Estech Co., Ltd.
97-1, Hoeeok-ri, Majang-myun, Ichion-city, Gyonggi-do, South Korea
TEL : +82 31 6318037 FAX : +82 31 6318039 www.estech.co.kr

# Test Report for FCC

FCC ID : V2X-PM60-1

| | | | | |
|---|---|---|---|---|
| Report Number | | ESTF151410-005 | | |
| Applicant | Company name | POINTMOBILE CO.,LTD | | |
| | Address | GASAN-DONG B-9F KABUL GREAT VALLEY 32 DIGITAL-RO9-GIL GEUMCHEON-GU SEOUL 153-709 KOREA | | |
| | Telephone | 82-70-7090-2676 | | |
| Product | Product name | Mobile Computer | | |
| | Model No. | PM60 | Manufacturer | POINTMOBILE CO.,LTD |
| | Serial No. | NONE | Country of origin | CHINA |
| Test date | 2014-07-10 ~ 2014-08-03 | | Date of issue | 3-Aug-14 |
| Testing location | ESTECH Co., Ltd.<br>97-1, Hoeeok-ri, Majang-myeon, Icheon-si, Gyeonggi-do, Korea | | | |
| Standard | FCC PART 15 Subpart C (15.247):2010 , ANSI C 63.4(2009) , KDB 558074 D01(2014) | | | |
| Measurement facility registration number | 915135 | | | |
| Tested by | Engineer K.H.Chung (Signature) | | | |
| Reviewed by | Engineering Manager J.M.Yang (Signature) | | | |
| Abbreviation | OK, Pass = Passed, Fail = Failed, N/A = not applicable | | | |

* Note

- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned
- Additional SKU(s) : PM60G152356E0C, PM60G154356E0C, PM60G152357E0C, PM60G154357E0C, PM60G152356KKC, PM60G172356KKC, PM60G174356KKC, PM60G152357KKC, PM60G172357KKC, PM60G174357KKC, PM60G172356E0C, PM60G172357E0C, PM60G174357E0C

# Contents

# Contents

# 1. Laboratory Information

## 1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.
ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.
ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

## 1.2 Test Lab.

Corporation Name : ESTECH Co., Ltd.

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea

EMC/Telecom/Safety Test Lab : 97-1, Hoeeok-ri, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

## 1.3 Official Qualification(s)

KCC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication
FCC : Conformity Assessment Body(CAB) with registration number 659627 under APEC TEL MRA between the RRA and the FCC
VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

# 2. Description of EUT

## 2.1 Summary of Equipment Under Test (WLAN)

| | | |
|---|---|---|
| Modulation Type | : | WLAN(OFDM) |
| Transfer Rate | : | up to 65 Mbps |
| Number of Channel | : | 5.0 GHz : 5 CH |
| PEAK Output Power | : | 802.11a : 0.078 W,<br>802.11n(5.0 GHz) : 0.078 W |
| Rating | : | INPUT : (100 - 240)Va.c , (50 / 60)Hz , 21~34VA 0.4 A<br>OUTPUT : 5.0 Vd.c. , 2.0 A |
| Receipt Date | : | 15-May-14 |
| X-tal list(s) or Frequencies generated | : | The highest operating frequency is 5825 MHz(WLAN)<br>XTAL : 32.768 kHz , OSC : 26 MHz , WLAN : 5825 MHz |

## 2.2 General descriptions of EUT

| | |
|---|---|
| **Operating System** | Microsoft Windows Embedded Handheld 6.5 Pro |
| **Application Software** | Tools and Demos |
| **Processor** | Cortex-A8 1GHz |
| **Memory** | 512MB RAM X 1GB Flash |
| **Storage Expansion** | User accessible Micro SD memory card slot. |
| **Display** | 3.5 in. transmissive active matrix 65K color LCD with backlight, VGA (480 x 640) |
| **Scan Engine** | 1D engine: N4313<br>2D engine : N560x |
| **Keypad** | Numeric , Qwerty |
| **Audio** | Built-in microphone and speaker |
| **I/O** | High speed USB 2.0 from cradle (or I/O cable) |
| **Battery** | Li-ion battery 3.7V / 4000 mAh / 14.8Wh |
| **Expected Hours of Operation** | 8.5+ hours (with scan and continuously transmittingif using new standard Li-ion battery) |
| **Charging** | 5Vinput throughMicroUSB port. |
| **Expected Charge Time** | Capacity: 4000mAh–approx.5 hours |
| **Charging Peripherals** | MicroUSBAdaptor<br>Single Slot cradle–single-bay terminal charge/communicate<br>Single Ethernet cradle–single-bay terminal charge/communication base (Via Ethernet connection)<br>Quad Battery Charger |
| **WPAN** | Bluetooth Class II (10 m) v2.1 Enhanced Data Rate (EDR) with internalantenna. |
| **WLAN** | Dual Mode 802.11 a/b/g/n (11 Mbps/54 Mbps) with internal antenna |
| **WLAN Security** | Wi-Fi Certified, 802.1X, WPA2, EAP, WEP, LEAP, TKIP, MSD, EAP-TLS, EAP-TTLS, WPAPSK,PEAP, CCXv4 |

## 2.2 General descriptions of EUT

| | |
|---|---|
| **WWAN** | GSM : Quad band, 850/900/1800/1900MHz<br>UMTS/HSPA+: Five band, 800/850/900/1900/2100MHz |
| **GPS** | Standalone and Assisted GPS |
| **Operating Temperature** | -20° to55°C |
| **Charging Temperature** | 0~45 ℃ (±3 ℃) |
| **Storage Temperature** | -25°C to 70°C |
| **Humidity** | 95% humidity, non-condensing |
| **Construction** | High impact resistant PC/ABS housings<br>Magnesium alloy internal chassis with component shock mounts |
| **Drop** | 1.22m multiple drops to concrete, MIL-STD-810G, Method 516.6, Procedure |
| **Tumble** | 3.3 ft (1.0m) tumbles (500 drops) |
| **ESD** | Air: ± 15kV<br>Direct: ± 8kV |
| **Environmental** | Independently certified to meet IP65 standards for moisture and particle resistance |
| **Dimensions** | H; 157.4mm x W; 74.2mm x L; 25.8mm(top) |
| **Scanner / Decode Capabilities** | 1D Laser model : N4313 Laser engine. Decodes all standard 1D codes.<br>2D engine model : N560X 2D Imager. Decodes all standard 1D, 2D Postal, and OCR codes. |

# 3. Test Standards

## Test Standard : FCC PART 15 Subpart C (15.247) : 2010 & IC RSS-210 Issue8 : 2010

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

## Test Method : ANSI C 63.4 (2009) & KDB558074 D01(2014)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain decides that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment These method apply to the measurement of individual units or systems comprised of multiple units

### Summary of Test Results

| Applied Satandard : 47 CFR Part 15 Subpart C & RSS 210-Part I and II | | | | | remark |
|---|---|---|---|---|---|
| Standard | IC Standard | Test Type | Result | Remark | Limit |
| 15.207 | RSS-Gen 7.2.2 | AC Power Conducted Emission | Pass | Meet the requirement | |
| 15.205 & 15.209 | A8.5 | Restricted band / Intentional Radiated Emission | Pass | Meet the requirement | |
| 15.247(a)(2) | A8.2(a) | 6 dB Bandwidth | Pass | Meet the requirement | Min. 500 kHz |
| | RSS-Gen 4.6.1 | 99 % Bandwidth | | | |
| 15.247(b)(3) | A8.4(4) | Maximum Peak/average ouput power | Pass | Meet the requirement | Max. 30 dBm |
| 15.247(c) | A8.5 | Transmitter Radiated Emission | Pass | Meet the requirement | Table 15.209 |
| 15.247(e) | A8.2(b) | Power Spectral Density | Pass | Meet the requirement | Max. 8 dBm |
| 15.247(d) | A8.5 | Band Edge Measurement | Pass | Meet the requirement | 20 dB less |
| 15.107 | RSS-Gen 7.2.2 | Receiver conducted Emission | Pass | Meet the requirement | |
| 15.109 | RSS-Gen 7.2.3.2 | Receiver radiated emission | Pass | Meet the requirement | |

# 4. Measurement Condition

## 4.1 EUT Operation(For 802.11a and 802.11n)

a. Channel

| Ch. | Frequency |
|---|---|
| 149 | 5745 MHz |
| 153 | 5765 MHz |
| 157 | 5785 MHz |
| 161 | 5805 MHz |
| 165 | 5825 MHz |

b. Measurement Channel : Low(5745 MHz),Middle(5785 MHz),High(5825 MHz)

c. Test Mode : Continuous Output, DSSS, OFDM

d. Test rate : the worst case of rate 802.11a (6Mbps), 802.11n-5 GHz (6.5 Mbps)

## 4.2 EUT Operation.

* The EUT was in the following operation mode during all testing

* The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected hightest level of emission

* Execute a RF test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.

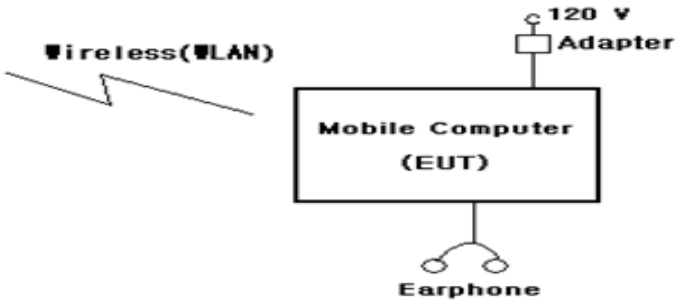
* The worst data were recorded 1D scanner the results after testing each of the 1D scanner and 2D scanner.

*. Transmit mode and receive mode was each test.

*. Highest frequency of the EUT is above 1 GHz, the measurement shall be made up to 10 th the highest frequency or 40 GHz, But the EUT wasn't Detected from 3th any other spurings and harmonic emissions.

## 4.3 Configuration and Peripherals

Test setup for WLAN



## 4.4 EUT and Support equipment

| Equipment Name | Model Name | S/N | Manufacturer | Remark (FCC ID) |
|---|---|---|---|---|
| Mobile Computer | PM60 | NONE | POINTMOBILE CO.,LTD | EUT |
| Adapter | KSAS0100500200D5 | NONE | Kuantech(BeiHai) Co., Ltd. | |
| Earphone | NONE | NONE | SAMSUNG | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## 4.5 Cable Connecting

| Start Equipment | | End Equipment | | Cable Standard | | Remark |
|---|---|---|---|---|---|---|
| Name | I/O port | Name | I/O port | Length | Shielded | |
| Mobile Computer | Power | Adapter | - | 2.0 | Unshielded | |
| Mobile Computer | Head Phone | Earphone | - | 1.0 | Unshielded | |
| | | | | | | |
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# 5. DTS bandwidth

## 5.1 Test procedure

558074 D01 DTS Meas Guidance v03 8.2 Option 2 :The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW ≥ 3 RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

## 5.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

. RBW= 100 KHz

. VBW= 4 MHz

. Span= 50 MHz

. Sweep= suitable duration based on the EUT specification.

Limits : FCC § 15.247(a)(2) , IC RSS-210 A8.2(a)

6dB Bandwidth Test Instruments

| Description | Model | Serial Number | Cal. Due Date |
|---|---|---|---|
| Spectrum Analyzer | E4440A | US42041281 | 2015-01-27 |
| RF Cable | Length: 6cm | - | |
| -Spectrum Analyzer <=> EUT | Loss: 11dB | - | |

## 5.3 Measurement results

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 44 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

(802.11a)

| Channel Frequency (MHz) | Emission bandwidth | Bandwidth at 6dB below(MHz) | Minimum Limit (MHz) | PASS/FAIL |
|---|---|---|---|---|
| 5745 | 16.36 | 12.28 | 0.5 | PASS |
| 5785 | 16.39 | 16.29 | 0.5 | PASS |
| 5825 | 16.38 | 16.18 | 0.5 | PASS |

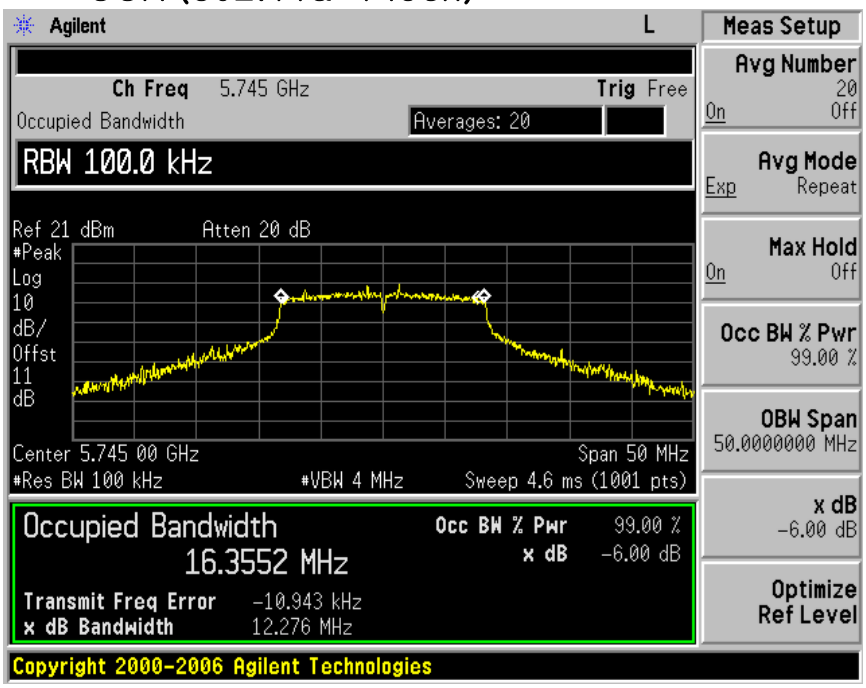
| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 44 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

(802.11n)

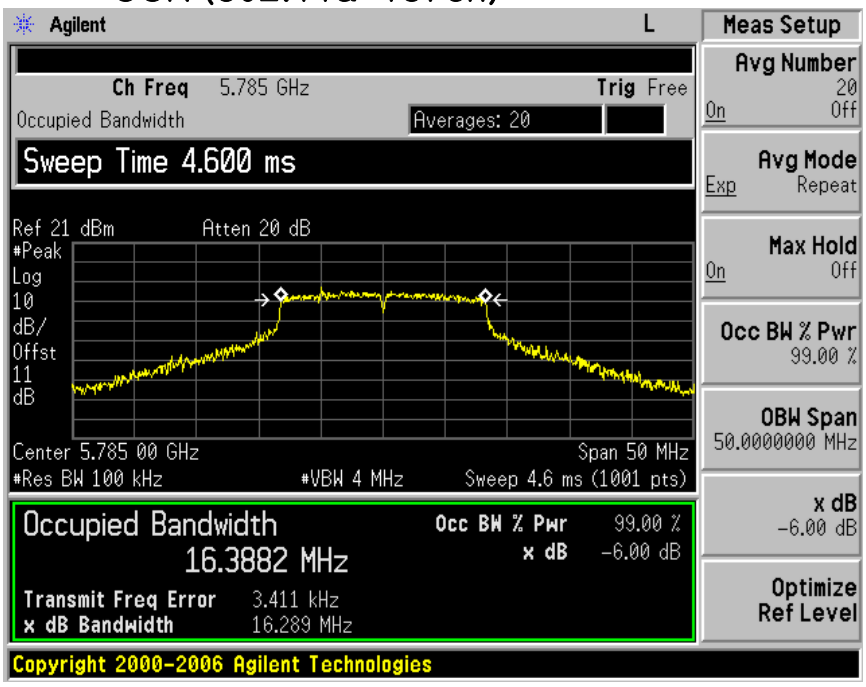
| Channel Frequency (MHz) | Emission bandwidth | Bandwidth at 6dB below(MHz) | Minimum Limit (MHz) | PASS/FAIL |
|---|---|---|---|---|
| 5745 | 17.58 | 17.27 | 0.5 | PASS |
| 5785 | 17.59 | 17.01 | 0.5 | PASS |
| 5825 | 17.60 | 17.06 | 0.5 | PASS |

## 5.4 Trace data

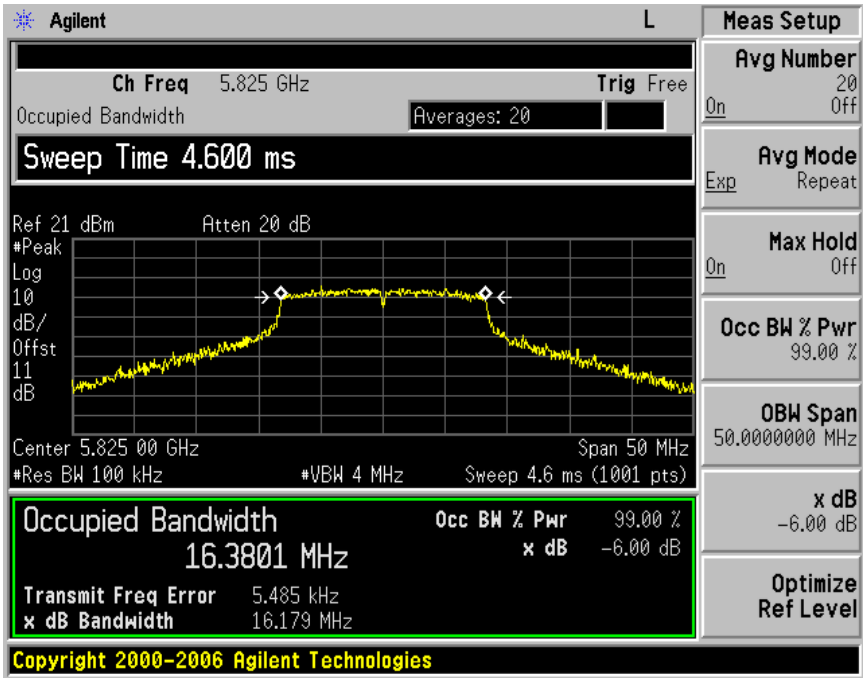
CCK (802.11a-149ch)




CCK (802.11a-157ch)

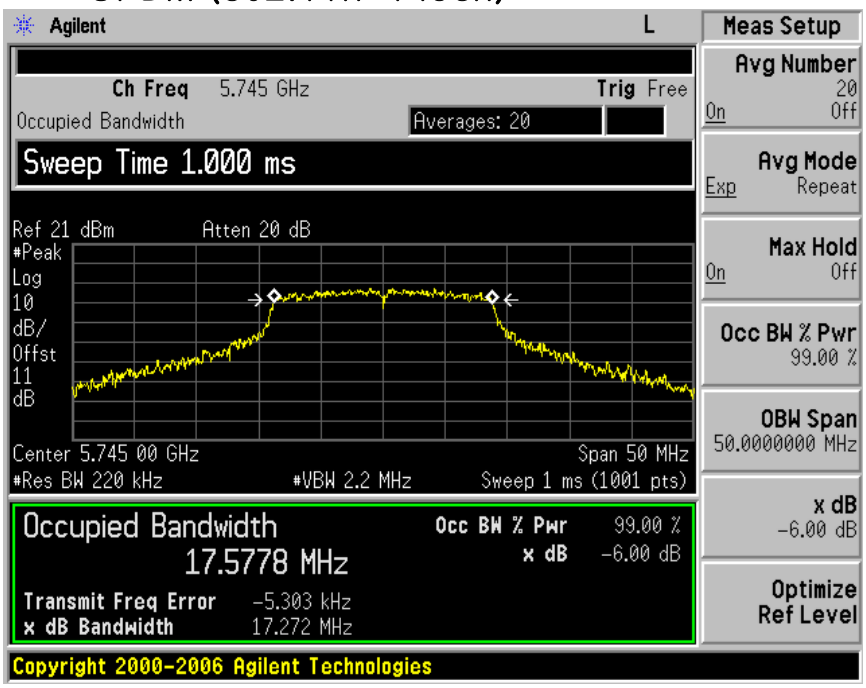


CCK (802.11a-165ch)

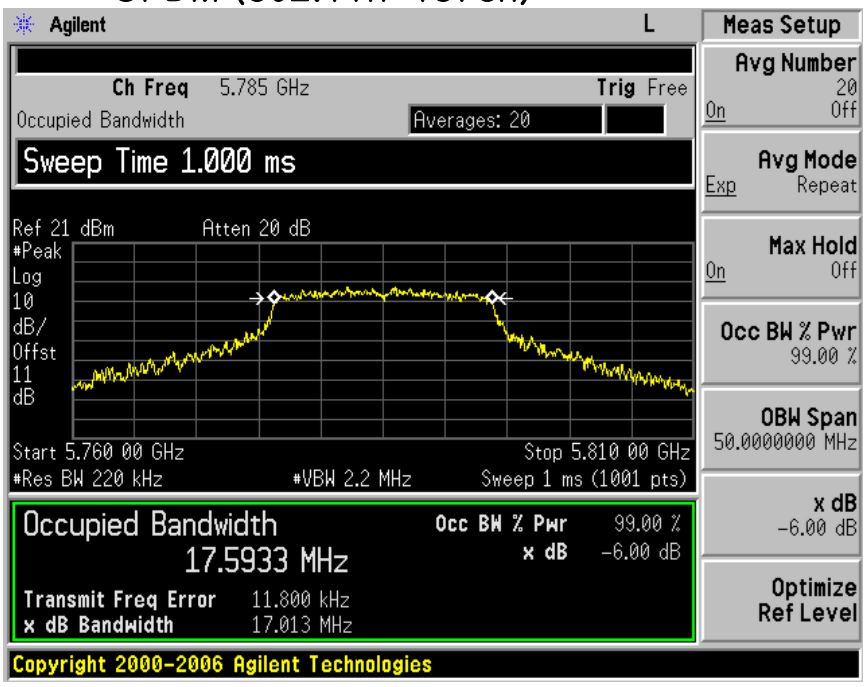


## 5.4-1 Trace data

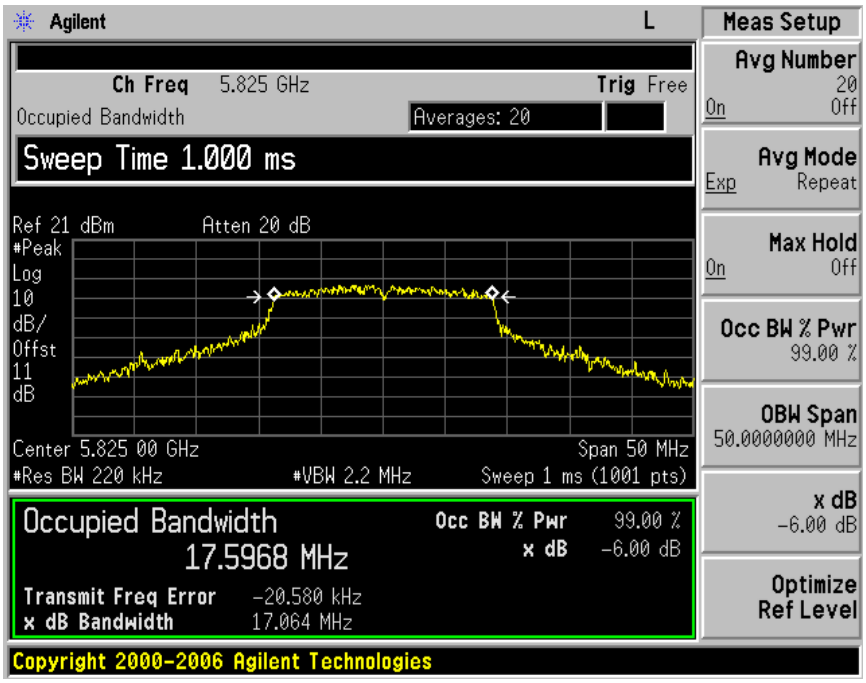
### OFDM (802.11n-149ch)




### OFDM (802.11n-157ch)



OFDM (802.11n-165ch)



# 6. Maximum peak conducted output power

## 6.1 Test procedure

KDB 558074 D01 DTS Meas Guidance v03r02 9.1.1 RBW ≥ DTS bandwidth

### 6.2 Test instruments and measurement setup

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ 3 × RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

Limits : FCC § 15.247 , IC RSS-210 A8.4

Maximum Peak Output Power Test Instruments

| Description | Model | Serial Number | Cal. Due Date |
|---|---|---|---|
| Spectrum Analyzer | FSV40 | 100939 | 2015-01-23 |
| Spectrum Analyzer | 4440A | US41421291 | 2015-01-27 |
| RF Cable | Length: 6cm | - | |
| -Spectrum Analyzer <=> EUT | Loss: 11 dB | - | |

## 6.3 Measurement results

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

(802.11a)

| CHANNEL | Channel requency (MHz) | Conducted Power Output(dBm) | | | Limit[1W] (dBm) | PASS/FAIL |
|---|---|---|---|---|---|---|
| | | Detector | (dBm) | (W) | | |
| 149 | 5745 | PEAK | 20.19 | 0.10 | 30.0 | PASS |
| 157 | 5785 | PEAK | 19.36 | 0.09 | 30.0 | PASS |
| 165 | 5825 | PEAK | 18.68 | 0.07 | 30.0 | PASS |

(802.11n)

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

| CHANNEL | Channel Frequency (MHz) | Conducted Power Output(dBm) | | | Limit[1W] (dBm) | PASS/FAIL |
|---|---|---|---|---|---|---|
| | | Detector | (dBm) | (W) | | |
| 149 | 5745 | PEAK | 19.84 | 0.10 | 30.0 | PASS |
| 157 | 5785 | PEAK | 19.02 | 0.08 | 30.0 | PASS |
| 165 | 5825 | PEAK | 18.46 | 0.07 | 30.0 | PASS |

# 7. Maximum conducted (average) output power

## 7.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r02 9.2.2.4 Method AVGSA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction)

### 7.2 Test instruments and measurement setup

a) Measure the duty cycle, x, of the transmitter output signal as described in 6.0.
b) Set span to at least 1.5 times the OBW.
c) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
d) Set VBW ≥ 3 x RBW.
e) Number of points in sweep ≥ 2 span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
f) Sweep time = auto.
g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
h) Do not use sweep triggering. Allow the sweep to "free run".
i) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the on and off periods of the transmitter.
j) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
k) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log (1/0.25) = 6 dB if the duty cycle is 25 %.

Maximum Peak Output Power Test Instruments

| Description | Model | Serial Number | Cal. Due Date |
|---|---|---|---|
| Spectrum Analyzer | 4440A | US42041281 | 2015-01-27 |
| RF Cable | Length: 6cm | - | |
| -Spectrum Analyzer <=> EUT | Loss: 11 dB | - | |

## 7.3 Measurement results

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

(802.11a)

| CHANNEL | Channel requency (MHz) | Conducted Power Output(dBm) | | | Measured + Factor(dBm) | Measured + Factor(mW) |
|---|---|---|---|---|---|---|
| | | Detector | (dBm) | Factor | | |
| 149 | 5745 | AVG | 8.08 | 2.35 | 10.43 | 11.04 |
| 157 | 5785 | AVG | 7.27 | 2.35 | 9.62 | 9.16 |
| 165 | 5825 | AVG | 7.18 | 2.35 | 9.53 | 8.97 |

(802.11n)

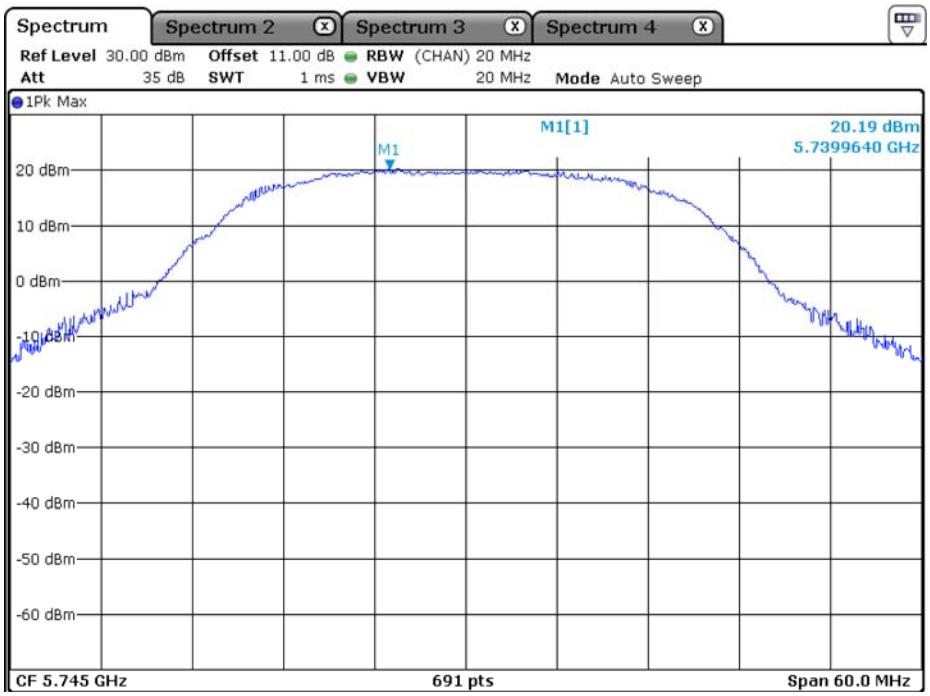
| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 24 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

| CHANNEL | Channel requency (MHz) | Conducted Power Output(dBm) | | | Measured + Factor(dBm) | Measured + Factor(mW) |
|---|---|---|---|---|---|---|
| | | Detector | (dBm) | Factor | | |
| 149 | 5745 | AVG | 6.79 | 2.37 | 9.16 | 8.24 |
| 157 | 5785 | AVG | 6.14 | 2.37 | 8.51 | 7.10 |
| 165 | 5825 | AVG | 5.73 | 2.37 | 8.10 | 6.46 |

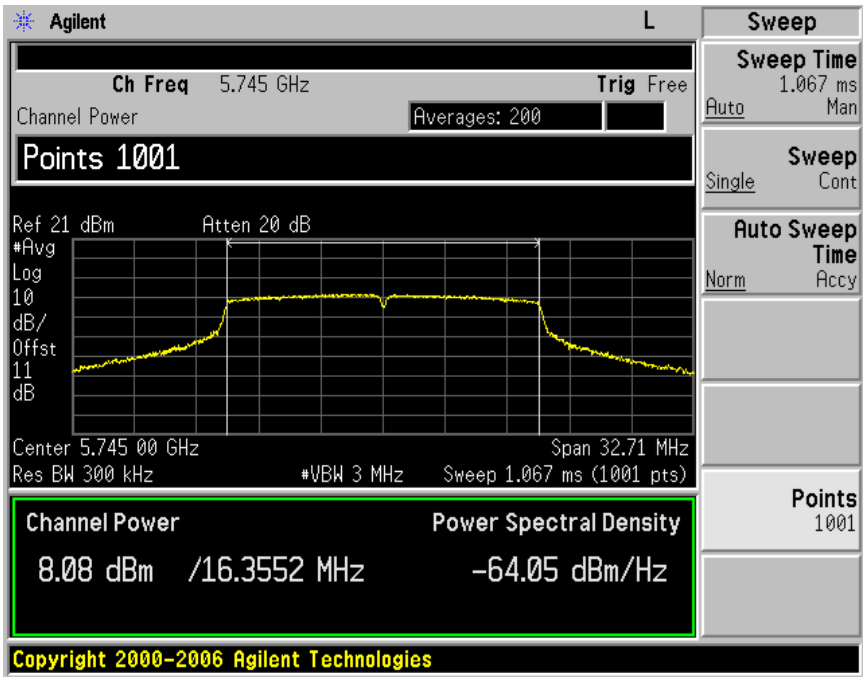
## 7.4 Trace data

## OFDM (802.11a-149ch)

(Peak)

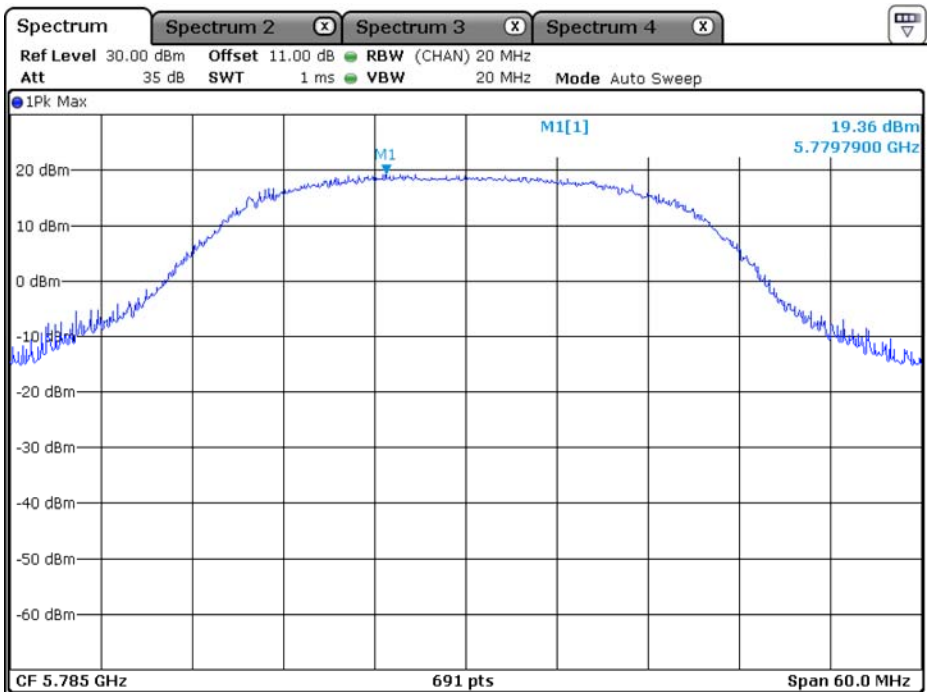



(Avg)

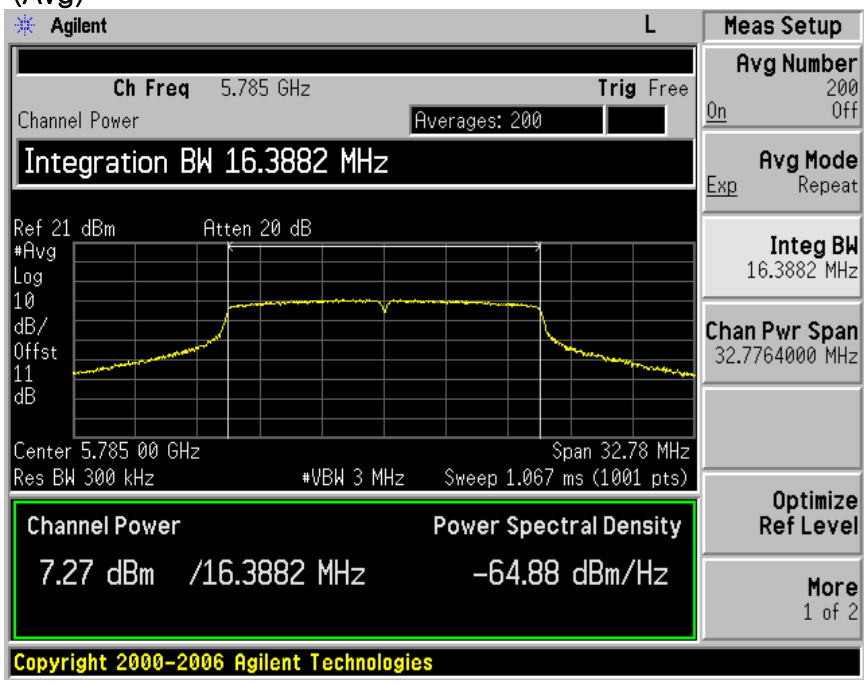


## OFDM (802.11a-157ch)

(Peak)

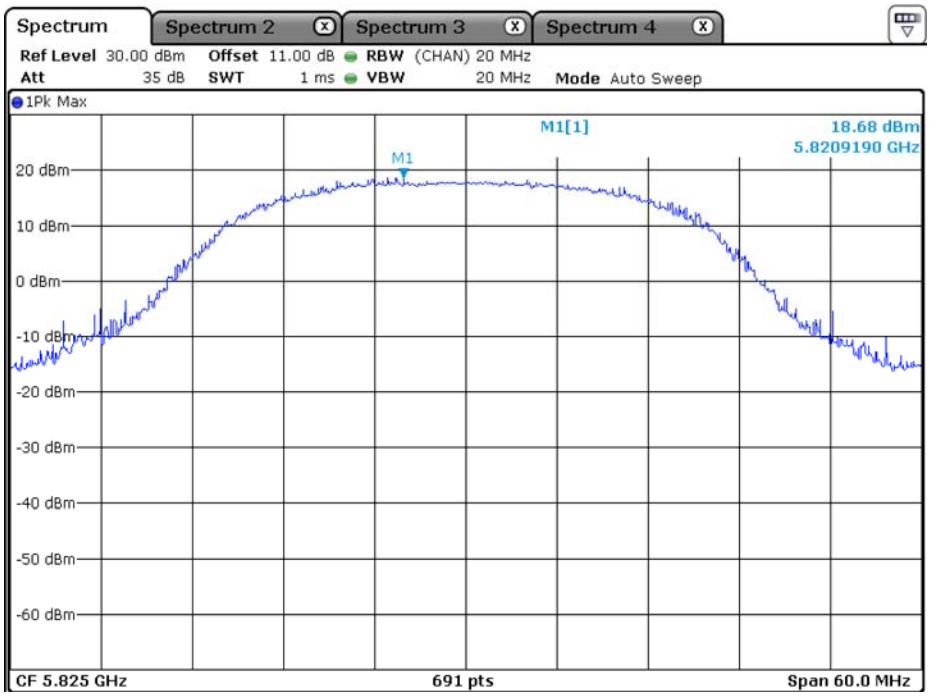



(Avg)



## OFDM (802.11a-165ch)

(Peak)

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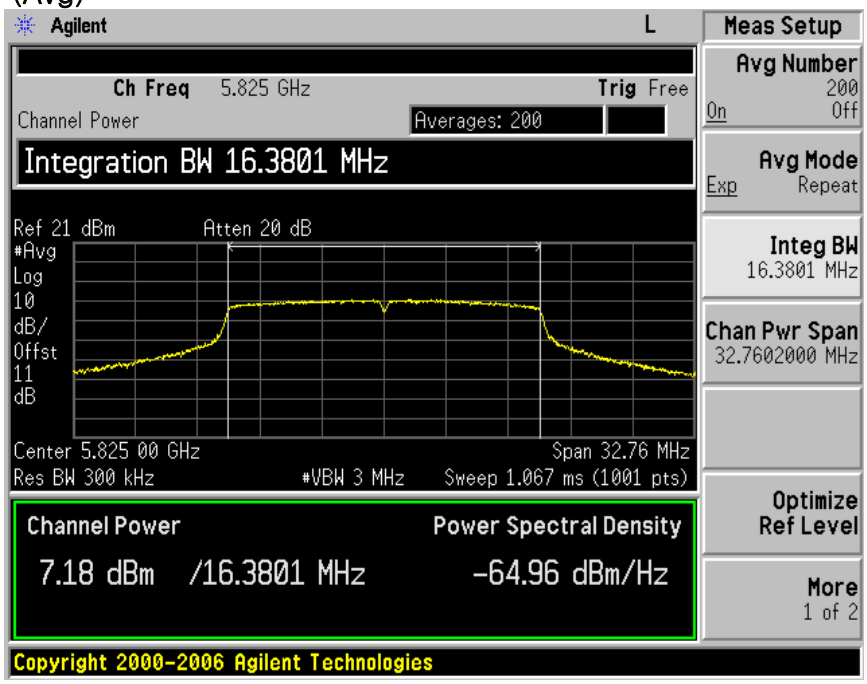
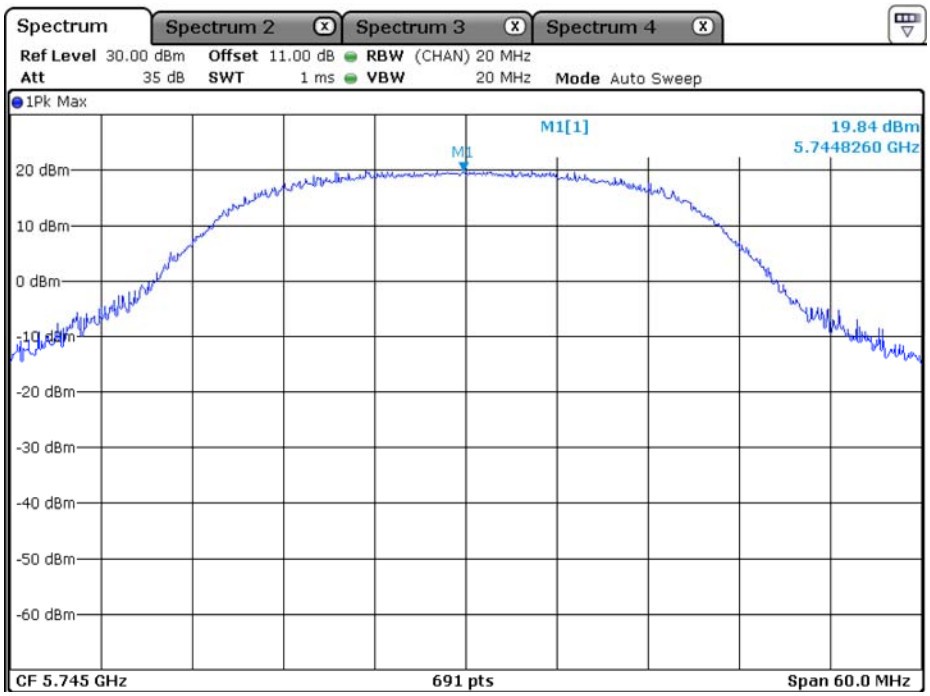
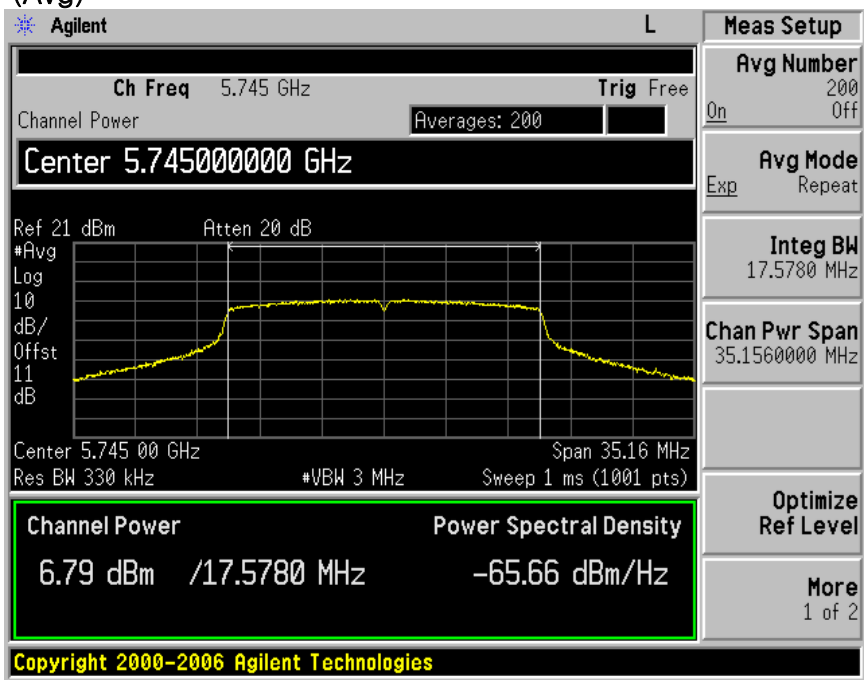


## OFDM (802.11n-149ch)

(Peak)

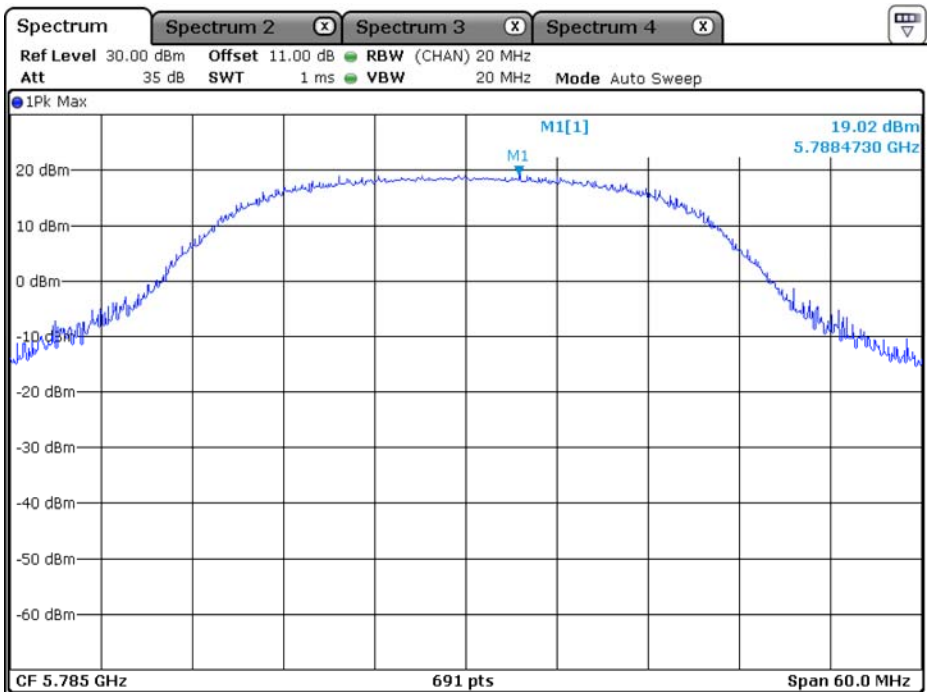



(Avg)

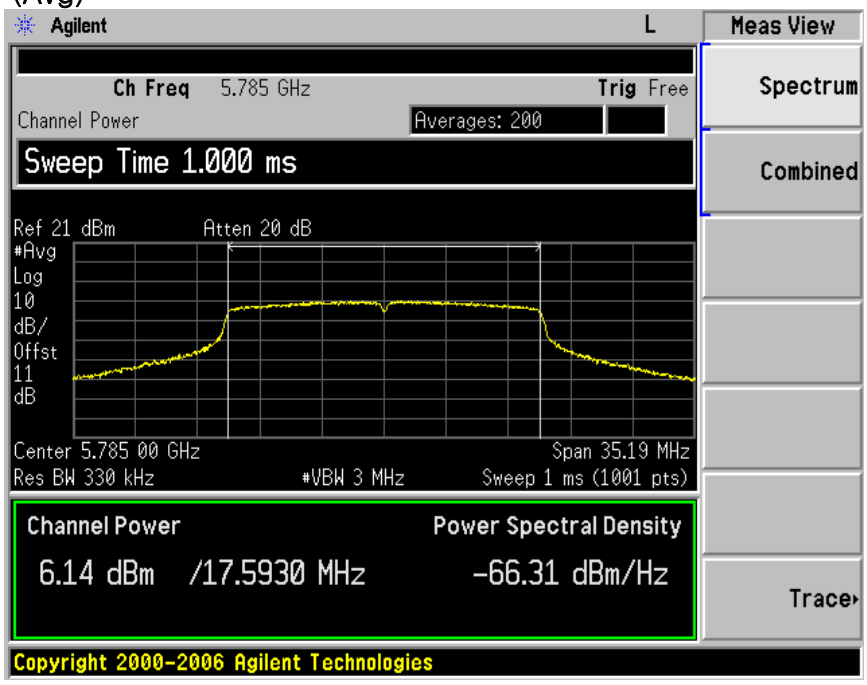


## OFDM (802.11n-157ch)

(Peak)

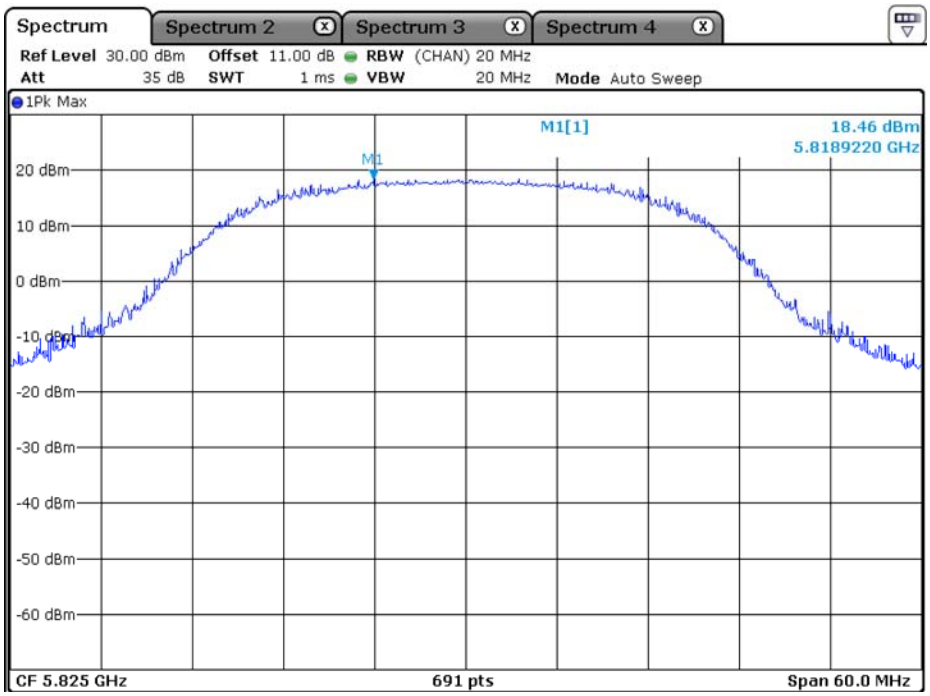



(Avg)

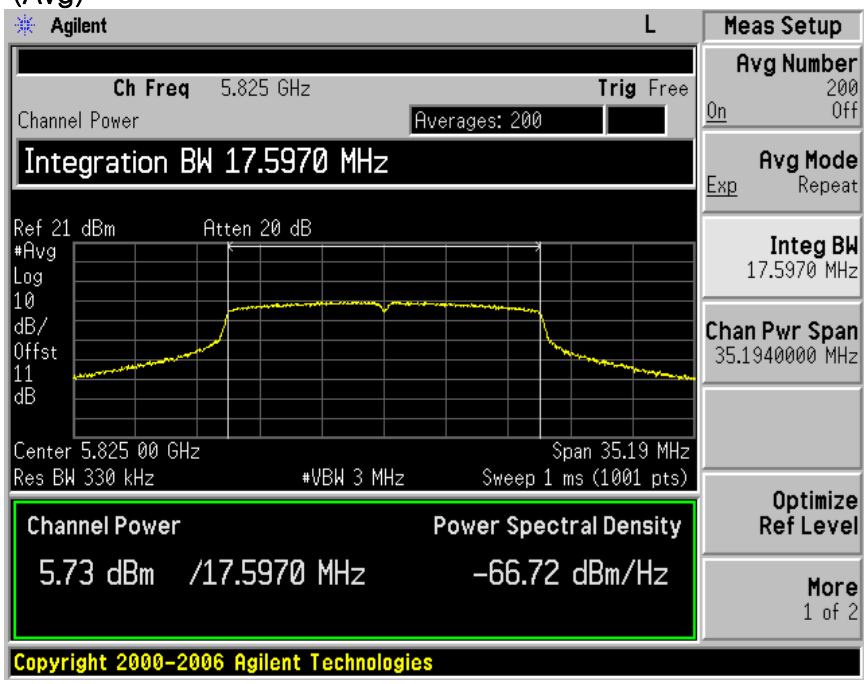


## OFDM (802.11n-165ch)

(Peak)




(Avg)



# 8. Maximum power spectral density level in the fundamental emission

## 8.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r02 10.2 Method PKPSD (peak PSD)

## 8.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

a) Set analyzer center frequency to DTS channel center frequency.

b) Set the span to 1.5 times the DTS bandwidth.

c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

d) Set the VBW ≥ 3 RBW.

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Limits FCC § 15.247 , IC RSS-210 A8.2

The peak power density Test Instruments

| Description | Model | Serial Number | Cal. Due Date |
|---|---|---|---|
| Spectrum Analyzer | E440A | US42041281 | 2015-01-27 |
| RF Cable | Length: 6cm | - | |
| -Spectrum Analyzer <=> EUT | Loss: 11 dB | - | |

## 8.3 Measurement results

802.11a

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 23 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

| CHANNEL | Channel Frequency (MHz) | Measured Power Spectral Density (dBm) | Maximum Permissible Power Density (dBm/3kHz) | Margin |
|---|---|---|---|---|
| 149 | 5745 | -8.31 | 8.0 | 16.31 |
| 157 | 5785 | -10.69 | 8.0 | 18.69 |
| 165 | 5825 | -9.62 | 8.0 | 17.62 |

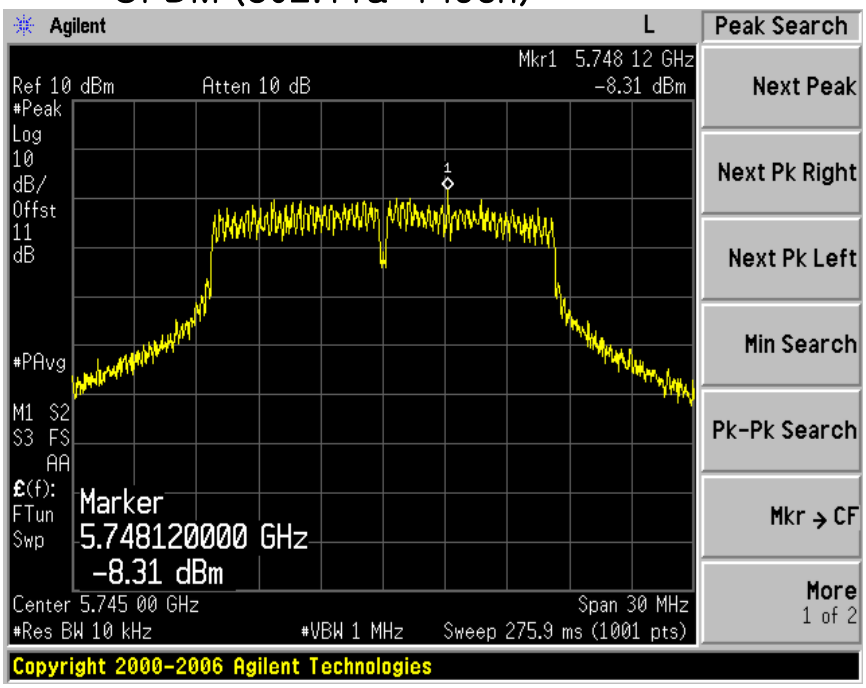
| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 23 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

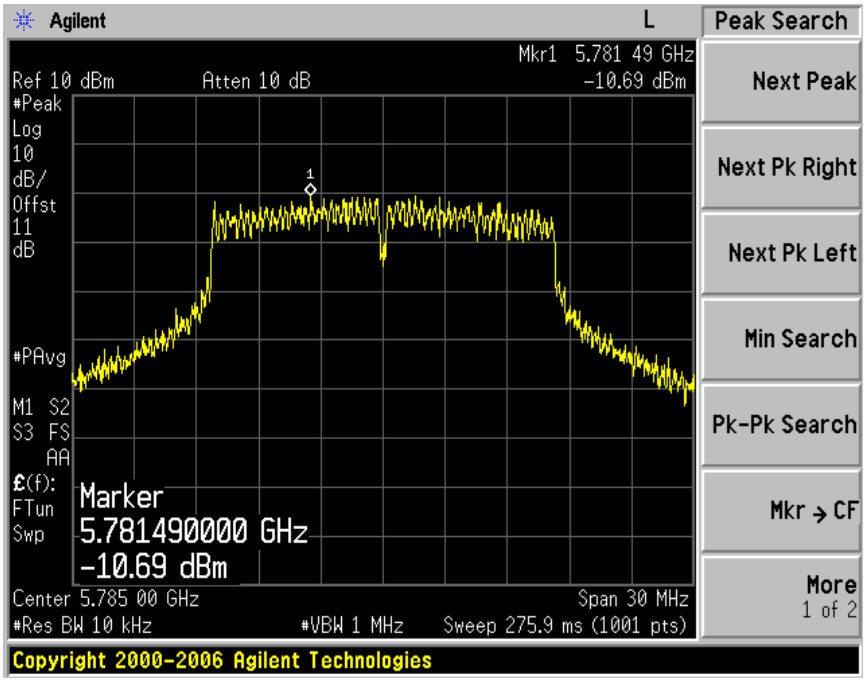
802.11n

| CHANNEL | Channel Frequency (MHz) | Measured Power Spectral Density (dBm) | Maximum Permissible Power Density (dBm/3kHz) | Margin |
|---|---|---|---|---|
| 149 | 5745 | -10.55 | 8.0 | 18.55 |
| 157 | 5785 | -11.24 | 8.0 | 19.24 |
| 165 | 5825 | -11.28 | 8.0 | 19.28 |

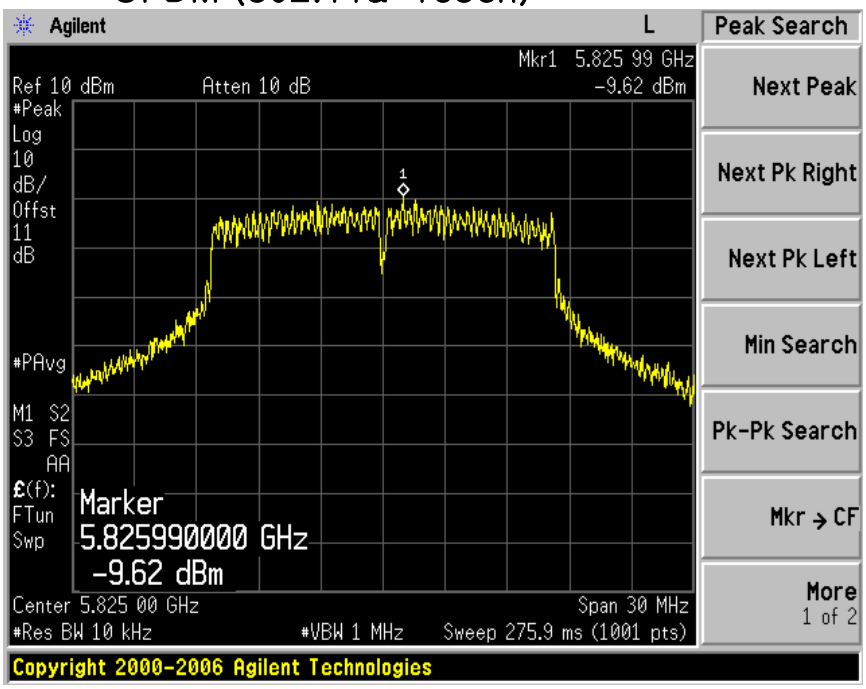
## 8.4 Trace data

OFDM (802.11a-149ch)

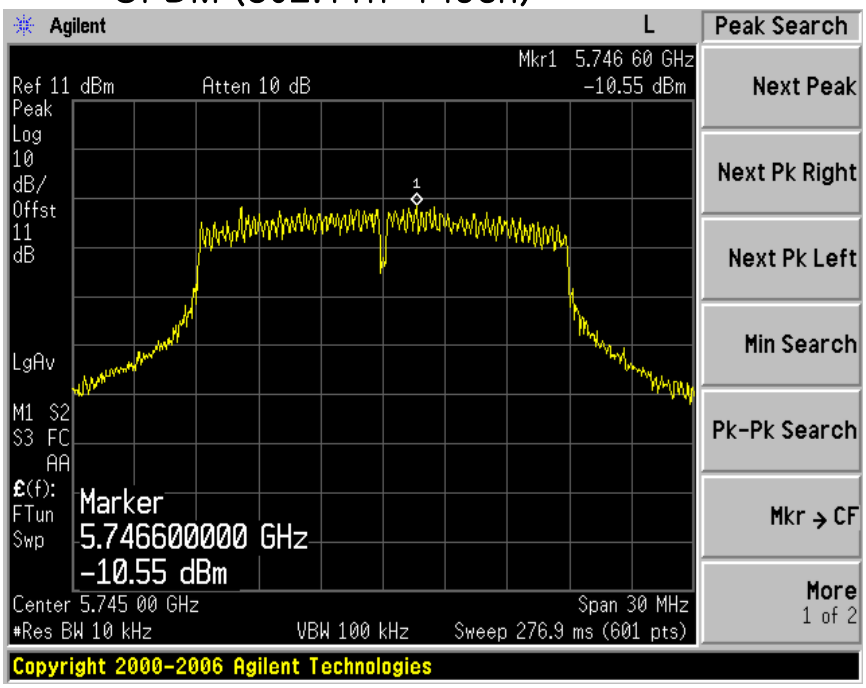


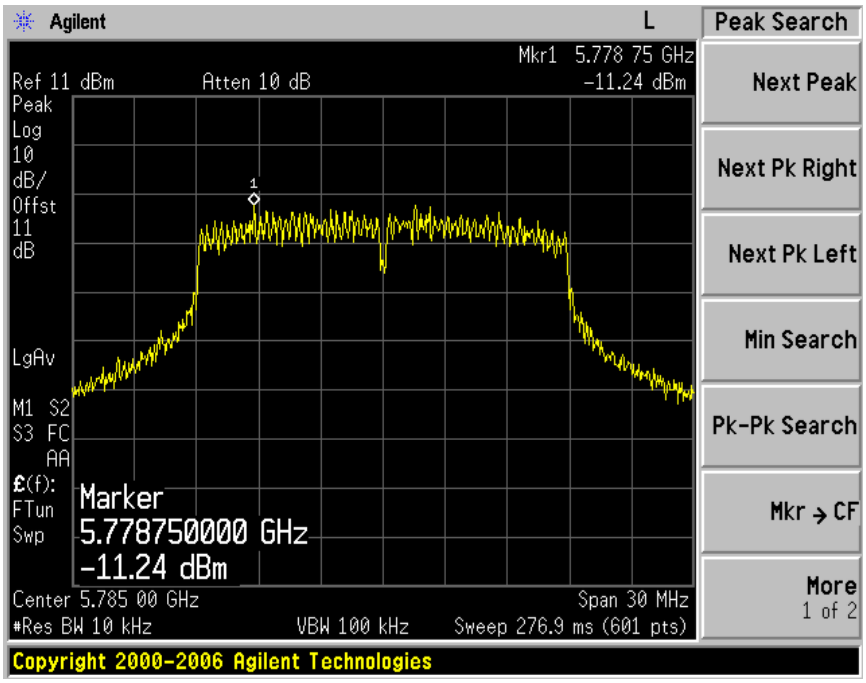



OFDM (802.11a-165ch)

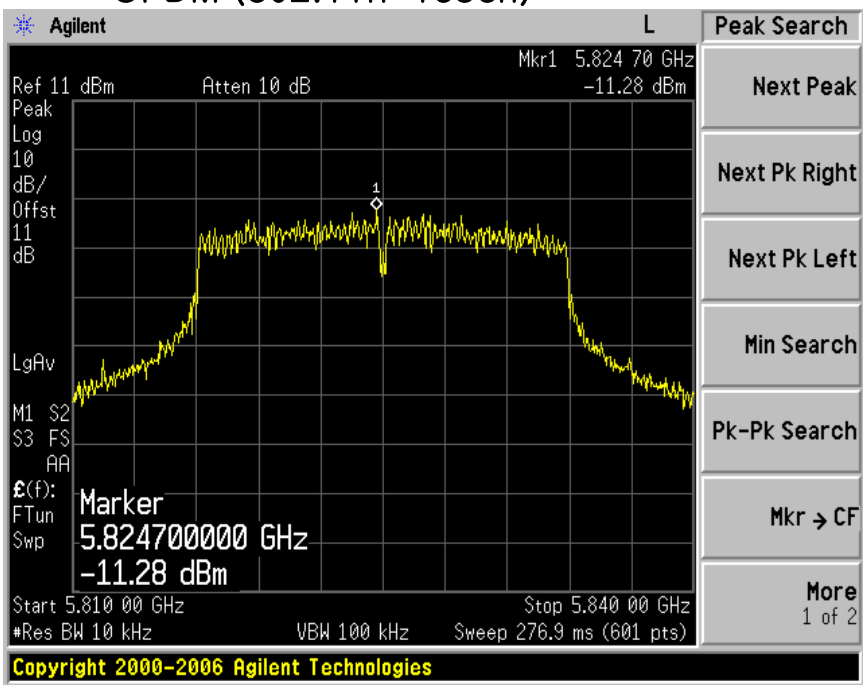


OFDM (802.11n-149ch)



OFDM (802.11n-165ch)



# 9. Emissions in non-restricted frequency bands

## 9.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r02 11.0 Emissions in non-restricted frequency

## 9.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

a) Set the center frequency and span to encompass frequency range to be measured.

b) Set the RBW = 100 kHz)

c) Set the VBW ≥ 3 x RBW)

d) Detector = peak.

e) Ensure that the number of measurement points ≥ span/RBW

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum amplitude level.

Limits FCC § 15.247 , IC RSS-210 A8.5

Band Edge&Out of Emission Test Instruments

| Description | Model | Serial Number | Cal. Due Date |
|---|---|---|---|
| Spectrum Analyzer | E4440A | US42041281 | 2015-01-27 |
| Spectrum Analyzer | FSV40 | 100939 | 2015-01-23 |
| RF Cable | Length: 6cm | | - |
| -Spectrum Analyzer <=> EUT | Loss: 11 dB | | - |

not

1. RBW was set to 1MHz rather than 100khz in order to increase the measurement speed

2. The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100khz bandwidth. however, since the traces in the following plots are measured with a 1mhz rbw , the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz

3. for plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced rbw to ensure that no emissions were present

## 9.3 Measurement results of band-edge & out of emission

| EUT | Mobile Computer | MODEL | PM60 |
|---|---|---|---|
| MODE | OFDM | ENVIRONMENTAL CONDITION | 23 ℃, 43 % R.H. |
| INPUT POWER | 120 Va.c., 60 Hz | | |

802.11a

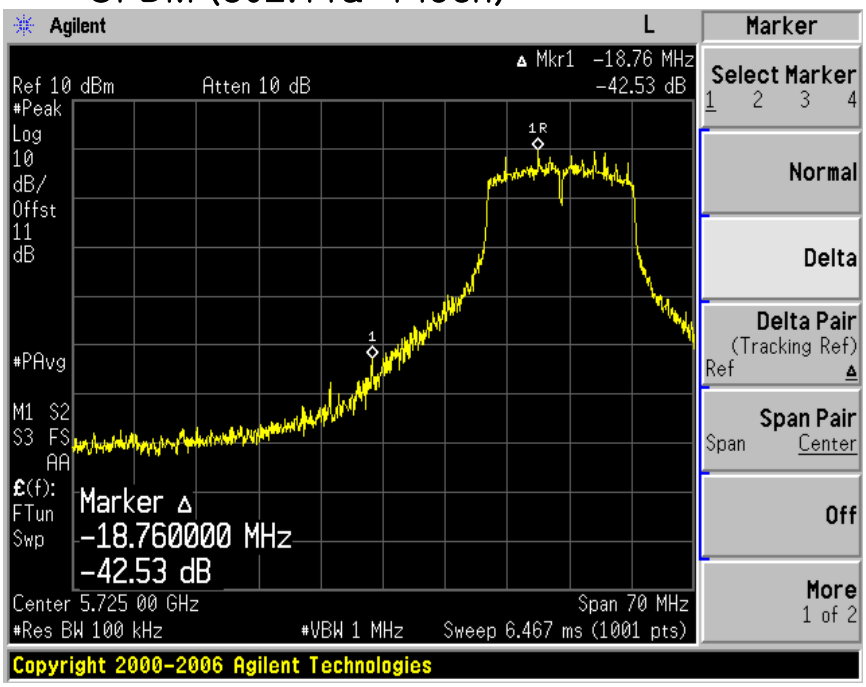
| CHANNEL | Channel Frequency (MHz) | limit | PASS/FAIL |
|---|---|---|---|
| 149 | 5745 | 20dBc | PASS |
| 165 | 5825 | 20dBc | PASS |

802.11n

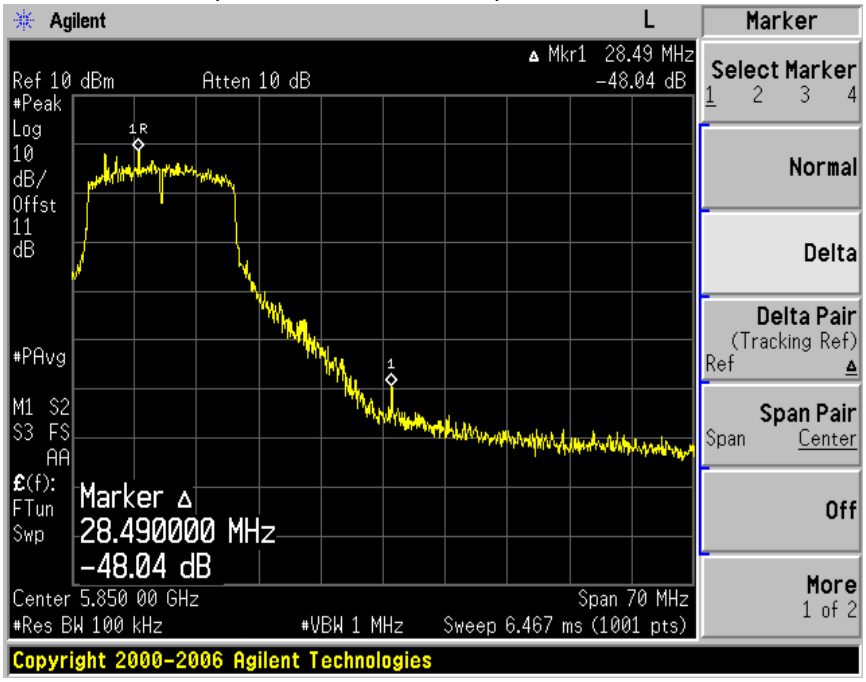
| CHANNEL | Channel Frequency (MHz) | limit | PASS/FAIL |
|---|---|---|---|
| 149 | 5745 | 20dBc | PASS |
| 165 | 5825 | 20dBc | PASS |

## 9.4 Trace data of band-edge & Out of Emission

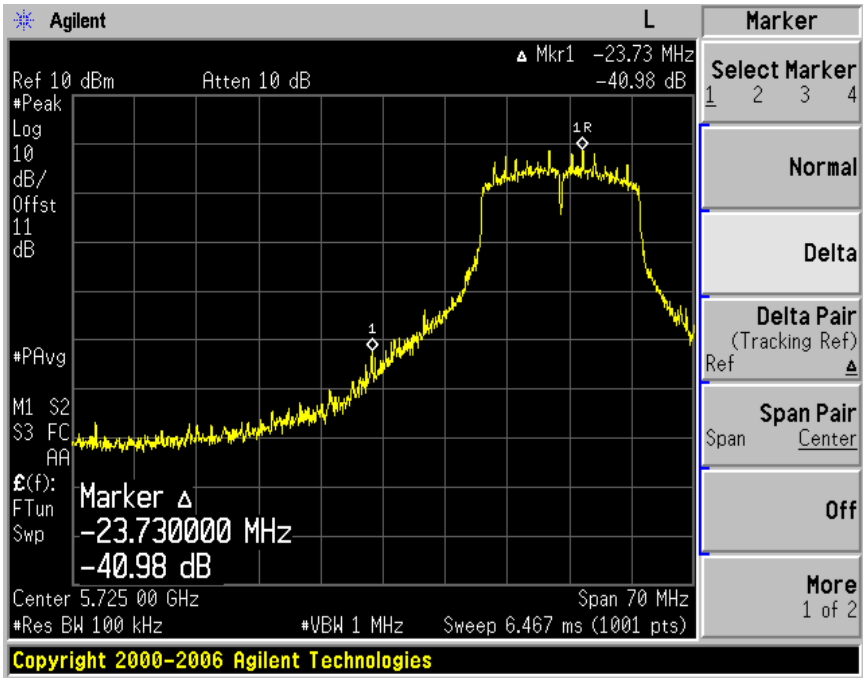
### OFDM (802.11a-149ch)



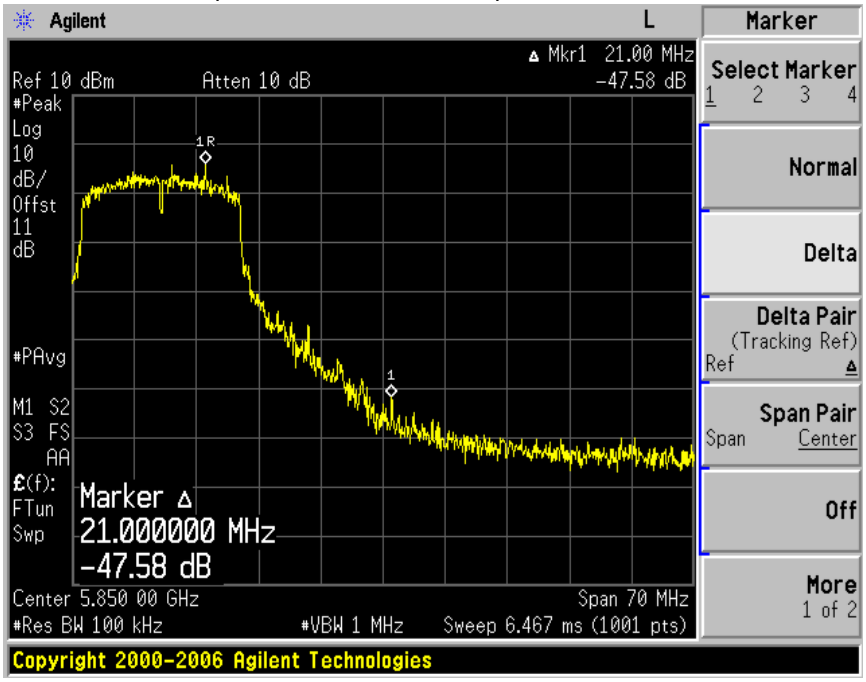

### OFDM (802.11a-165ch)



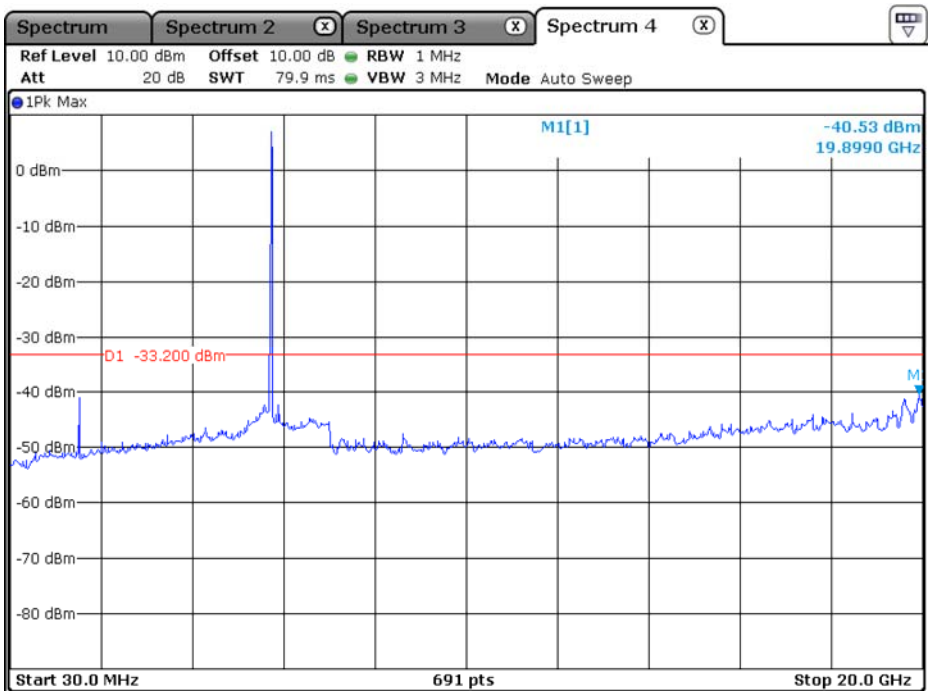
OFDM (802.11n-149ch)

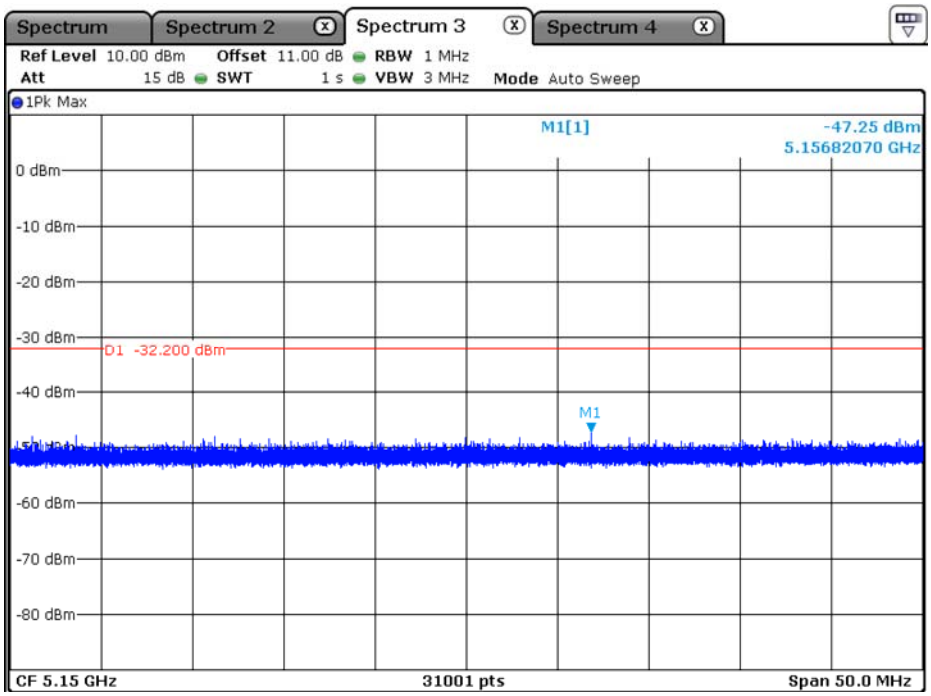



OFDM (802.11n-165ch)

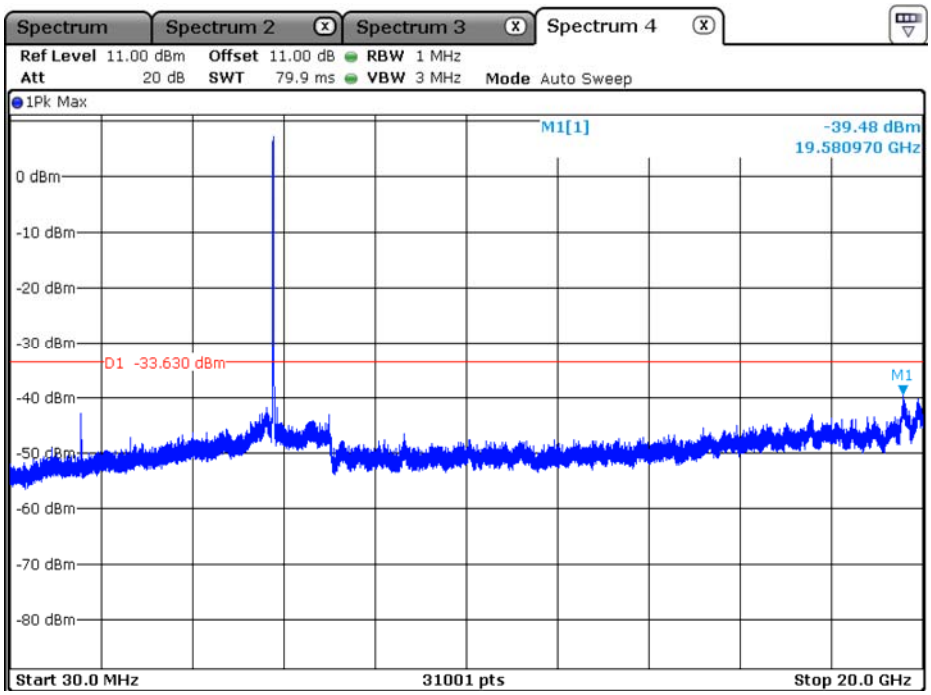


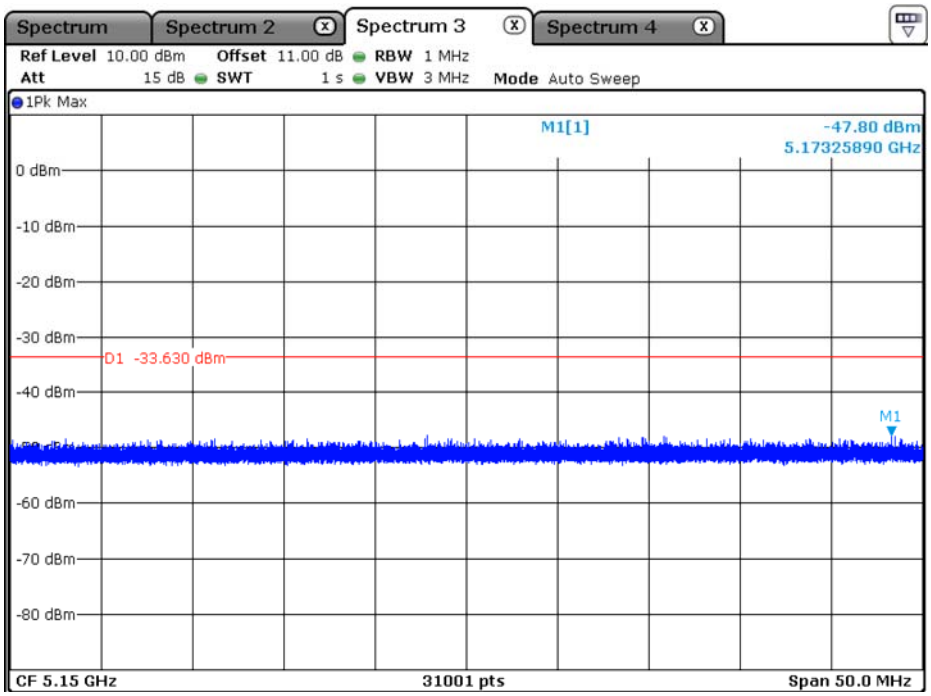
OFDM (802.11a-149ch)



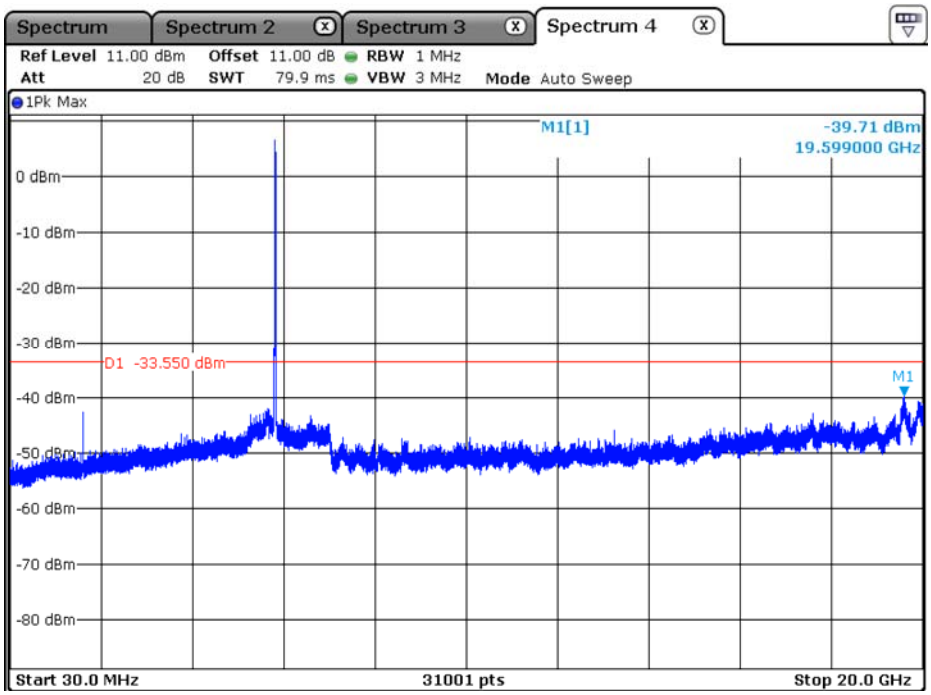



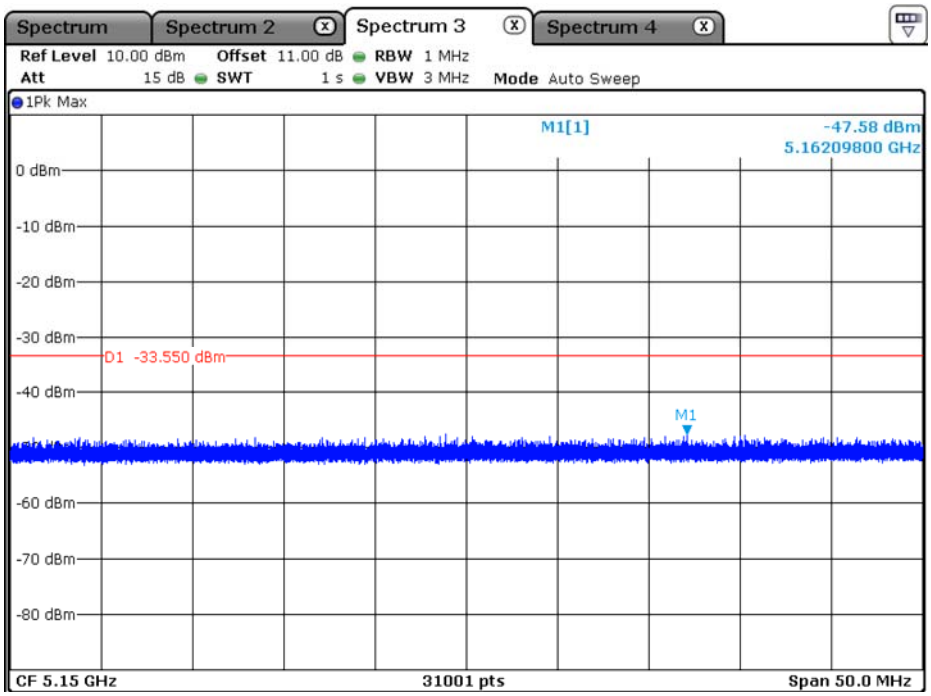
OFDM (802.11a-157ch)



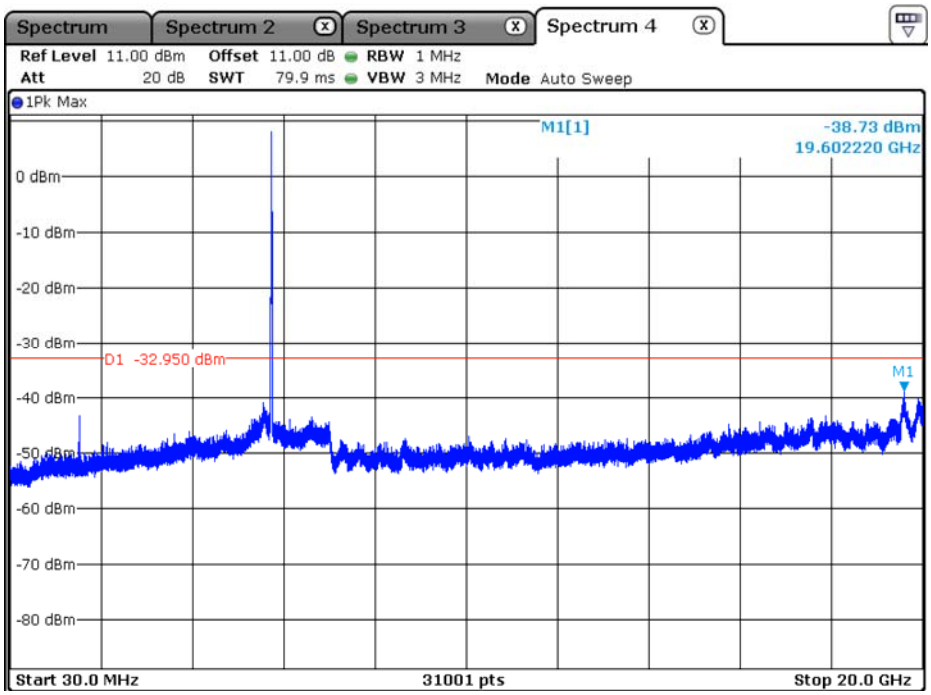



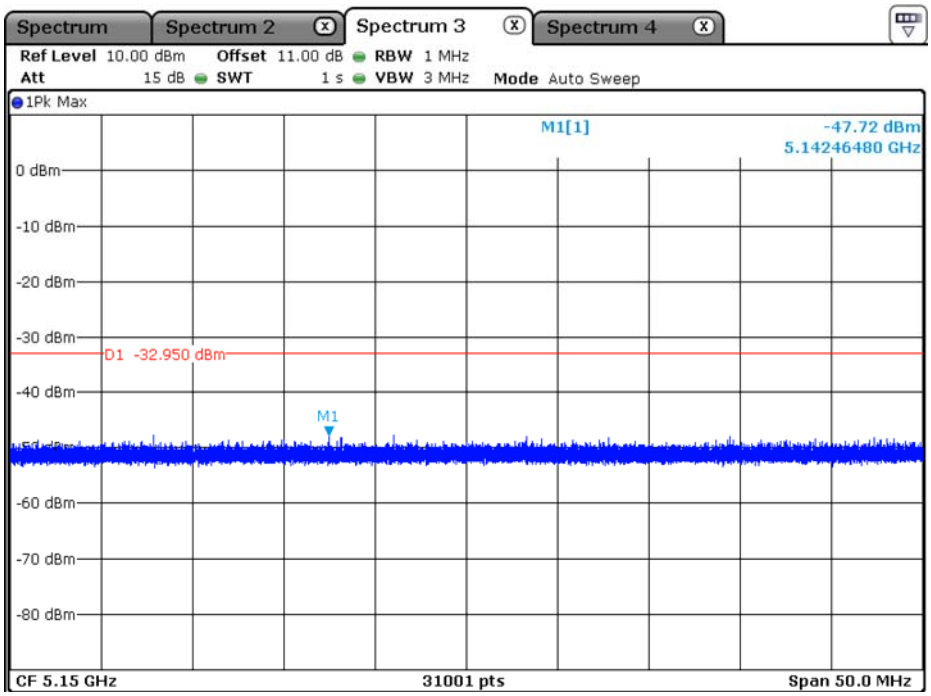
OFDM (802.11a-165ch)



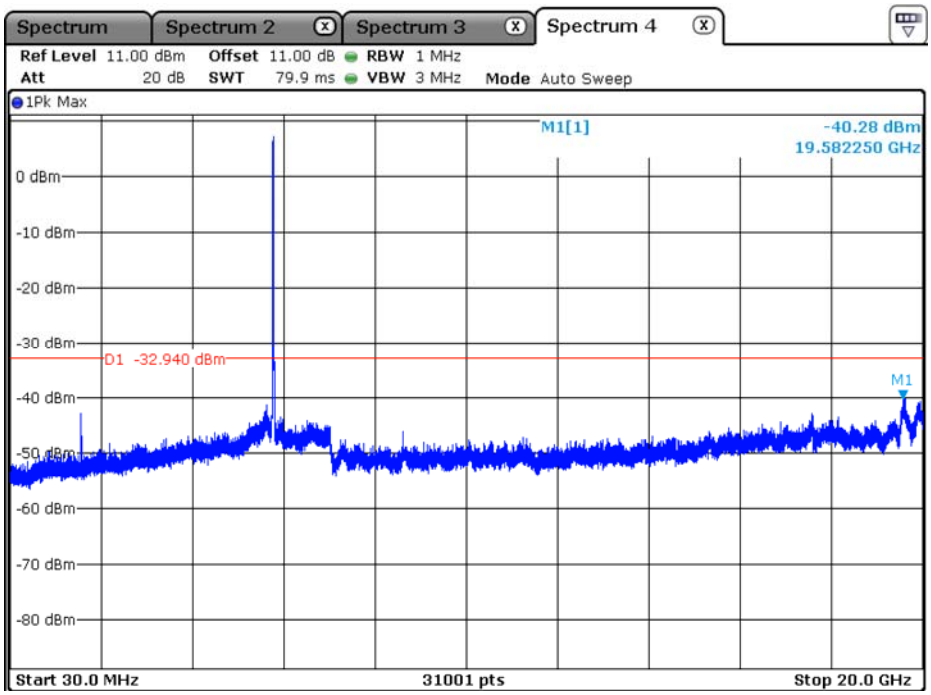



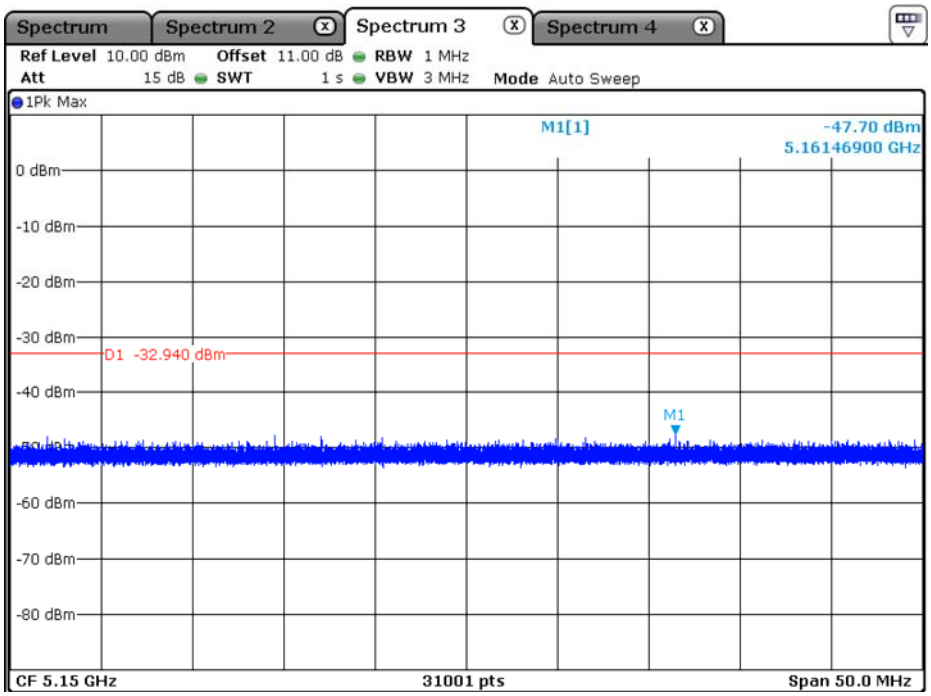
OFDM (802.11n-149ch)



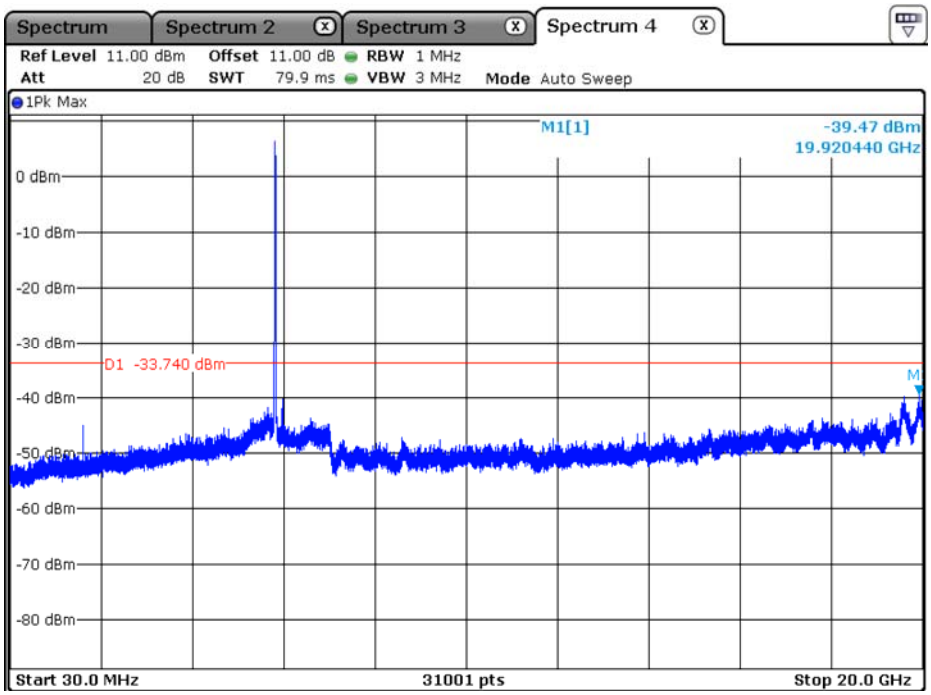



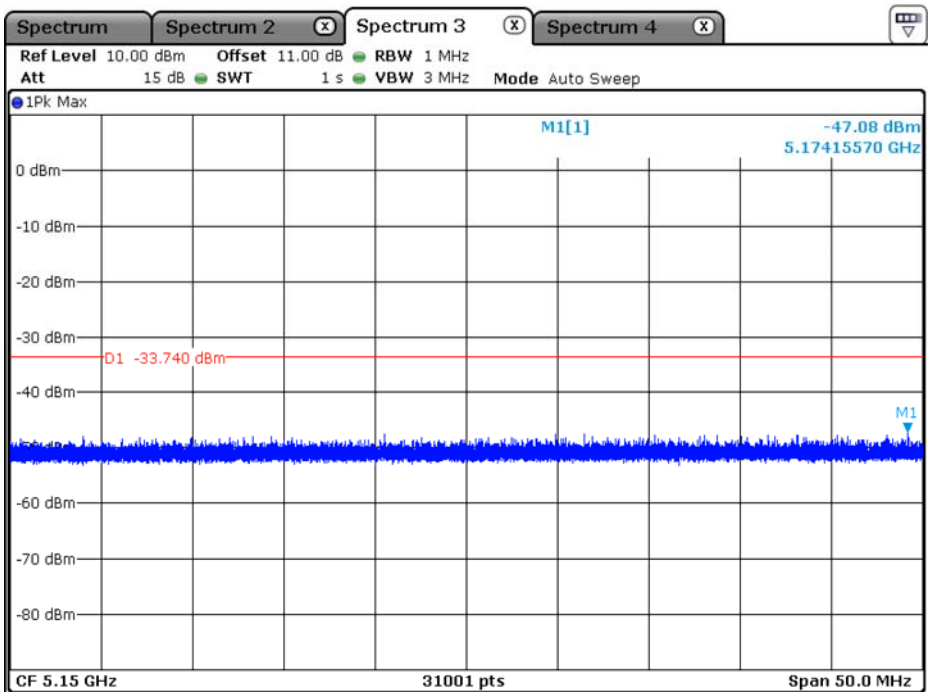
OFDM (802.11n-157ch)



OFDM (802.11n-165ch)



# 10. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC PART 15.205, 15.209 & IC RSS-210 (A8.5). The test setup was made according to ANSI C 63.4 (2009) & KDB 558074 D01 Semi-anechoic chamber, which allows a 3 m distance measurement. The EUT was placed in the center of styrofoam. turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

## 10.1 Measurement equipments

| Equipment Name | Type | Manufacturer | Serial No. | Next Calibration date |
|---|---|---|---|---|
| TEST Receiver | ESCI7 | ROHDE & SCHWARZ | 1166.5950.07 | 25-Jan-14 |
| Logbicon Antenna | VULB 9168 | SCHWARZBECK | 237 | 24-Jan-14 |
| Turn Table | DT3000-2t | Innco System GmbH | N/A | - |
| Antenna Mast | MA4000-EP | Innco System GmbH | N/A | - |
| PREAMPLIFIER | 8449B | AGILENT | 3008A00595 | 25-Jan-14 |
| Horn Antenna | BBHA9120D | SCHWARZBECK | 469 | 21-Oct-13 |
| Test Receiver | ESPI7 | ROHDE & SCHWARZ | 100185 | 25-Jan-14 |
| Spectrum Analyzer | R3273 | ADVANTEST | 110600592 | 26-Jan-14 |
| Turn Table | DT1500-S | Innco System GmbH | N/A | - |
| Antenna Mast | MA4000-EP | Innco System GmbH | N/A | - |
| Pyramidal Horn Antenna | 3160-09-01 | EST-LINDGREN | 102642 | 22-Oct-13 |
| Antenna Master & Turn table controller | CO2000-P | Innco System GmbH | CO2000/642 /28051111/L | - |
| Spectrum Analyzer | FSV40 | ROHDE & SCHWARZ | 100939 | 23-Jan-15 |
| Double Ridged Horn Antenna | SAS-574 | A.H.SYSTEMS | 154 | 20-Mar-14 |
| PREAMPLIFIER | 83051A | AGILENT | 3950M00201 | 5-Jun-14 |

## 10.2 Environmental Condition

Below 1 GHz -Test Place : 10 m Semi-anechoic chamber

Wireless LAN 802.11a Mode
Temperature (°C) : 22.0 ℃
Humidity (% R.H.) : 47.2 % R.H.

Wireless LAN 802.11n Mode
Temperature (°C) : 22.0 ℃
Humidity (% R.H.) : 47.4 % R.H.

Above 1 GHz-Test Place : 3 m Semi-anechoic chamber

Wireless LAN 802.11a Mode
Temperature (°C) : 22.1 ℃
Humidity (% R.H.) : 47.0 % R.H.

Wireless LAN 802.11n Mode
Temperature (°C) : 21.9 ℃
Humidity (% R.H.) : 47.2 % R.H.

## 10.3 Measurement Instrument setting for Radiated Emission

### 10.3.1 Frequency range below 1 GHz

RBW: 120 kHz , VBW: 3 x RBW , Detector: Quasi Peak

### 10.3.2 Frequency range above 1 GHz

Peak Power Measurement Procedure (KDB 558074 section 12.2.4)

a.RBW: 1 MHz , VBW: 3 MHz
b.Trace mode = max hold
c.Detector: Peak
d.Sweep time = auto

Average Power Measurement Procedures (KDB 558074 section 12.2.5.2)

a.Set analyzer center frequency to the frequency associated with the emission
b.RBW: 1 MHz , VBW: 3 MHz
c.Detector : power average (RMS) detector
d.Sweep time = auto

Note

| | Duty cycle(%) | Ton (ms) | Ton + Toff (ms) | DCF=10*log(1/Duty) (dB) |
|---|---|---|---|---|
| 802.11a | 60.8 | 1.485 | 2.444 | 2.16 |
| 802.11b | 89.1 | 8.420 | 9.454 | 0.50 |
| 802.11g | 57.7 | 1.390 | 2.409 | 2.39 |
| 802.11n 2.4 GHz | 58.9 | 1.353 | 2.298 | 2.30 |
| 802.11n 5 GHz | 58.9 | 1.372 | 2.331 | 2.30 |

*This was applied of duty cycle factor for average value because of measured with the EUT transmitting continuously less than 98% duty cycle at its maximum power control level.

## 10.4 Test Data for wireless LAN (802.11a)

Test Date : 10-Jul-13 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Result Value | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| 33.80 | 11.73 | V | 3.2 | 11.33 | 0.88 | 40.00 | 23.94 | -16.06 |
| 72.70 | 8.16 | H | 3.7 | 10.72 | 1.30 | 40.00 | 20.18 | -19.82 |
| 87.50 | 10.33 | H | 2.4 | 8.07 | 1.42 | 40.00 | 19.82 | -20.18 |
| 148.10 | 7.57 | V | 2.1 | 12.46 | 1.86 | 43.50 | 21.89 | -21.61 |
| 172.80 | 10.21 | H | 2.8 | 11.98 | 2.00 | 43.50 | 24.19 | -19.31 |
| 192.00 | 12.75 | V | 2.6 | 10.29 | 2.11 | 43.50 | 25.15 | -18.35 |
| 222.20 | 6.95 | H | 1.8 | 10.49 | 2.28 | 46.00 | 19.72 | -26.28 |
| 300.00 | 6.63 | H | 2.6 | 13.55 | 2.66 | 46.00 | 22.84 | -23.16 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Remark | H : Horizontal, V : Vertical TEST MODE : 802.11a-CH157 (5785 MHz)<br><br>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)<br>*CL = Cable Loss(In case of below 1000 MHz)<br>*Result Value = Reading + Ant Factor + Cable loss<br>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz. |
|---|---|

## 10.4-1 Test Data for wireless LAN

Test Date 14-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11490.0 | 36.71 | H | 1.1 | 39.93 | -16.46 | 0.00 | 74.00 | 60.18 | -13.82 |
| 11490.0 | 34.41 | V | 1.2 | 39.93 | -16.46 | 0.00 | 74.00 | 57.88 | -16.12 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11490.0 | 24.11 | H | 1.1 | 39.93 | -16.46 | 2.16 | 54.00 | 49.74 | -4.26 |
| 11490.0 | 23.01 | V | 1.2 | 39.93 | -16.46 | 2.16 | 54.00 | 48.64 | -5.36 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Remark

H : Horizontal, V : Vertical TEST MODE : 802.11a-CH149 (5745 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction

FYI
a. Ton Time : 1.485 ms
b. duty cycle : 60.8 %
c. DCF : 2.16 dB

## 10.4-2 Test Data for wireless LAN

Test Date 14-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11570.0 | 36.89 | H | 1.2 | 39.79 | -16.43 | 0.00 | 74.00 | 60.25 | -13.75 |
| 11570.0 | 36.91 | V | 1.1 | 39.79 | -16.43 | 0.00 | 74.00 | 60.27 | -13.73 |
| | | | | | | | | | |
| | | | | | | | | | |
| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11570.0 | 23.92 | H | 1.2 | 39.79 | -16.43 | 2.16 | 54.00 | 49.44 | -4.56 |
| 11570.0 | 24.12 | V | 1.1 | 39.79 | -16.43 | 2.16 | 54.00 | 49.64 | -4.36 |
| | | | | | | | | | |
| | | | | | | | | | |

Remark

H : Horizontal, V : Vertical TEST MODE : 802.11a-CH157(5785 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction
FYI
a. Ton Time : 1.485 ms
b. duty cycle : 60.8 %
c. DCF : 2.16 dB

## 10.4-4 Test Data for wireless LAN

Test Date 13-Jul-13 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11650.0 | 35.78 | H | 1.2 | 39.64 | -16.40 | 0.00 | 74.00 | 59.02 | -14.98 |
| 11650.0 | 36.12 | V | 1.2 | 39.64 | -16.40 | 0.00 | 74.00 | 59.36 | -14.64 |
| | | | | | | | | | |
| | | | | | | | | | |
| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11650.0 | 24.61 | H | 1.2 | 39.64 | -16.40 | 2.16 | 54.00 | 50.01 | -3.99 |
| 11650.0 | 23.11 | V | 1.2 | 39.64 | -16.40 | 2.16 | 54.00 | 48.51 | -5.49 |
| | | | | | | | | | |
| | | | | | | | | | |

Remark

H : Horizontal, V : Vertical TEST MODE : 802.11a-CH165 (5825 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction
FYI
a. Ton Time : 1.485 ms
b. duty cycle : 60.8 %
c. DCF : 2.16 dB

## 10.5 Test Data for wireless LAN (802.11n)

Test Date : 11-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Result Value | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| 33.30 | 11.56 | V | 1.4 | 11.31 | 0.87 | 40.00 | 23.73 | -16.27 |
| 73.30 | 12.40 | V | 1.8 | 10.61 | 1.31 | 40.00 | 24.32 | -15.68 |
| 77.10 | 13.32 | H | 2.1 | 9.91 | 1.34 | 40.00 | 24.56 | -15.44 |
| 90.80 | 18.31 | V | 2.2 | 7.69 | 1.45 | 43.50 | 27.45 | -16.05 |
| 139.80 | 10.74 | V | 1.2 | 12.20 | 1.81 | 43.50 | 24.75 | -18.75 |
| 185.00 | 10.60 | V | 1.4 | 11.00 | 2.07 | 43.50 | 23.67 | -19.83 |
| 281.50 | 7.89 | V | 1.4 | 12.89 | 2.57 | 46.00 | 23.35 | -22.65 |
| 300.00 | 8.56 | H | 2.6 | 13.55 | 2.66 | 46.00 | 24.77 | -21.23 |
| 520.00 | 6.83 | H | 2.4 | 18.48 | 3.54 | 46.00 | 28.85 | -17.15 |
| 756.10 | 9.52 | V | 2.9 | 21.96 | 4.29 | 46.00 | 35.78 | -10.22 |
| | | | | | | | | |
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Remark

H : Horizontal, V : Vertical TEST MODE : 802.11n-CH157 (5785 MHz)

*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*CL = Cable Loss(In case of below 1000 MHz)
*Result Value = Reading + Ant Factor + Cable loss
*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.

## 10.5-1 Test Data for wireless LAN

Test Date 15-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11490.0 | 36.91 | H | 1.1 | 39.93 | -16.46 | 0.00 | 74.00 | 60.38 | -13.62 |
| 11490.0 | 36.87 | V | 1.1 | 39.93 | -16.46 | 0.00 | 74.00 | 60.34 | -13.66 |
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| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11490.0 | 25.12 | H | 1.1 | 39.93 | -16.46 | 2.30 | 54.00 | 50.89 | -3.11 |
| 11490.0 | 25.21 | V | 1.1 | 39.93 | -16.46 | 2.30 | 54.00 | 50.98 | -3.02 |
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Remark

H : Horizontal, V : Vertical TEST MODE : 802.11n-CH149 (5745 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction
FYI
a. Ton Time : 1.372 ms
b. duty cycle : 58.9 %
c. DCF : 2.30 dB

## 10.5-2 Test Data for wireless LAN

Test Date 15-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11570.0 | 36.81 | H | 1.1 | 39.79 | -16.43 | 0.00 | 74.00 | 60.17 | -13.83 |
| 11570.0 | 36.34 | V | 1.2 | 39.79 | -16.43 | 0.00 | 74.00 | 59.70 | -14.30 |
| | | | | | | | | | |
| | | | | | | | | | |
| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11570.0 | 25.04 | H | 1.1 | 39.79 | -16.43 | 2.30 | 54.00 | 50.70 | -3.30 |
| 11570.0 | 25.24 | V | 1.2 | 39.79 | -16.43 | 2.30 | 54.00 | 50.90 | -3.10 |
| | | | | | | | | | |
| | | | | | | | | | |

Remark

H : Horizontal, V : Vertical TEST MODE : 802.11n-CH157(5785 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction
FYI
a. Ton Time : 1.372 ms
b. duty cycle : 58.9 %
c. DCF : 2.30 dB

## 10.5-3 Test Data for wireless LAN

Test Date 15-Jul-14 Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Duty Cycle Correction(dB) | Result Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | | Limit (dBμV/m) | Result (dBμV/m) | Margin (dB) |
| PEAK(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11650.0 | 34.91 | H | 1.2 | 39.64 | -16.40 | 0.00 | 74.00 | 58.15 | -15.85 |
| 11650.0 | 34.19 | V | 1.0 | 39.64 | -16.40 | 0.00 | 74.00 | 57.43 | -16.57 |
| | | | | | | | | | |
| | | | | | | | | | |
| AV(RBW: 1 MHz VBW: 3 MHz) | | | | | | | | | |
| 11650.0 | 24.87 | H | 1.2 | 39.64 | -16.40 | 2.30 | 54.00 | 50.41 | -3.59 |
| 11650.0 | 25.01 | V | 1.0 | 39.64 | -16.40 | 2.30 | 54.00 | 50.55 | -3.45 |
| | | | | | | | | | |
| | | | | | | | | | |

Remark

H : Horizontal, V : Vertical TEST MODE : 802.11n-CH161(5805 MHz)

*The TX signal wasn't detected from 3th harmonics.
*Checked in all 3 axis and the maximum measured data were reported.( Worst data is Z axis of position)
*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction
FYI
a. Ton Time : 1.372 ms
b. duty cycle : 58.9 %
c. DCF : 2.30 dB

# 11. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC PART 15.207 & IC RSS-Gen 7.2.2. The test setup was made according to ANSI C 63.4 (2009) in a shielded room. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m. The test receiver with Quasi Peak detector complies with CISPR 16.

## 11.1 Measurement equipments

| Equipment Name | Type | Manufacturer | Serial No. | Next Calibration date |
|---|---|---|---|---|
| EMI TEST Receiver | ESPI | Rohde & Schwarz | 100005 | 13-Jan-15 |
| LISN | ENV216 | Rohde & Schwarz | 101231 | 24-Aug-14 |
| LISN | ESH3-Z5 | Rohde & Schwarz | 836679/025 | 15-Jan-15 |
| Pulse Limiter | ESH3Z2 | Rohde & Schwarz | NONE | 13-Jan-15 |

## 11.2 Environmental Condition

Test Place : Shielded Room

Wireless LAN 802.11a Mode

Temperature (°C) : 22.4 ℃

Humidity (% R.H.) : 51.9 % R.H.

Wireless LAN 802.11n 5G Mode

Temperature (°C) : 22.0 ℃

Humidity (% R.H.) : 51.9 % R.H.

## 11.3 Test Data for wireless LAN (802.11a)

Test Date : 11-Jul-14

| Frequency (MHz) | Correction Factor | | Line (H/N) | Quasi-peak Value | | | Average Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Lisn (dB) | Cable (dB) | | Limit (dBμV) | Reading (dBμV) | Result (dBμV) | Limit (dBμV) | Reading (dBμV) | Result (dB) |
| 0.18 | 0.15 | 0.19 | H | 64.49 | 47.07 | 47.41 | 54.49 | | |
| 0.18 | 0.15 | 0.19 | N | 64.49 | 47.51 | 47.85 | 54.49 | | |
| 0.27 | 0.15 | 0.19 | H | 61.12 | 40.51 | 40.86 | 51.12 | | |
| 0.27 | 0.15 | 0.19 | N | 61.12 | 42.40 | 42.75 | 51.12 | | |
| 0.37 | 0.16 | 0.20 | H | 58.50 | 39.08 | 39.44 | 48.50 | | |
| 0.54 | 0.16 | 0.21 | N | 56.00 | 37.17 | 37.54 | 46.00 | | |
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TEST MODE : 802.11a - CH 157(5785 MHz)

H : Hot Line, N : Neutral Line
*Correction Factor = Lisn + Cable
*Result = Correction Factor + Reading

## 11.4 Test Data for wireless LAN (802.11n-5 GHz)

Test Date : 11-Jul-14

| Frequency (MHz) | Correction Factor | | Line (H/N) | Quasi-peak Value | | | Average Value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Lisn (dB) | Cable (dB) | | Limit (dBμV) | Reading (dBμV) | Result (dBμV) | Limit (dBμV) | Reading (dBμV) | Result (dB) |
| 0.15 | 0.15 | 0.19 | H | 66.00 | 50.89 | 51.23 | 56.00 | 35.14 | 35.48 |
| 0.19 | 0.15 | 0.19 | N | 64.04 | 46.96 | 47.30 | 54.04 | 32.37 | 32.71 |
| 0.23 | 0.15 | 0.19 | H | 62.45 | 41.45 | 41.79 | 52.45 | 29.04 | 29.38 |
| 0.25 | 0.15 | 0.19 | N | 61.76 | 43.11 | 43.46 | 51.76 | 29.50 | 29.85 |
| 0.28 | 0.15 | 0.20 | H | 60.82 | 40.88 | 41.23 | 50.82 | 25.08 | 25.43 |
| 0.32 | 0.15 | 0.20 | N | 59.71 | 39.06 | 39.41 | 49.71 | 26.58 | 26.93 |
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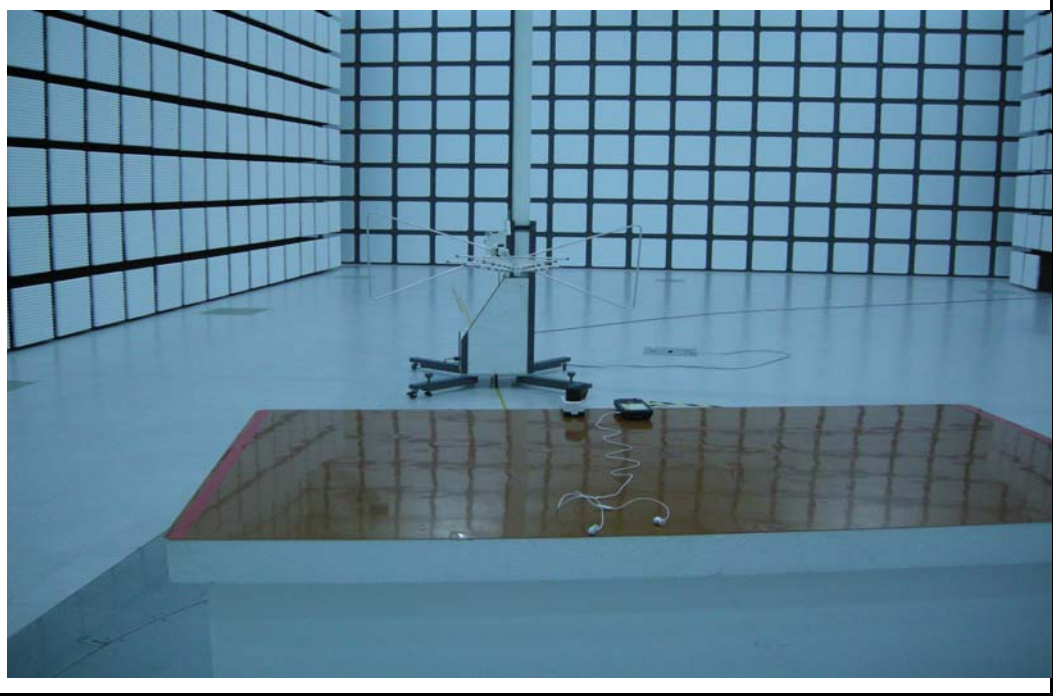
TEST MODE : 802.11N - CH 157(5785 MHz)

H : Hot Line, N : Neutral Line
*Correction Factor = Lisn + Cable
*Result = Correction Factor + Reading

# 12. Photographs of test setup

## 12.1.Setup for Radiated Test : (30 ~ 1 000) MHz

[ Front ]

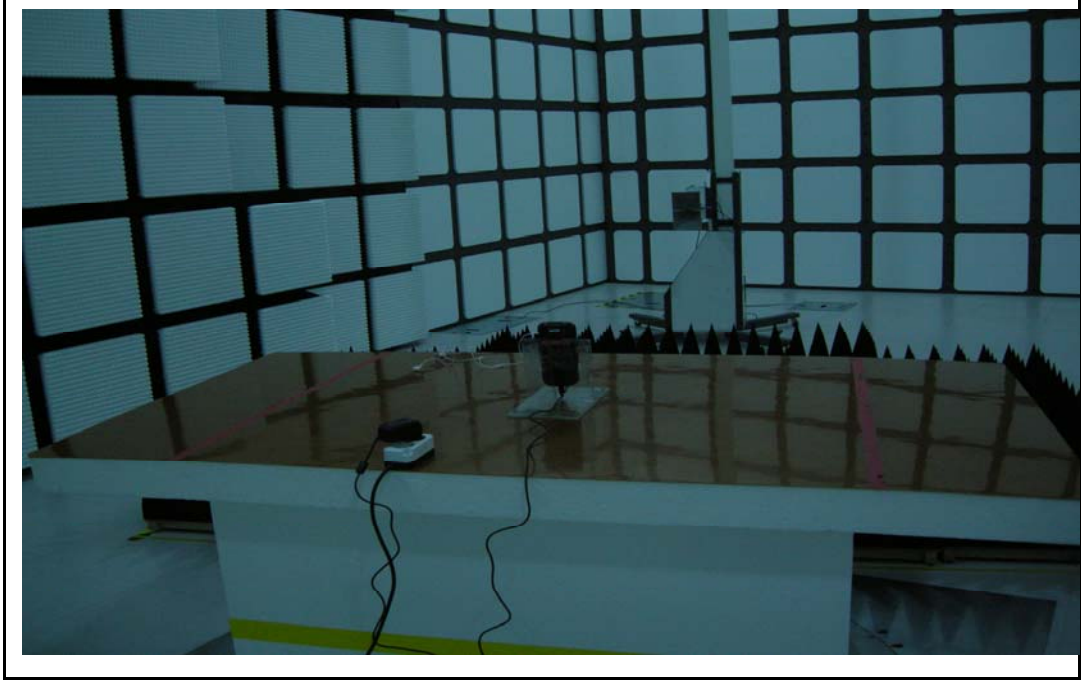


[ Rear ]

## 12.2.Setup for Radiated Test : Above 1 GHz

[ Front ]

[ Rear ]



## 12.3. Setup for Conducted Test : (0.15 ~ 30) MHz

[ Front ]

[ Rear ]

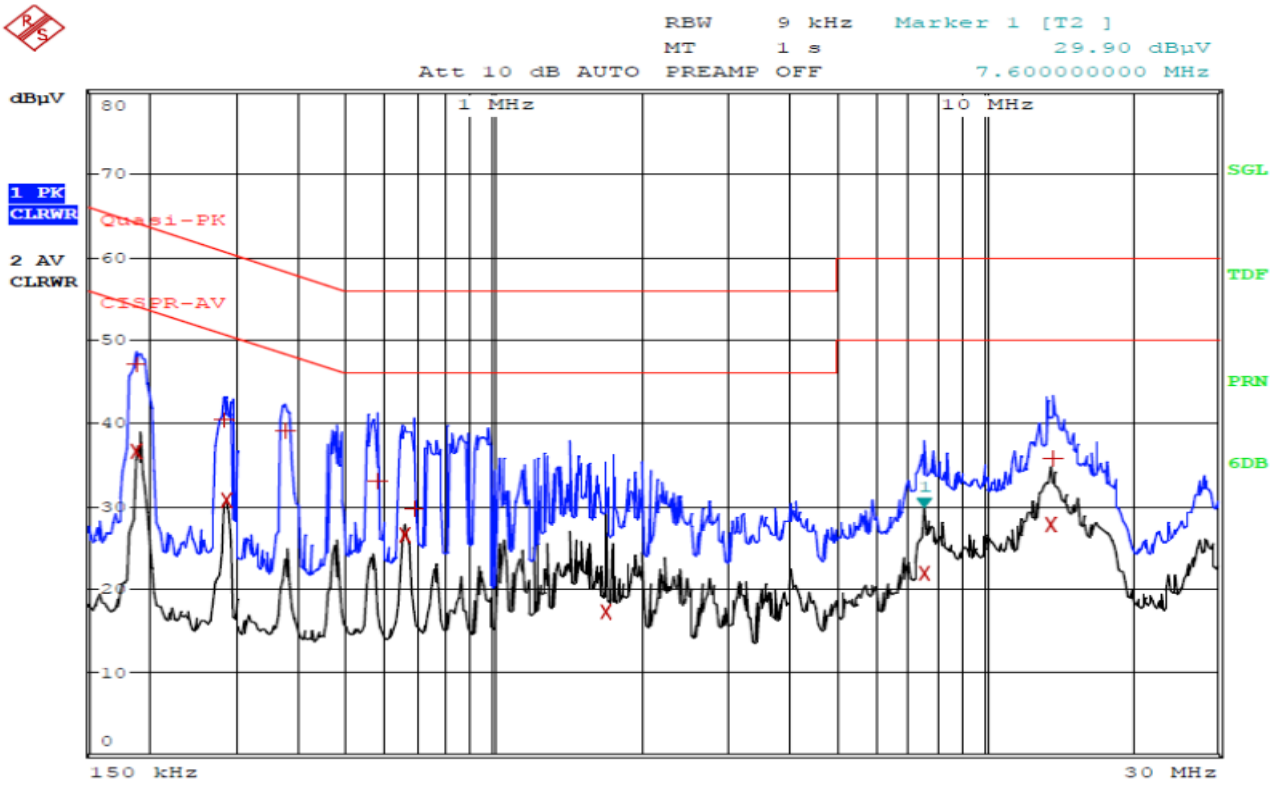
## 12.4. Photographs of EUT

[ Front ]

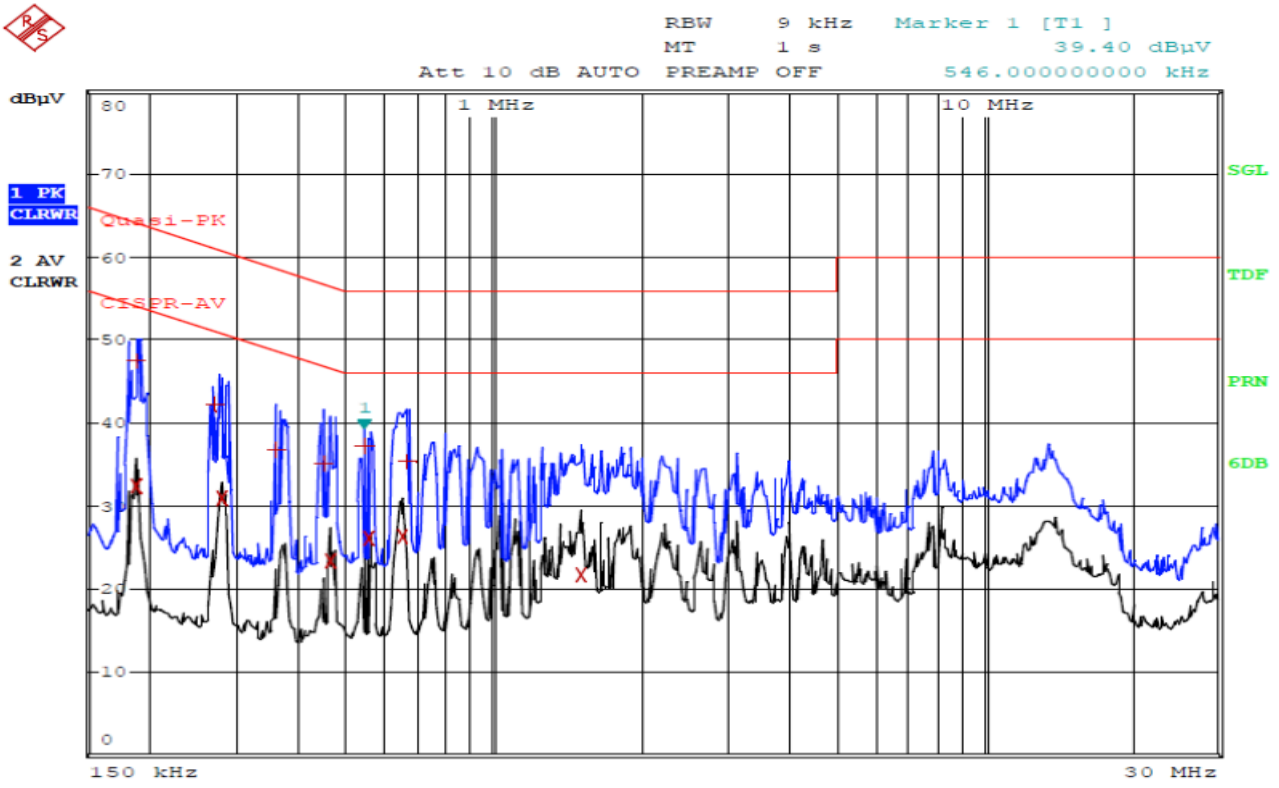
[ Rear ]

# Appendix 1. Special diagram for Wireless LAN

802.11a - CH 157



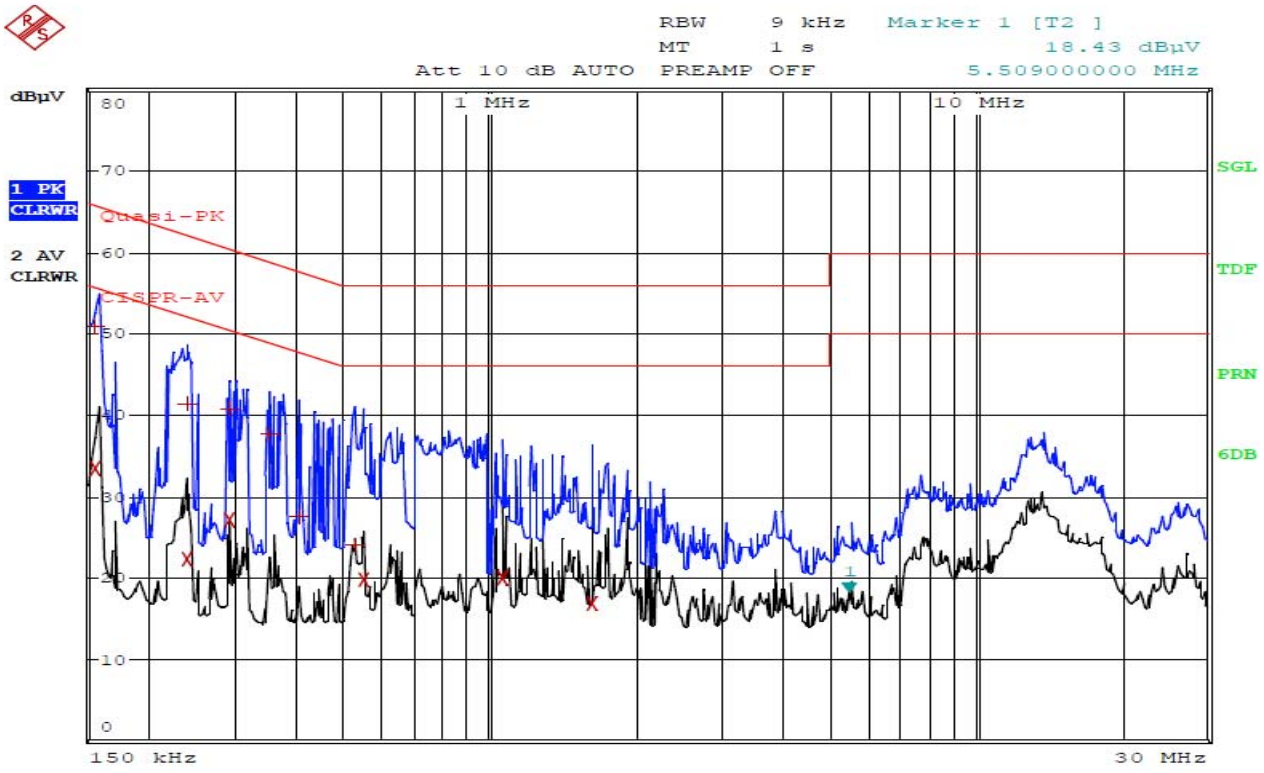

Comment: 14-00824_HOT(802.11a, CH 157-5785 MHz)
Date: 11.JUL.2014 14:29:46



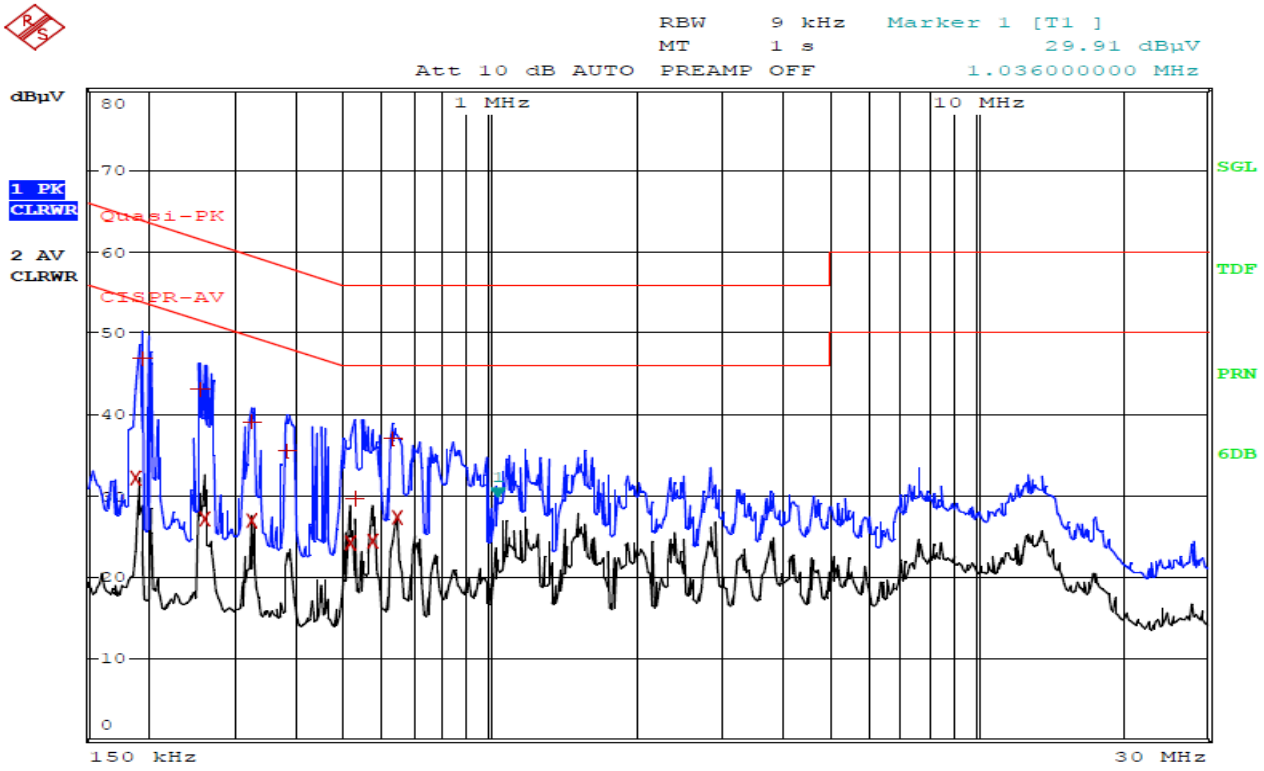

Comment: 14-00824_NEUTRAL(802.11a, CH 157-5785 MHz)
Date: 11.JUL.2014 14:33:37

# Special diagram for Wireless LAN

802.11n - CH 157




Comment: 14-00824_HOT(802.11n, CH 157-5785 MHz)
Date: 11.JUL.2014 10:26:38




Comment: 14-00824_NEUTRAL(802.11n, CH 157-5785 MHz)
Date: 11.JUL.2014 10:32:59