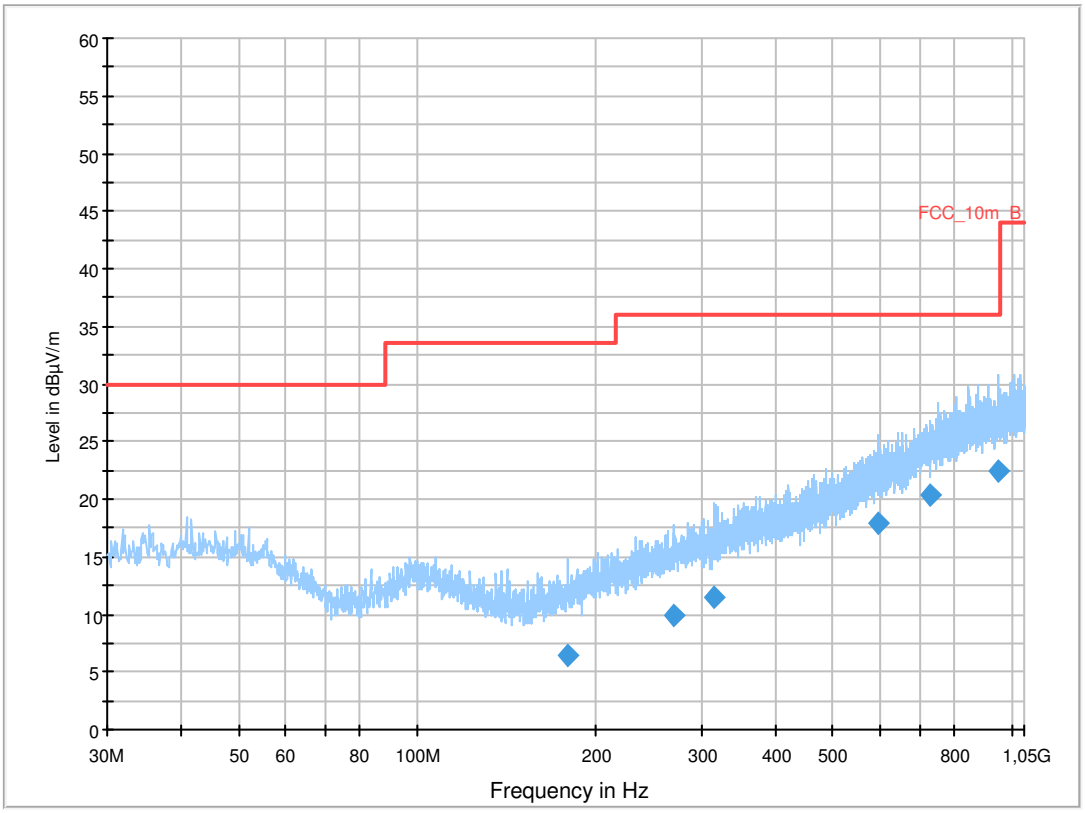
Common Information

EUT:	PM-0220-BV
Serial Number:	CB5A1LN5WE
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	IDLE + charging
Operator Name:	Medrow
Comment:	AC 115V/60Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

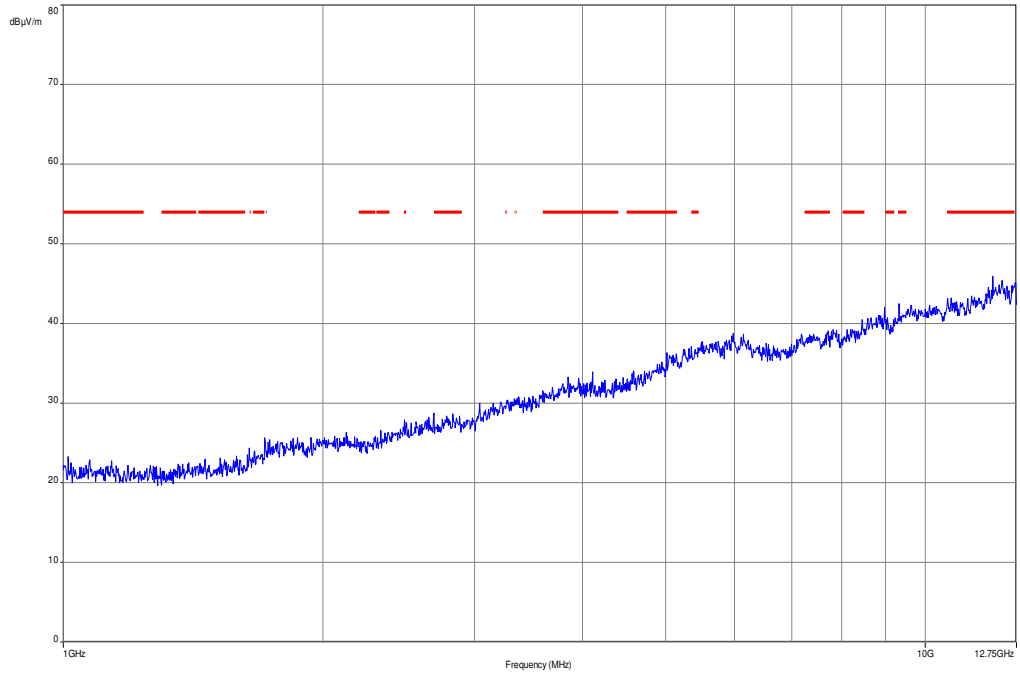
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



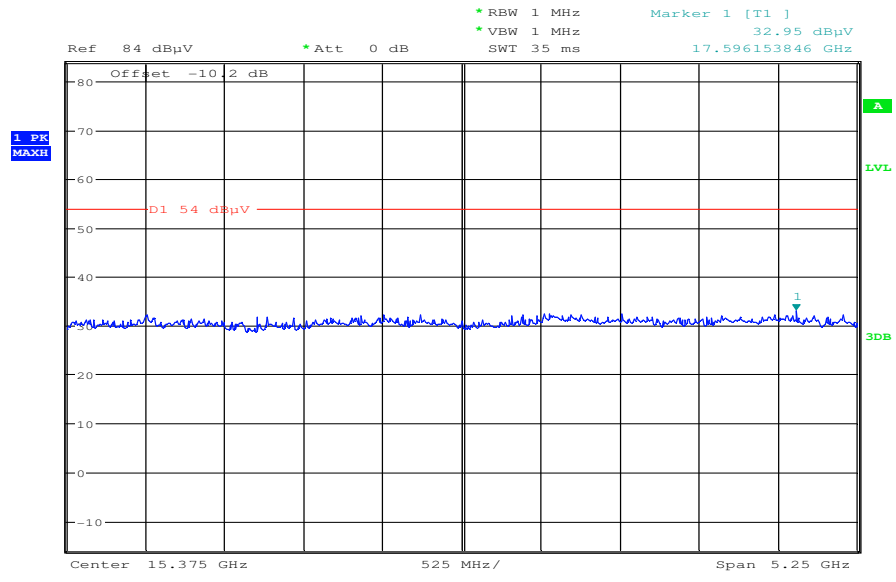
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
179.319900	6.4	1000.0	120.000	170.0	H	-2.0	10.4	27.1	33.5	
269.817450	9.9	1000.0	120.000	170.0	V	3.0	13.8	26.1	36.0	
316.387200	11.5	1000.0	120.000	170.0	H	280.0	15.0	24.5	36.0	
597.644100	17.9	1000.0	120.000	98.0	H	80.0	20.7	18.1	36.0	
730.390050	20.4	1000.0	120.000	111.0	V	178.0	23.2	15.6	36.0	
947.912700	22.4	1000.0	120.000	170.0	H	3.0	25.3	13.6	36.0	

Plot 2: 1 GHz to 12.75 GHz, vertical & horizontal polarization

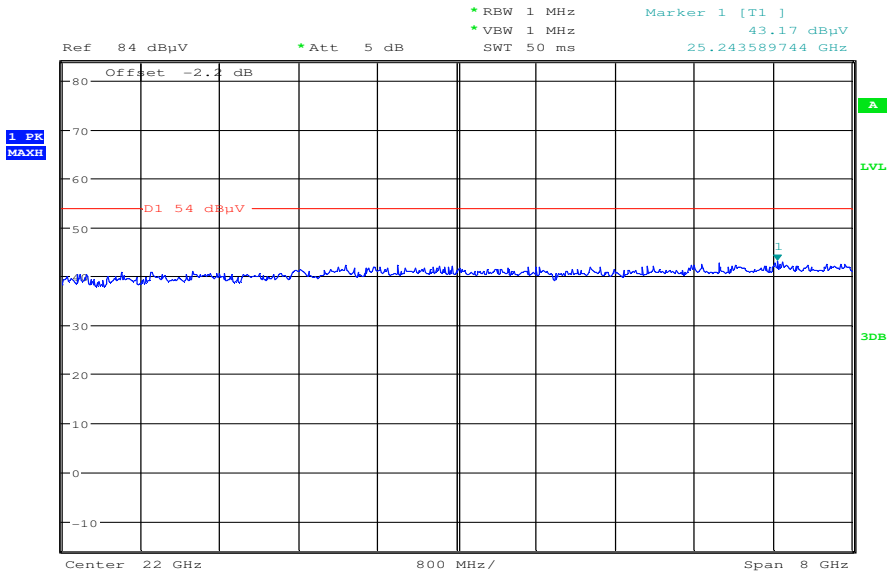


Plot 3: 12 GHz to 18 GHz, vertical & horizontal polarization



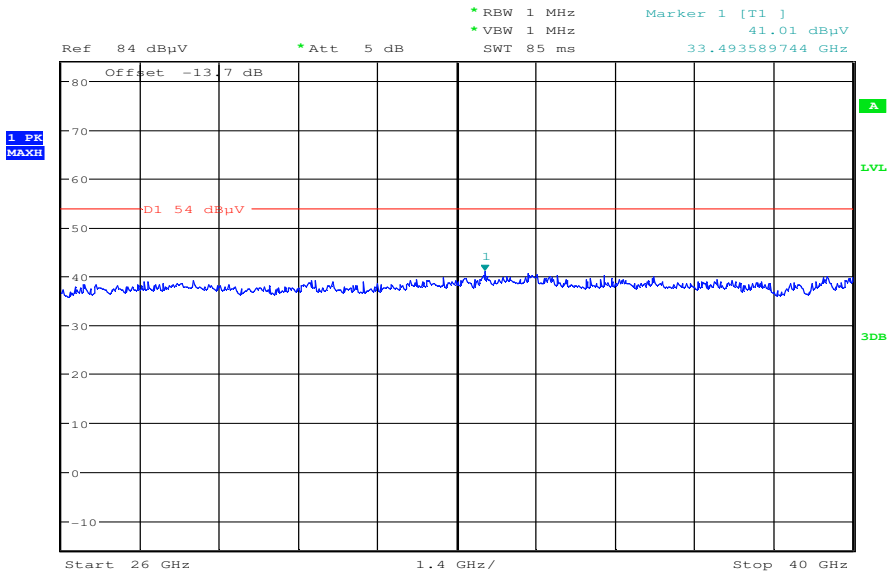
Date: 25.OCT.2012 10:42:33

Plot 4: 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 25.OCT.2012 10:47:32

Plot 5: 26 GHz to 40 GHz, vertical & horizontal polarization



Date: 25.OCT.2012 11:46:23

9.11 Spurious emissions radiated < 30 MHz

Description:

Measurement of the radiated spurious emissions in transmit mode and receive mode below 30 MHz. The EUT is set first to middle channel. This measurement is representative for all channels and modes. If critical peaks are found the lowest channel and the highest channel will be measured too. Then the EUT is set to receive or idle mode. 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:

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

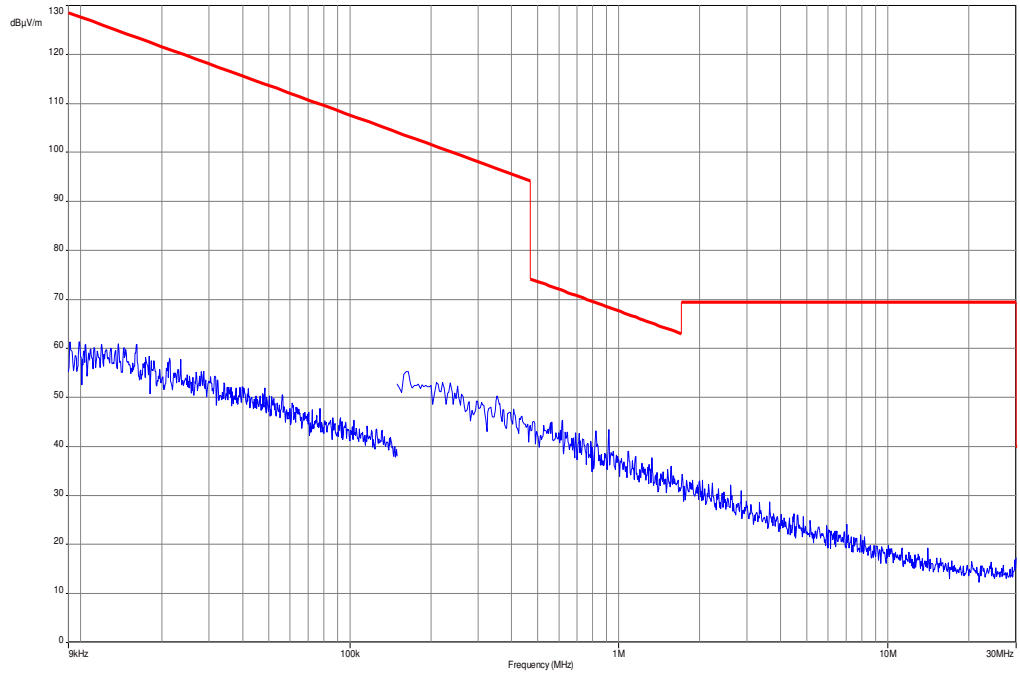
Results:

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

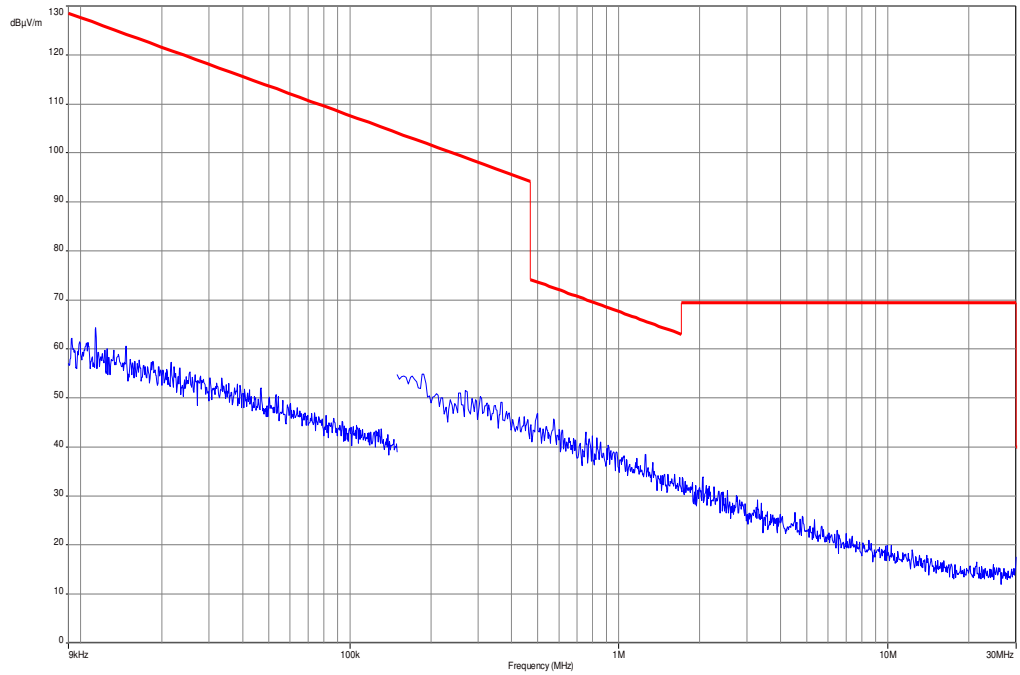
Result: Passed

Plots:

Plot 1: 9 kHz to 30 MHz, TX mode



Plot 2: 9 kHz to 30 MHz, RX mode



9.12 Spurious emissions conducted < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to middle channel. If critical peaks are found the lowest channel and the highest channel will be measured too. 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:

TX Spurious Emissions Conducted < 30 MHz		
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/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

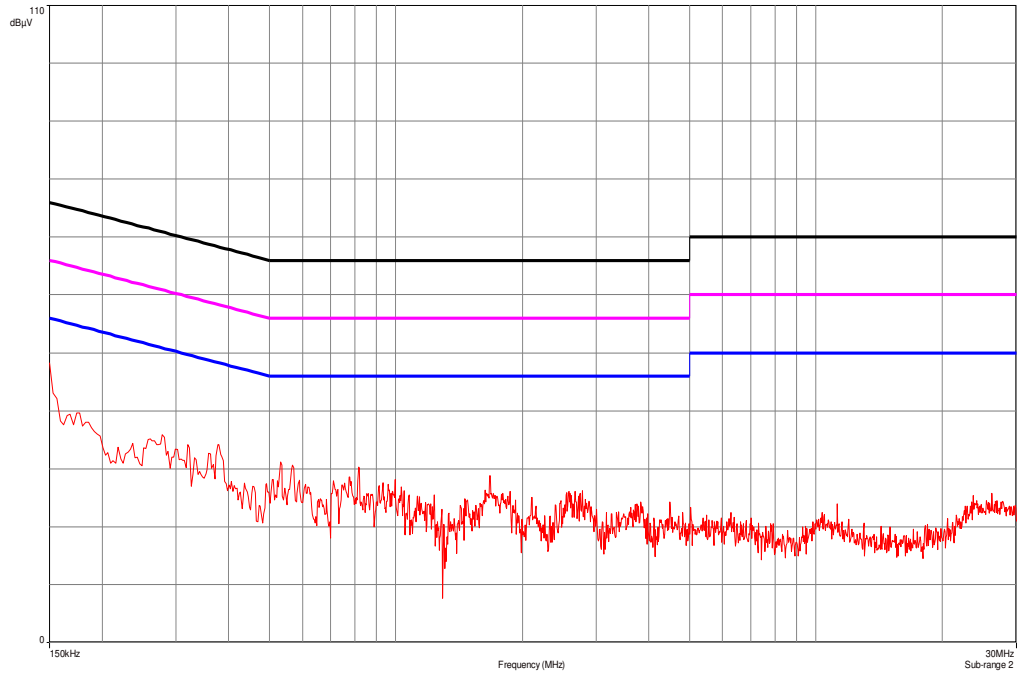
Results:

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

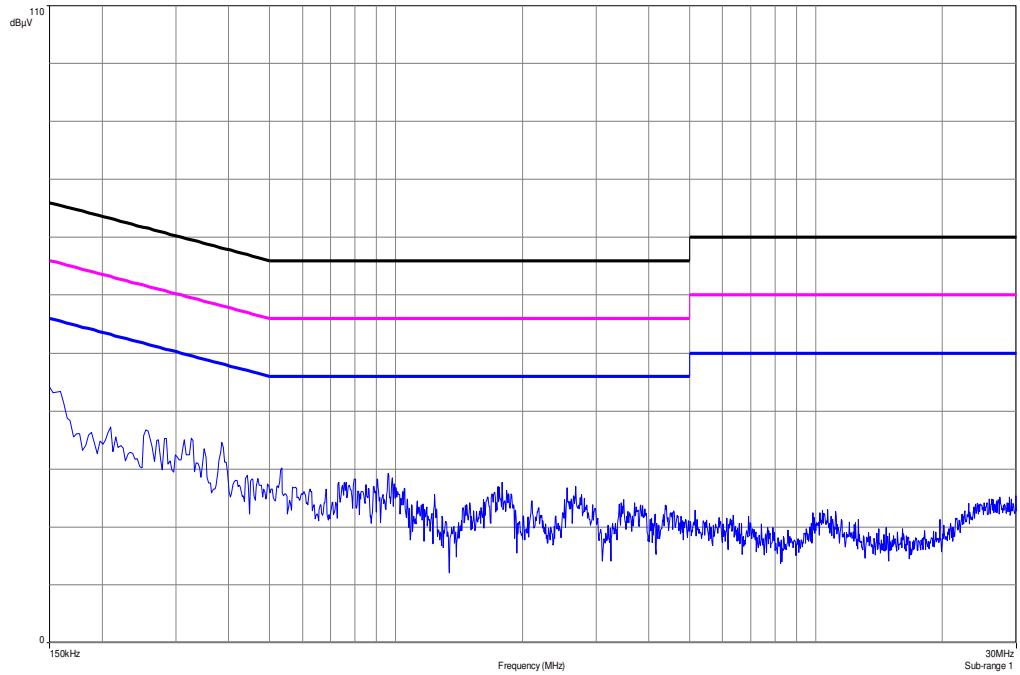
Result: Passed

Plots:

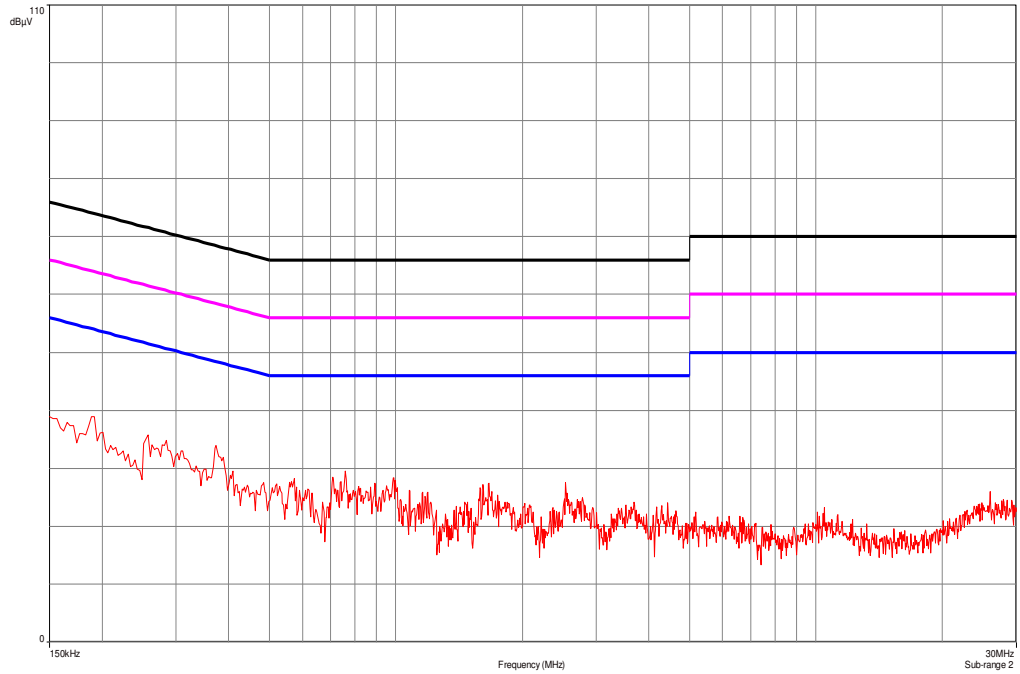
Plot 1: 9 kHz to 30 MHz / phase line, TX mode



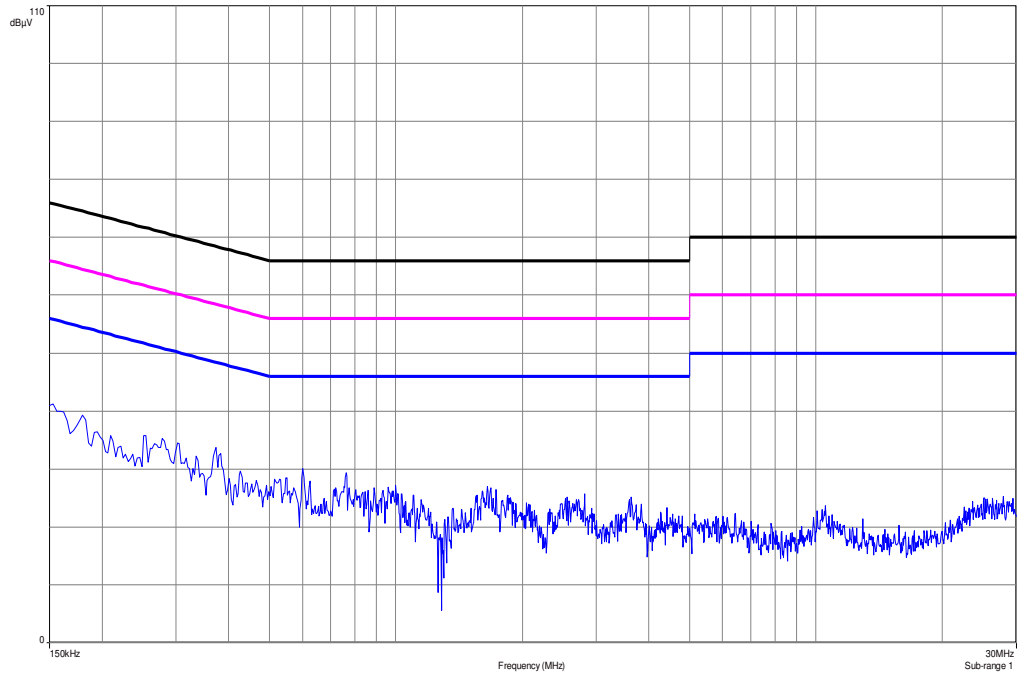
Plot 2: 9 kHz to 30 MHz / neutral line, TX mode



Plot 3: 9 kHz to 30 MHz / phase line, RX mode



Plot 4: 9 kHz to 30 MHz / neutral line, RX mode



10 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.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	11.05.2011	11.05.2013
3	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
4	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
5	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
6	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
7	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
8	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
9	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
10	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
11	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKl!	14.10.2011	14.10.2014
12	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	19.12.2011	19.12.2012
13	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
14	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
15	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
16	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	04.01.2012	04.01.2013
17	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/00205	300003314	k	14.07.2011	14.07.2013
18	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
19	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
20	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
21	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
22	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	12.04.2012	12.04.2014
23	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	06.01.2012	06.01.2014
24	A026	Std. Gain Horn	639	Narda		300000787	ne		

		Antenna 12.4 to 18.0 GHz							
25	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
26	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
27	A022	Std. Gain Horn Antenna 26.4-40.1 GHz	2224-20	Flann	235	300001976	ne		
28	n. a.	Broadband Low Noise Amplifier 18-50 GHz	CBL18503 070-XX	CERNEX	19338	300004273	ne		

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

11 Observations

No observations exceeding those reported with the single test cases have been made.