

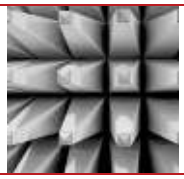

CETECOM™
CETECOM ICT Services
consulting - testing - certification

TEST REPORT

Test report no.: 1-5831/13-05-10-A

Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
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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

Sony Mobile Communications AB
Nya Vattentornet
22188 Lund / SWEDEN
Phone: +46 46 19 30 00
Fax: +46 1 08 00 24 41
Contact: Fredrik Björk
e-mail: Fredrik.Bjork@sonymobile.com
Phone: +46 10 80 14 67 5
Mobile: +46 70 32 40 14 0

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:	**Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD1/19/21; WLAN a/b/g/n; BT 3.1; RFID; FM Rx; A-GPS**
Model name:	**PM-0320-BV**
FCC ID:	**PY7PM-0320**
IC:	**-/-**
Frequency:	UNII bands: 5150 MHz to 5250 MHz; 5250 MHz to 5350 MHz, 5470 MHz to 5600 MHz; 5650 MHz to 5725 MHz
Technology tested:	WLAN
Antenna:	Integrated antenna
Power Supply:	3.7 V DC by Li - Ion battery
Temperature Range:	-20°C to +50°C

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

cn=Andreas Luckenbill, o=CETECOM ICT Services GmbH, ou=LUC-111202, email=andreas.luckenbill@cetecom.com, c=DE
2013.04.30 09:42:54 +02'00'

Andreas Luckenbill
Expert

Test performed:

p.o.

cn=Stefan Boes, o=CETECOM ICT Services GmbH, ou=BOE-111011, email=Stefan.Boes@cetecom.com, c=DE
2013.04.30 09:35:14 +02'00'

Christoph Schneider
Expert

1 Table of contents

2 General information

2.1 Notes and disclaimer

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2013-01-15
Date of receipt of test item:	2013-02-18
Start of test:	2013-02-18
End of test:	2013-04-29
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	2013-04	Guidlines 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}	+50 °C	during high temperature tests
	T_{min}	-20 °C	during low temperature tests
Relative humidity content:		55 %	
Barometric pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	3.7 V	DC by Li - Ion battery
	V_{max}	4.1 V	
	V_{min}	3.3 V	

5 Test item

Kind of test item	:	**Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/V/VI/XIX; LTE FDD1/19/21; WLAN a/b/g/n; BT 3.1; RFID; FM Rx; A-GPS**
Type identification	:	**PM-0320-BV**
S/N serial number	:	**Rad. CB5A1NUBTB, CB5A1NUBM6** **Cond. CB5A1NUBMJ, CB5A1NUBMY**
HW hardware status	:	**AP1**
SW software status	:	**atp_dogo_dcm_0_0_36_0_d**
Frequency band [MHz]	:	**UNII bands:** **5150 MHz to 5250 MHz; 5250 MHz to 5350 MHz,** **5470 MHz to 5600 MHz; 5650 MHz to 5725 MHz**
Type of radio transmission **Use of frequency spectrum**	: :	**OFDM**
Type of modulation	:	**QPSK, 16-QAM, 64-QAM**
Number of channels	:	**19**
Antenna	:	**Integrated antenna**
Power supply	:	**3.7 V DC by Li - Ion battery**
Temperature range	:	**-20°C to +50 °C**

5.1 Additional information

External EUT photos: 1-5831/13-05-01_AnnexA
Internal EUT photos: 1-5831/13-05-01_AnnexB
Test setup: 1-5831/13-05-01_AnnexD

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	2013-04-30	-/-

Test specification clause	Test case	Guideline	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 guide	Duty cycle	KDB 789033 U-NII clause B	Nominal	Nominal	☐	☐	☐	☐	No passed / fail criteria!
§15.407(a) RSS-210	Maximum output power (conducted & radiated)	KDB 789033 U-NII clause E, Method SA-2 Alternative	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a) RSS-210	Power spectral density	KDB 789033 U-NII clause F	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a) RSS-210	Spectrum bandwidth 26dB bandwidth	KDB 789033 U-NII clause C	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(a) RSS-210	Peak excursion measurements	KDB 789033 U-NII clause G	Nominal	Nominal	☒	☐	☐	☐	complies
§15.205 RSS-210	Band edge compliance radiated		Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(b) RSS-210	TX spurious emissions radiated		Nominal	Nominal	☒	☐	☐	☐	complies
§15.109 RSS-Gen	RX spurious emissions radiated		Nominal	Nominal	☒	☐	☐	☐	complies
§15.209(a) RSS-Gen	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

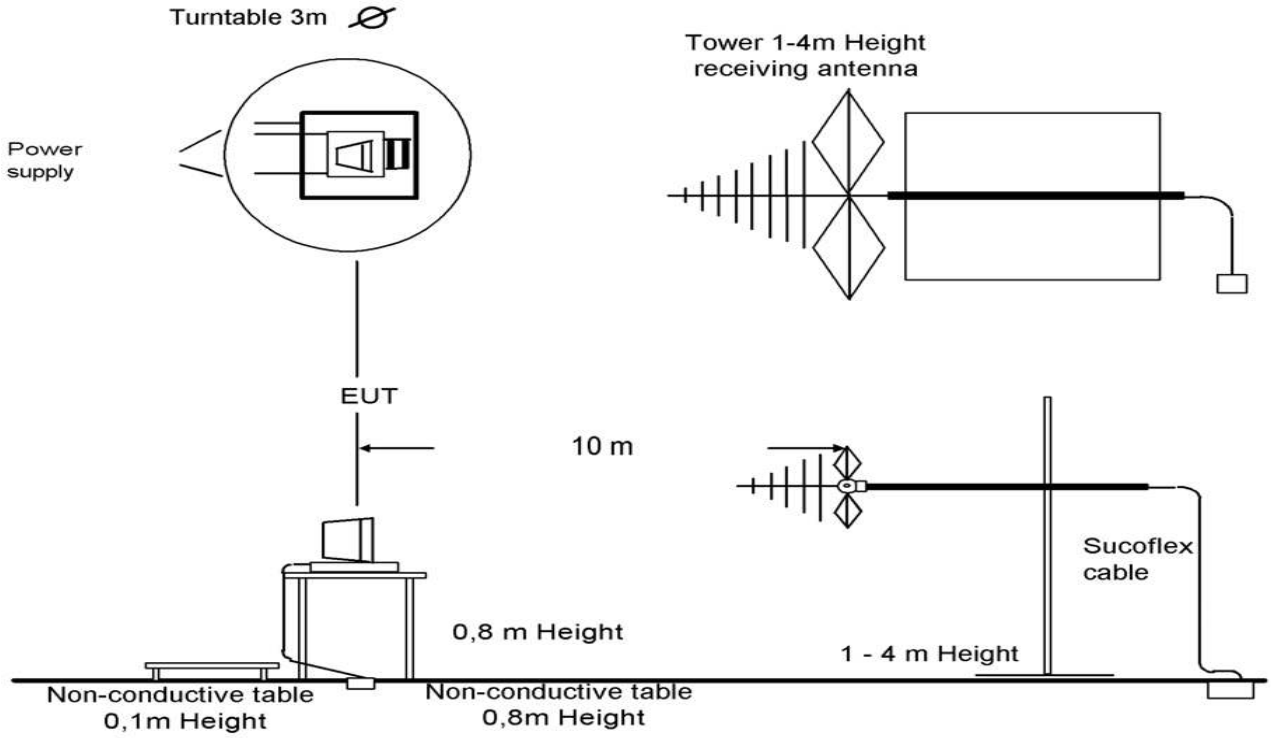
8 RF measurements

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



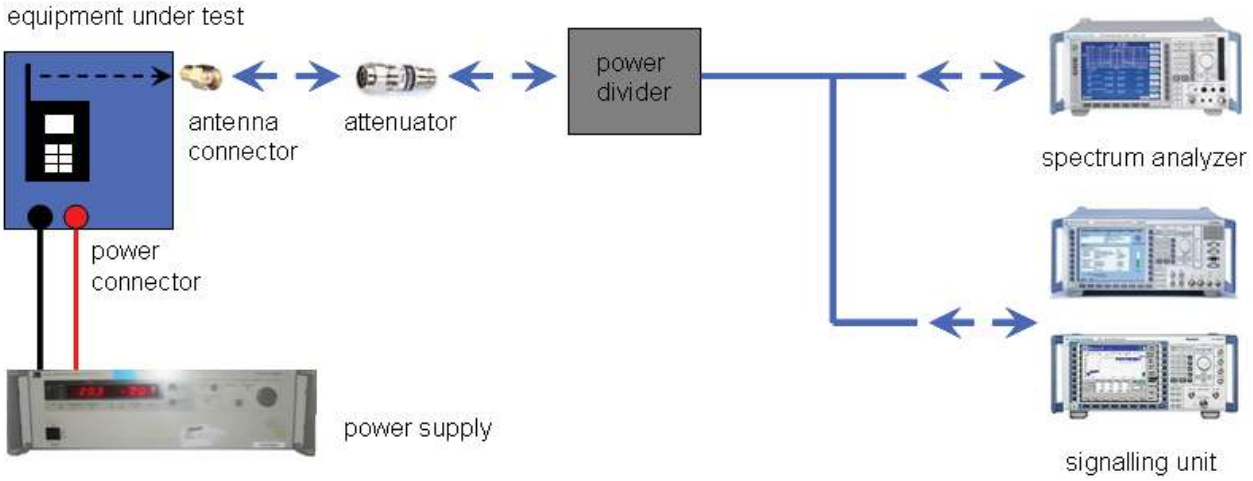
Picture 1: Diagram radiated measurements

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. The results shows the only the middle channel in all modes and all data rates as an example for the variation of the power over all modes. The mode with the highest output power per channel (low, mid, high) 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	19.0	19.5	19.2	19.5	19.3	19.5	19.4	19.6
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	18.8	18.5	18.5	19.0	18.8	18.9	18.6	18.6
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	18.5	18.3	18.3	17.9	18.2	18.4	18.2	18.1
Measurement uncertainty	± 0.5 dB							

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

OFDM / a – mode: **54 MBit/s**
OFDM / n – mode HT20: **MCS3**
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:	5s
Resolution bandwidth:	3 MHz
Video bandwidth:	8 MHz / 10 MHz
Span:	See complete signal!
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	10.2		10.2
Conducted power for gain calculation	12.9		13.1
Gain	-2.7		-2.9
Measurement uncertainty	± 3 dB		

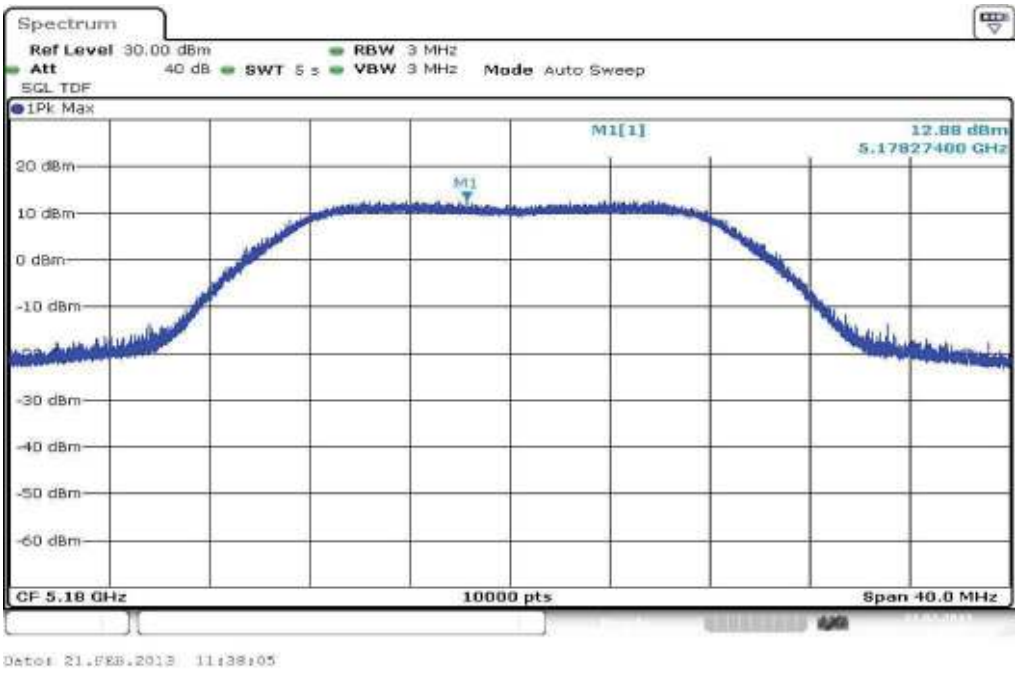
OFDM Band 5250 MHz to 5350 MHz Channel	**Gain**		
	Lowest 5260 MHz		Highest 5320 MHz
Radiated power for gain calculation	11.2		10.5
Conducted power for gain calculation	13.8		12.6
Gain	-2.6		-2.1
Measurement uncertainty	± 3 dB		

OFDM Band 5470 MHz to 5725 MHz Channel	**Gain**		
	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz
Radiated power for gain calculation	10.7	11.6	12.1
Conducted power for gain calculation	12.1	11.4	11.3
Gain	-1.4	0.2	0.8
Measurement uncertainty	± 3 dB		

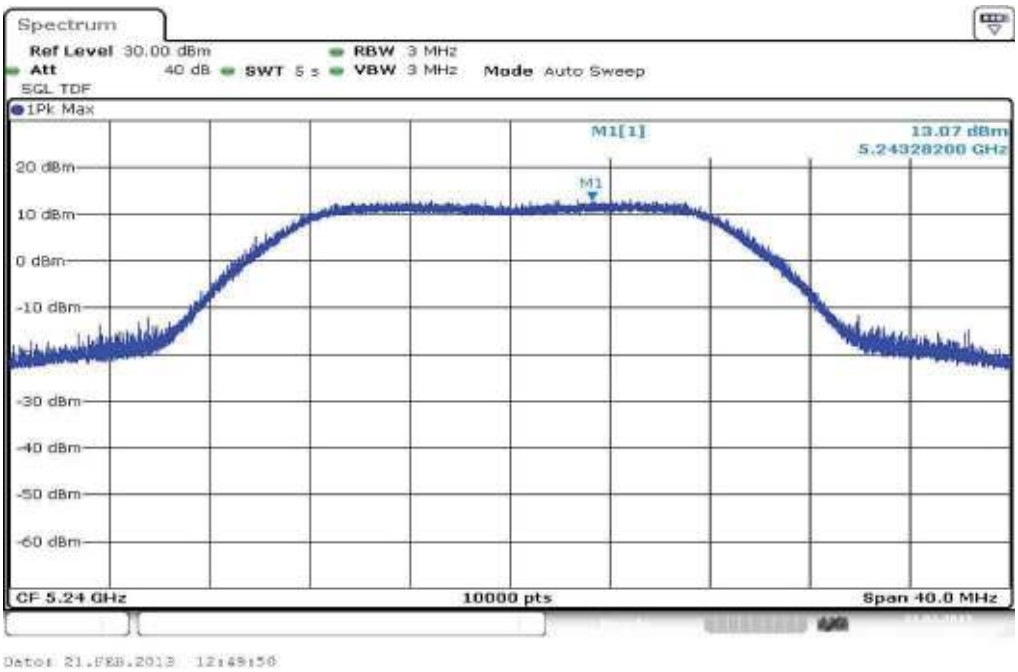
Result: **Passed**

Plots: conducted power for gain calculation

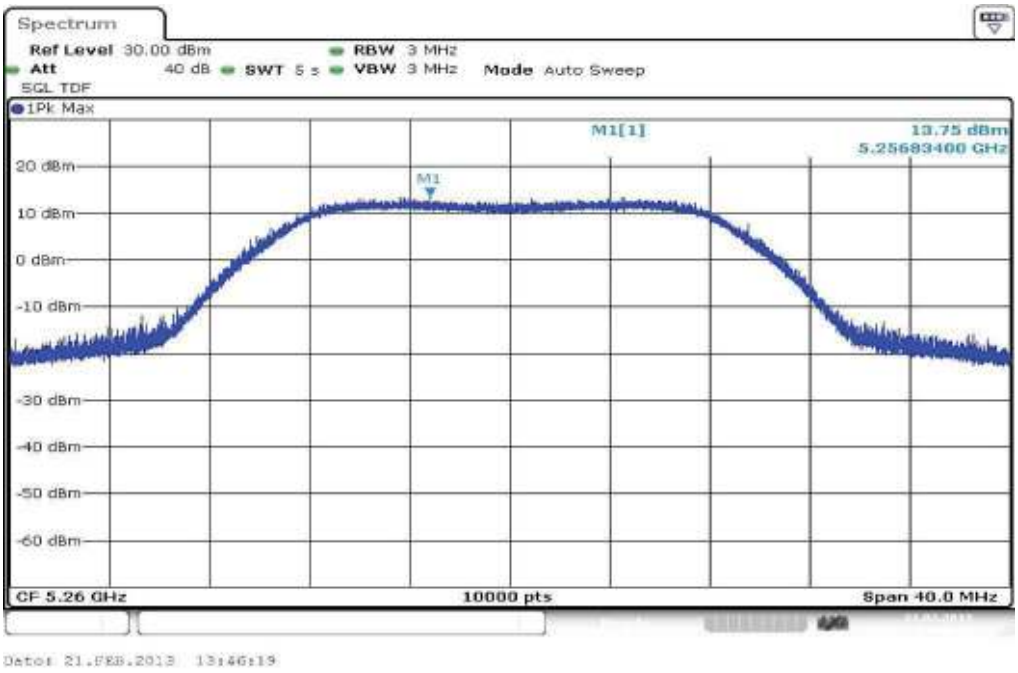
Plot 1: OFDM / a – mode, 5180 MHz



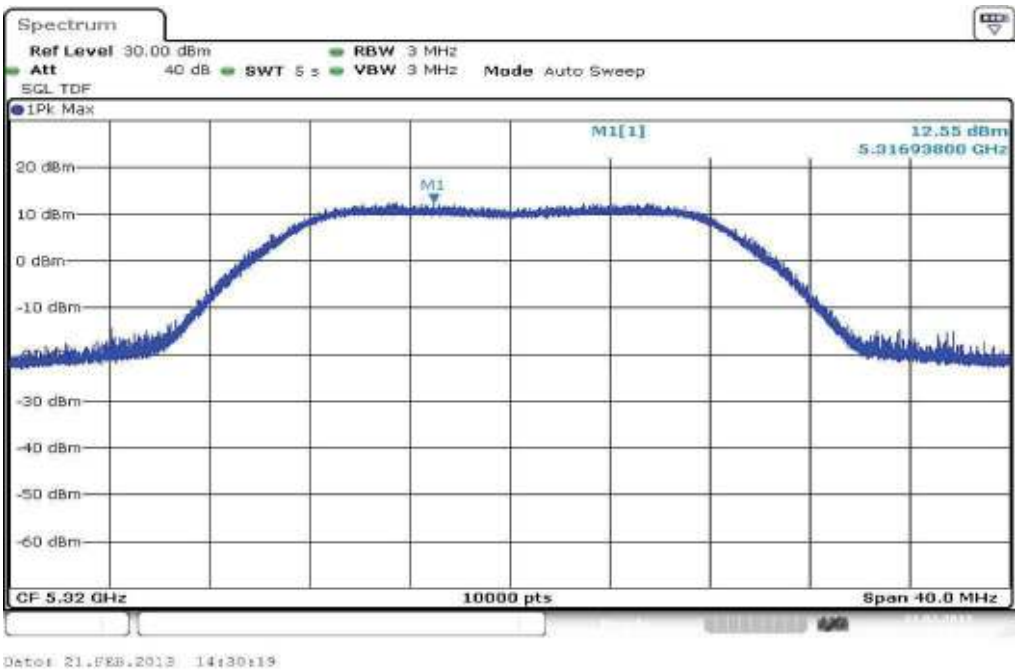
Plot 2: OFDM / a – mode, 5240 MHz



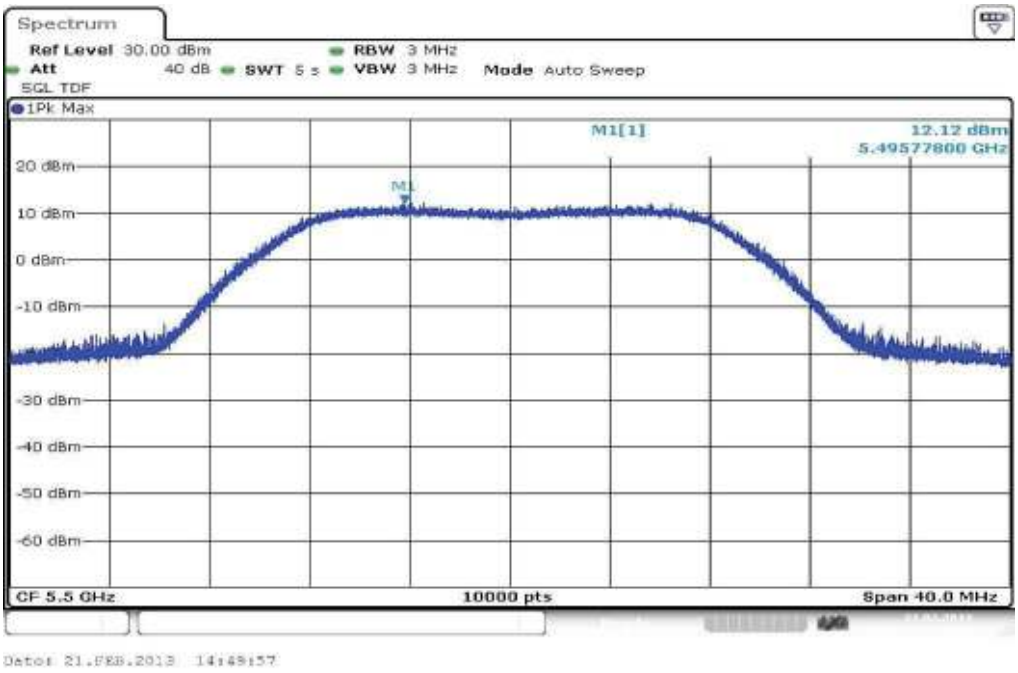
Plot 3: OFDM / a – mode, 5260 MHz



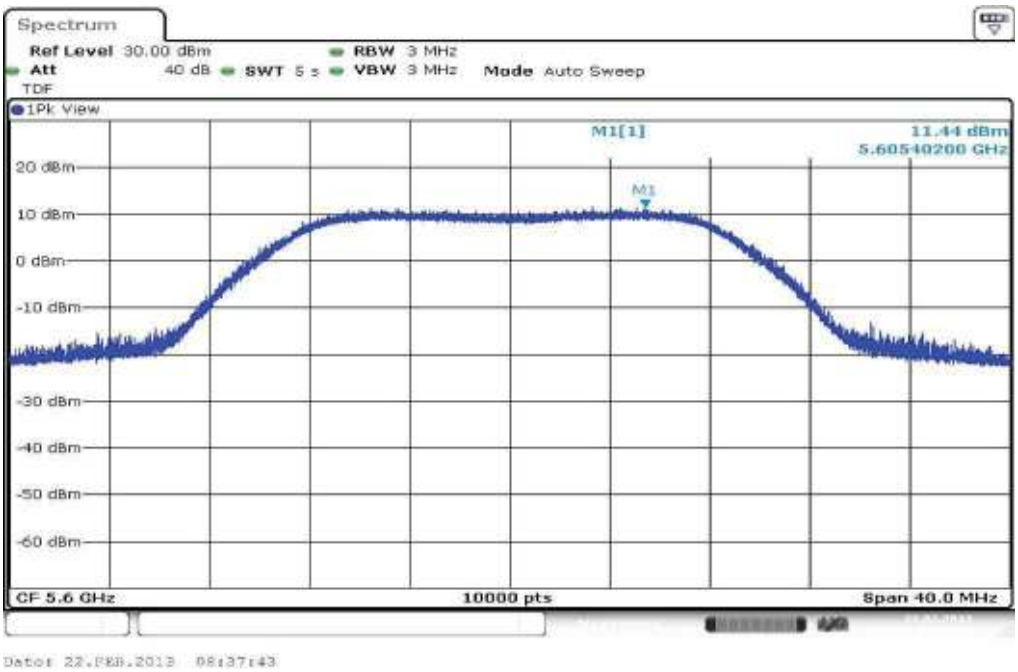
Plot 4: OFDM / a – mode, 5320 MHz



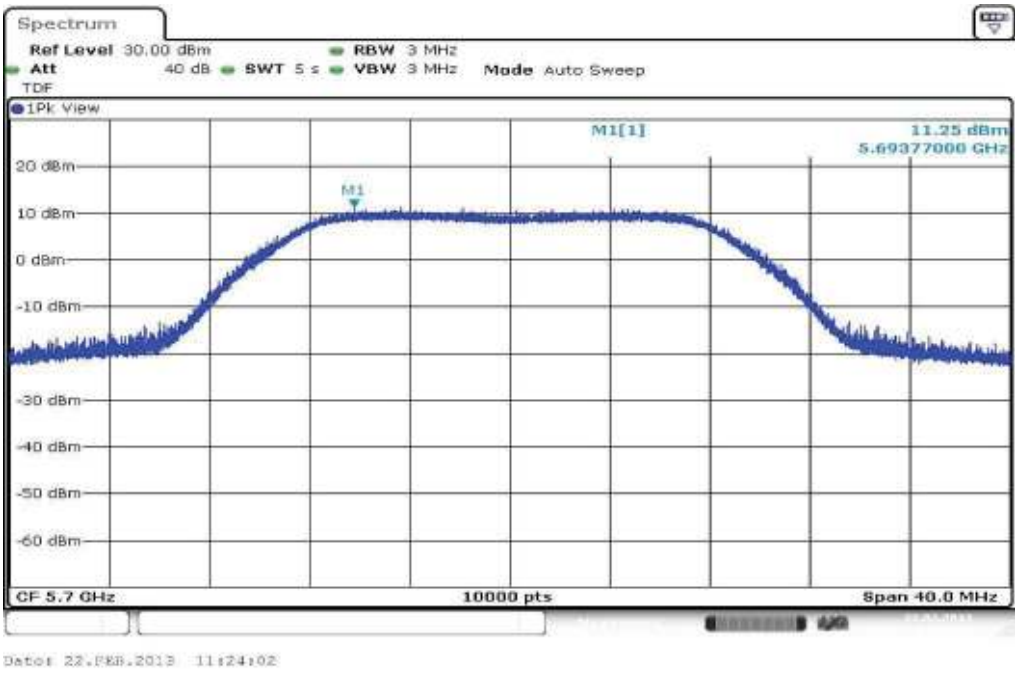
Plot 5: OFDM / a – mode, 5500 MHz



Plot 6: OFDM / a – mode, 5600 MHz



Plot 7: OFDM / a – mode, 5700 MHz



9.3 Duty cycle

Measurement:

Measurement parameter	
According to U-NII clause B	
Detector:	Peak
Sweep time:	adjusted to burst length
Resolution bandwidth:	40 MHz
Video bandwidth:	40 MHz
Span:	Zero
Trace-Mode:	Single sweep
Sweep points:	32001

Results:

Duty cycle and correction factor:

OFDM / a – mode:	98.44 % duty cycle	=>	0.07 dB
OFDM / n – mode HT20:	99.43 % duty cycle	=>	0.03 dB
OFDM / n – mode HT40:	98.86 % duty cycle	=>	0.05 dB

9.4 Maximum output power conducted and radiated

Description:

Measurement of the maximum output power conduced and radiated

Measurement:

Measurement parameter	
According to U-NII clause E, Method SA-2 Alternative	
Detector:	RMS
Sweep time:	60s
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 5.150-5.250 GHz 250mW or 11 dBm + 10 log Bandwidth 5.250-5.350 GHz 250mW or 11 dBm + 10 log Bandwidth 5.470-5.725 GHz 1W or 17 dBm + 10 log Bandwidth 5.725-5.825 GHz (where Bandwidth is the 26dB Bandwidth [MHz])

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
+0.07 dB duty cycle correction	9.1	9.5	9.8	8.8
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.07 dB duty cycle correction	8.3	7.8	7.5	
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
+0.07 dB duty cycle correction	6.4	6.6	7.2	6.7
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.07 dB duty cycle correction	6.9	8.0	8.3	
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
+0.03 dB duty cycle correction	7.7	7.3	7.6	7.1
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.03 dB duty cycle correction	6.0	6.6	6.2	
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
+0.03 dB duty cycle correction	5.0	4.4	5.0	5.0
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.03 dB duty cycle correction	4.6	6.8	7.0	
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
+0.05 dB duty cycle correction	7.7	7.4	7.9	7.8
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.05 dB duty cycle correction	5.6	6.8	7.5	-/-
Measurement uncertainty	± 1 dB			

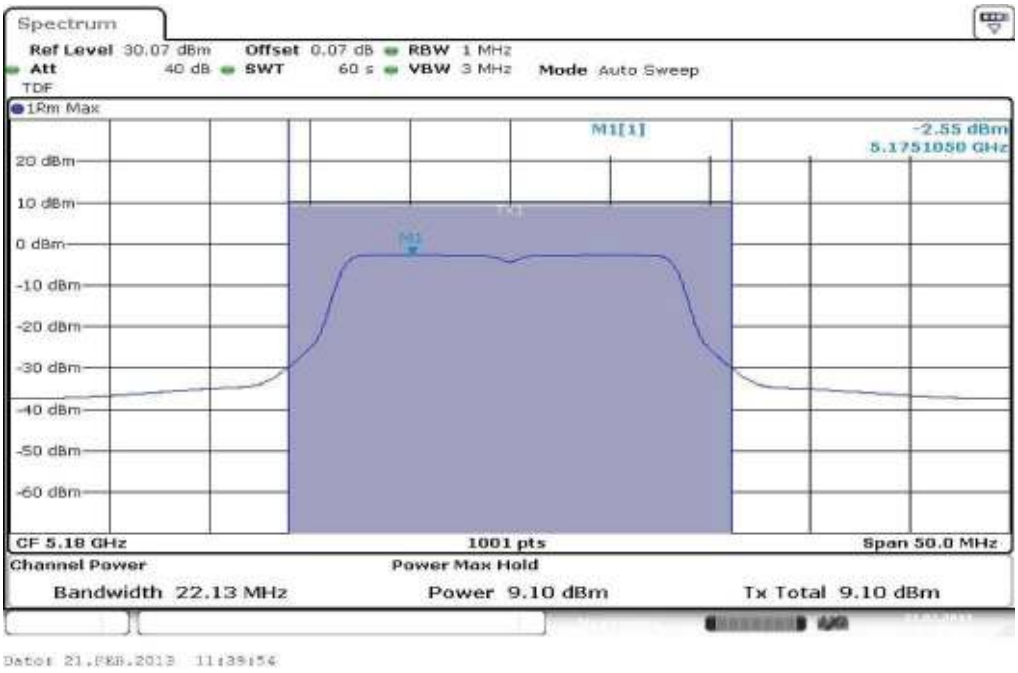
Result: Passed

OFDM / n – mode HT40	Maximum output power radiated - EIRP [dBm]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
+0.05 dB duty cycle correction	5.0	4.5	5.3	5.7
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.05 dB duty cycle correction	4.2	7.0	8.3	
Measurement uncertainty	± 3 dB			

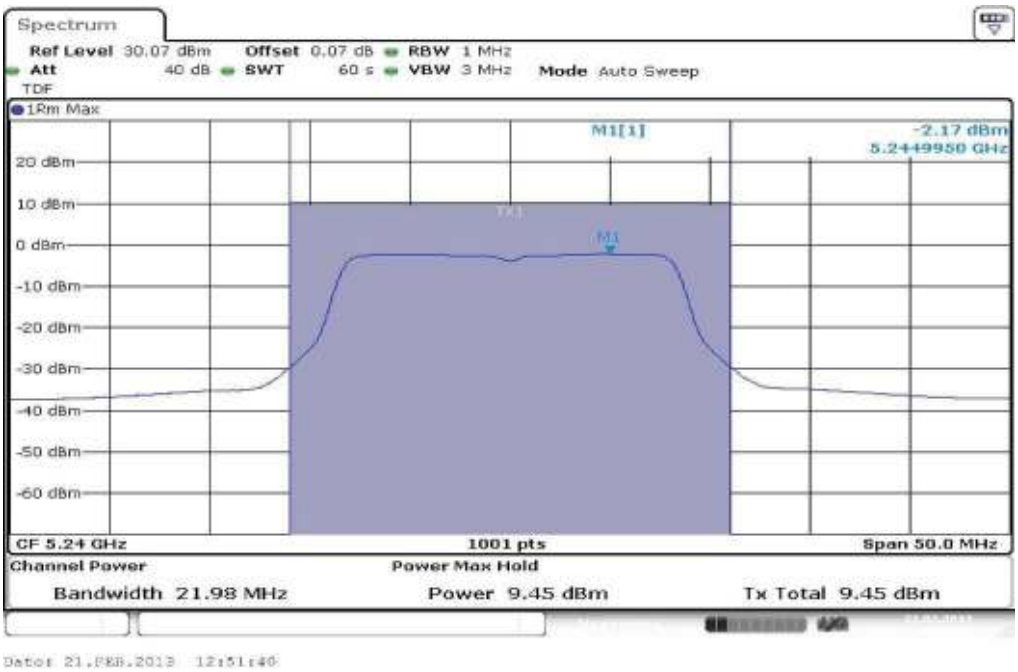
Result: Passed

Plots: OFDM / a – mode

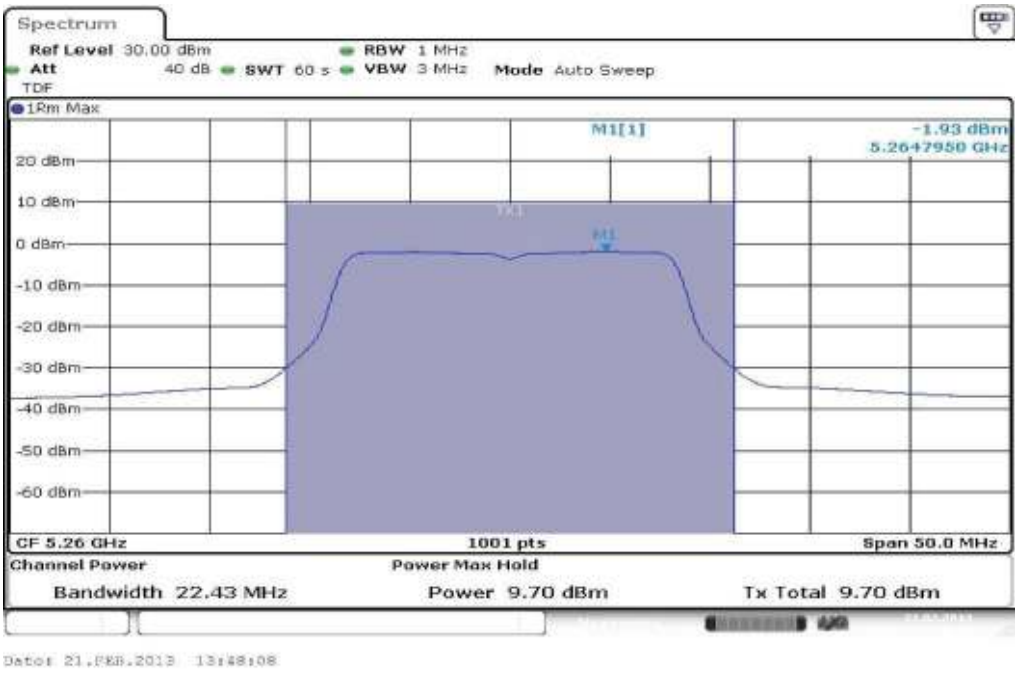
Plot 1: 5180 MHz



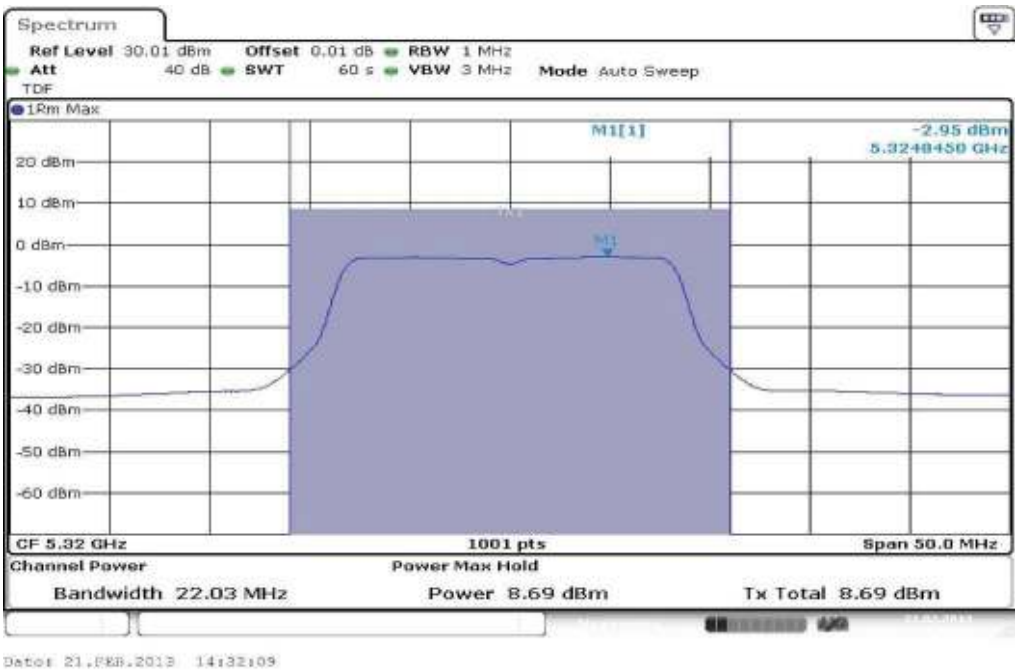
Plot 2: 5240 MHz



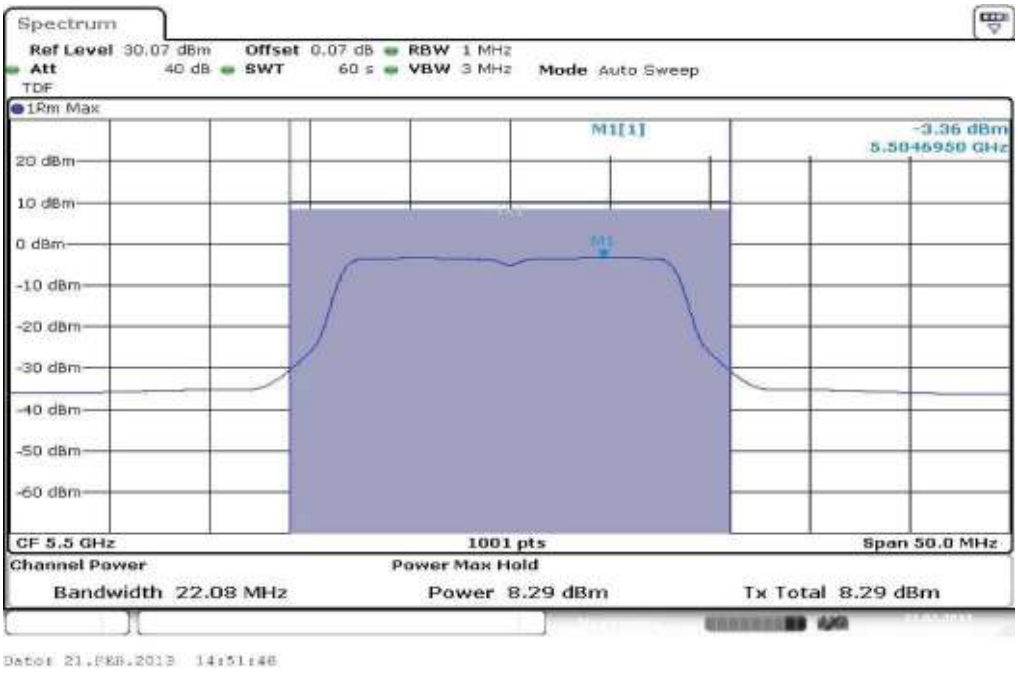
Plot 3: 5260 MHz



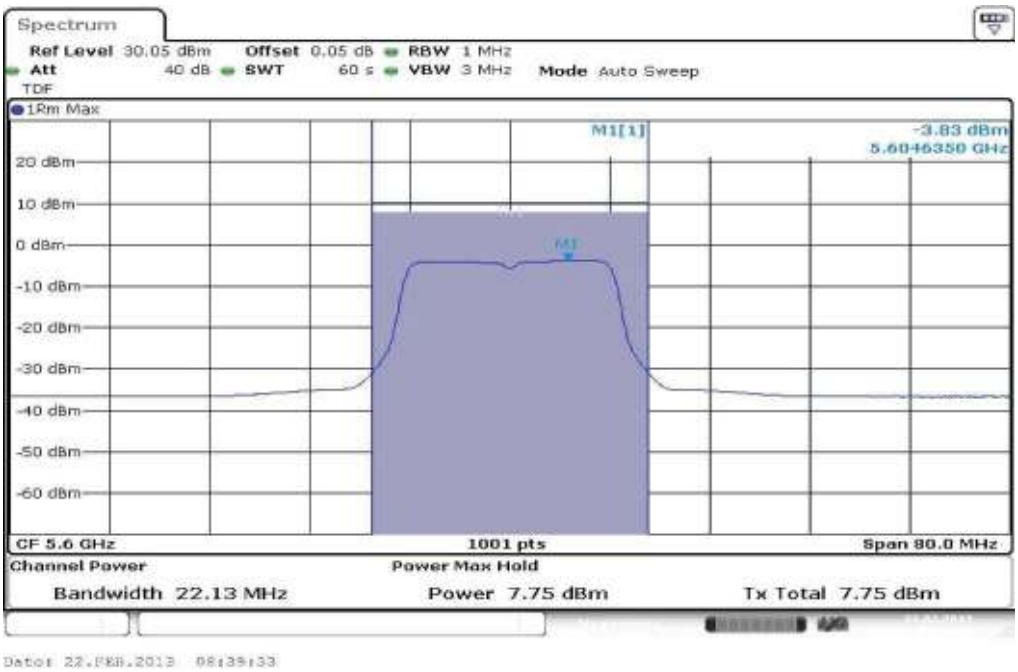
Plot 4: 5320 MHz



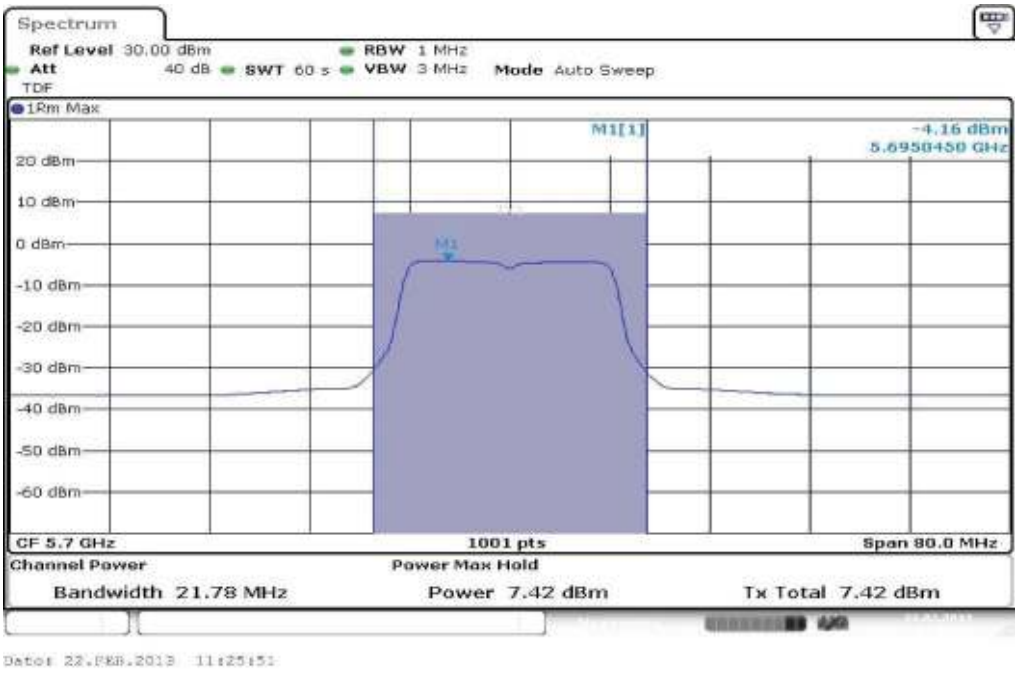
Plot 5: 5500 MHz



Plot 6: 5600 MHz

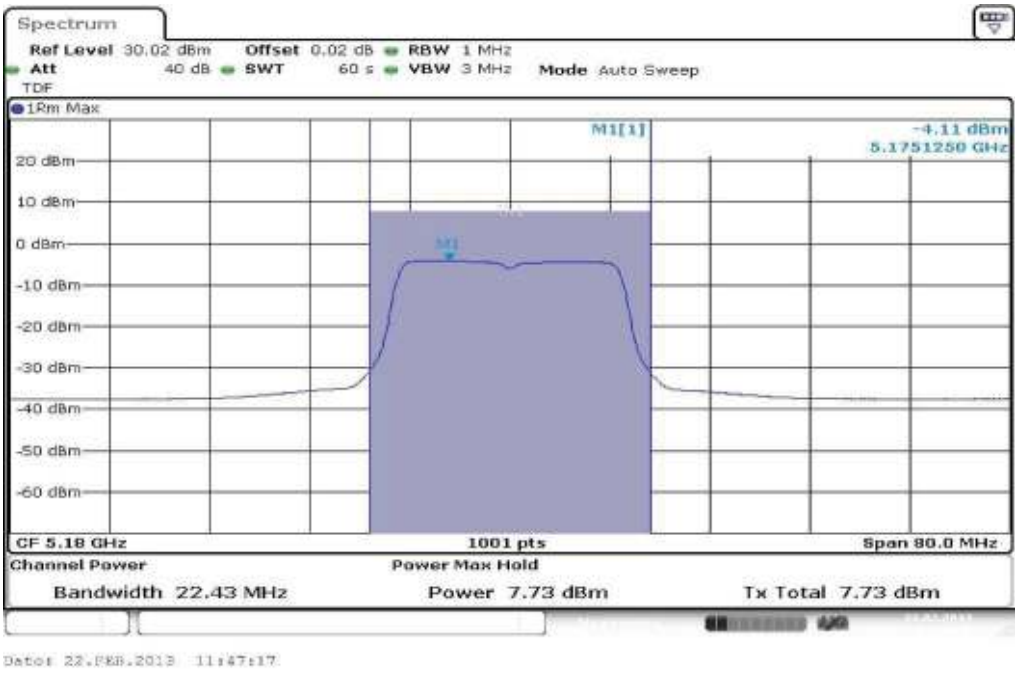


Plot 7: 5700 MHz

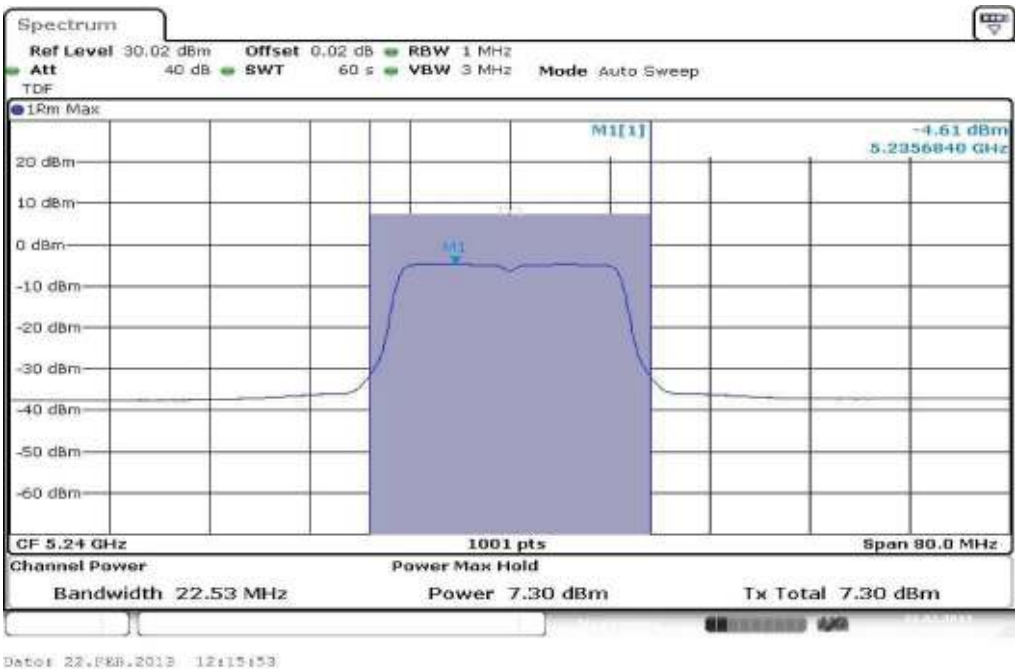


Plots: OFDM / n – mode HT20

Plot 1: 5180 MHz

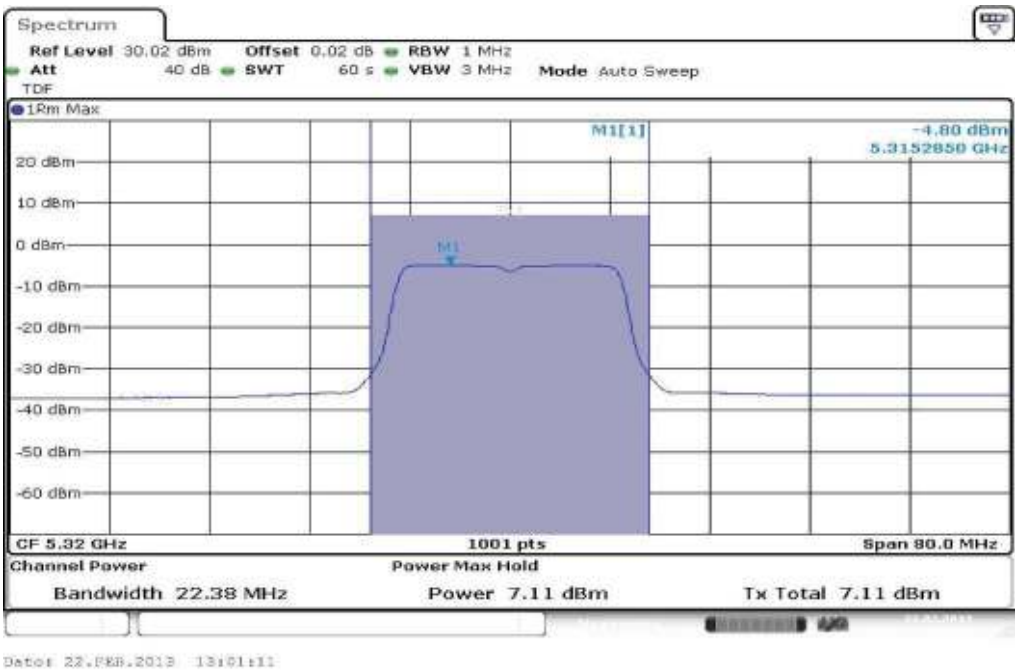


Plot 2: 5240 MHz

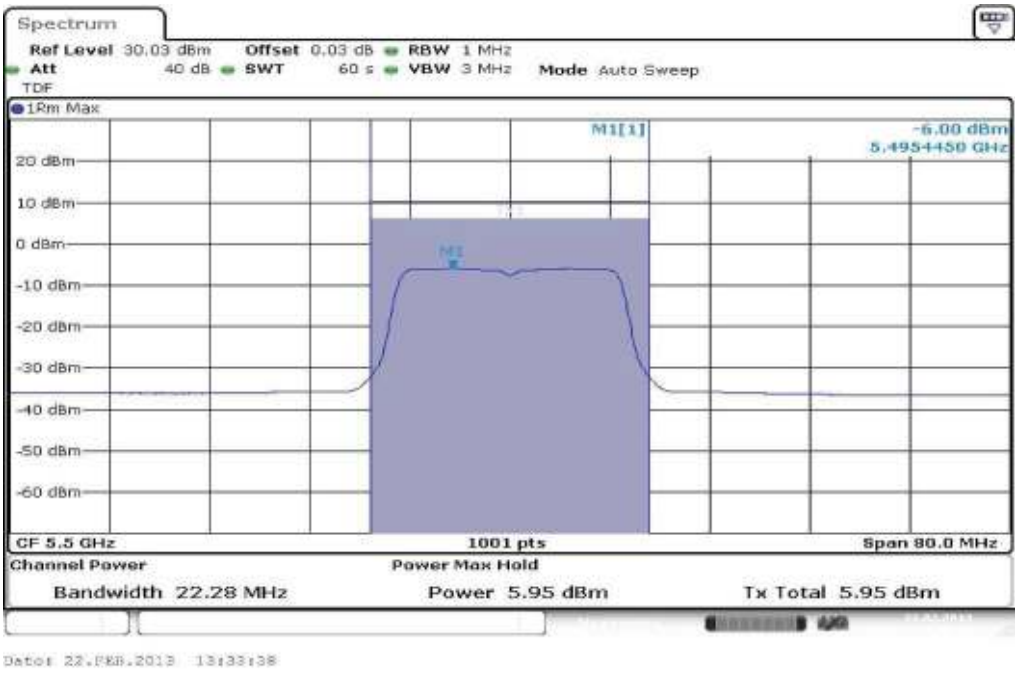


Plot 3: 5260 MHz

Plot 4: 5320 MHz

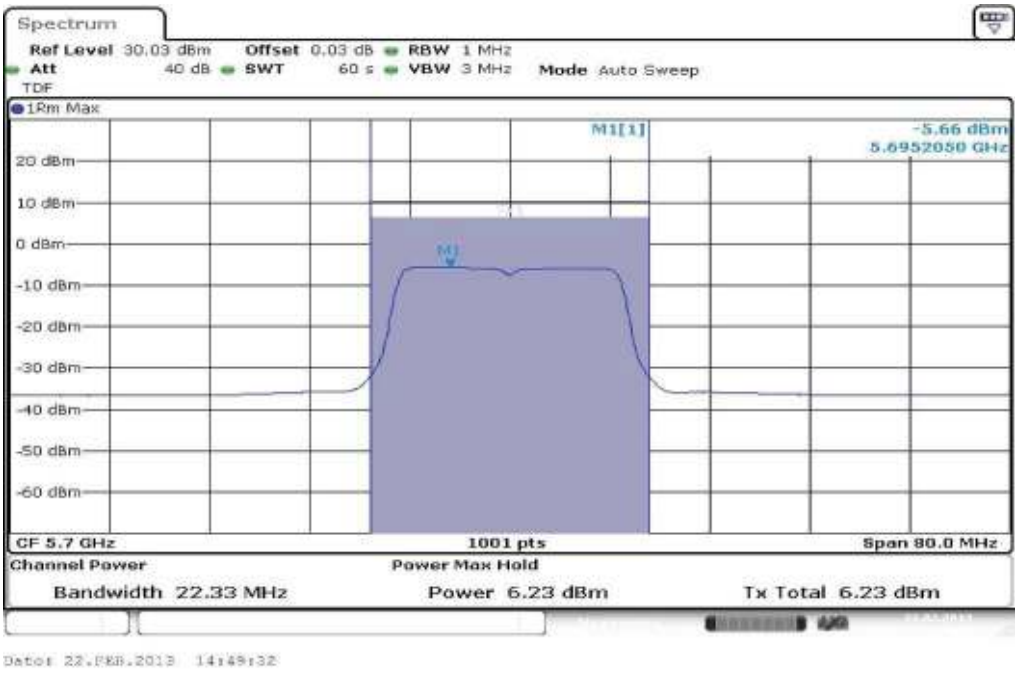


Plot 5: 5500 MHz



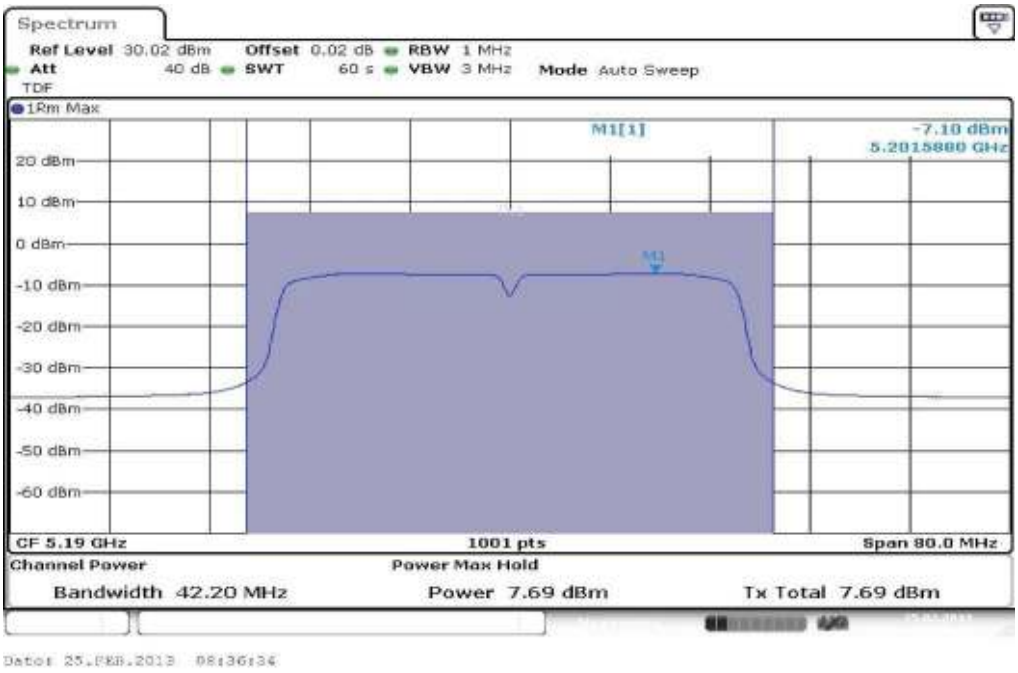
Plot 6: 5600 MHz

Plot 7: 5700 MHz

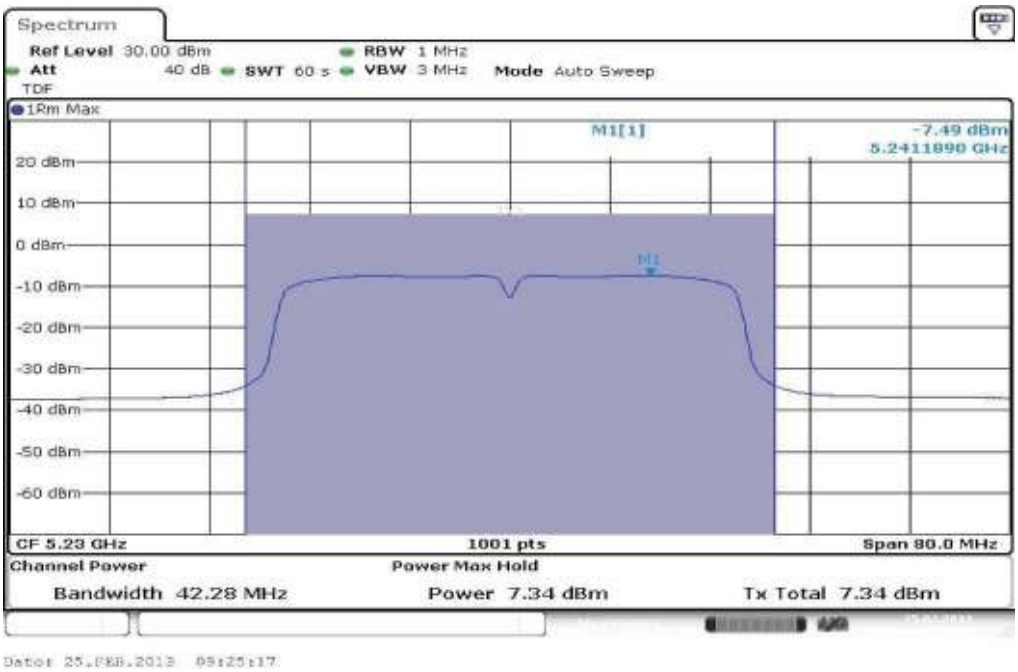


Plots: OFDM / n – mode HT40

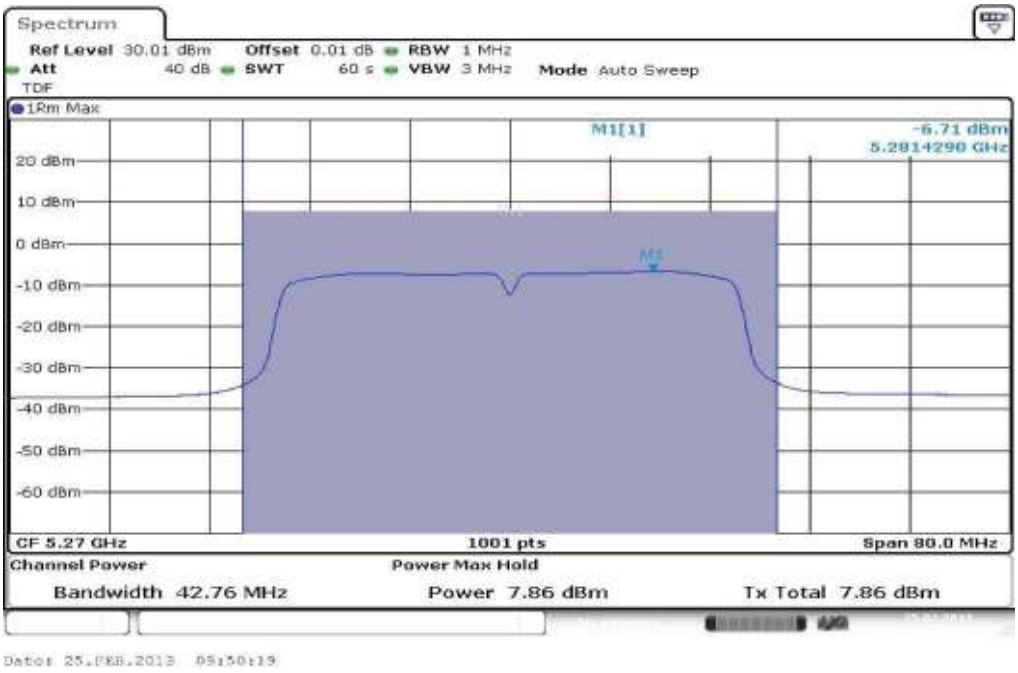
Plot 1: 5190 MHz



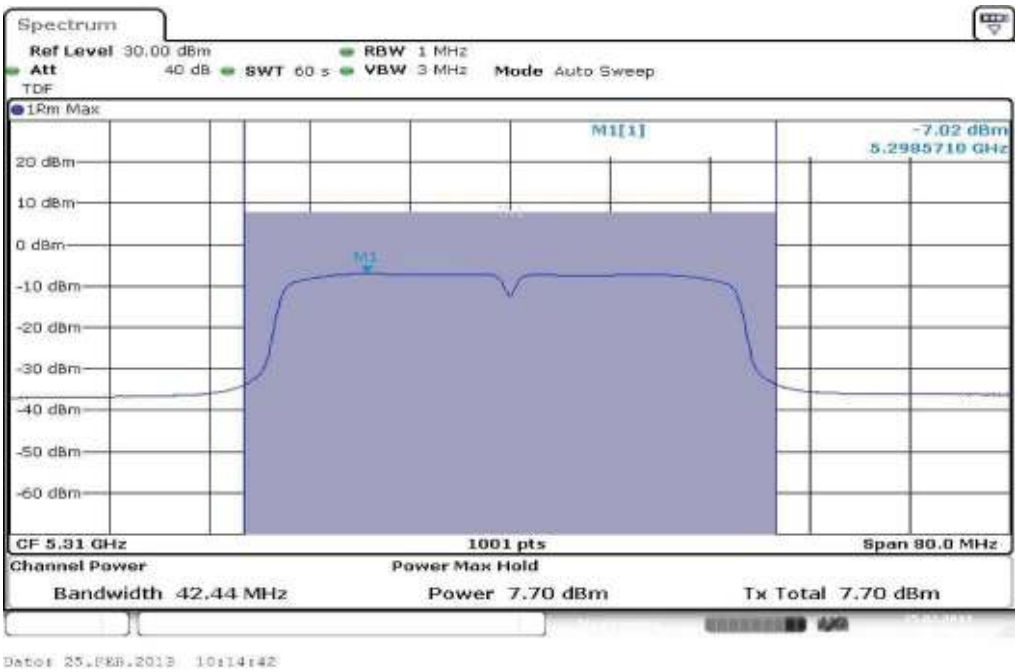
Plot 2: 5230 MHz



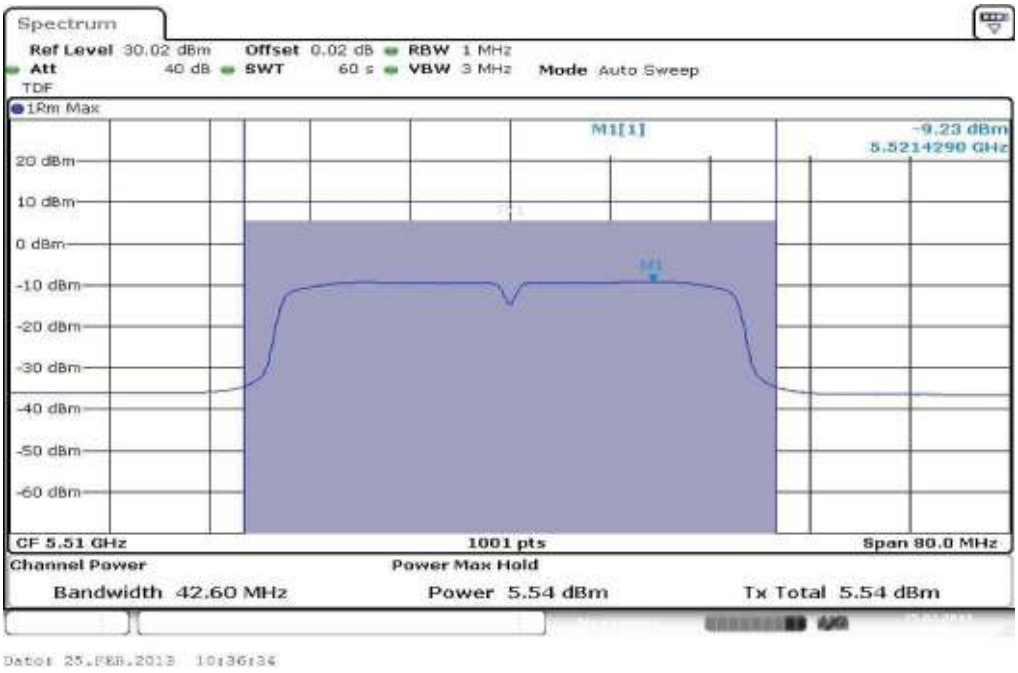
Plot 3: 5270 MHz



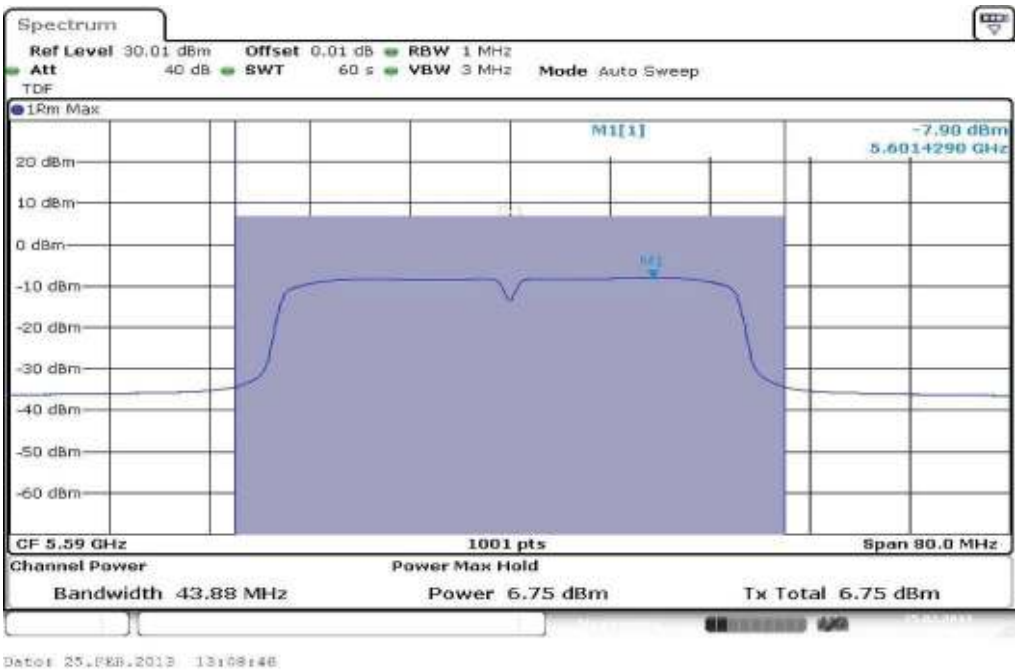
Plot 4: 5310 MHz



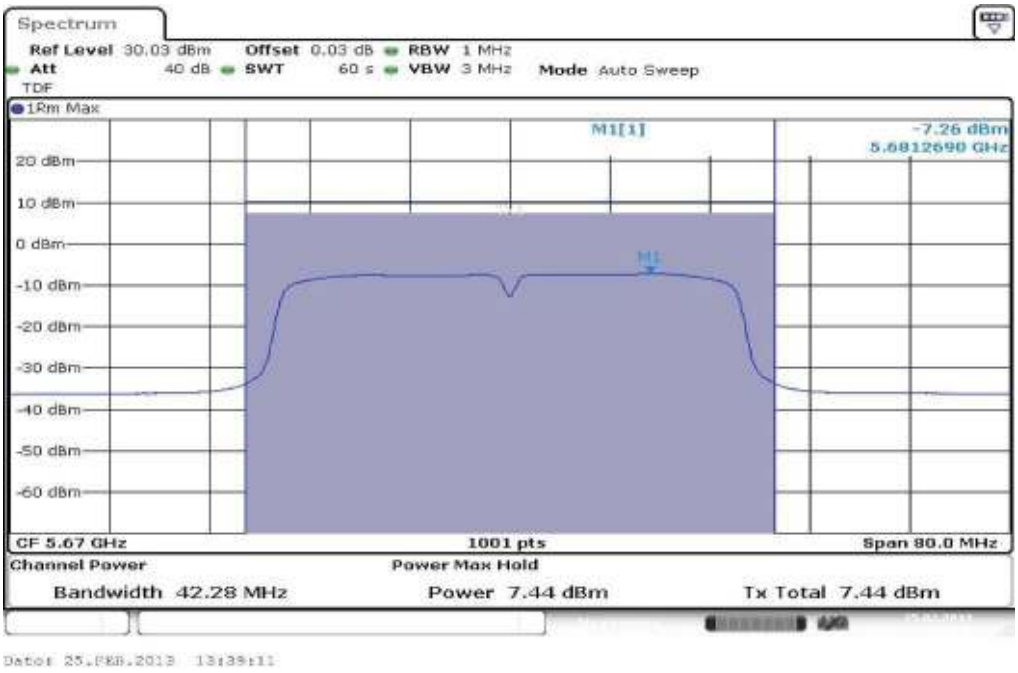
Plot 5: 5510 MHz



Plot 6: 5590 MHz



Plot 7: 5670 MHz



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	
According to U-NII clause F	
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) power spectral density conducted ≤ 17 dBm in any 1 MHz band (band 5725 – 5825 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
+0.07 dB duty cycle correction	-2.43	-2.00	-1.77	-2.79
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.07 dB duty cycle correction	-3.21	-3.68	-4.00	
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
+0.03 dB duty cycle correction	-4.01	-4.48	-4.21	-4.68
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
+0.03 dB duty cycle correction	-5.87	-5.15	-5.53	
Measurement uncertainty	± 1 dB			

Result: Passed

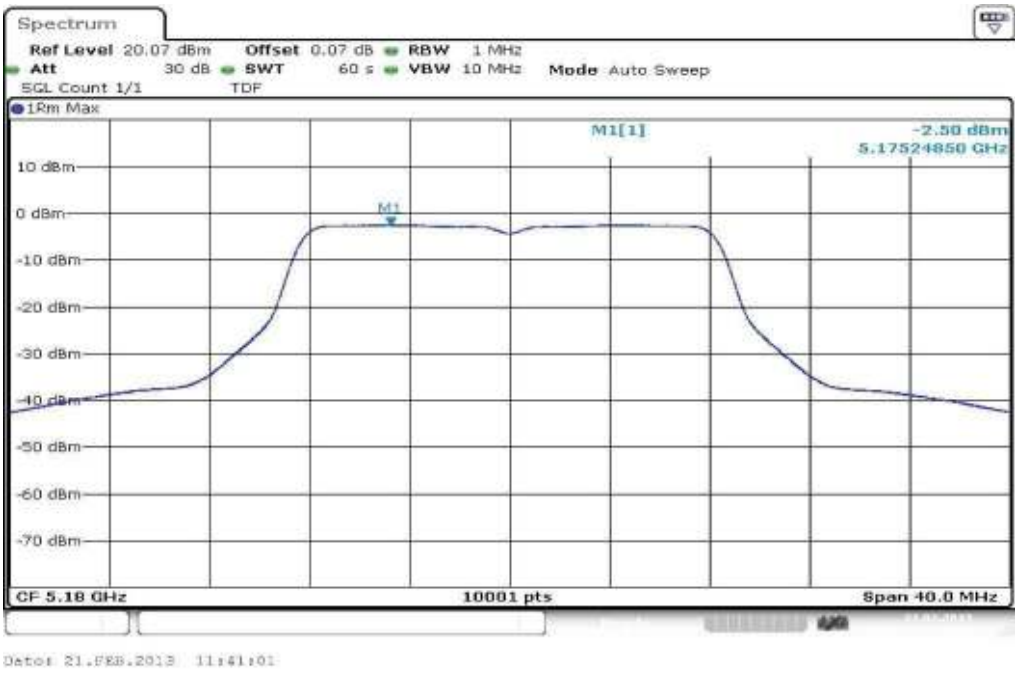
Result: OFDM / n – mode HT40

OFDM / n – mode HT40	Power Spectral density [dBm/MHz]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
+0.05 dB duty cycle correction	-7.05	-7.39	-6.69	-6.97
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
+0.05 dB duty cycle correction	-9.15	-7.83	-7.20	-/-
Measurement uncertainty	± 1 dB			

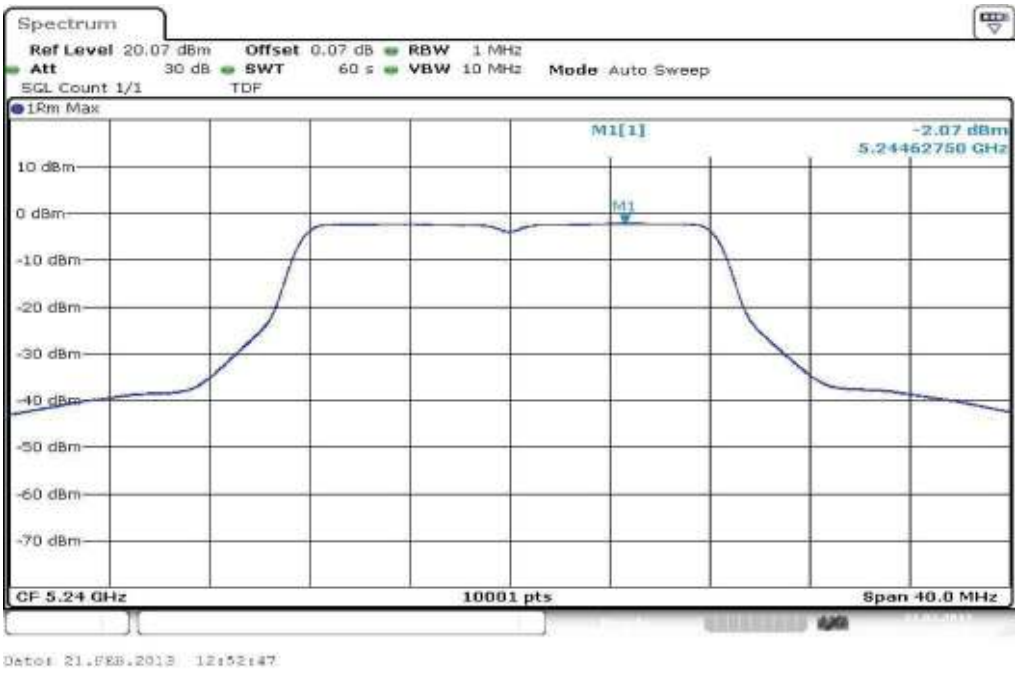
Result: Passed

Plots: OFDM / a – mode

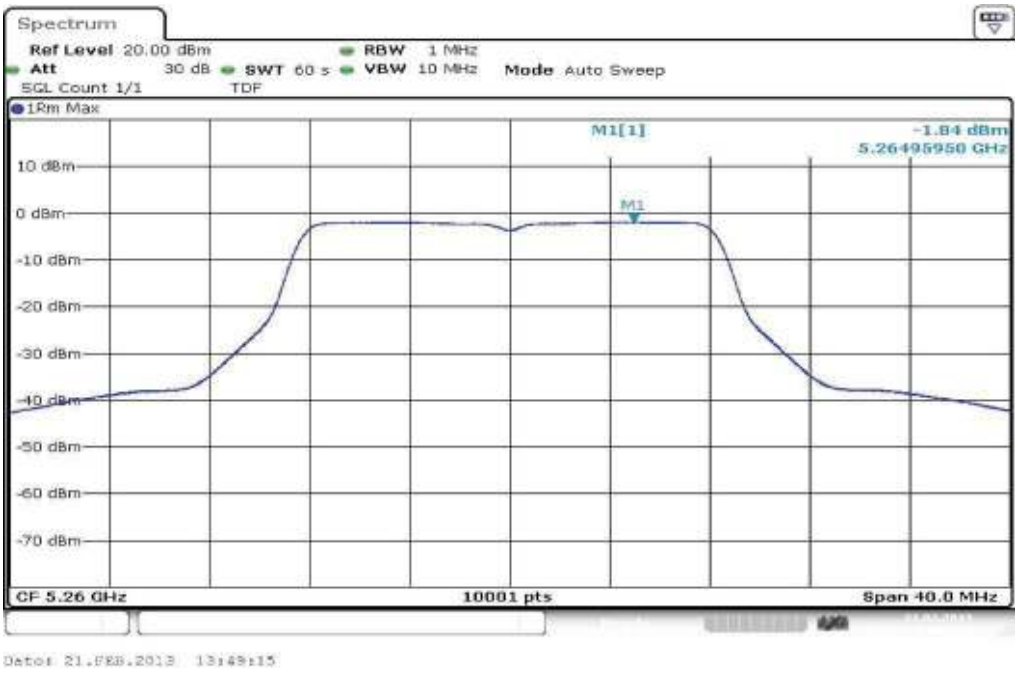
Plot 1: 5180 MHz



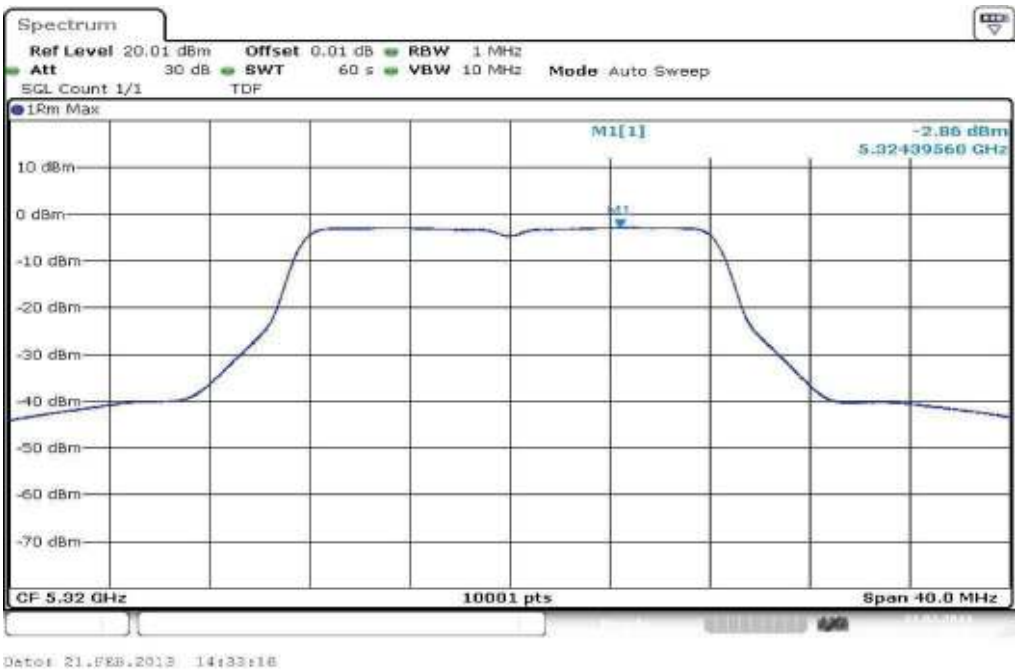
Plot 2: 5240 MHz



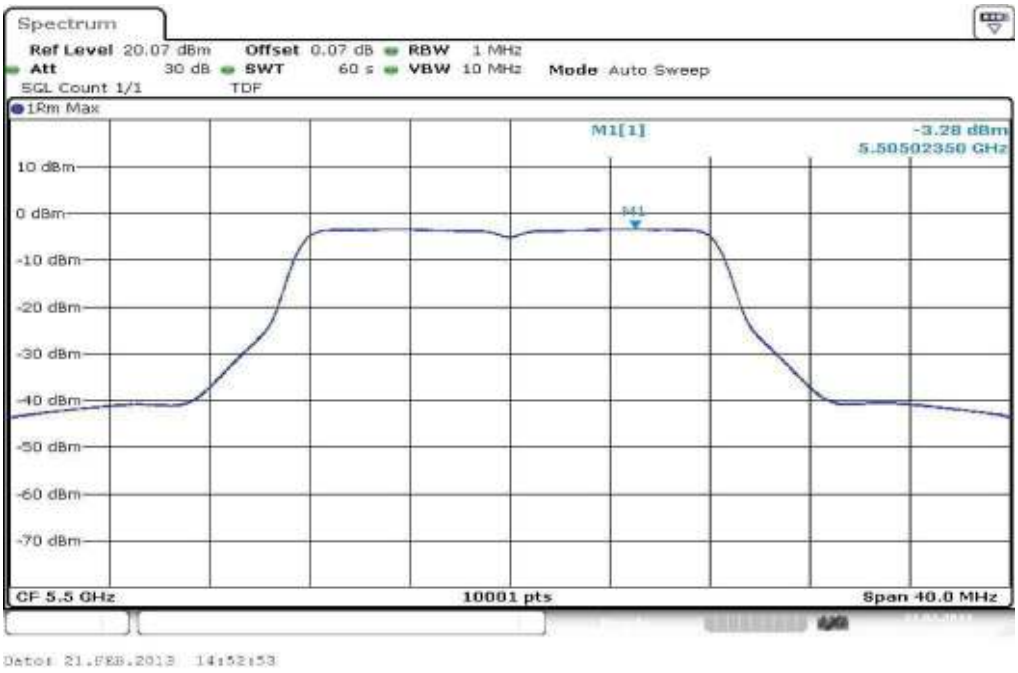
Plot 3: 5260 MHz



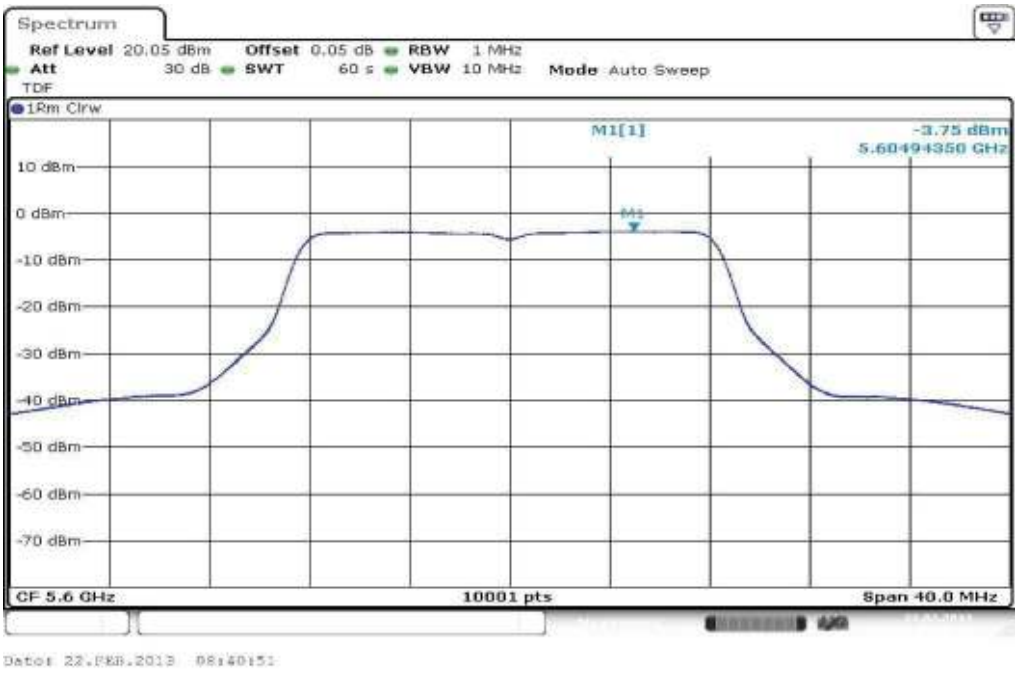
Plot 4: 5320 MHz



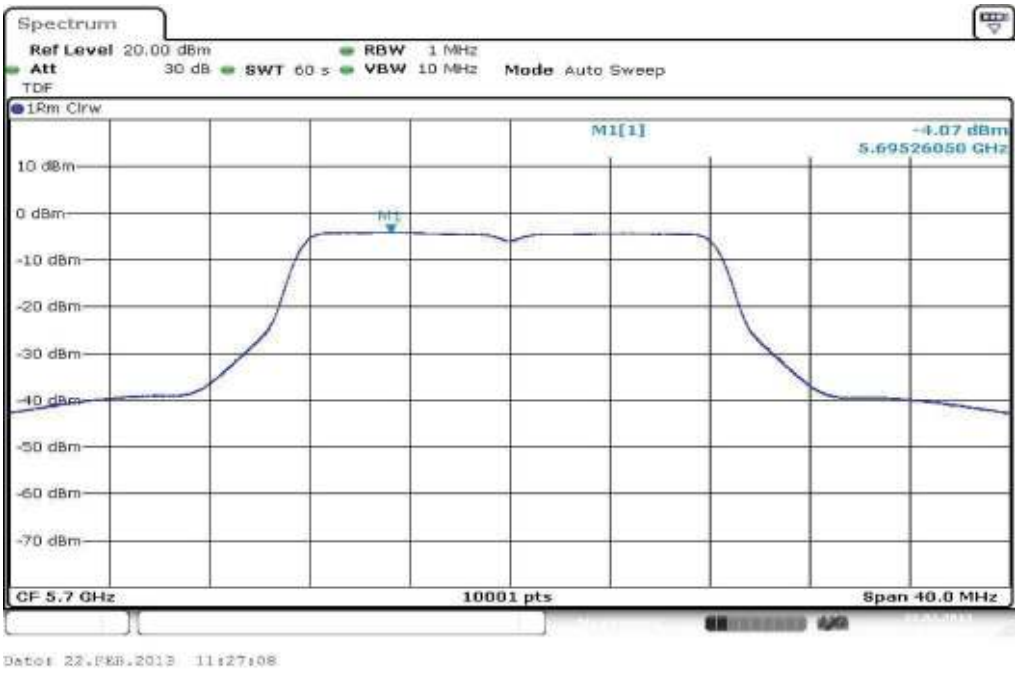
Plot 5: 5500 MHz



Plot 6: 5600 MHz

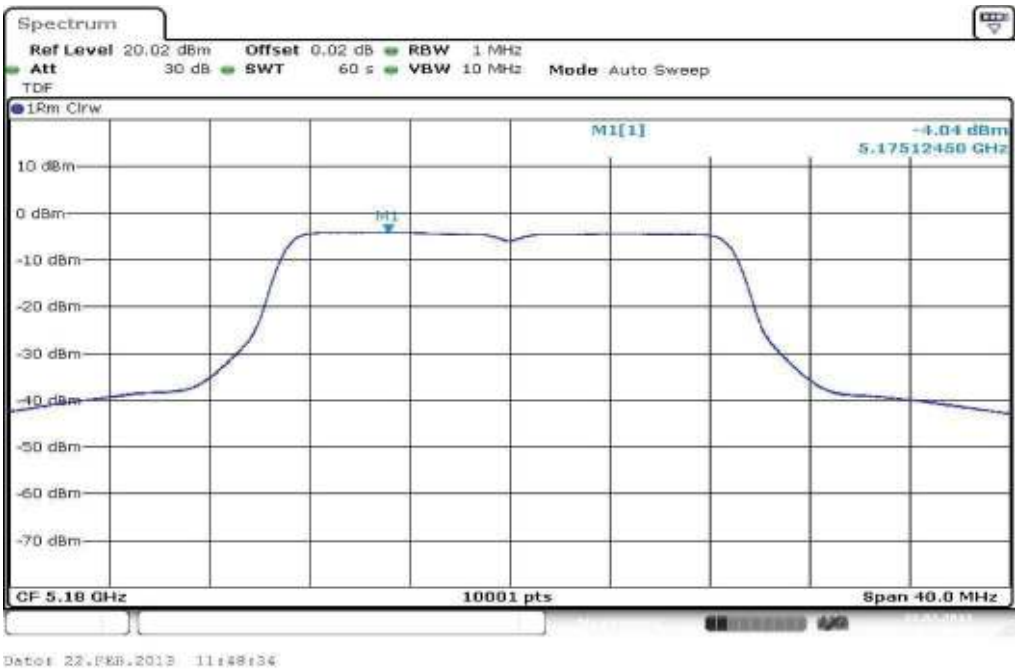


Plot 7: 5700 MHz

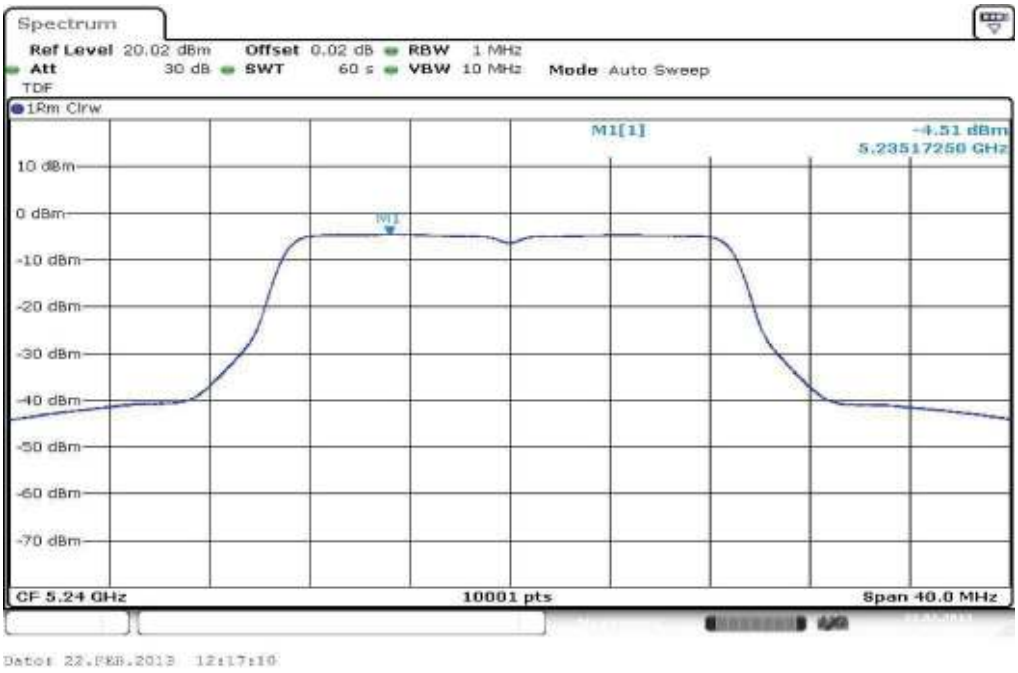


Plots: OFDM / n – mode HT20

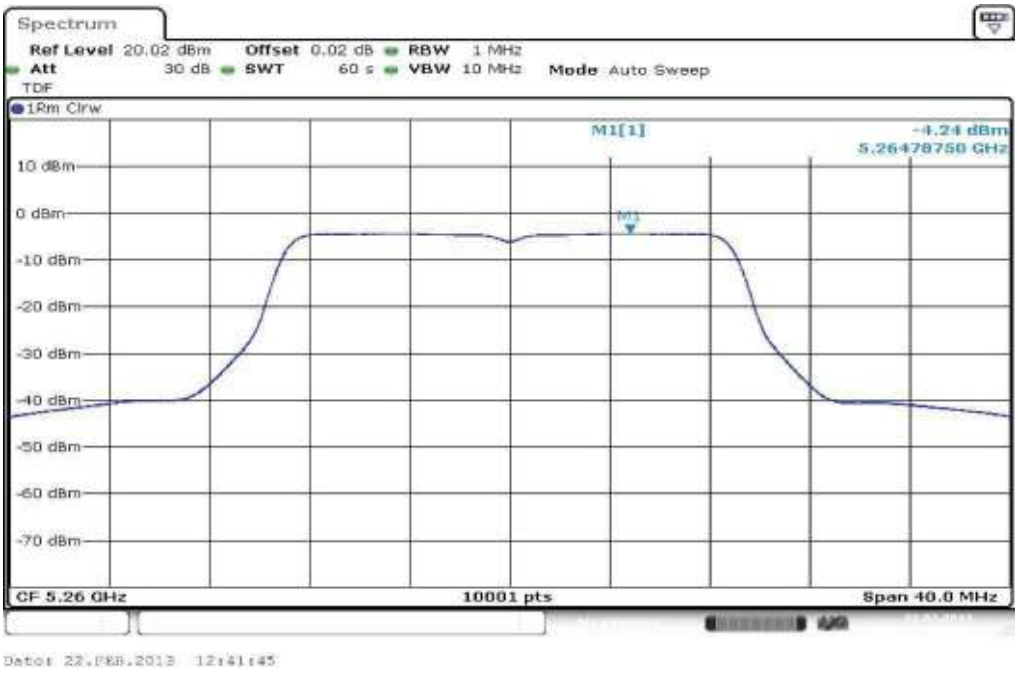
Plot 1: 5180 MHz



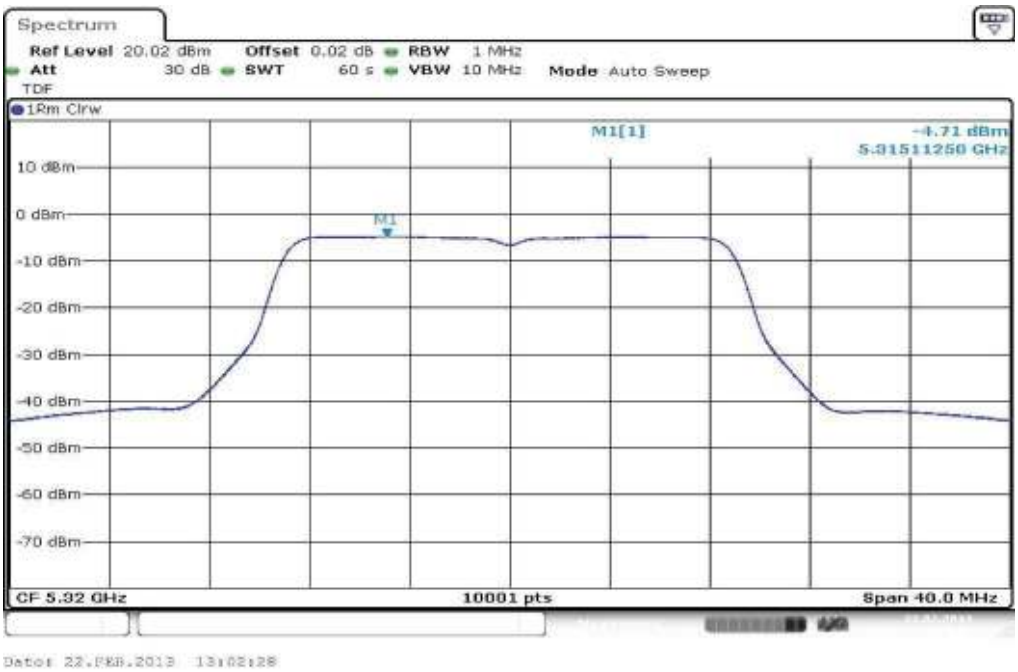
Plot 2: 5240 MHz



Plot 3: 5260 MHz

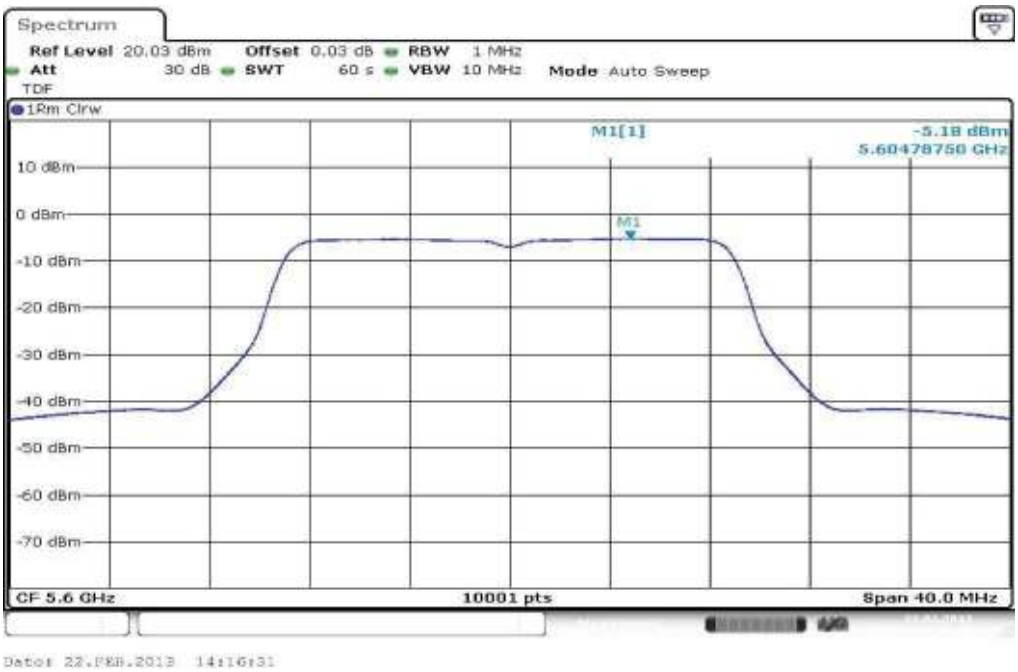


Plot 4: 5320 MHz

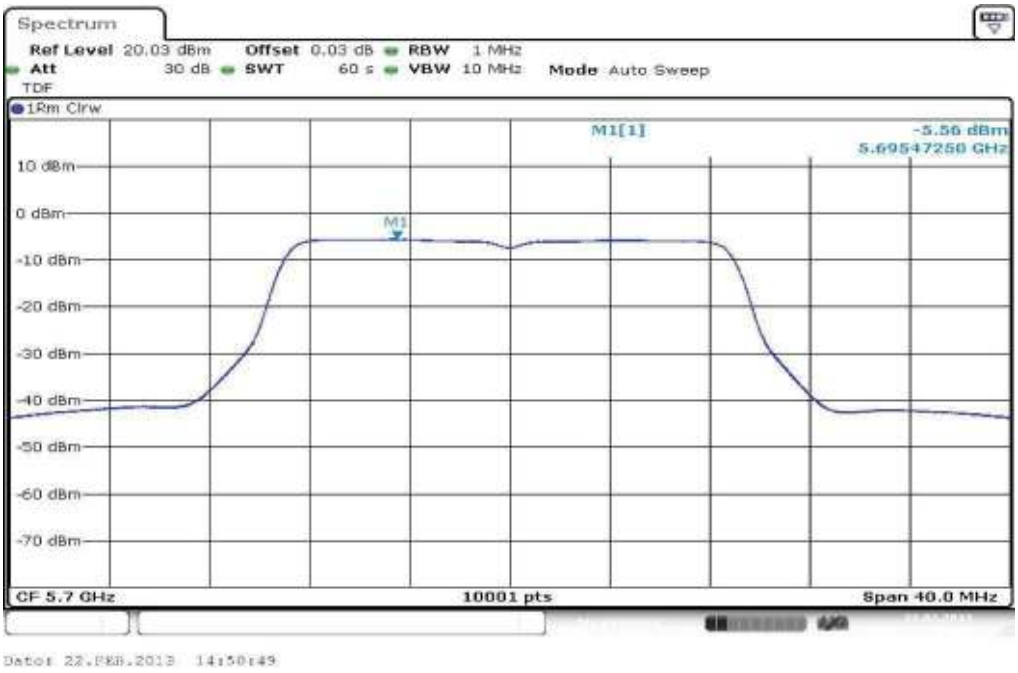


Plot 5: 5500 MHz

Plot 6: 5600 MHz

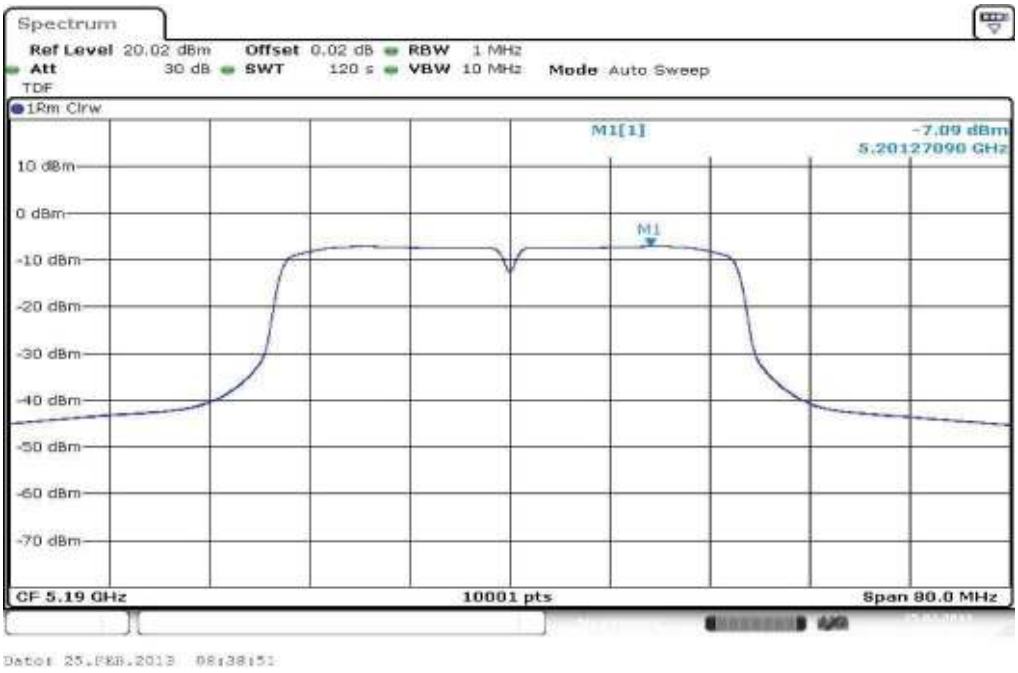


Plot 7: 5700 MHz

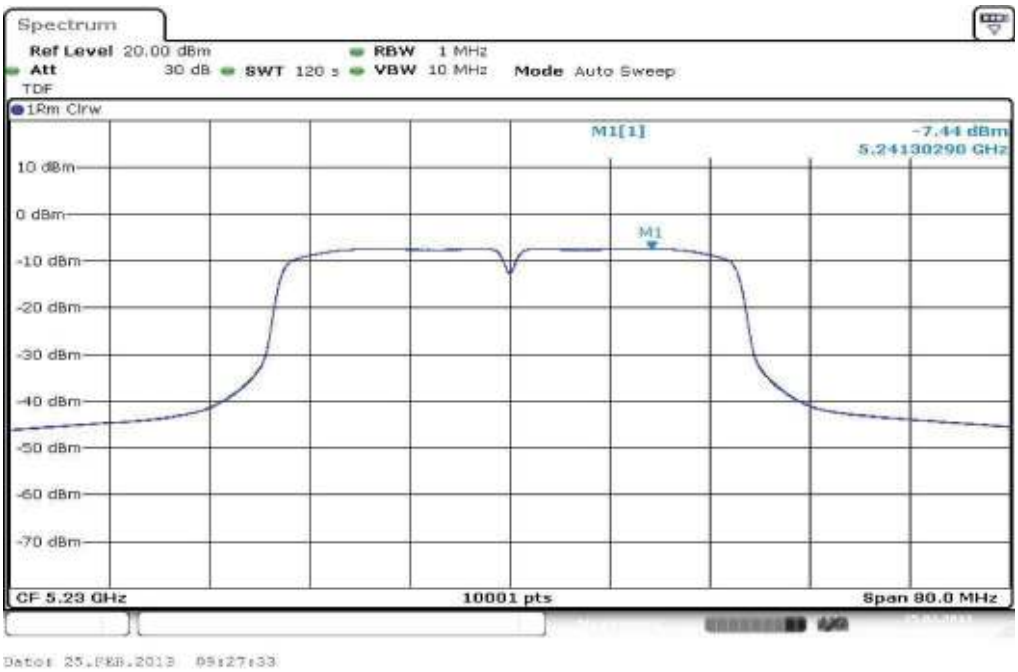


Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz

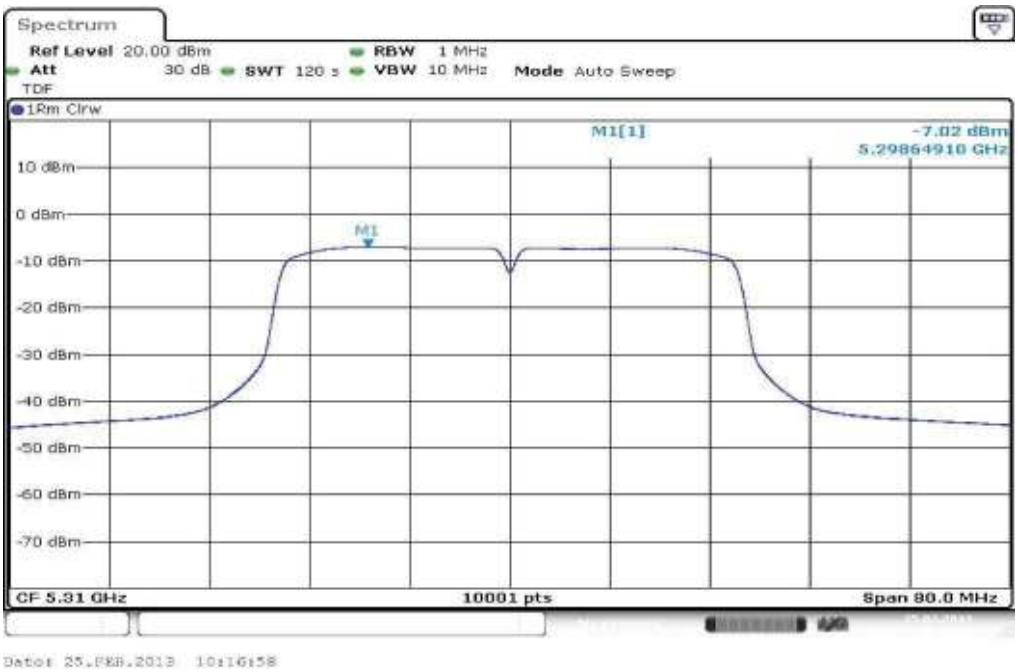


Plot 2: 5230 MHz

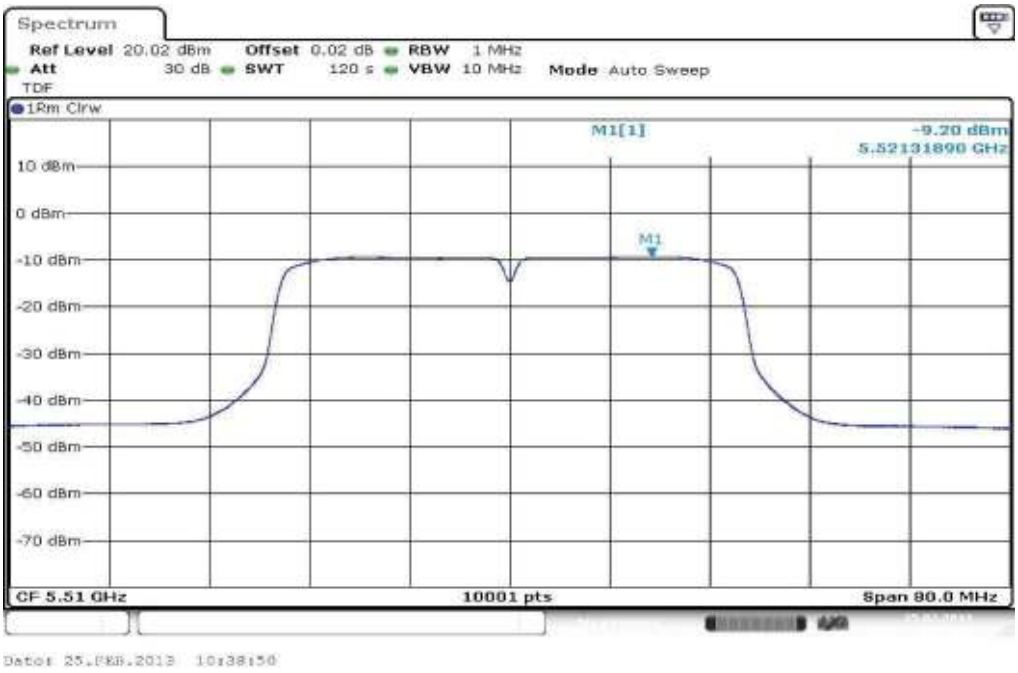


Plot 3: 5270 MHz

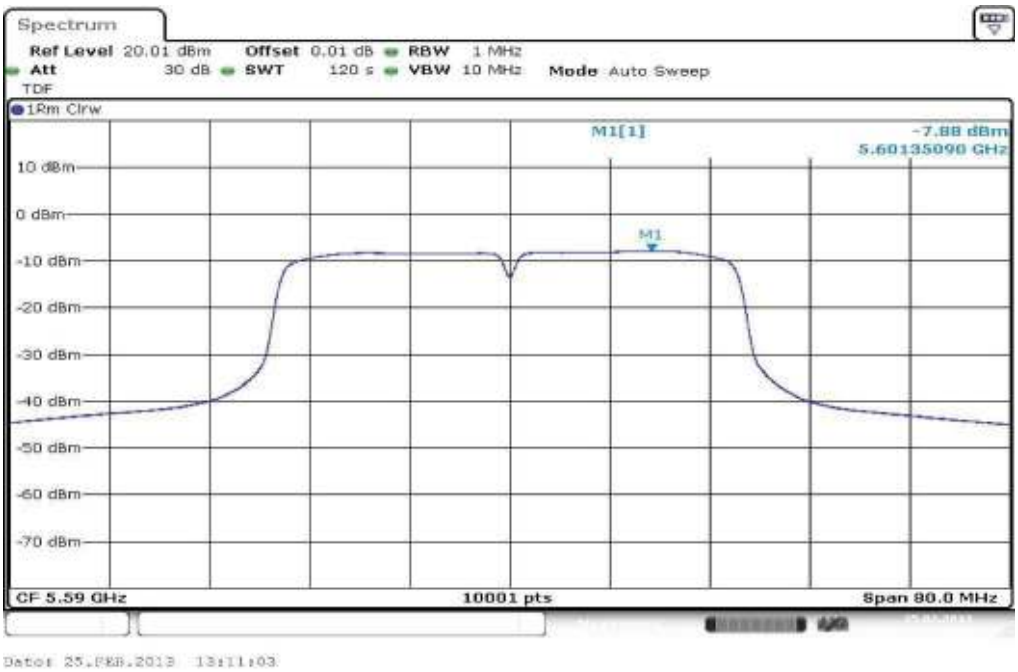
Plot 4: 5310 MHz



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
	22.1	21.9	22.4	22.0
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
	22.0	22.1	21.7	
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
	22.4	22.2	22.3	22.3
Channel	Lowest 5500 MHz	Middle 5600 MHz	Highest 5700 MHz	
	22.2	22.5	22.3	
Measurement uncertainty	± 1 dB			

Result: Passed

Result: OFDM / n – mode HT40

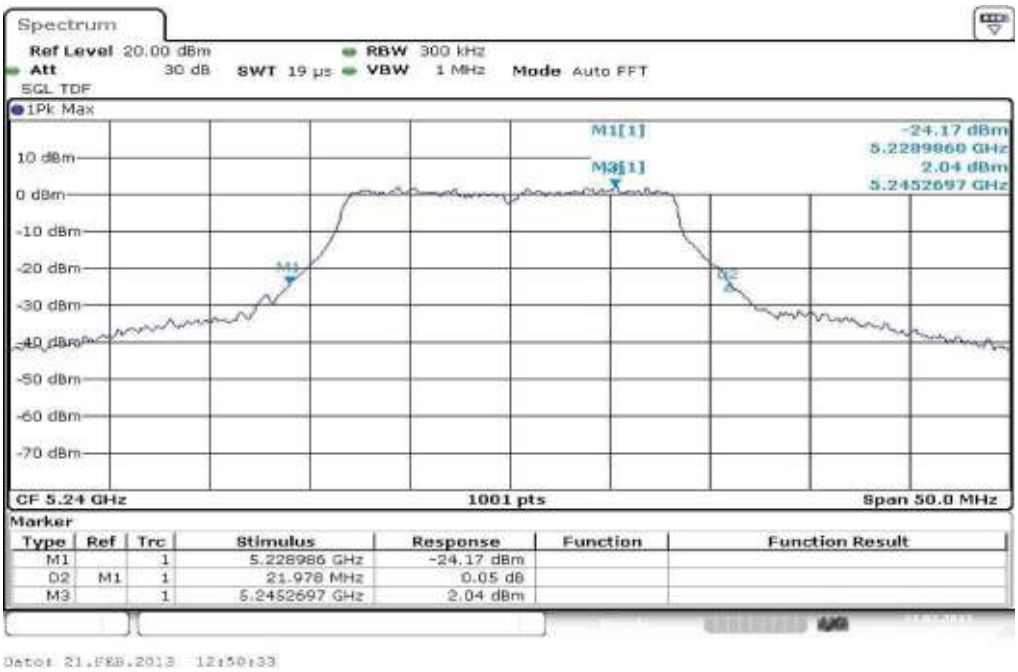
OFDM / n – mode HT40	26 dB BANDWIDTH [MHz]			
Channel	Lowest 5190 MHz	Highest 5230 MHz	Lowest 5270 MHz	Highest 5310 MHz
	42.2	42.2	42.7	42.4
Channel	Lowest 5510 MHz	Middle 5590 MHz	Highest 5670 MHz	-/-
	42.6	43.8		-/-
Measurement uncertainty	± 1 dB			

Result: Passed

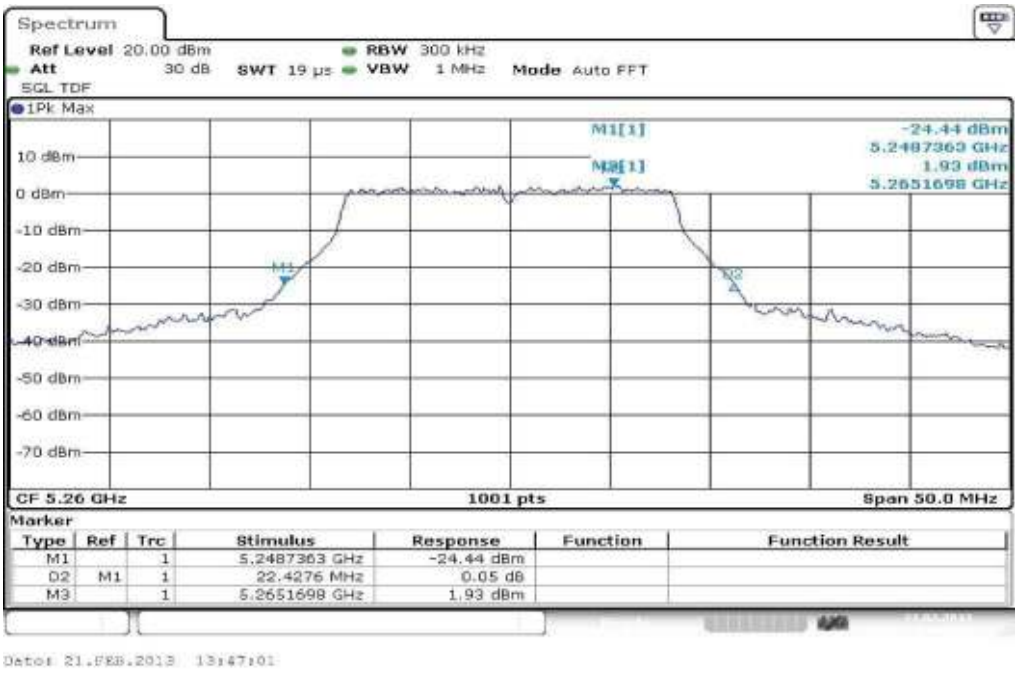
Plots: OFDM / a – mode

Plot 1: 5180 MHz

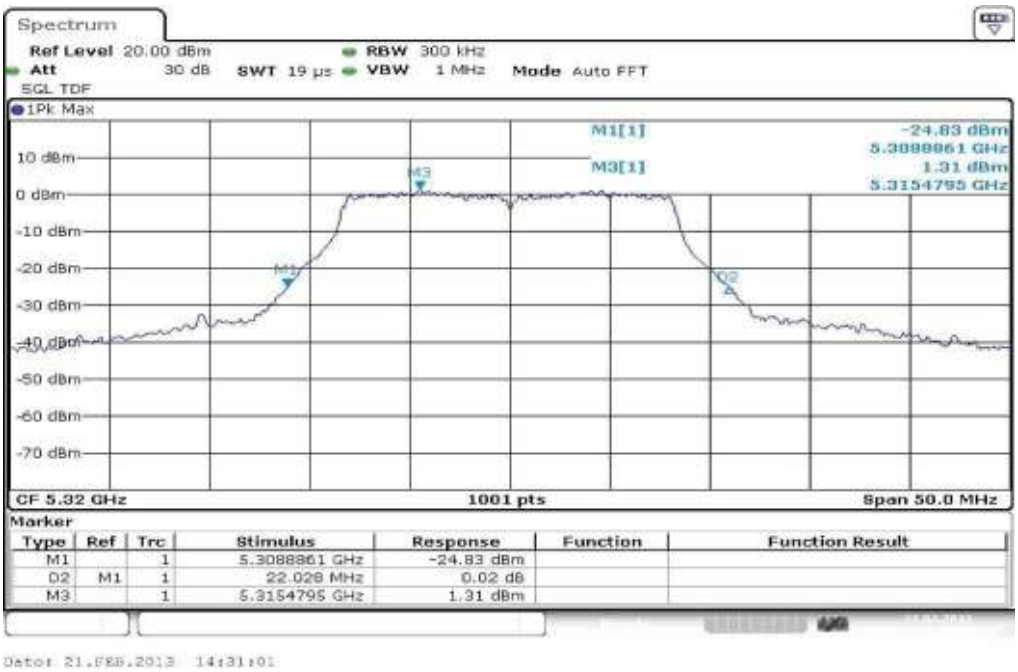
Plot 2: 5240 MHz



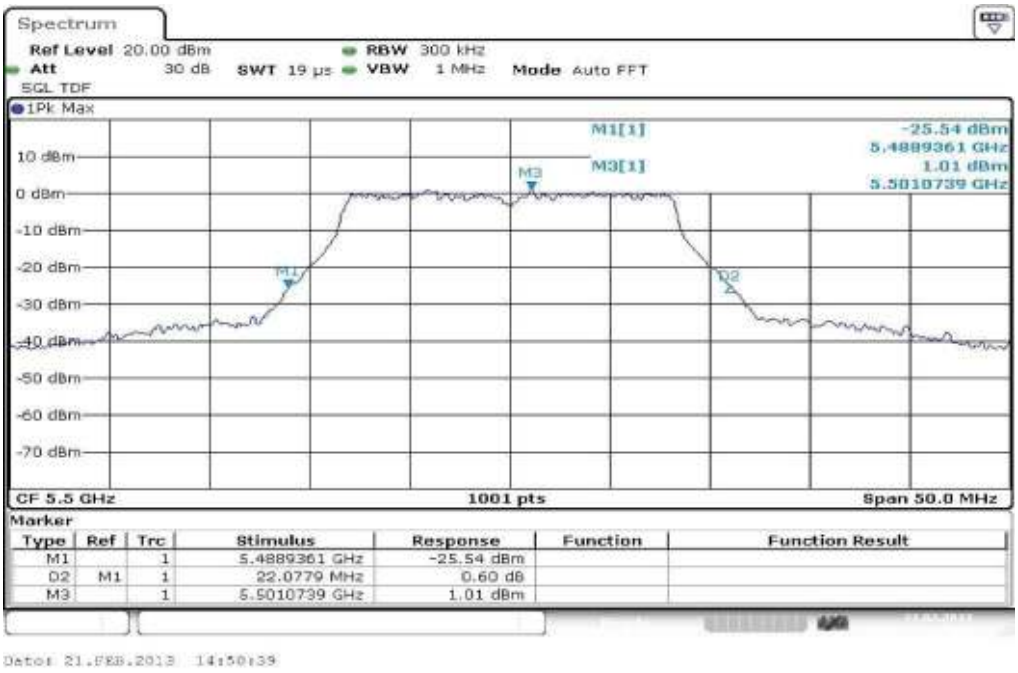
Plot 3: 5260 MHz



Plot 4: 5320 MHz



Plot 5: 5500 MHz

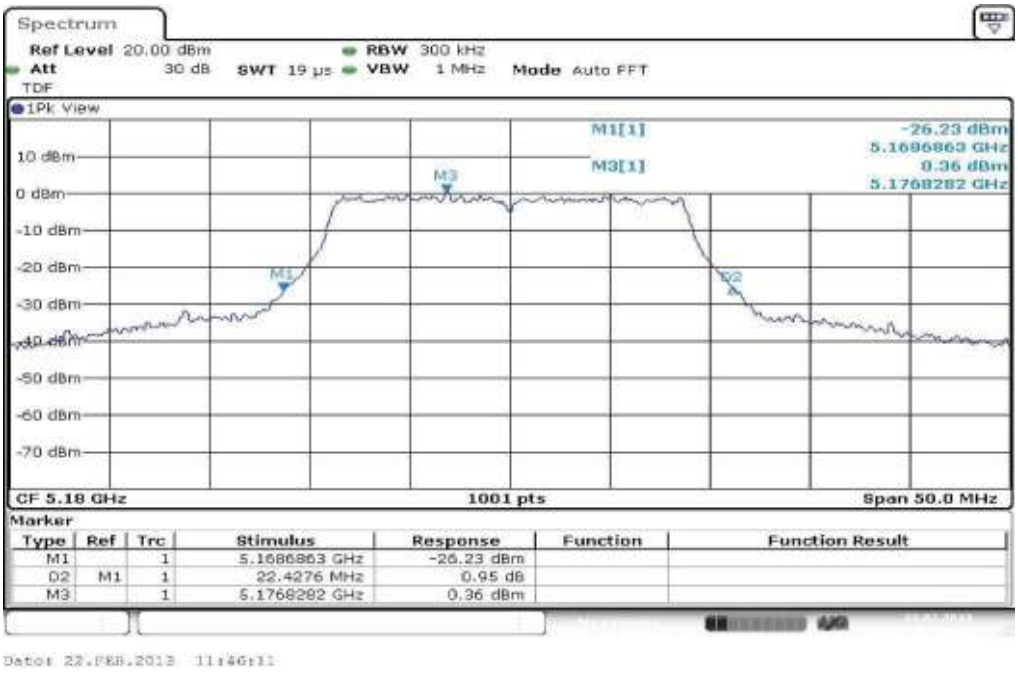


Plot 6: 5600 MHz

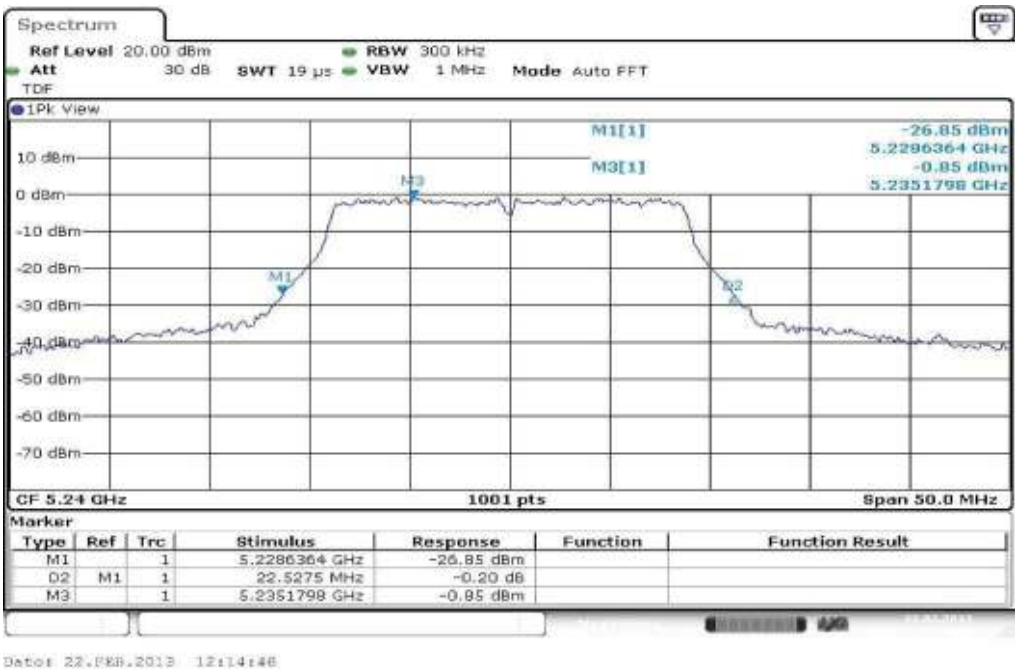
Plot 7: 5700 MHz

Plots: OFDM / n – mode HT20

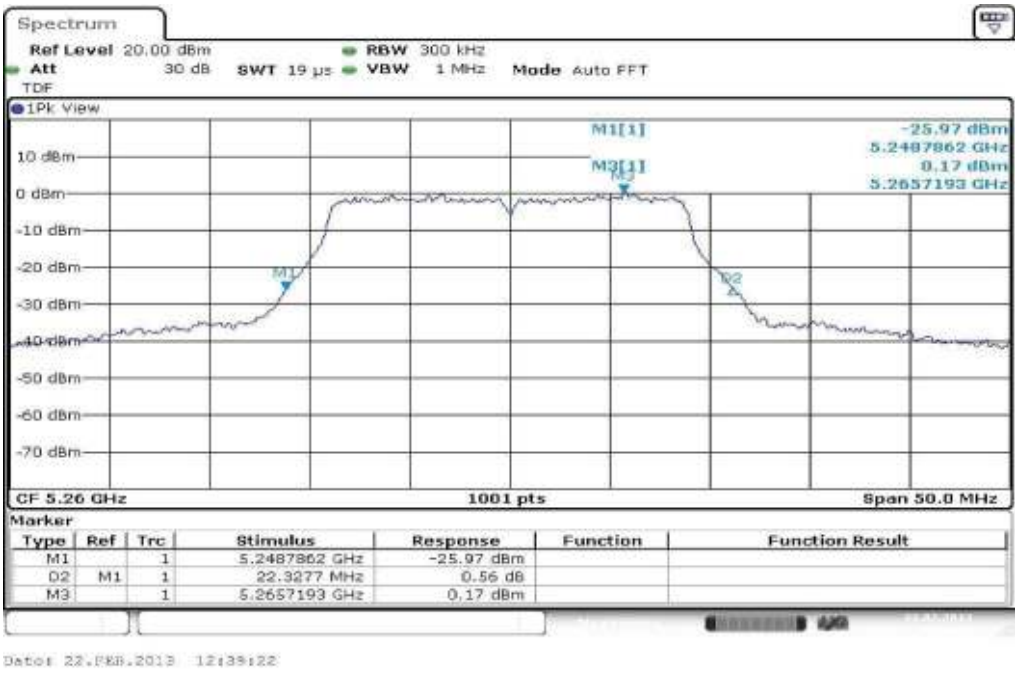
Plot 1: 5180 MHz



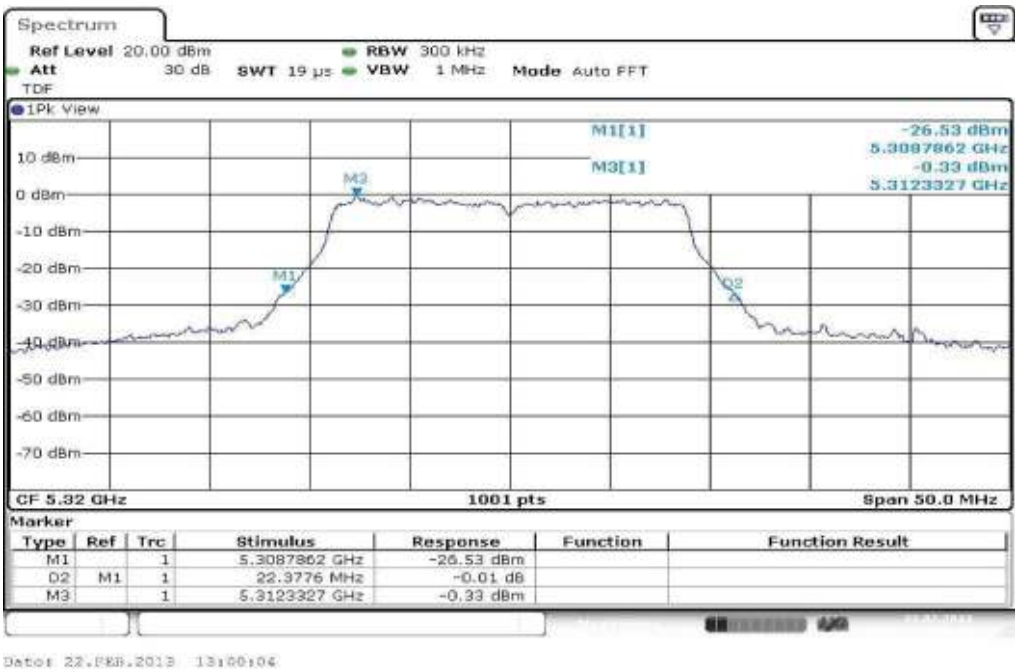
Plot 2: 5240 MHz



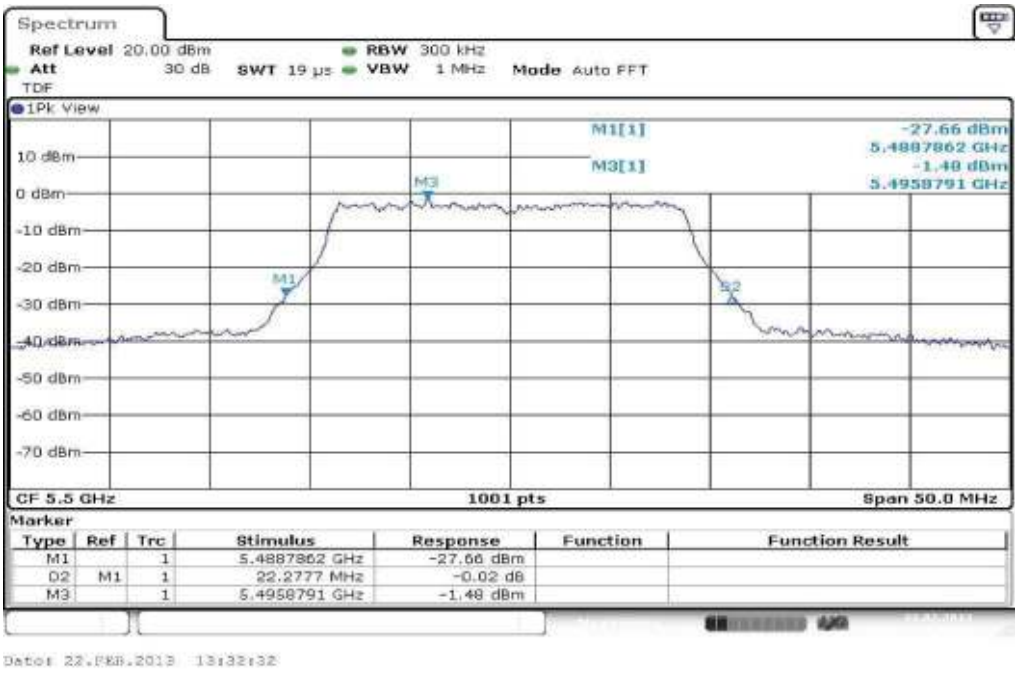
Plot 3: 5260 MHz



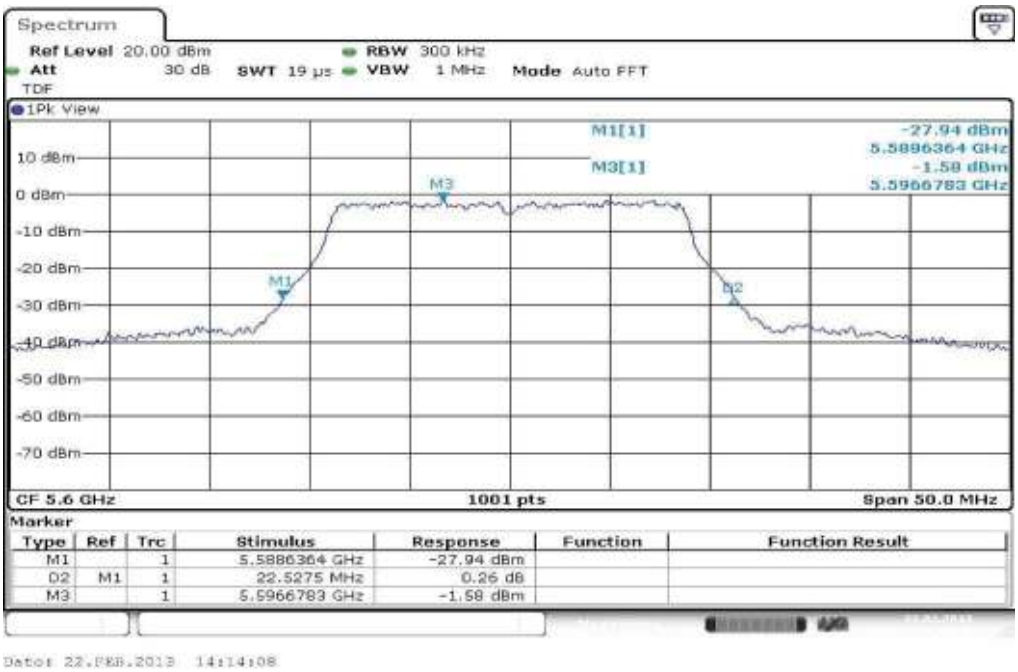
Plot 4: 5320 MHz



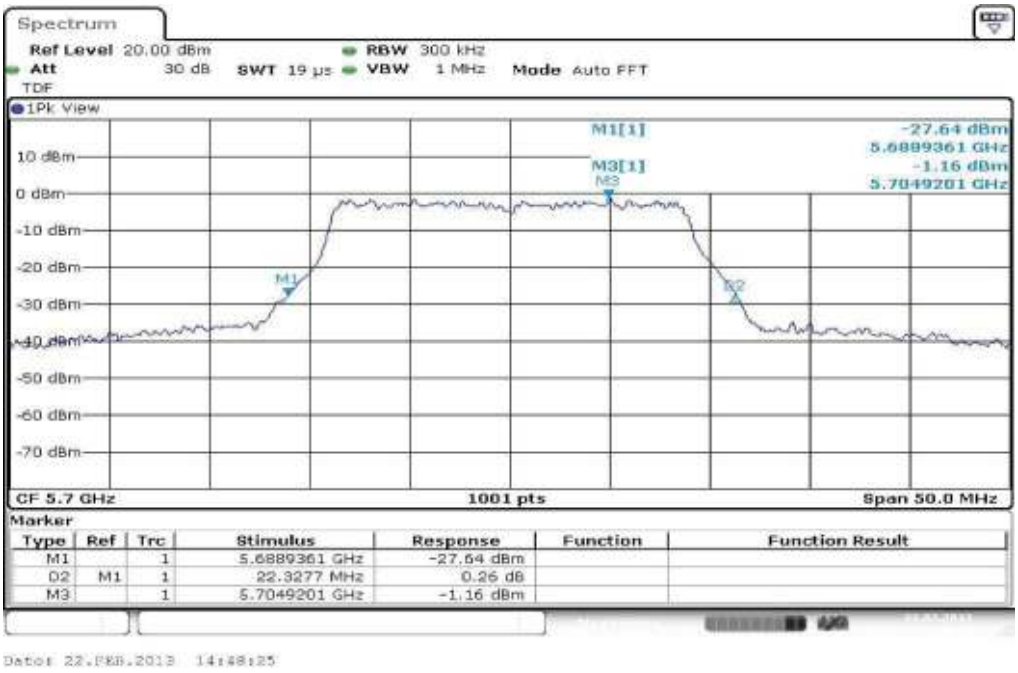
Plot 5: 5500 MHz



Plot 6: 5600 MHz

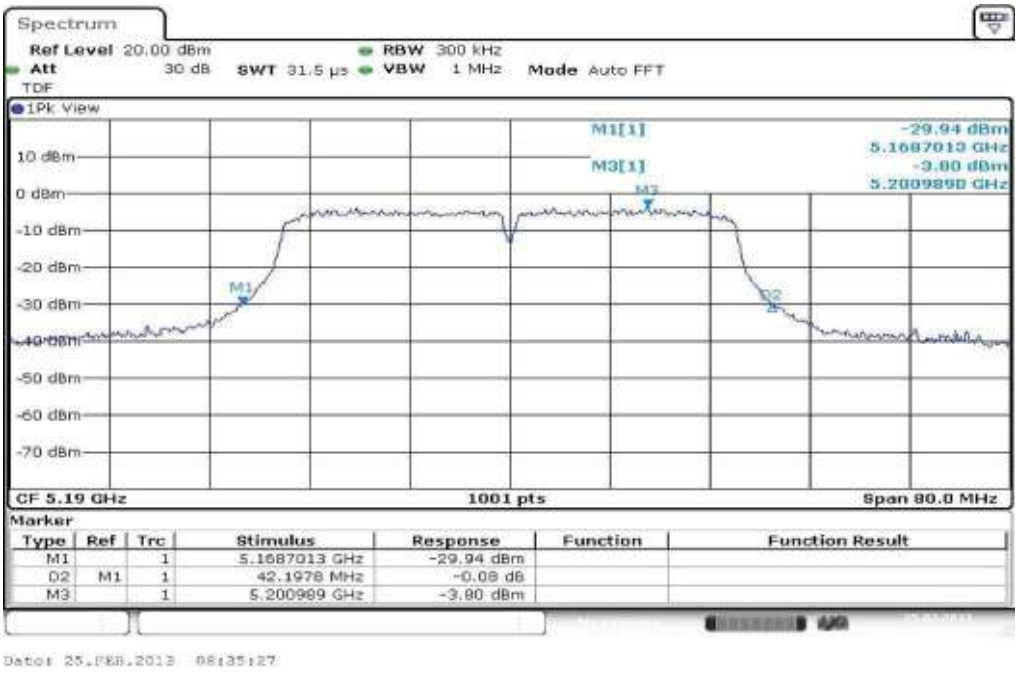


Plot 7: 5700 MHz

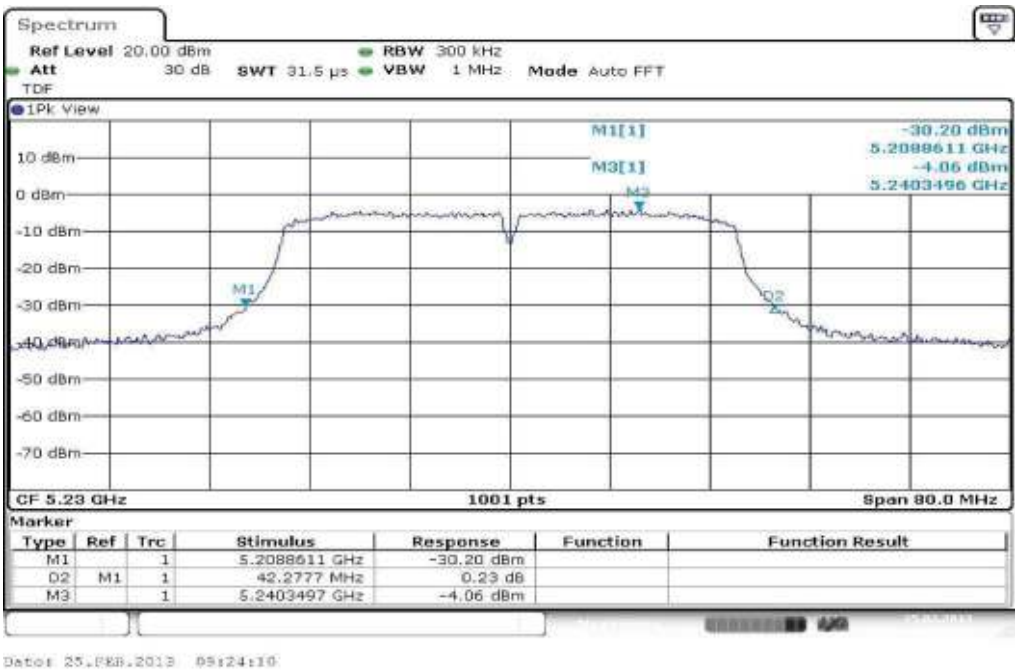


Plots: OFDM / n – mode HT40

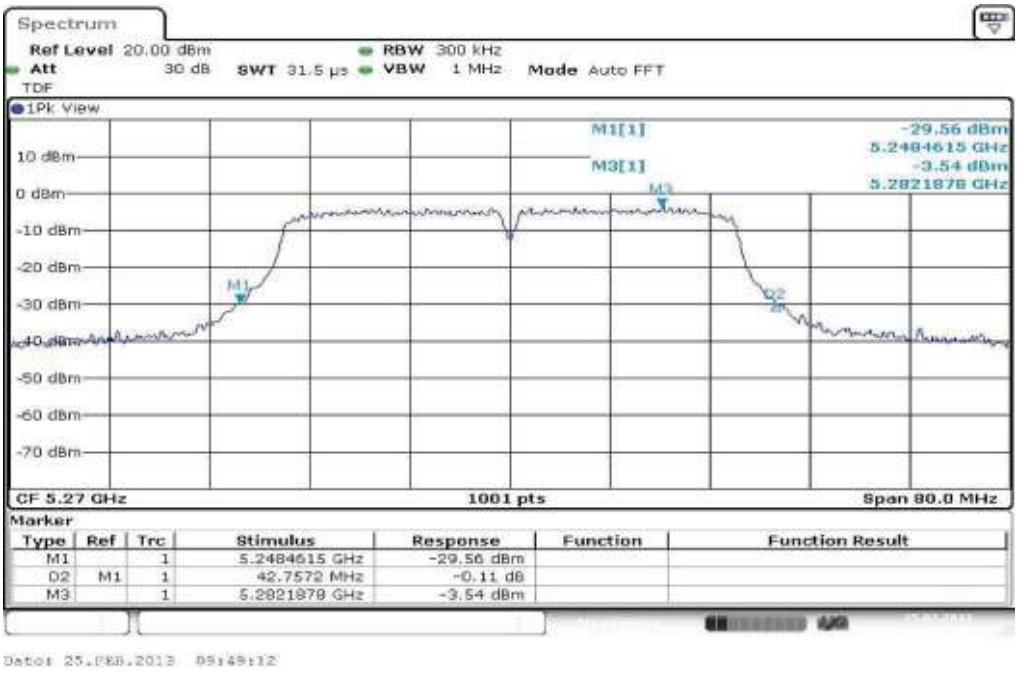
Plot 1: 5190 MHz



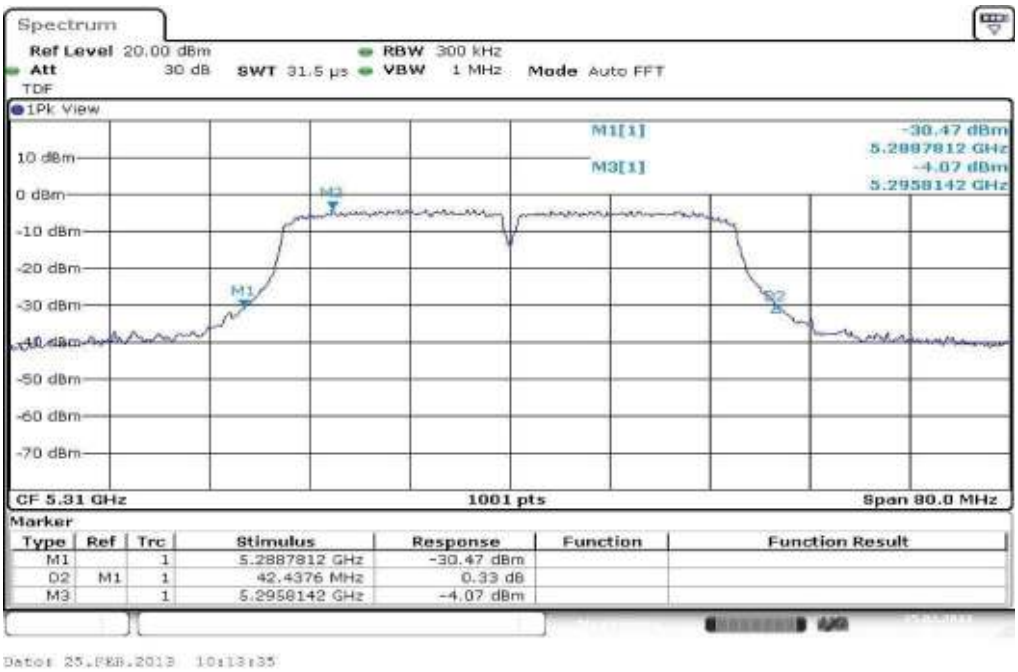
Plot 2: 5230 MHz



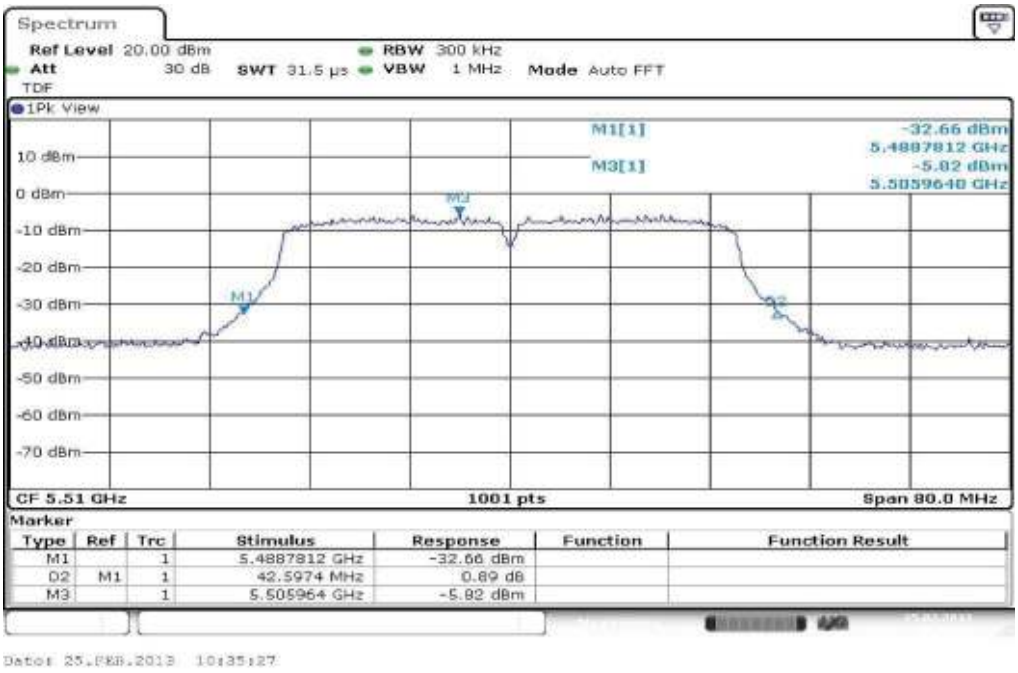
Plot 3: 5270 MHz



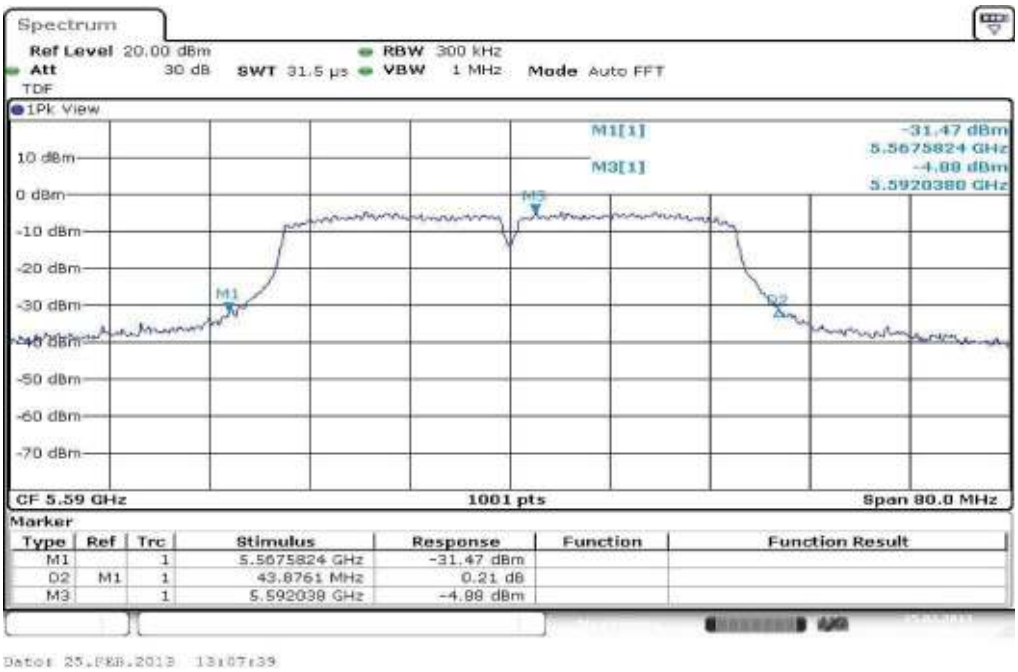
Plot 4: 5310 MHz



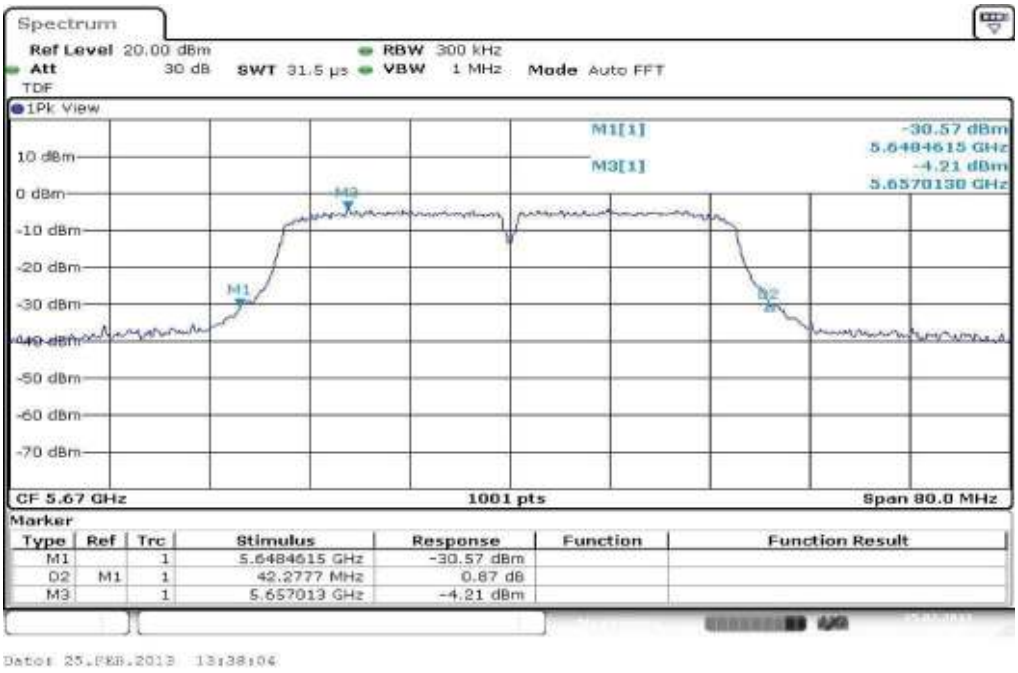
Plot 5: 5510 MHz



Plot 6: 5590 MHz



Plot 7: 5670 MHz



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	-2.43	-2.00	
Peak	8.46	8.88	
Peak excursion value	10.89	10.88	
Channel	5260 MHz	5320 MHz	
RMS	-1.77	-2.79	
Peak	9.64	8.17	
Peak excursion value	11.41	10.96	
Channel	5500 MHz	5600 MHz	5700 MHz
RMS	-3.21	-3.68	-4.00
Peak	7.55	7.28	7.14
Peak excursion value	10.76	10.96	11.14
Measurement uncertainty	± 1 dB		

Result: Passed

Results:

Modulation OFDM / n – mode HT20	Peak excursion value		
Channel	5180 MHz	5240 MHz	
RMS	-4.01	-4.48	
Peak	6.87	6.50	
Peak excursion value	10.88	10.98	
Channel	5260 MHz	5320 MHz	
RMS	-4.21	-4.68	
Peak	7.10	6.87	
Peak excursion value	11.31	11.55	
Channel	5500 MHz	5600 MHz	5700 MHz
RMS	-5.87	-5.15	-5.53
Peak	5.24	5.99	5.17
Peak excursion value	11.11	11.14	10.70
Measurement uncertainty	± 1 dB		

Result: Passed

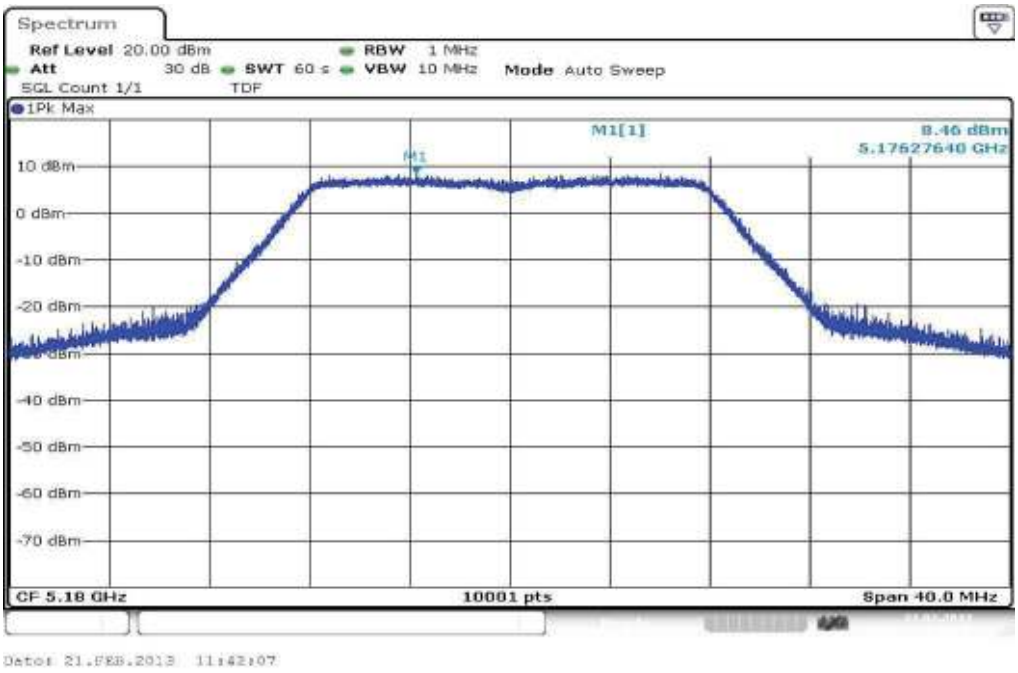
Results:

Modulation OFDM / n – mode HT40	Peak excursion value		
Channel	5190 MHz	5230 MHz	5270 MHz
RMS	-7.05	-7.39	-6.69
Peak	3.27	3.30	3.67
Peak excursion value	10.32	10.69	10.36
Channel	5310 MHz	5510 MHz	5590 MHz
RMS	-6.97	-9.15	-7.83
Peak	3.68	1.02	2.43
Peak excursion value	10.65	10.17	10.26
Channel	5670 MHz		
RMS	-7.20		
Peak	3.13		
Peak excursion value	10.33		
Measurement uncertainty	± 1 dB		

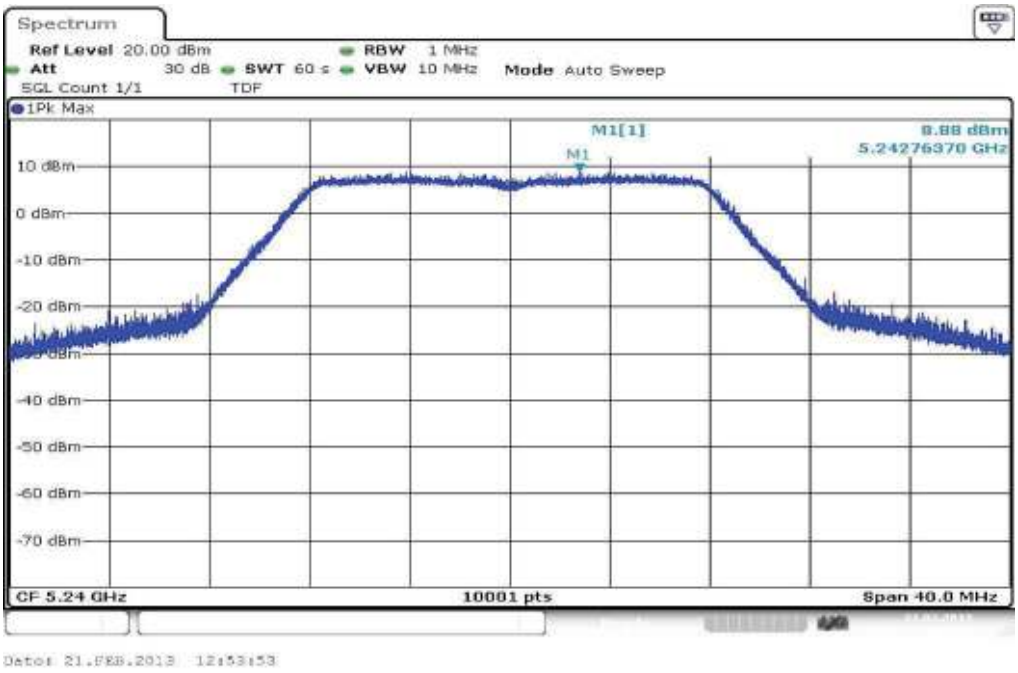
Result: Passed

Plots: OFDM / a – mode

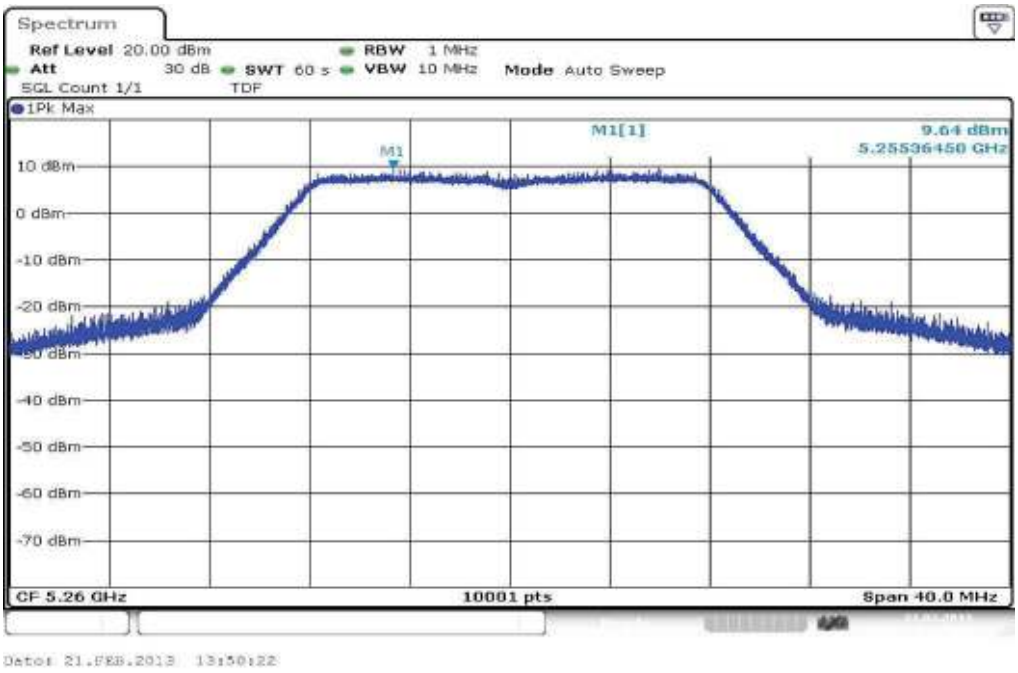
Plot 1: 5180 MHz



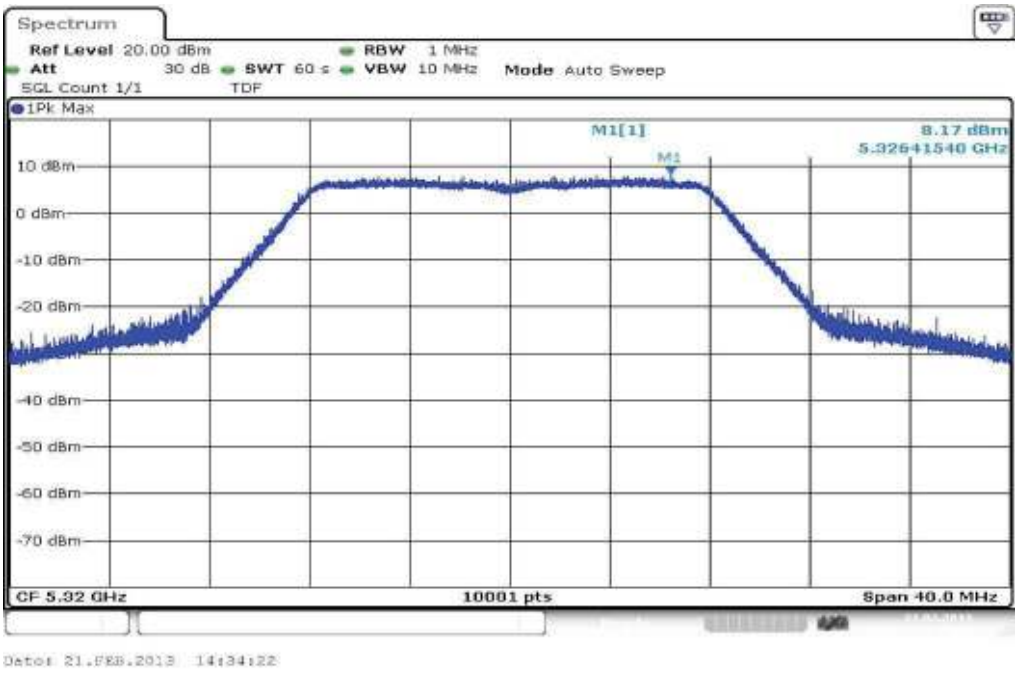
Plot 2: 5240 MHz



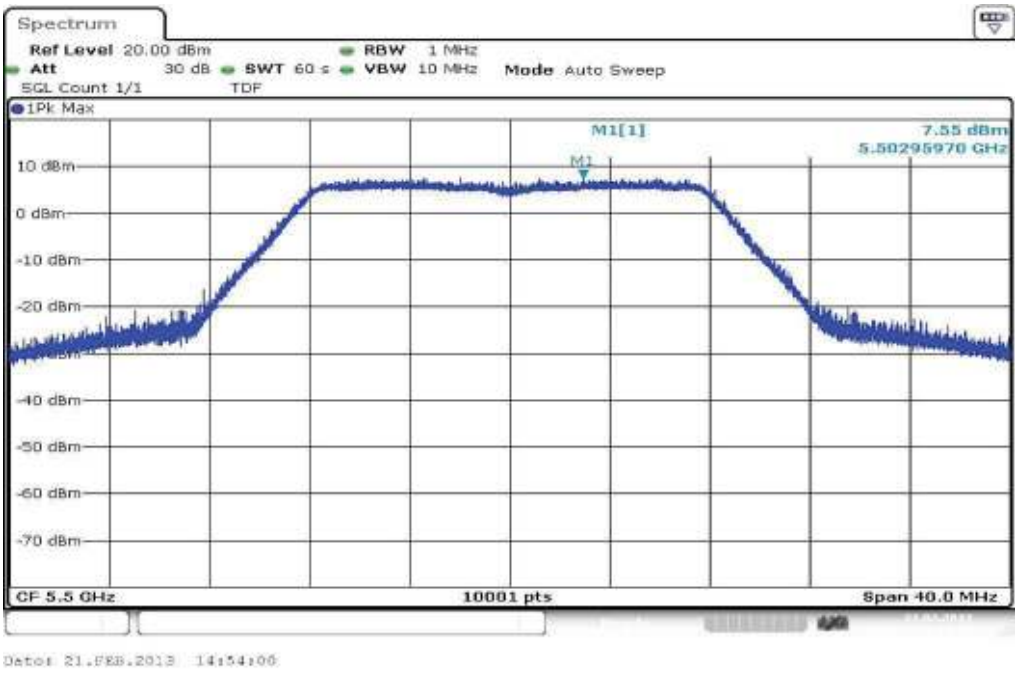
Plot 3: 5260 MHz



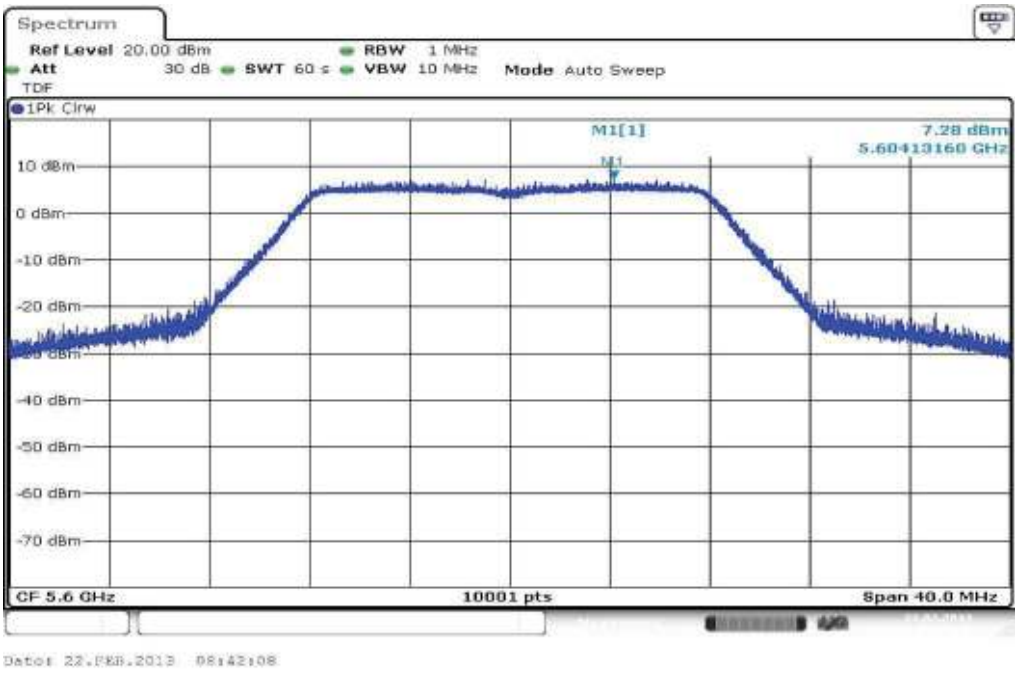
Plot 4: 5320 MHz



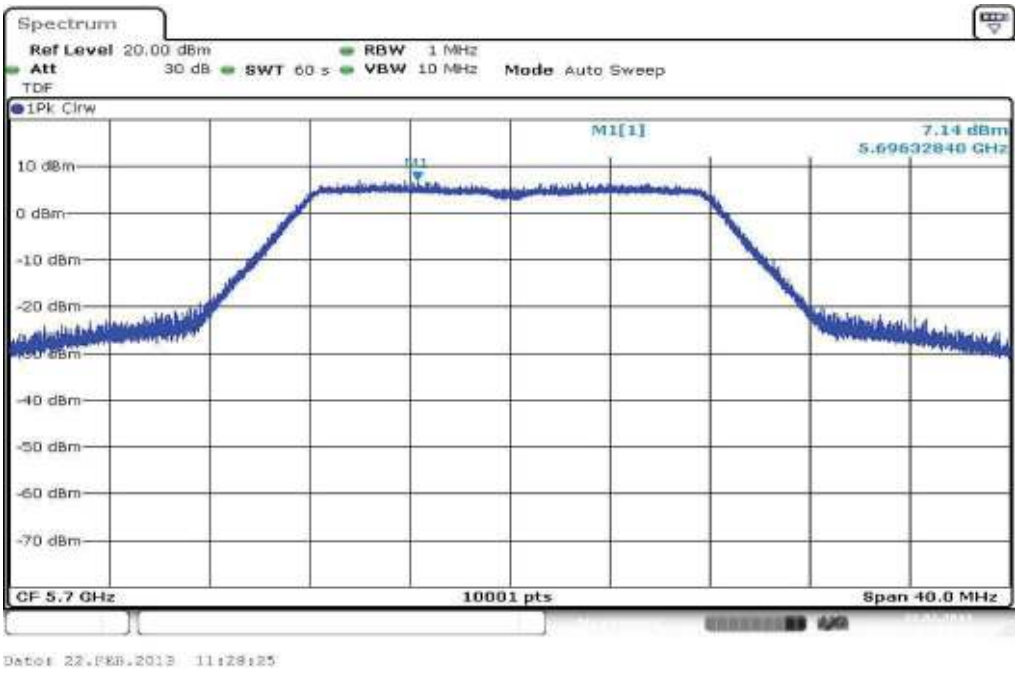
Plot 5: 5500 MHz



Plot 6: 5600 MHz

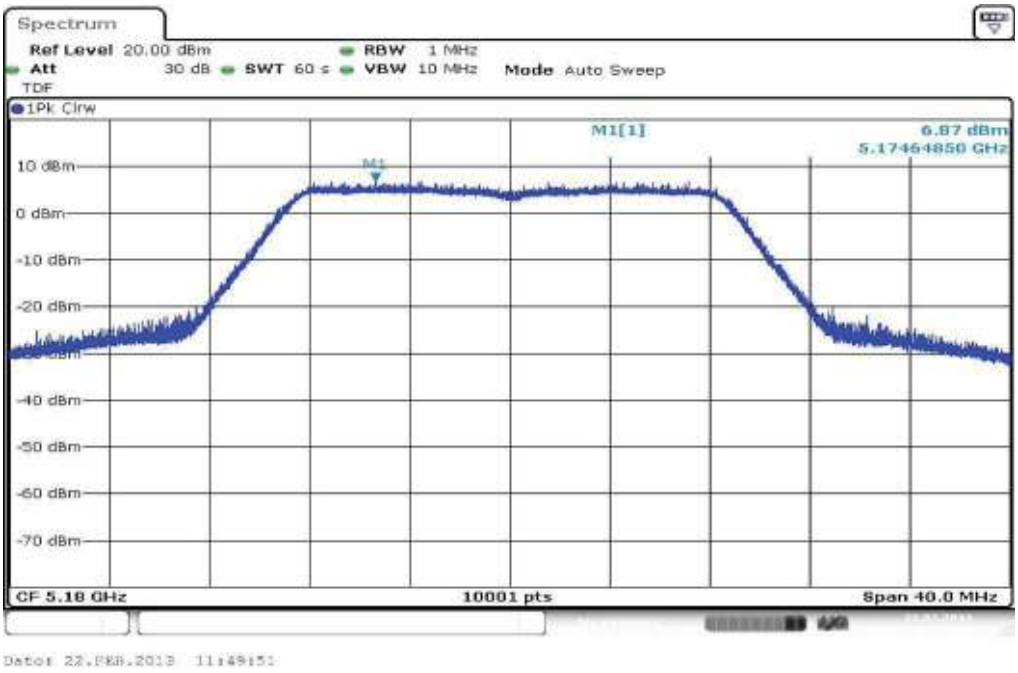


Plot 7: 5700 MHz

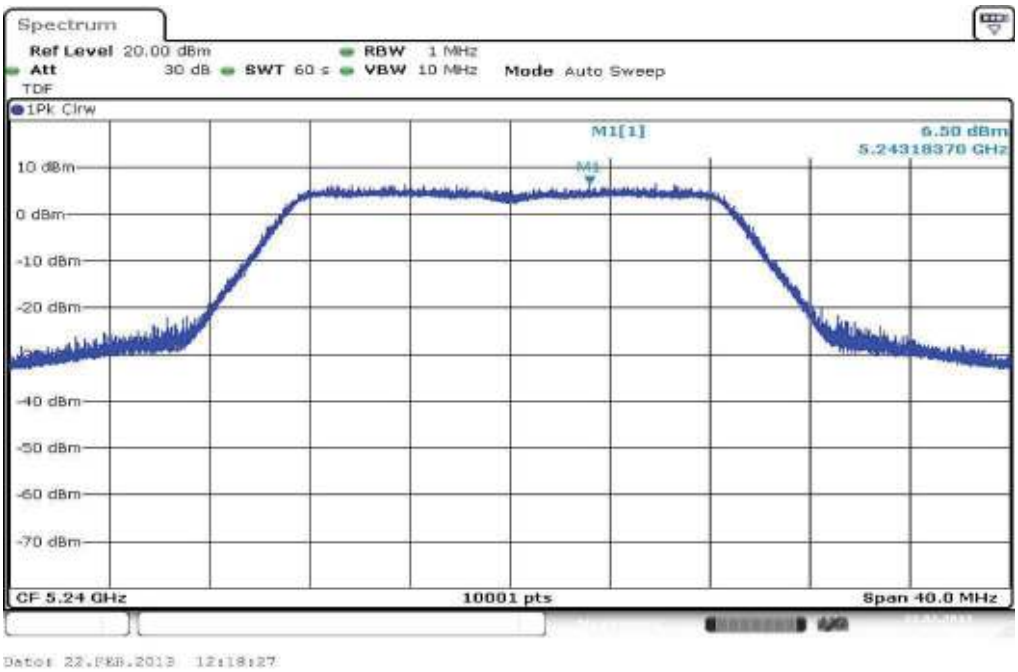


Plots: OFDM / n – mode HT20

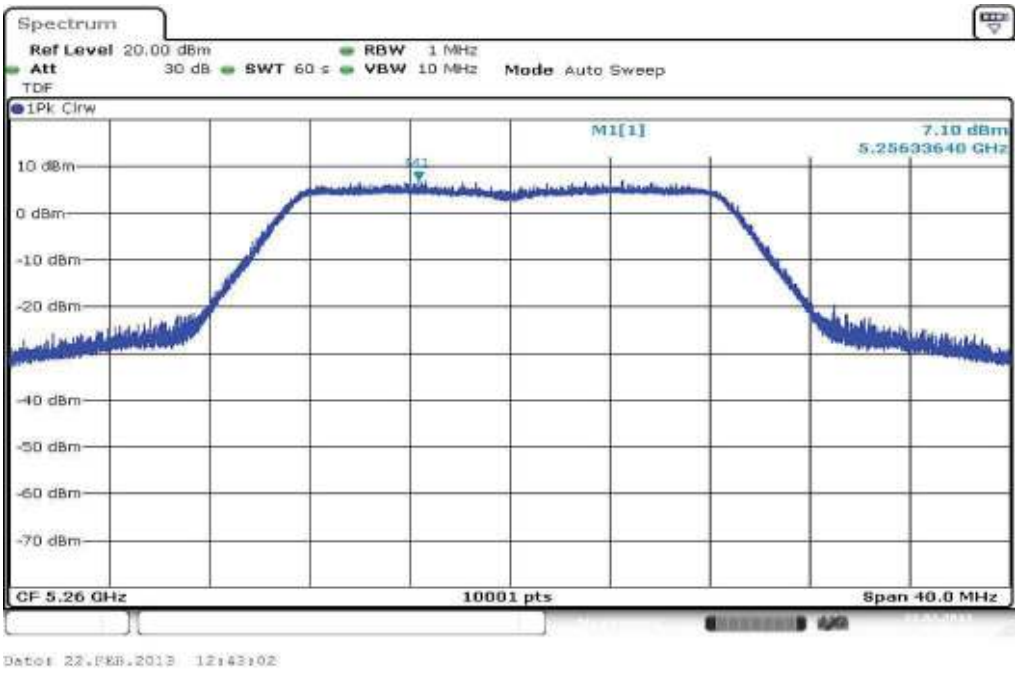
Plot 1: 5180 MHz



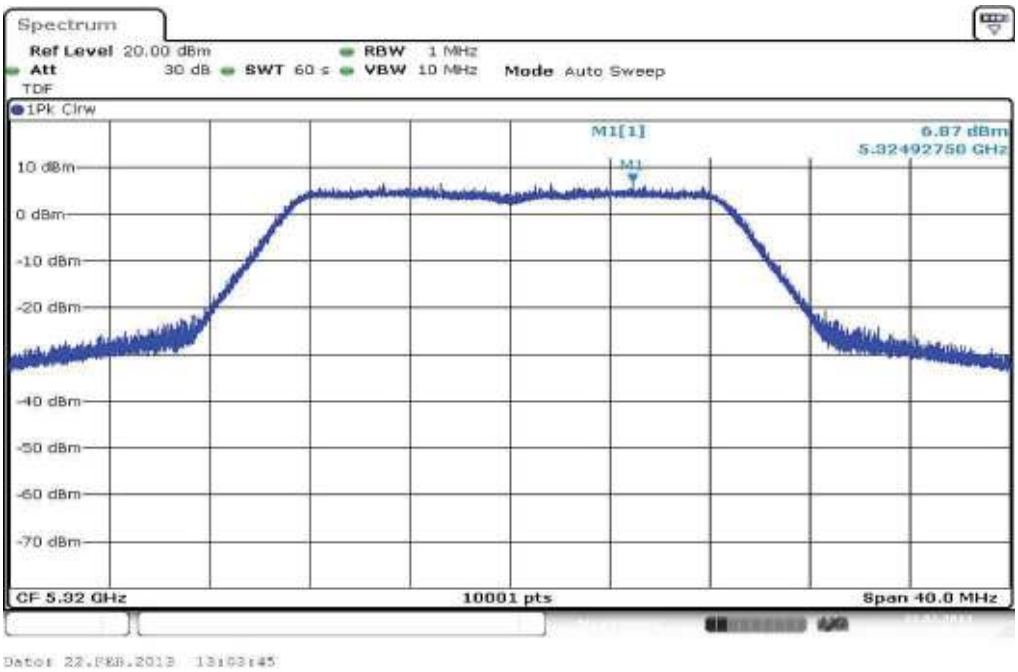
Plot 2: 5240 MHz



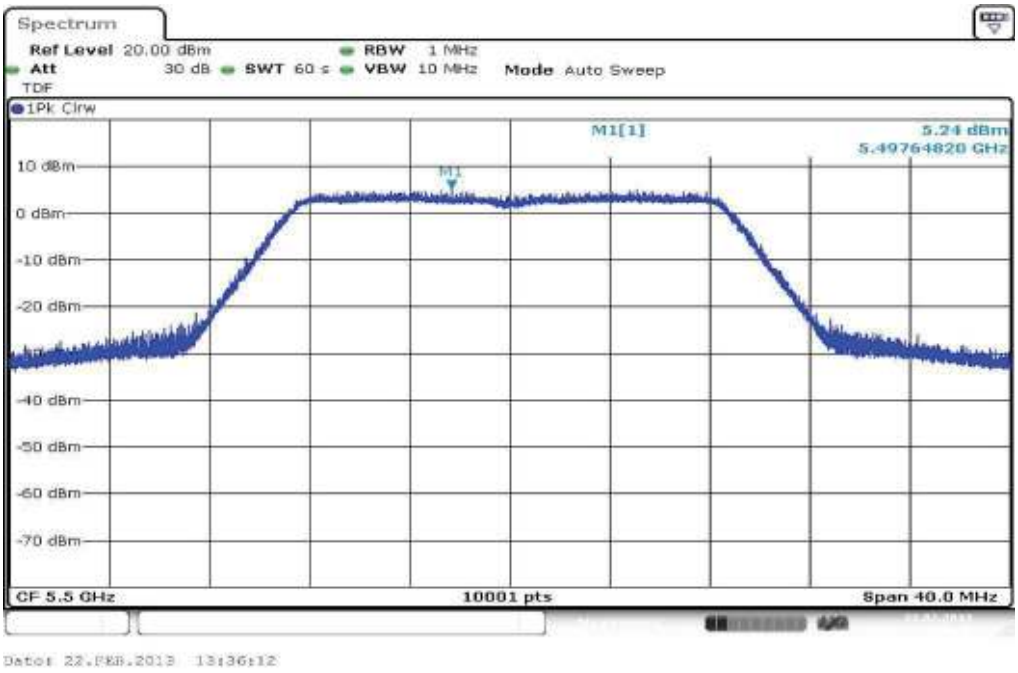
Plot 3: 5260 MHz



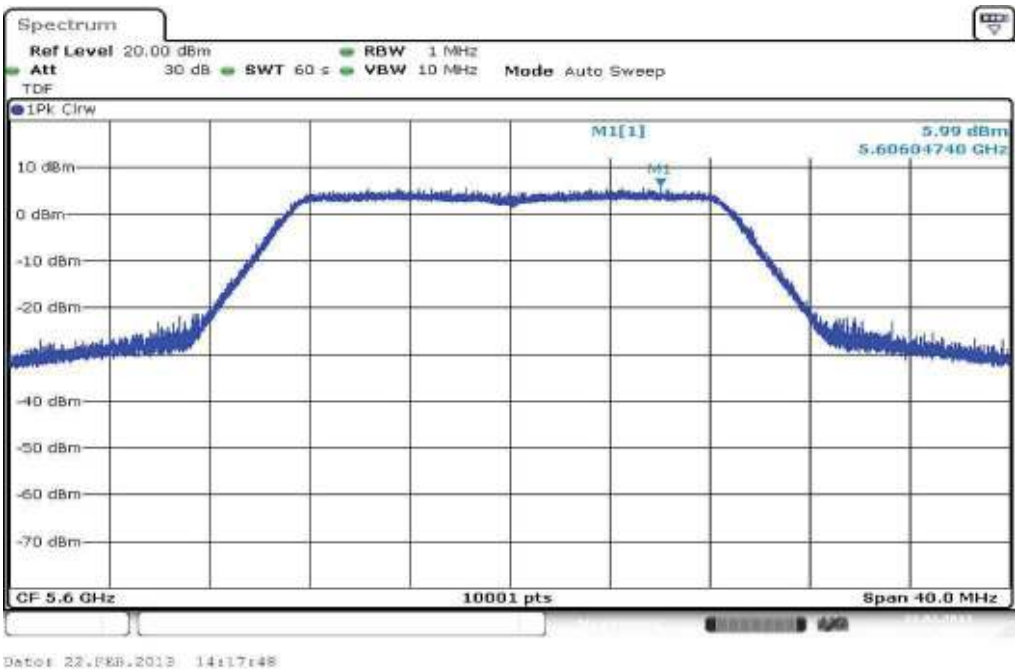
Plot 4: 5320 MHz



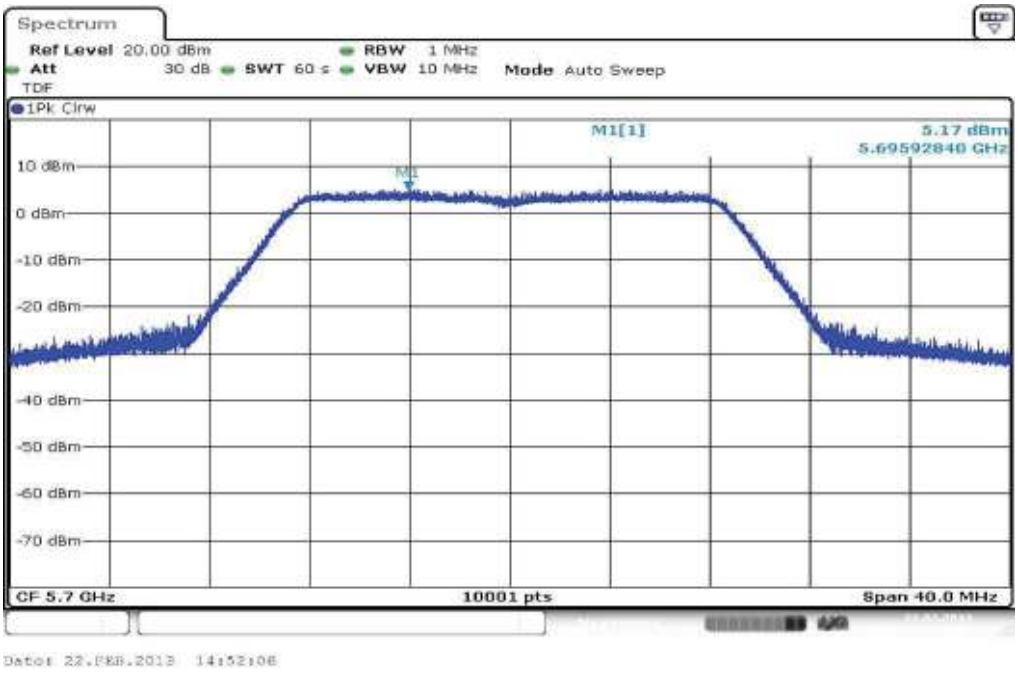
Plot 5: 5500 MHz



Plot 6: 5600 MHz

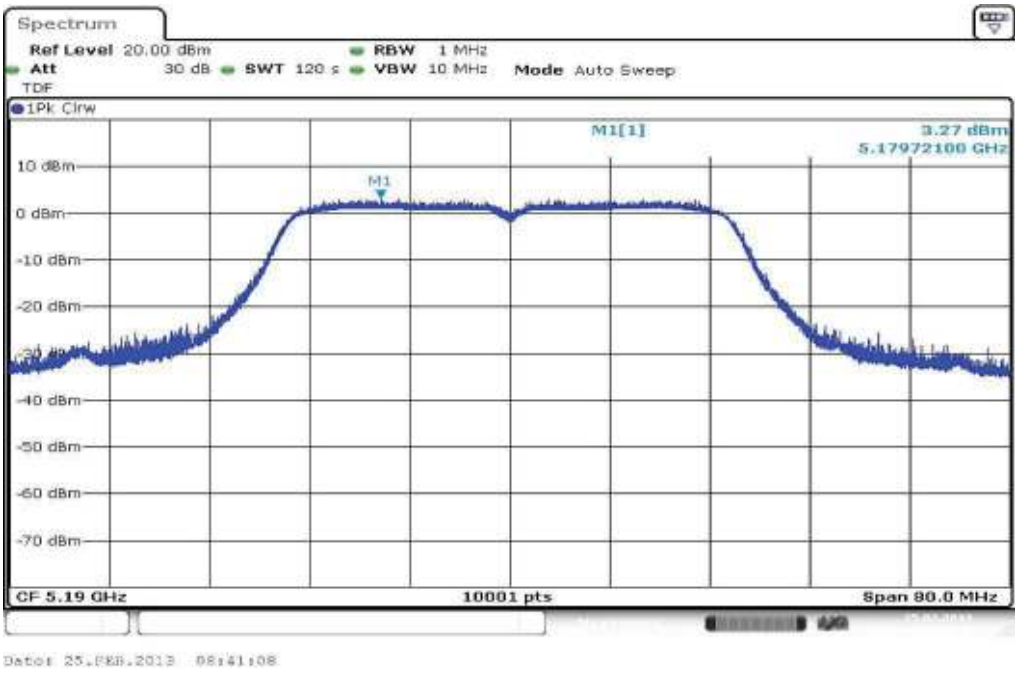


Plot 7: 5700 MHz



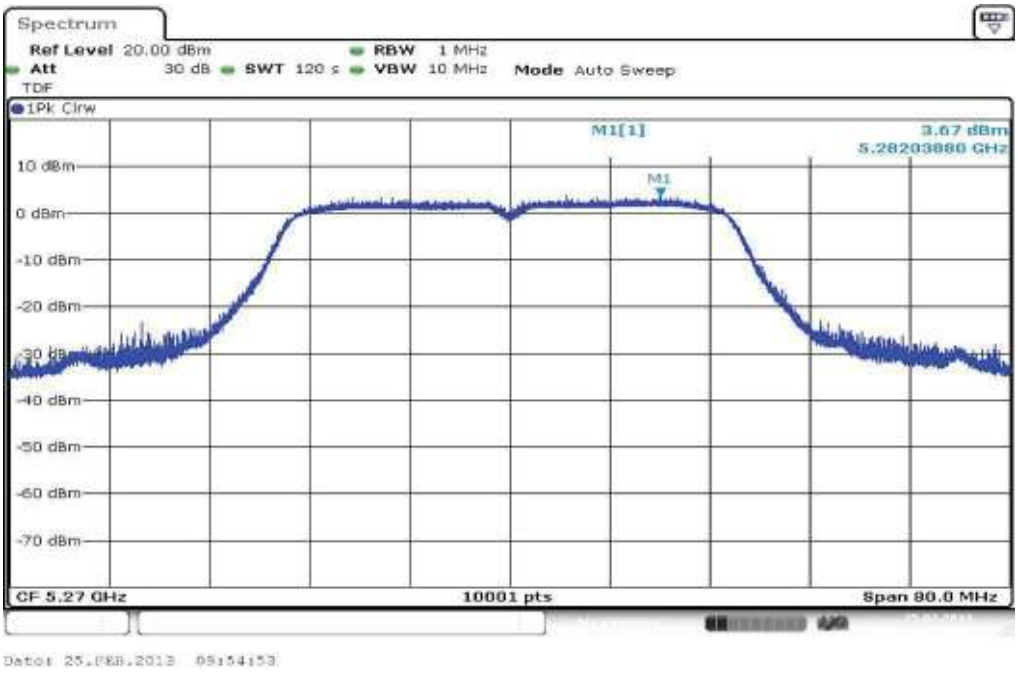
Plots: OFDM / n – mode HT40

Plot 1: 5190 MHz

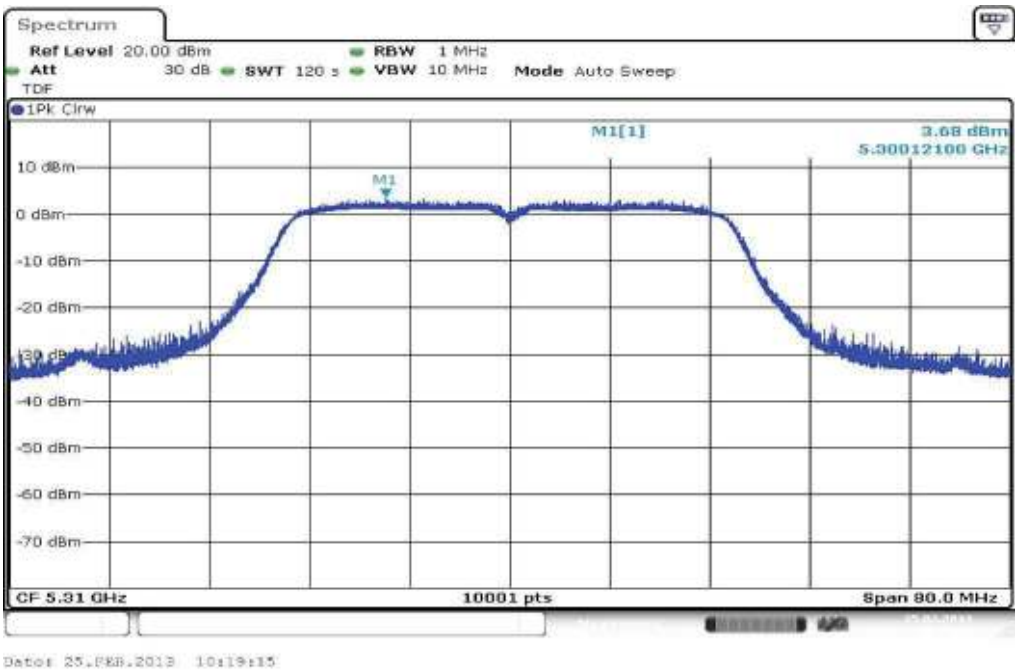


Plot 2: 5230 MHz

Plot 3: 5270 MHz



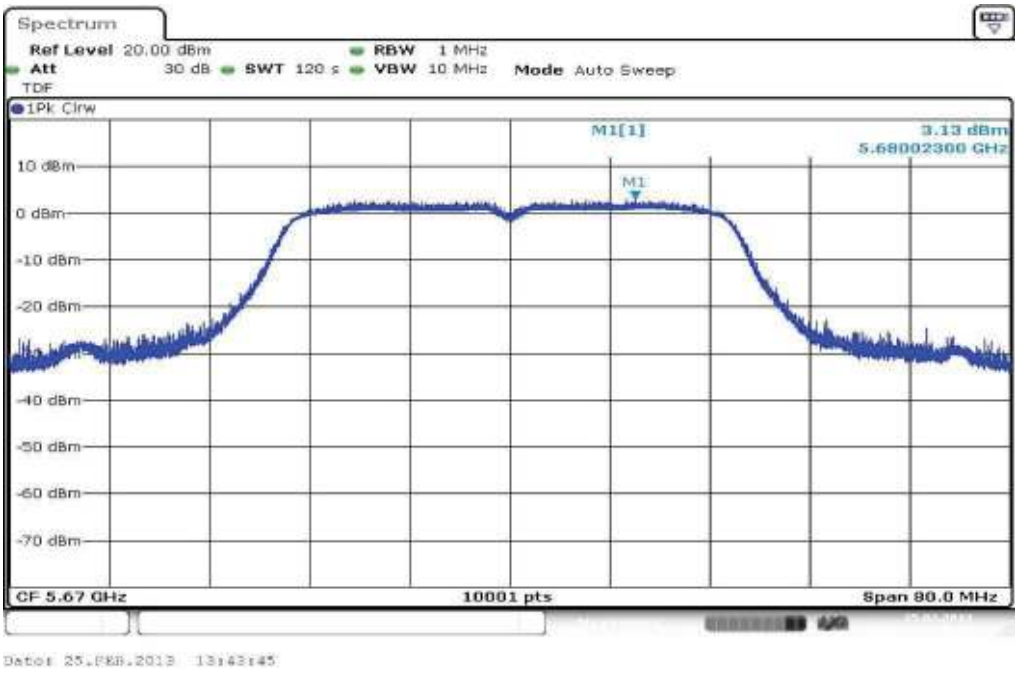
Plot 4: 5310 MHz



Plot 5: 5510 MHz

Plot 6: 5590 MHz

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:	1 MHz / 10 Hz
Span:	See plots!
Trace-Mode:	Max Hold

Limits:

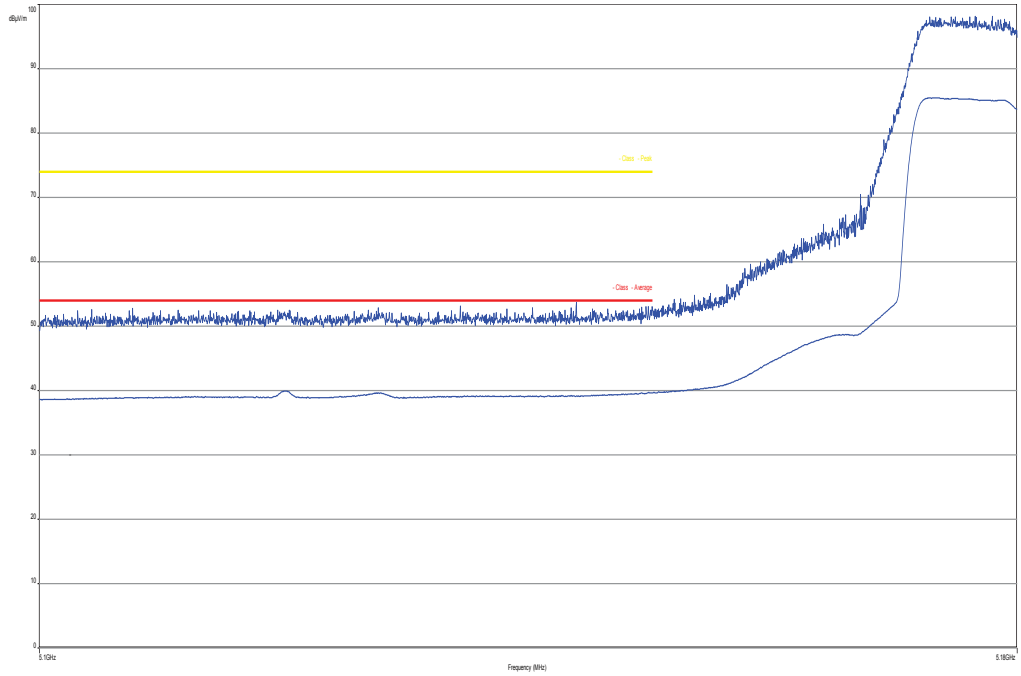
Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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)).
74 dBµV/m PEAK 54 dBµV/m AVG

Result:

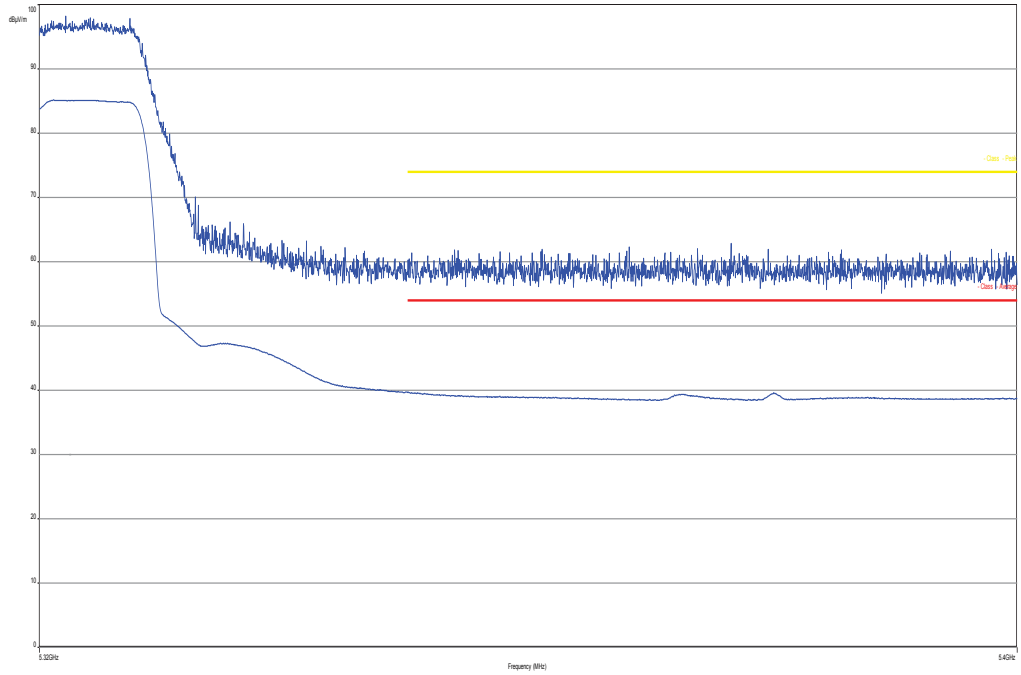
Scenario	Band Edge Compliance Radiated [dBµV/m]
band edge	< 74 dBµV/m (AVG) < 54 dBµV/m (PEAK)
Measurement uncertainty	± 3 dB

Plots:

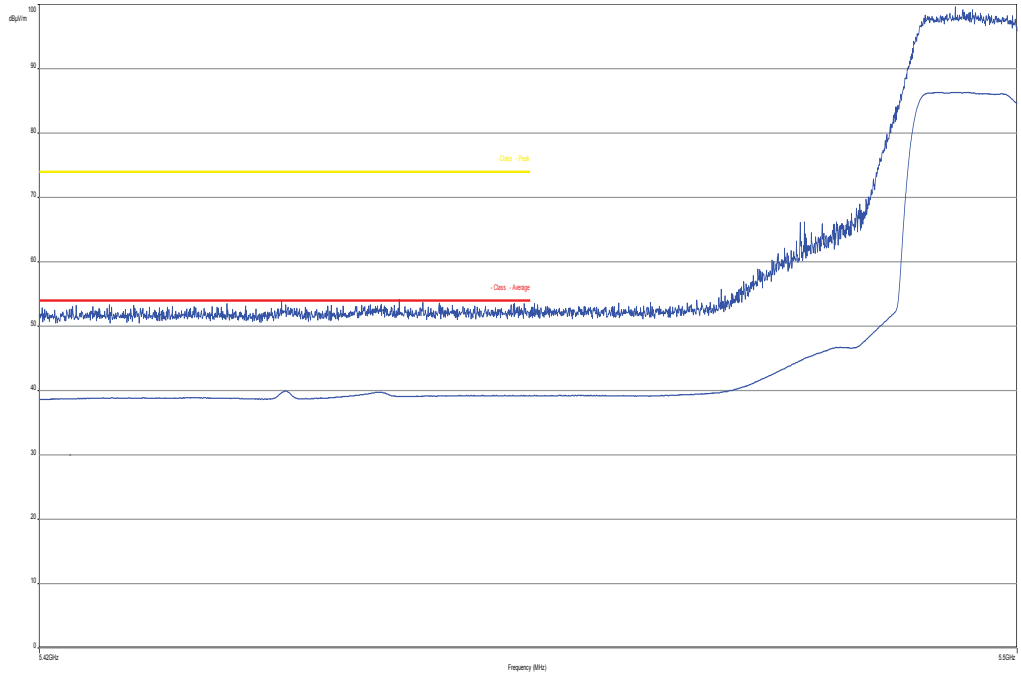
Plot 1: lower band edge, vertical & horizontal polarization (a mode / n HT 20 mode), channel 36



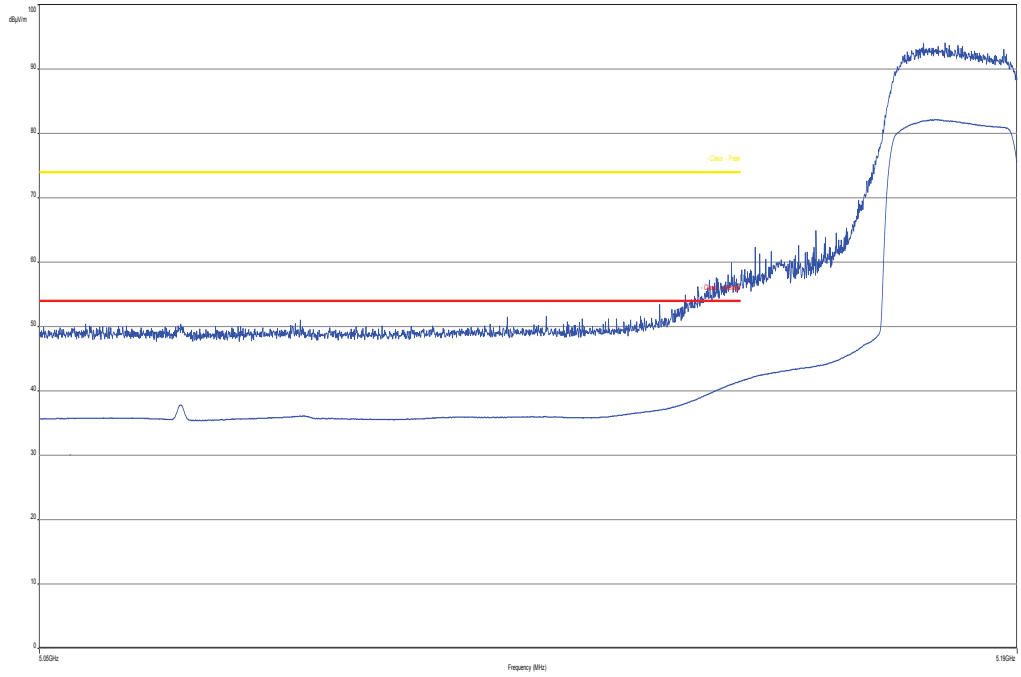
Plot 2: upper band edge, vertical & horizontal polarization (a mode / n HT 20 mode), channel 64



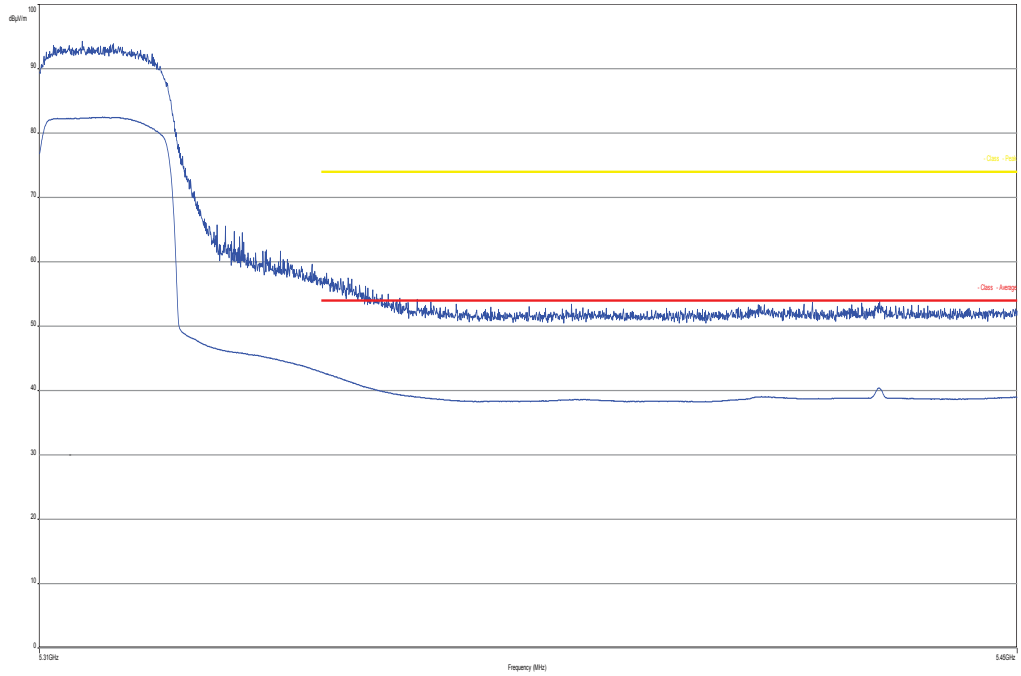
Plot 3: lower band edge, vertical & horizontal polarization (a mode / n HT 20 mode), channel 100



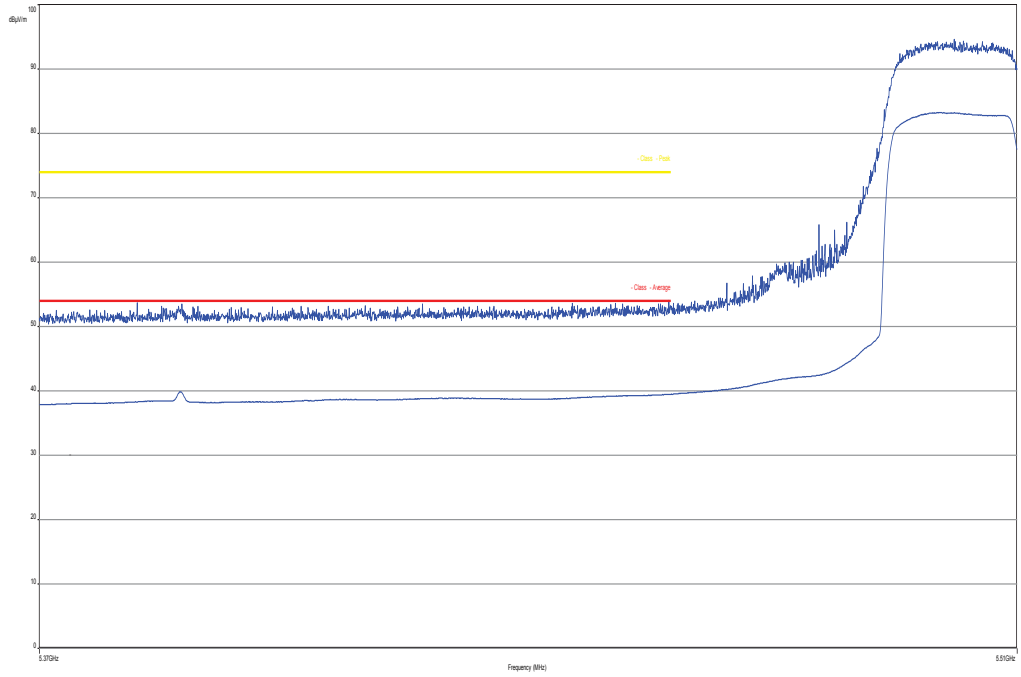
Plot 4: lower band edge, vertical & horizontal polarization (n HT 40 mode), channel 38



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 40 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			Middle 5200 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 a – mode								
Lowest 5260 MHz			Middle 5280 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 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			Middle 5200 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			Middle 5280 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		
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								
Lowest 5270 MHz			-/-			Highest 5310 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								
Lowest 5510 MHz			Middle 5590 MHz			Highest 5670 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**

Note:

Results of the OFDM / n – mode HT20 and HT40 are added to show the behaviour of the EUT.

Plots: OFDM / a – mode / n – mode HT20

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

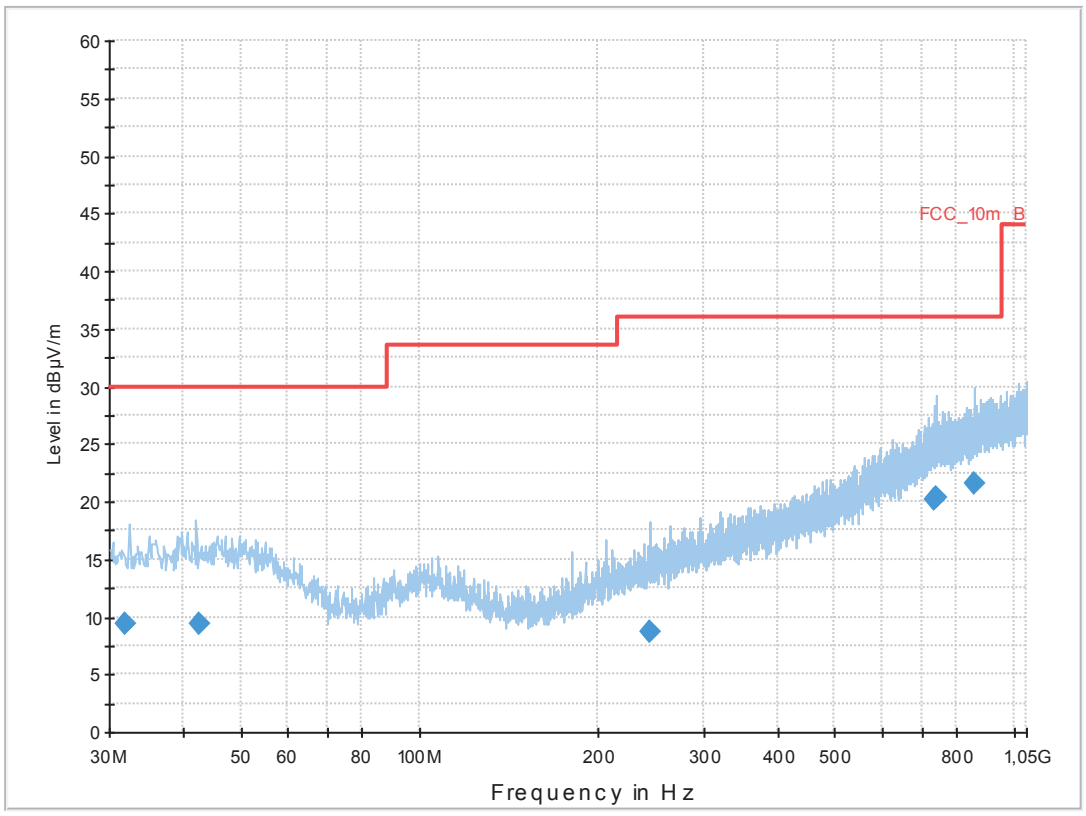
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH36 + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

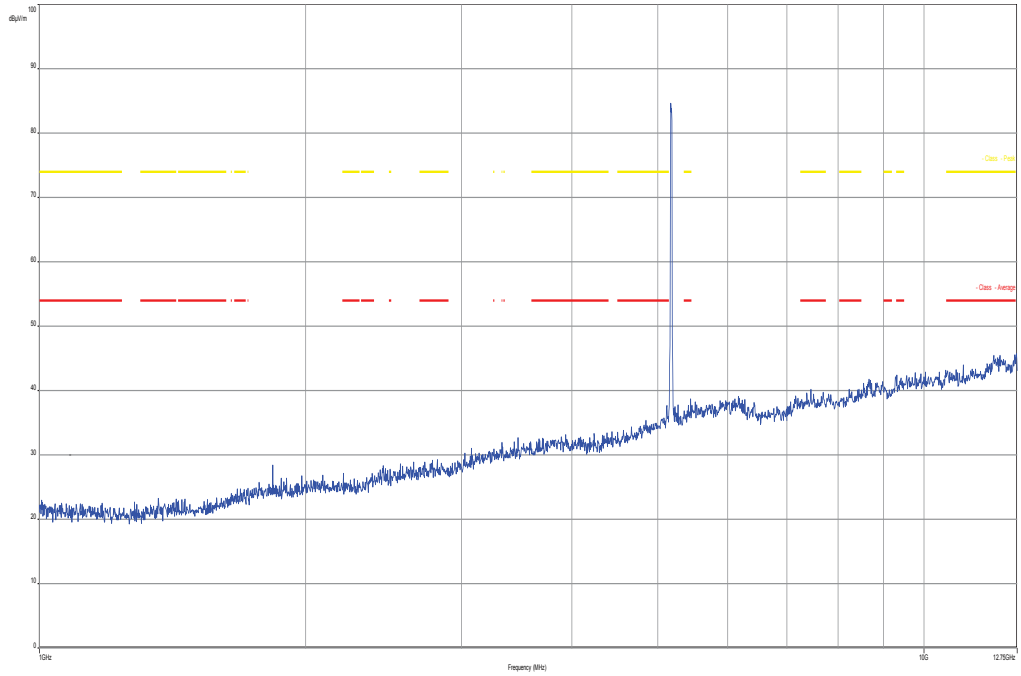
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



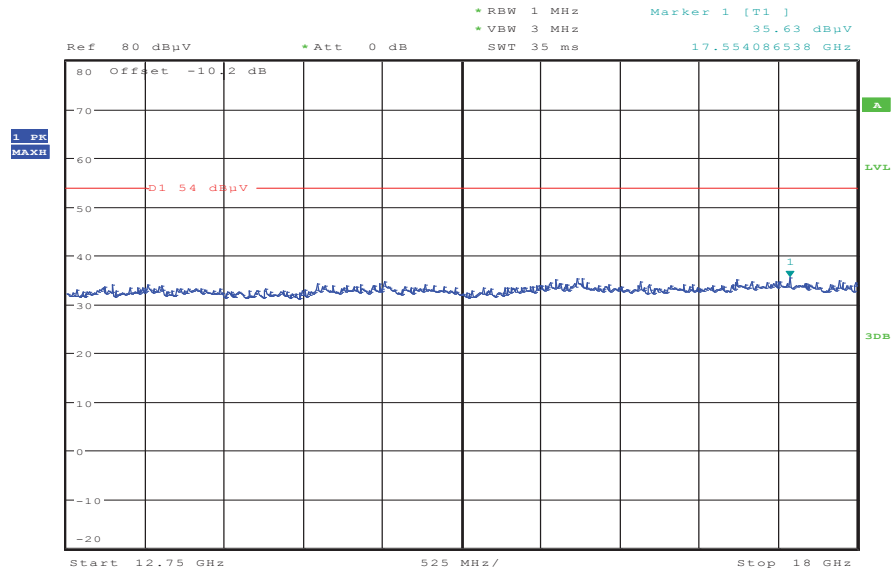
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.039100	9.4	1000.0	120.000	132.0	H	268.0	12.7	20.6	30.0	
42.412050	9.4	1000.0	120.000	152.0	V	182.0	13.4	20.6	30.0	
243.989100	8.7	1000.0	120.000	170.0	H	100.0	13.1	27.3	36.0	
732.818850	20.2	1000.0	120.000	160.0	V	10.0	23.3	15.8	36.0	
741.361350	20.3	1000.0	120.000	120.0	H	100.0	23.5	15.7	36.0	
858.971400	21.6	1000.0	120.000	170.0	H	260.0	24.7	14.4	36.0	

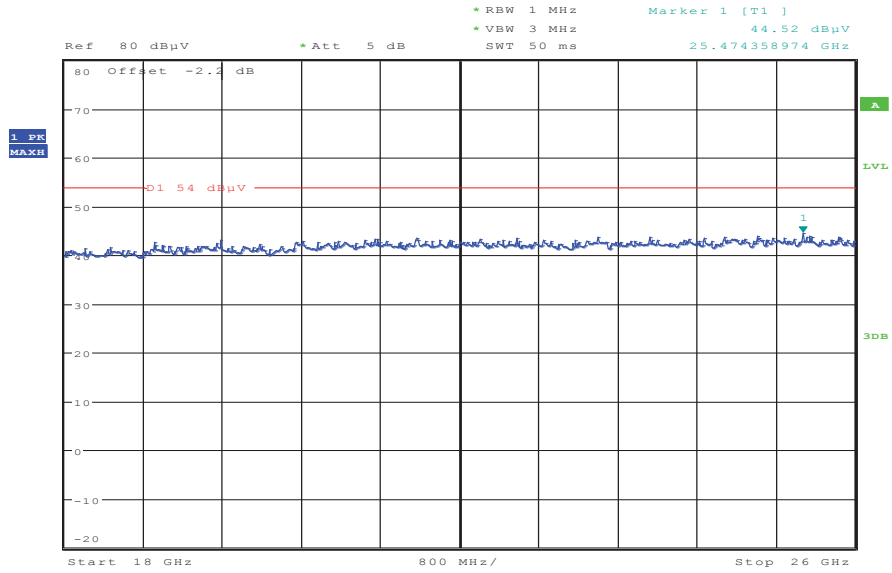
Plot 2: 1 GHz to 12.75 GHz, 5180 MHz, vertical & horizontal polarization



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

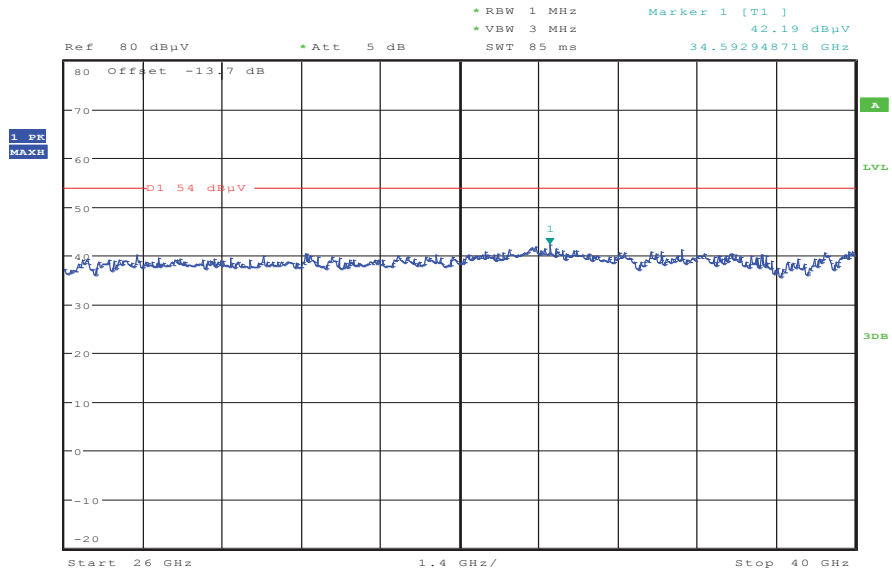


Plot 4: 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 09:17:21

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



Date: 7.MAR.2013 09:43:38

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

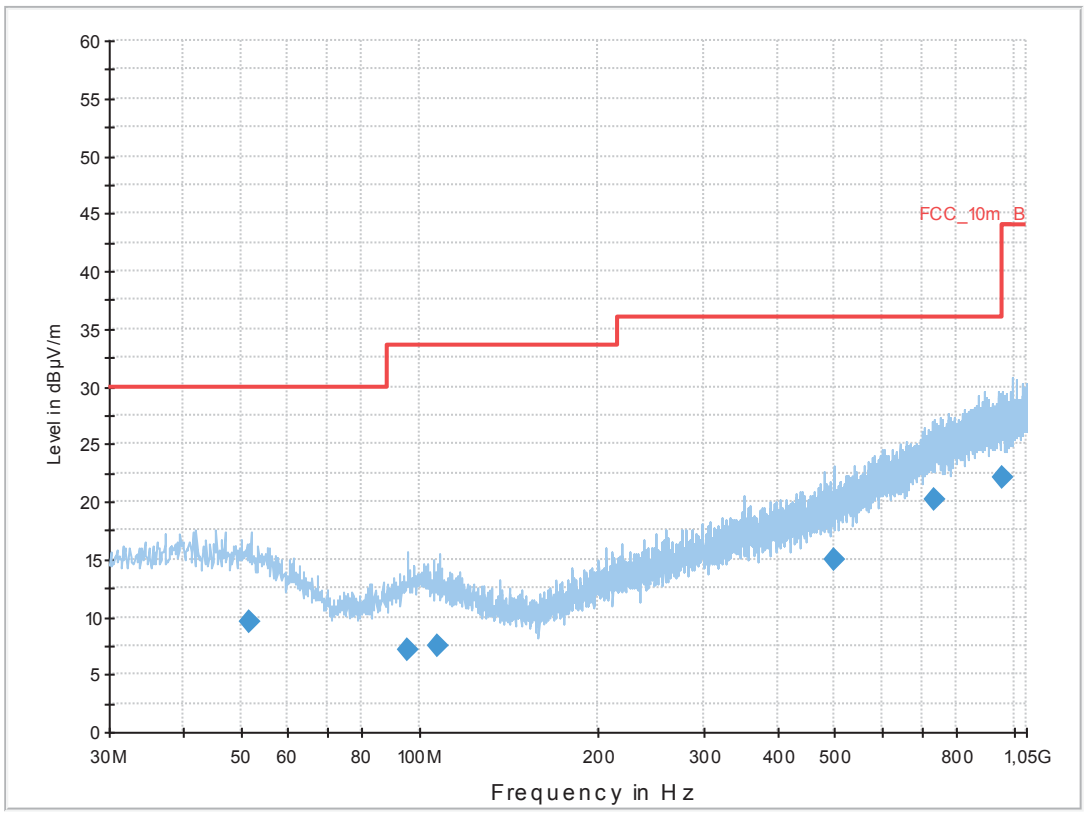
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH48 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

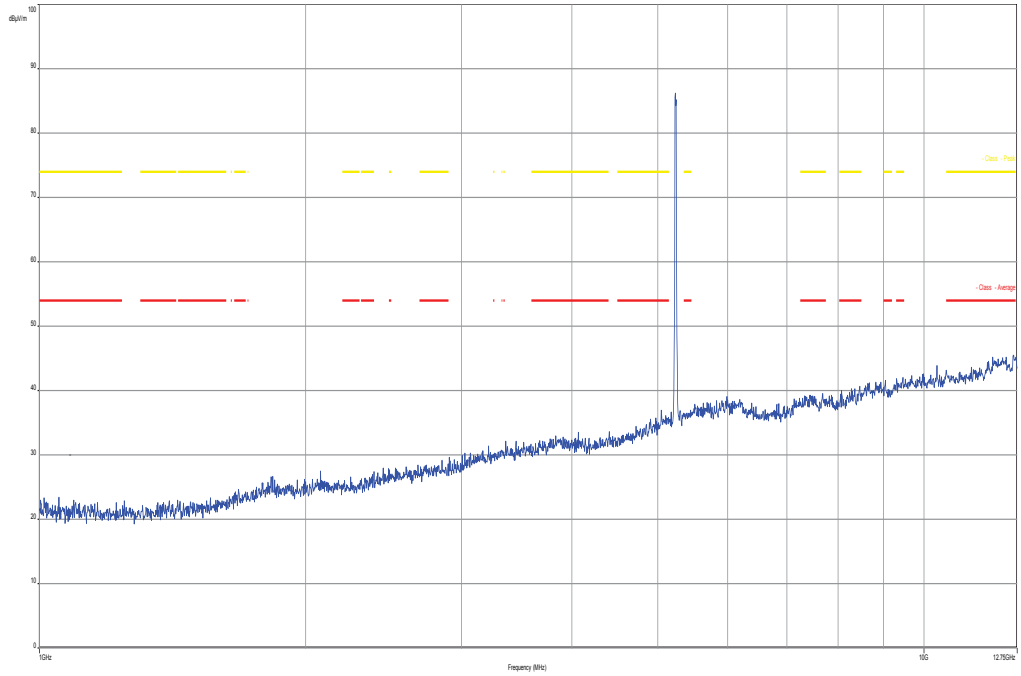
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



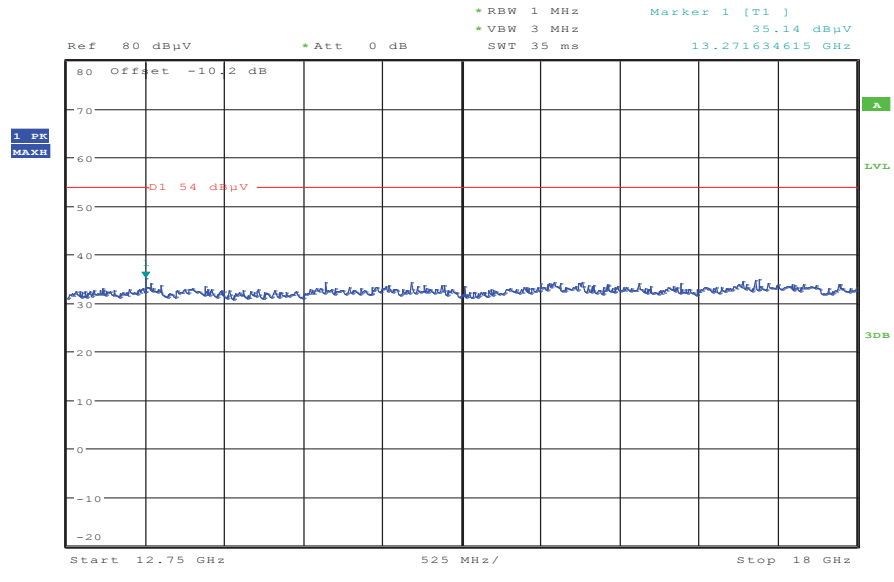
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
51.781050	9.5	1000.0	120.000	170.0	H	270.0	13.2	20.5	30.0	
95.094750	7.1	1000.0	120.000	170.0	H	261.0	11.2	26.4	33.5	
107.177400	7.5	1000.0	120.000	170.0	H	190.0	11.3	26.0	33.5	
496.886850	15.0	1000.0	120.000	152.0	V	280.0	18.6	21.0	36.0	
733.124850	20.2	1000.0	120.000	170.0	V	268.0	23.3	15.8	36.0	
954.100950	22.0	1000.0	120.000	170.0	V	2.0	25.4	14.0	36.0	

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

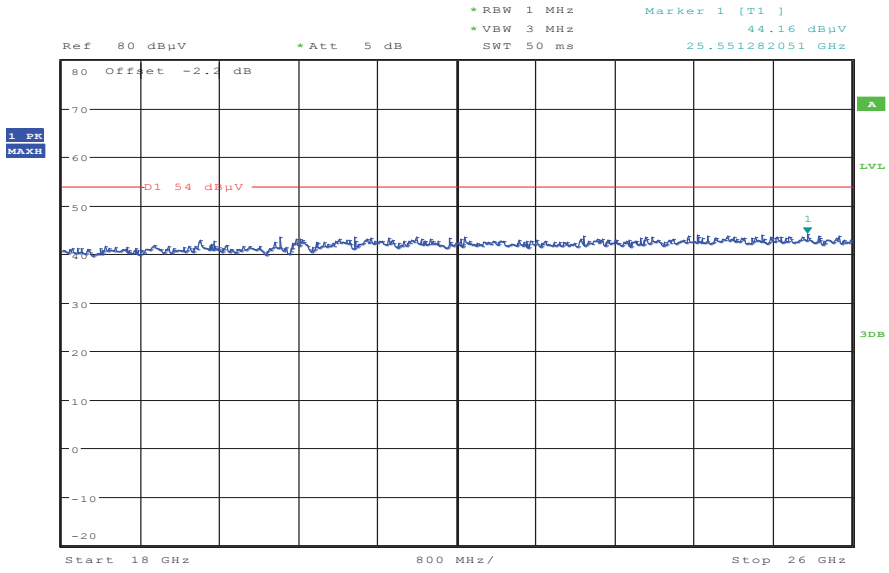


Plot 8: 12 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization



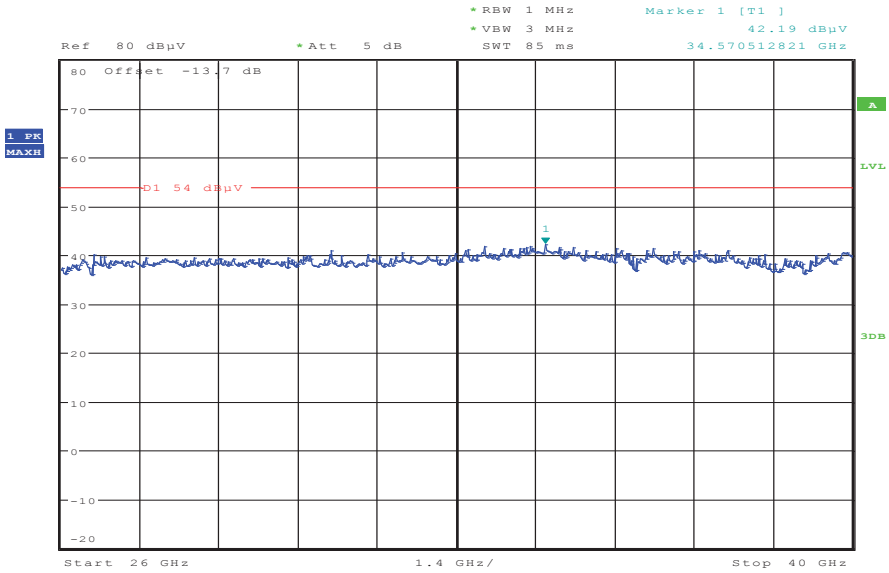
Date: 7.MAR.2013 08:14:38

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



Date: 7.MAR.2013 09:18:48

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



Date: 7.MAR.2013 09:42:23

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

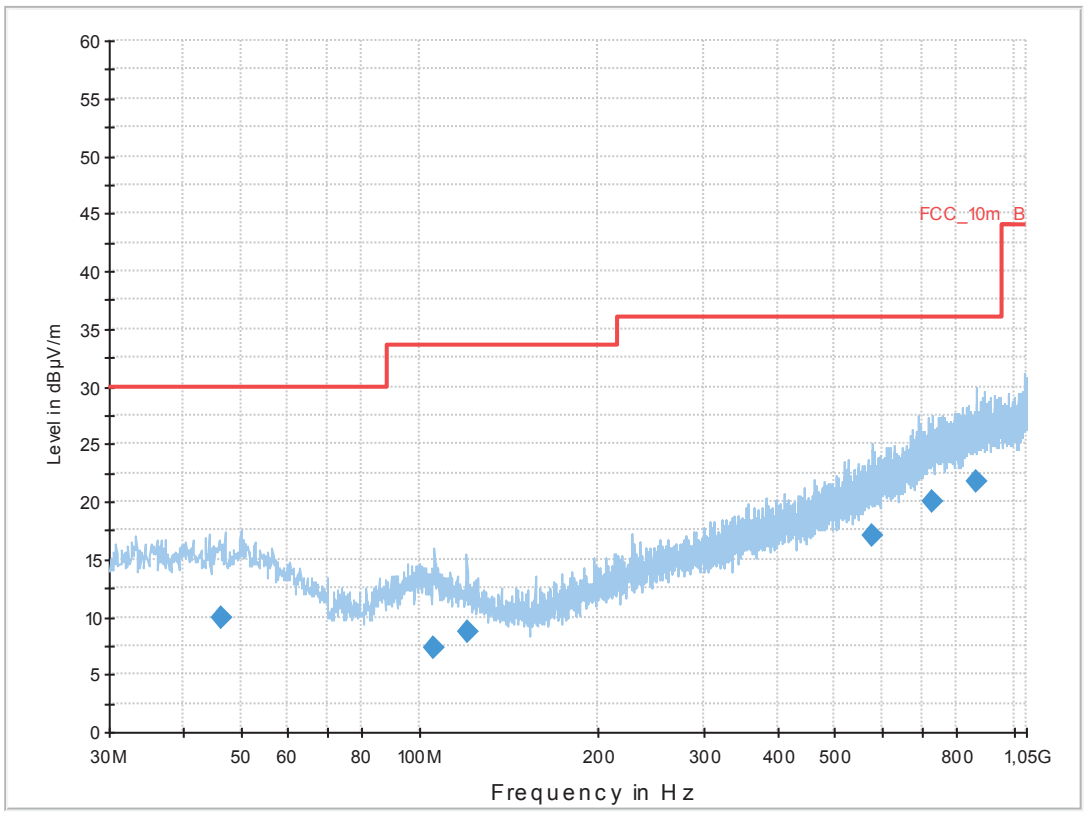
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH52 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

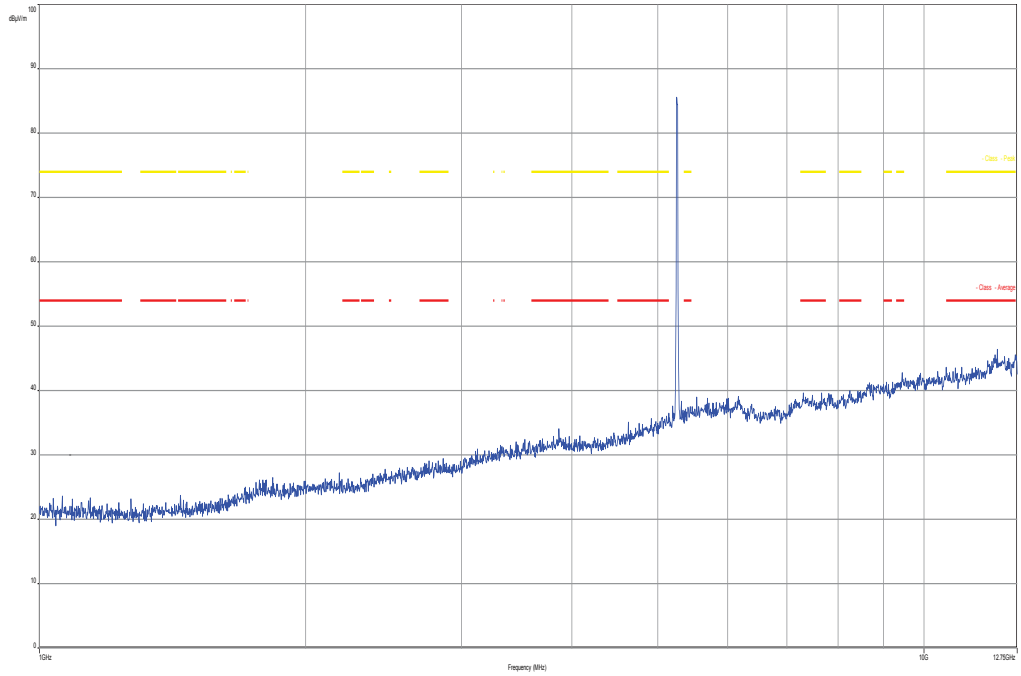
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



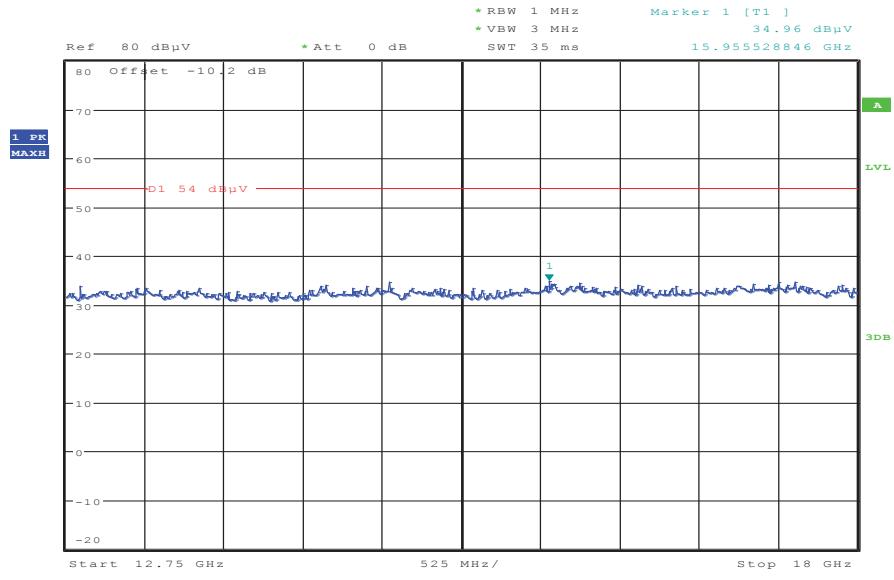
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.509900	10.0	1000.0	120.000	111.0	V	260.0	13.3	20.0	30.0	
105.810450	7.2	1000.0	120.000	111.0	H	85.0	11.4	26.3	33.5	
120.010650	8.8	1000.0	120.000	170.0	V	2.0	10.2	24.7	33.5	
579.626550	17.1	1000.0	120.000	170.0	V	10.0	20.2	18.9	36.0	
726.865500	20.1	1000.0	120.000	170.0	V	280.0	23.1	15.9	36.0	
865.902900	21.7	1000.0	120.000	170.0	H	261.0	24.8	14.3	36.0	

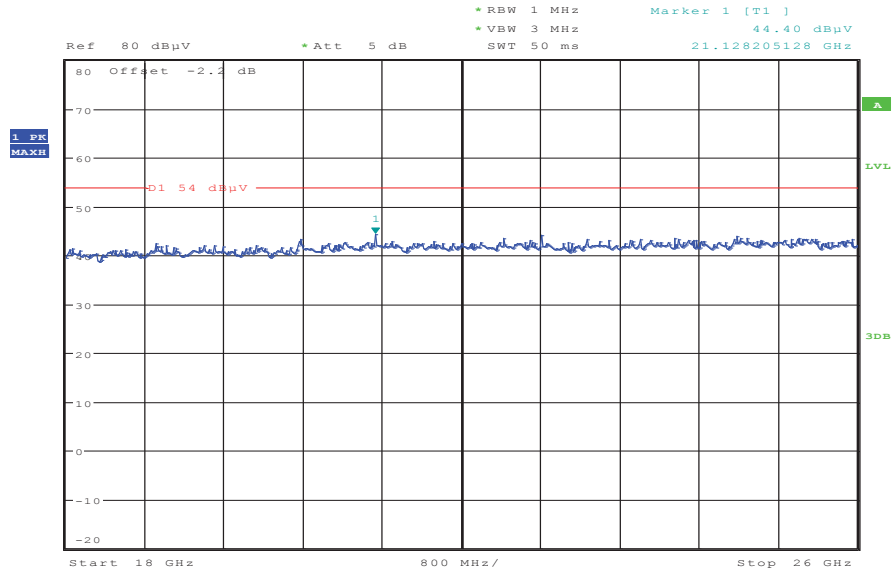
Plot 12: 1 GHz to 12.75 GHz, 5260 MHz, vertical & horizontal polarization



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

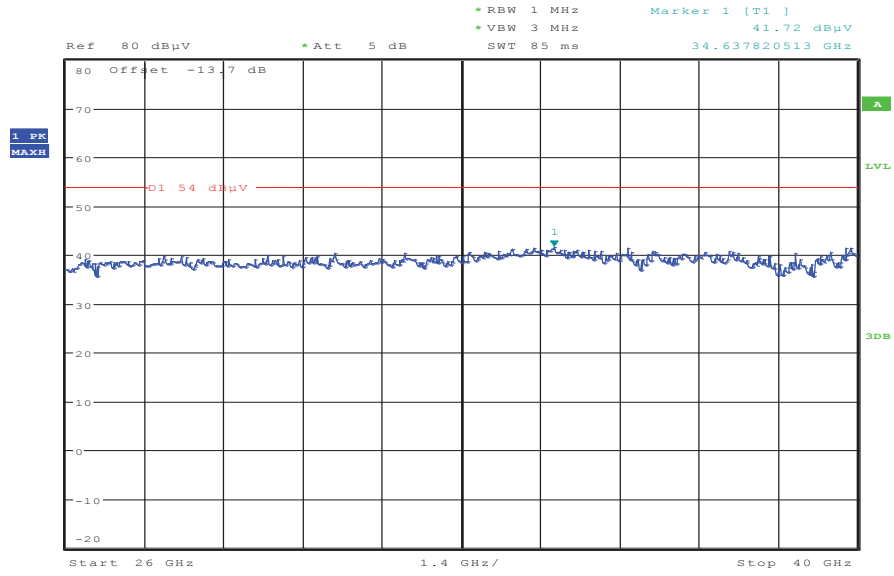


Plot 14: 18 GHz to 26 GHz, 5260 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 09:19:36

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



Date: 7.MAR.2013 09:40:43

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

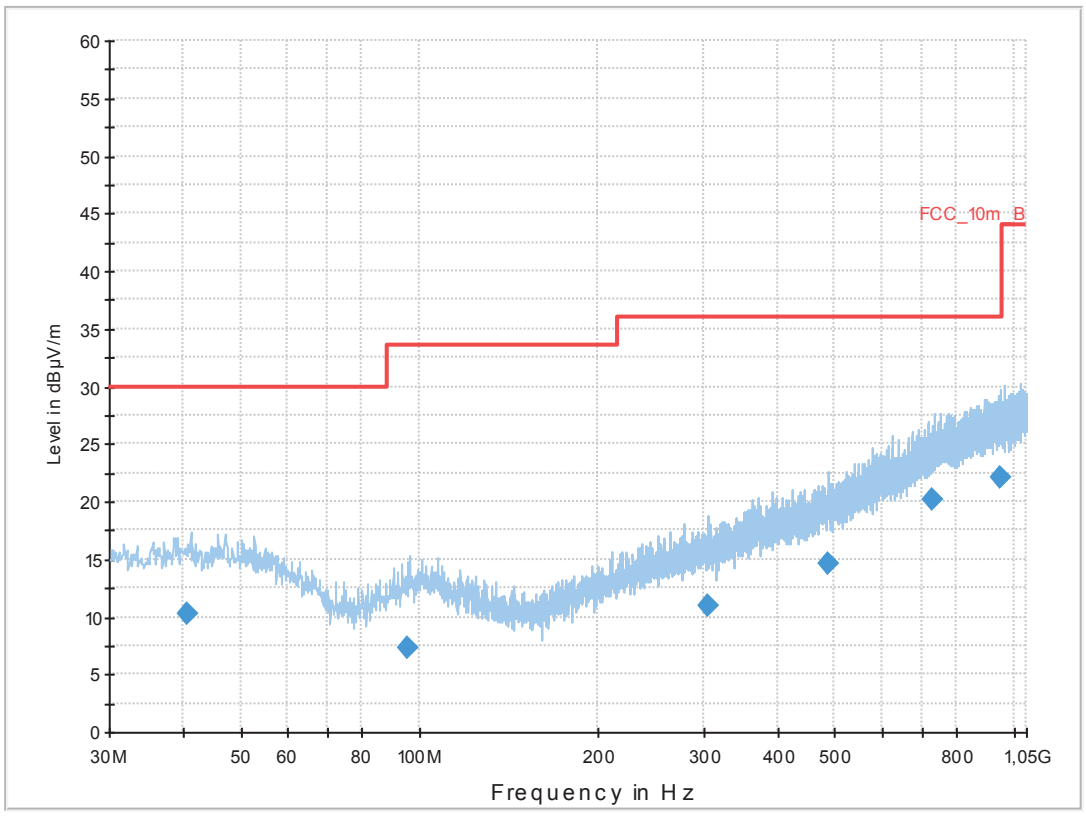
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH64 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

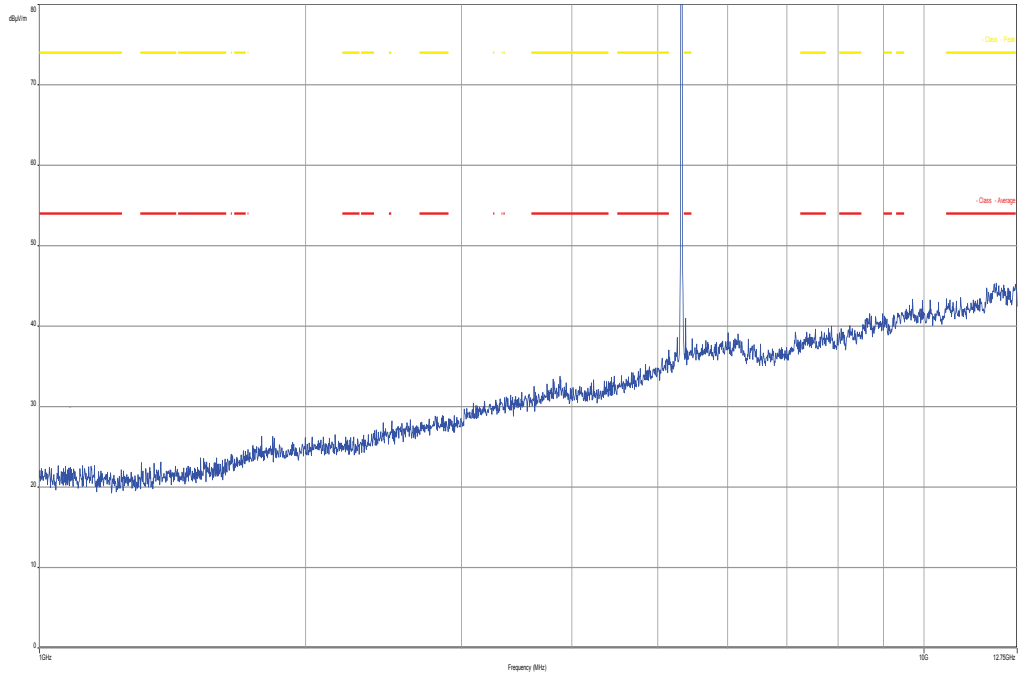
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



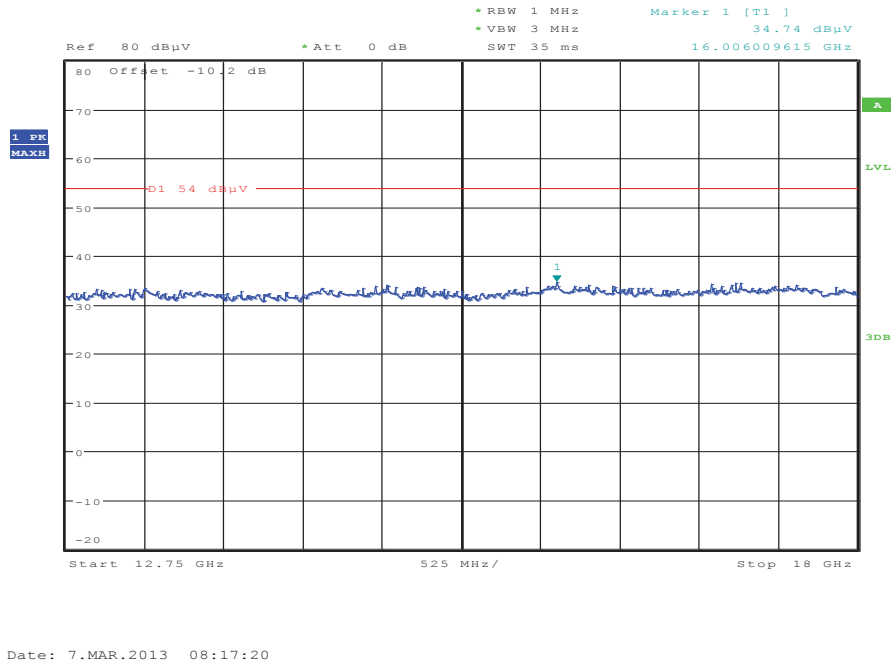
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.745550	10.3	1000.0	120.000	115.0	V	280.0	13.4	19.7	30.0	
95.405550	7.3	1000.0	120.000	120.0	V	100.0	11.3	26.2	33.5	
305.719050	10.9	1000.0	120.000	98.0	V	261.0	14.7	25.1	36.0	
485.642250	14.6	1000.0	120.000	170.0	V	180.0	18.4	21.4	36.0	
731.511300	20.2	1000.0	120.000	135.0	V	261.0	23.2	15.8	36.0	
947.171550	22.0	1000.0	120.000	170.0	V	280.0	25.3	14.0	36.0	

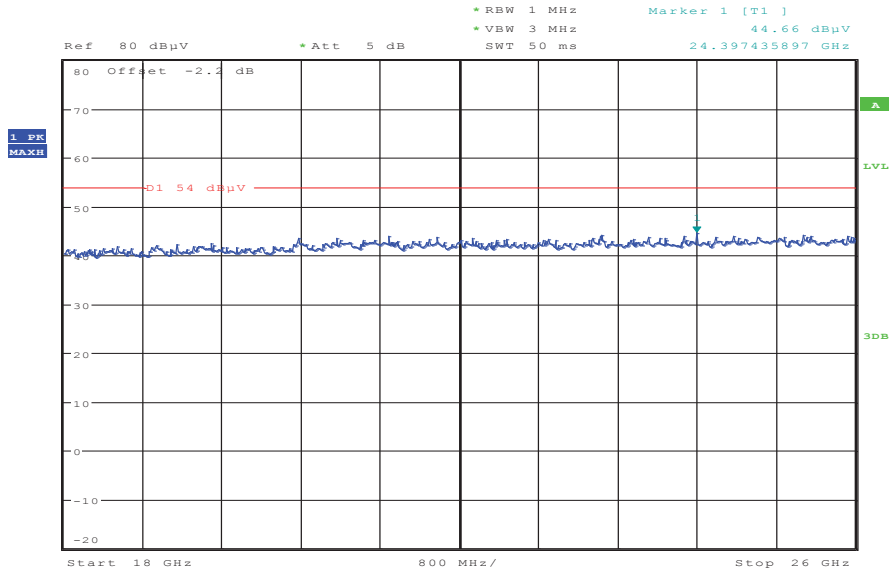
Plot 17: 1 GHz to 12.75 GHz, 5320 MHz, vertical & horizontal polarization



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

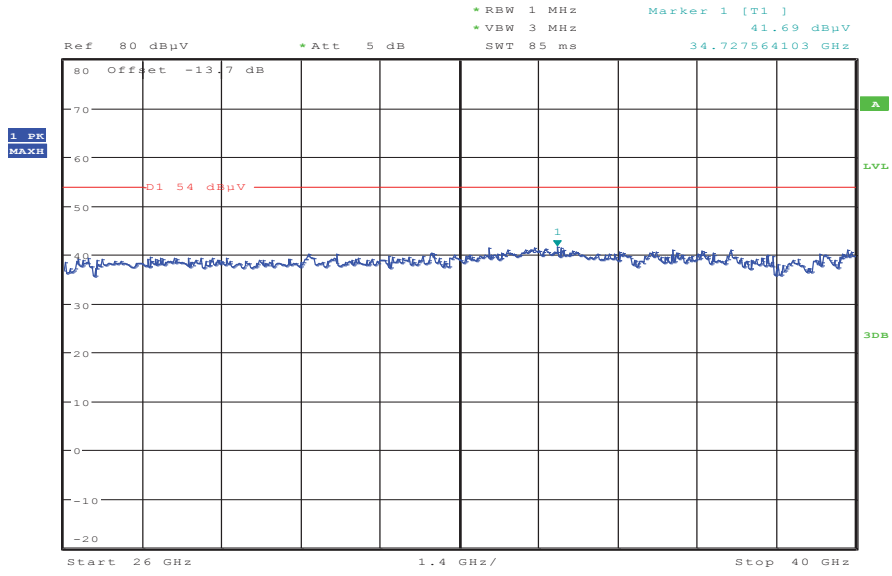


Plot 19: 18 GHz to 26 GHz, 5320 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 09:20:59

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



Date: 7.MAR.2013 09:39:38

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

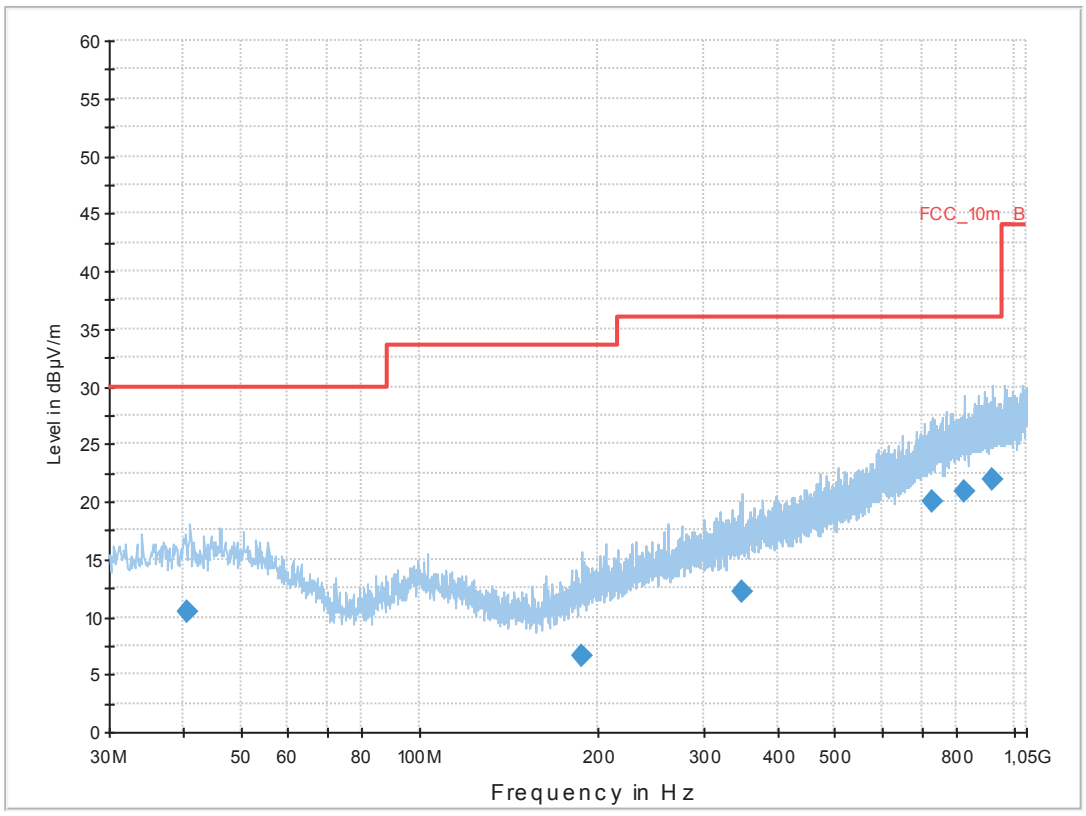
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH100 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

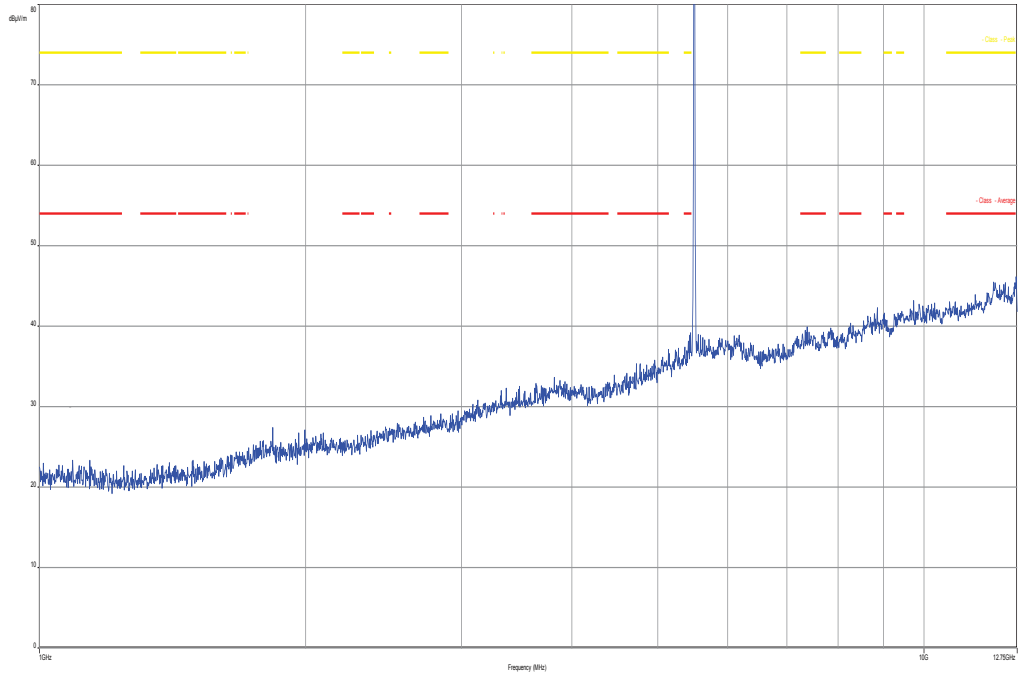
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



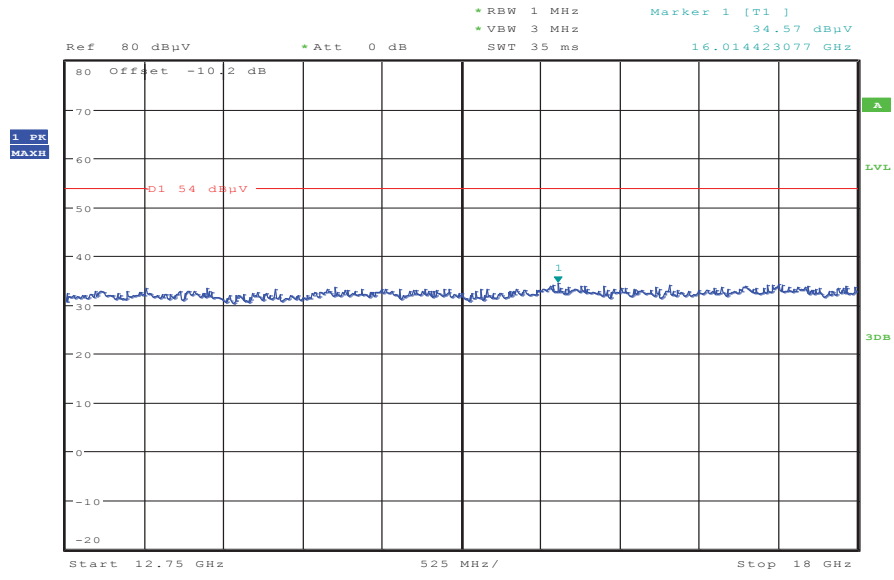
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.561800	10.5	1000.0	120.000	120.0	V	-4.0	13.4	19.5	30.0	
187.724100	6.7	1000.0	120.000	170.0	V	170.0	10.9	26.8	33.5	
349.893600	12.1	1000.0	120.000	170.0	H	190.0	16.1	23.9	36.0	
729.196800	20.0	1000.0	120.000	143.0	H	-5.0	23.2	16.0	36.0	
822.965250	20.9	1000.0	120.000	120.0	H	-5.0	24.2	15.1	36.0	
917.544000	22.0	1000.0	120.000	111.0	H	100.0	25.3	14.0	36.0	

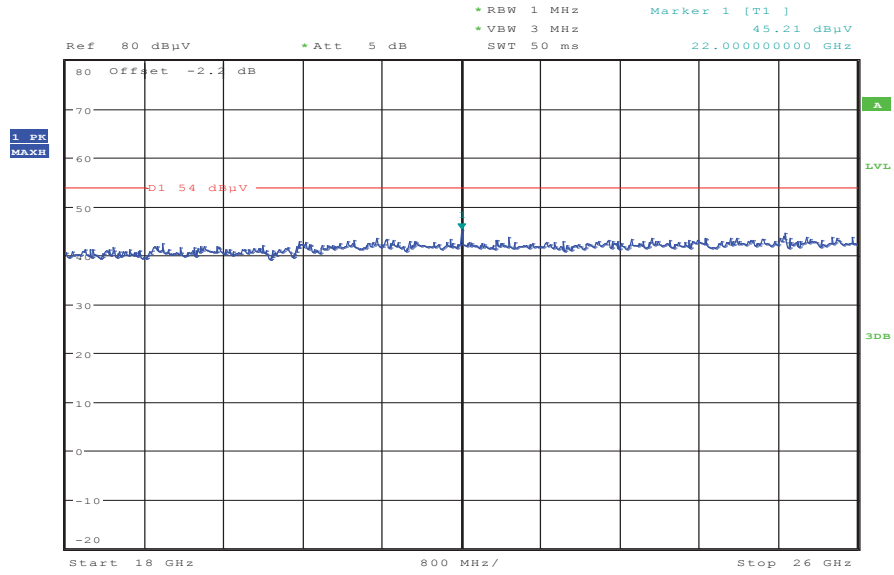
Plot 22: 1 GHz to 12.75 GHz, 5500 MHz, vertical & horizontal polarization



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

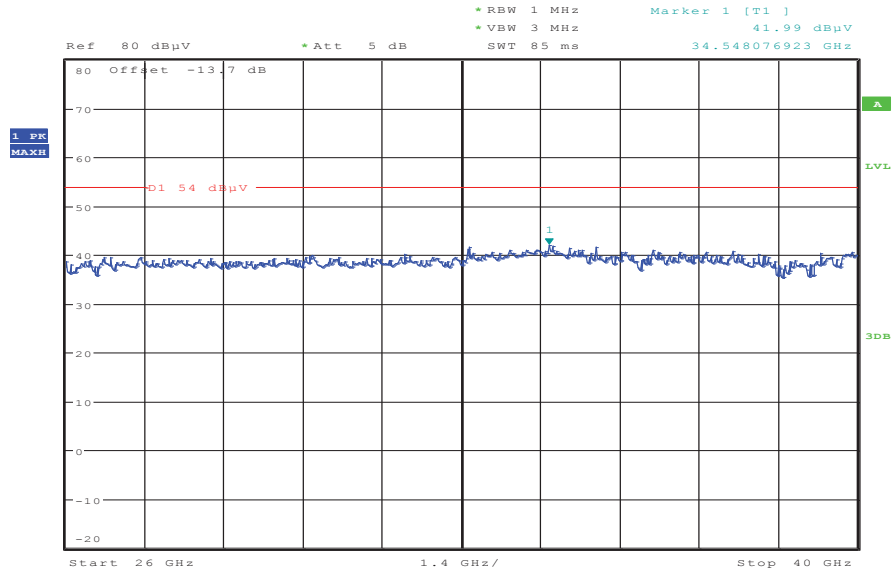


Plot 24: 18 GHz to 26 GHz, 5500 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 09:22:01

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



Date: 7.MAR.2013 09:38:28

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

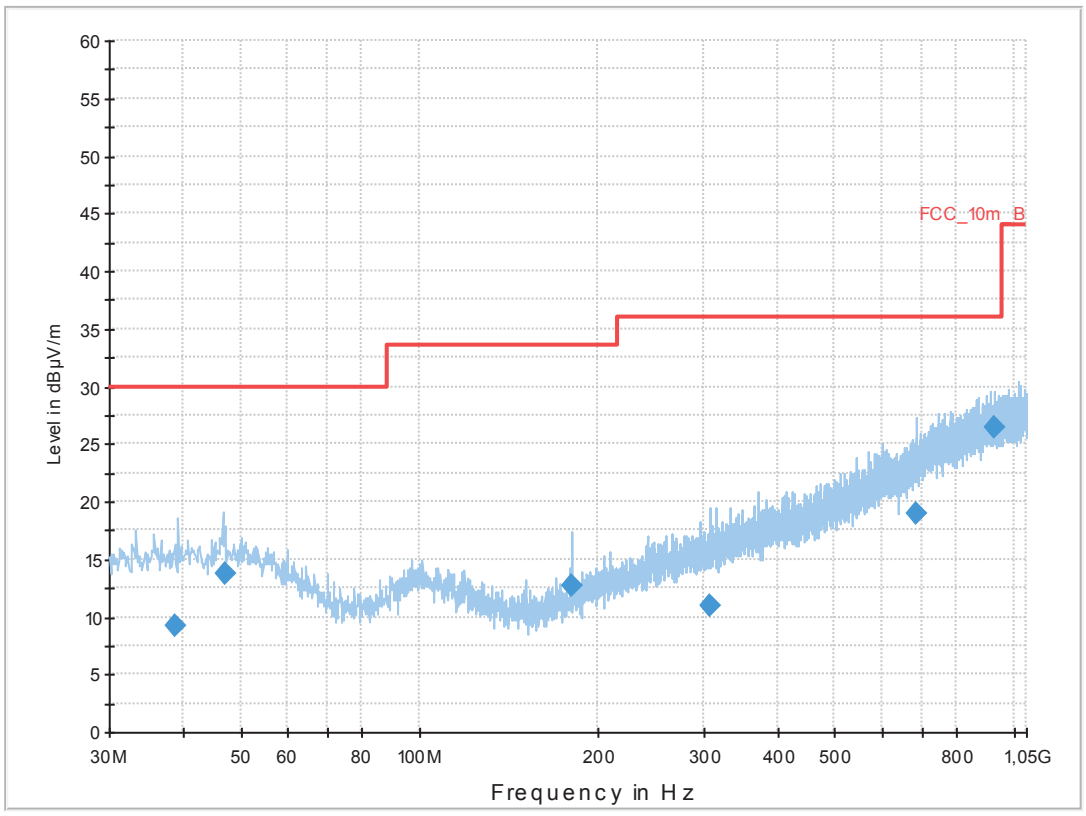
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH120 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

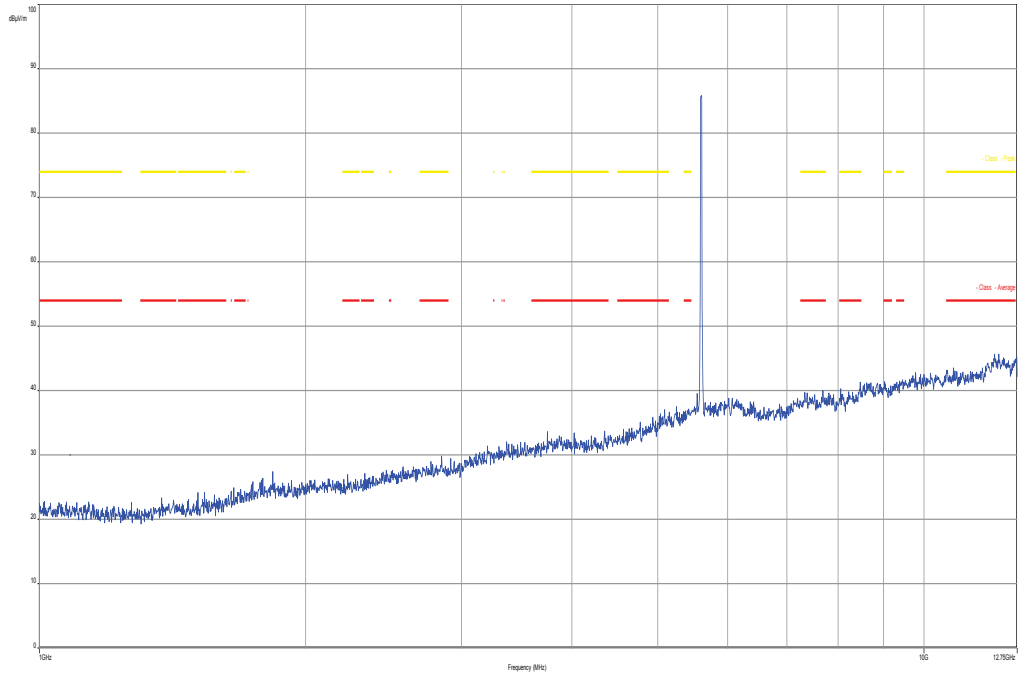
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



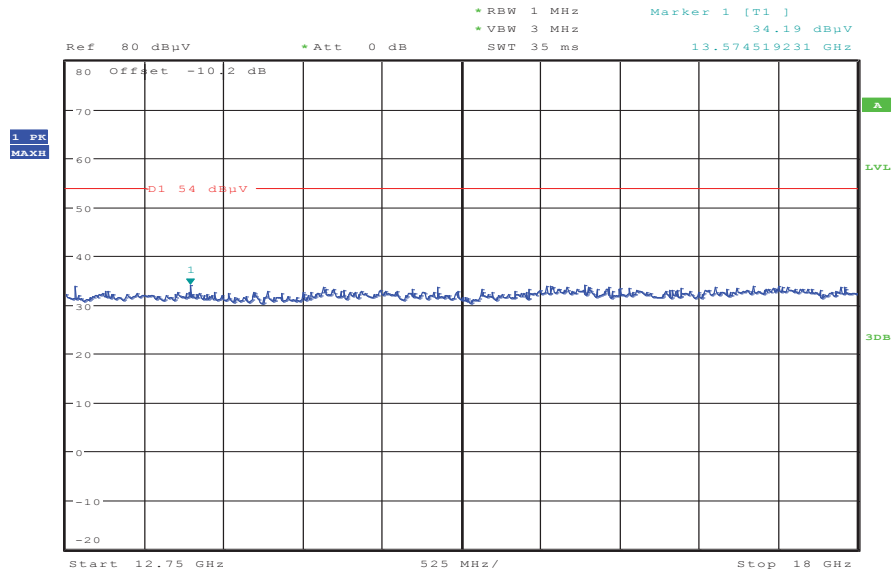
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
38.839350	9.1	1000.0	120.000	170.0	V	265.0	13.3	20.9	30.0	
47.019000	13.7	1000.0	120.000	98.0	V	10.0	13.3	16.3	30.0	
180.006450	12.7	1000.0	120.000	132.0	V	-5.0	10.4	20.8	33.5	
308.544000	11.0	1000.0	120.000	170.0	V	270.0	14.8	25.0	36.0	
686.156850	19.0	1000.0	120.000	132.0	V	190.0	22.1	17.0	36.0	
927.450450	26.4	1000.0	120.000	170.0	V	4.0	25.3	9.6	36.0	

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

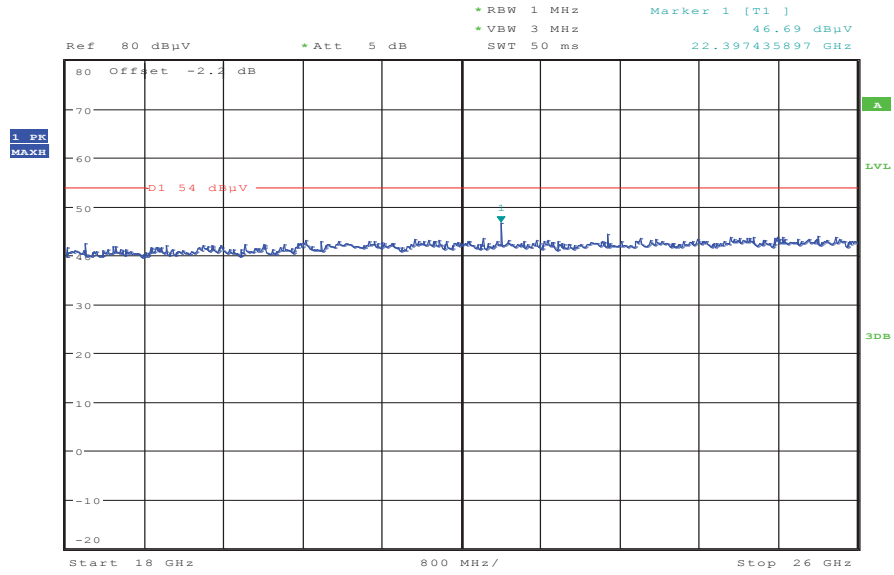


Plot 28: 12 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization



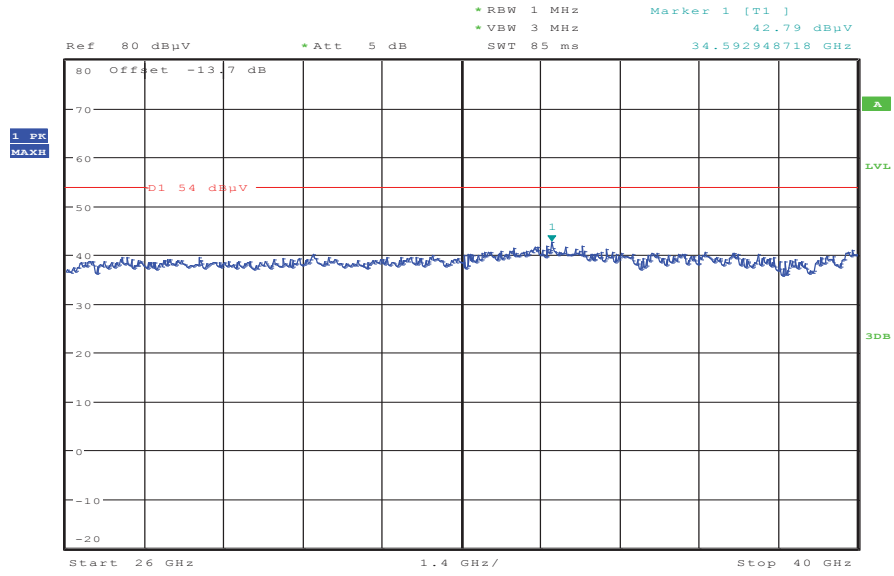
Date: 7.MAR.2013 08:20:00

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



Date: 7.MAR.2013 09:23:09

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



Date: 7.MAR.2013 09:37:25

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

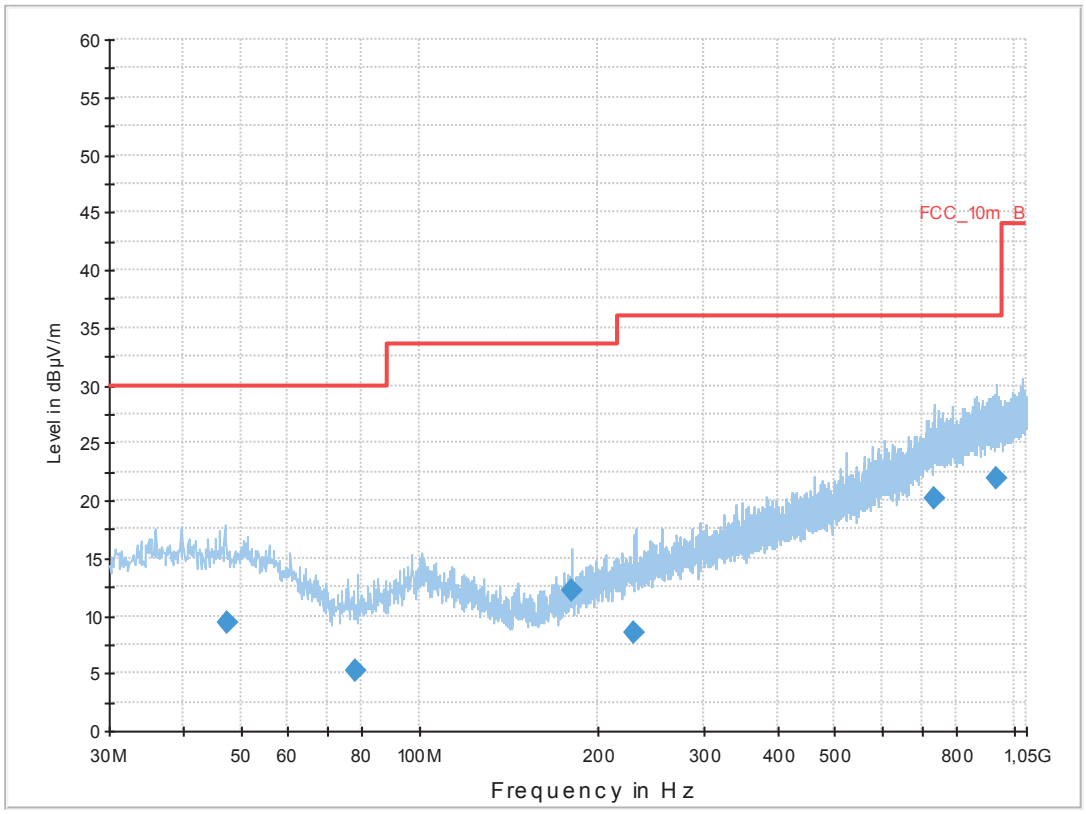
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 C class B @ 10 m
Operating Conditions:	W-LAN n-mode CH140 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

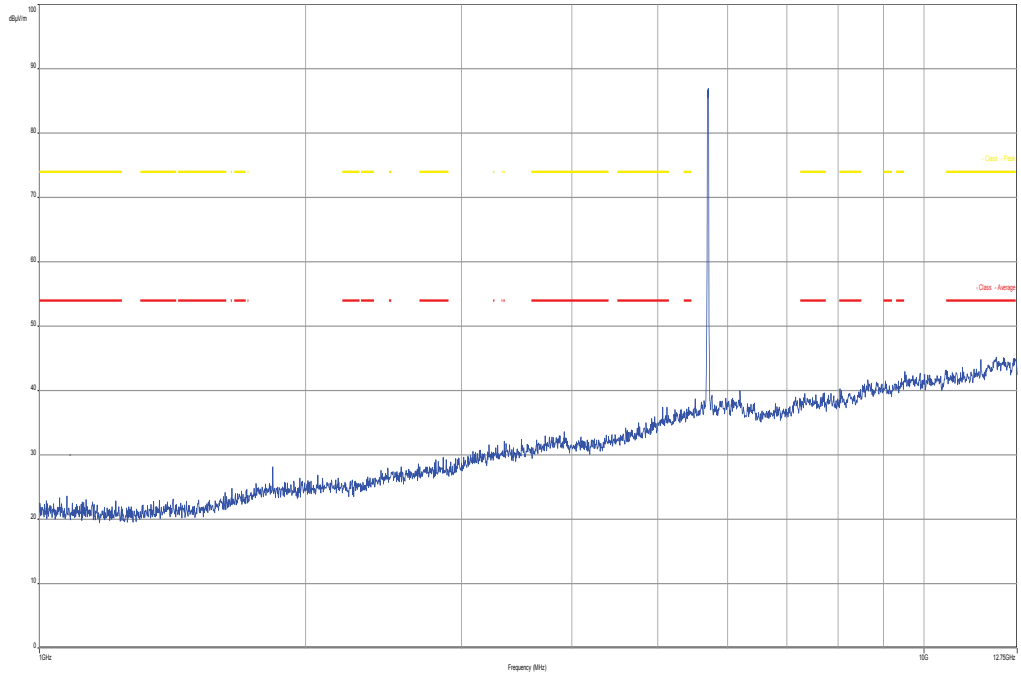
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



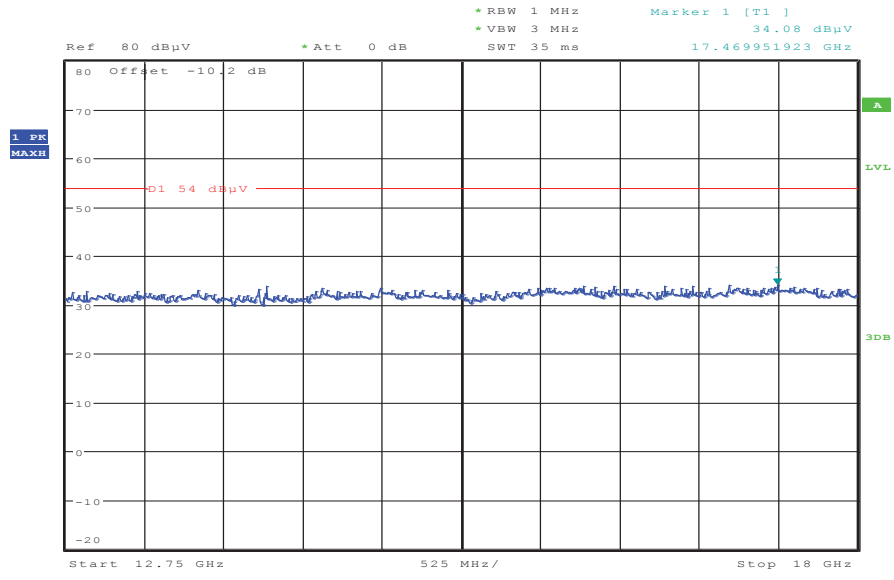
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
47.269800	9.4	1000.0	120.000	132.0	V	190.0	13.3	20.6	30.0	
77.946000	5.2	1000.0	120.000	170.0	V	100.0	9.1	24.8	30.0	
180.040800	12.1	1000.0	120.000	170.0	V	270.0	10.4	21.4	33.5	
229.819050	8.6	1000.0	120.000	153.0	H	272.0	12.7	27.4	36.0	
734.350950	20.1	1000.0	120.000	98.0	V	80.0	23.3	15.9	36.0	
935.893050	22.0	1000.0	120.000	170.0	V	260.0	25.3	14.0	36.0	

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

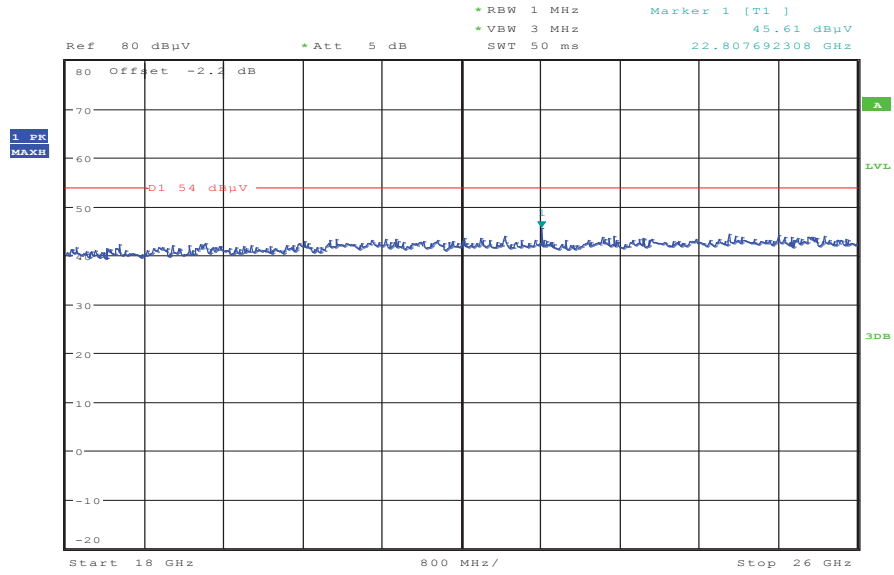


Plot 33: 12 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization



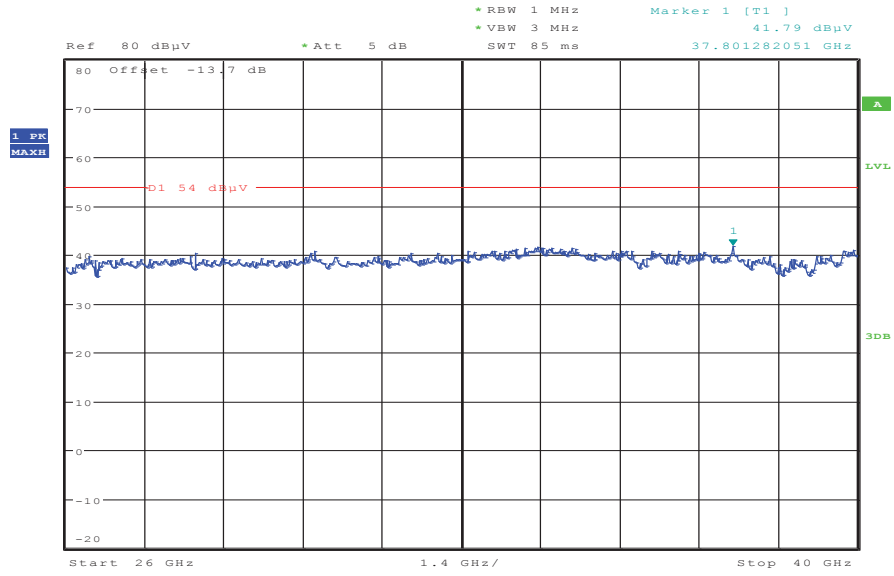
Date: 7.MAR.2013 08:21:05

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



Date: 7.MAR.2013 09:24:23

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



Date: 7.MAR.2013 09:36:33

Plots: OFDM / n – mode HT40

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

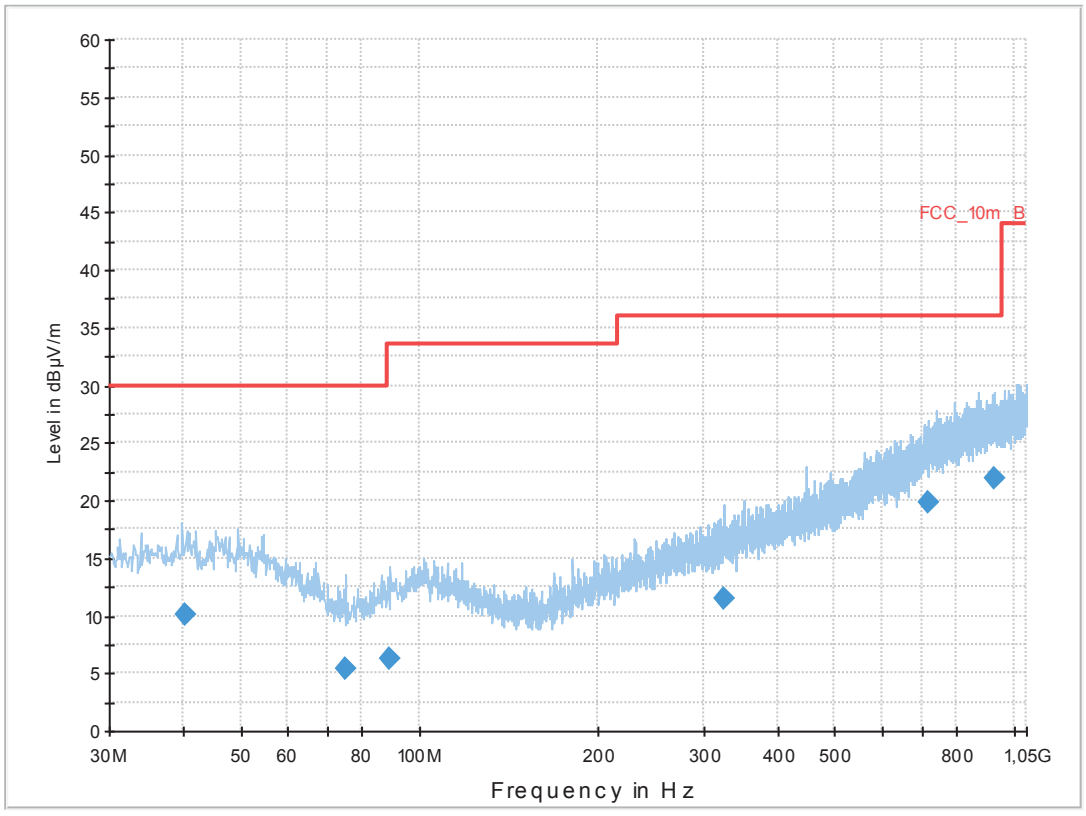
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	W-LAN n-mode HT40 CH38 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

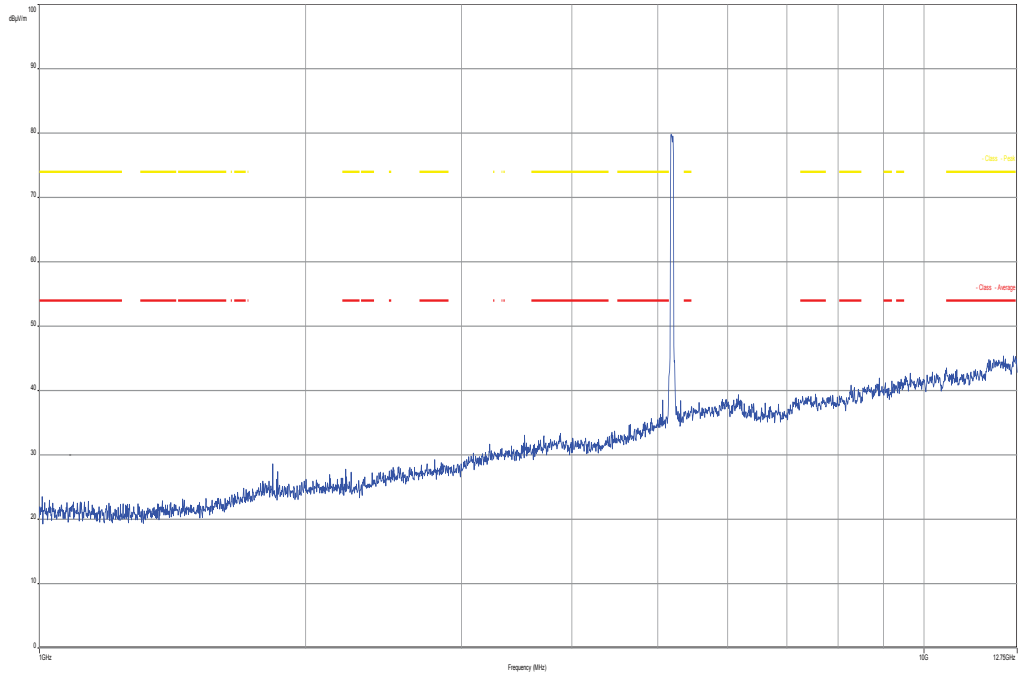
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



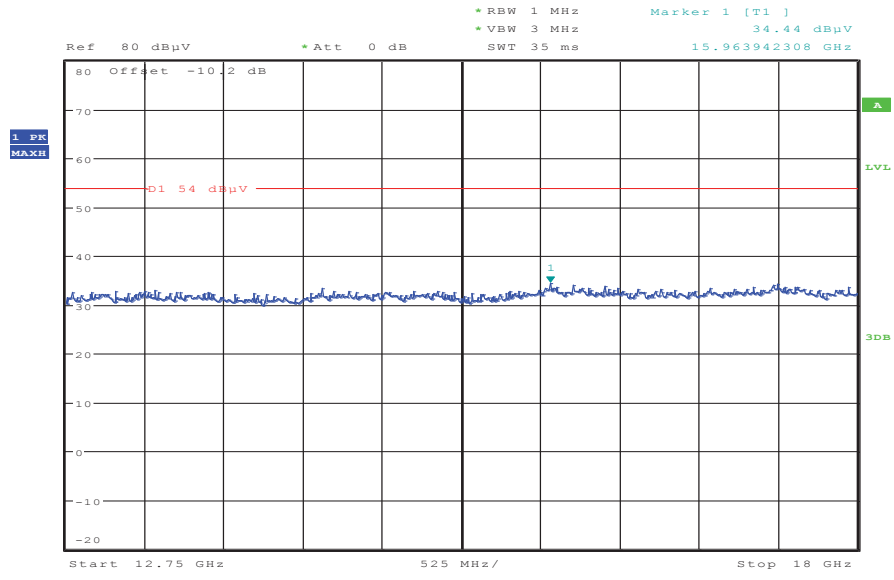
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.182750	10.1	1000.0	120.000	170.0	H	175.0	13.4	19.9	30.0	
74.819850	5.3	1000.0	120.000	112.0	V	88.0	9.2	24.7	30.0	
88.909200	6.2	1000.0	120.000	145.0	V	88.0	10.4	27.3	33.5	
325.663500	11.5	1000.0	120.000	170.0	H	10.0	15.3	24.5	36.0	
719.389200	19.8	1000.0	120.000	170.0	V	190.0	23.0	16.2	36.0	
930.168600	22.0	1000.0	120.000	156.0	V	175.0	25.3	14.0	36.0	

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

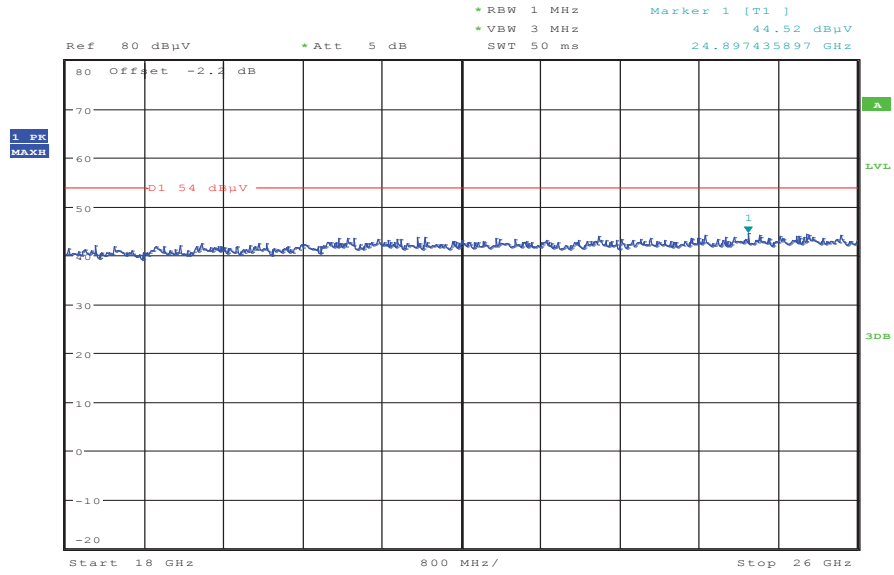


Plot 3: 12 GHz to 18 GHz, 5190 MHz, vertical & horizontal polarization



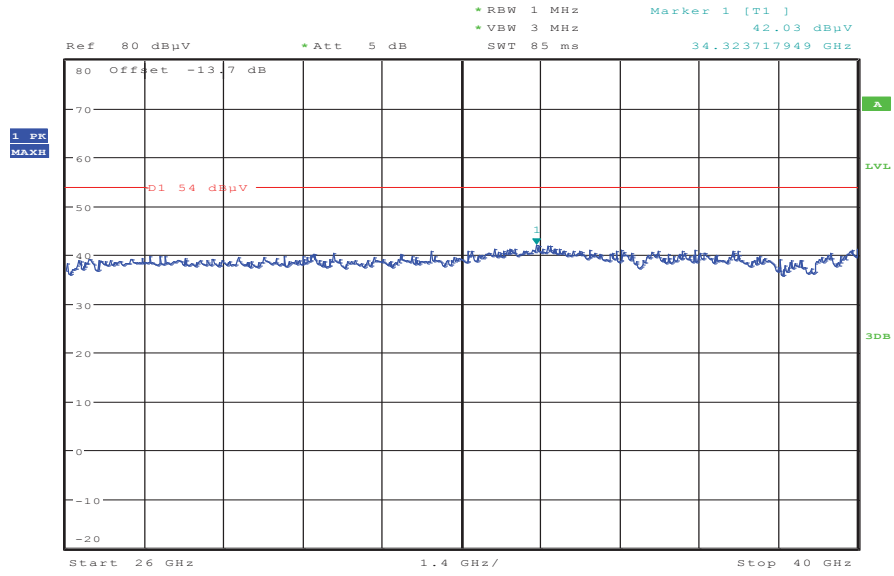
Date: 7.MAR.2013 08:27:50

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



Date: 7.MAR.2013 08:51:16

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



Date: 7.MAR.2013 09:47:29

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

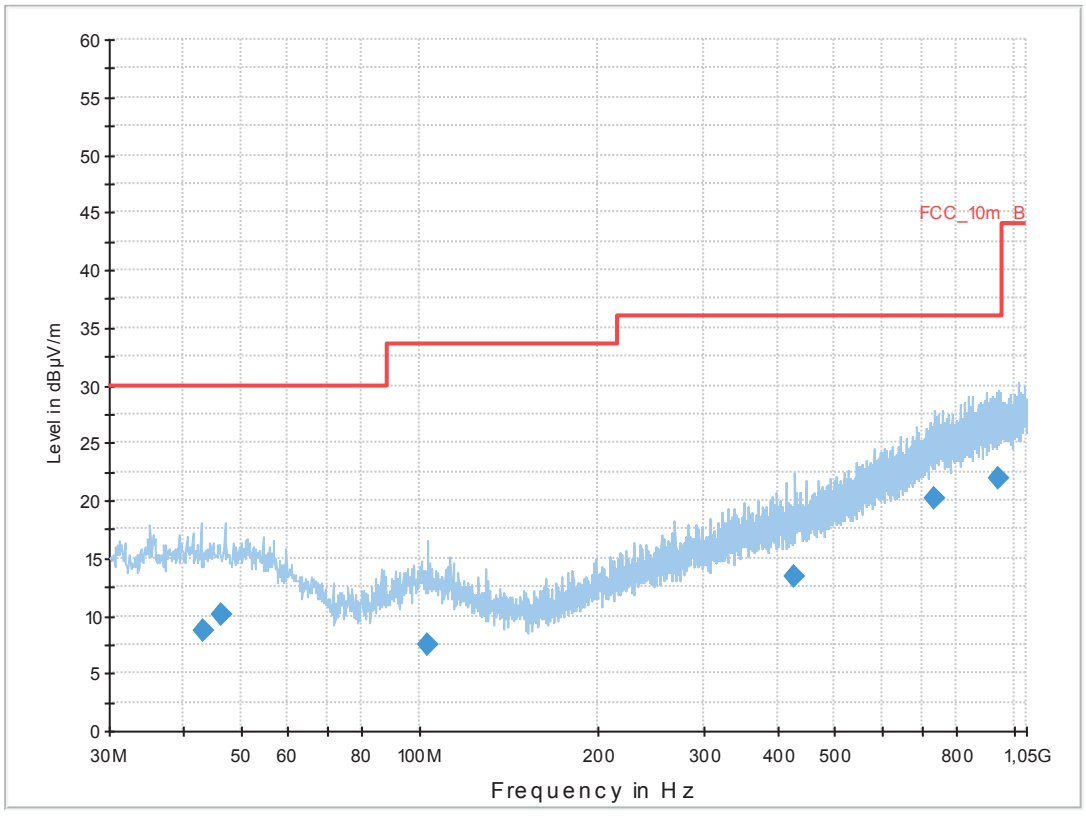
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	W-LAN n-mode HT40 CH46 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

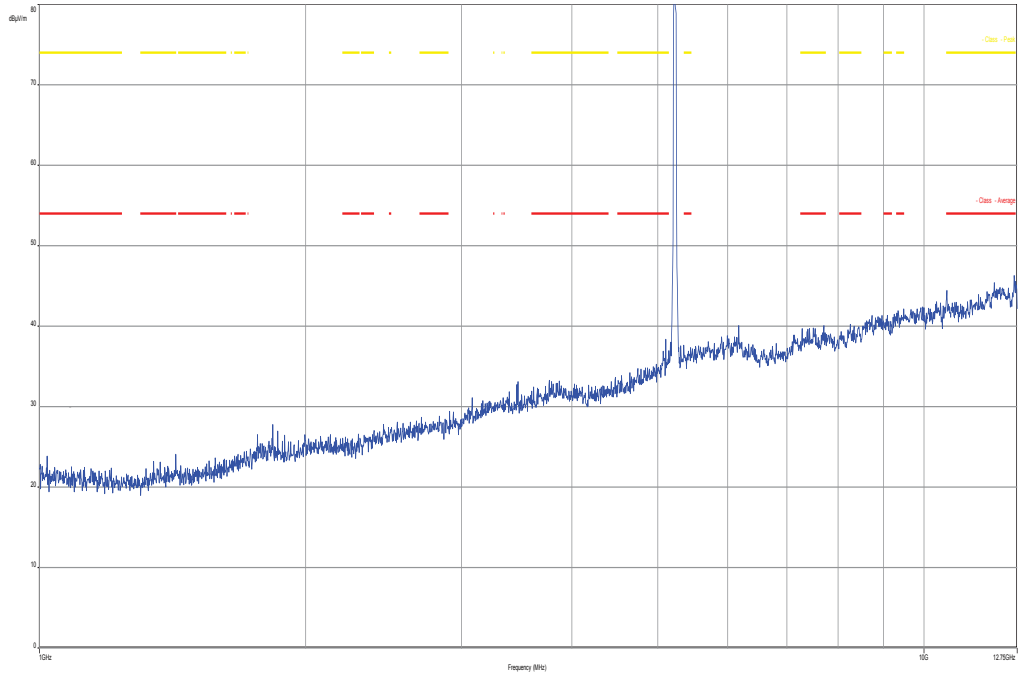
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



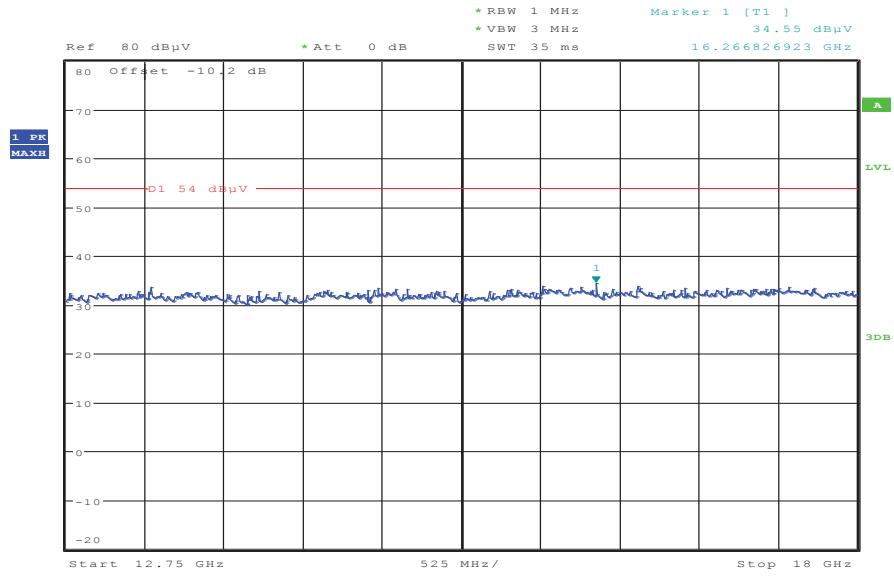
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
43.088550	8.8	1000.0	120.000	133.0	V	88.0	13.3	21.2	30.0	
46.383450	10.0	1000.0	120.000	105.0	V	100.0	13.3	20.0	30.0	
102.724350	7.5	1000.0	120.000	170.0	H	183.0	11.7	26.0	33.5	
428.056050	13.5	1000.0	120.000	112.0	H	261.0	17.3	22.5	36.0	
733.165350	20.1	1000.0	120.000	170.0	H	178.0	23.3	15.9	36.0	
943.253700	21.9	1000.0	120.000	122.0	H	190.0	25.3	14.1	36.0	

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

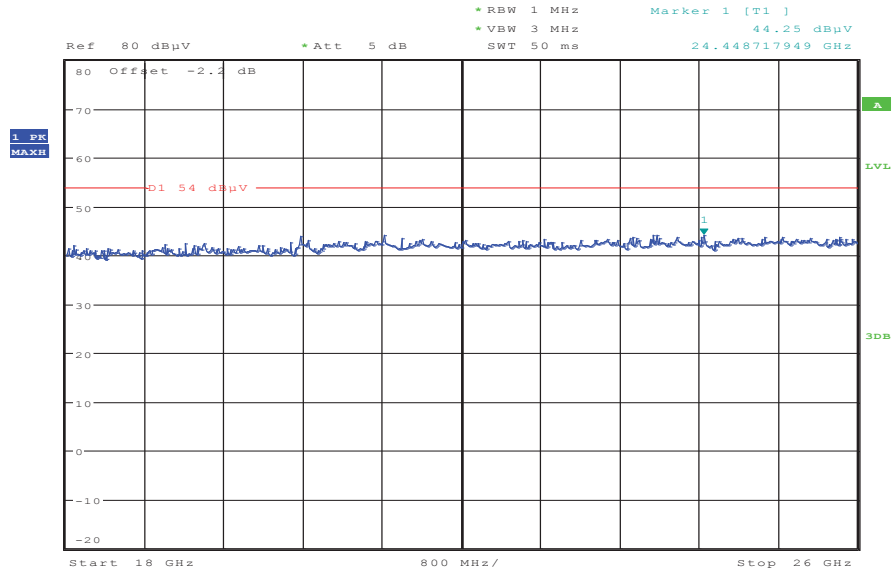


Plot 8: 12 GHz to 18 GHz, 5230 MHz, vertical & horizontal polarization



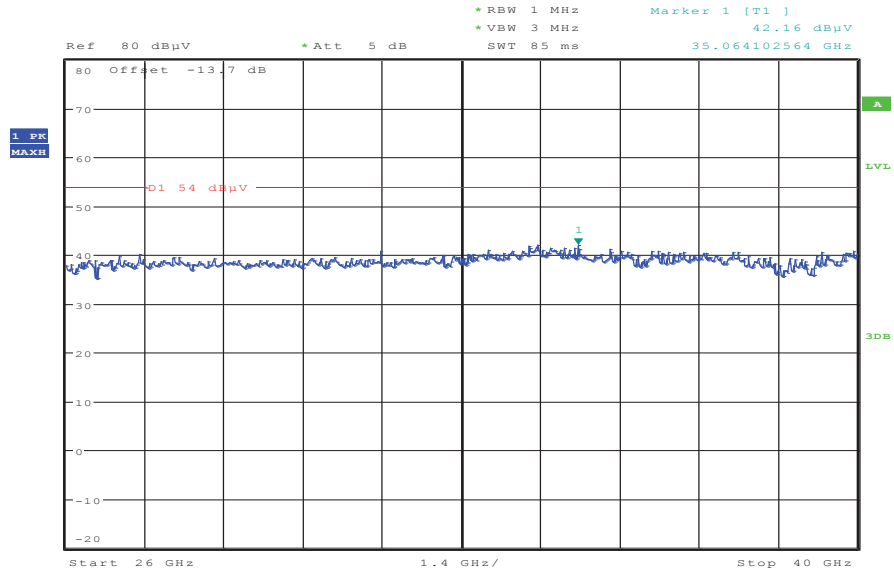
Date: 7.MAR.2013 08:29:13

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



Date: 7.MAR.2013 08:50:16

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



Date: 7.MAR.2013 09:48:40

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

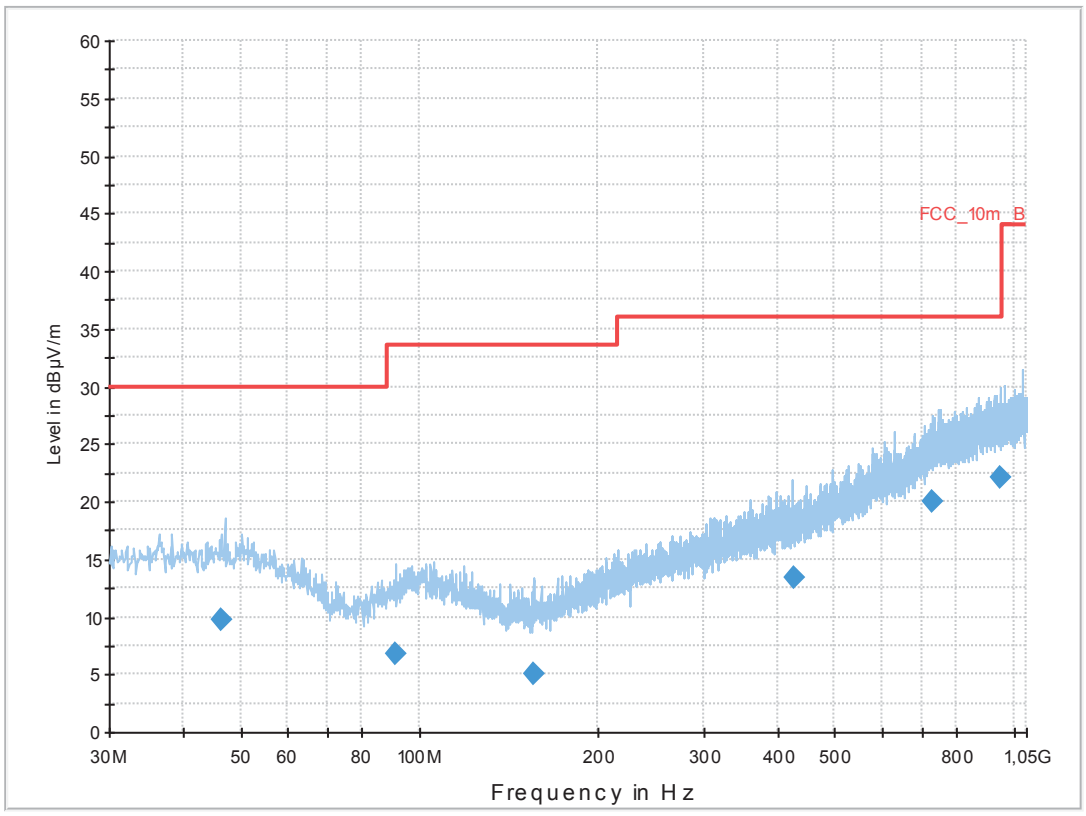
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	W-LAN n-mode HT40 CH54 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

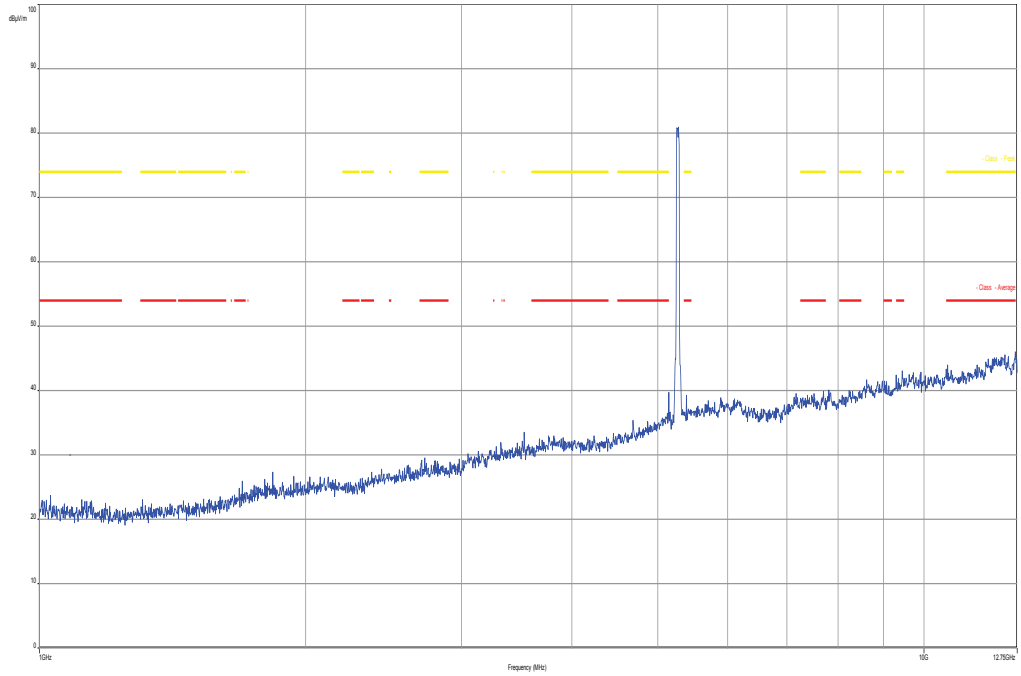
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



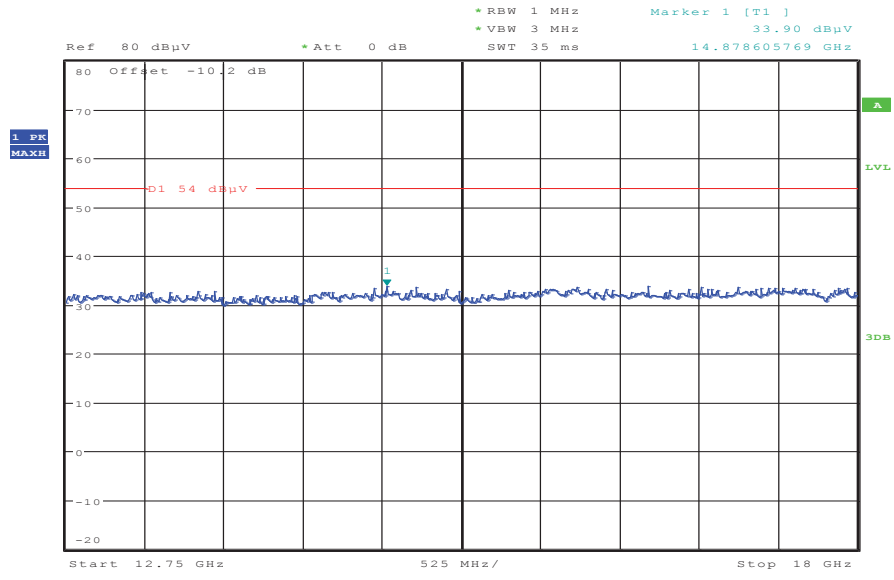
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.387200	9.7	1000.0	120.000	170.0	H	-10.0	13.3	20.3	30.0	
90.738750	6.8	1000.0	120.000	98.0	H	190.0	10.6	26.7	33.5	
155.277300	5.0	1000.0	120.000	170.0	H	88.0	9.1	28.5	33.5	
425.188050	13.4	1000.0	120.000	170.0	V	261.0	17.3	22.6	36.0	
730.828500	20.0	1000.0	120.000	170.0	H	178.0	23.2	16.0	36.0	
951.600150	22.0	1000.0	120.000	170.0	V	190.0	25.4	14.0	36.0	

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

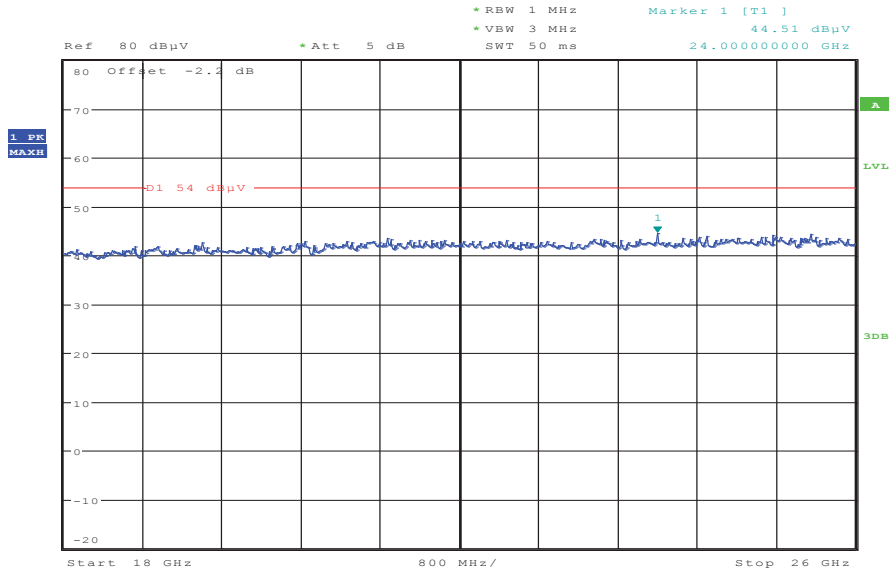


Plot 13: 12 GHz to 18 GHz, 5270 MHz, vertical & horizontal polarization



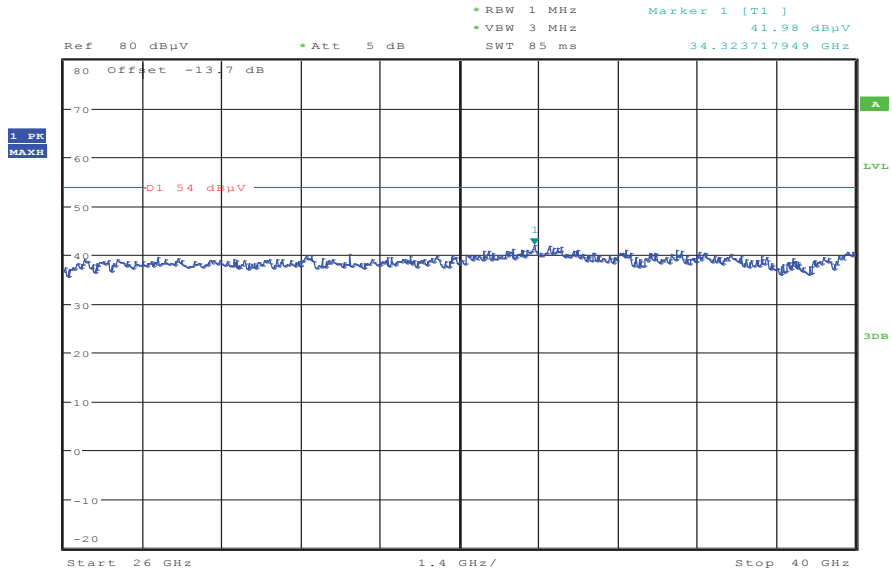
Date: 7.MAR.2013 08:30:27

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



Date: 7.MAR.2013 08:49:24

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



Date: 7.MAR.2013 09:49:39

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

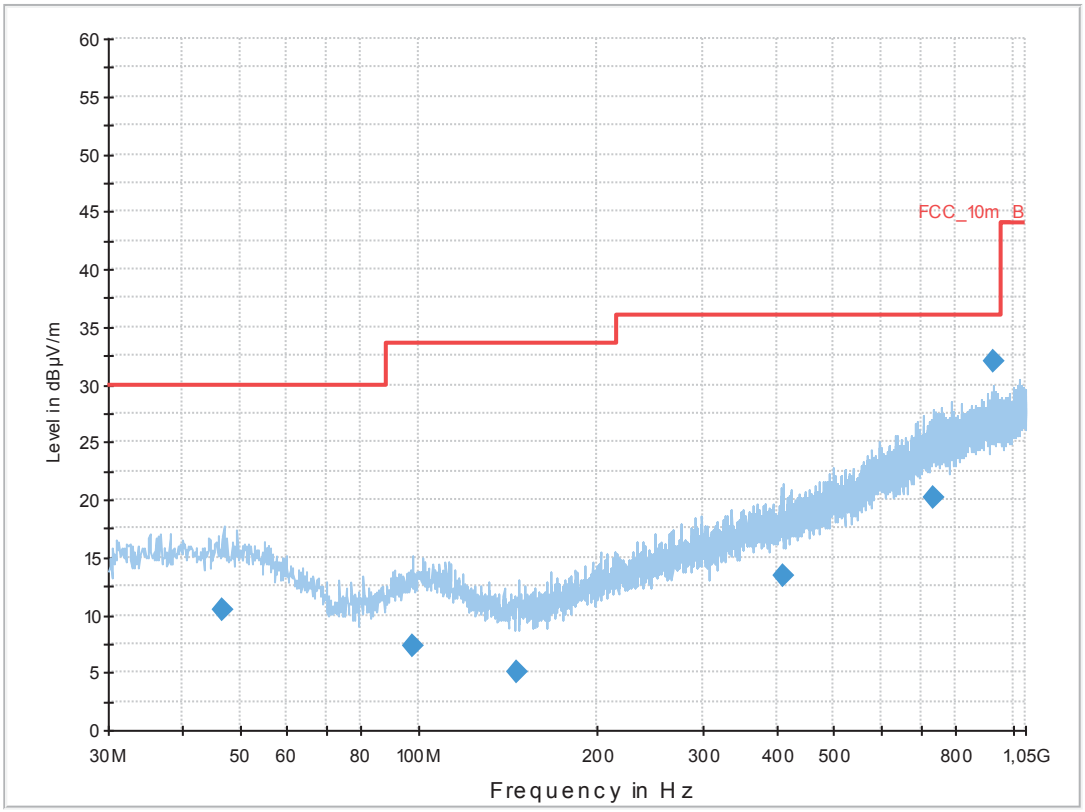
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUMBJ
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	W-LAN n-mode HT40 CH62 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

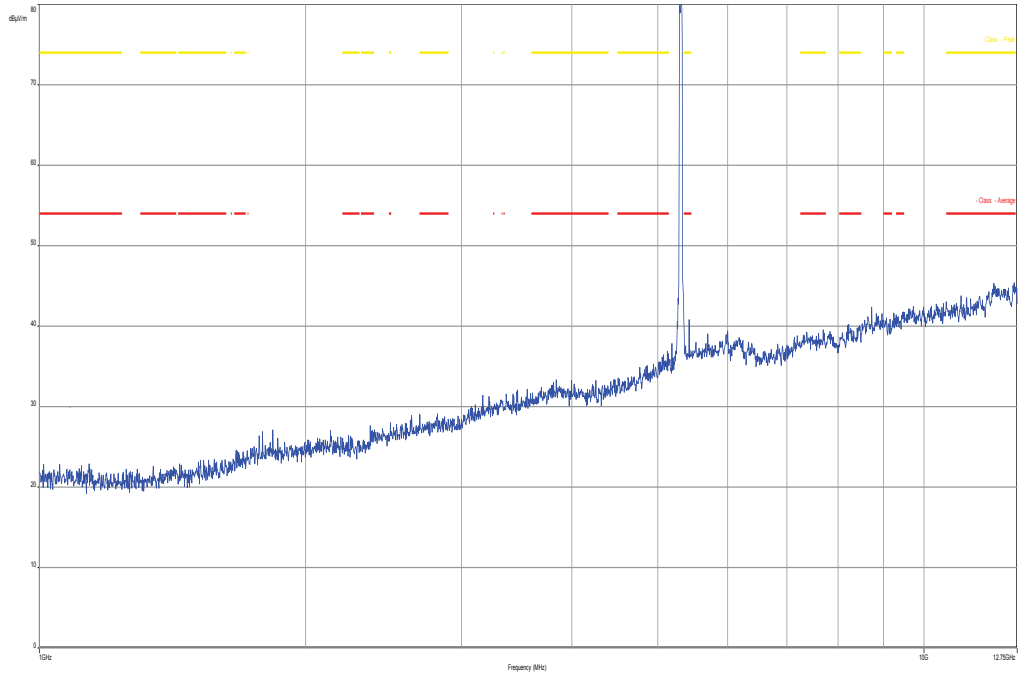
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



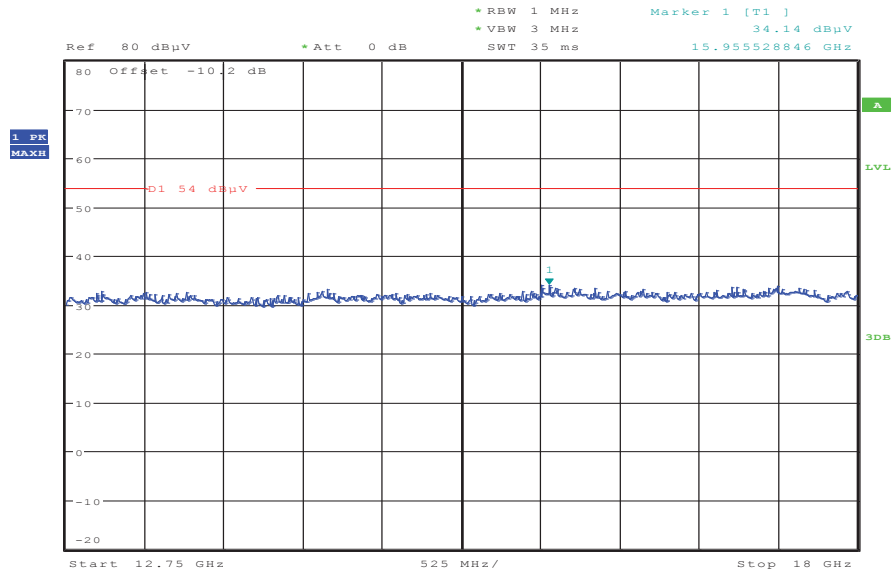
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.855800	10.5	1000.0	120.000	112.0	V	190.0	13.3	19.5	30.0	
97.816950	7.3	1000.0	120.000	170.0	H	81.0	11.6	26.2	33.5	
146.627550	5.0	1000.0	120.000	112.0	H	190.0	8.8	28.5	33.5	
411.414000	13.3	1000.0	120.000	98.0	H	280.0	17.1	22.7	36.0	
733.031100	20.2	1000.0	120.000	143.0	H	81.0	23.3	15.8	36.0	
927.340050	32.1	1000.0	120.000	170.0	V	3.0	25.3	3.9	36.0	

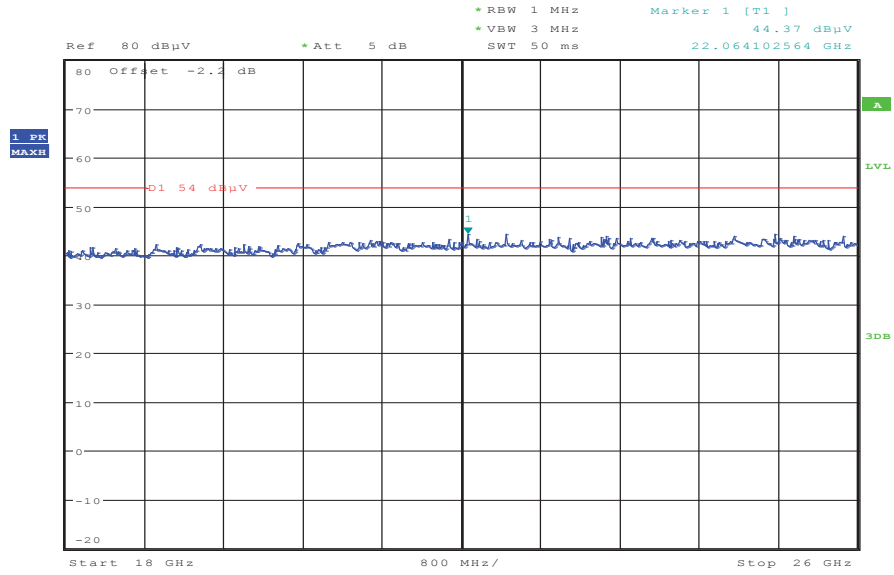
Plot 17: 1 GHz to 12.75 GHz, 5310 MHz, vertical & horizontal polarization



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

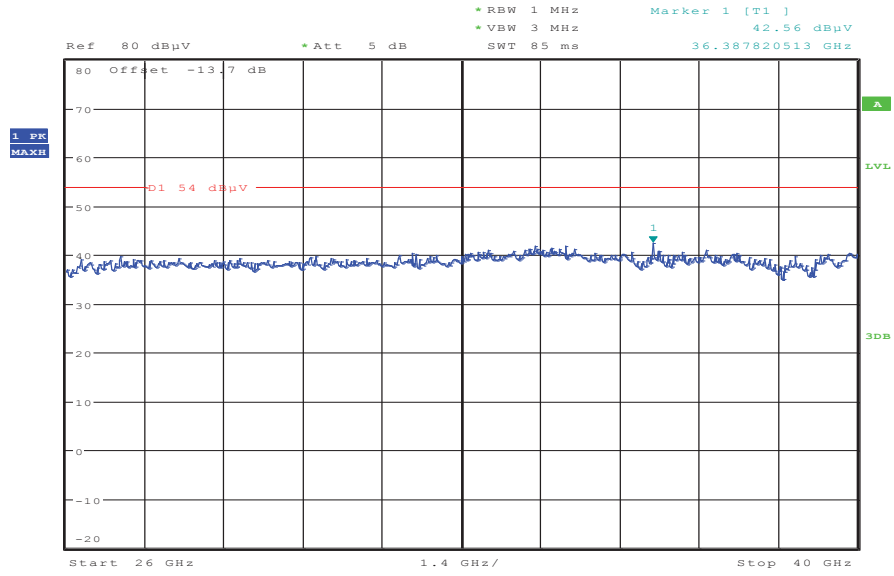


Plot 19: 18 GHz to 26 GHz, 5310 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 08:47:45

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



Date: 7.MAR.2013 09:50:22

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

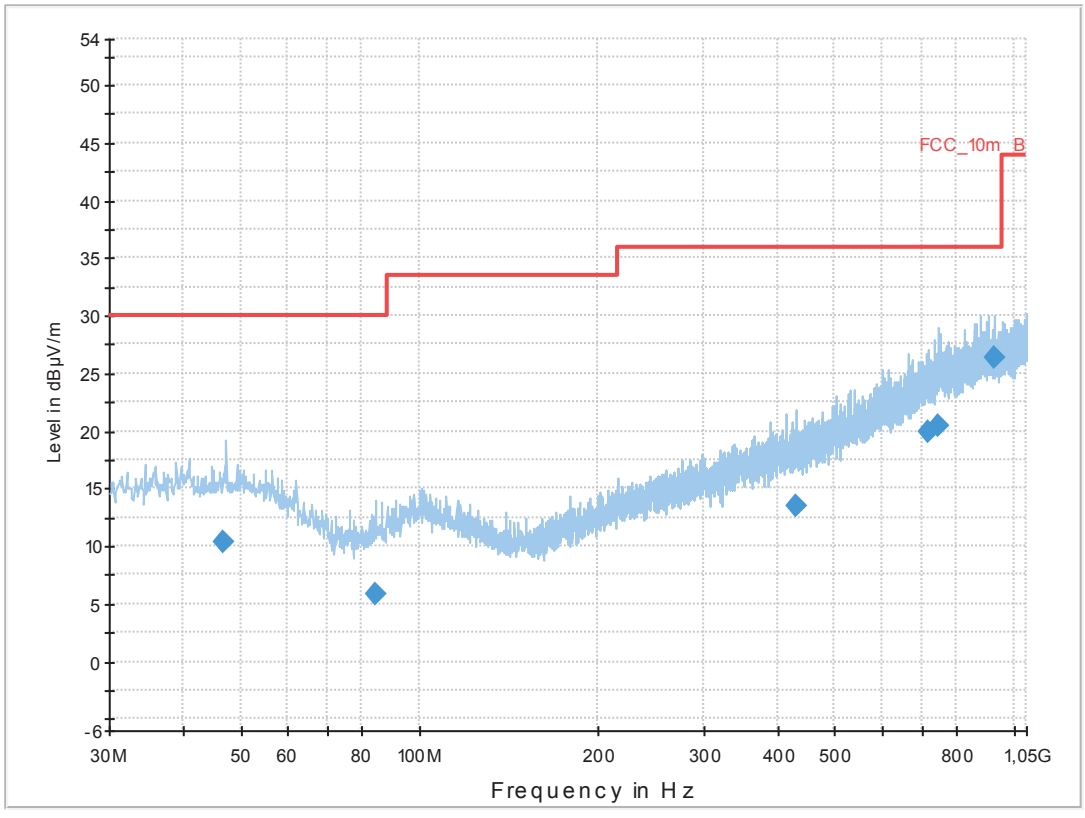
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUMBJ
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	W-LAN n-mode HT40 CH102 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

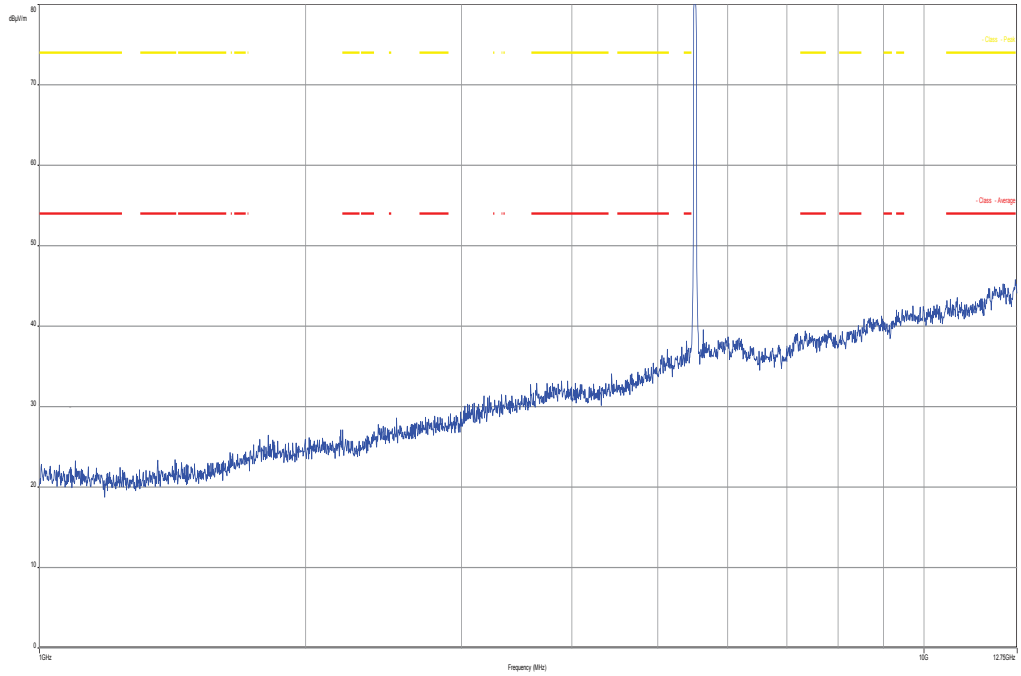
Subrange	Step Size	Detetors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



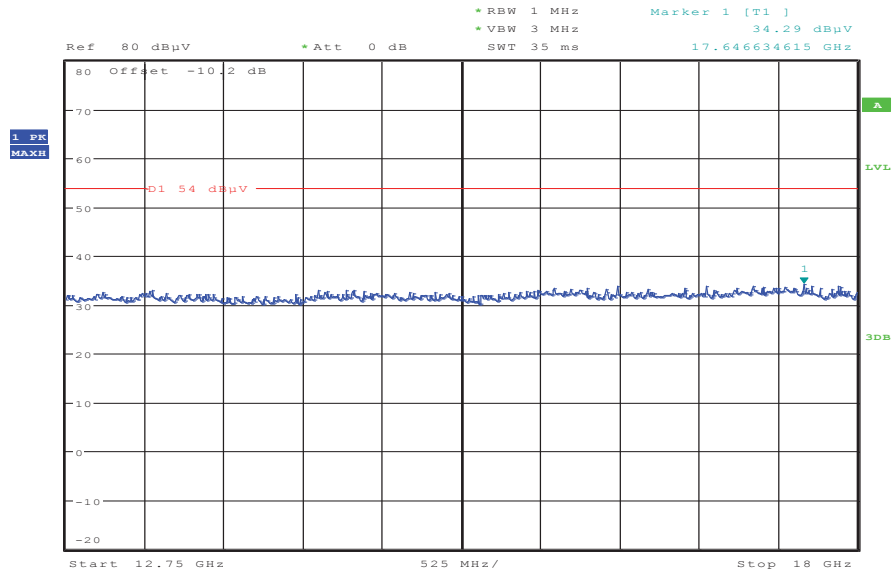
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polariztion	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
46.669800	10.4	1000.0	120.000	112.0	V	280.0	13.3	19.6	30.0	
84.019500	5.8	1000.0	120.000	170.0		261.0	9.7	24.2	30.0	
431.443950	13.5	1000.0	120.000	170.0	V	90.0	17.4	22.5	36.0	
720.546150	19.9	1000.0	120.000	120.0	V	93.0	23.0	16.1	36.0	
748.050450	20.5	1000.0	120.000	170.0	V	-2.0	23.6	15.5	36.0	
927.335550	26.4	1000.0	120.000	170.0	V	268.0	25.3	9.6	36.0	

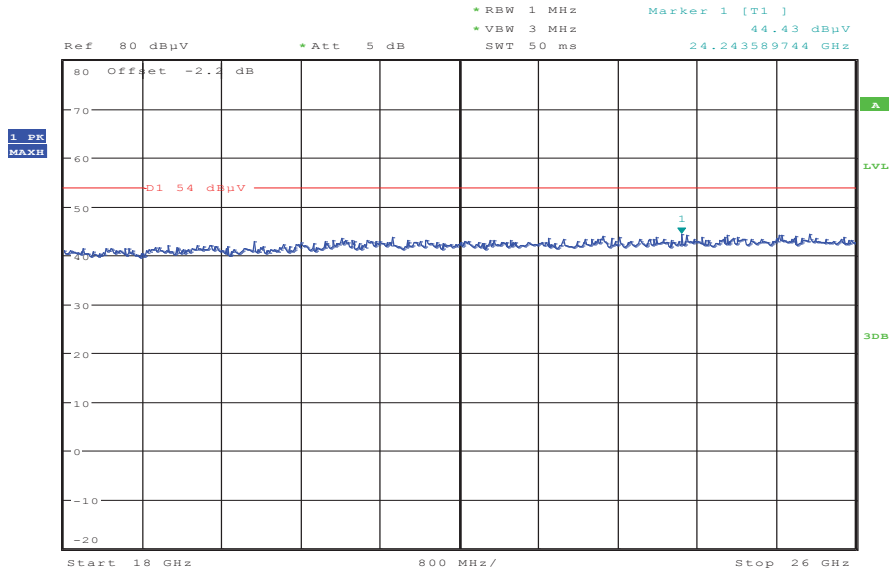
Plot 22: 1 GHz to 12.75 GHz, 5510 MHz, vertical & horizontal polarization



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

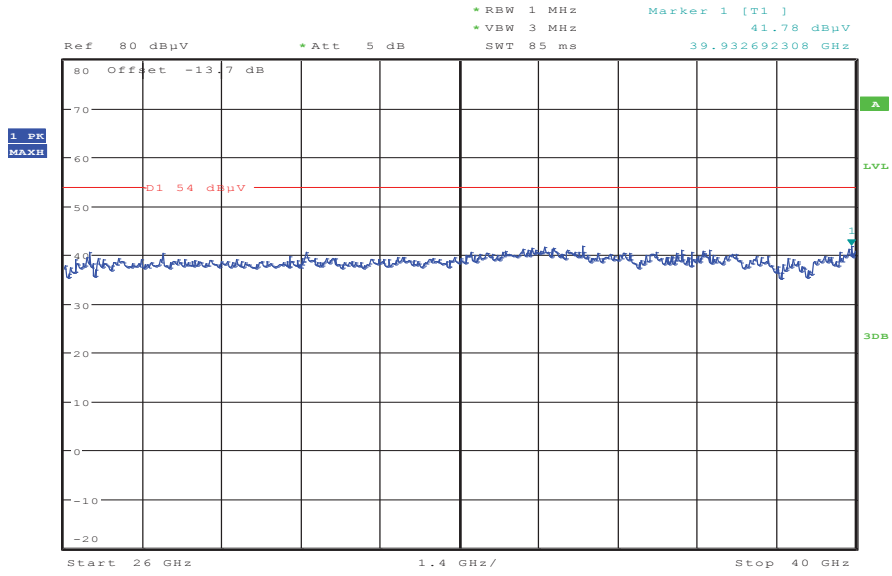


Plot 24: 18 GHz to 26 GHz, 5510 MHz, vertical & horizontal polarization



Date: 7.MAR.2013 08:46:53

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



Date: 7.MAR.2013 09:51:20

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

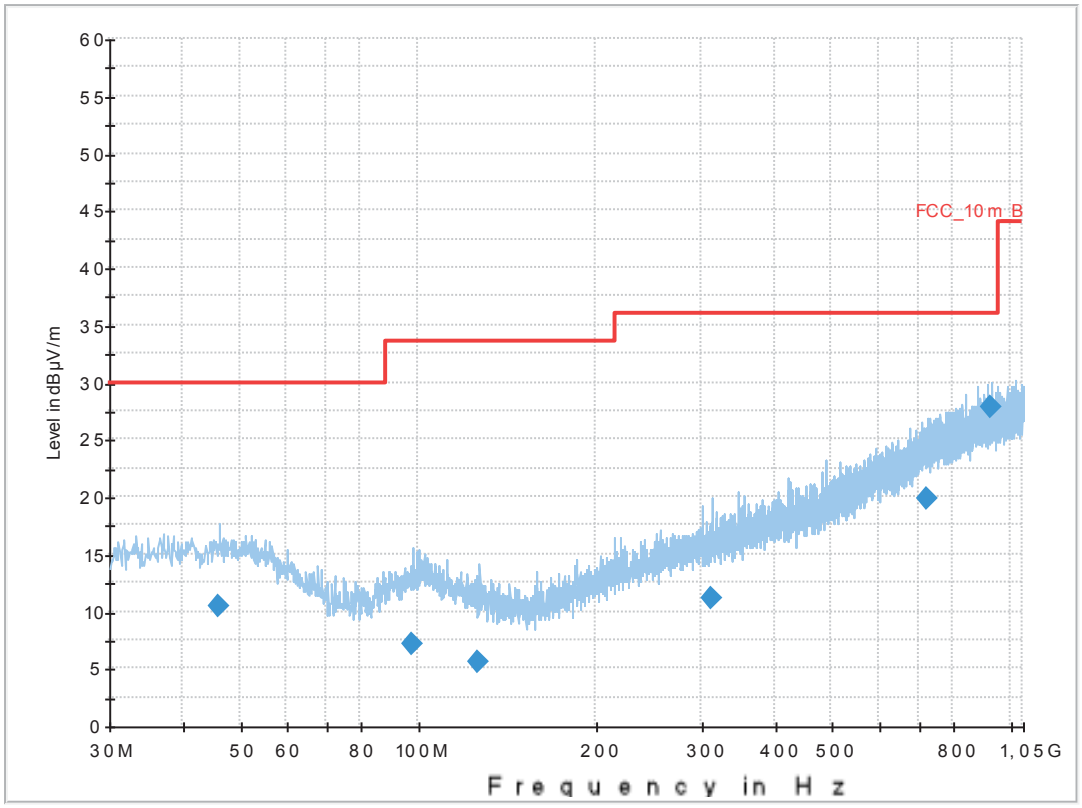
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 class B @ 10m
Operating Conditions:	W-LAN n-mode HT40 CH118 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

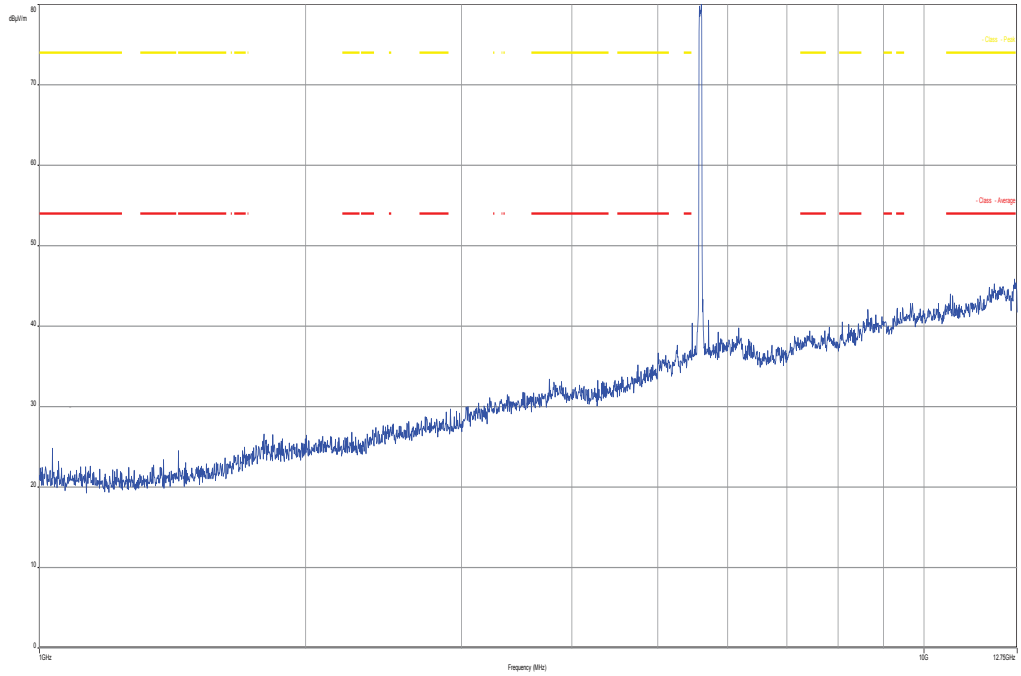
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



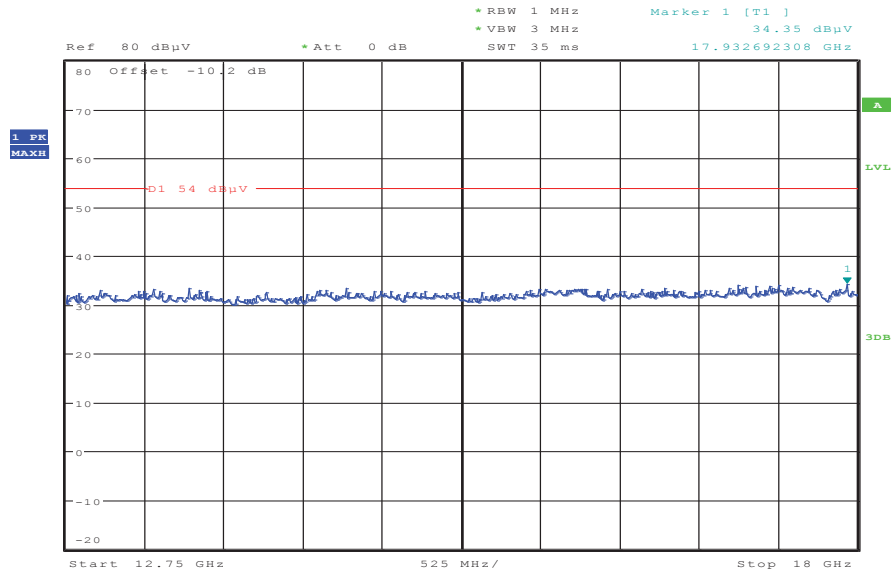
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
45.919050	10.5	1000.0	120.000	105.0	V	10.0	13.3	19.5	30.0	
97.972650	7.1	1000.0	120.000	170.0	V	268.0	11.6	26.4	33.5	
126.438450	5.6	1000.0	120.000	170.0	H	171.0	9.7	27.9	33.5	
313.657650	11.2	1000.0	120.000	170.0	H	0.0	15.0	24.8	36.0	
724.776000	19.9	1000.0	120.000	170.0	H	-2.0	23.1	16.1	36.0	
927.377550	27.9	1000.0	120.000	170.0	V	81.0	25.3	8.1	36.0	

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

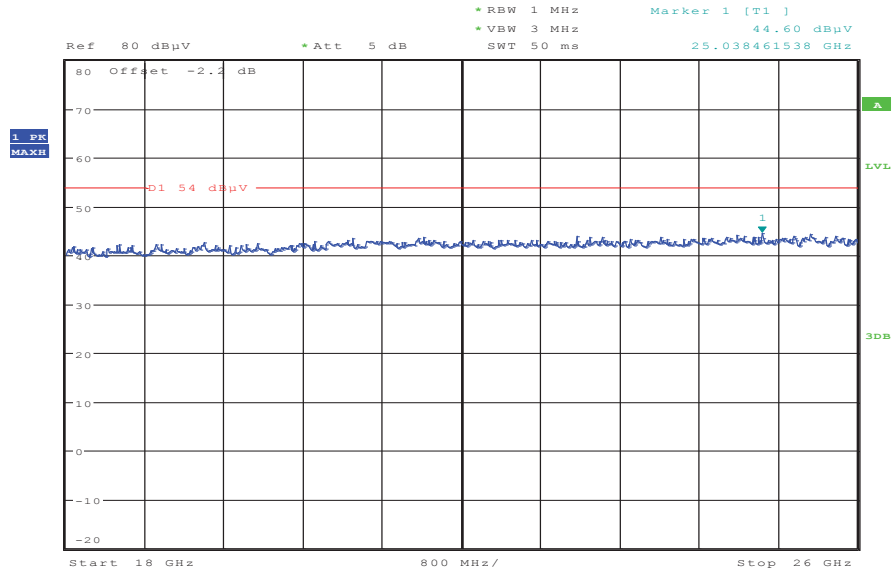


Plot 28: 12 GHz to 18 GHz, 5590 MHz, vertical & horizontal polarization



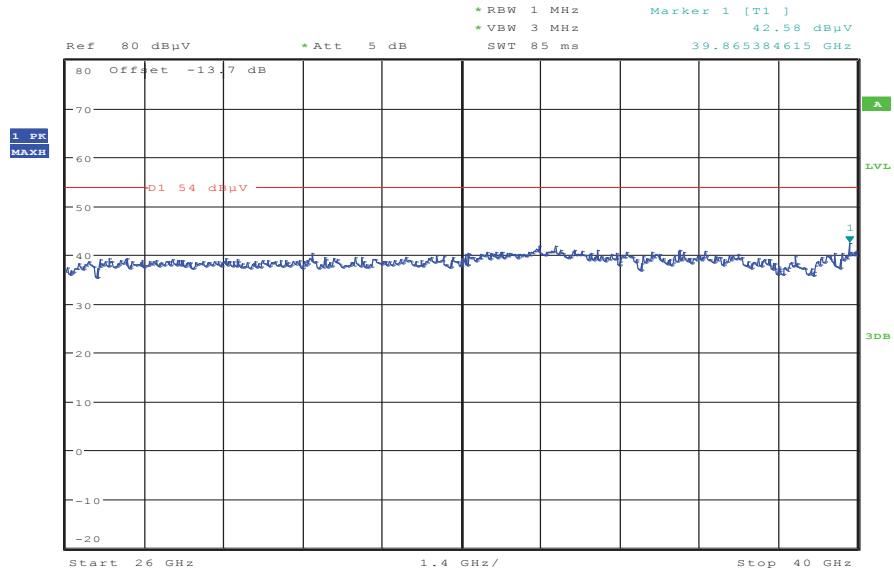
Date: 7.MAR.2013 08:34:10

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



Date: 7.MAR.2013 08:45:41

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



Date: 7.MAR.2013 09:52:12

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

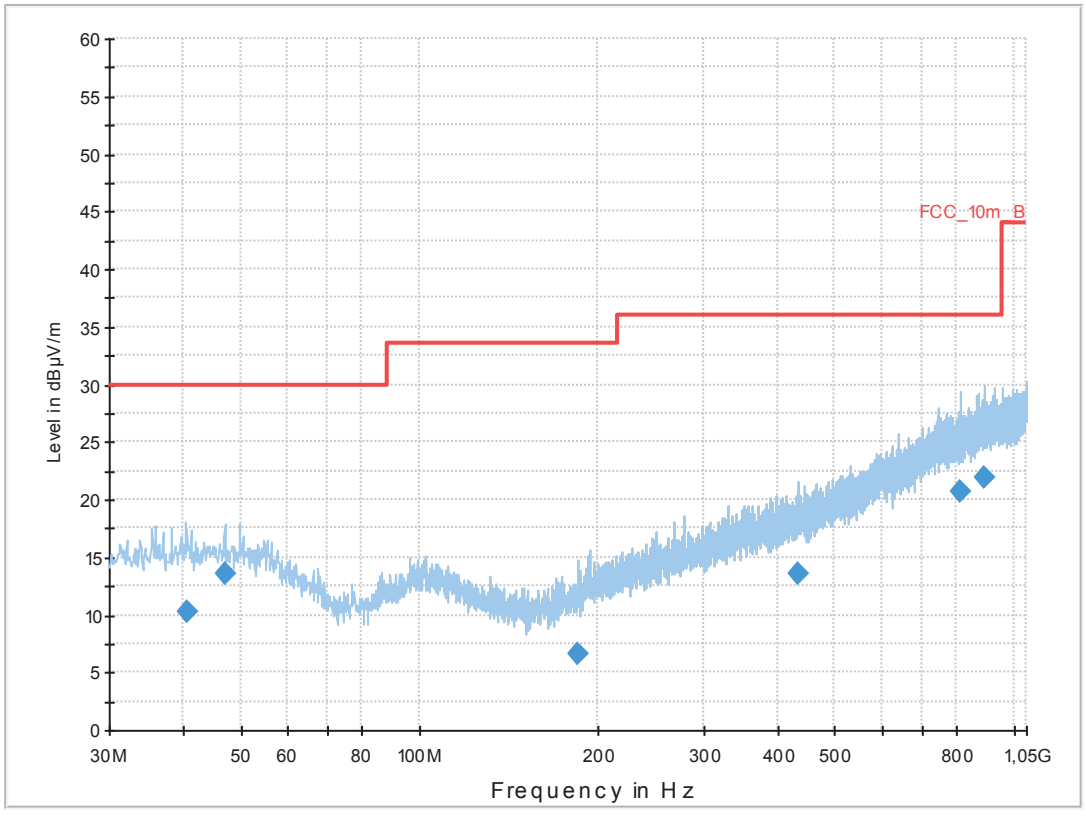
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 class B @ 10m
Operating Conditions:	W-LAN n-mode HT40 CH134 + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

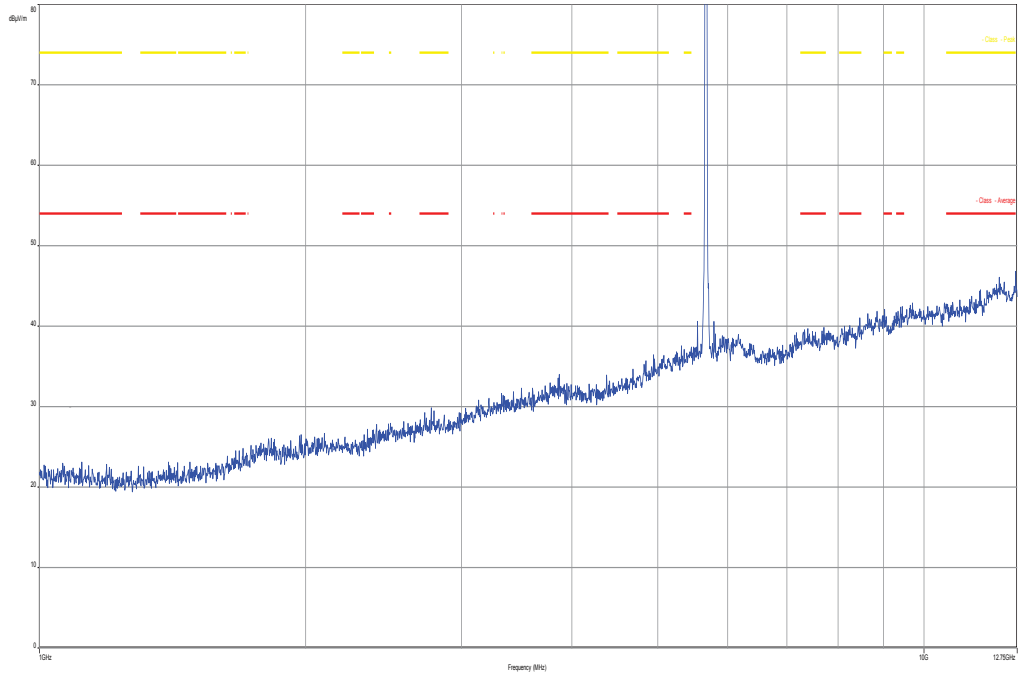
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



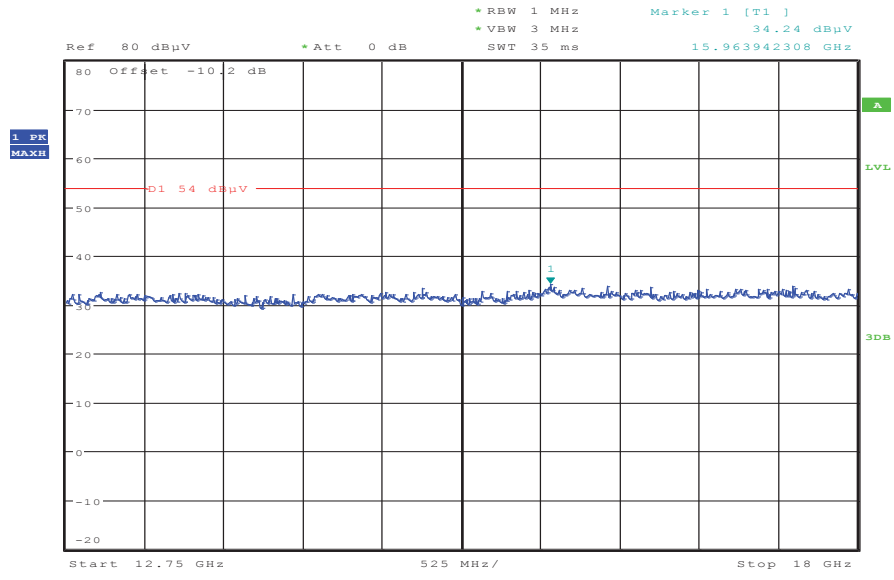
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.616250	10.3	1000.0	120.000	98.0	V	190.0	13.4	19.7	30.0	
47.013300	13.6	1000.0	120.000	98.0	V	10.0	13.3	16.4	30.0	
183.857250	6.5	1000.0	120.000	98.0	V	-5.0	10.7	27.0	33.5	
434.635950	13.5	1000.0	120.000	170.0	H	178.0	17.4	22.5	36.0	
814.016850	20.7	1000.0	120.000	170.0	V	190.0	24.0	15.3	36.0	
889.220850	21.9	1000.0	120.000	170.0	V	280.0	25.1	14.1	36.0	

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

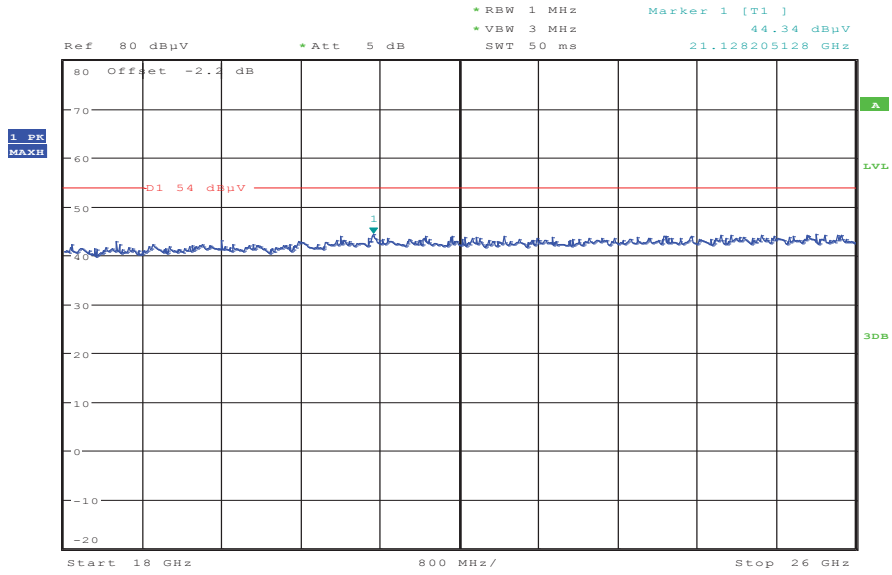


Plot 33: 12 GHz to 18 GHz, 5670 MHz, vertical & horizontal polarization



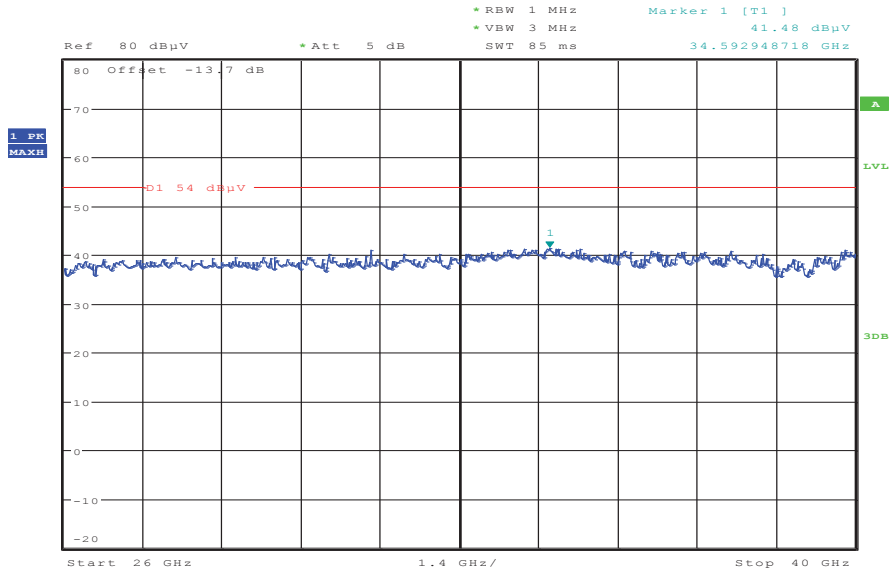
Date: 7.MAR.2013 08:35:05

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



Date: 7.MAR.2013 08:42:24

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



Date: 7.MAR.2013 09:53:03

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 40 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

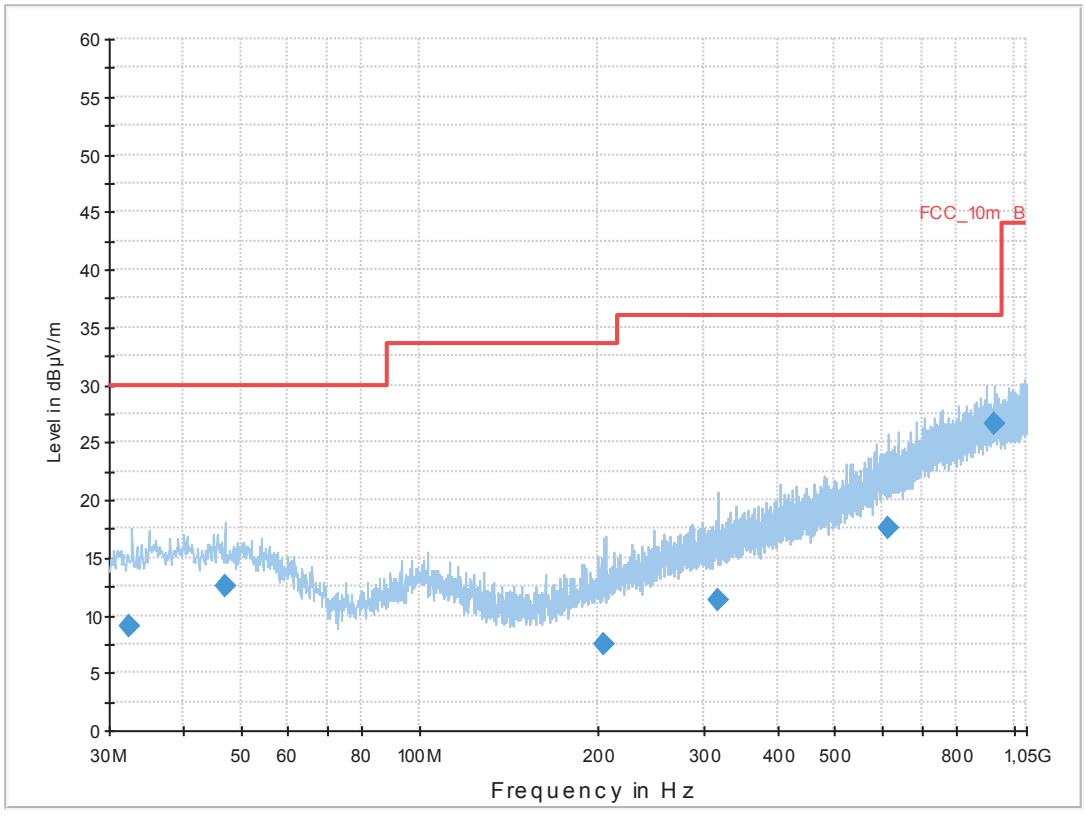
Common Information

EUT:	PM-0320--BV
Serial Number:	CB5A1NUBMJ
Test Description:	FCC part 15 class B @ 10m
Operating Conditions:	W-LAN idle + charging
Operator Name:	Medrow
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

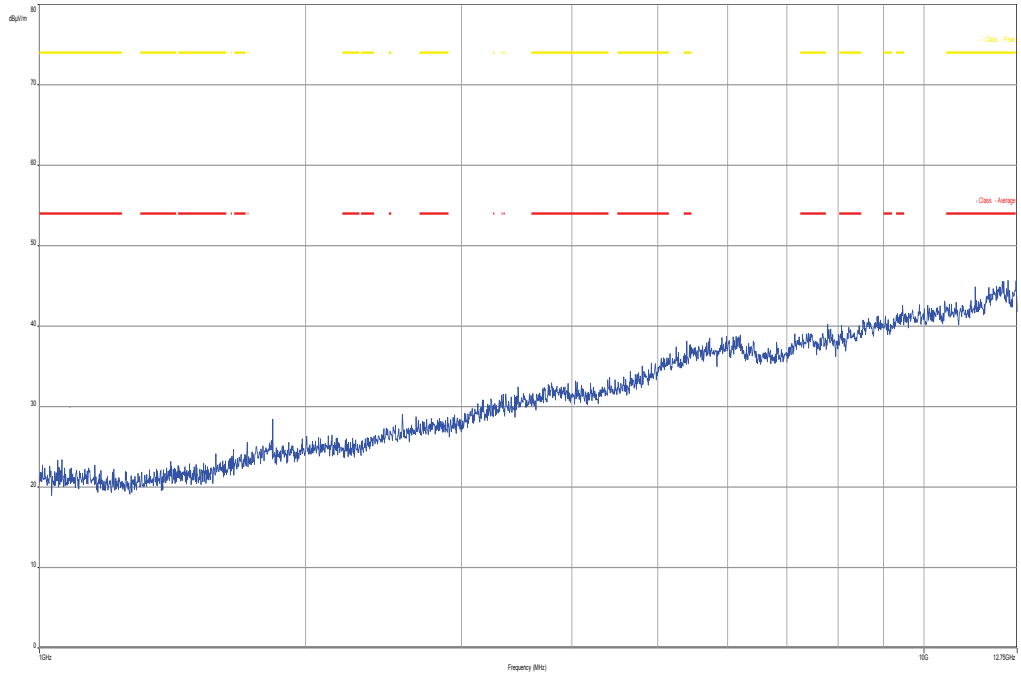
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



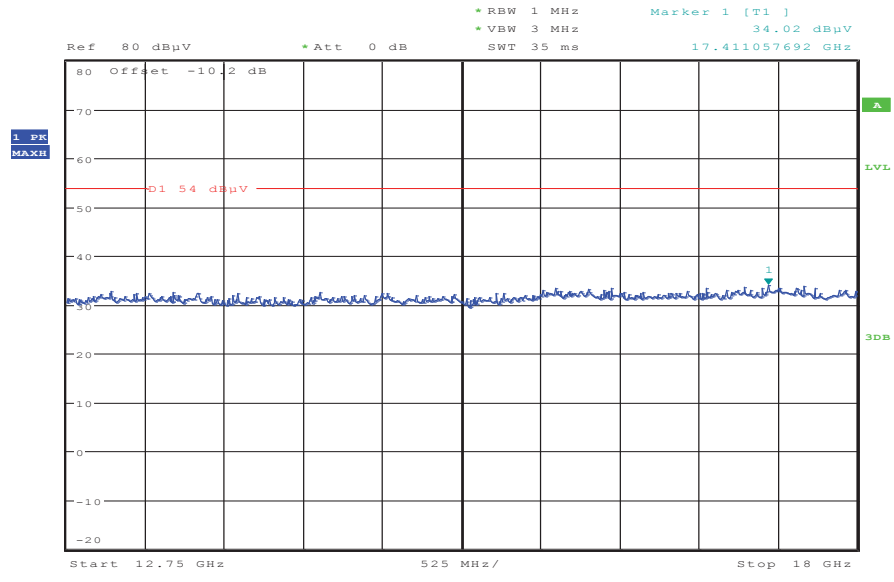
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.355000	9.1	1000.0	120.000	133.0	H	190.0	12.8	20.9	30.0	
46.981800	12.5	1000.0	120.000	133.0	V	10.0	13.3	17.5	30.0	
204.253350	7.4	1000.0	120.000	170.0	H	100.0	11.9	26.1	33.5	
318.557250	11.3	1000.0	120.000	106.0	H	100.0	15.1	24.7	36.0	
613.815150	17.6	1000.0	120.000	170.0	V	-10.0	20.9	18.4	36.0	
927.407250	26.7	1000.0	120.000	170.0	V	280.0	25.3	9.3	36.0	

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

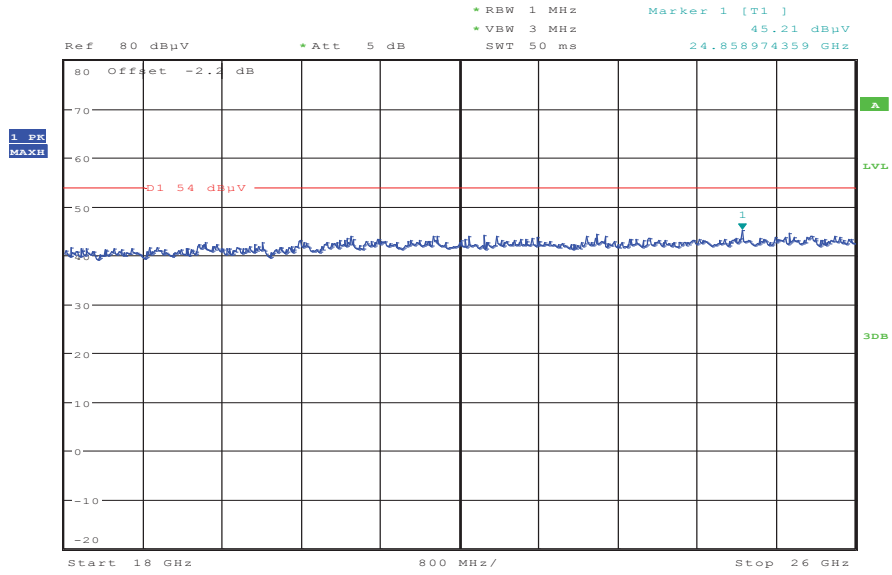


Plot 3: 12 GHz to 18 GHz, vertical & horizontal polarization



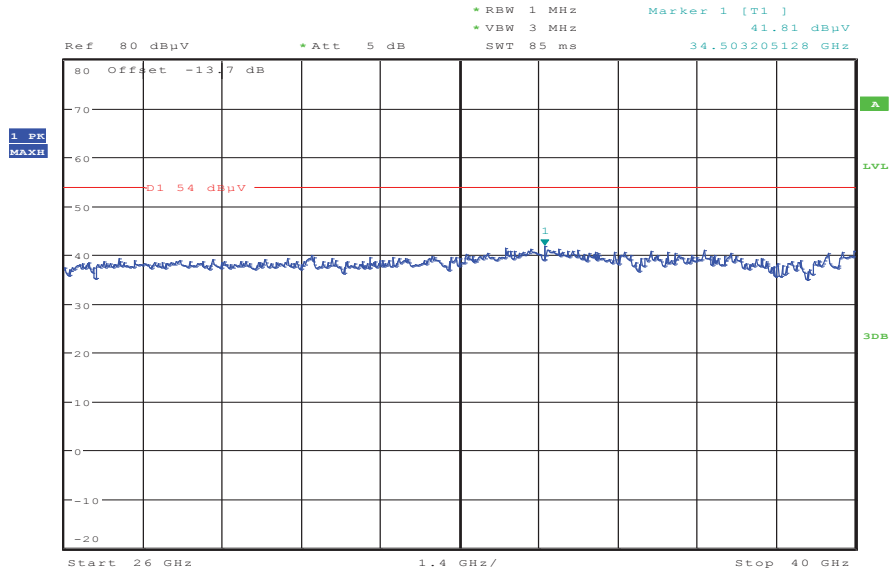
Date: 7.MAR.2013 08:38:49

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



Date: 7.MAR.2013 08:40:05

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



Date: 7.MAR.2013 09:44:12

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:

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

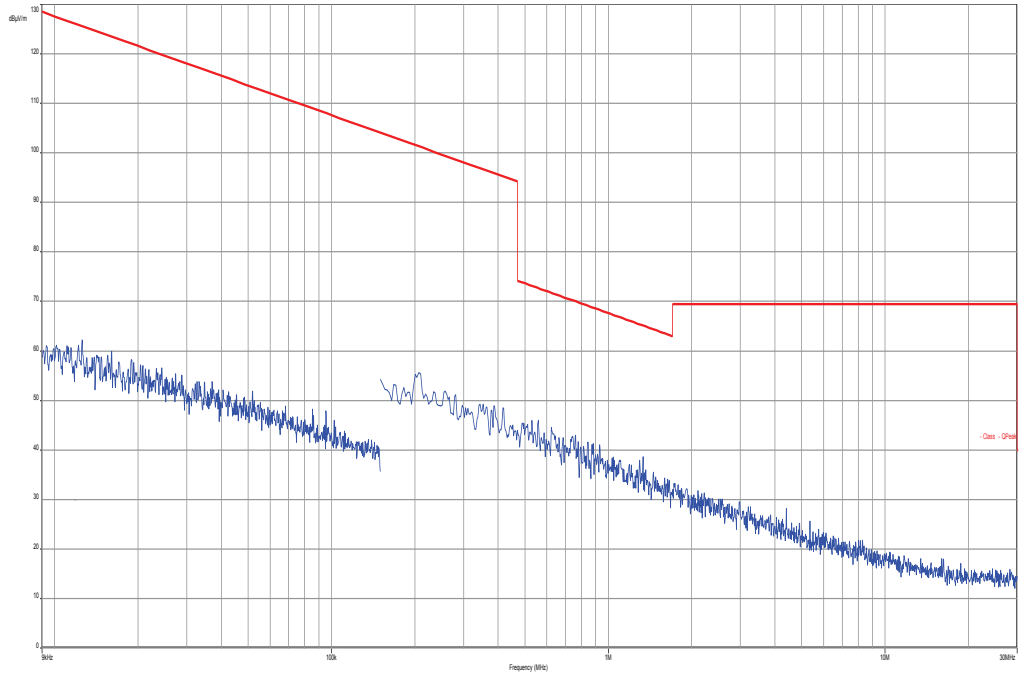
Results:

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

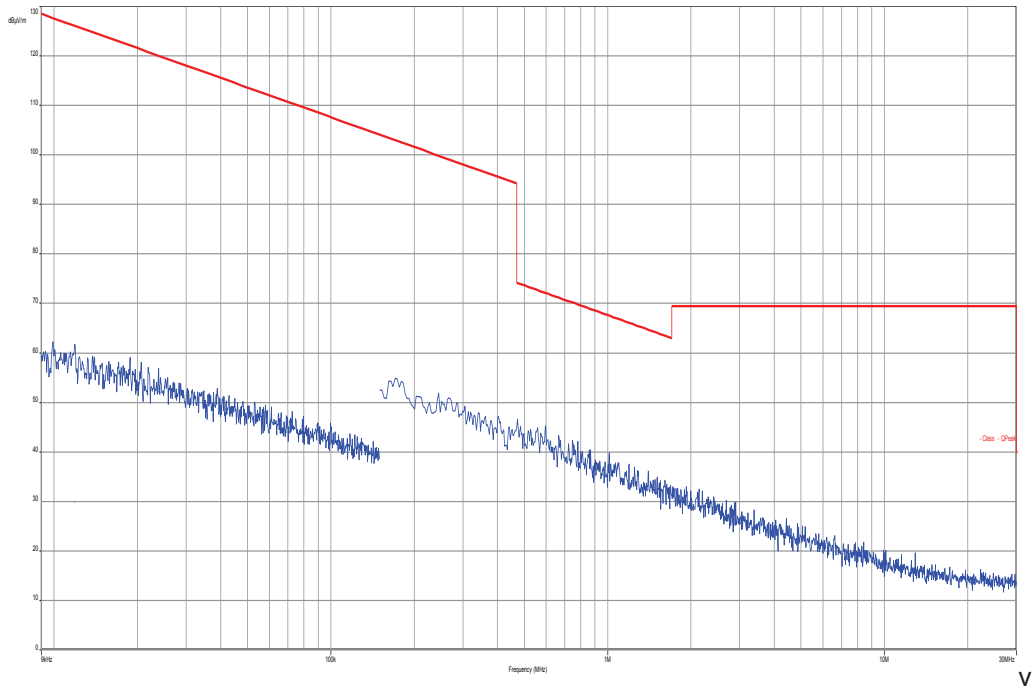
Result: Passed

Plots:

Plot 1: 9 kHz to 30 MHz, TX mode



Plot 2: 9 kHz to 30 MHz, RX mode



V

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: 9 kHz
Resolution bandwidth:	F > 150 kHz: 100 kHz
Span:	150 kHz to 30 MHz
Trace-Mode:	Max Hold

Limits:

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

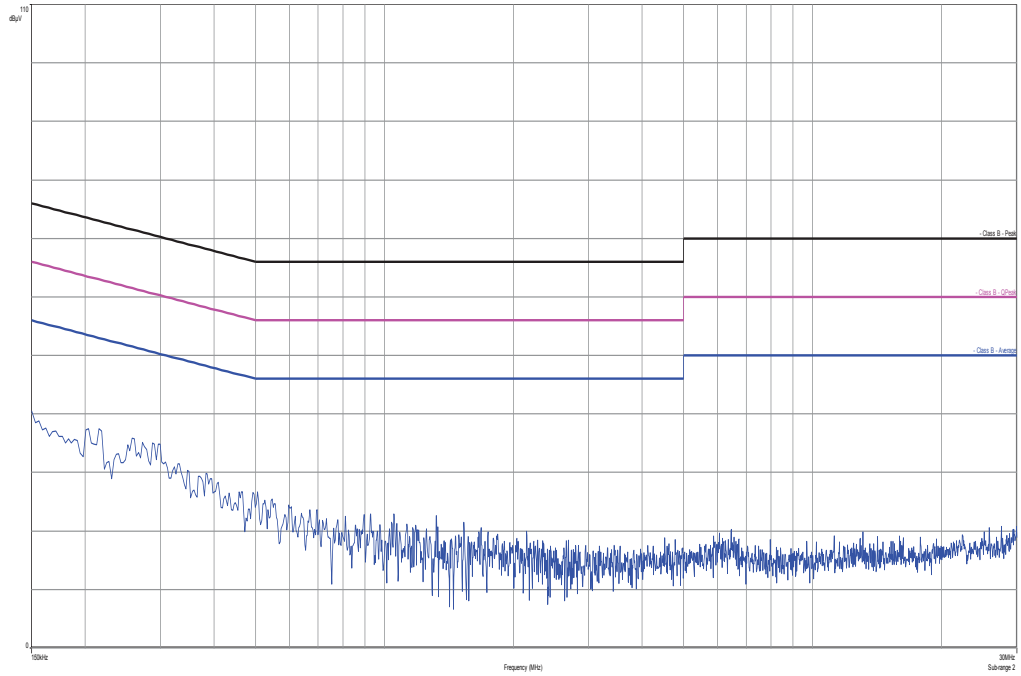
Results:

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

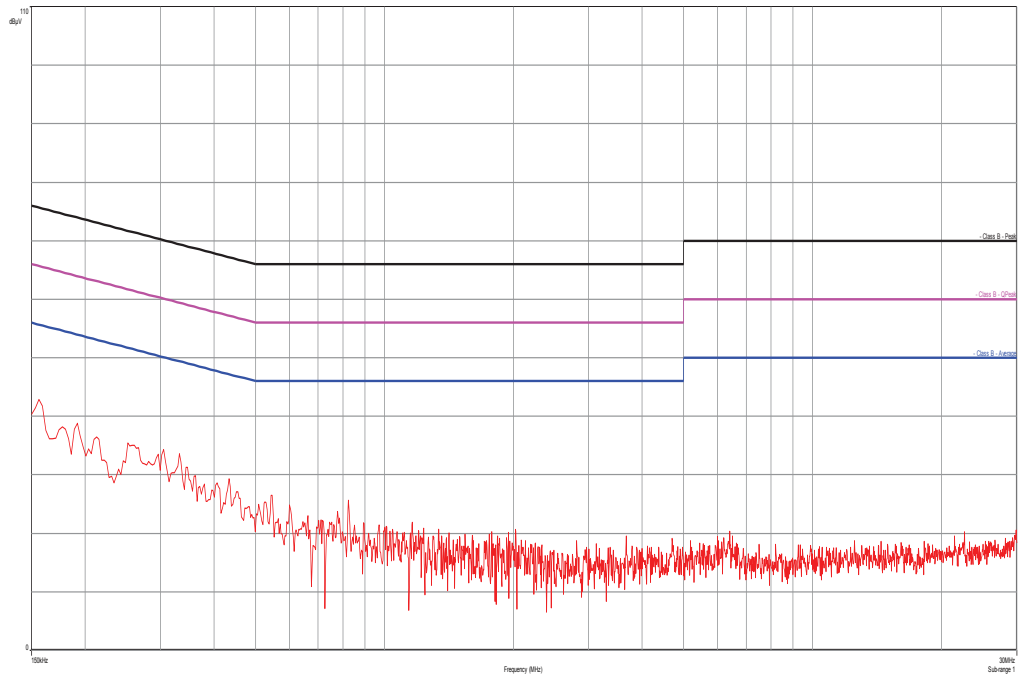
Result: Passed

Plots:

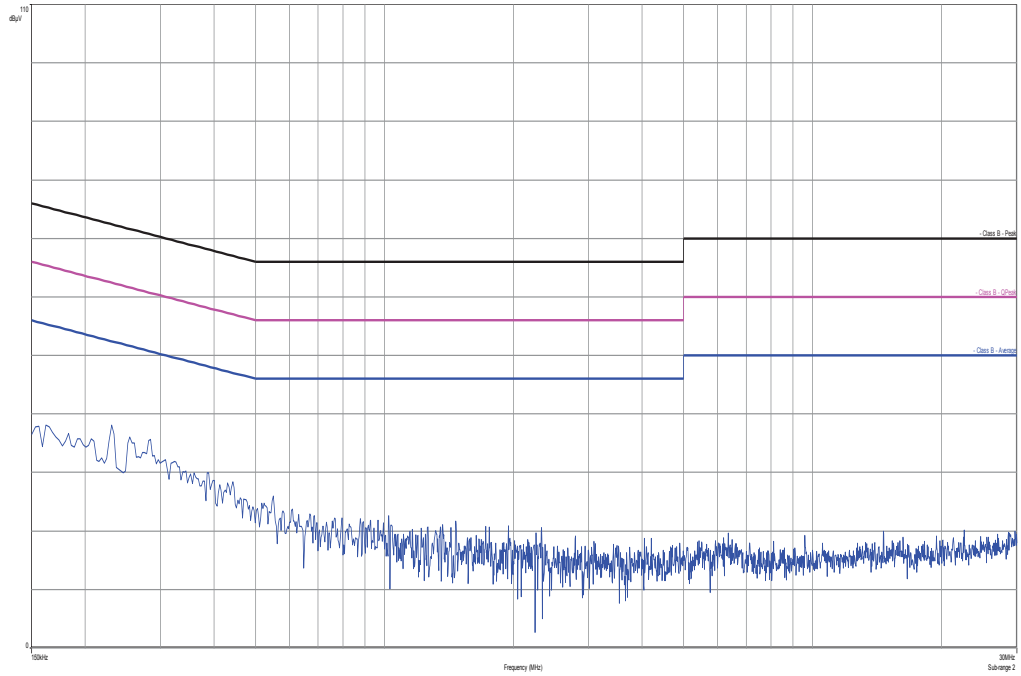
Plot 1: 150 kHz to 30 MHz / phase Line, TX mode



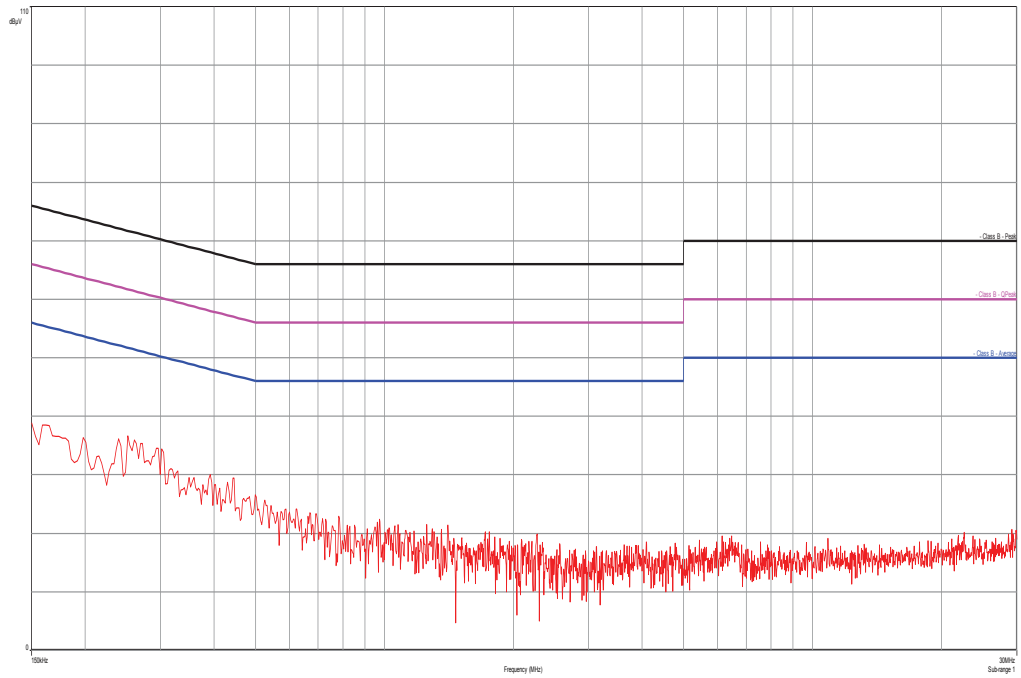
Plot 2: 150 kHz to 30 MHz / neutral Line, TX mode



Plot 3: 150 kHz to 30 MHz / phase Line, RX mode



Plot 4: 150 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	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B597 9	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950. 03	R&S	100083	300003312	k	04.01.2012	
5	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbe ck	295	300003787	k	12.04.2012	12.04.2014
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	06.01.2012	06.01.2014
12	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	11.05.2011	11.05.2013
13	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
14	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
15	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
16	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
17	9	Isolating Transformer	MPL IEC625 Bus Regeltrennt ravo	Erfi	91350	300001155	ne		
18	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
19	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
20	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
21	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbe ck	371	300003854	vIKI!	14.10.2011	14.10.2014
22	n. a.	MXE EMI	N9038A	Agilent	MY51210197	300004405	k	19.12.2011	

		Receiver 20 Hz bis 26,5 GHz		Technologies					
23	CR 79	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751	ne		
24	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
25	A025	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000786	ne		
26	A027	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300000486	ne		
27	n. a.	Broadband Low Noise Amplifier 18-50 GHz	CBL18503 070-XX	CERNEX	19338	300004273	ne		
28	n. a.	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004xxx	k	22.10.2012	22.10.2013

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.

Annex A Document history

Version	Applied changes	Date of release
1.0	Initial release	2013-03-07
-A	Editorial changes, Remeasurements acc. U-NII Guideline 789033 (dated from April 2013)	2013-04-30

Annex B Further information

Glossary

AVG - Average
DUT - Device under test
EMC - Electromagnetic Compatibility
EN - European Standard
EUT - Equipment under test
ETSI - European Telecommunications Standard Institute
FCC - Federal Communication Commission
FCC ID - Company Identifier at FCC
HW - Hardware
IC - Industry Canada
Inv. No. - Inventory number
N/A - Not applicable
PP - Positive peak
QP - Quasi peak
S/N - Serial number
SW - Software

Annex C Accreditation Certificate

Front side of certificate

DAkkS

Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
VoIP und DECT
Akustik
Funk einschließlich WLAN
Short Range Devices (SRD)
RFID
WiMax und Richtfunk
Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
Produktsicherheit
SAR und Hearing Aid Compatibility (HAC)
Umweltsimulation
Smart Card Terminals
Bluetooth
Wi-Fi- Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 18.01.2013 mit der Akkreditierungsnummer D-PL-12076-01 und ist gültig bis 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 80 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-01

Frankfurt am Main, 18.01.2013

Back side of certificate

Deutsche Akkreditierungsstelle GmbH

Standort Berlin
Spittelmarkt 10
10117 Berlin

Standort Frankfurt am Main
Gartenstraße 6
60594 Frankfurt am Main

Standort Braunschweig
Bundesallee 100
38116 Braunschweig

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Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung in Zusammenhang mit der Vermarktung von Produkten (ABl. L 218 vom 9. Juli 2008, S. 30).
Die DAkkS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

Note:
The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html