

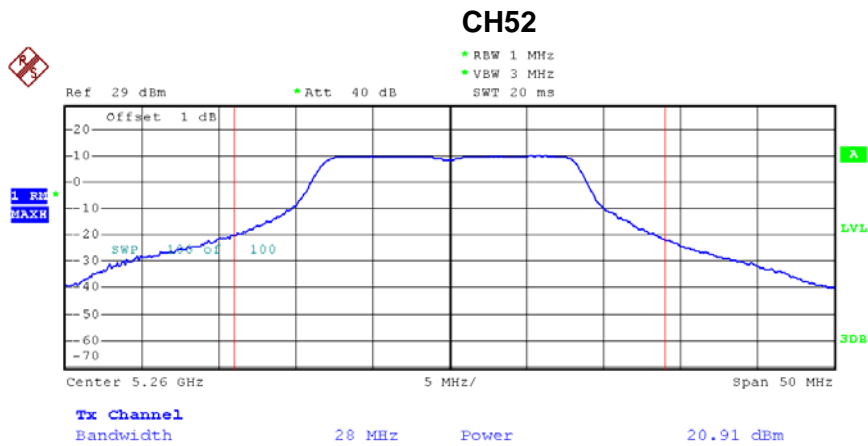


6.1.6 TEST RESULTS

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX A Mode/CH52, CH56, CH64		

Peak Output Power

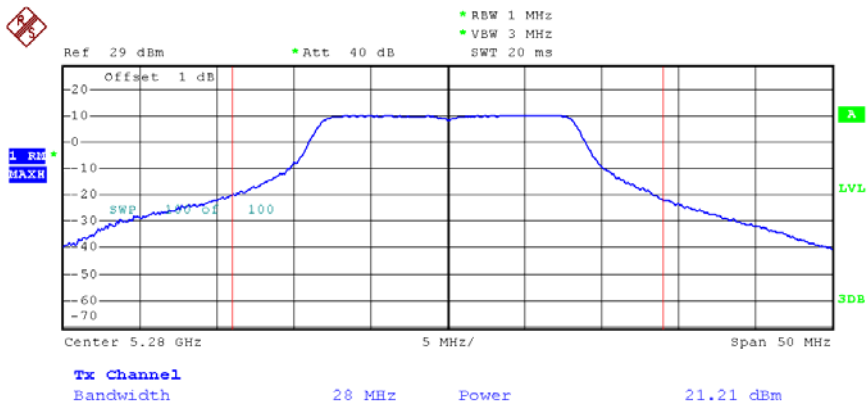
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH52	5260	20.91	24	0.251
CH56	5280	21.21	24	0.251
CH64	5320	21.40	24	0.251



Date: 30.MAY.2012 05:53:34

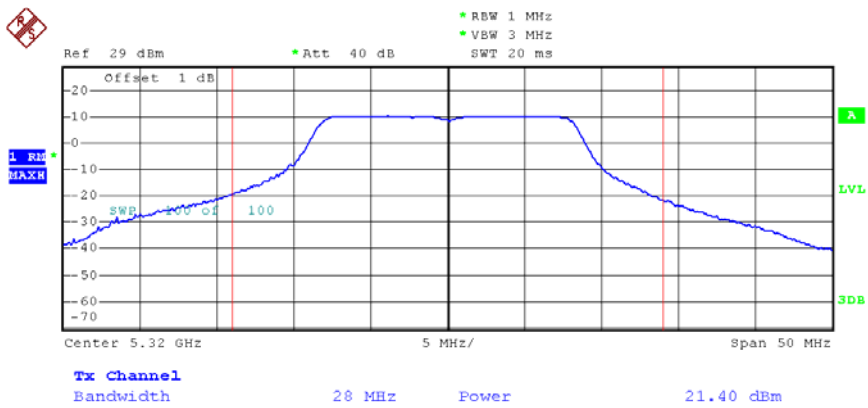


CH56



Date: 30.MAY.2012 06:06:27

CH64

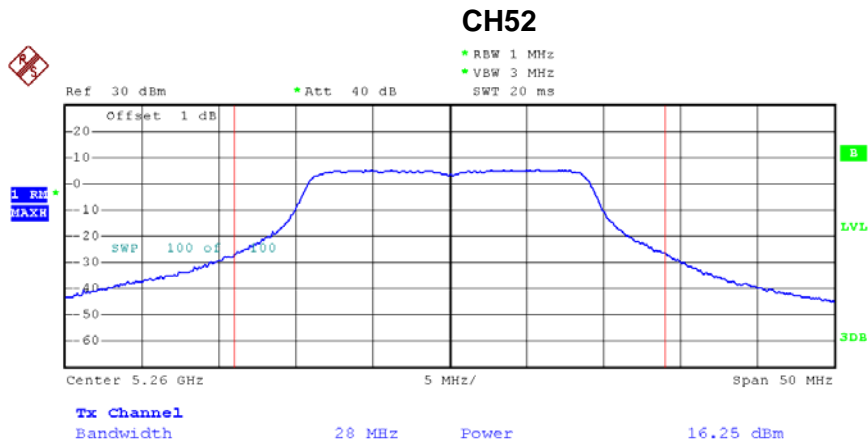


Date: 30.MAY.2012 06:07:52



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/CH52, CH56, CH64(ANT 1)		

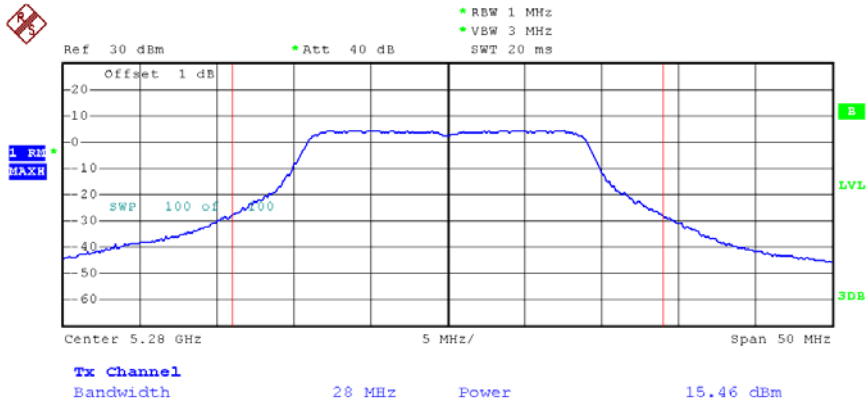
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH52	5260	16.25	24	0.251
CH56	5280	15.46	24	0.251
CH64	5320	15.55	24	0.251



Date: 15.JUL.2012 13:51:37

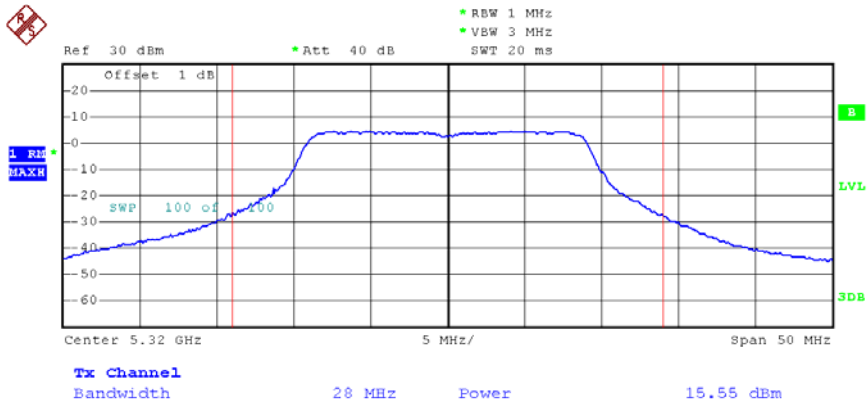


CH56



Date: 15.JUL.2012 13:51:08

CH64

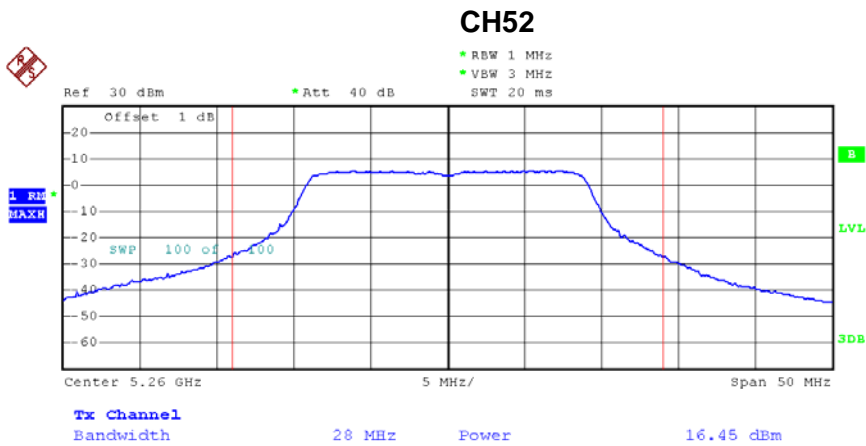


Date: 15.JUL.2012 13:50:31



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/CH52, CH56, CH64(ANT 2)		

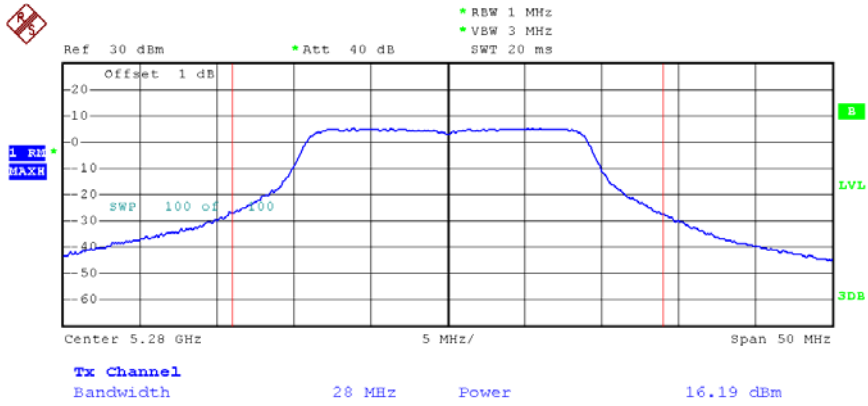
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH52	5260	16.45	24	0.251
CH56	5280	16.19	24	0.251
CH64	5320	15.98	24	0.251



Date: 15.JUL.2012 13:35:24

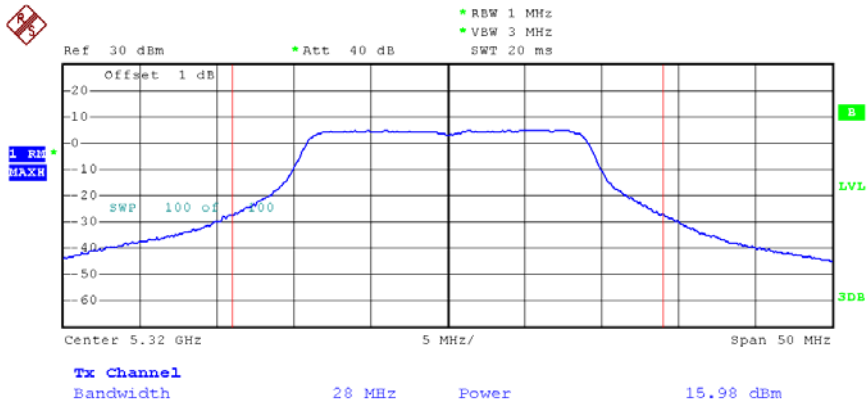


CH56



Date: 15.JUL.2012 13:34:45

CH64

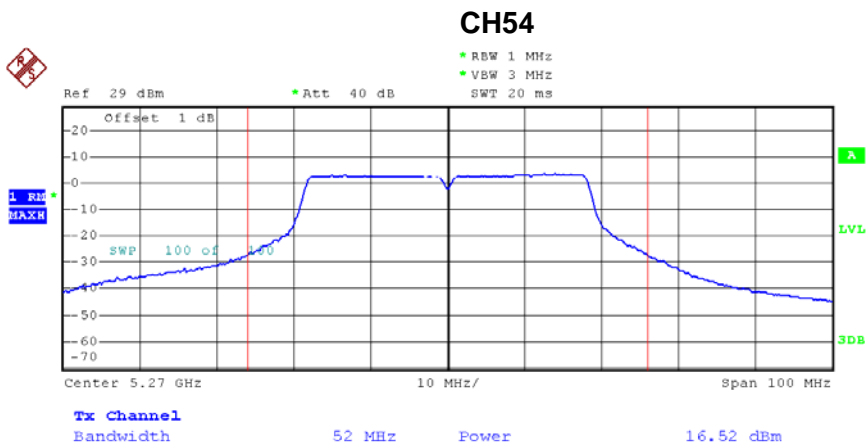


Date: 15.JUL.2012 13:33:03



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/CH54, CH62 (ANT 1)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH54	5270	16.52	24	0.251
CH62	5310	13.79	24	0.251



Date: 30.MAY.2012 07:08:55



CH62

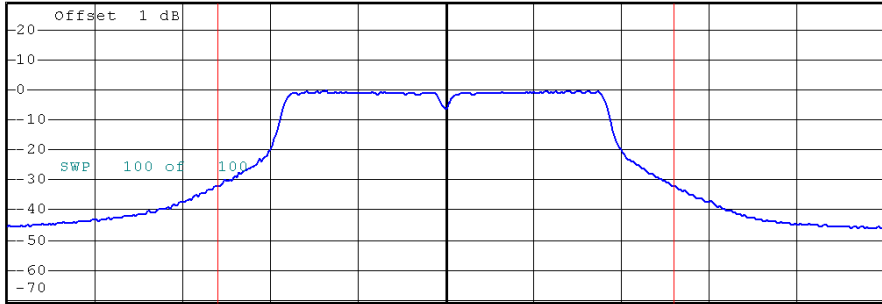


*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms

Ref 29 dBm

*Att 40 dB

1 RM
MAXH



Center 5.31 GHz

10 MHz/

Span 100 MHz

Tx Channel

Bandwidth

52 MHz

Power

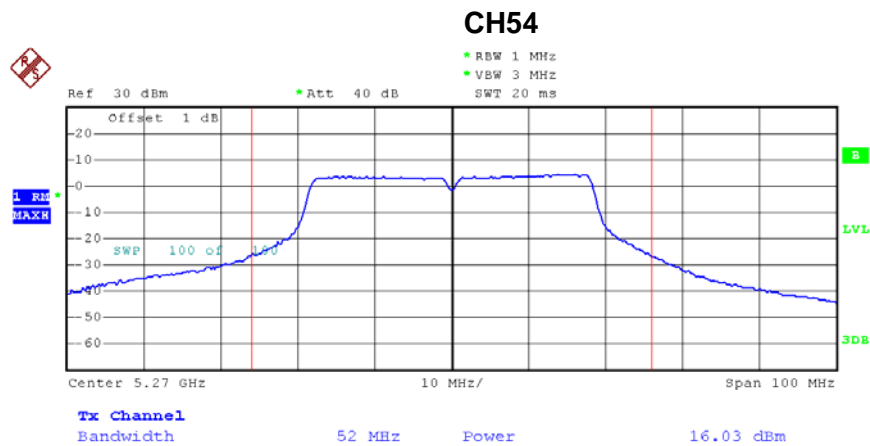
13.79 dBm

Date: 30.MAY.2012 07:11:37

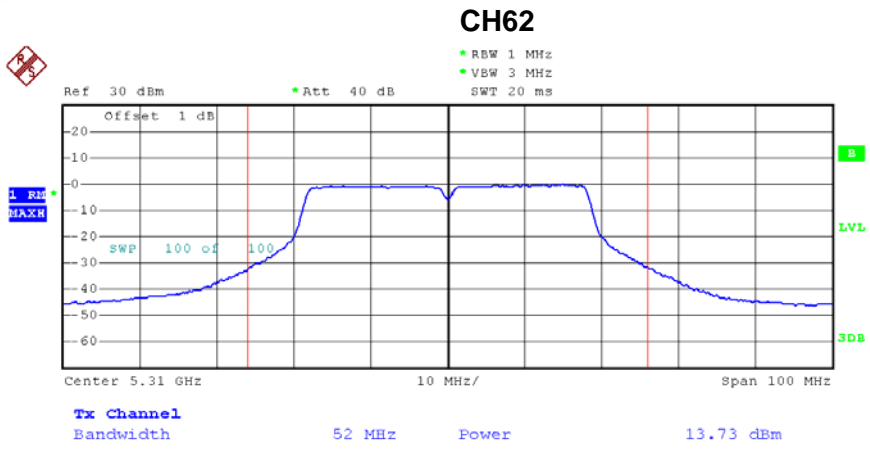


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/CH54, CH62 (ANT 2)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH54	5270	16.03	24	0.251
CH62	5310	13.73	24	0.251



Date: 31.MAY.2012 16:17:33



Date: 31.MAY.2012 16:20:02



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Band 2/ TX N20 Mode /CH52, CH56, CH64 (ANT1+ANT2)		

Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH52	5260 MHz	19.36	20.6	0.1148
CH56	5280 MHz	18.85	20.6	0.1148
CH64	5320 MHz	18.78	20.6	0.1148

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Band 2/ TX N40 Mode /CH54, CH62 (ANT1+ANT2)		

Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH54	5270 MHz	19.29	20.6	0.1148
CH62	5310 MHz	16.77	20.6	0.1148

Remark :

- (1) **The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.**
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:

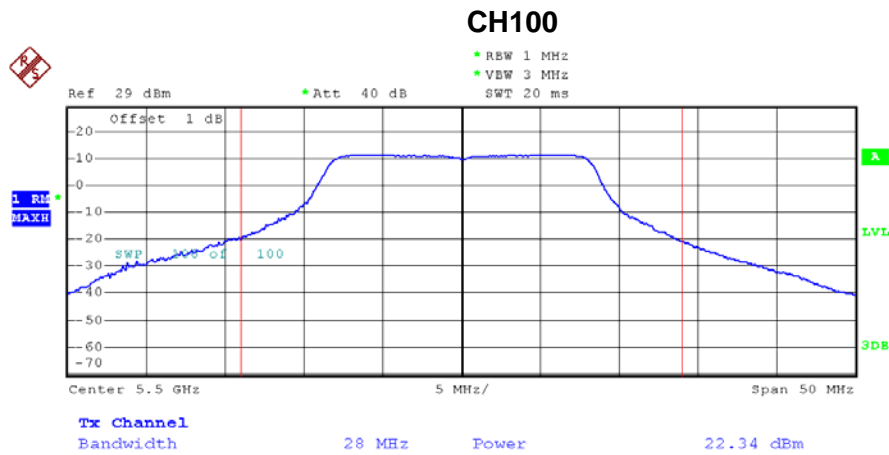
$$((\text{dBm}/\text{Chain 1})/10^{\text{Log}}) + ((\text{dBm}/\text{Chain 2})/10^{\text{log}}) + ((\text{dBm}/\text{Chain N})/10^{\text{log}}) = \text{Combined peak output power in mW.}$$
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = $G_{\text{ANT}}+10\log(\text{N})\text{dBi}$, that is Directional gain=9.4; So,the out power limit is $24-9.4+6=20.6$; and power density limit is $11-9.4+6=7.6$**



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX A Mode/CH100, CH116, CH140		

Peak Output Power

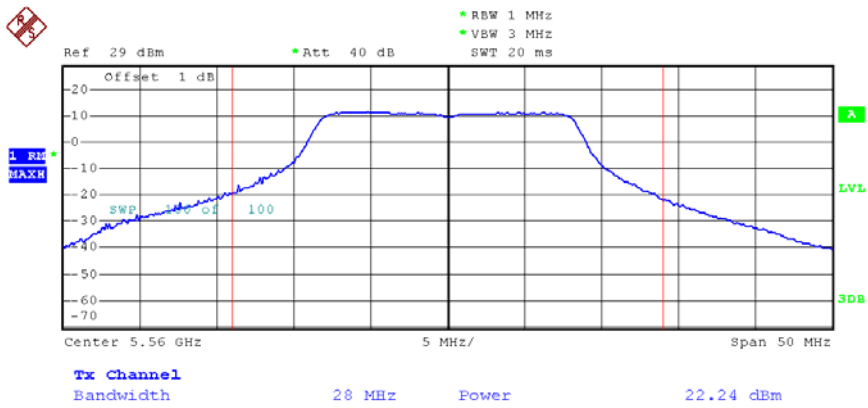
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH100	5500	22.34	24	0.251
CH116	5580	22.24	24	0.251
CH140	5700	19.66	24	0.251



Date: 30.MAY.2012 06:12:12

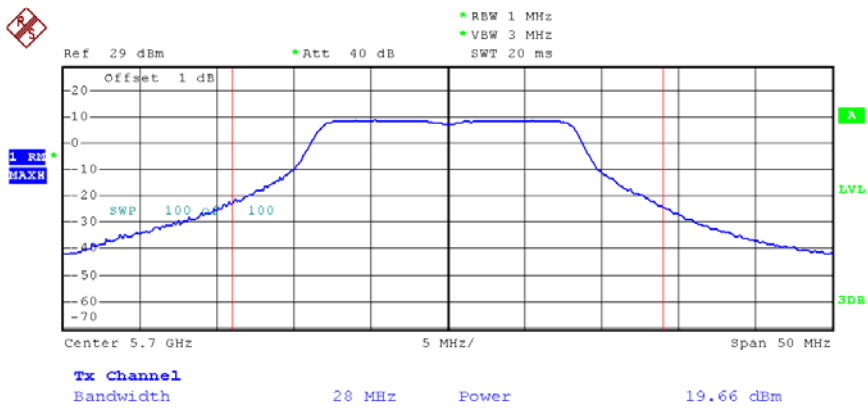


CH116



Date: 30.MAY.2012 06:12:44

CH140



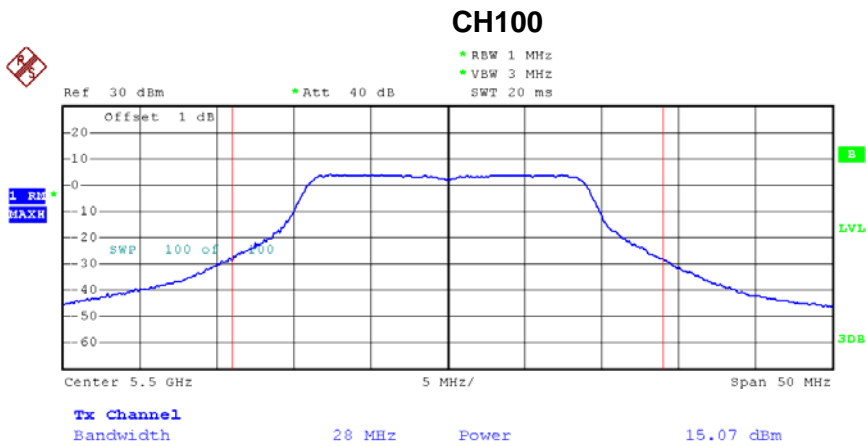
Date: 30.MAY.2012 06:17:08



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/CH100, CH112, CH140(ANT 1)		

Peak Output Power

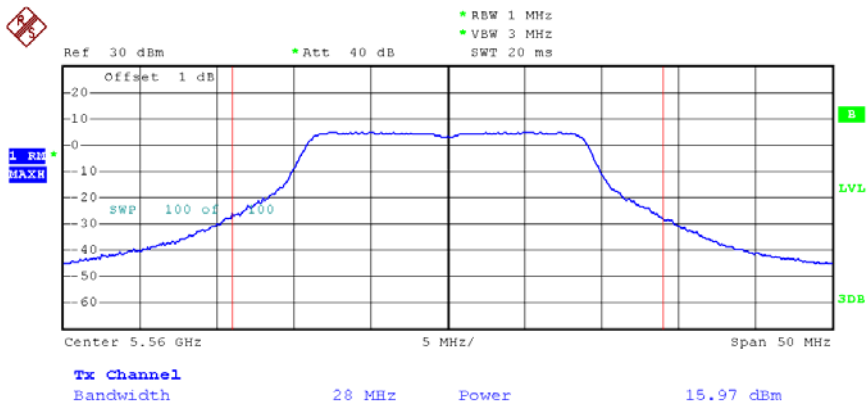
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH100	5500	15.07	24	0.251
CH112	5560	15.97	24	0.251
CH140	5700	15.79	24	0.251



Date: 15.JUL.2012 13:49:31

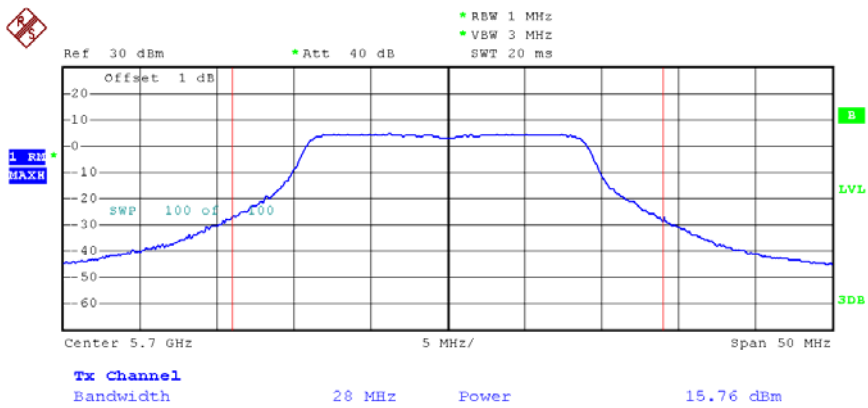


CH116



Date: 15.JUL.2012 13:48:54

CH140



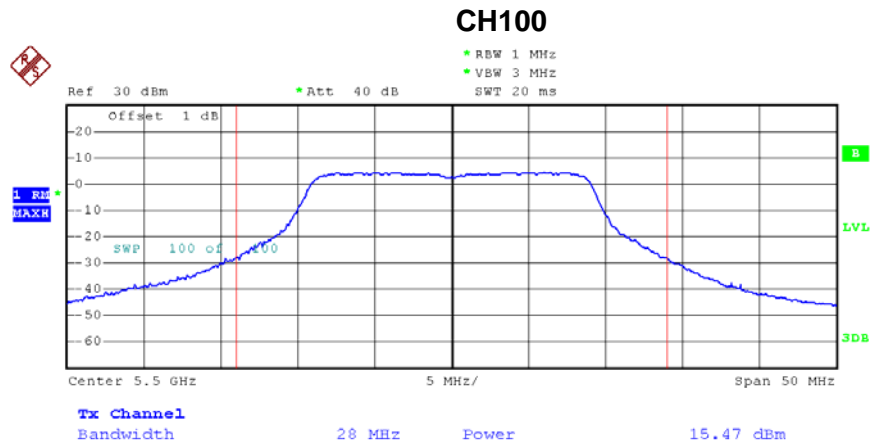
Date: 15.JUL.2012 13:48:15



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/CH100, CH112, CH140(ANT 2)		

Peak Output Power

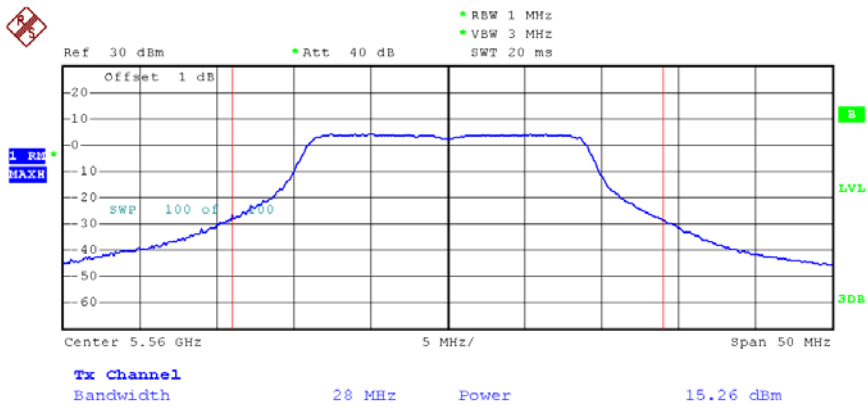
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH100	5500	15.47	24	0.251
CH112	5560	15.26	24	0.251
CH140	5700	15.17	24	0.251



Date: 15.JUL.2012 13:22:58

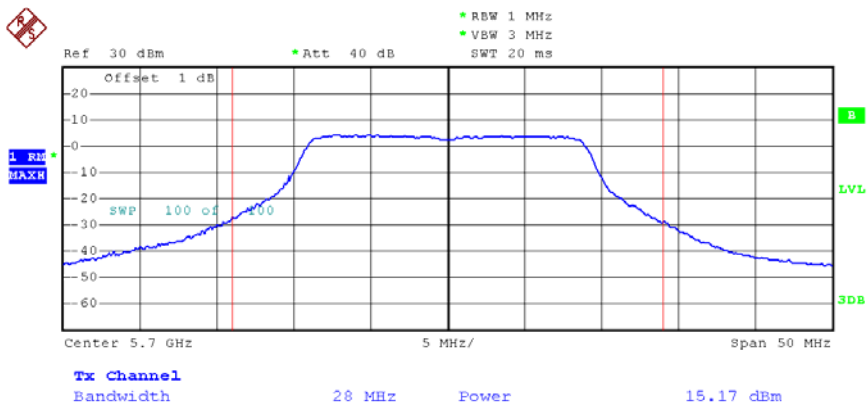


CH116



Date: 15.JUL.2012 13:22:33

CH140

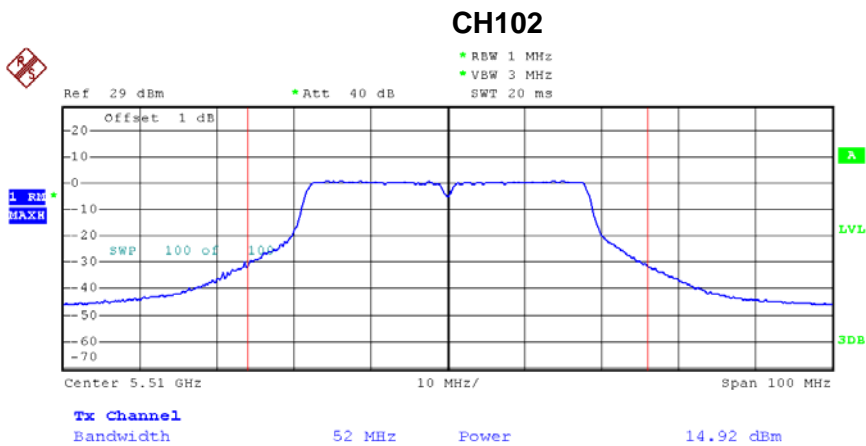


Date: 15.JUL.2012 13:21:51



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/CH102, CH110 (ANT 1)		

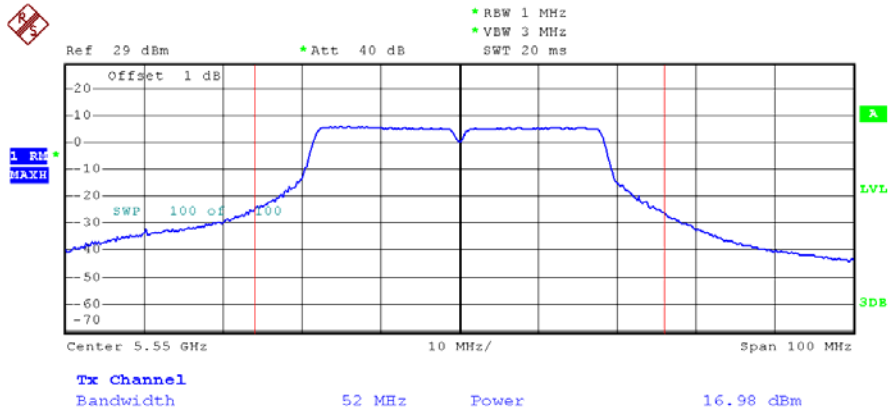
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH102	5510	14.92	24	0.251
CH110	5550	16.98	24	0.251



Date: 30.MAY.2012 07:20:54



CH110

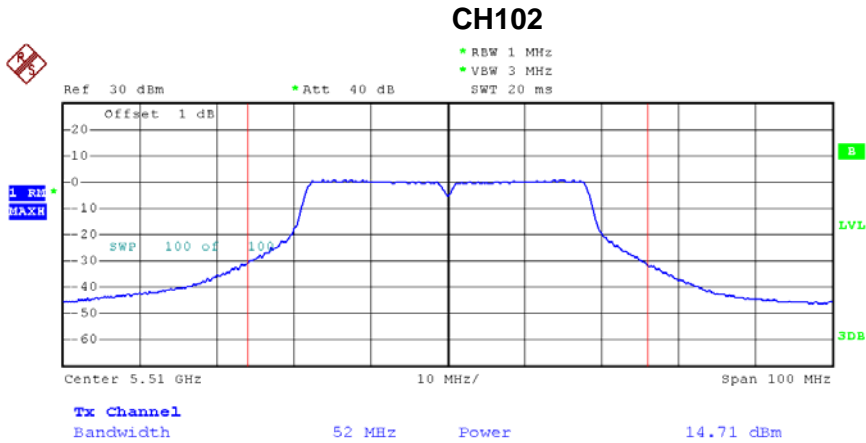


Date: 30.MAY.2012 07:17:57

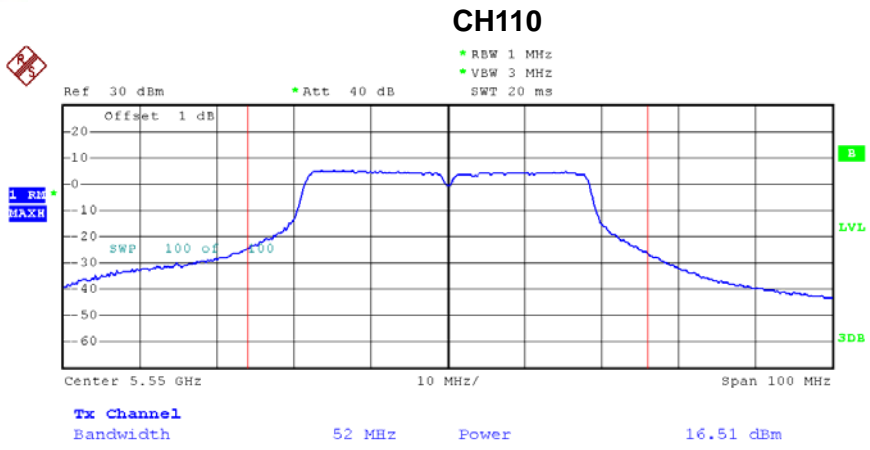


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/CH102, CH110 (ANT 2)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH102	5510	14.71	24	0.251
CH110	5550	16.51	24	0.251



Date: 31.MAY.2012 16:29:35



Date: 31.MAY.2012 16:23:40



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Band 3 TX N20 Mode /CH100, CH116, CH134 (ANT1+ANT2)		

Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH100	5500	18.28	20.6	0.1148
CH116	5580	18.64	20.6	0.1148
CH134	5700	18.50	20.6	0.1148

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Band 3/ TX N40 Mode /CH54, CH62 (ANT1+ANT2)		

Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH102	5510	17.83	20.6	0.1148
CH110	5550	19.76	20.6	0.1148

Remark :

- (1) **The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.**
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\wedge}\text{Log}) + ((\text{dBm}/\text{Chain 2})/10^{\wedge}\text{log}) + ((\text{dBm}/\text{ChainN})/10^{\wedge}\text{log}) =$$
Combined peak output power in mW.
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = $G_{\text{ANT}}+10\log(N)$ dBi, that is Directional gain=9.4; So,the out power limit is $24-9.4+6=20.6$; and power density limit is $11-9.4+6=7.6$**



7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Antenna conducted Spurious Emission	-27 dBm/1MHz	5150 - 5250	PASS

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2011	Nov.26.2012

Remark: "N/A" denotes no model name, serial no. or calibration specified.

7.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

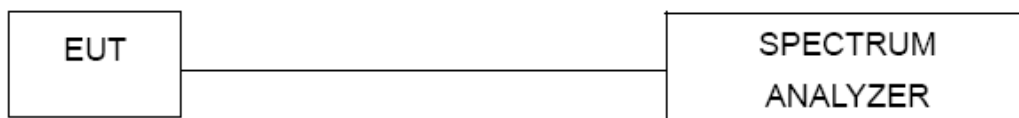
b.

Spectrum Parameter	Setting
Attenuation	Auto
RB	1000 kHz
VB	1000 kHz
Trace	Max Hold
Sweep Time	Auto

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



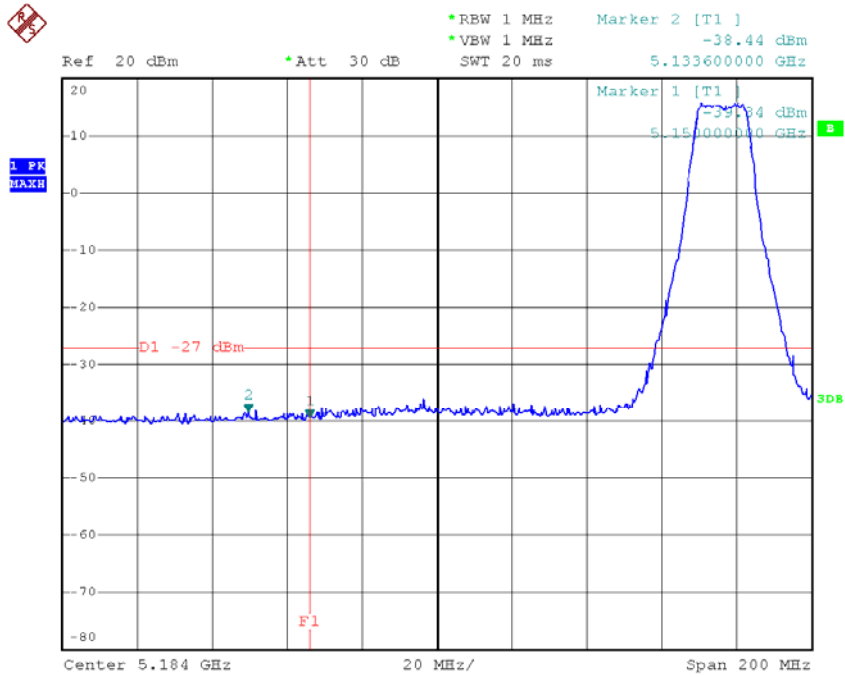
7.1.6 TEST RESULTS

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX A Mode/ CH52, CH56 , CH60		

Channel of Worst Data: CH60			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-39.84	5393.20	-34.43
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

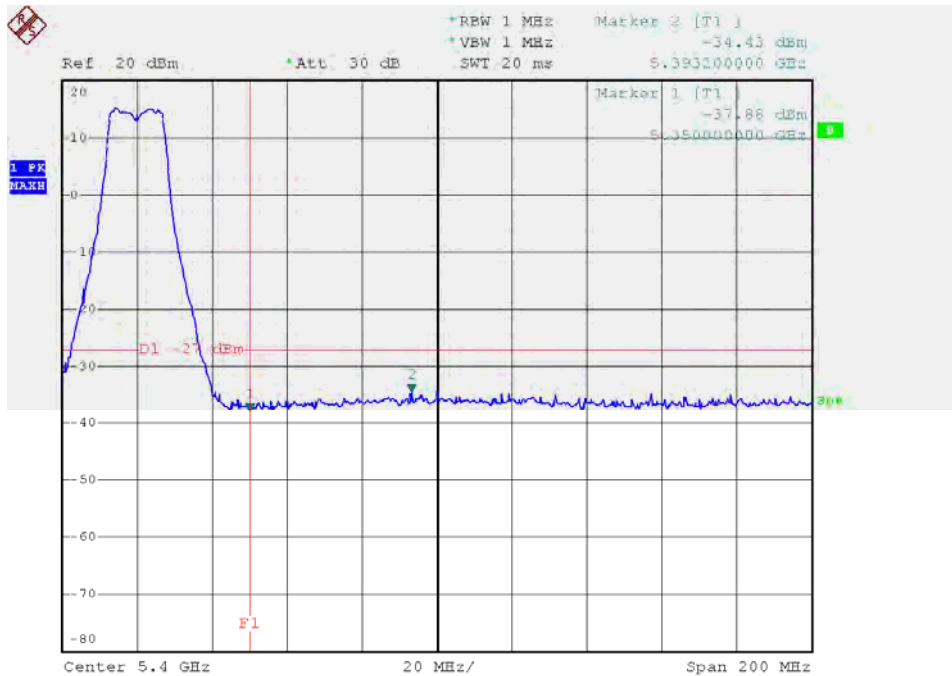


TX mode CH52

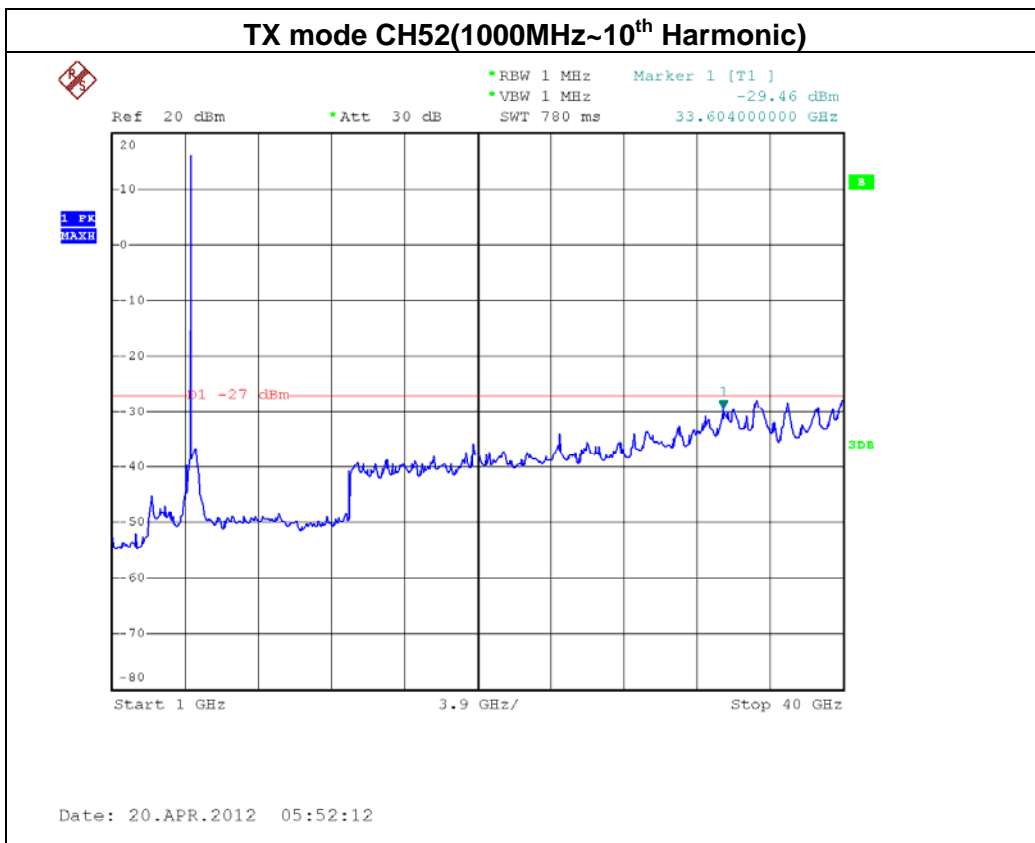
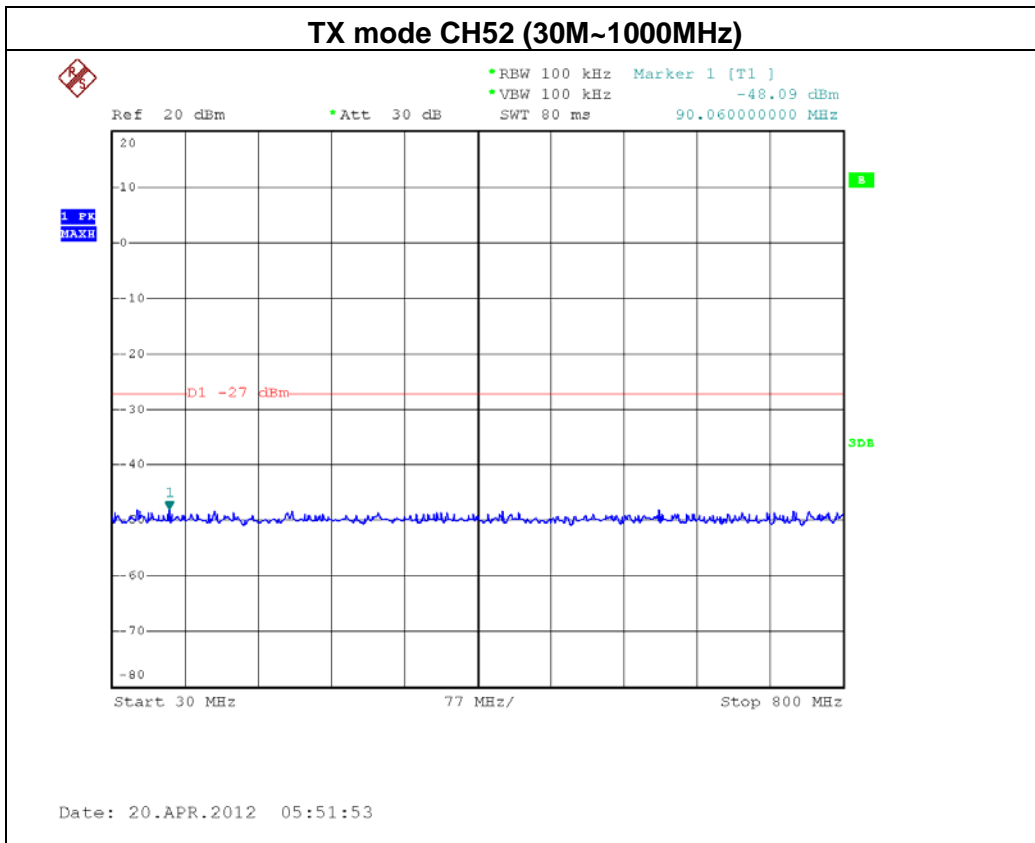


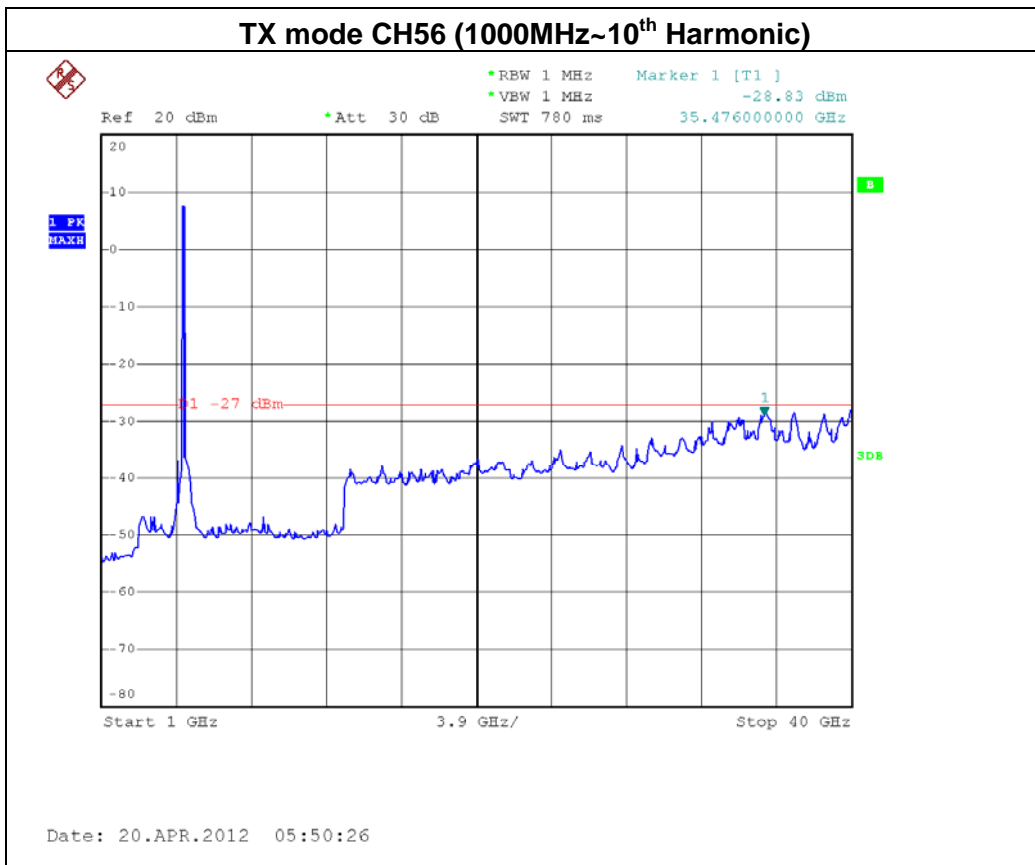
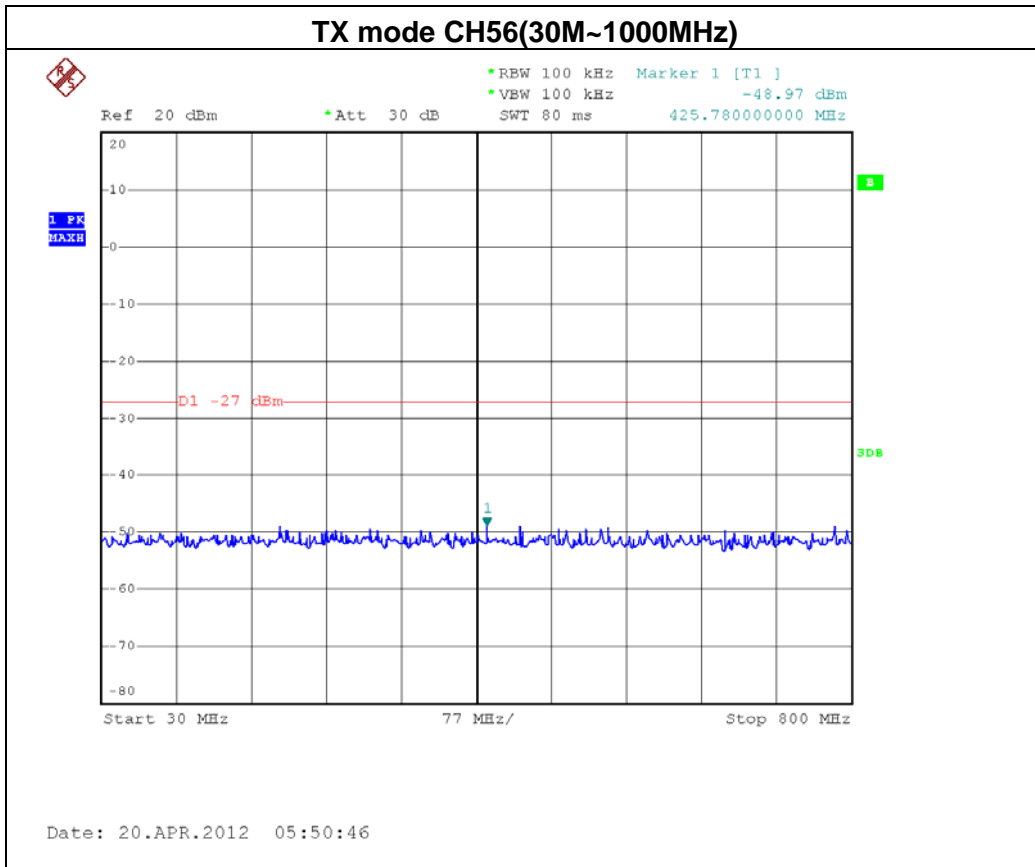
Date: 20.APR.2012 05:53:33

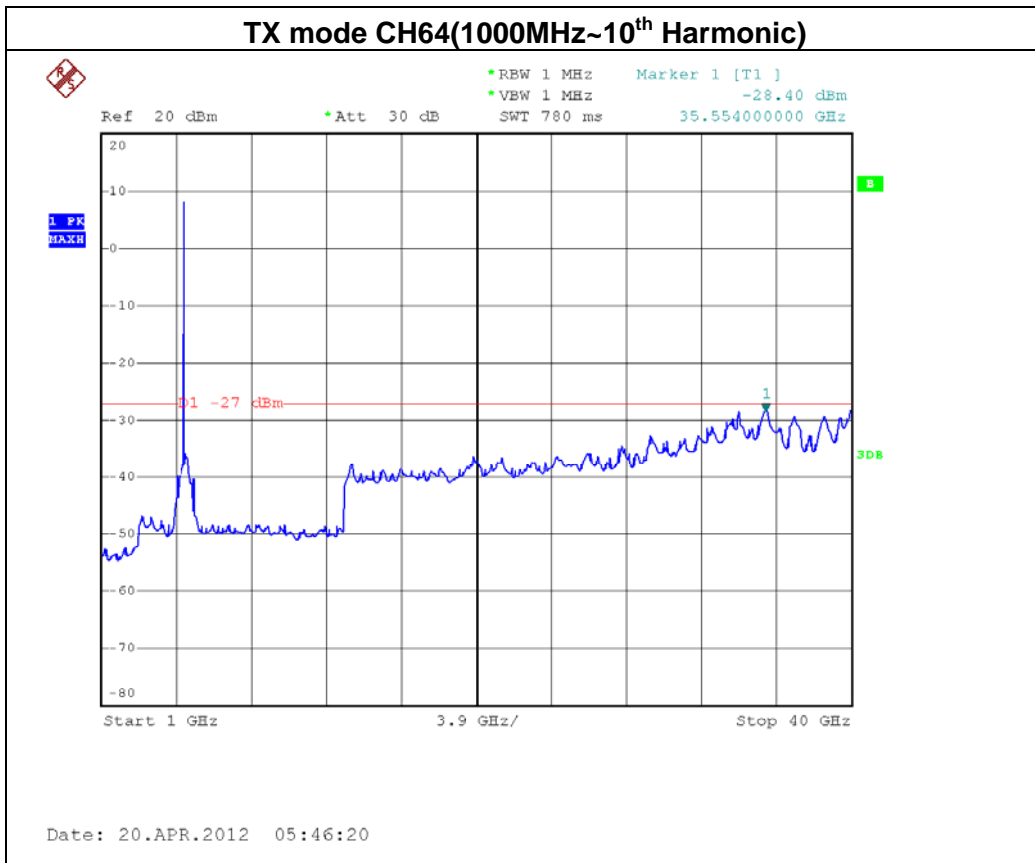
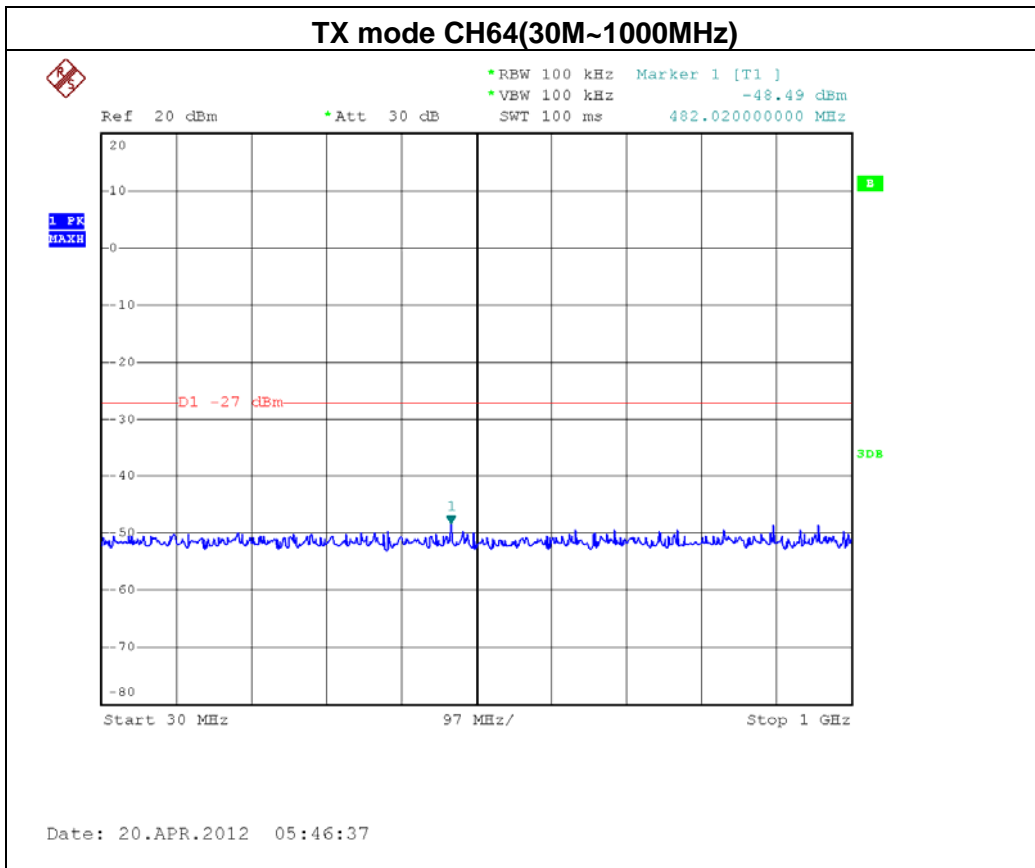
TX mode CH64



Date: 20.APR.2012 05:47:47







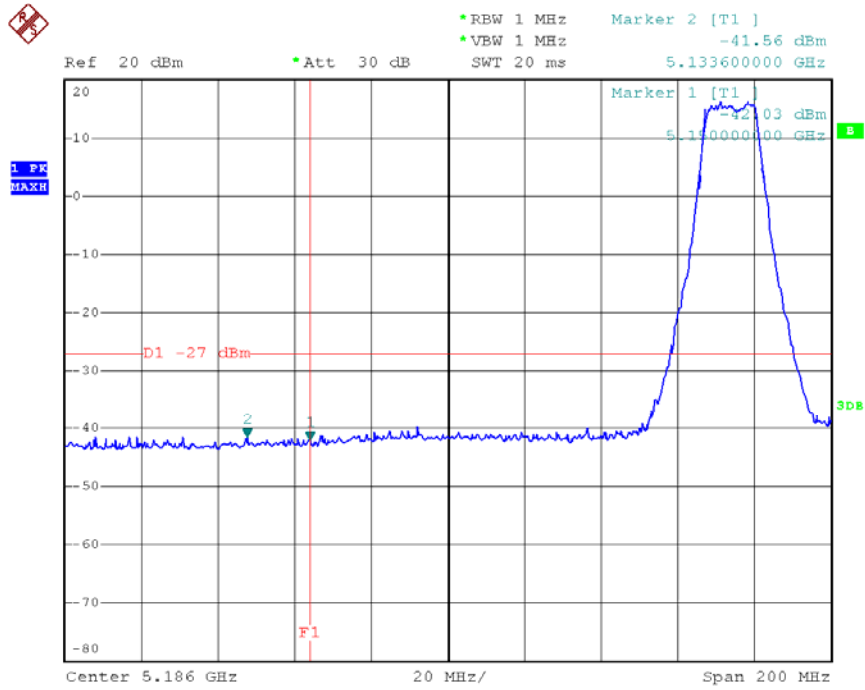


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 ° C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/ CH52, CH56 , CH64 (ANT 1)		

Channel of Worst Data: CH64			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-42.03	5406.40	-37.49
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

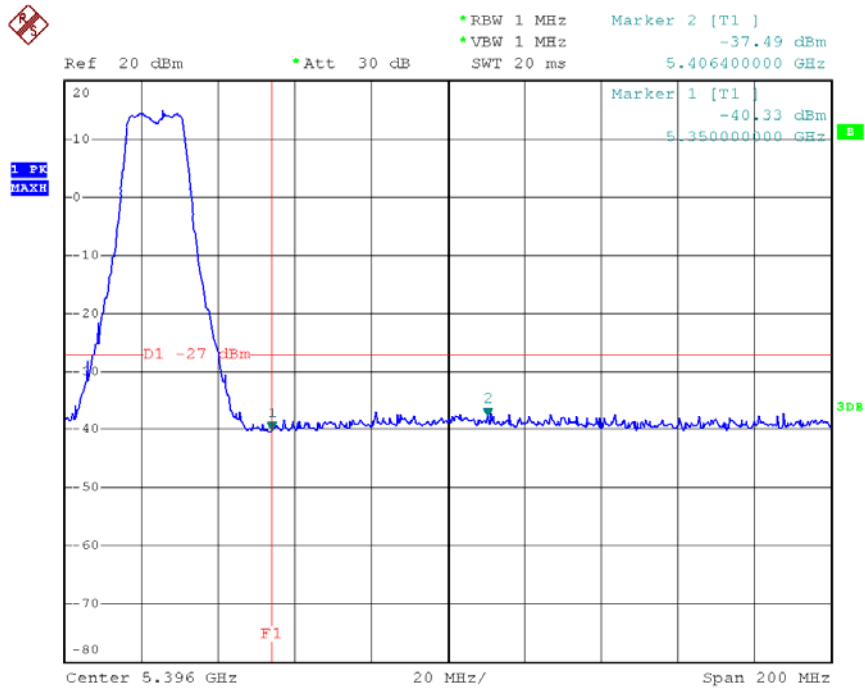


TX mode CH52

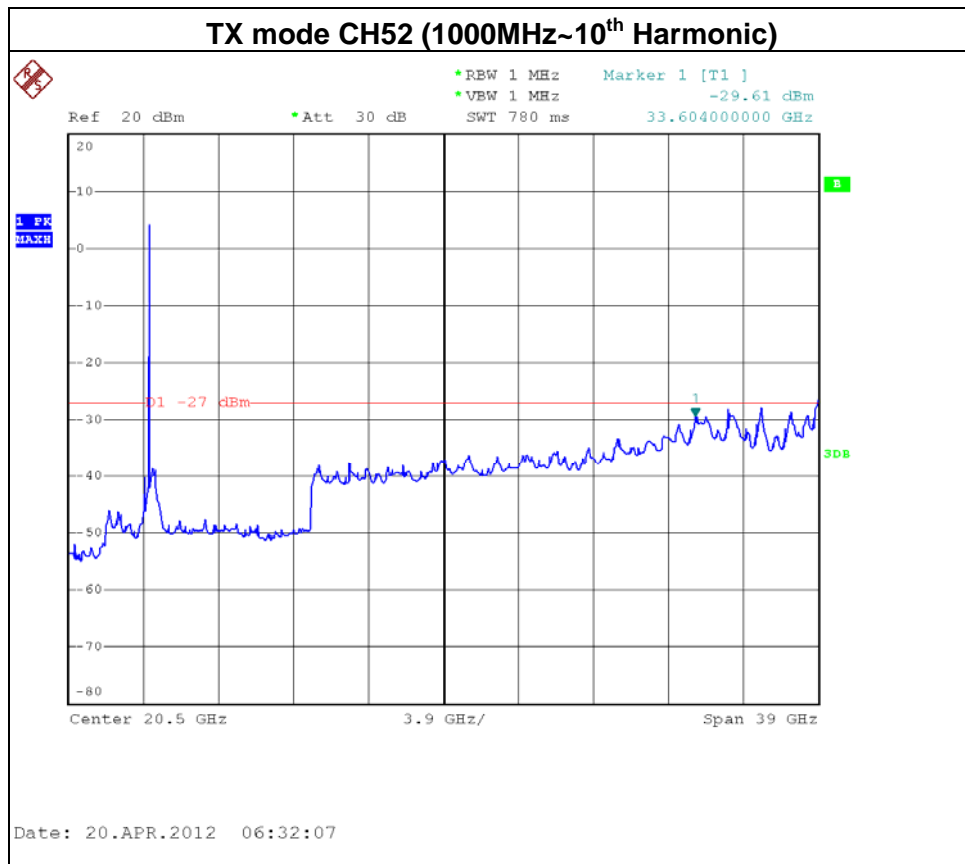
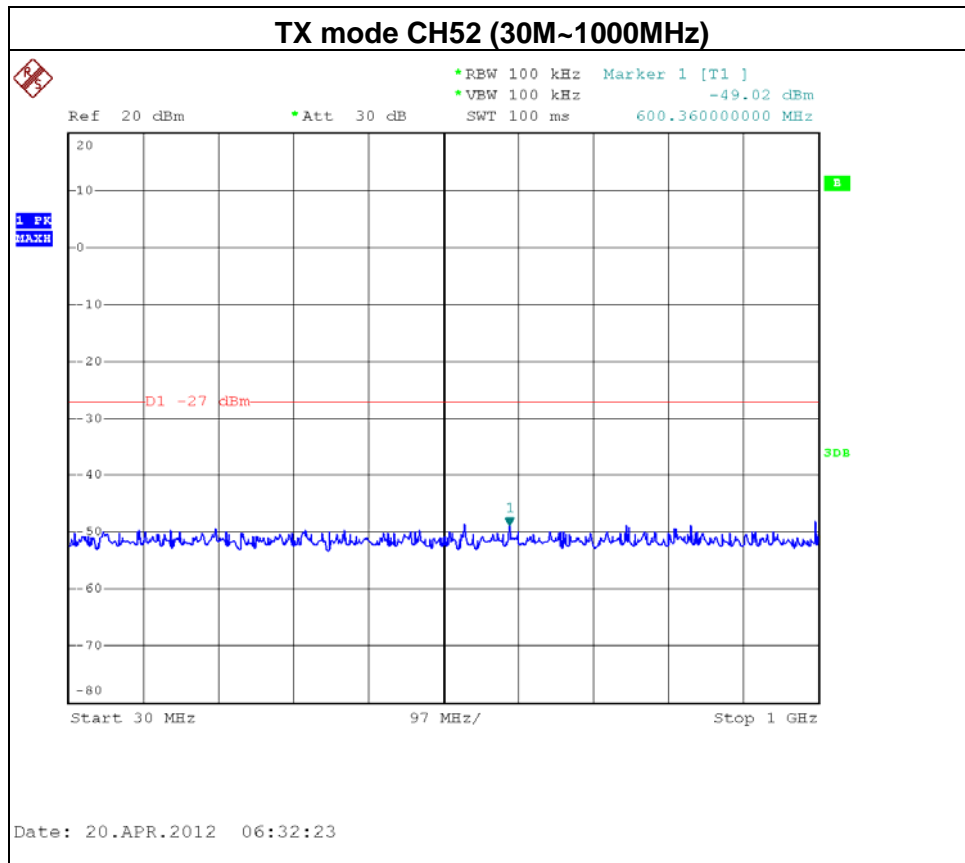


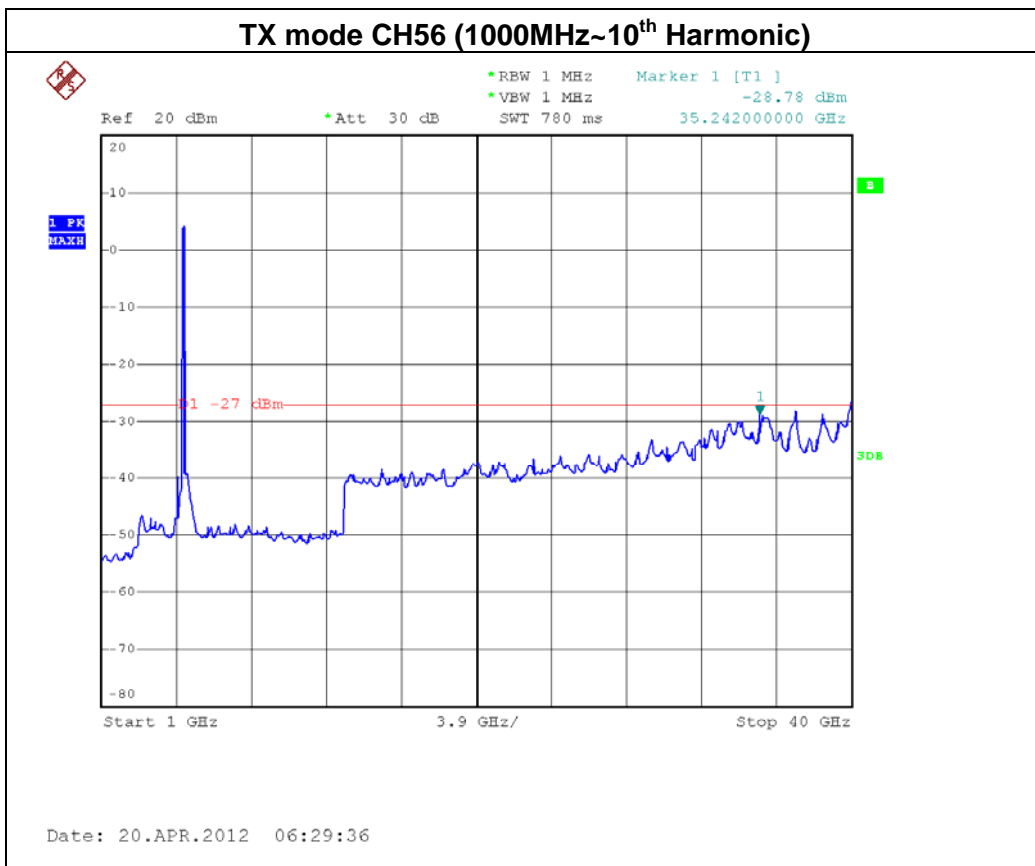
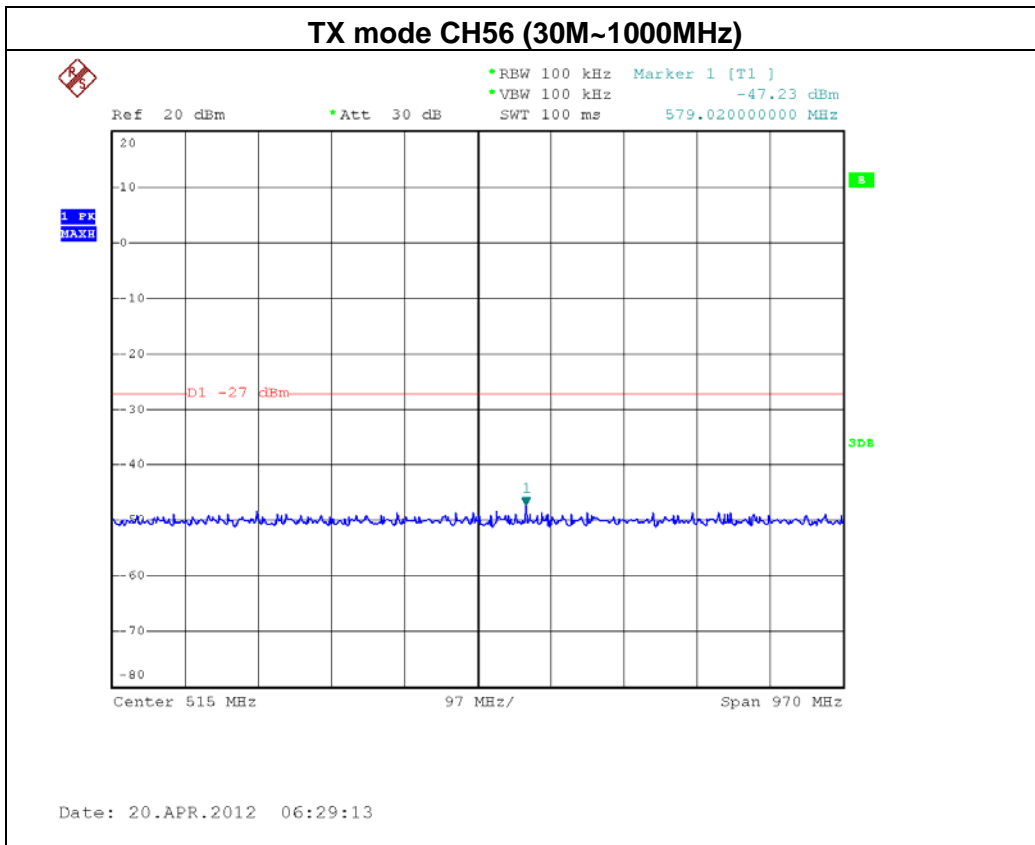
Date: 20.APR.2012 06:33:52

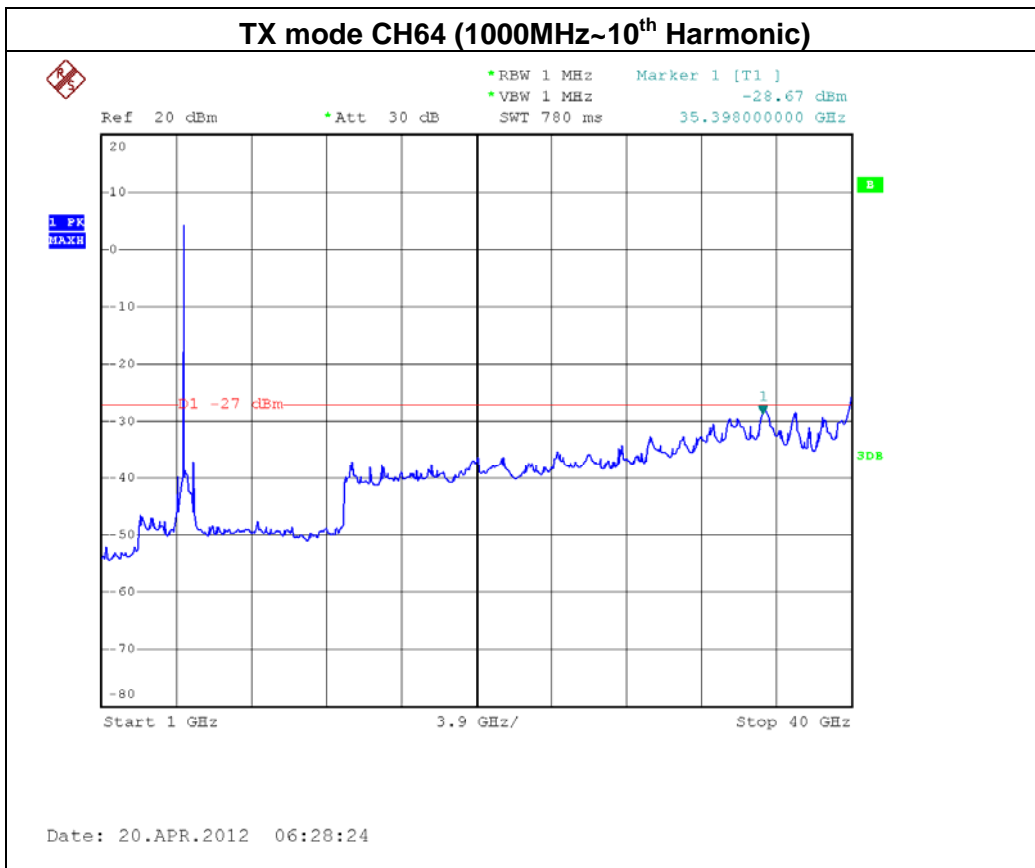
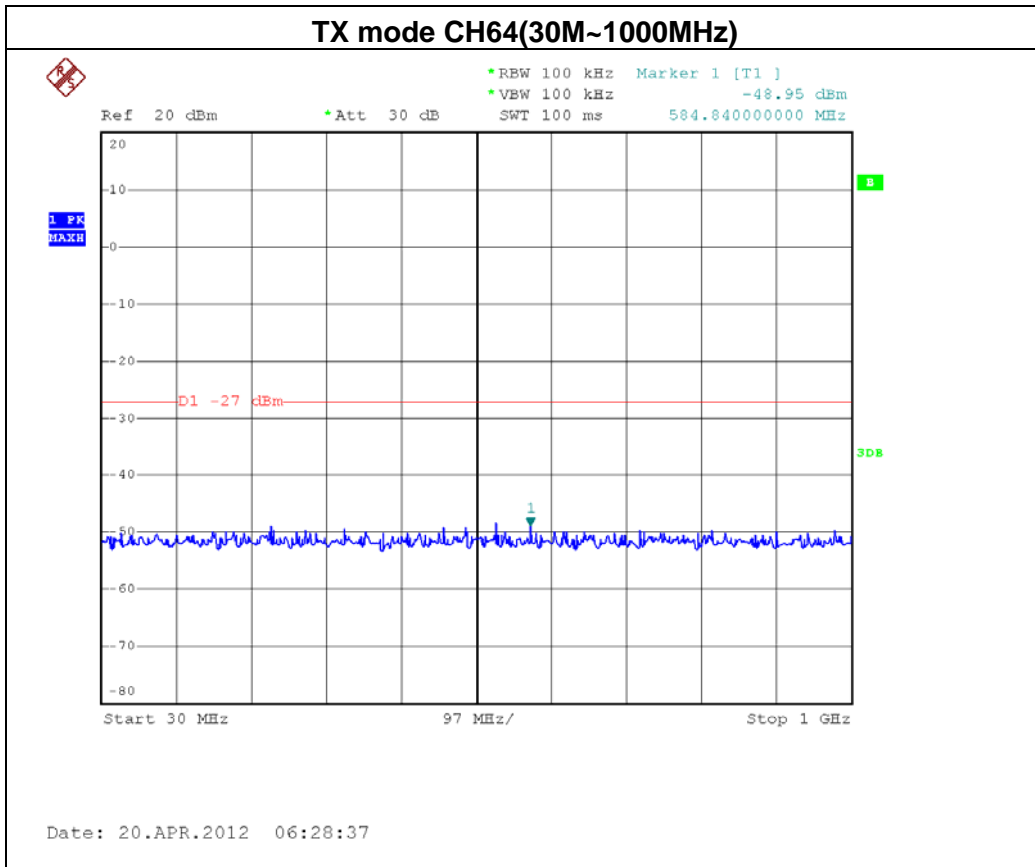
TX mode CH64



Date: 20.APR.2012 06:27:52







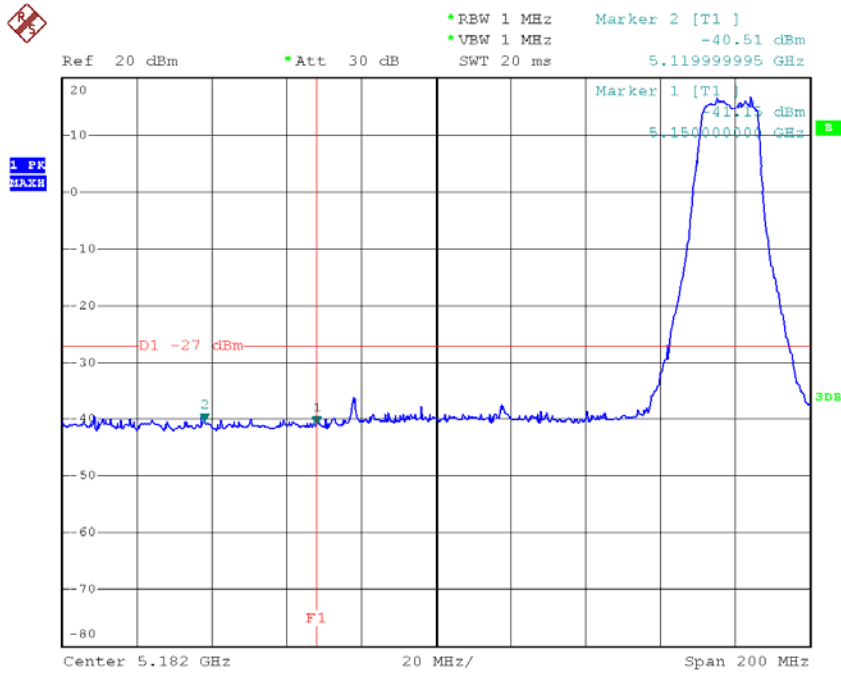


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/ CH52, CH56 , CH64 (ANT 2)		

Channel of Worst Data: CH64			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-41.15	5360.00	-37.19
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

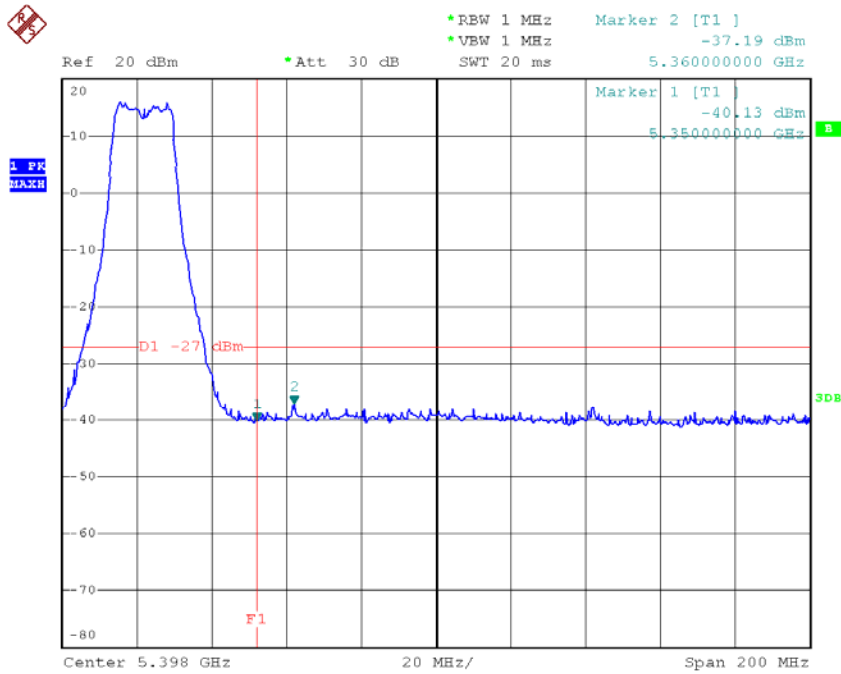


TX mode CH52

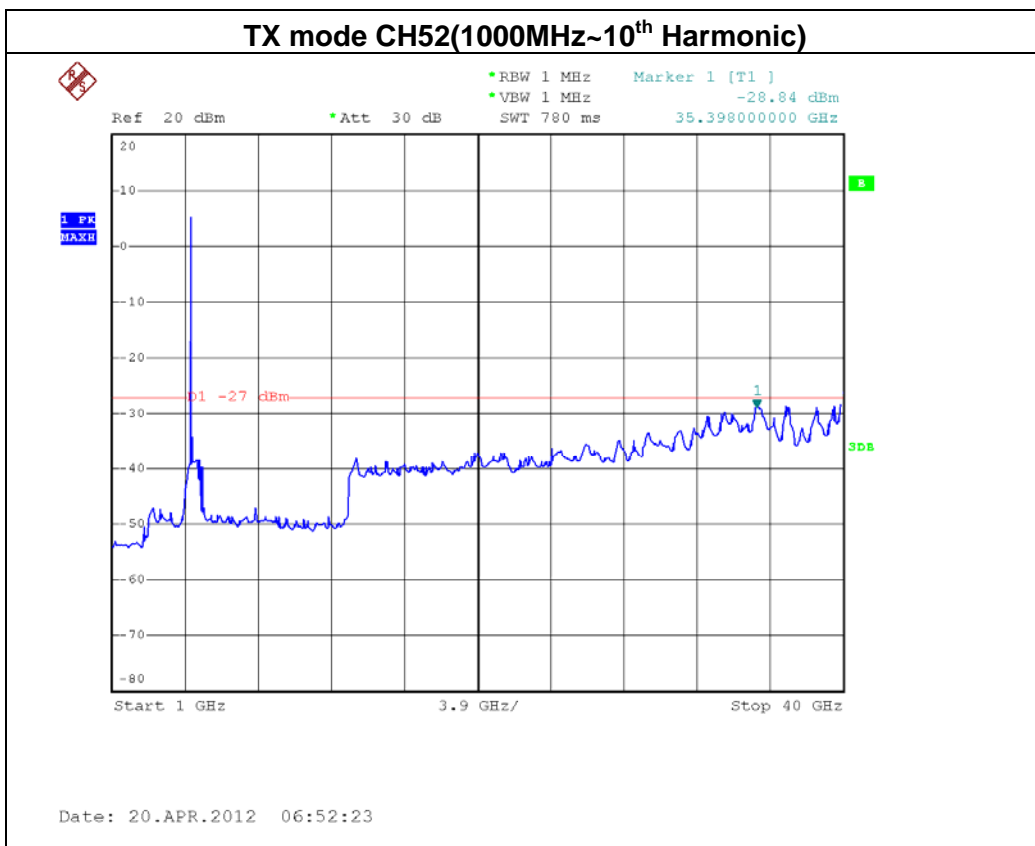
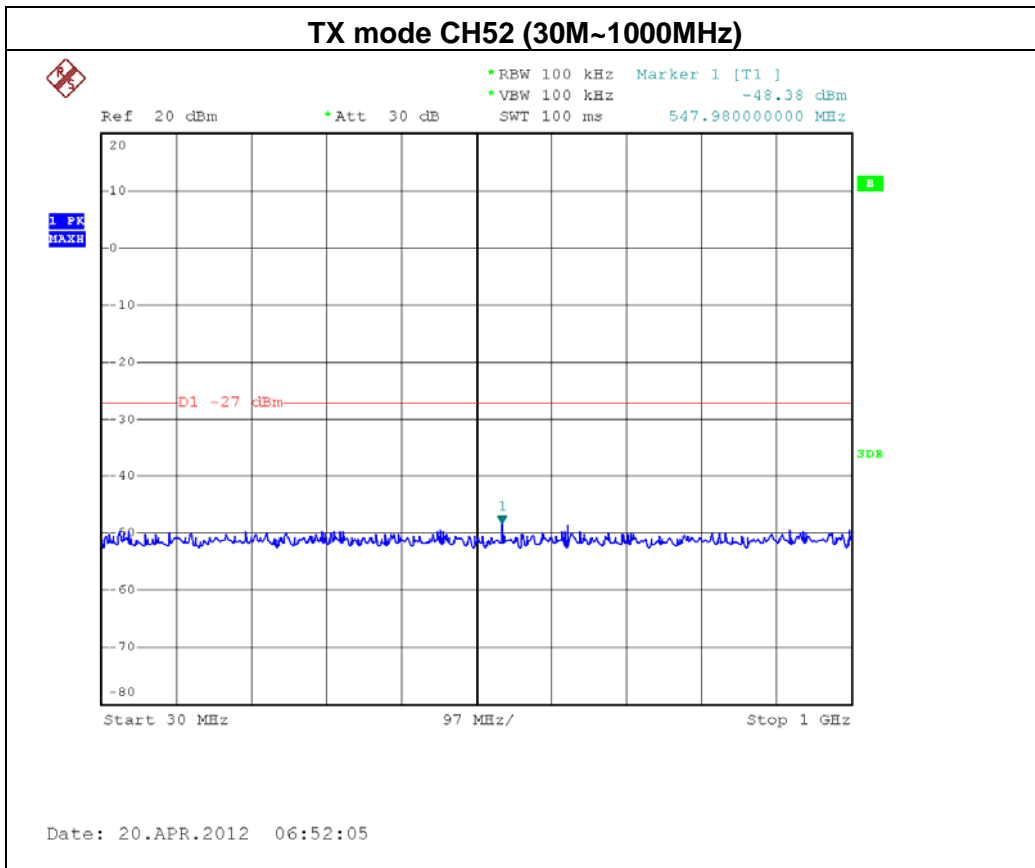


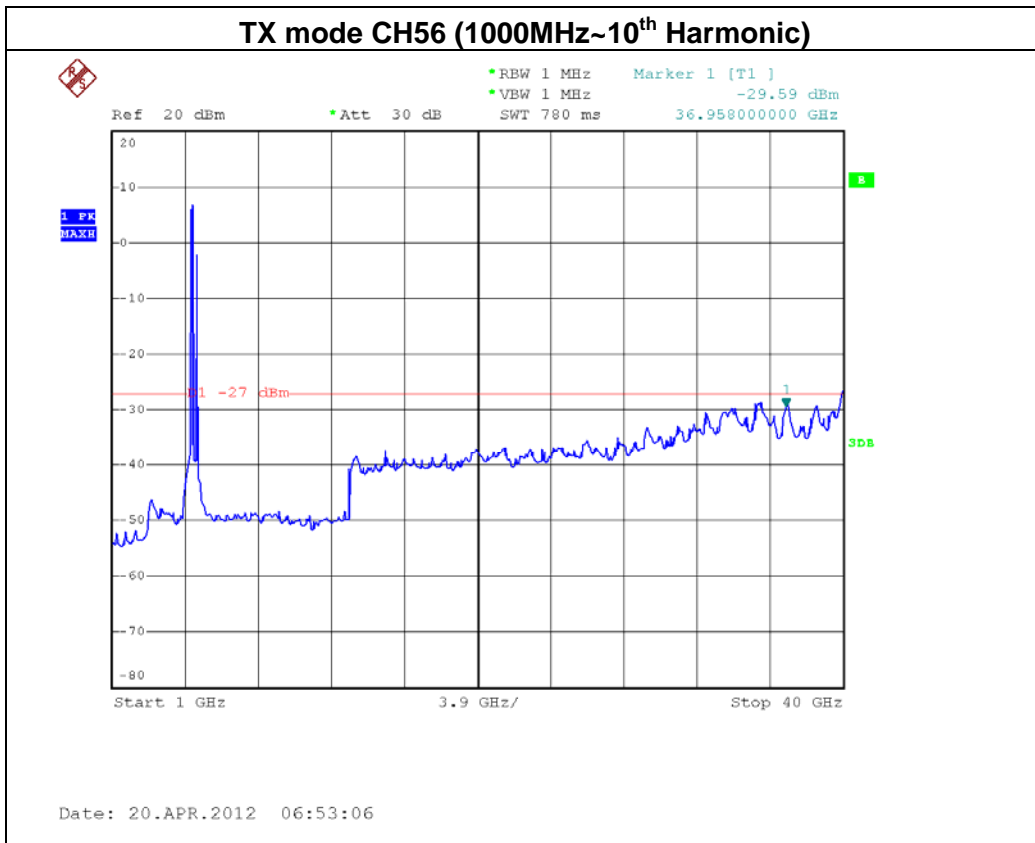
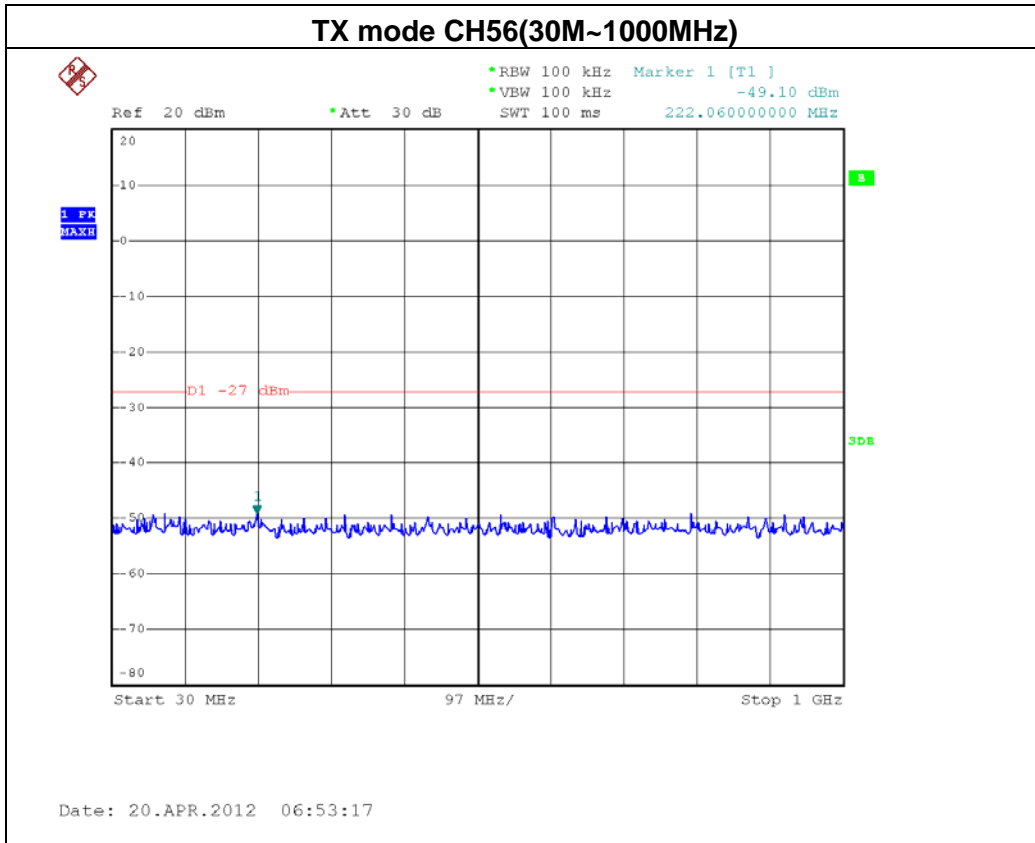
Date: 20.APR.2012 06:51:48

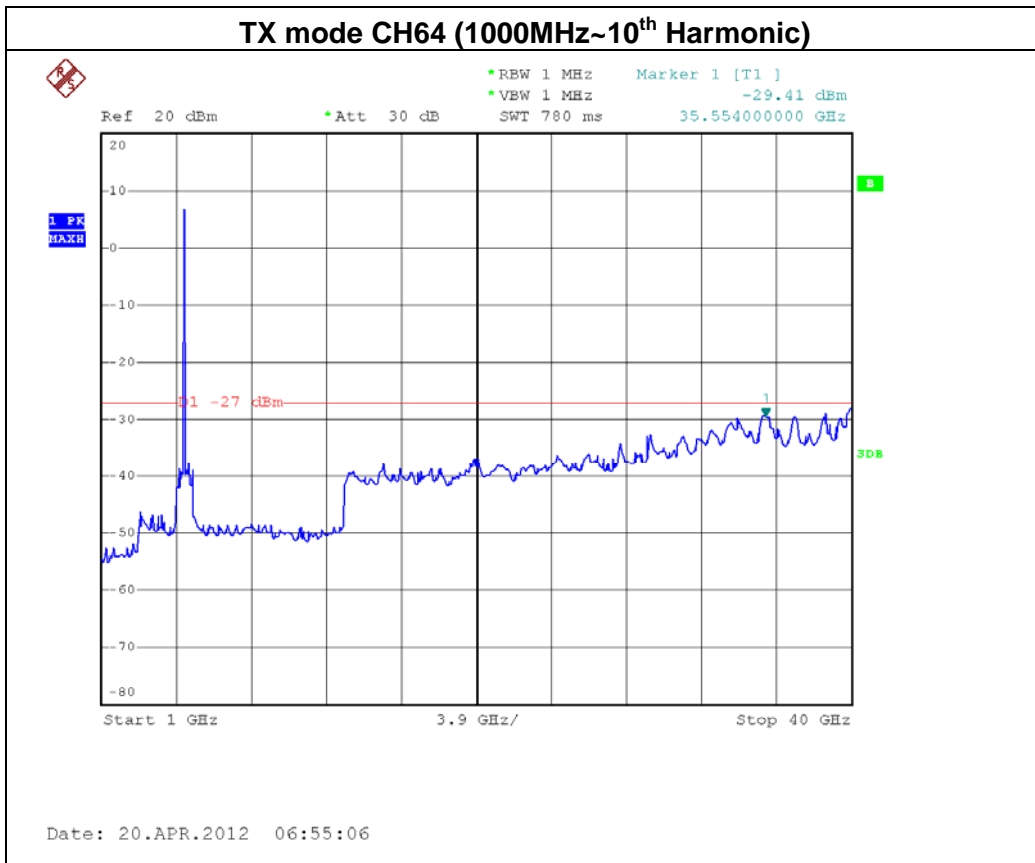
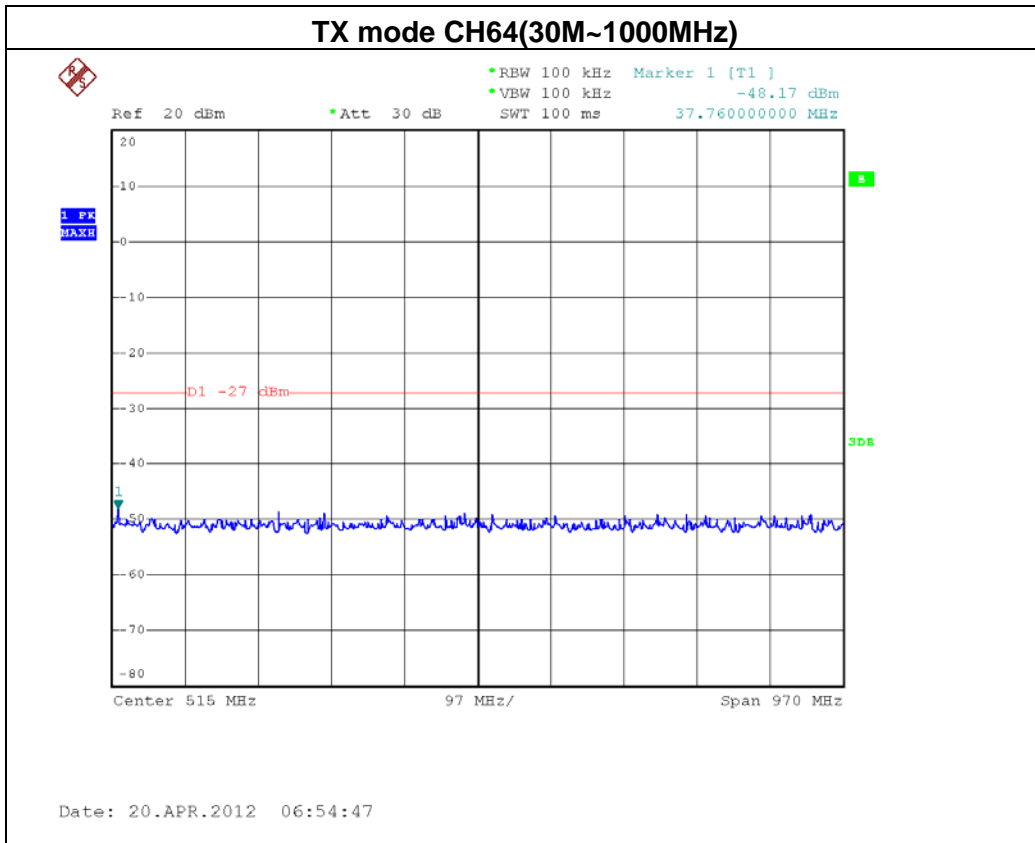
TX mode CH64



Date: 20.APR.2012 06:55:40







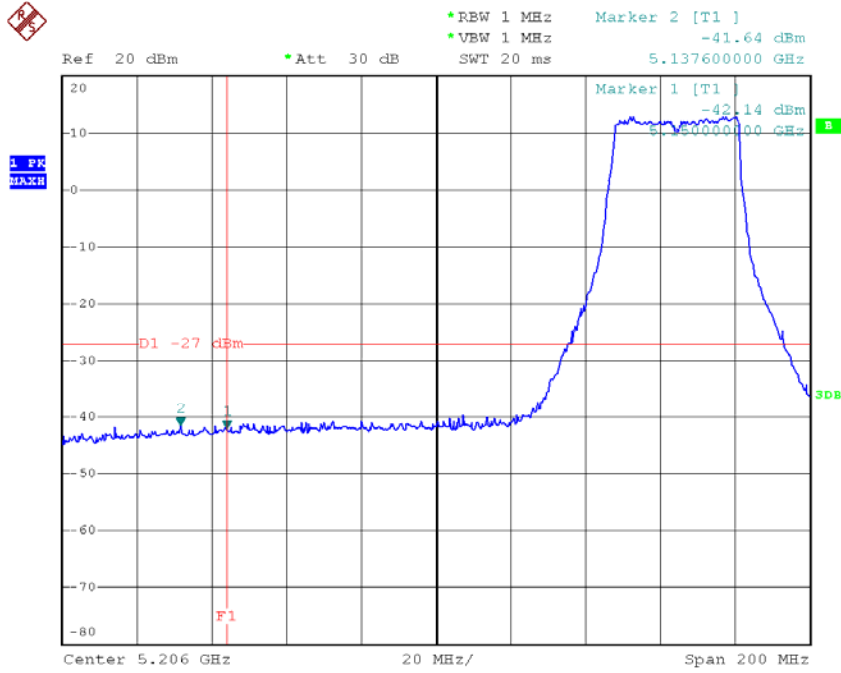


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/ CH54, CH62 (ANT 1)		

Channel of Worst Data: CH54			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-42.14	5356.00	-38.87
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

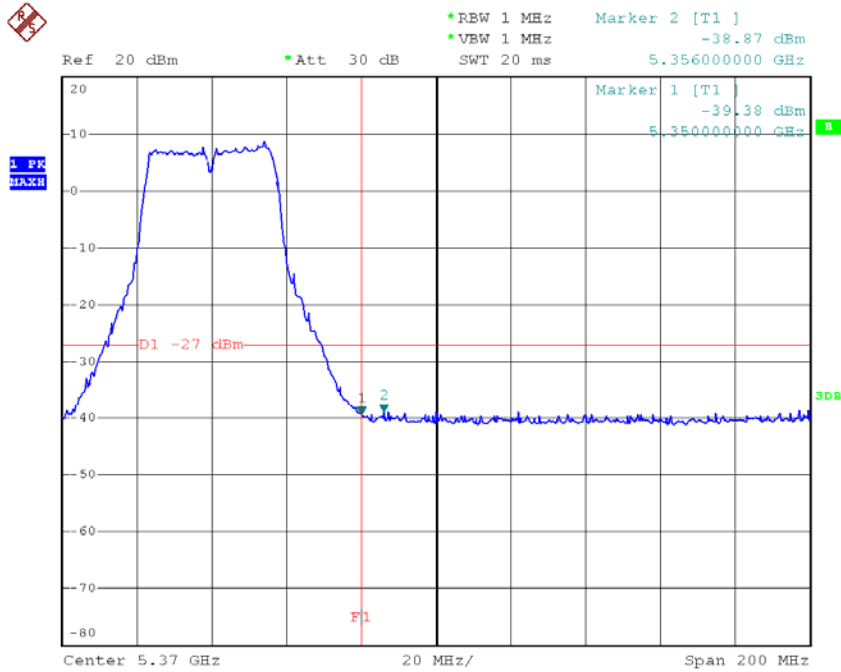


TX mode CH54

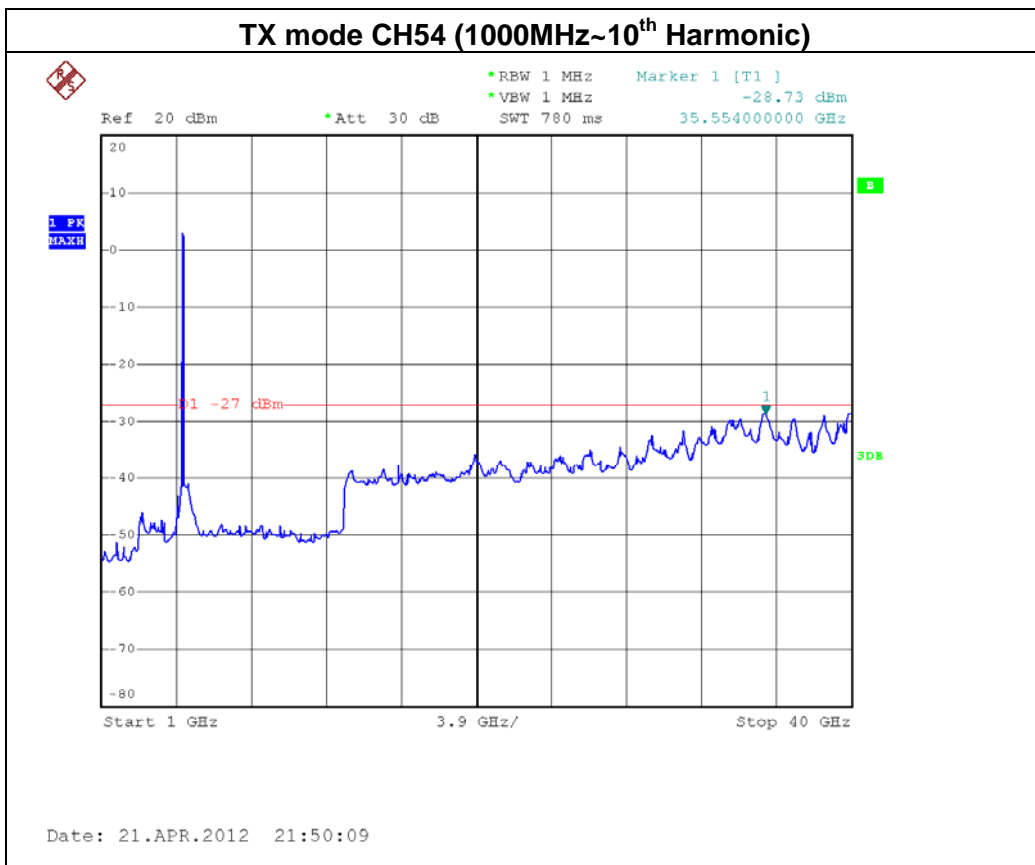
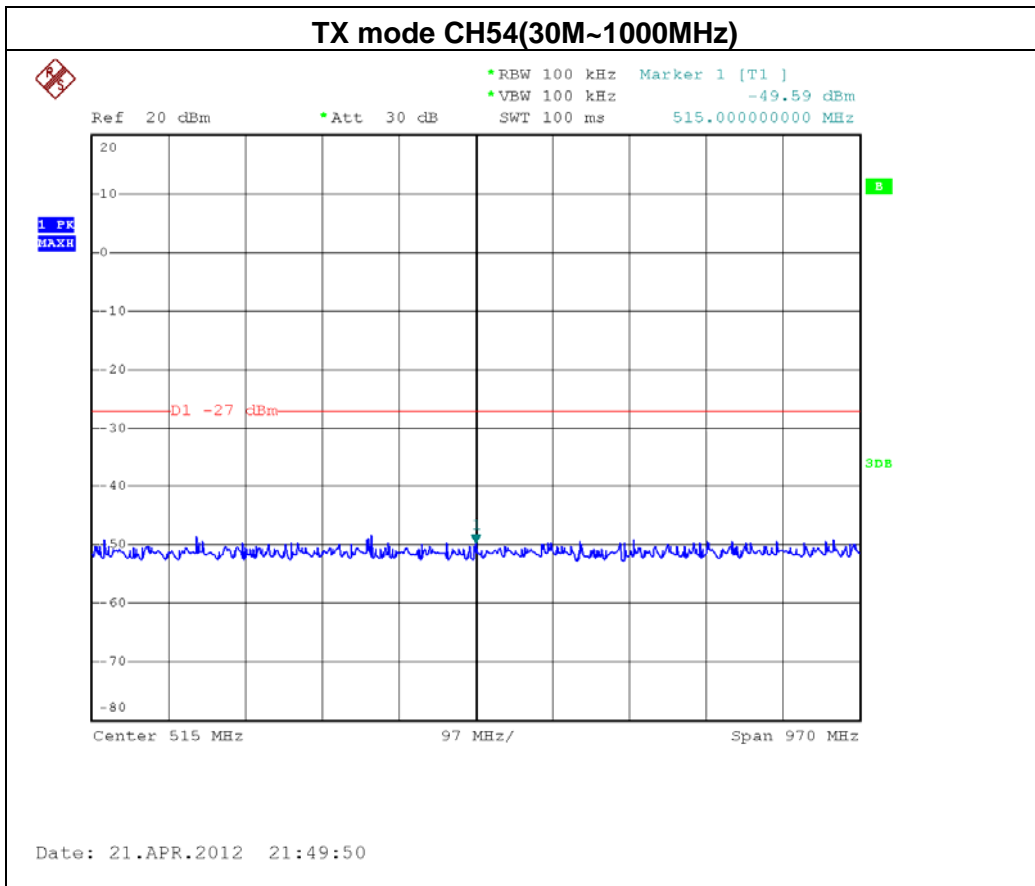


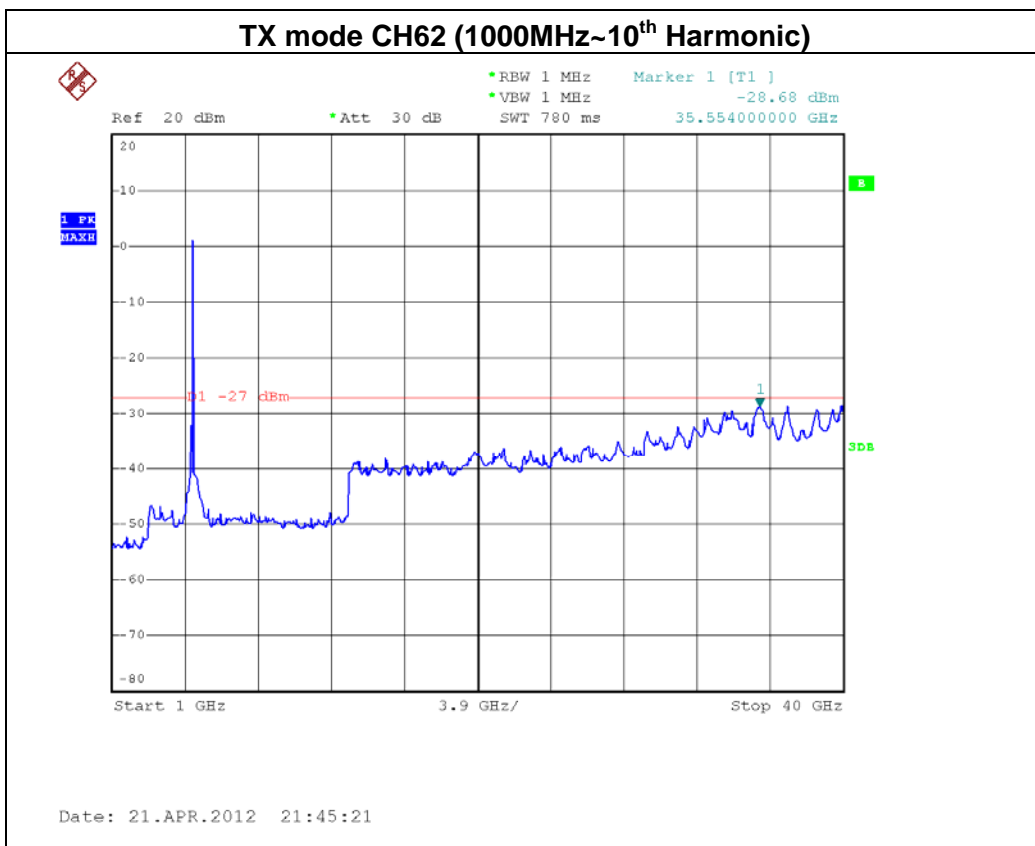
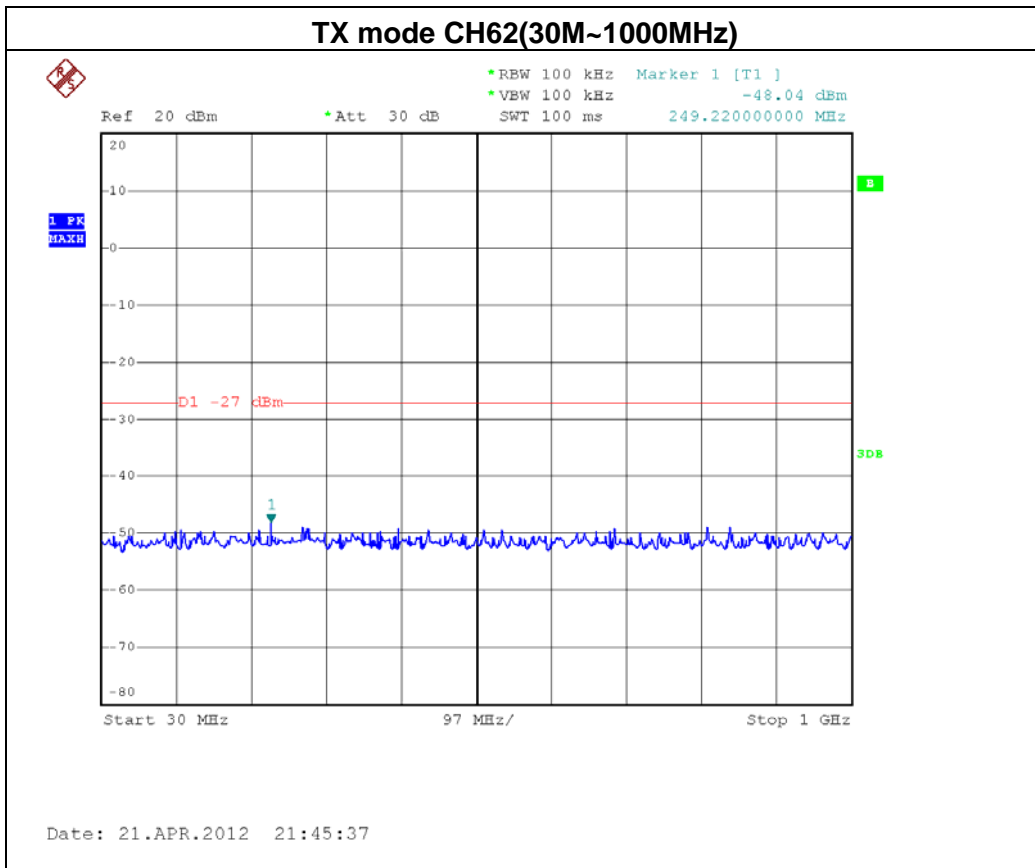
Date: 21.APR.2012 22:02:22

TX mode CH62



Date: 21.APR.2012 21:44:54





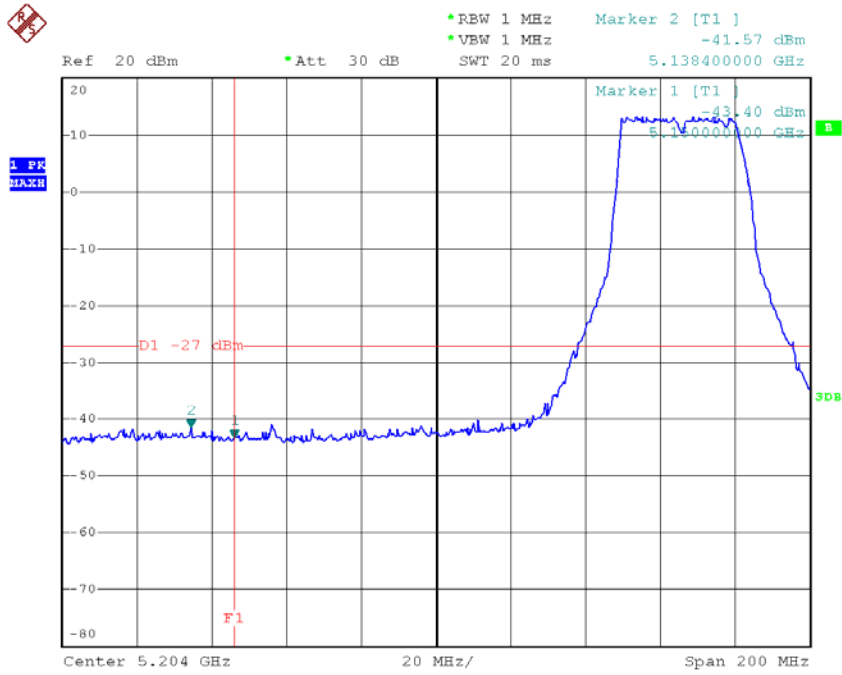


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/ CH54, CH62 (ANT 2)		

Channel of Worst Data: CH62			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-43.4	5350.00	-41.25
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

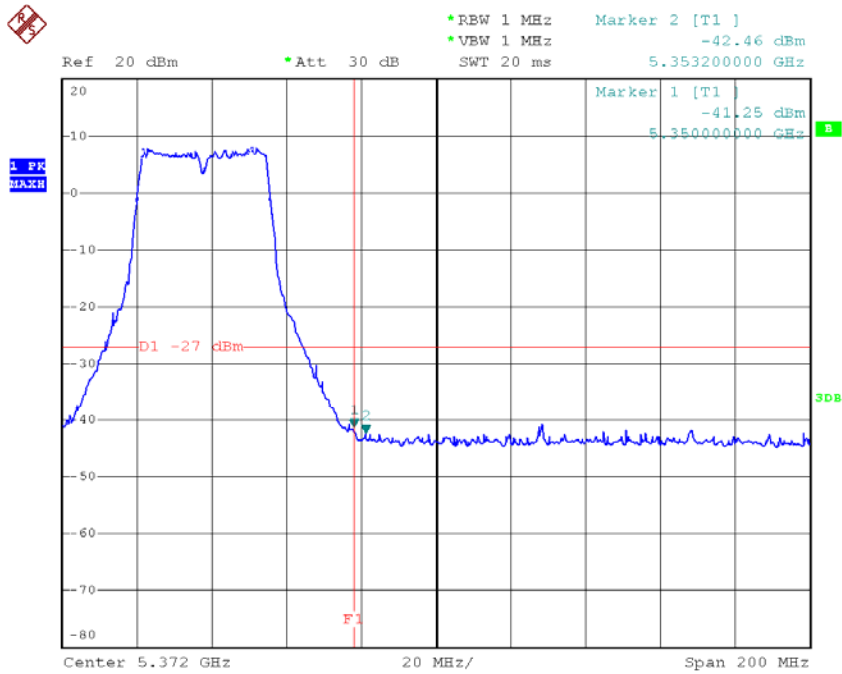


TX mode CH54

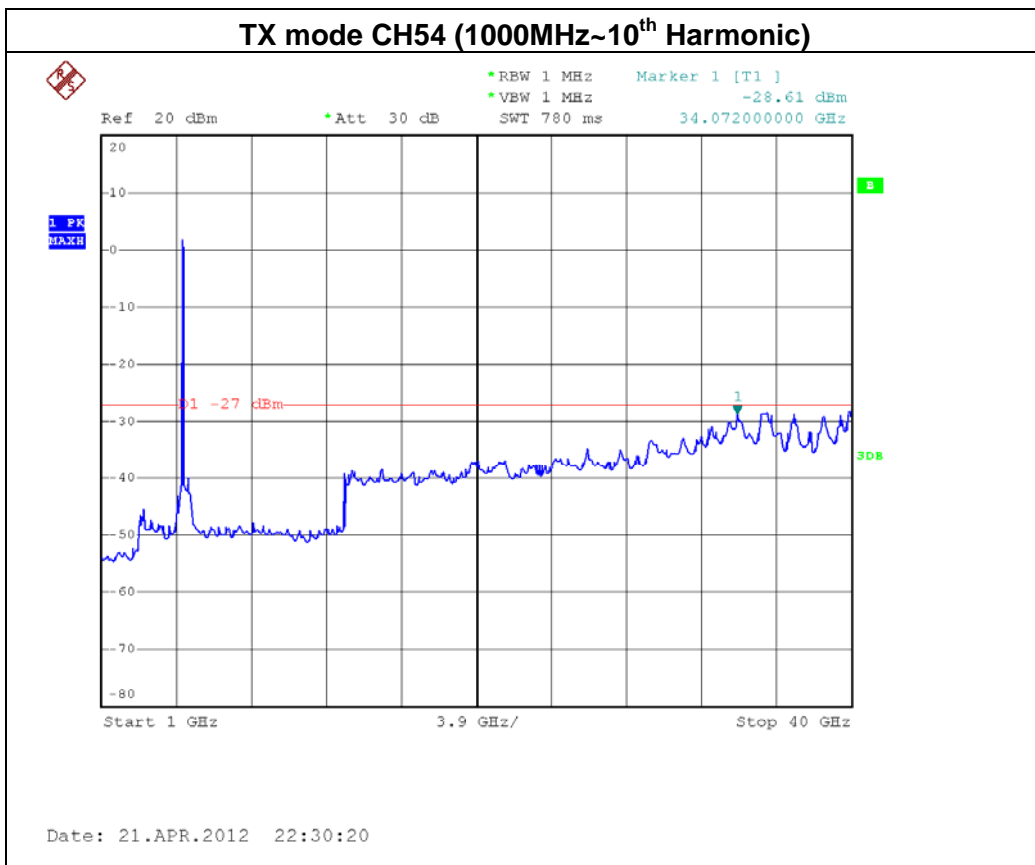
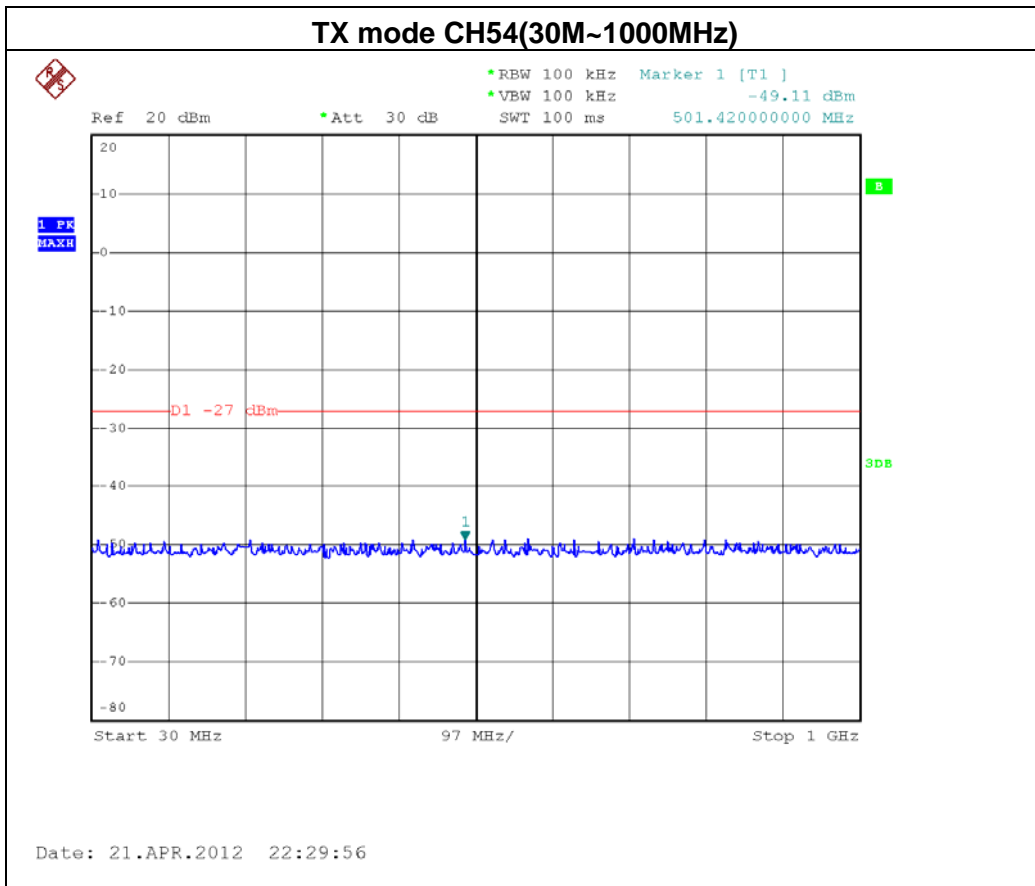


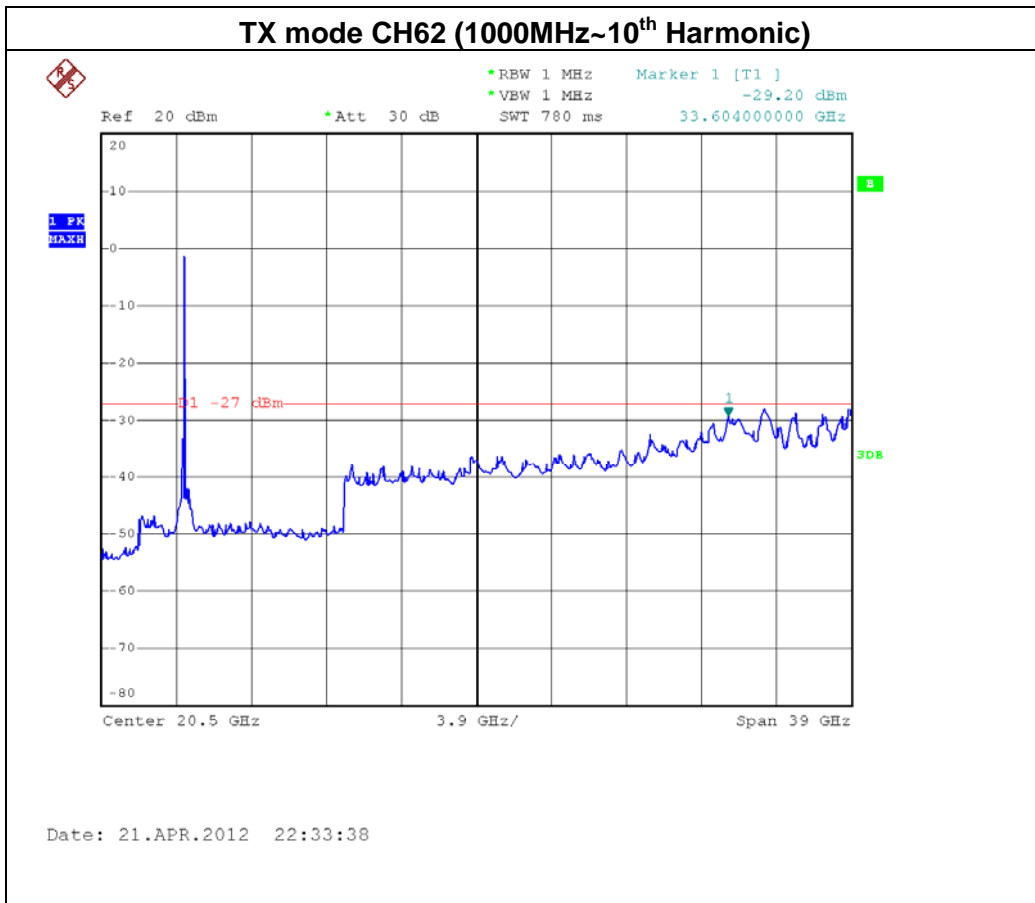
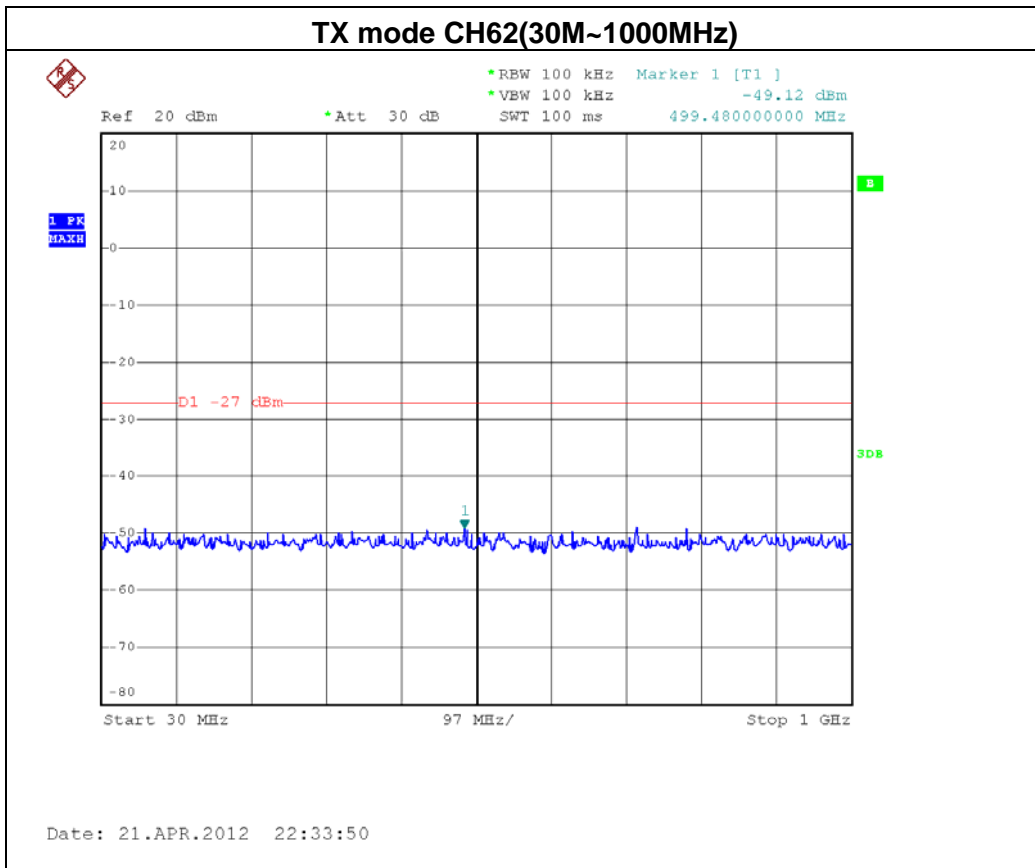
Date: 21.APR.2012 22:28:31

TX mode CH62



Date: 21.APR.2012 22:34:44





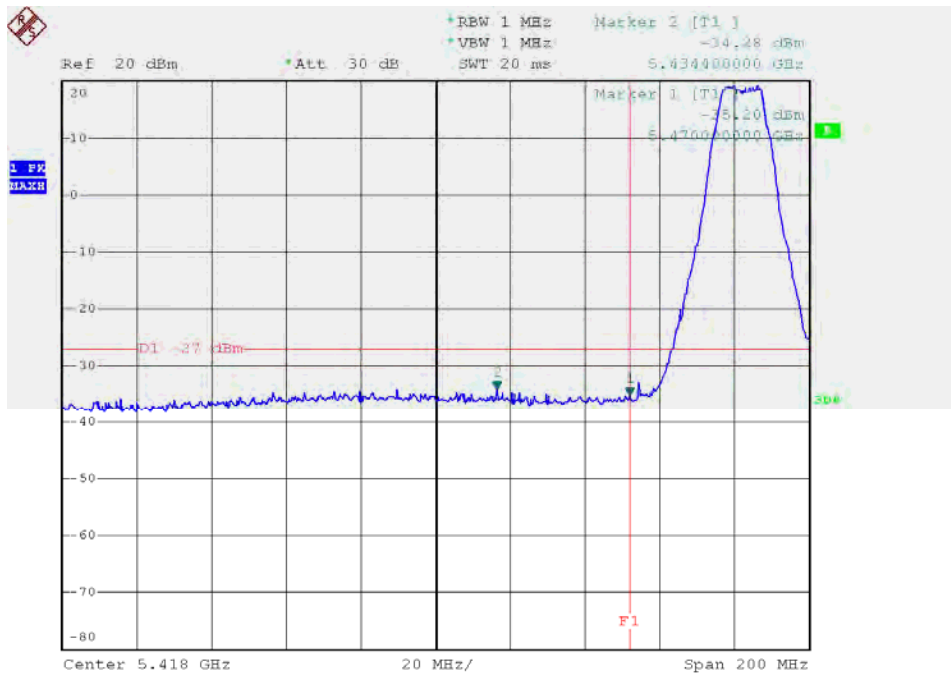


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 ° C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX A Mode/ CH100, CH112 , CH140		

Channel of Worst Data: CH100			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5470.00	-35.20	5725.00	-37.31
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

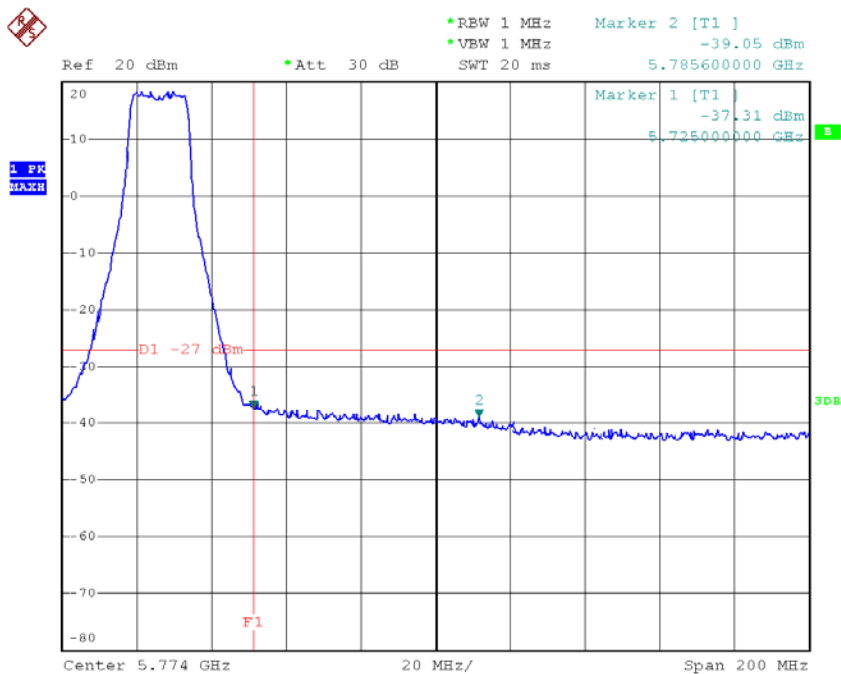


TX mode CH100

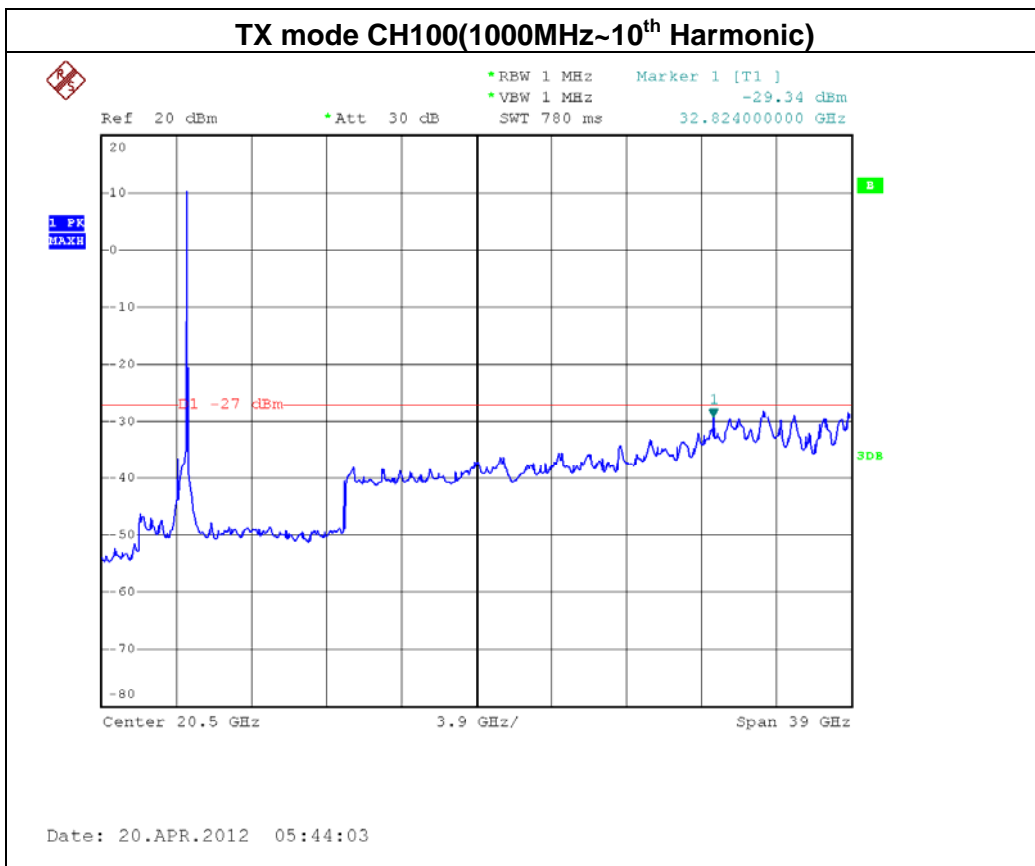
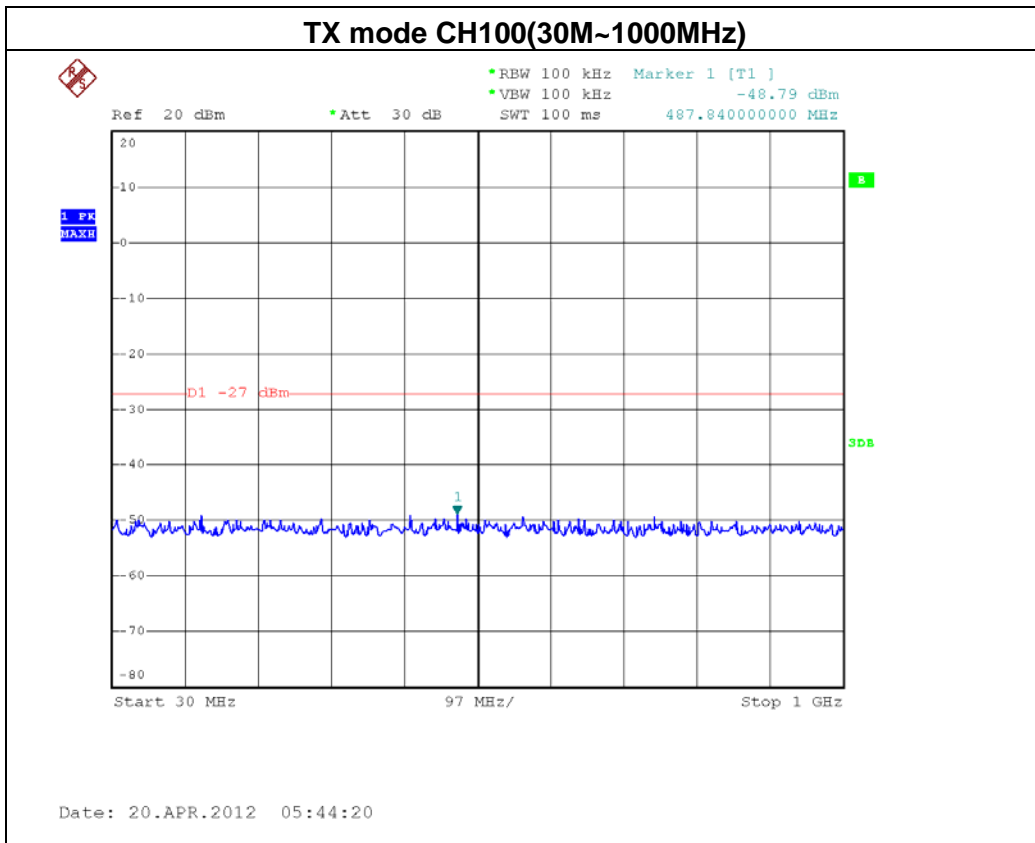


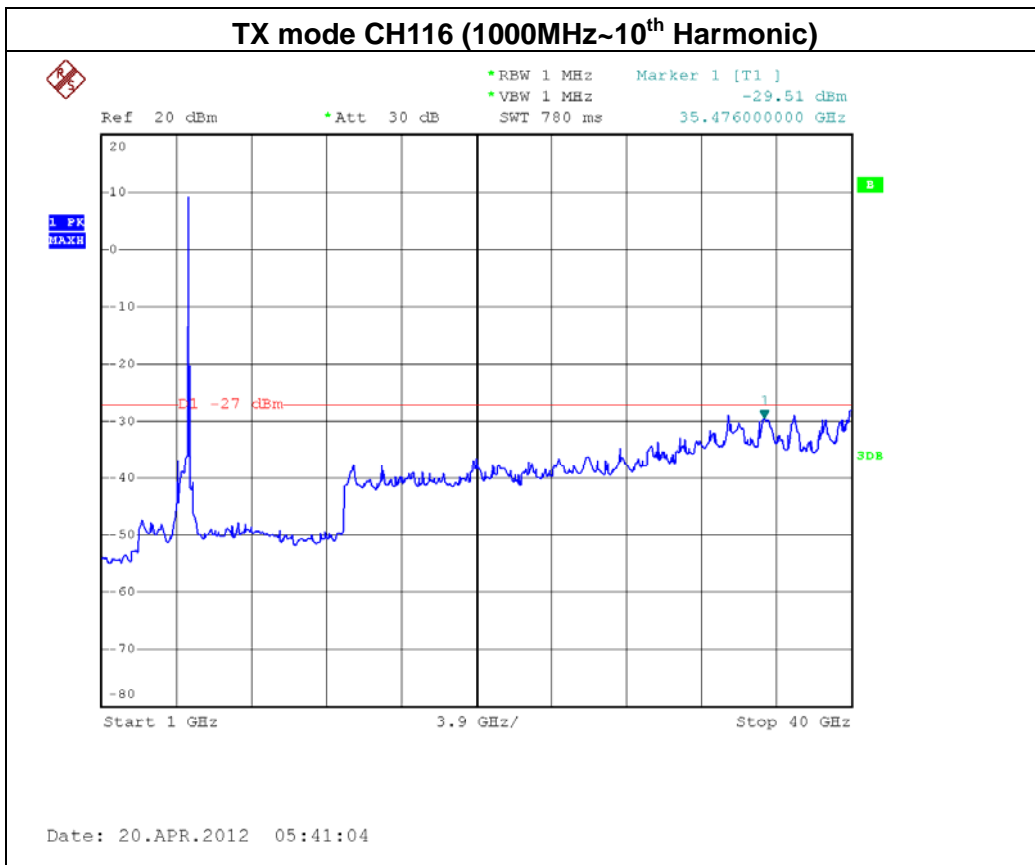
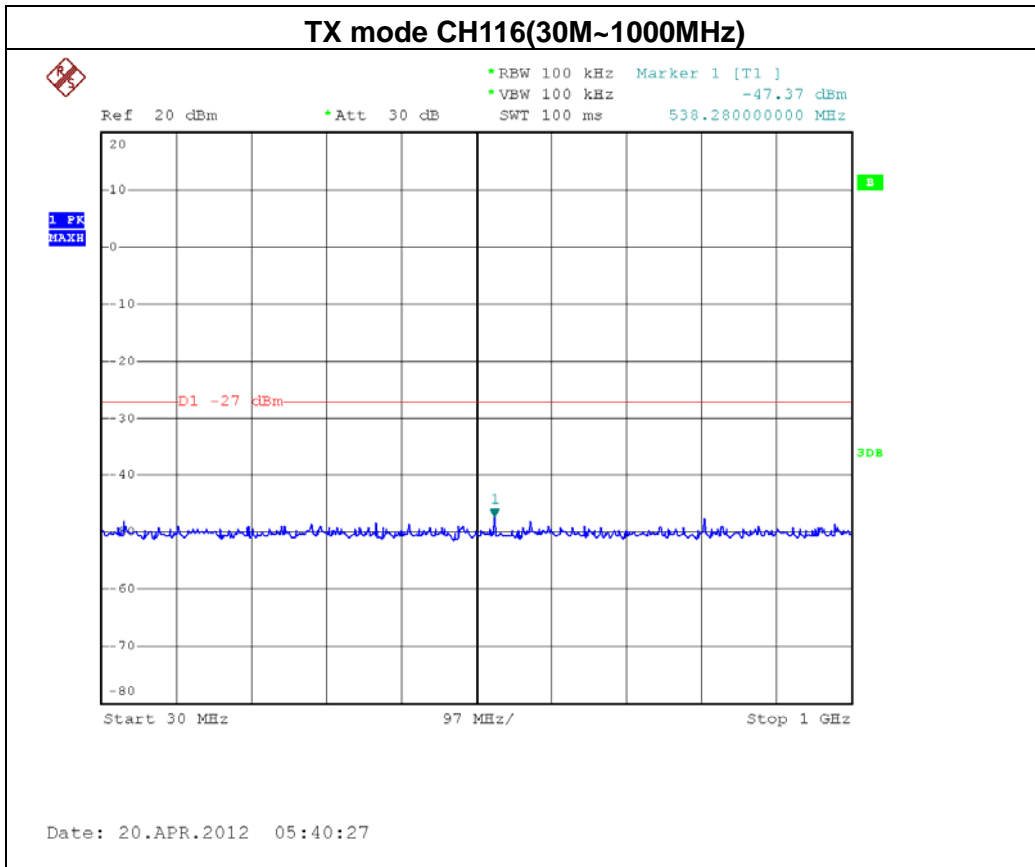
Date: 20.APR.2012 05:45:26

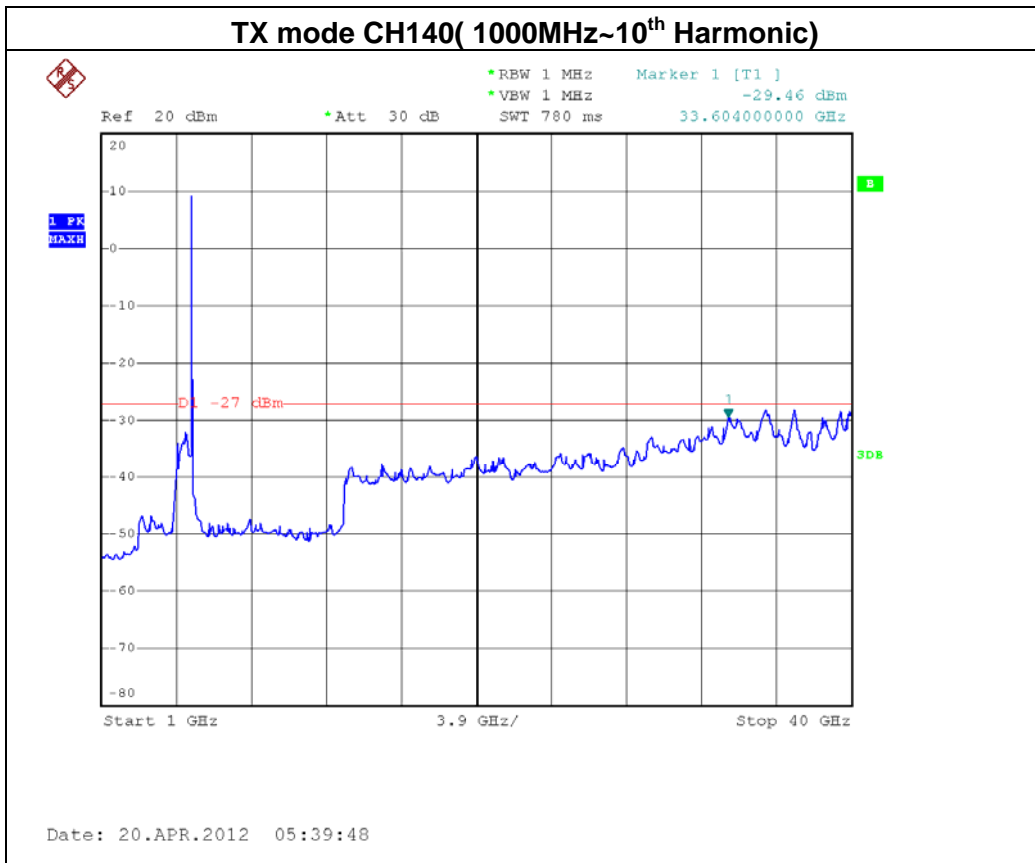
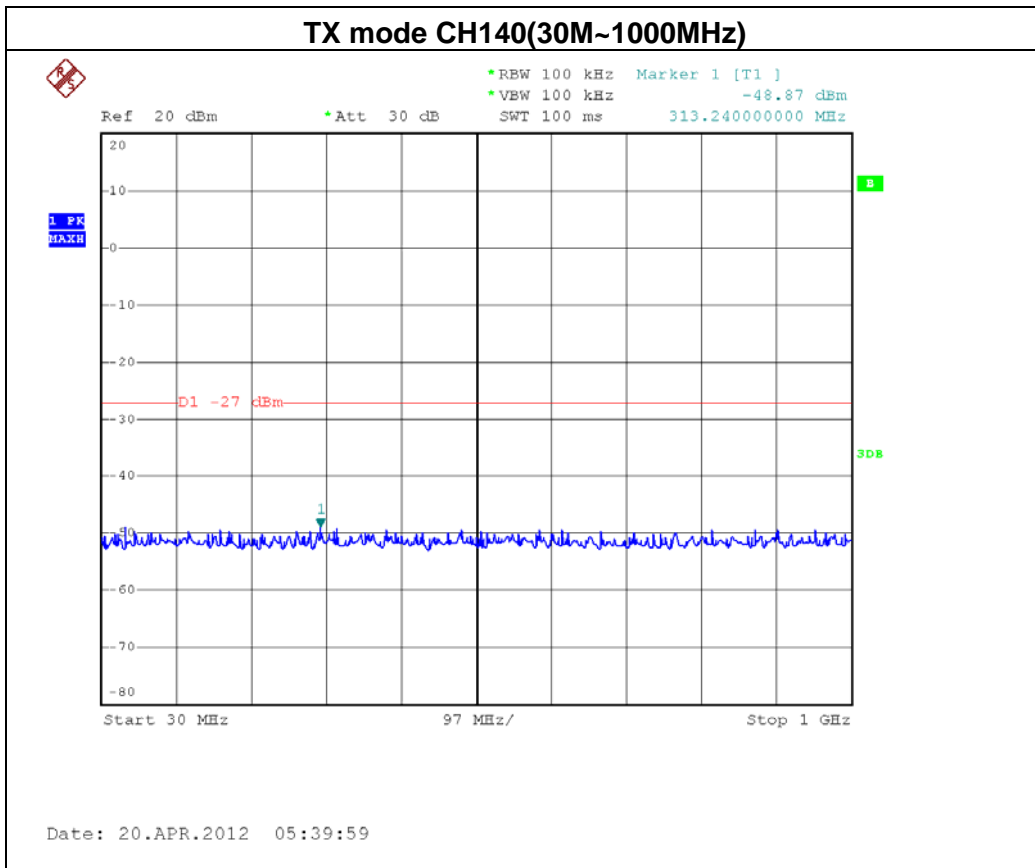
TX mode CH140



Date: 20.APR.2012 05:39:14







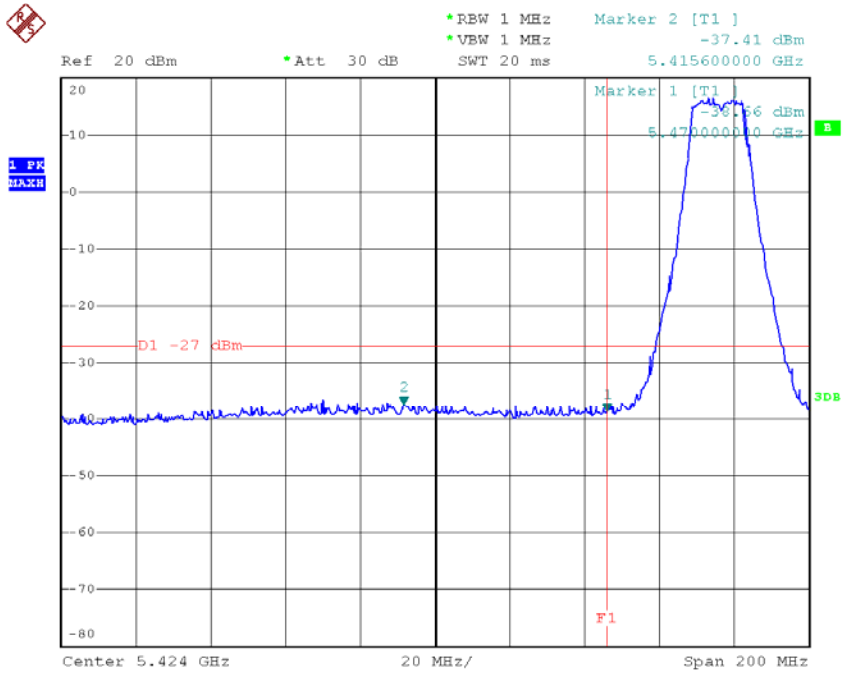


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 ° C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/ CH100, CH112 , CH140 (ANT 1)		

Channel of Worst Data: CH100			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5470.00	-38.66	5725.00	-42.17
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

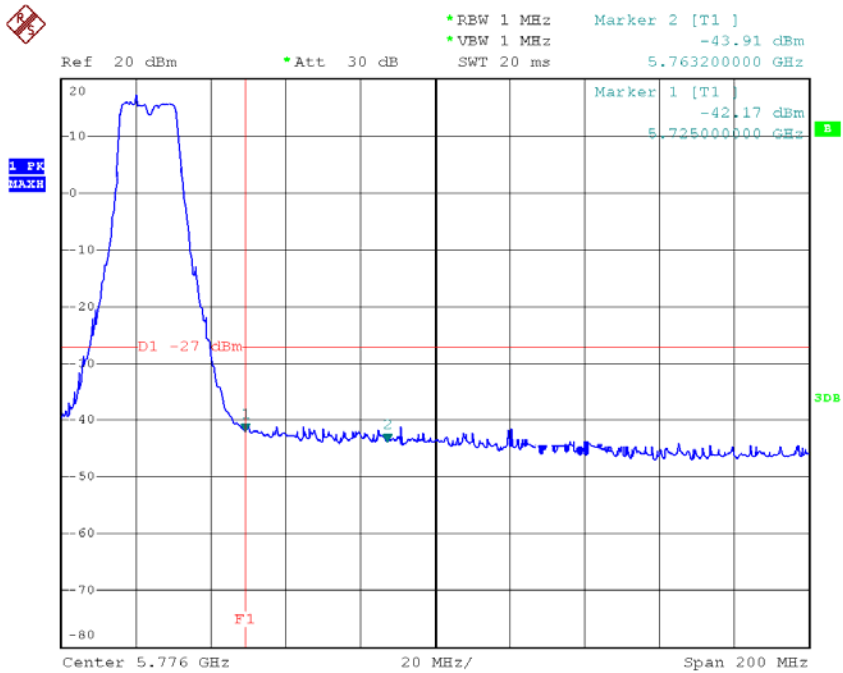


TX mode CH100

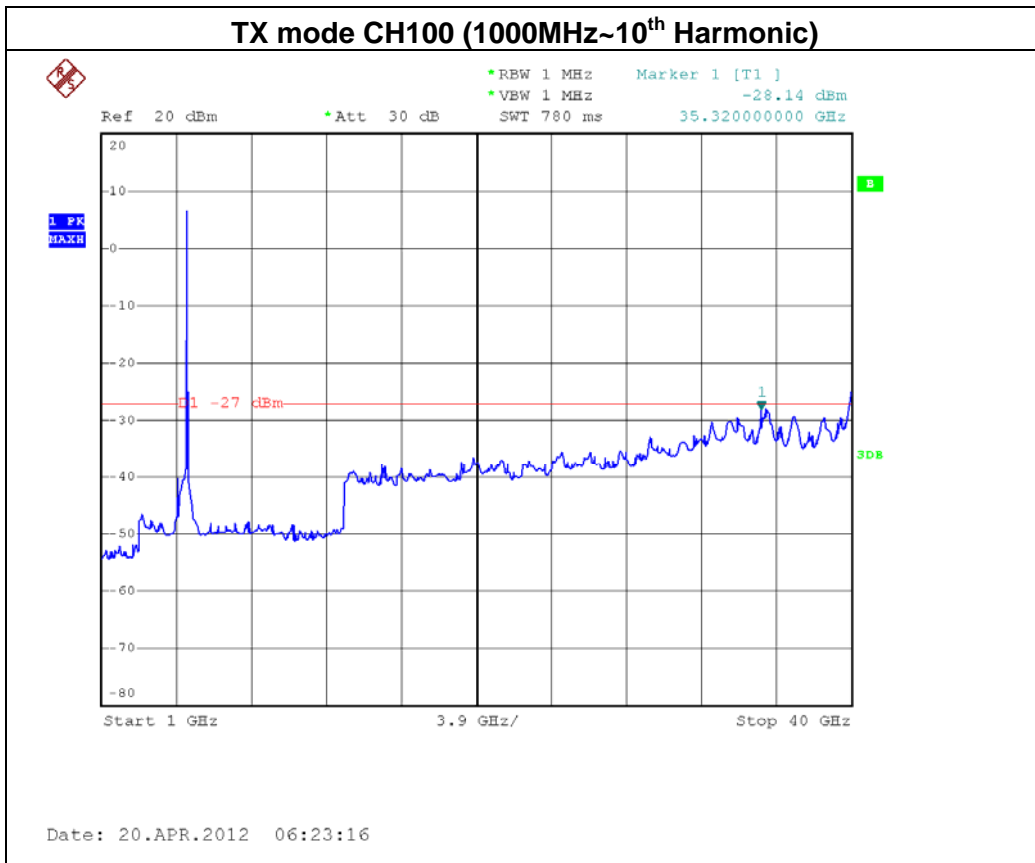
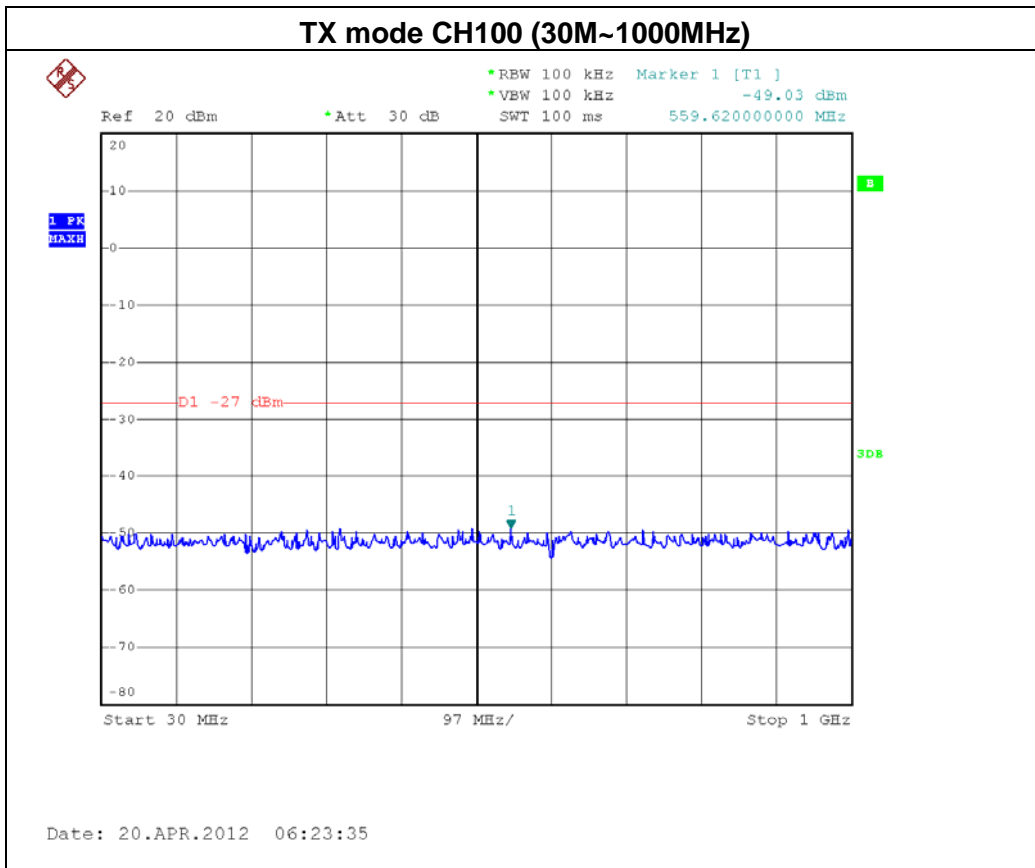


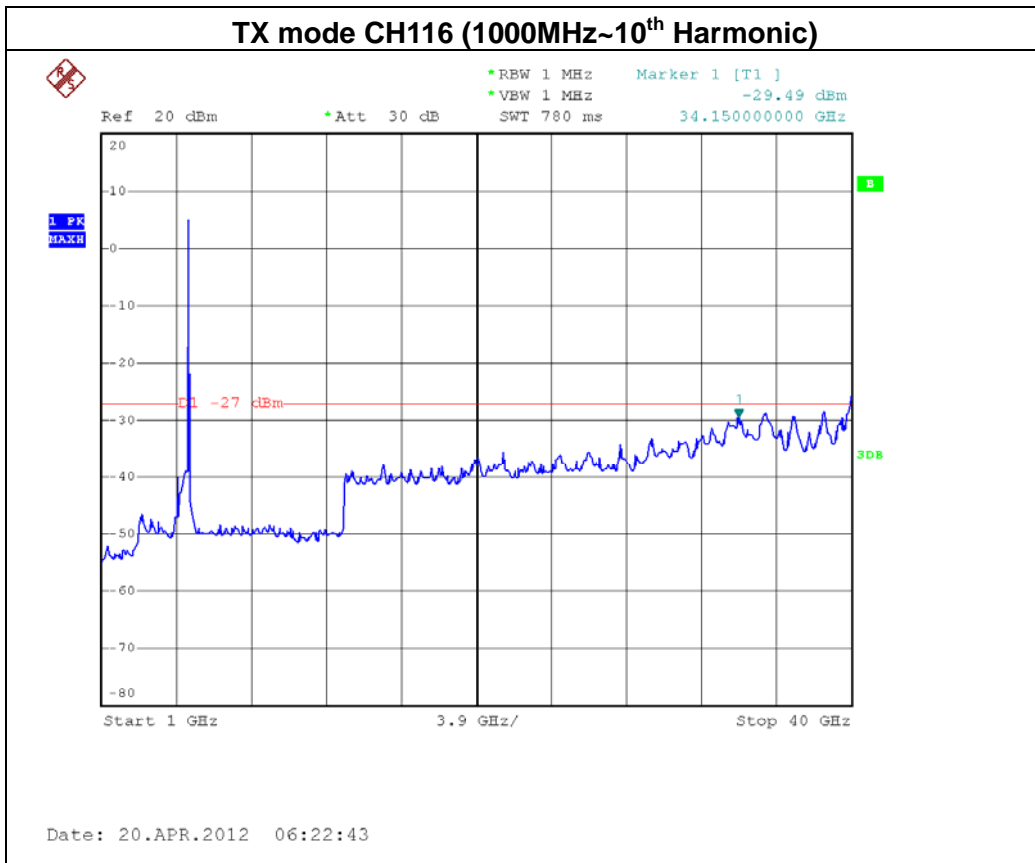
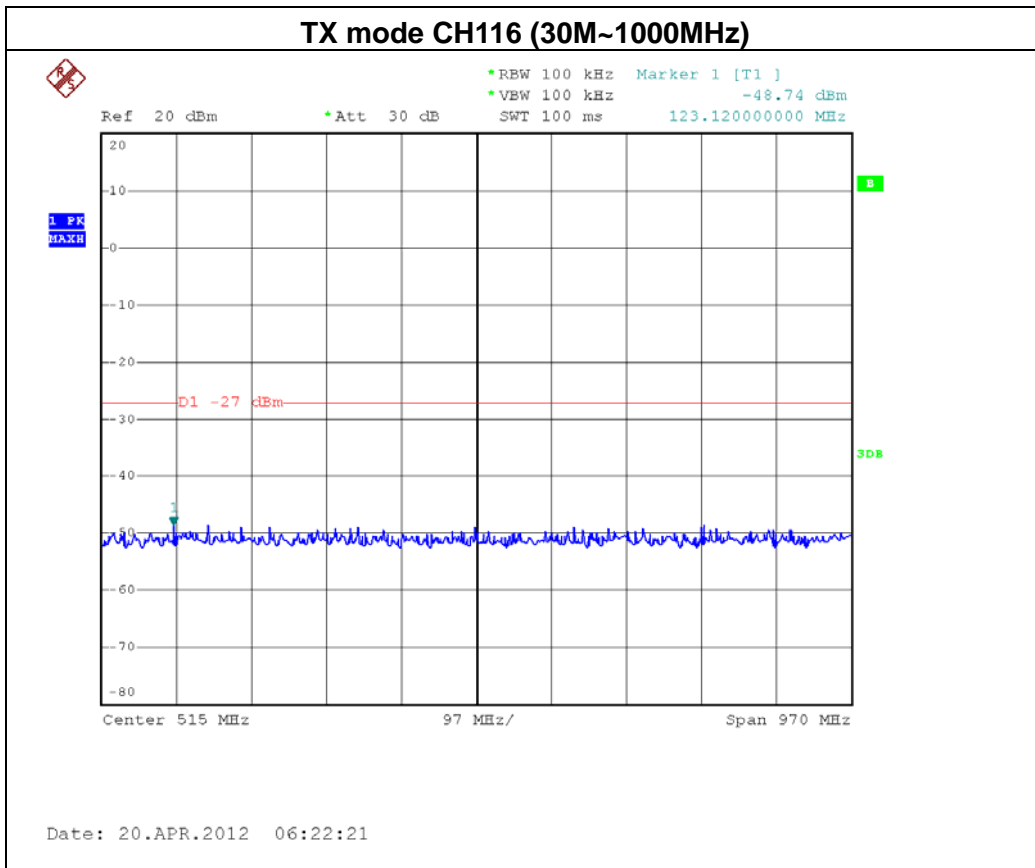
Date: 20.APR.2012 06:24:28

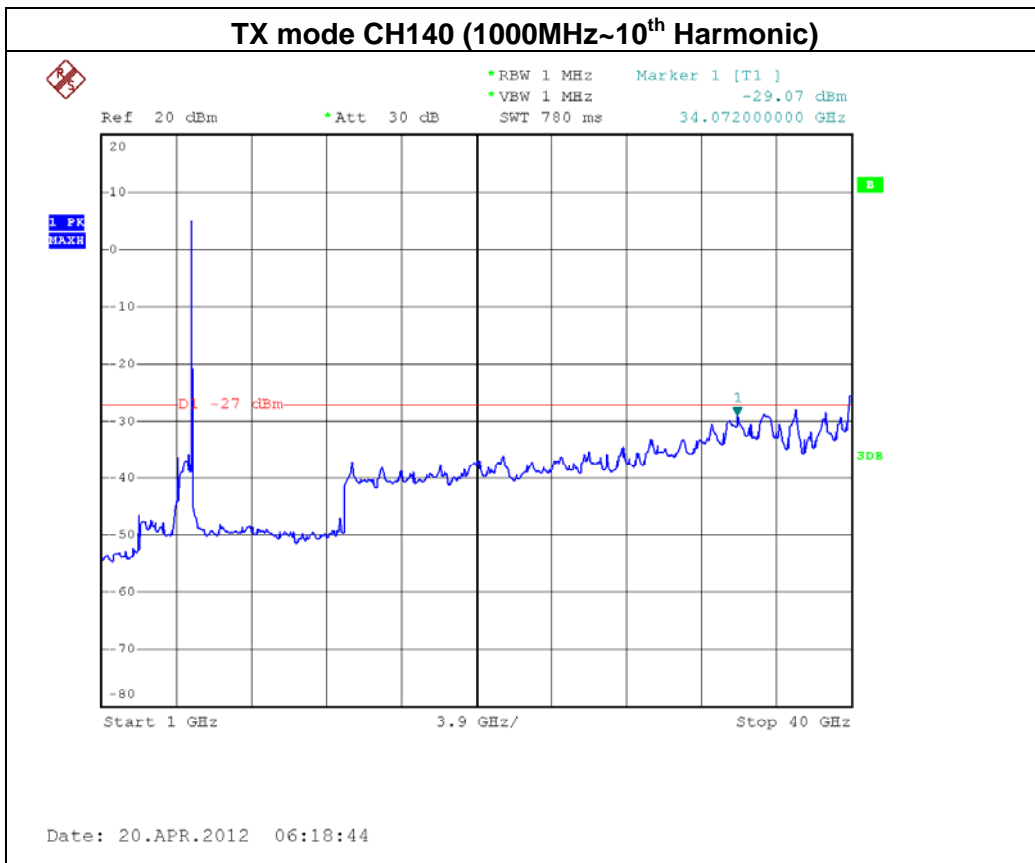
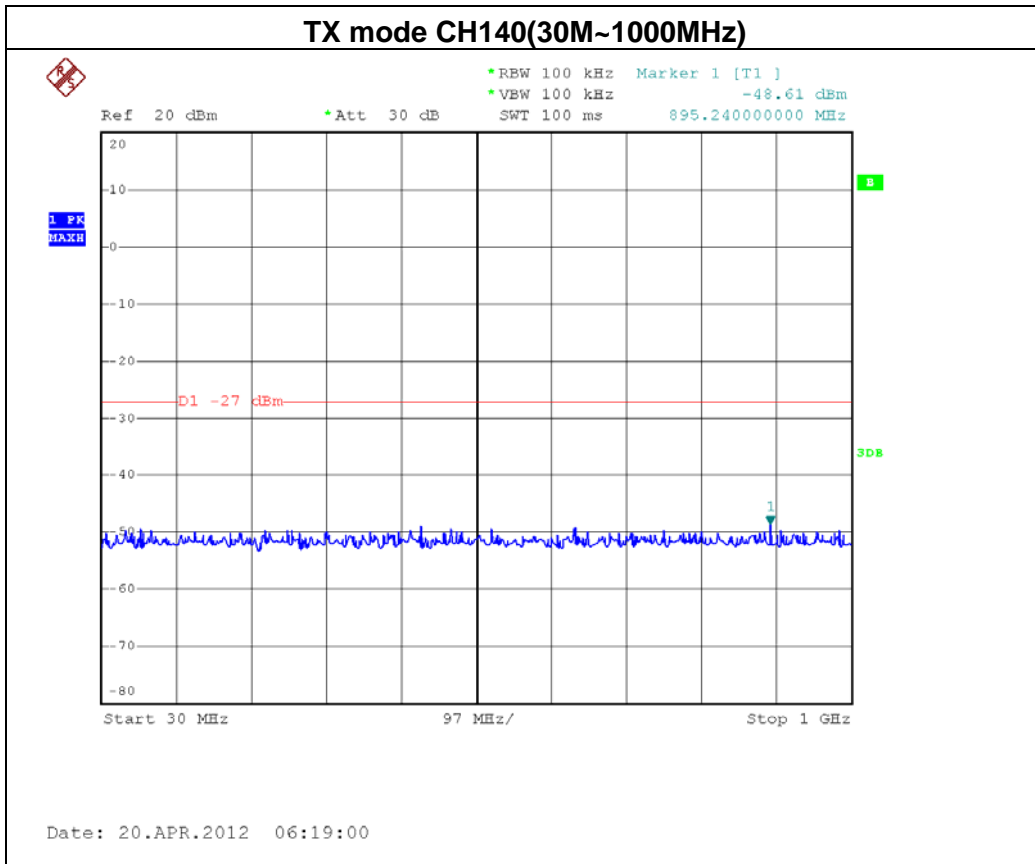
TX mode CH140



Date: 20.APR.2012 06:18:20







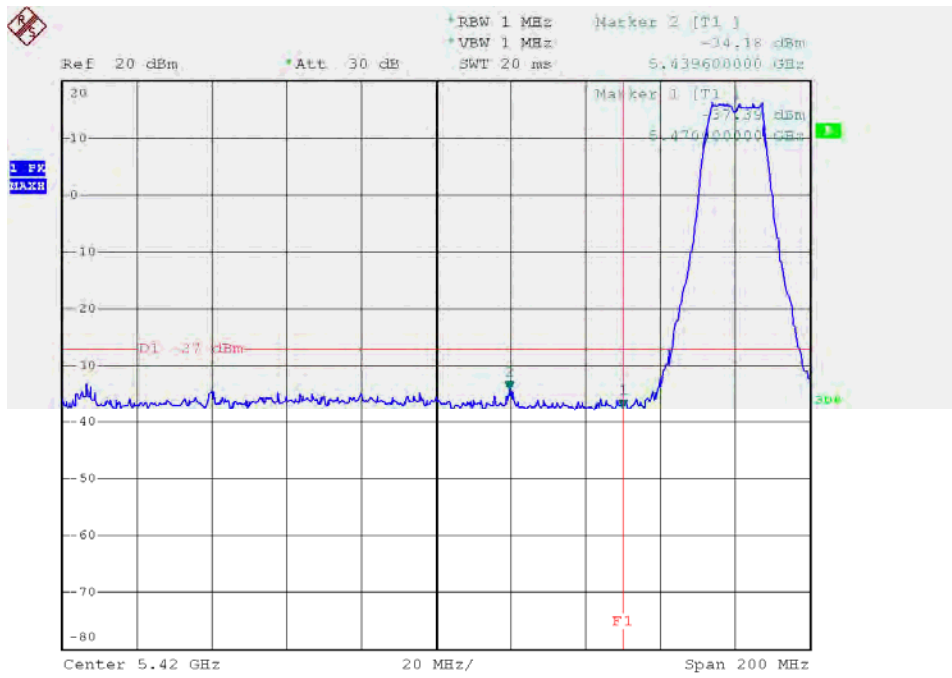


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/ CH100, CH112 , CH140 (ANT 2)		

Channel of Worst Data: CH100			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5470.00	-37.39	5725.00	-40.25
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

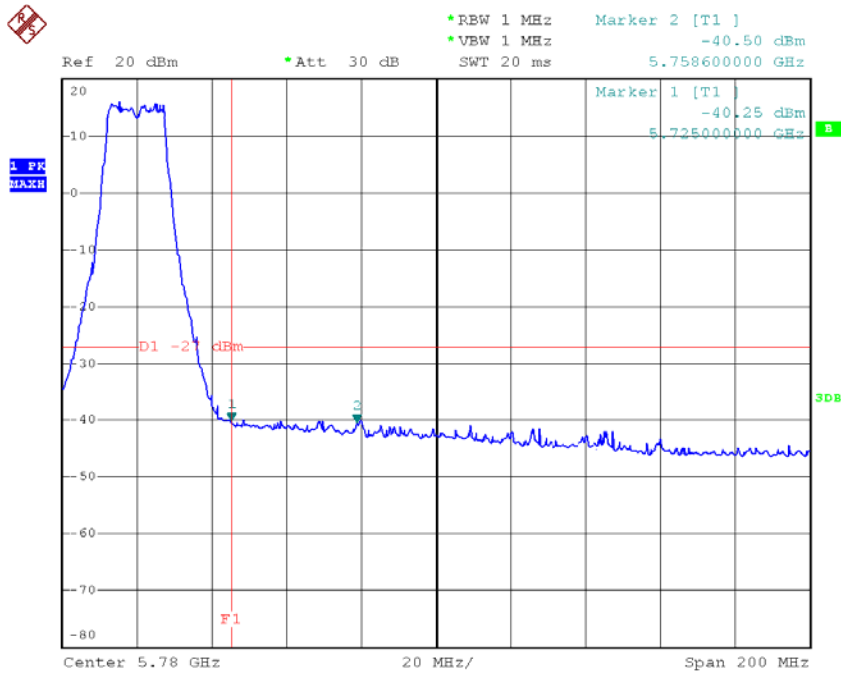


TX mode CH100

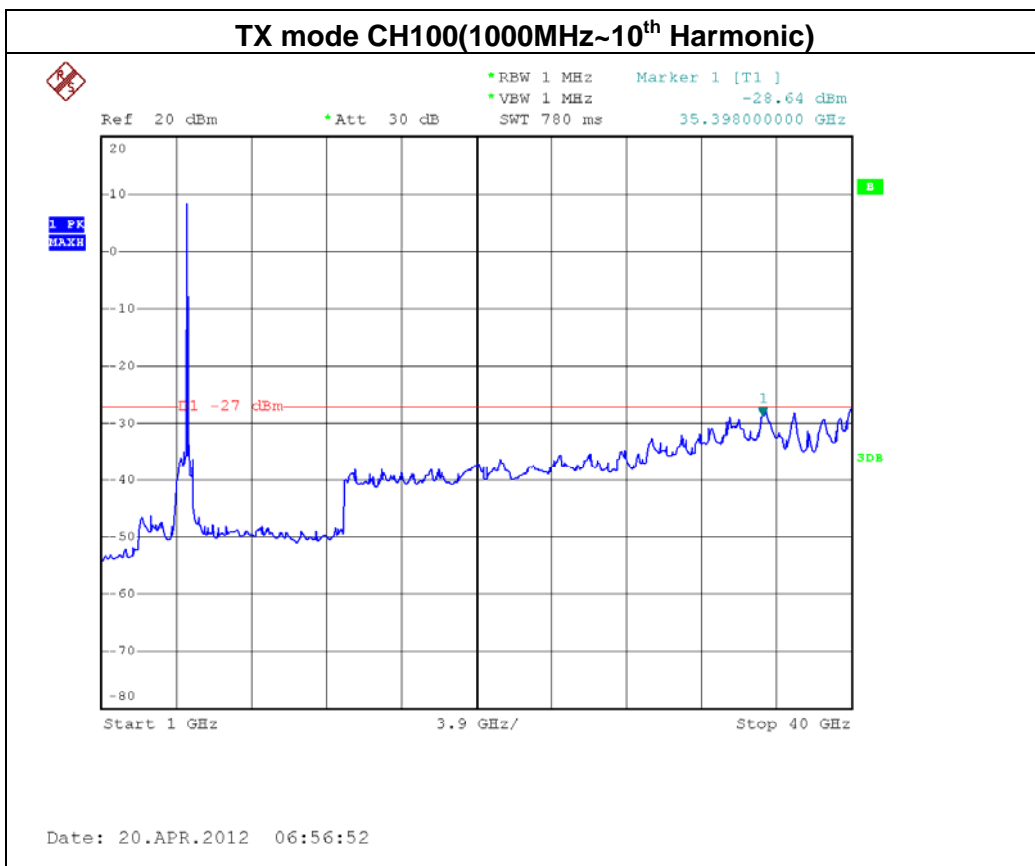
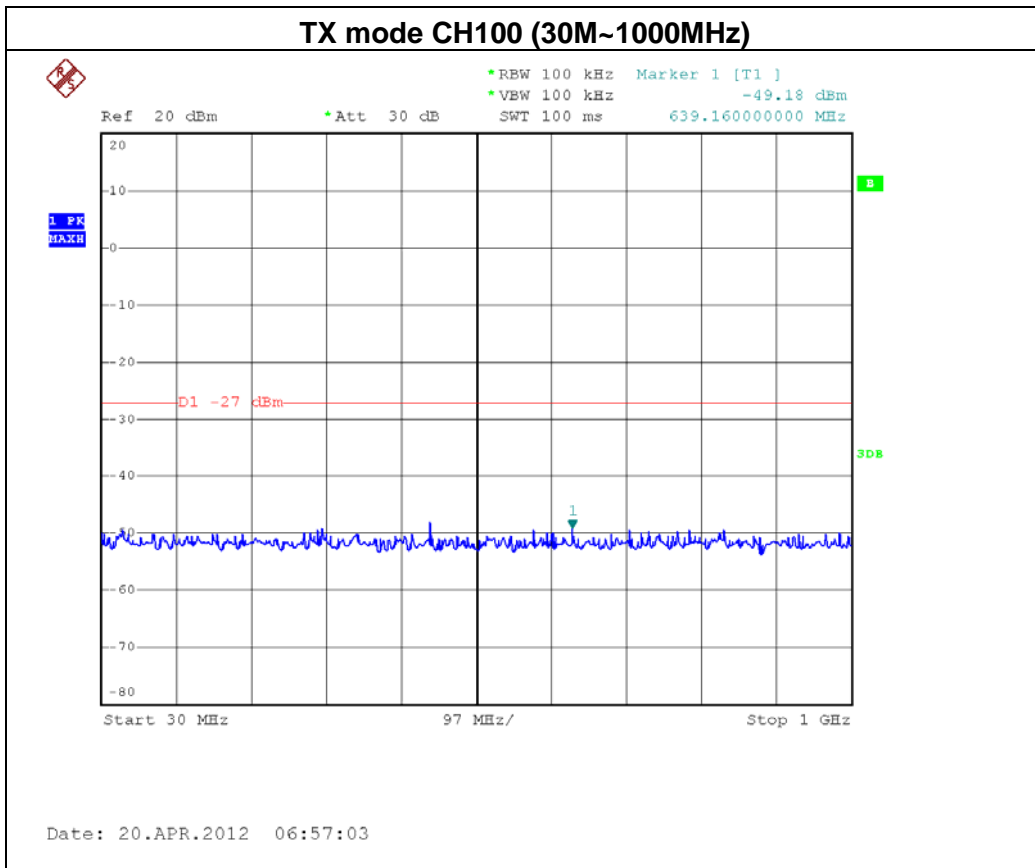


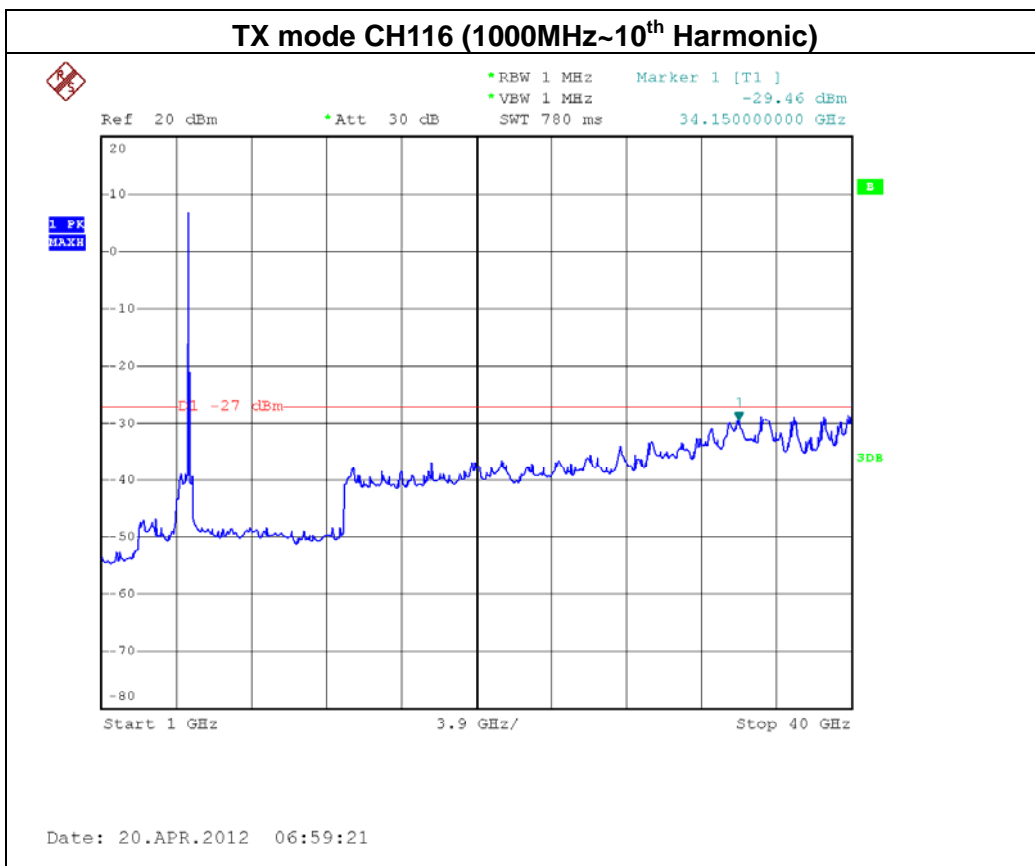
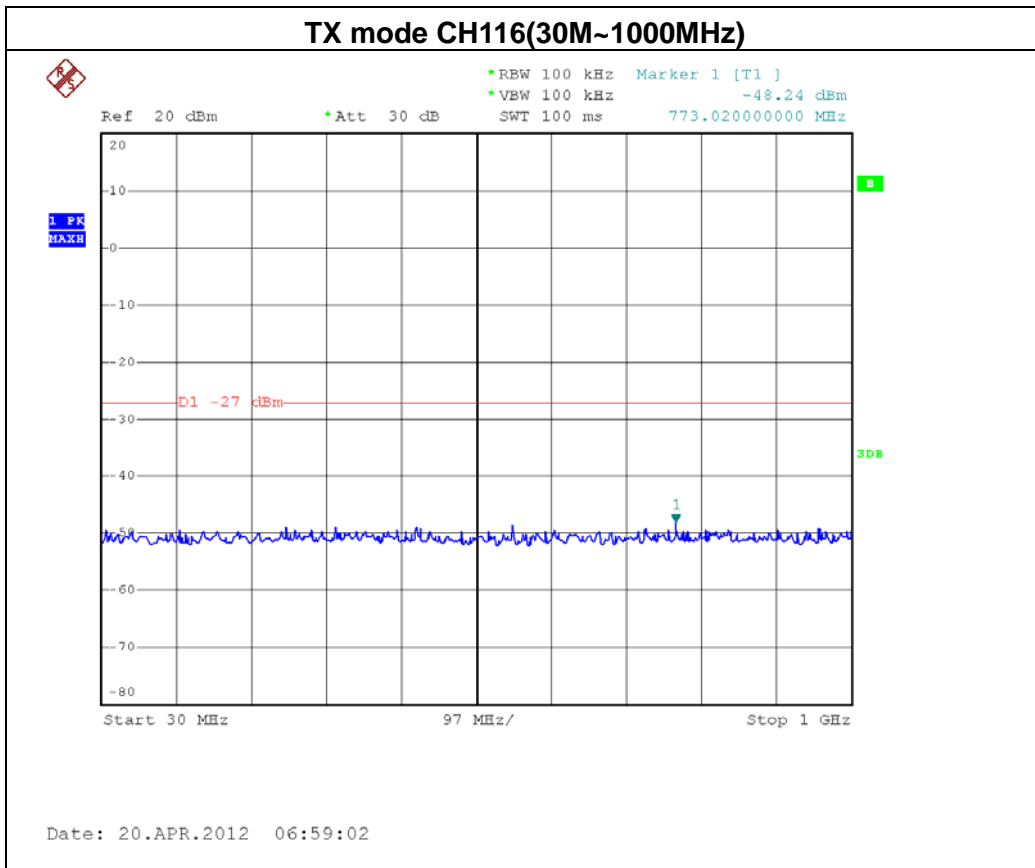
Date: 20.APR.2012 06:56:27

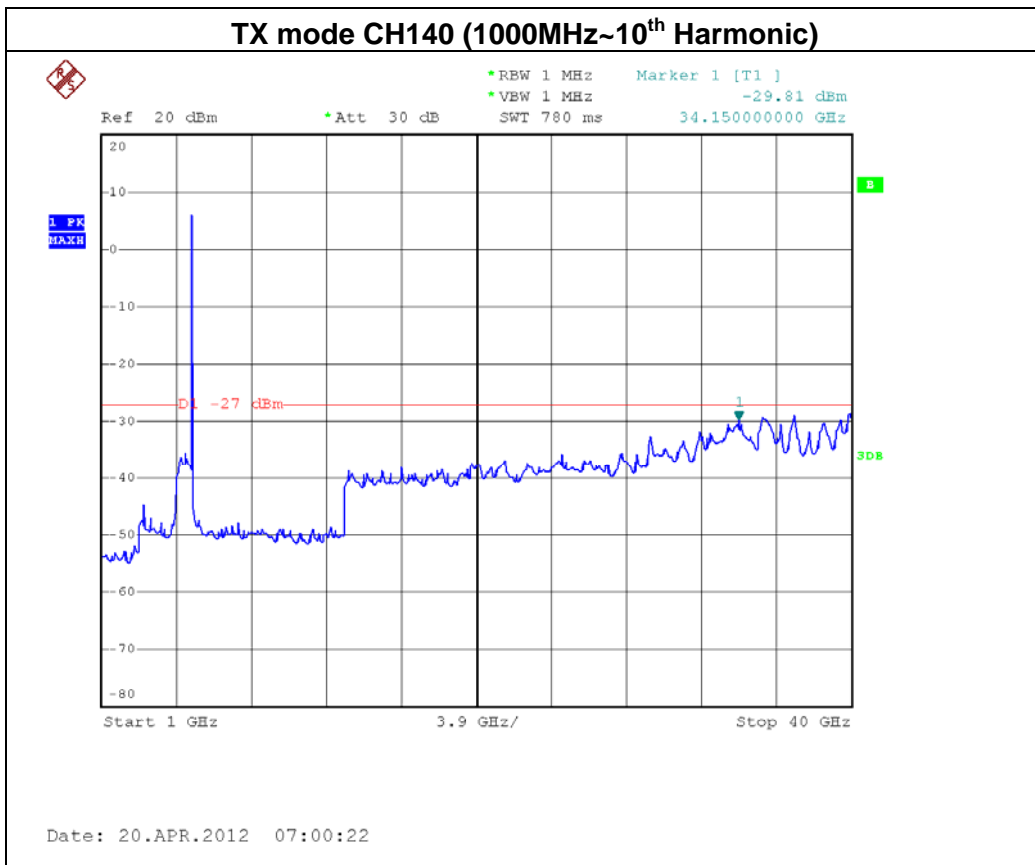
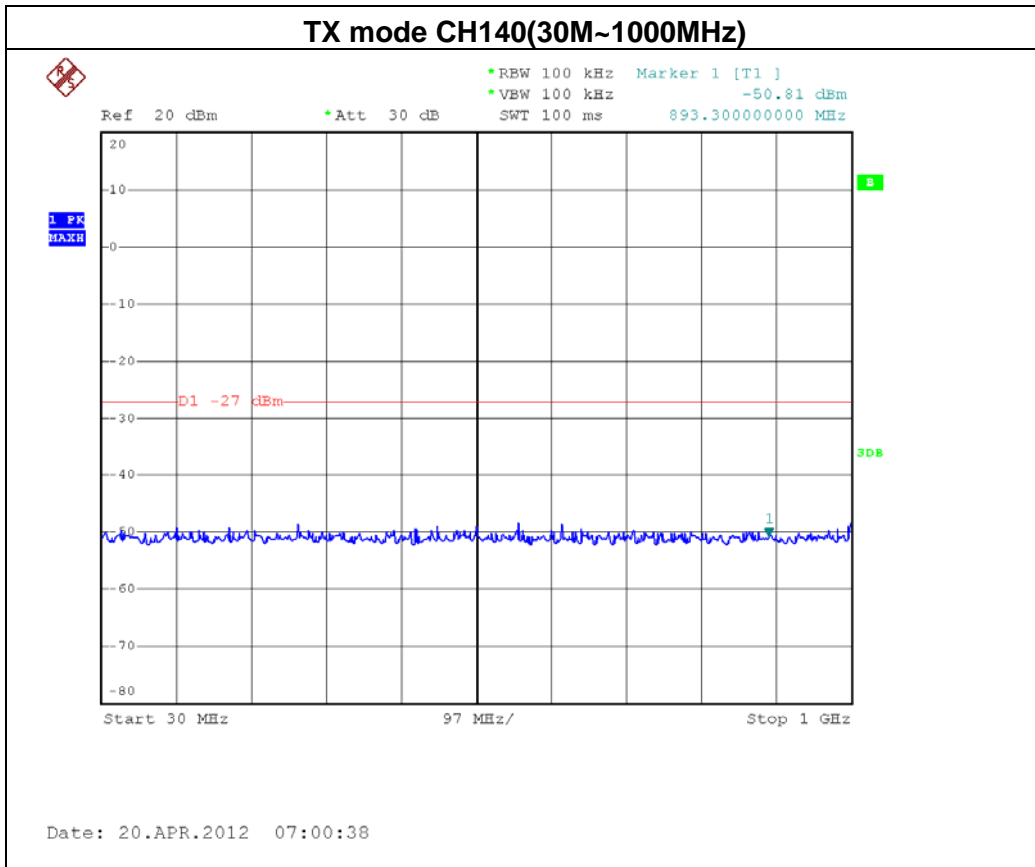
TX mode CH140



Date: 20.APR.2012 07:01:30







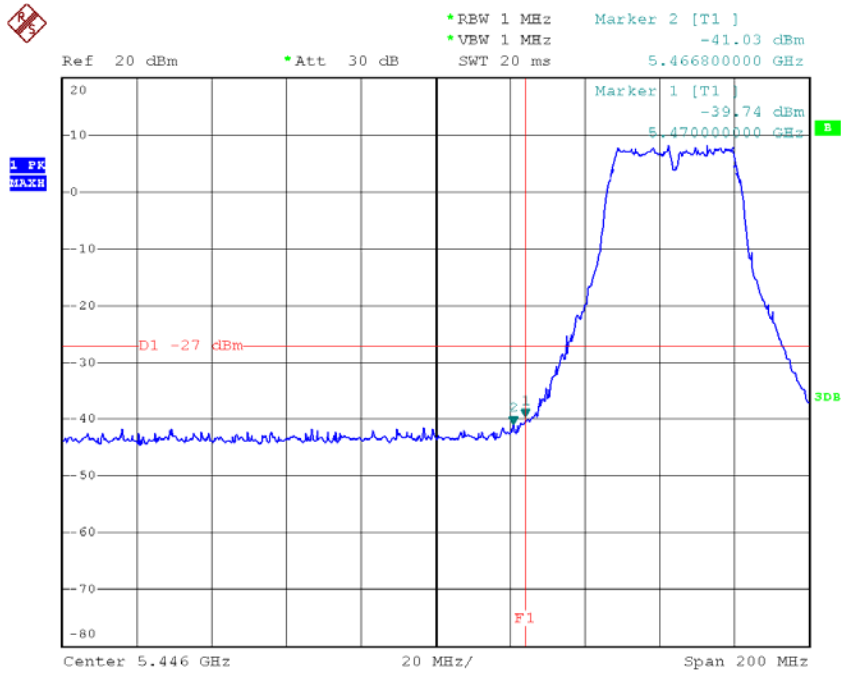


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 ° C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/ CH102, CH110 (ANT 1)		

Channel of Worst Data: CH102			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5470.00	-39.74	5728.80	-43.62
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

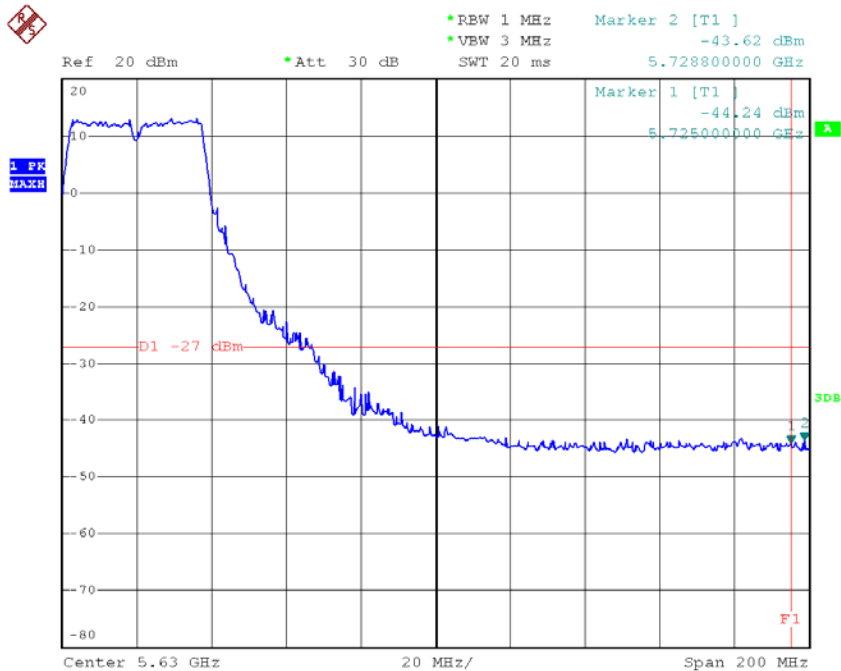


TX mode CH102

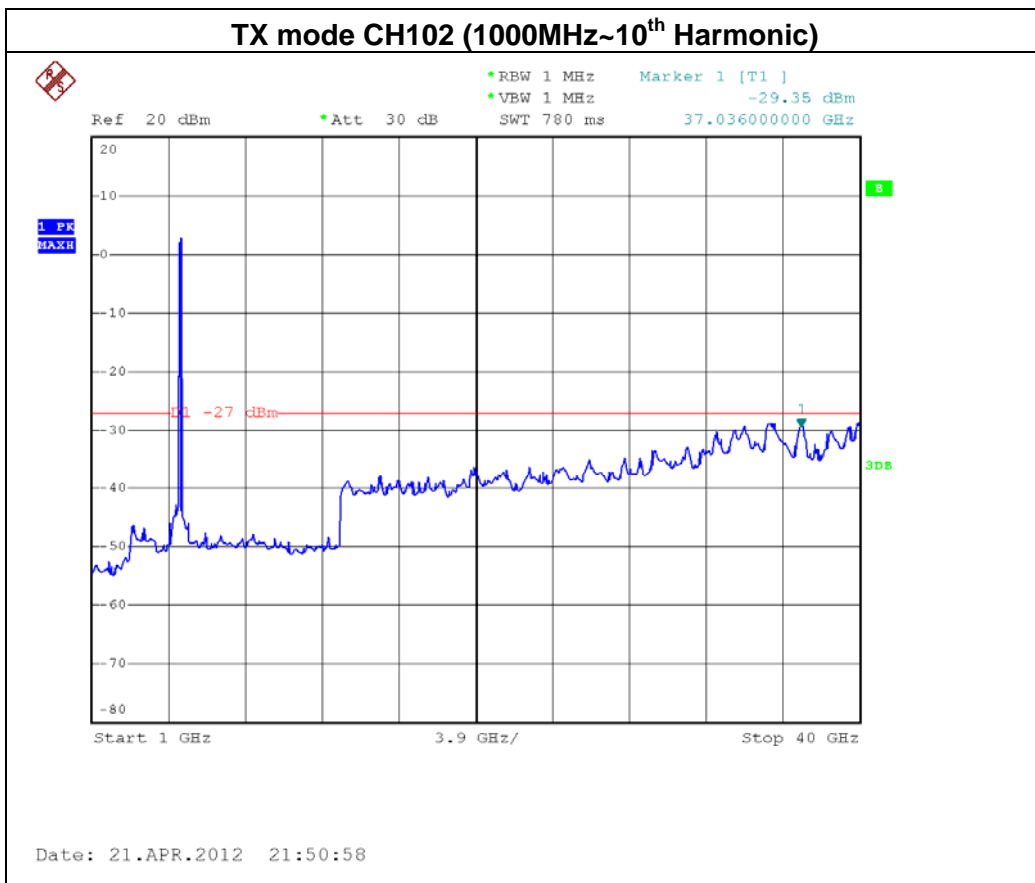
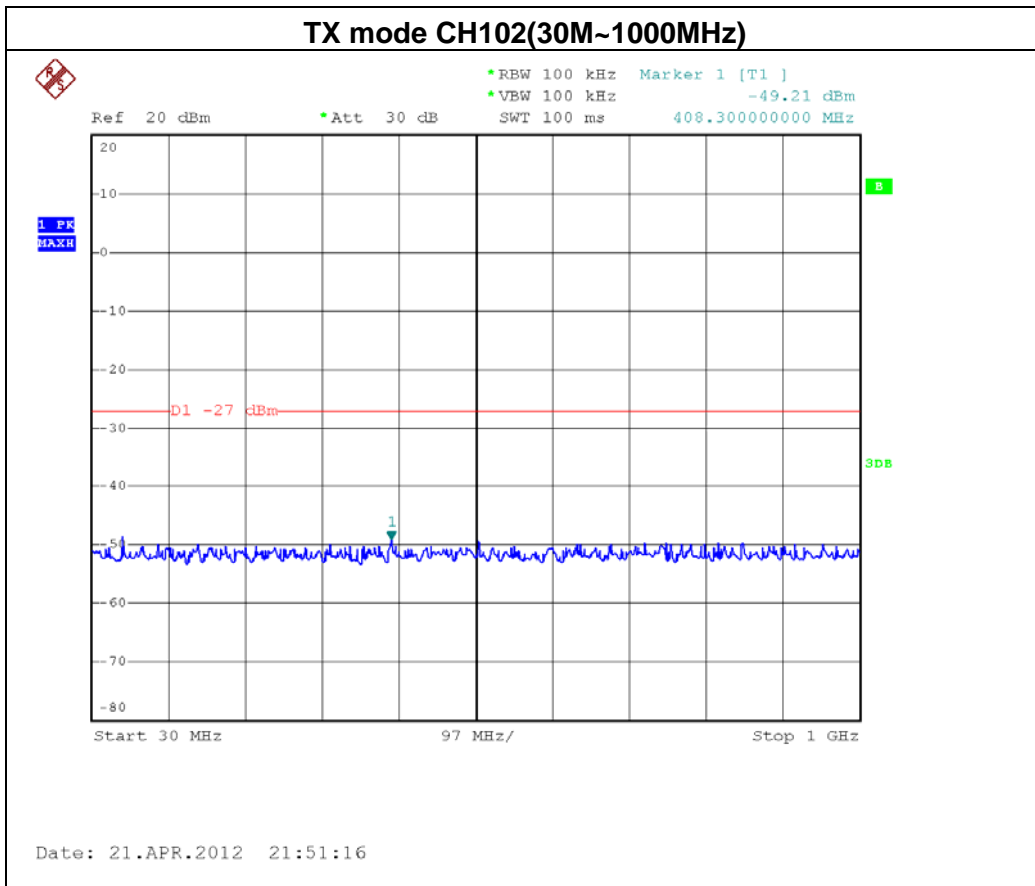


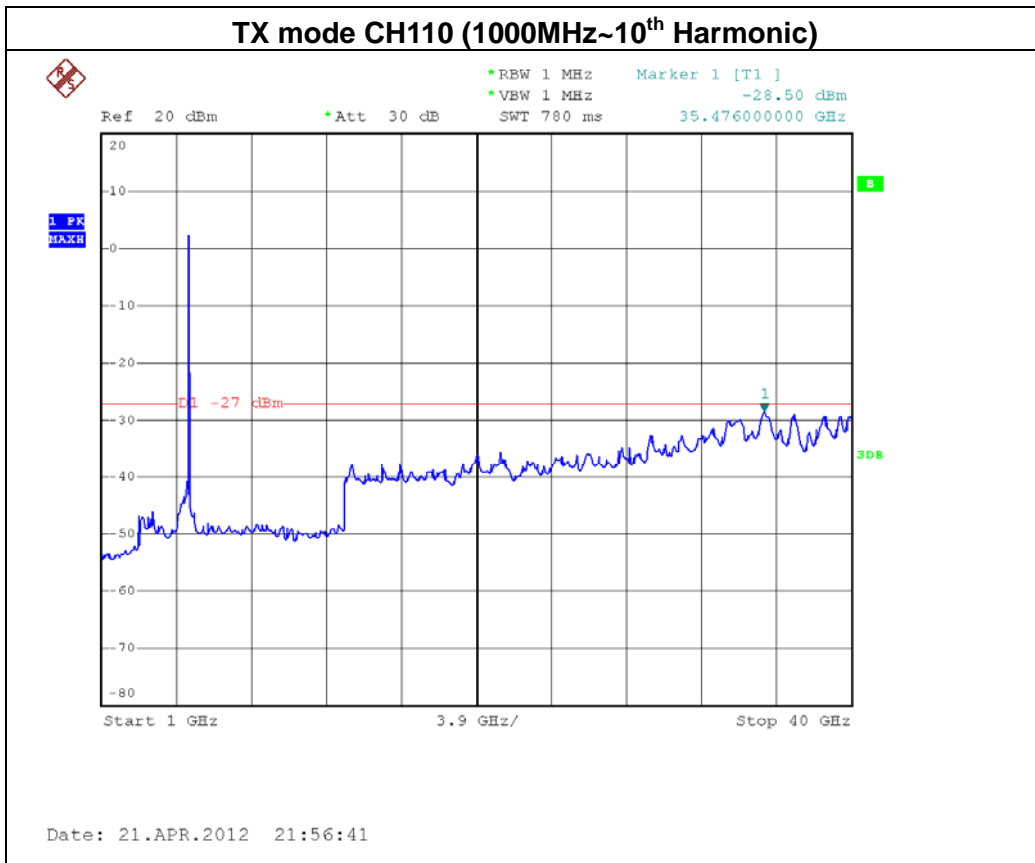
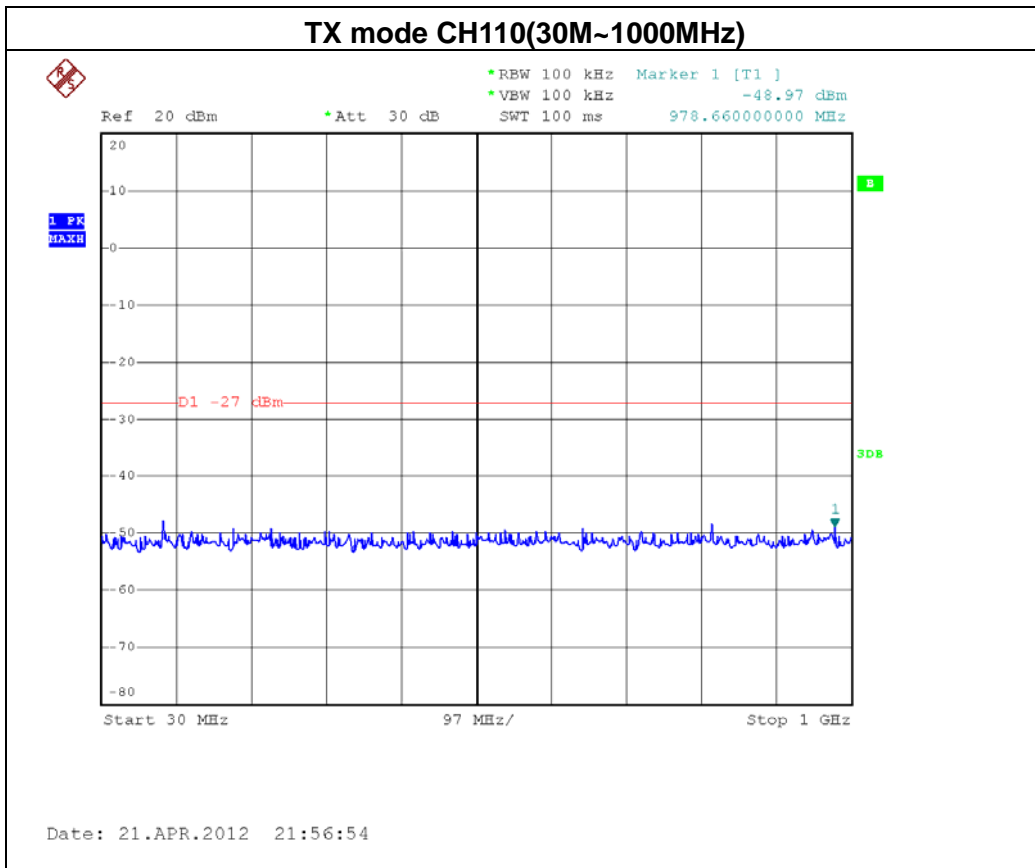
Date: 21.APR.2012 21:52:12

TX mode CH110



Date: 22.JUN.2012 16:45:51





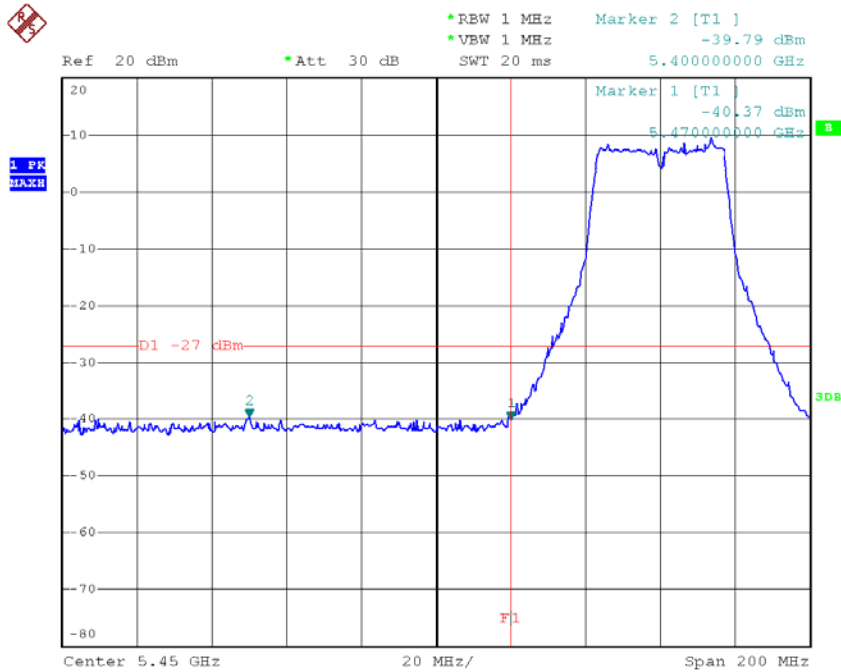


EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 ° C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/ CH102, CH110 (ANT 2)		

Channel of Worst Data: CH102			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5470.00	-40.37	5725.00	-45.50
Limit: -27 dBm/1MHz		Result:PASS	
Measurement method: S.A Read value+Ant gain+cable loss			

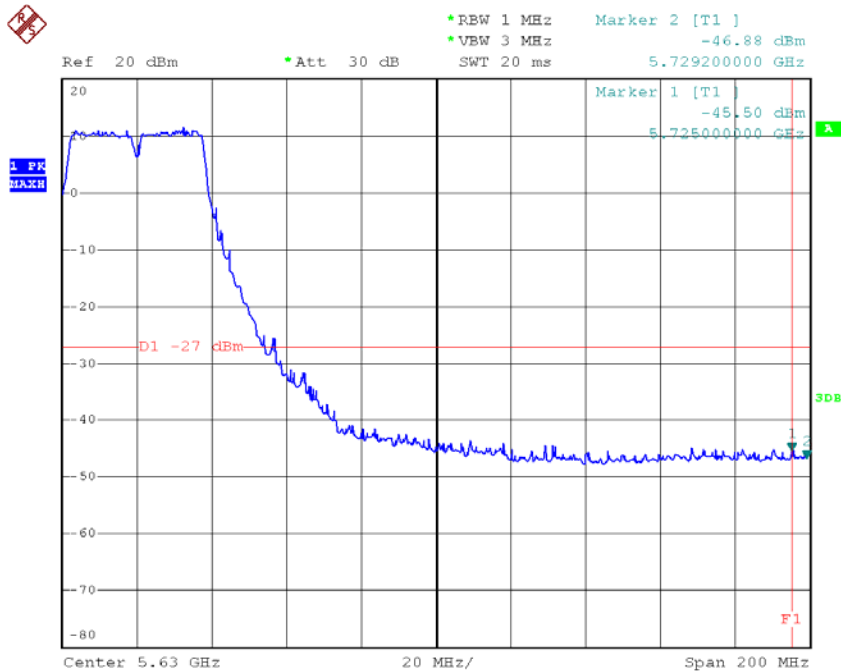


TX mode CH102

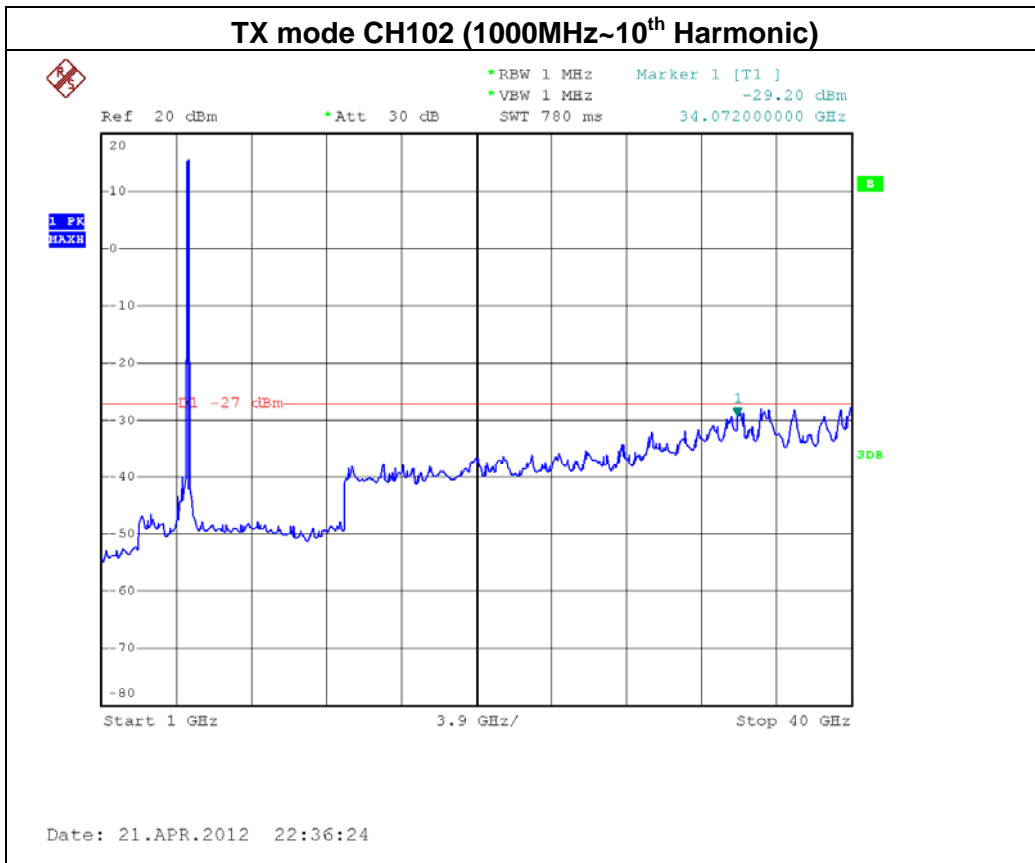
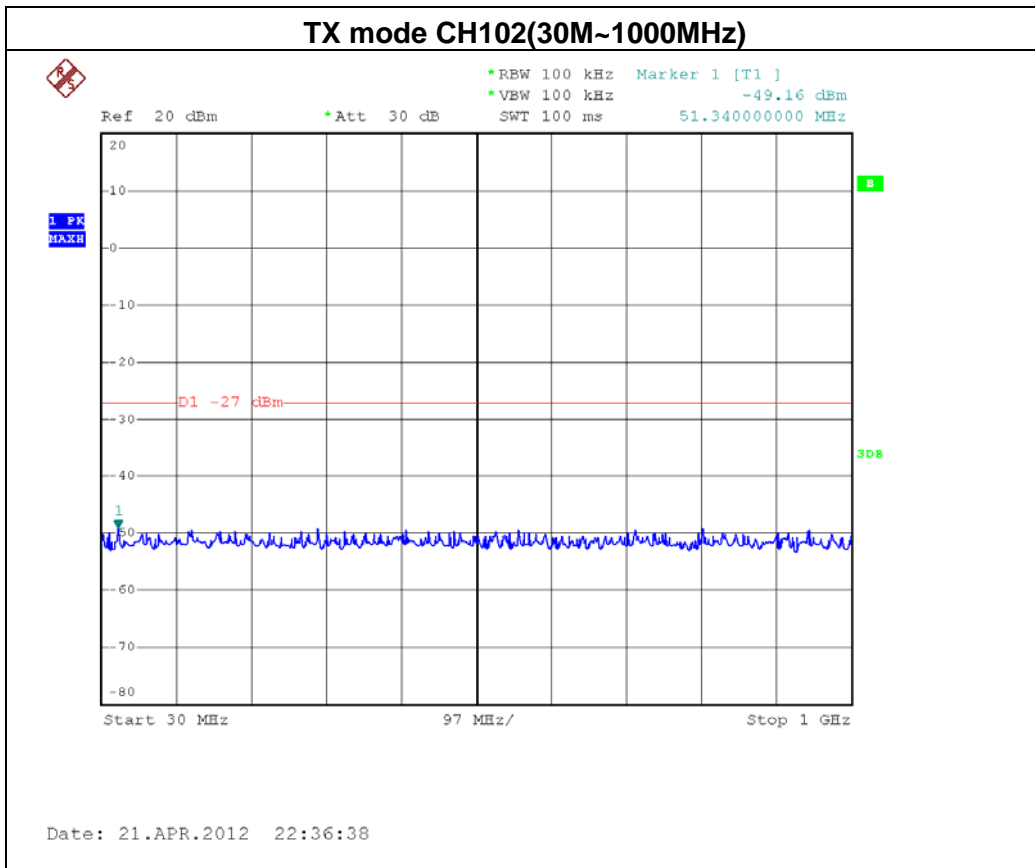


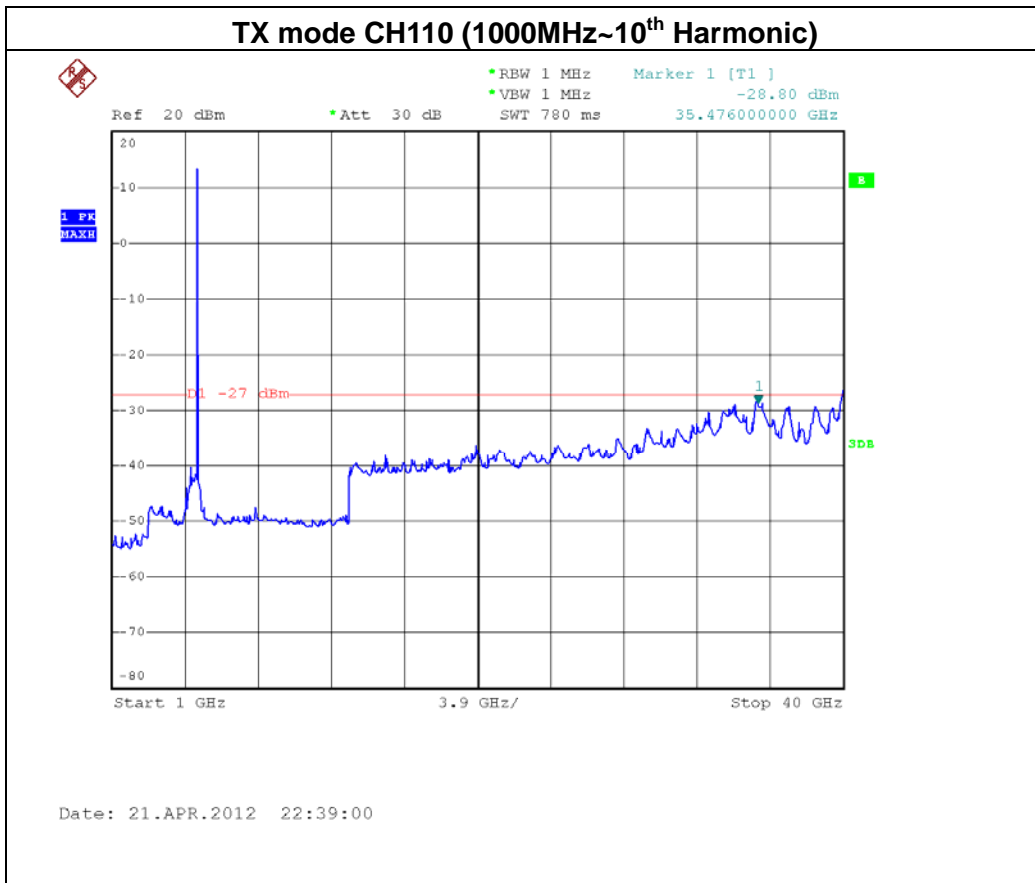
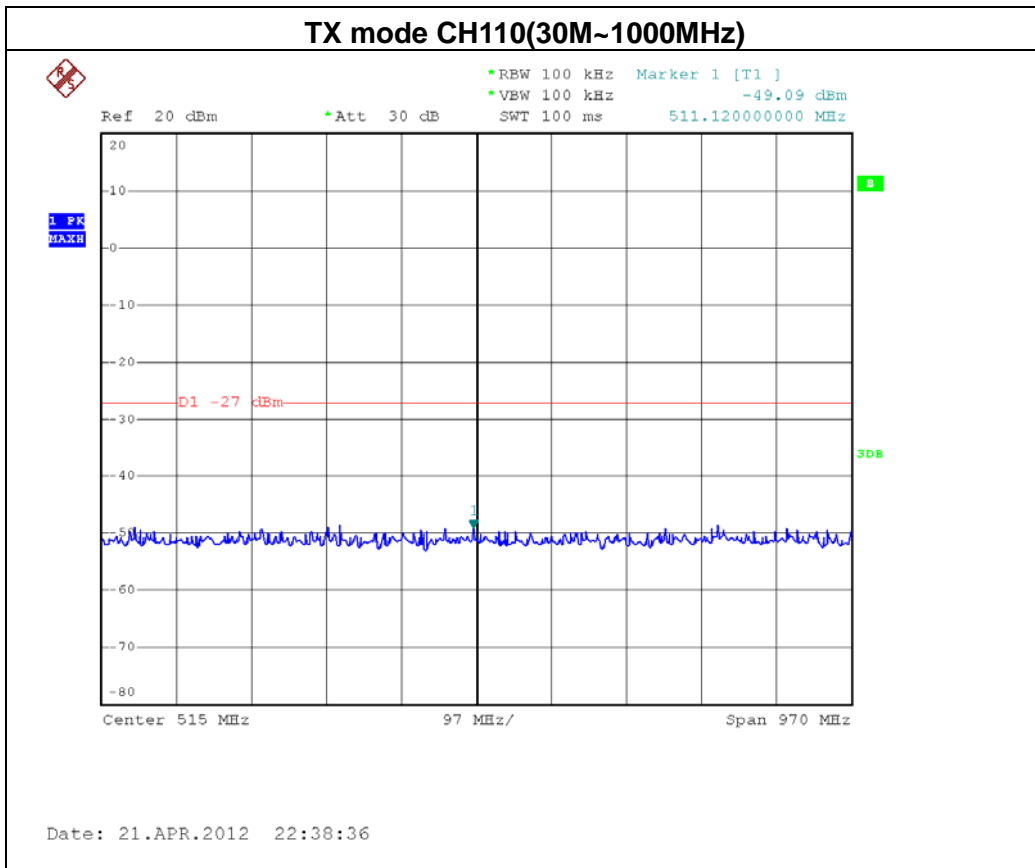
Date: 21.APR.2012 22:35:46

TX mode CH110



Date: 22.JUN.2012 16:47:37







8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Power Spectral Density	4 dBm	5150 - 5250	PASS
	11 dBm	5250 - 5350	PASS
	11 dBm	5470 - 5725	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2011	Nov.26.2012

Remark: "N/A" denotes no model name, serial no. or calibration specified.

8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

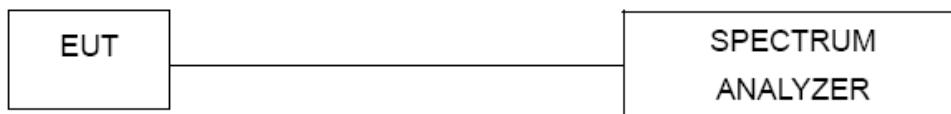
b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	= 1 MHz.
VB	≥ 3 MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

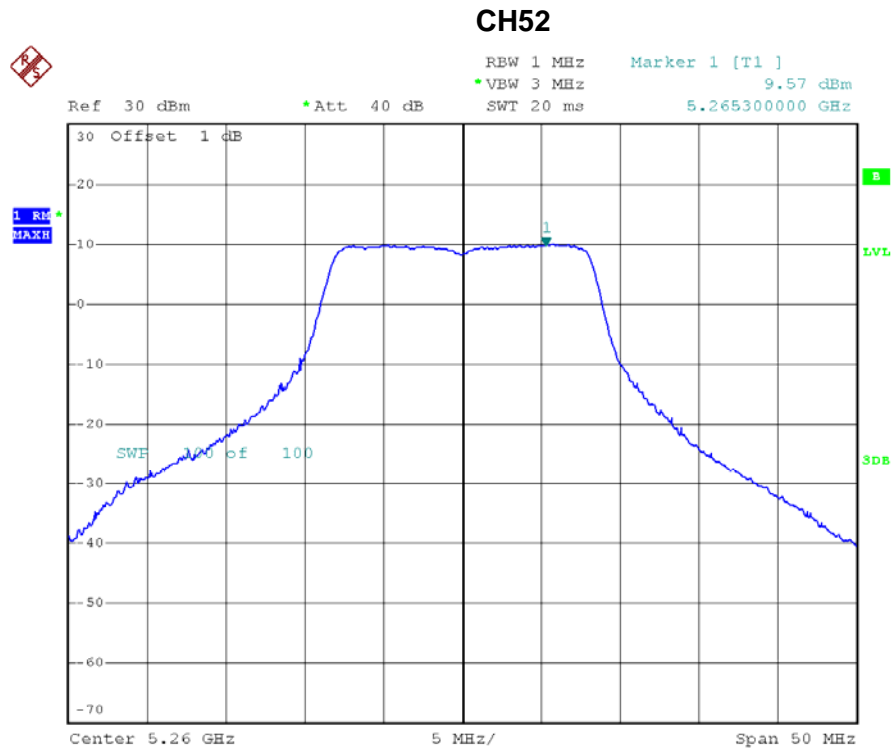
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



8.1.6 TEST RESULTS

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX A Mode/CH52, CH56, CH64		

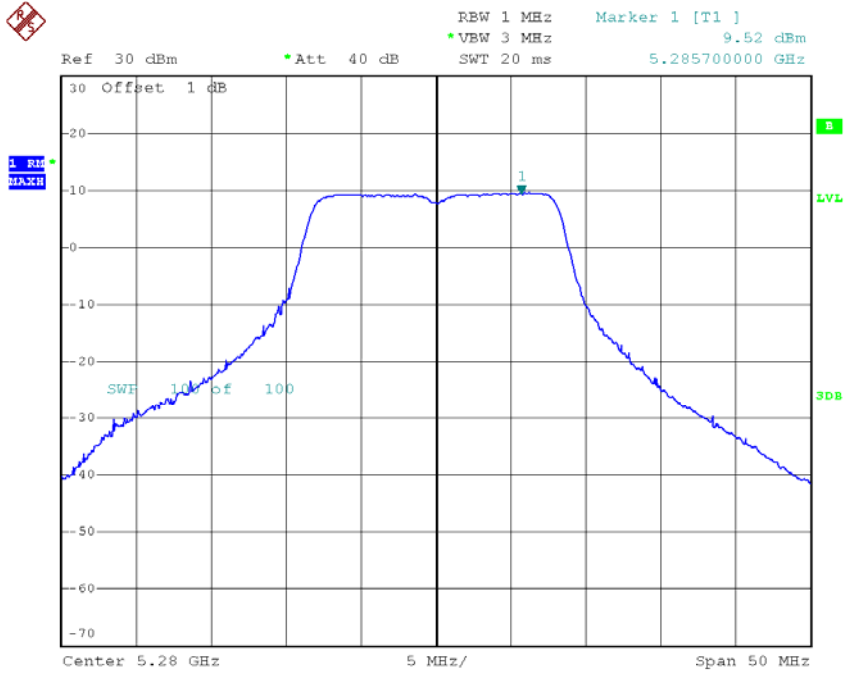
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH52	5260	9.57	11
CH56	5280	9.52	11
CH64	5320	9.85	11



Date: 30.MAY.2012 05:56:13

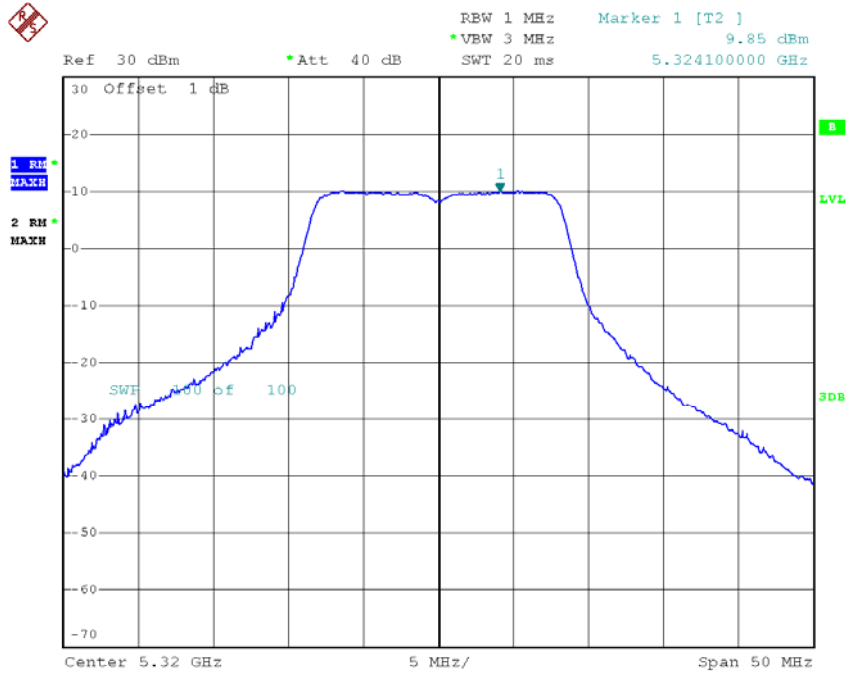


CH56



Date: 30.MAY.2012 05:57:43

CH64



Date: 30.MAY.2012 06:09:13



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/CH52, CH56, CH64		

ANT 1			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH52	5260	4.57	11
CH56	5280	4.25	11
CH64	5320	4.00	11

ANT 2			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH52	5260	4.59	11
CH56	5280	4.34	11
CH64	5320	4.47	11

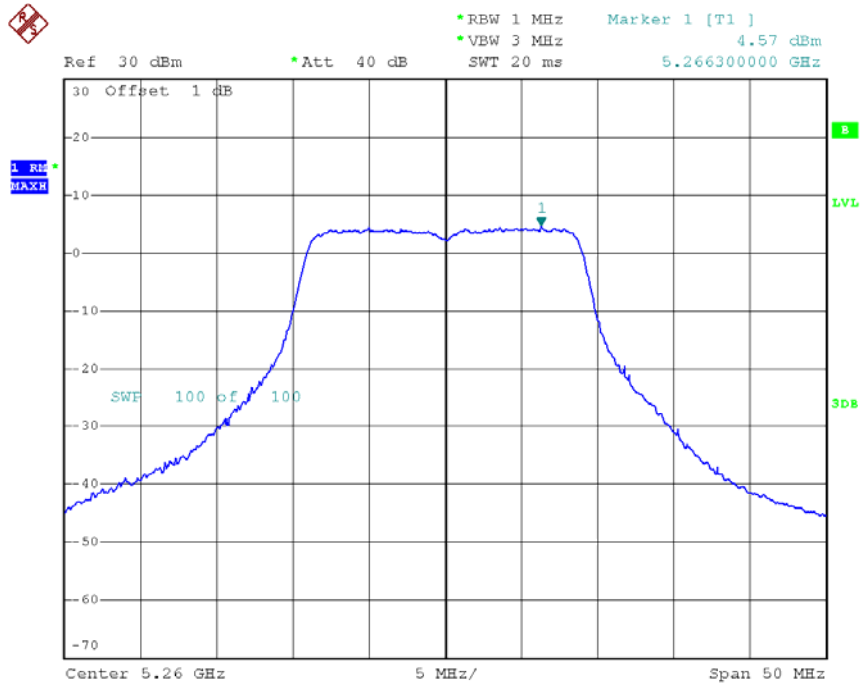
(ANT 1+ANT 2)			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH52	5260	7.59	10.6
CH56	5280	7.31	10.6
CH64	5320	7.25	10.6

Remark :

- (1) **The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:
 $((\text{dBm}/\text{Chain 1})/10^{\wedge}\text{Log}) + ((\text{dBm}/\text{Chain 2})/10^{\wedge}\text{log}) + ((\text{dBm}/\text{ChainN})/10^{\wedge}\text{log}) =$
Combined peak output power in mW.**
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=6.4; So,the out power limit is 24-6.4+6=23.6; and power density limit is 11-6.4+6=10.6**

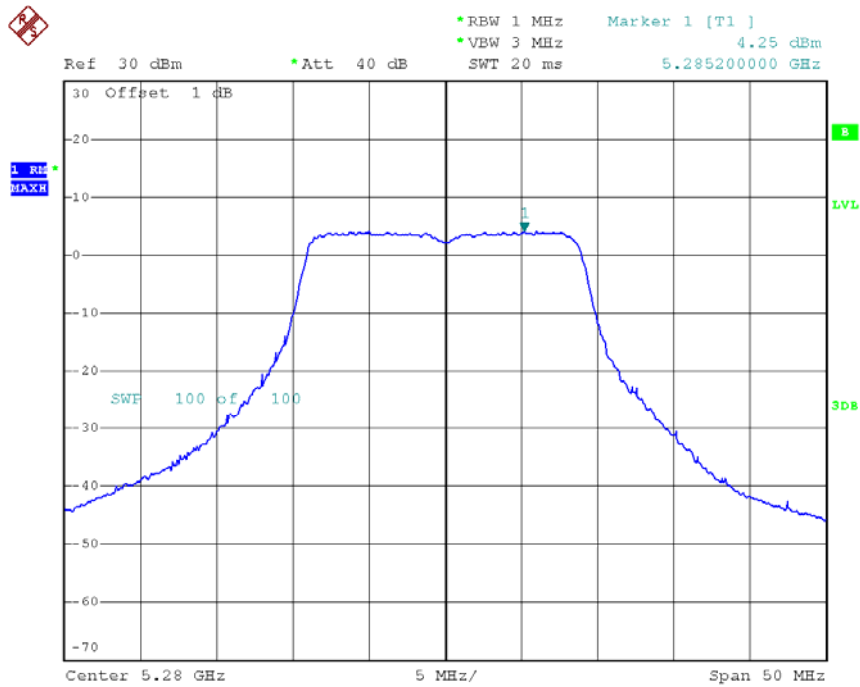


CH52-ANT 1



Date: 15.JUL.2012 13:37:22

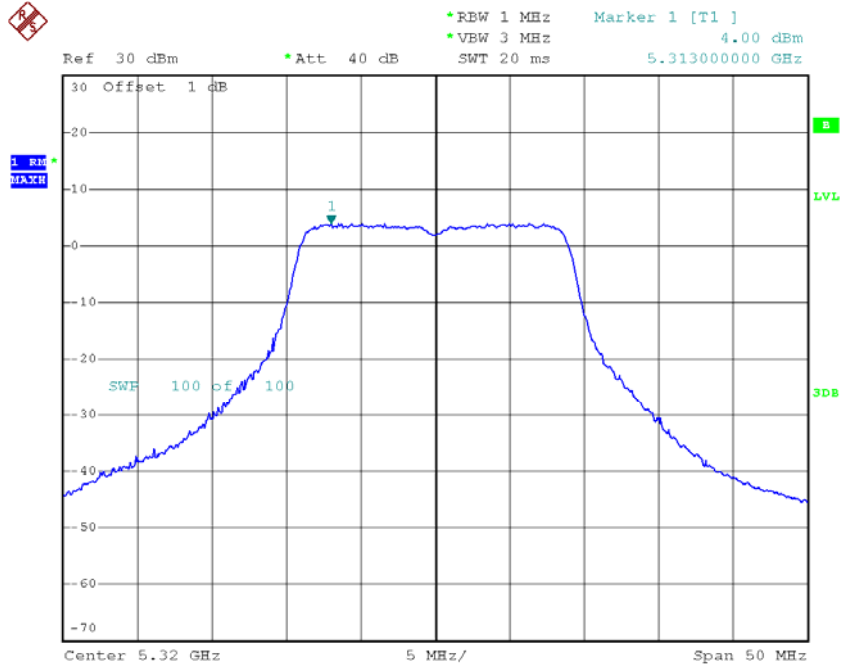
CH56-ANT 1



Date: 15.JUL.2012 13:38:54

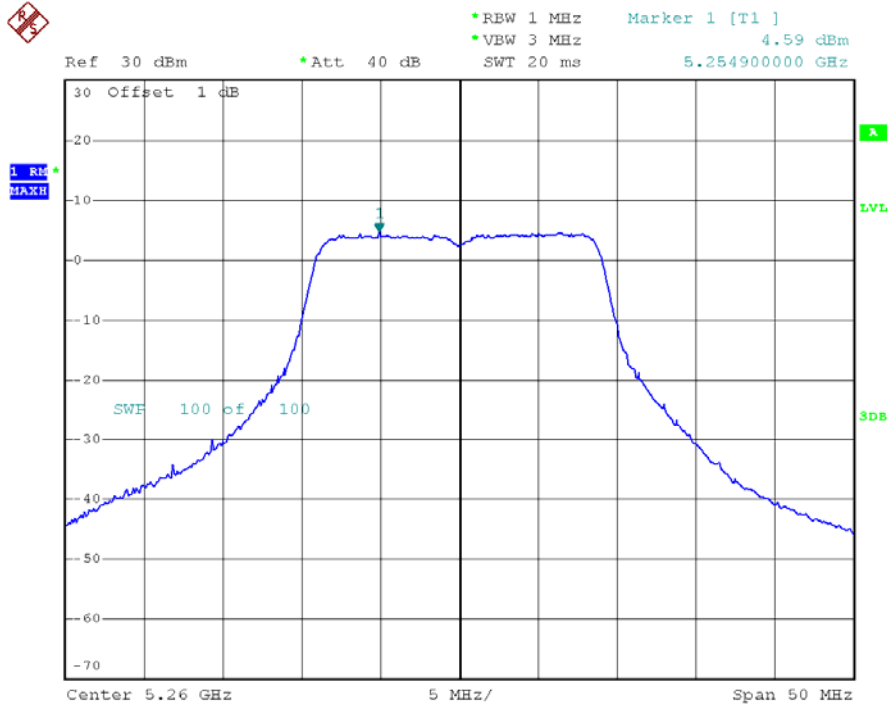


CH64-ANT 1



Date: 15.JUL.2012 13:39:46

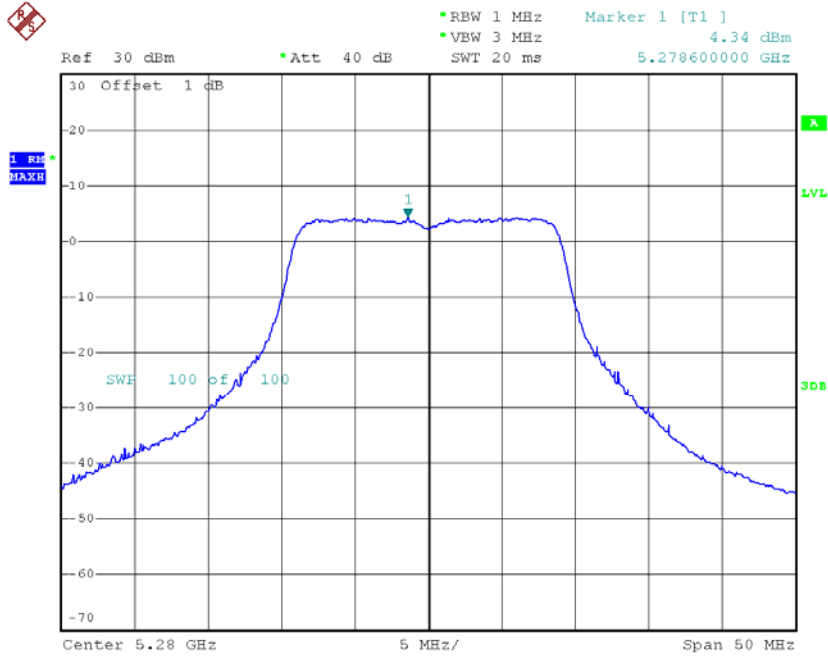
CH52-ANT 2



Date: 15.JUL.2012 13:11:31

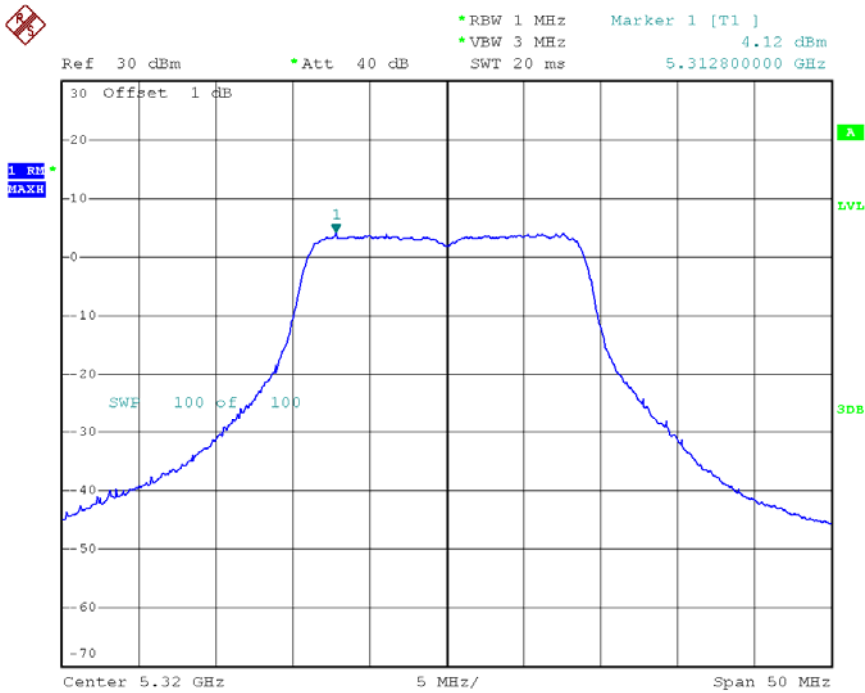


CH56-ANT 2



Date: 15.JUL.2012 13:14:10

CH64-ANT 2



Date: 15.JUL.2012 13:15:47



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/CH54, CH62		

ANT 1			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH54	5270	3.39	11
CH62	5310	-1.04	11

ANT 2			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH54	5270	3.28	11
CH62	5310	-0.61	11

(ANT 1+ANT 2)			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH54	5270	6.35	10.6
CH62	5310	2.19	10.6

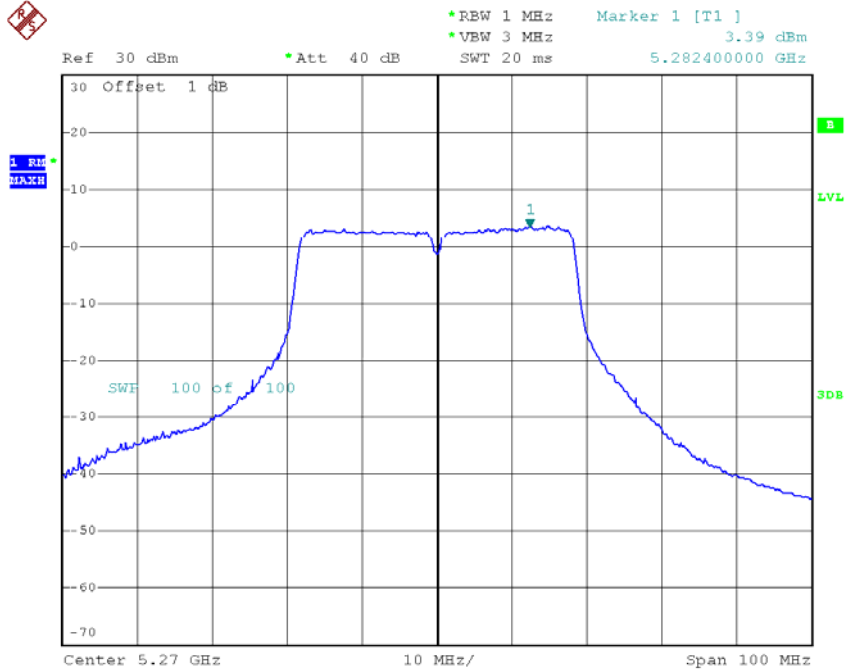
Remark :

- (1) **The MIMO test requirement, RF power density shall measure each transmitter chain by using channel power density method. And after obtain each individual transmitter chain power density, then sum the power density by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\text{Log}}) + ((\text{dBm}/\text{Chain 2})/10^{\text{log}}) + ((\text{dBm}/\text{Chain N})/10^{\text{log}}) =$$
Combined power density in mW.**
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=6.4; So,the out power limit is 24-6.4+6=23.6; and power density limit is 11-6.4+6=10.6**

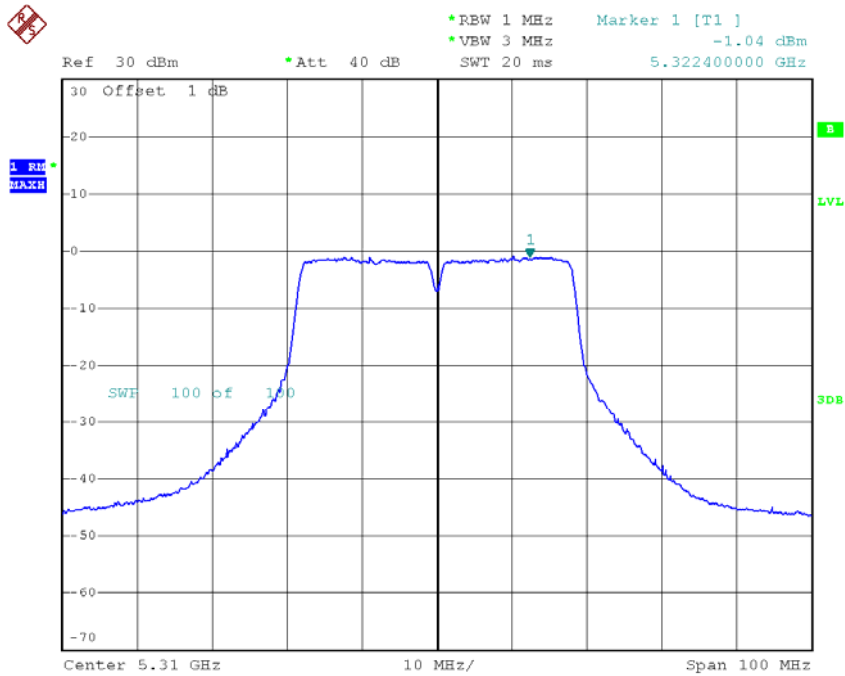


CH54-ANT 1



Date: 30.MAY.2012 07:08:03

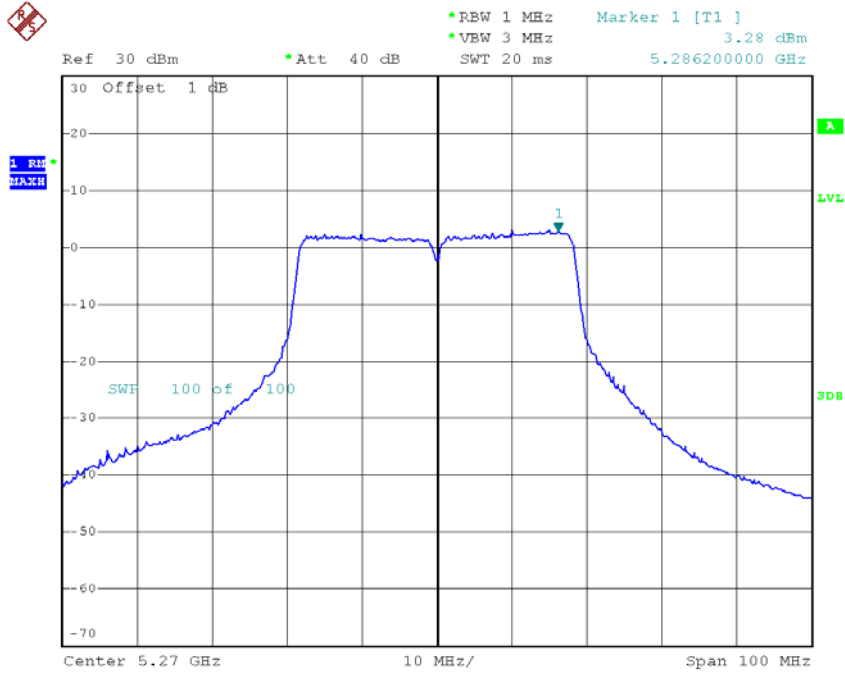
CH62-ANT 1



Date: 30.MAY.2012 07:12:15

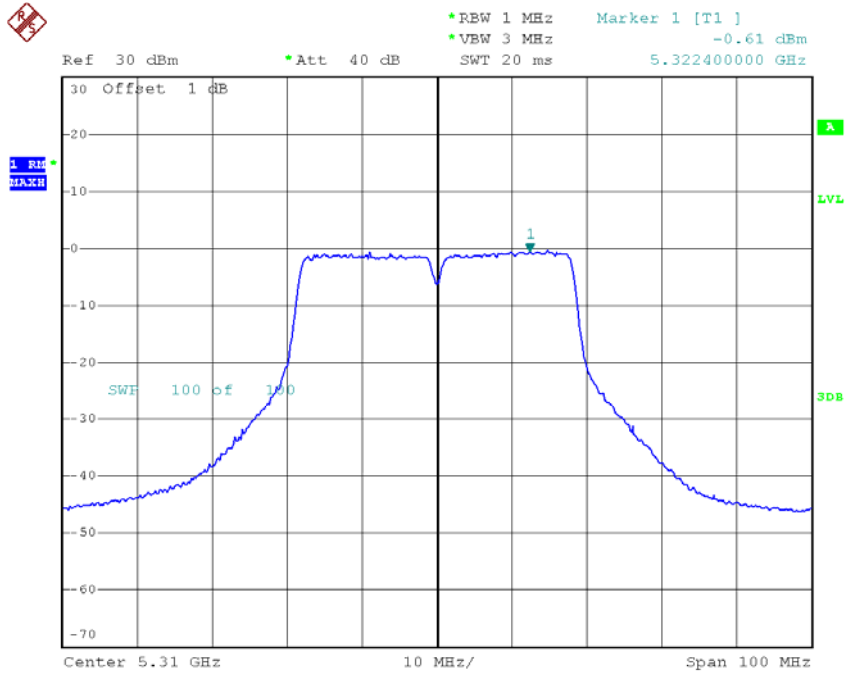


CH54-ANT 2



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

CH62-ANT 2



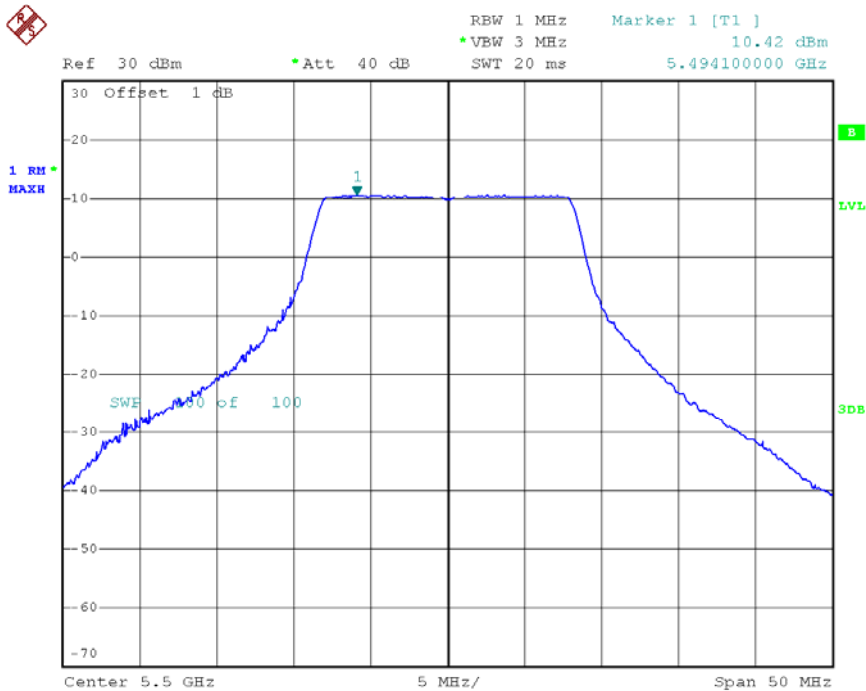
Date: 31.MAY.2012 16:20:33



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX A Mode/CH100, CH112, CH140		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH100	5500	10.42	11
CH112	5560	10.37	11
CH140	5700	8.30	11

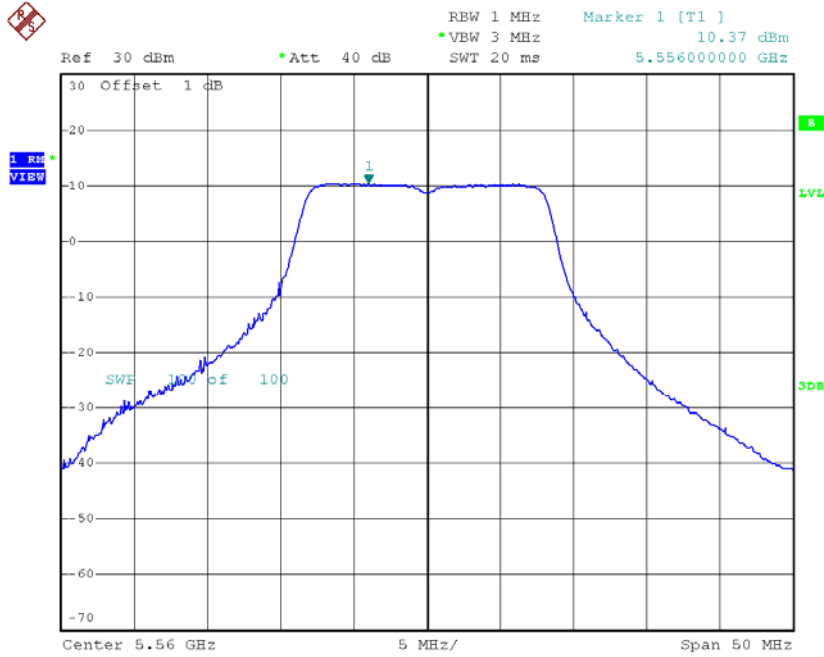
CH100



Date: 30.MAY.2012 06:11:15

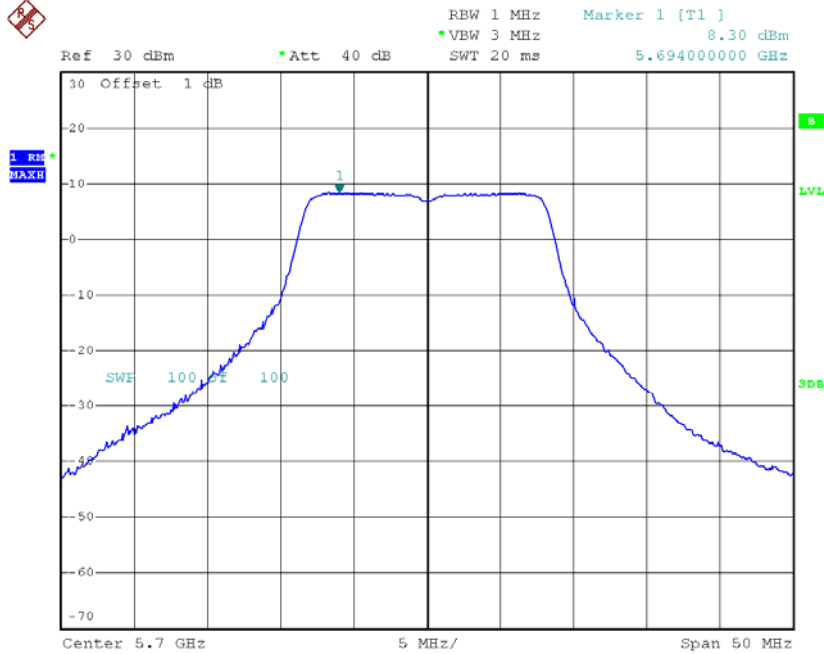


CH112



Date: 30.MAY.2012 06:14:02

CH140



Date: 30.MAY.2012 06:17:43



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/CH100, CH112, CH140		

ANT 1			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH100	5500	4.70	11
CH112	5560	4.38	11
CH140	5700	4.57	11

ANT 2			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH100	5500	4.40	11
CH112	5560	3.92	11
CH140	5700	4.47	11

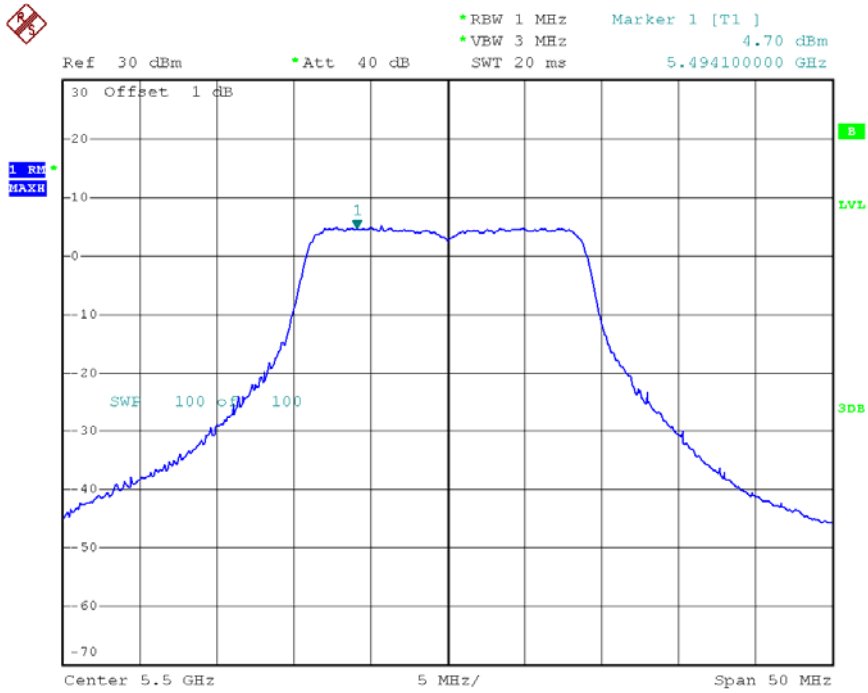
(ANT 1+ANT 2)			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH100	5500	7.56	10.6
CH112	5560	7.17	10.6
CH140	5700	7.53	10.6

Remark :

- (1) **The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:
 $((\text{dBm}/\text{Chain 1})/10^{\wedge}\text{Log}) + ((\text{dBm}/\text{Chain 2})/10^{\wedge}\text{log}) + ((\text{dBm}/\text{ChainN})/10^{\wedge}\text{log}) =$
Combined peak output power in mW.**
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=6.4; So,the out power limit is 24-6.4+6=23.6; and power density limit is 11-6.4+6=10.6**

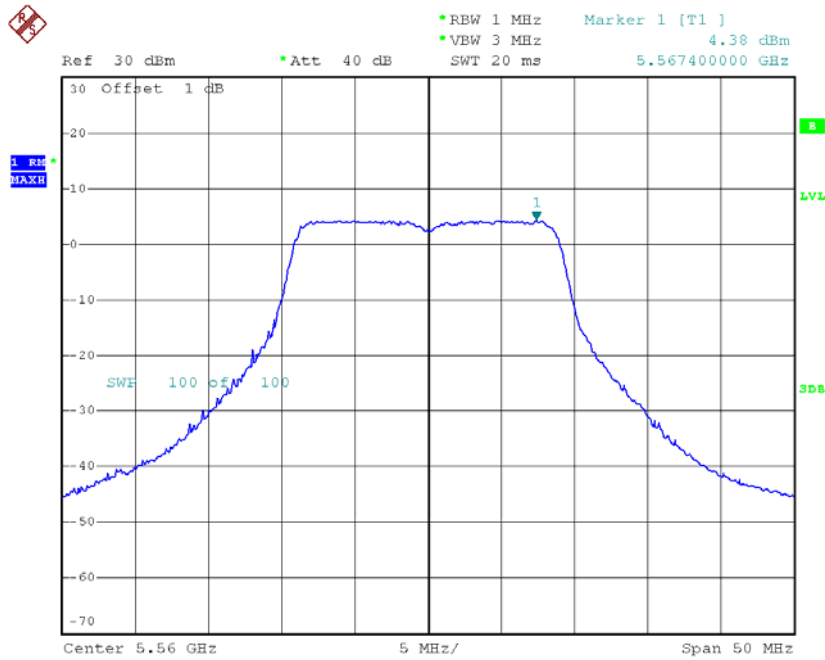


CH100-ANT 1



Date: 15.JUL.2012 13:40:20

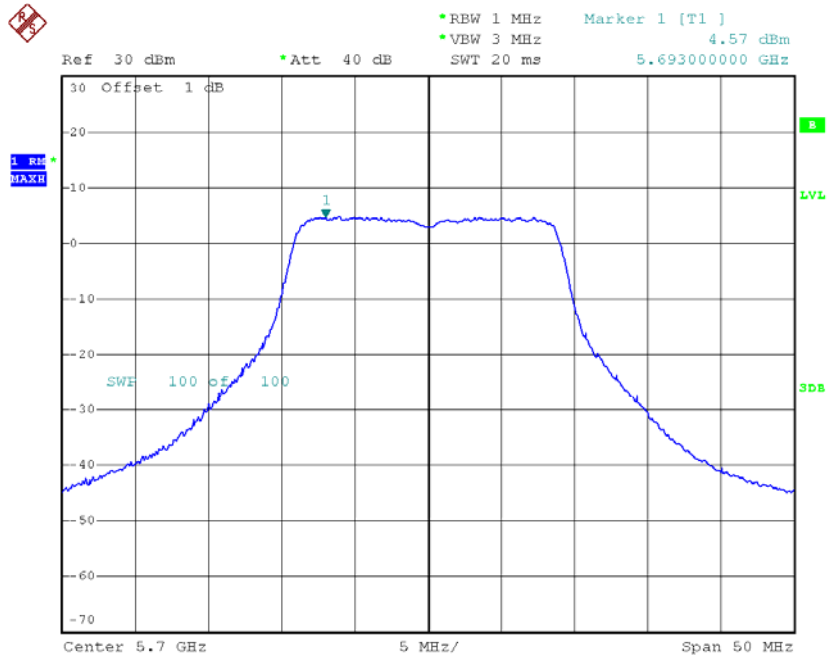
CH112-ANT 1



Date: 15.JUL.2012 13:46:08

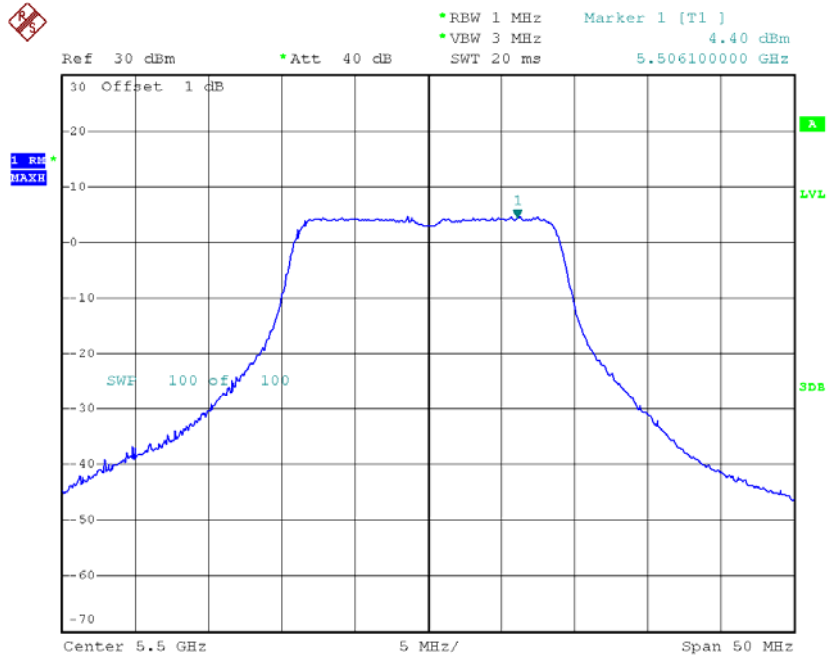


CH140-ANT 1



Date: 15.JUL.2012 13:47:42

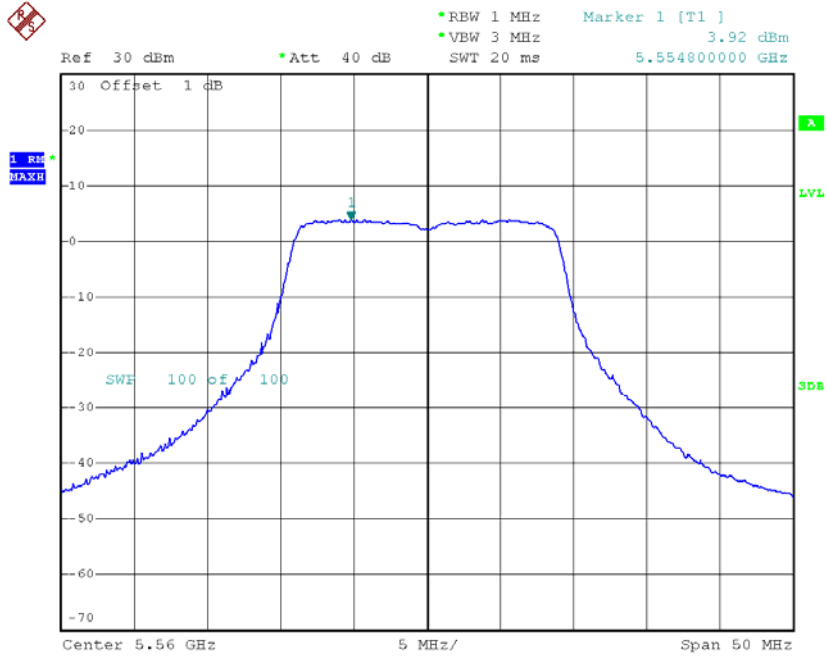
CH100-ANT 2



Date: 15.JUL.2012 13:17:34

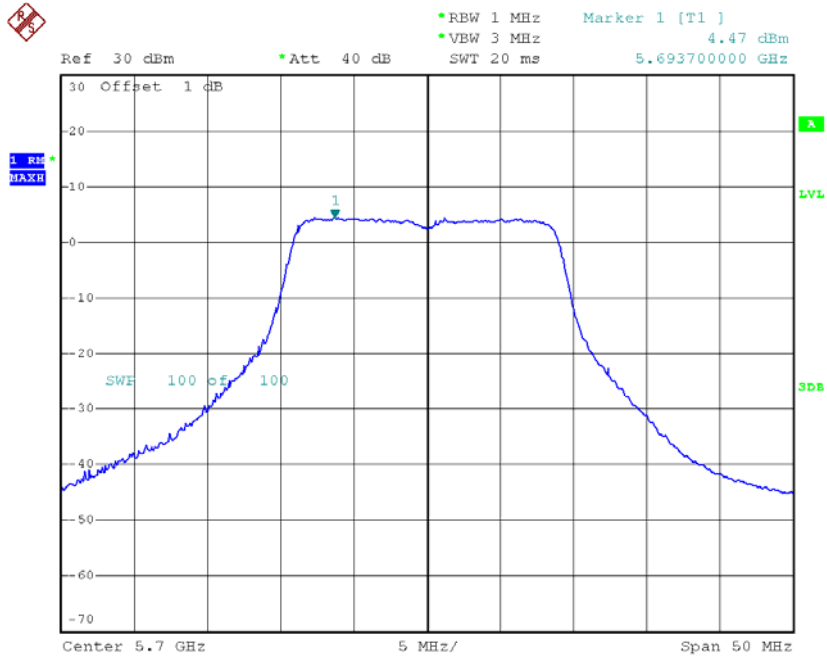


CH112-ANT 2



Date: 15.JUL.2012 13:19:30

CH140-ANT 2



Date: 15.JUL.2012 13:20:15



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/CH102, CH110		

ANT 1			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH102	5510	0.77	11
CH110	5550	4.02	11

ANT 2			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH102	5510	0.77	11
CH110	5550	3.90	11

(ANT 1+ANT 2)			
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH102	5510	3.78	10.6
CH110	5550	6.97	10.6

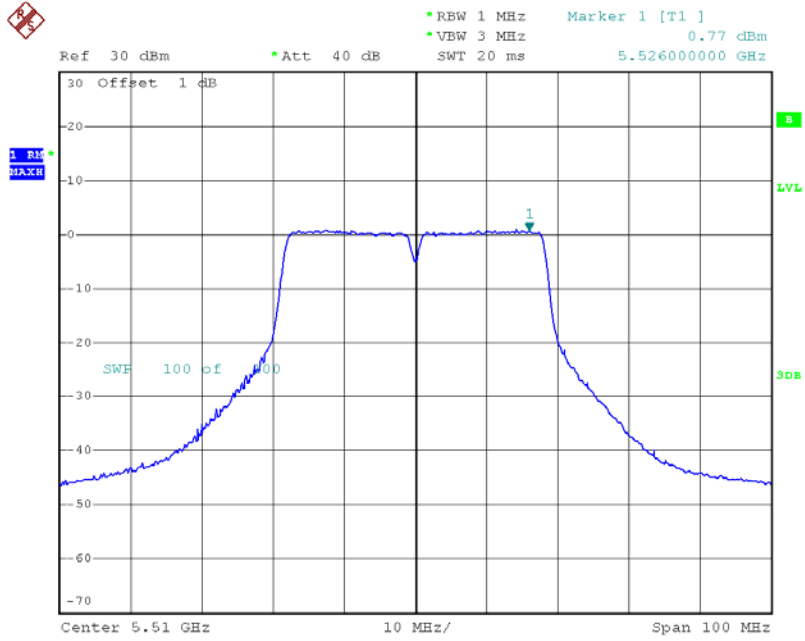
Remark :

- (1) **The MIMO test requirement, RF power density shall measure each transmitter chain by using channel power density method. And after obtain each individual transmitter chain power density, then sum the power density by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\text{Log}}) + ((\text{dBm}/\text{Chain 2})/10^{\text{log}}) + ((\text{dBm}/\text{Chain N})/10^{\text{log}}) =$$
Combined power density in mW.**
- (2) **Antenna Gain 1=6.4 dBi**
- (3) **This EUT supports MIMO 2T2R, all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=6.4; So,the out power limit is 24-6.4+6=23.6; and power density limit is 11-6.4+6=10.6**

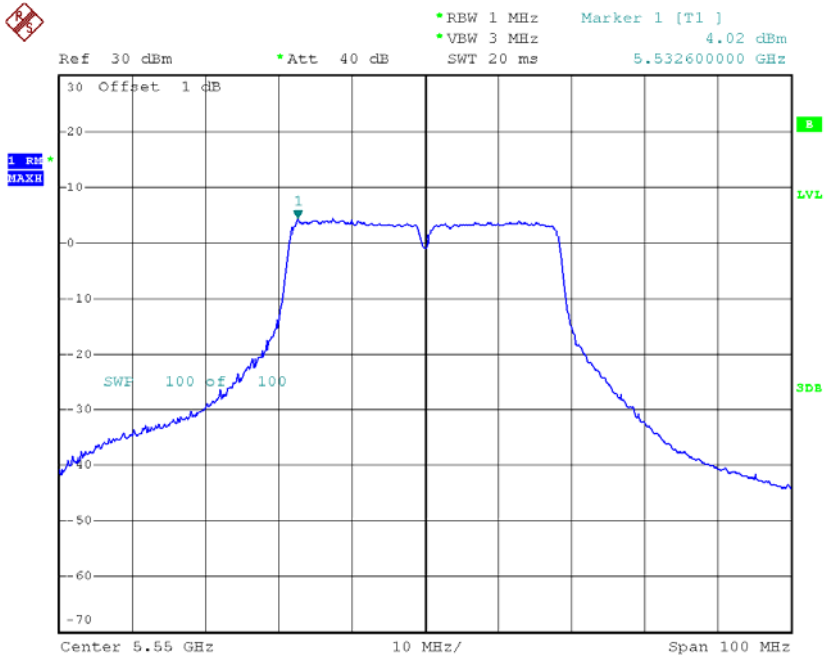


CH102-ANT 1



Date: 30.MAY.2012 07:20:18

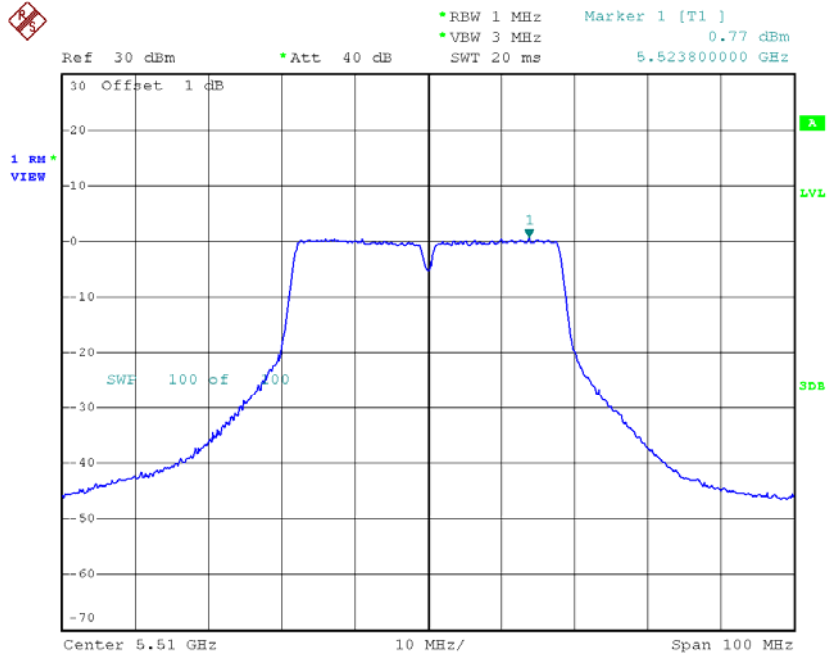
CH110-ANT 1



Date: 30.MAY.2012 07:18:24

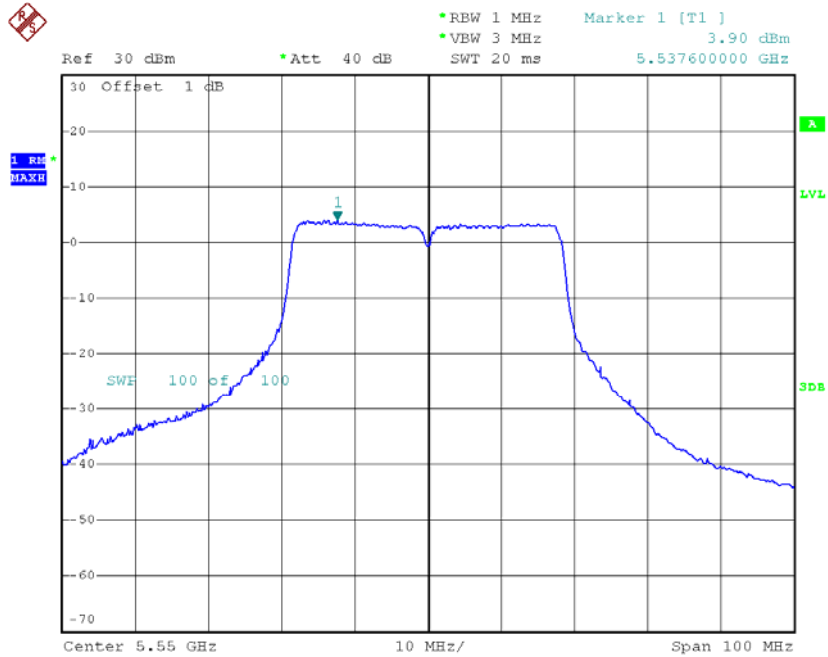


CH102-ANT 2



Date: 31.MAY.2012 16:30:14

CH110-ANT 2



Date: 31.MAY.2012 16:24:45



9. PEAK EXCURSION MEASUREMENT

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Peak Excursion Measurement	13 dB	5150 - 5250	PASS
		5250 - 5350	PASS
		5470 - 5725	PASS

9.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2011	Nov.26.2012

Remark: "N/A" denotes no model name, serial no. or calibration specified.

9.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 3000 kHz (Average Trace)
Detector	Peak (Peak Trace) / Rms (Average Trace)
Trace	Max Hold
Sweep Time	Auto

c. Peak Trace: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.

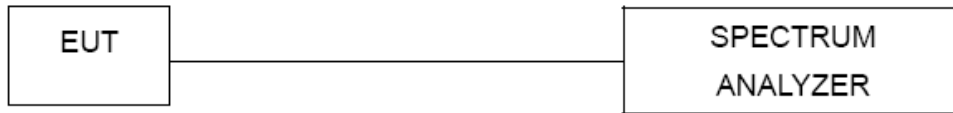
d. Average Trace: set RBW = 1 MHz, VBW = 3 MHz with RMS detector and trace average across 100 traces in power averaging mode.

9.1.3 DEVIATION FROM STANDARD

No deviation.



9.1.4 TEST SETUP



9.1.5 EUT OPERATION CONDITIONS

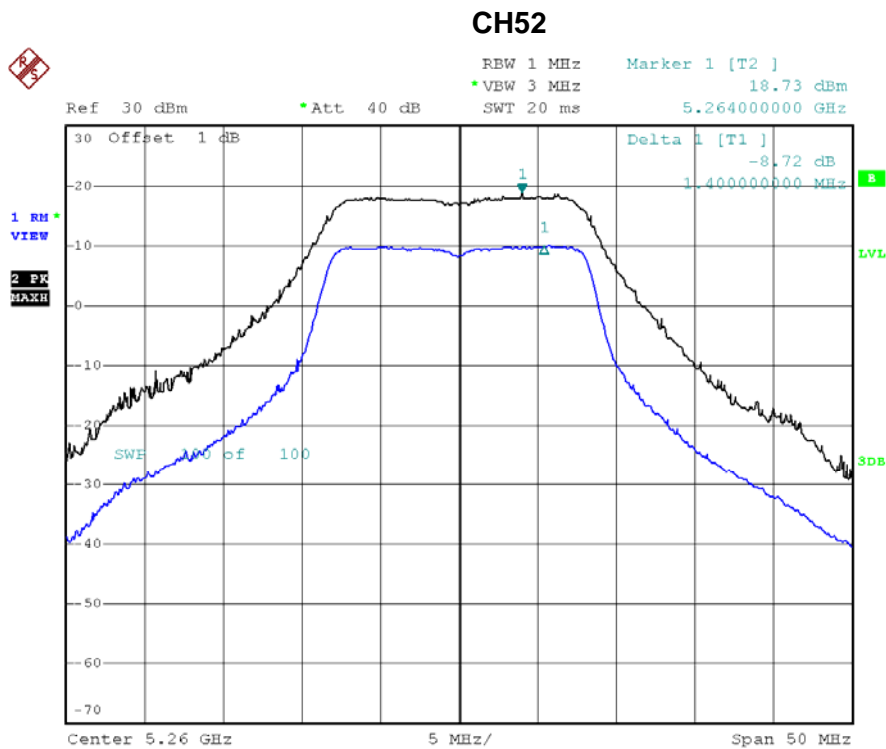
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



9.1.6 TEST RESULTS

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX A Mode/CH52, CH56, CH64		

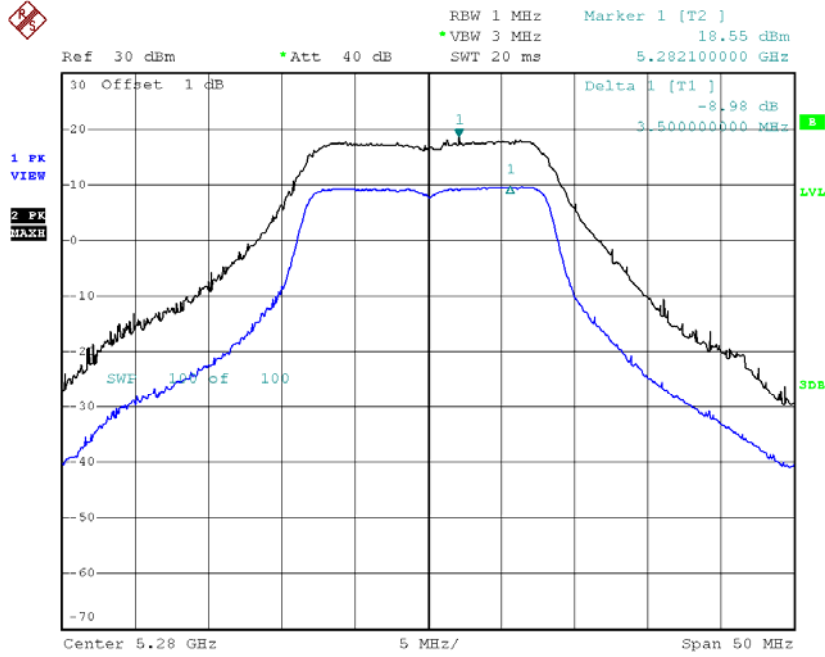
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH52	5260	8.72	13
CH56	5280	8.98	13
CH64	5320	8.10	13



Date: 30.MAY.2012 05:56:48

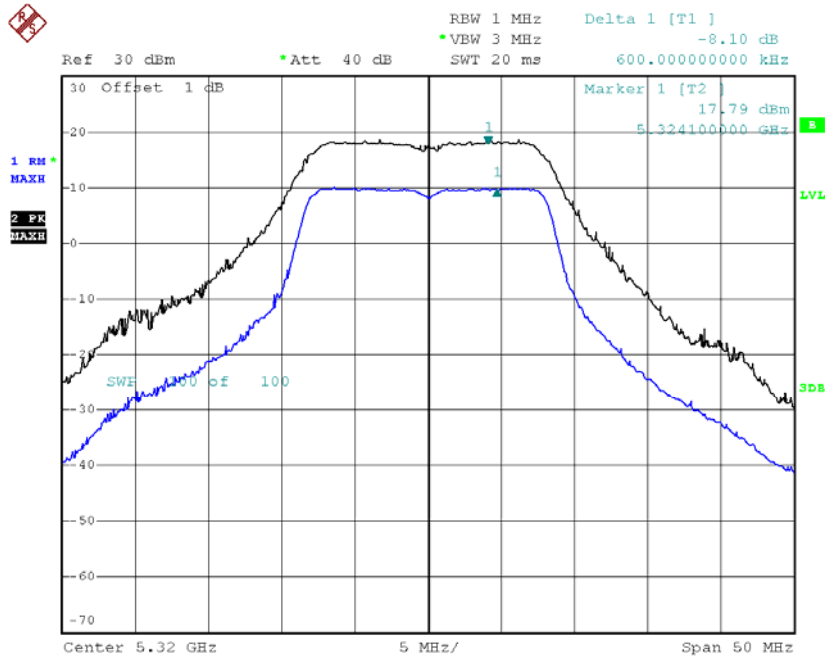


CH56



Date: 30.MAY.2012 05:59:44

CH64

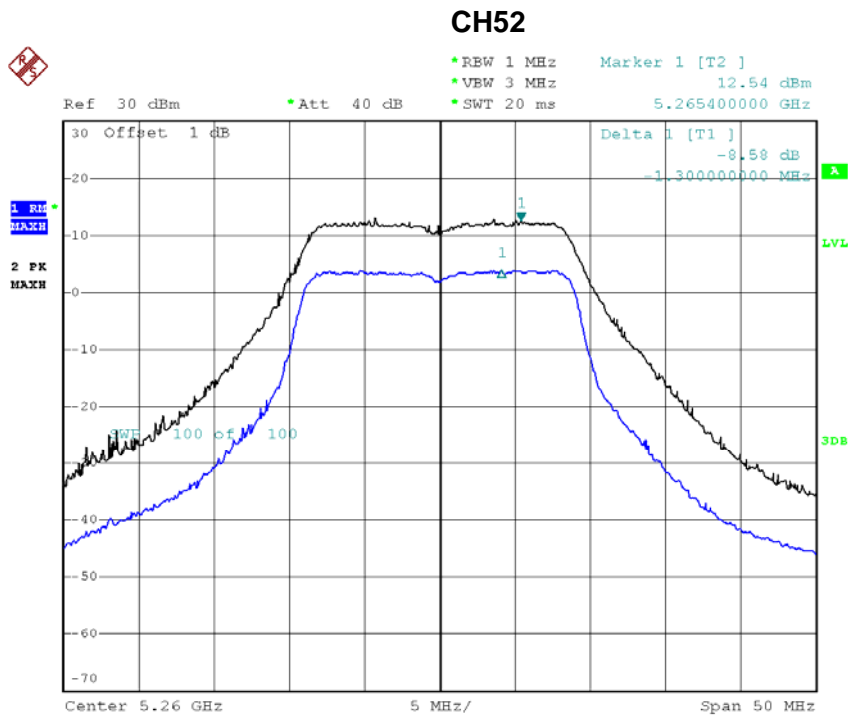


Date: 30.MAY.2012 06:09:45



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N20 Mode/CH52, CH56, CH64		

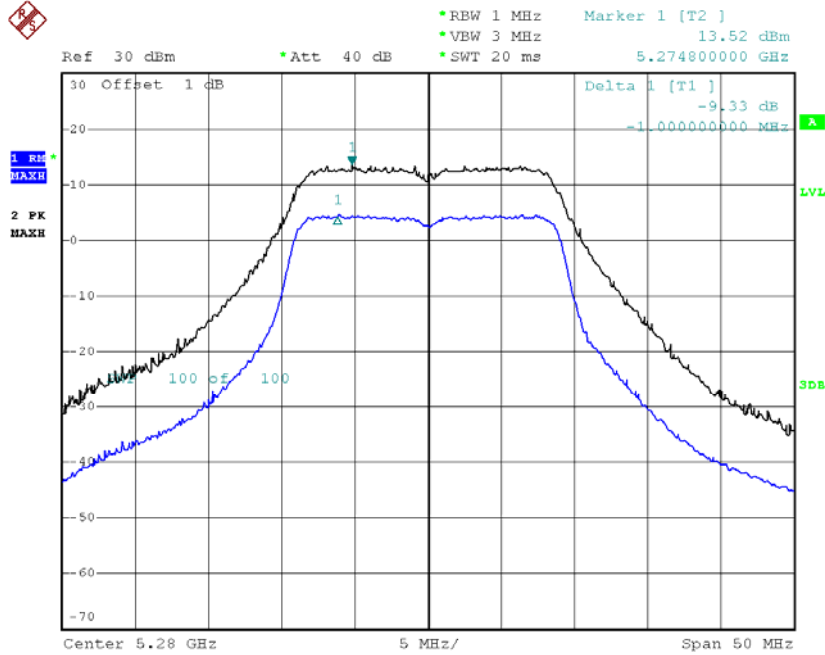
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH52	5260	8.58	13
CH56	5280	9.33	13
CH64	5320	8.58	13



Date: 17.JUL.2012 22:10:50

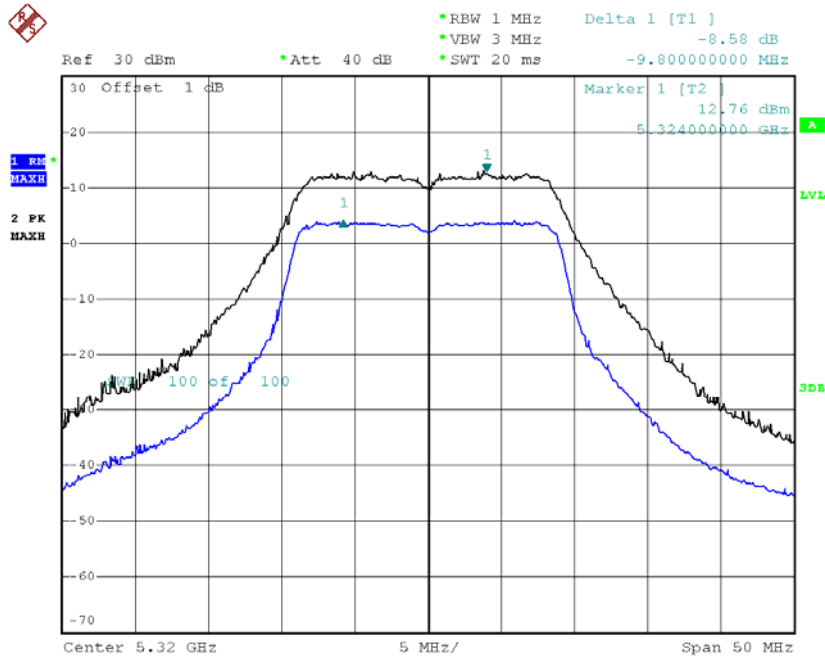


CH56



Date: 17.JUL.2012 22:12:41

CH64

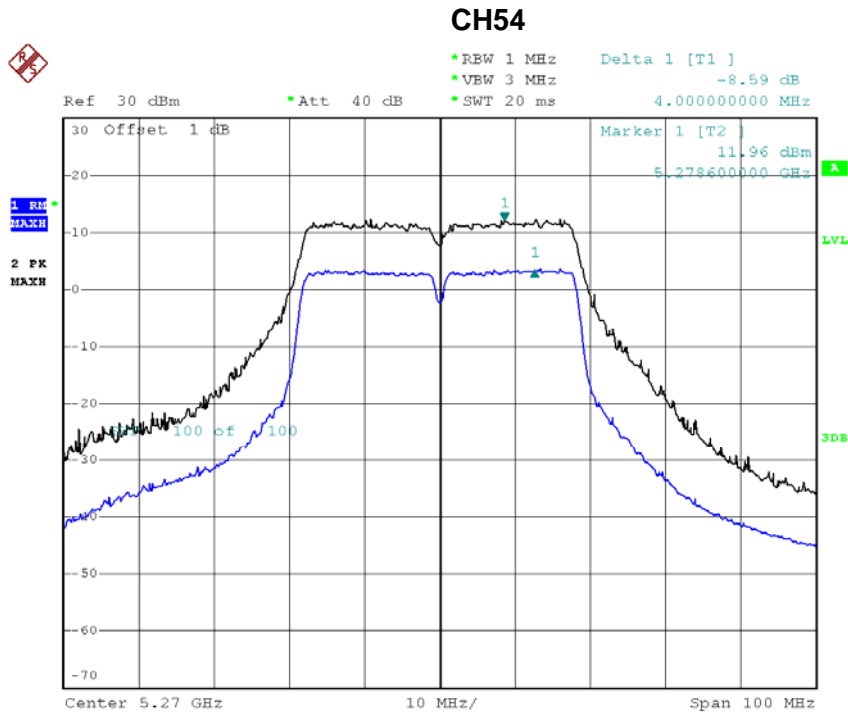


Date: 17.JUL.2012 22:16:04



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2/TX N40 Mode/CH54, CH62		

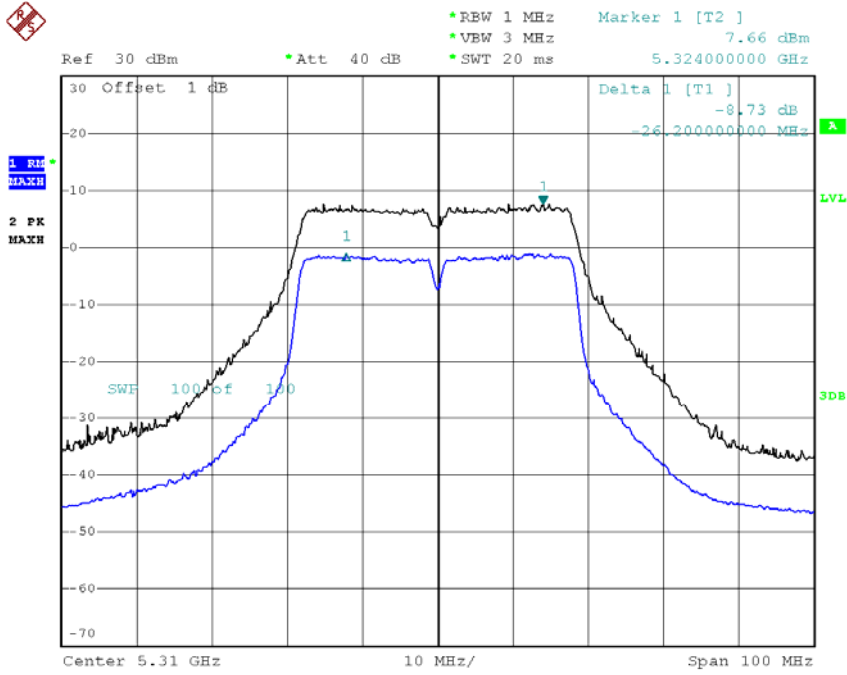
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH54	5270	8.59	13
CH62	5310	8.73	13



Date: 17.JUL.2012 22:20:09



CH62

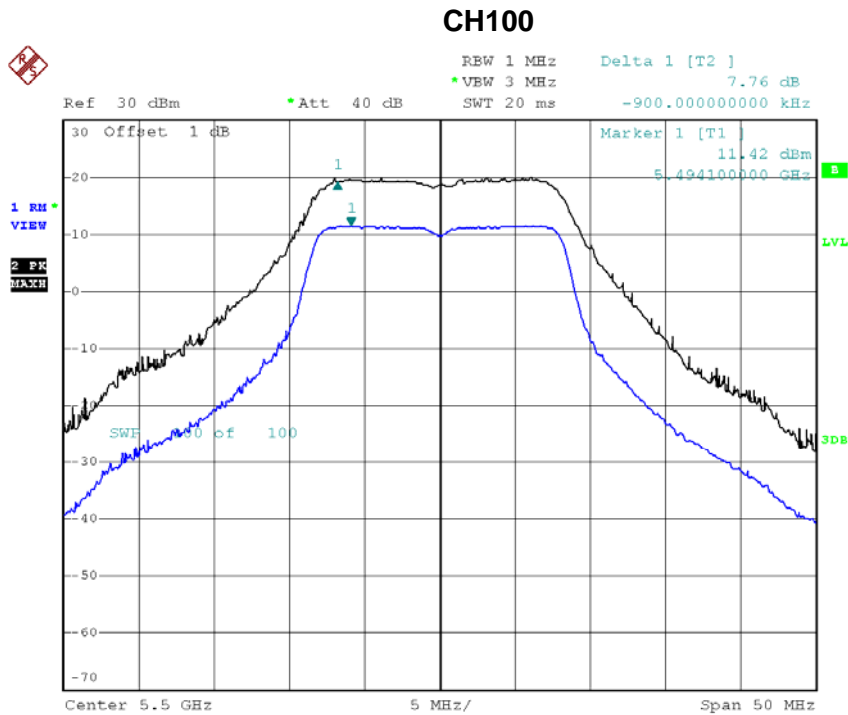


Date: 17.JUL.2012 22:21:57



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX A Mode/CH100, CH112, CH140		

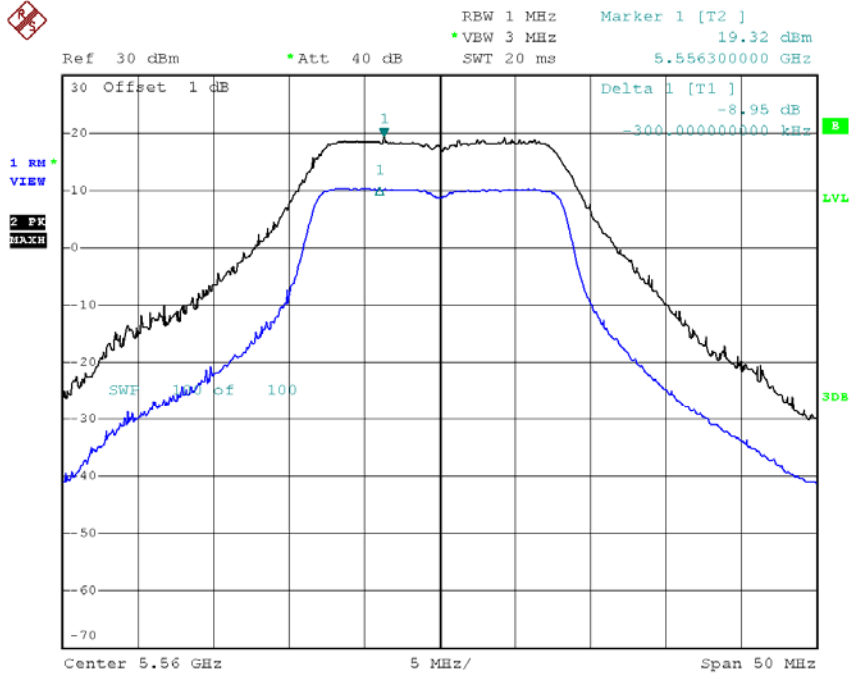
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH100	5500	7.76	13
CH112	5560	8.95	13
CH140	5700	9.33	13



Date: 30.MAY.2012 06:11:57

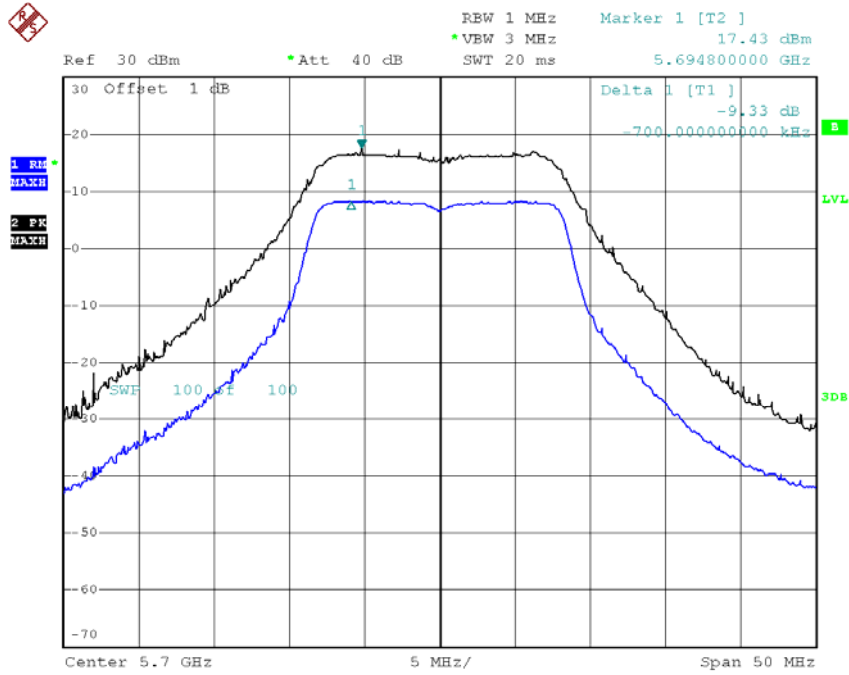


CH112



Date: 30.MAY.2012 06:14:58

CH140

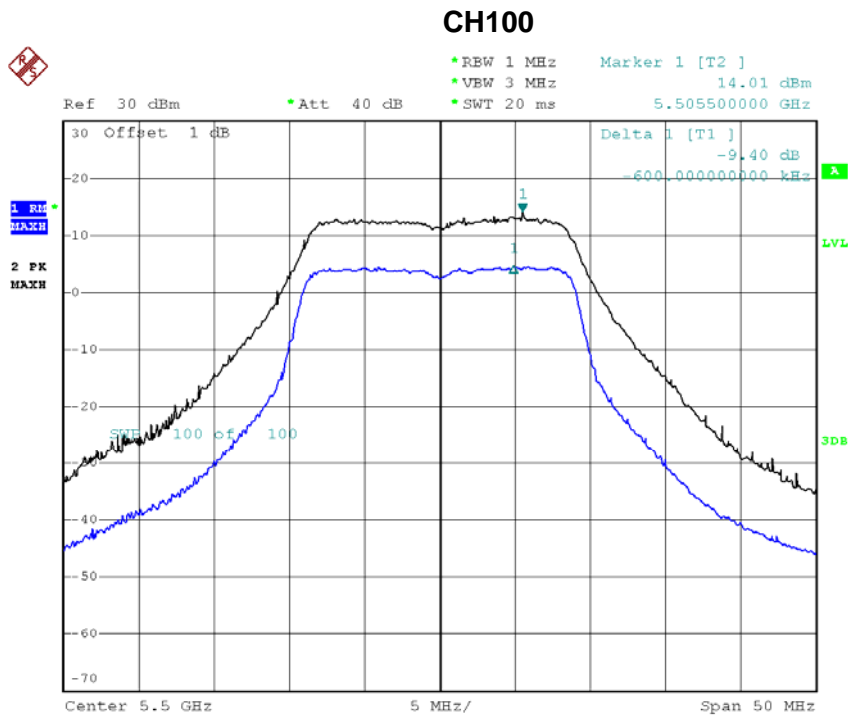


Date: 30.MAY.2012 06:18:26



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N20 Mode/ CH100, CH112, CH140		

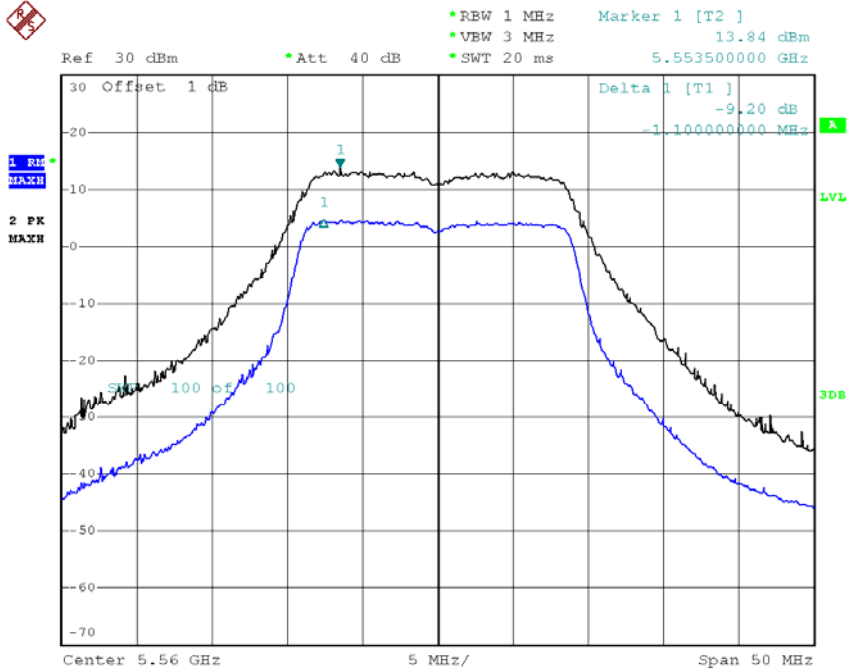
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH100	5500	9.4	13
CH112	5560	9.2	13
CH140	5700	8.75	13



Date: 17.JUL.2012 22:15:25

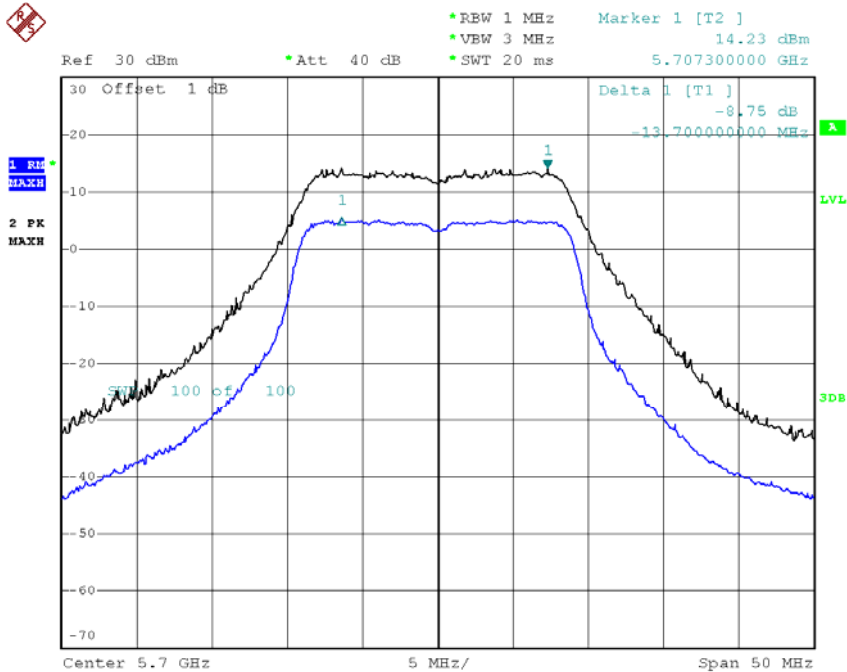


CH112



Date: 17.JUL.2012 22:17:09

CH140

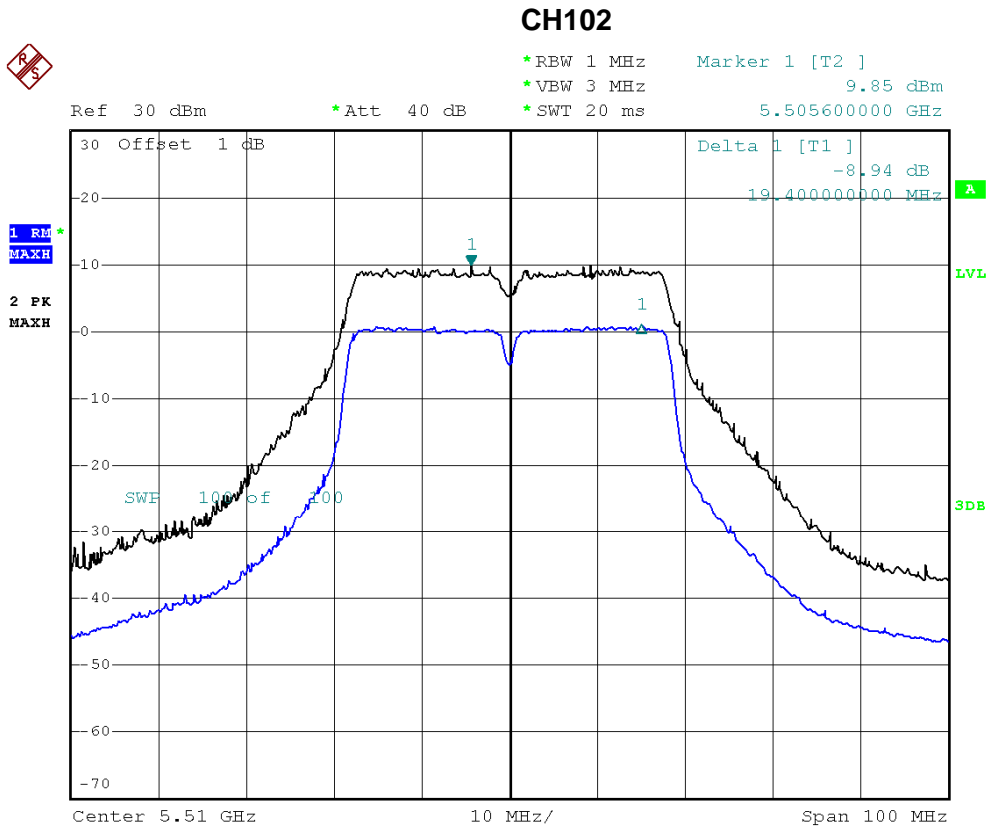


Date: 17.JUL.2012 22:18:05



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 3/TX N40 Mode/CH102, CH110		

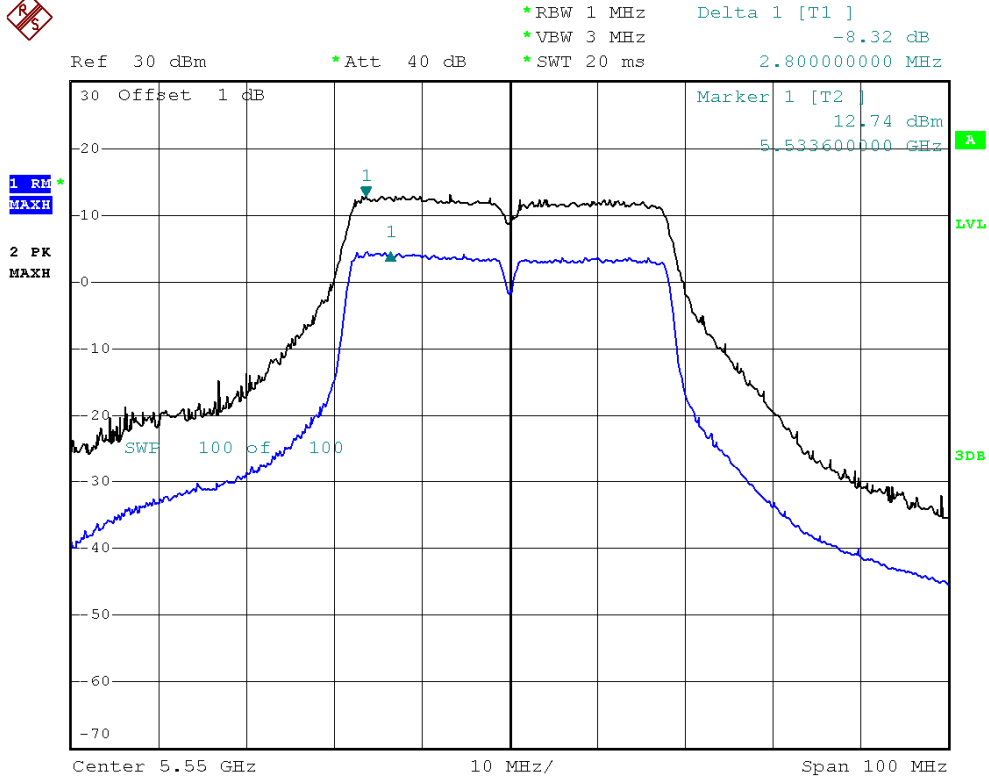
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH102	5510	8.94	13
CH110	5550	8.32	13



Date: 17.JUL.2012 22:23:17



CH110



Date: 17.JUL.2012 22:25:08



10. FREQUENCY STABILITY MEASUREMENT

10.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E 15.407(g)			
Test Item	Limit	Frequency Range (MHz)	Result
Frequency Stability	specified in the user's manual	5150 - 5250	PASS
		5250 - 5350	N/A
		5470 - 5725	N/A

10.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012
2	Precision Oven Tester	HOLINK	H-T-1F-D	BA03101701	May. 11, 2013

Remark: "N/A" denotes no model name, serial no. or calibration specified.

10.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

c. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

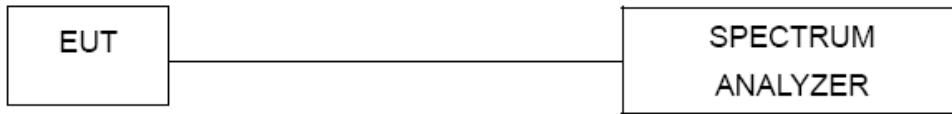
d. user manual temperature is 0°C~60°C.

10.1.3 DEVIATION FROM STANDARD

No deviation.



10.1.4 TEST SETUP



10.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



10.1.6 TEST RESULTS

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2		

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5320
138	5319.981800
120	5319.982000
102	5319.982400
Max. Deviation (MHz)	0.018200
Max. Deviation (ppm)	3.42

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5320
-20	5319.981000
-10	5319.981400
0	5319.981700
10	5319.981900
20	5319.982000
30	5319.982400
40	5319.982600
50	5319.987280
Max. Deviation (MHz)	0.019000
Max. Deviation (ppm)	3.57



EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP6610DN-AGN-US
Temperature :	25 °C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 2		

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
138	5499.981130
120	5499.981200
102	5499.981500
Max. Deviation (MHz)	0.018870
Max. Deviation (ppm)	3.43

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
5500	
-20	5499.980000
-10	5499.981000
0	5499.981100
10	5499.981200
20	5499.981200
30	5499.981300
40	5499.981500
50	5499.981600
Max. Deviation (MHz)	0.020000
Max. Deviation (ppm)	3.64



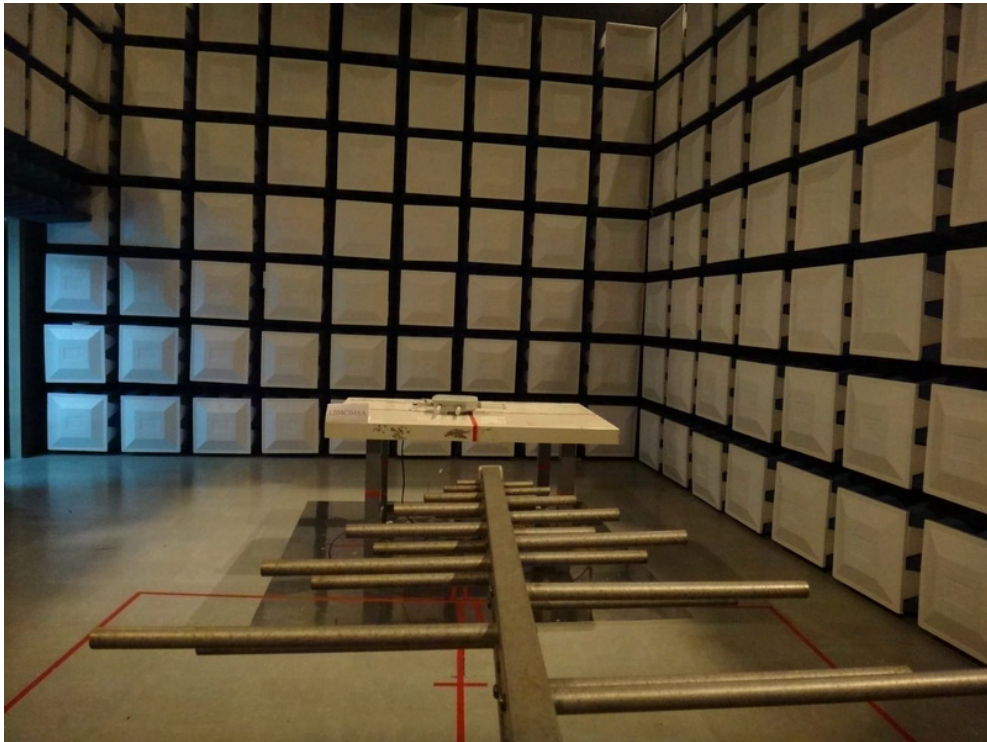
11. EUT TEST PHOTO

Conducted Measurement Photos





**Radiated Measurement Photos
BELOW 1G**





**Radiated Measurement Photos
ABOVE 1G**

