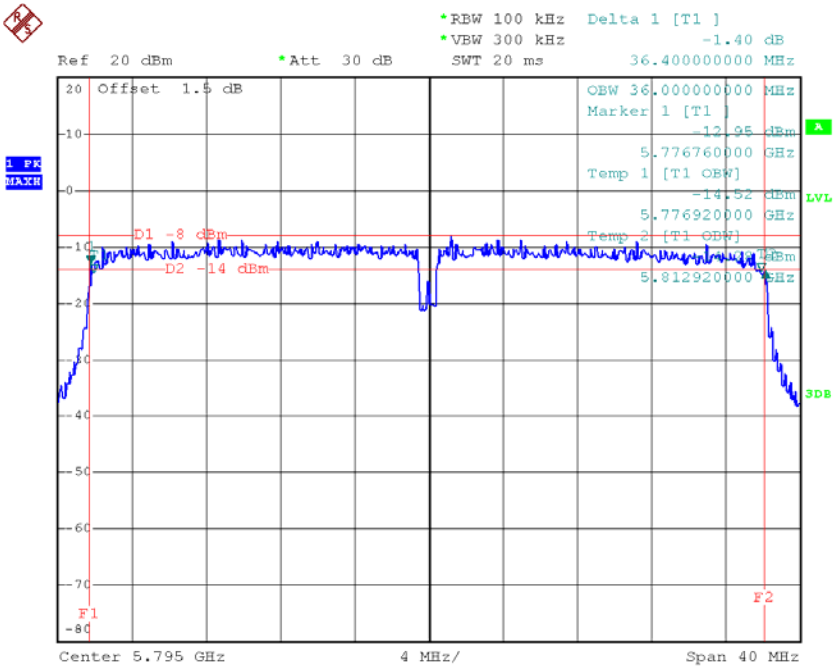
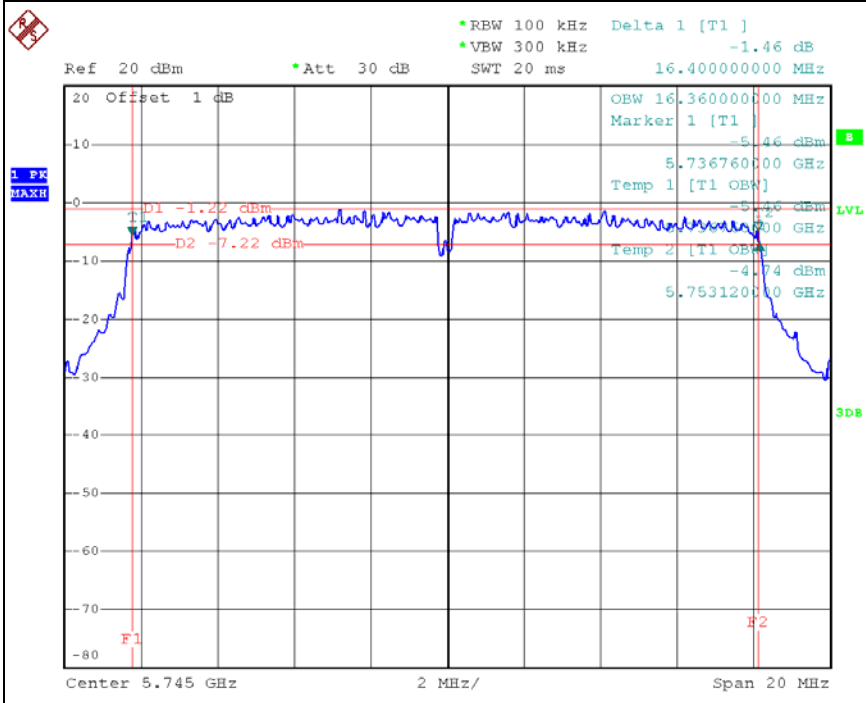
TX CH159


*RBW 100 kHz
*VBW 300 kHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
Delta 1 [T1]
-1.40 dB
36.400000000 MHz
Offset 1.5 dB
OBW 36.000000000 MHz
Marker 1 [T1]
-12.95 dBm
5.776760000 GHz
Temp 1 [T1 OBW]
-14.52 dBm
5.776920000 GHz
Temp 2 [T1 OBW]
5.812920000 GHz
D1 -8 dBm
D2 -14 dBm
1 PK MAXH
A
LVL
3DB
F1
F2
Center 5.795 GHz
4 MHz/
Span 40 MHz
Date: 28.AUG.2013 16:08:08

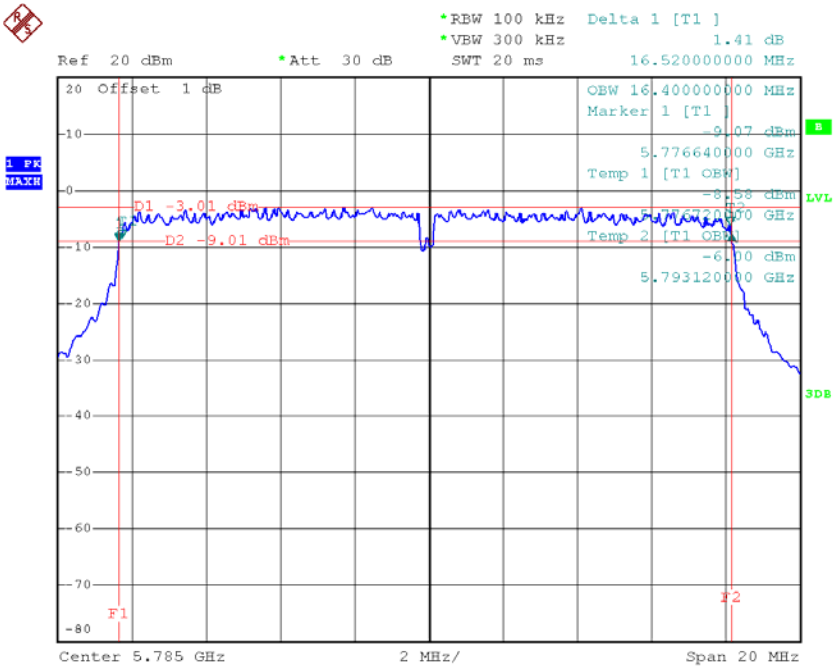
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH149	5745	16.40	16.36	PASS
CH157	5785	16.52	16.40	PASS
CH165	5825	16.52	16.44	PASS

TX CH149

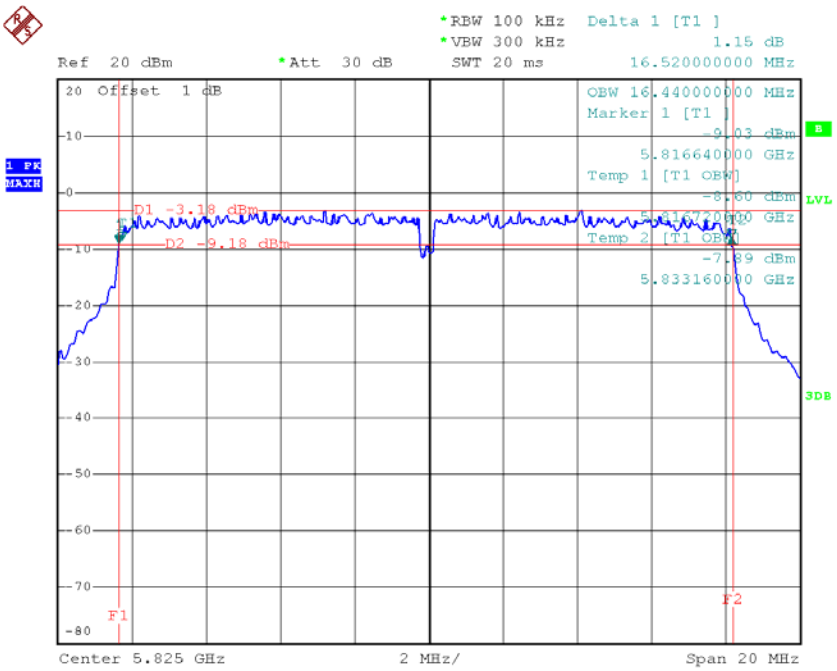


TX CH157



Date: 5.SEP.2013 21:13:00

TX CH165

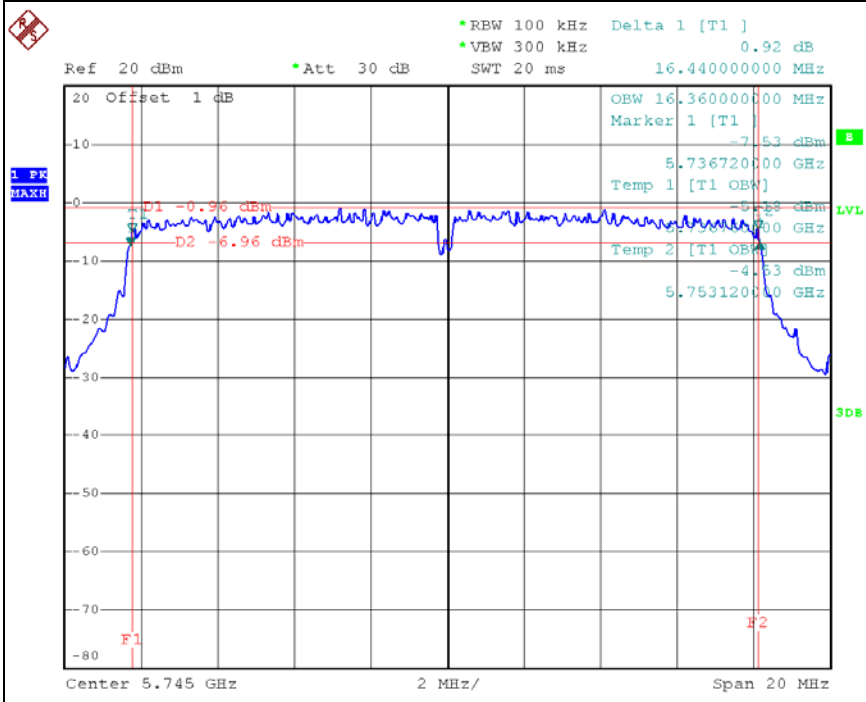


Date: 5.SEP.2013 21:04:40

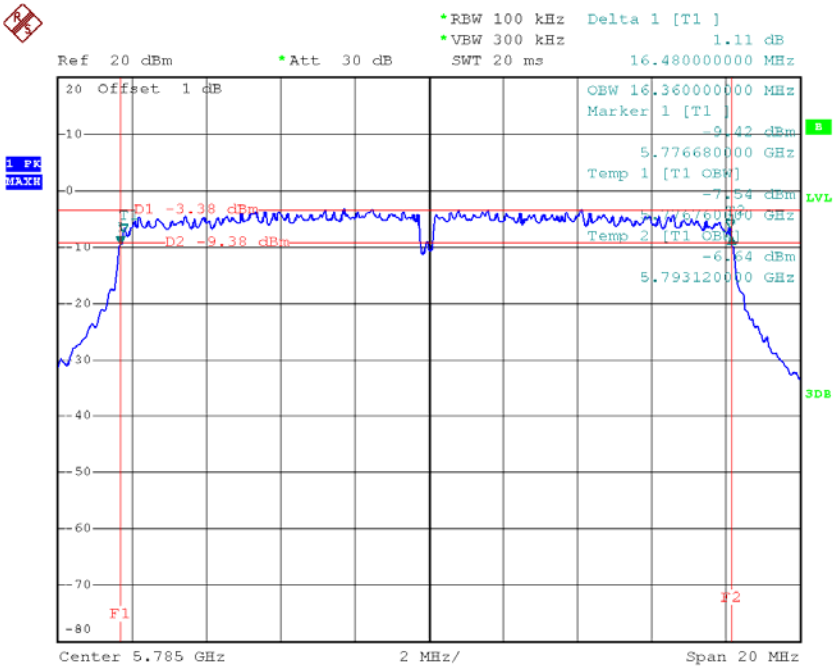
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH149	5745	16.44	16.36	PASS
CH157	5785	16.48	16.36	PASS
CH165	5825	16.52	16.40	PASS

TX CH149

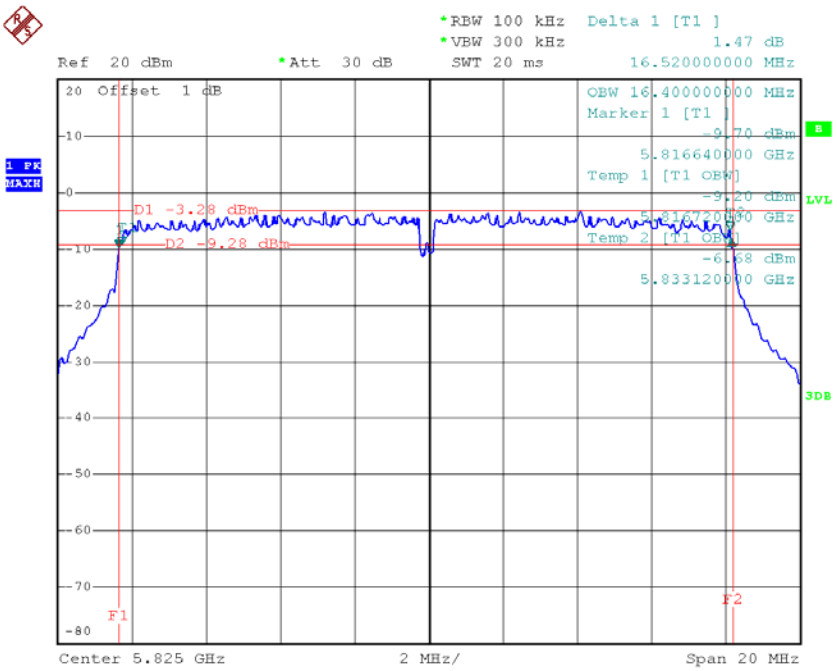


TX CH157



Date: 5.SEP.2013 21:14:30

TX CH165

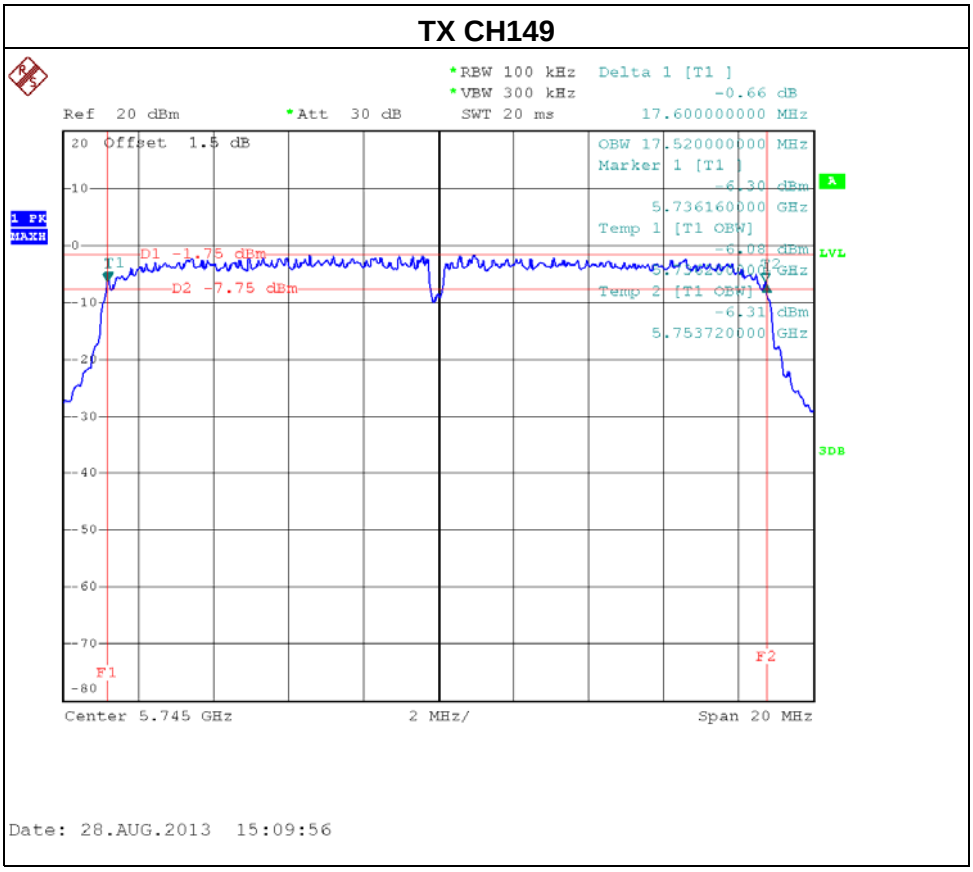


Date: 5.SEP.2013 21:05:45

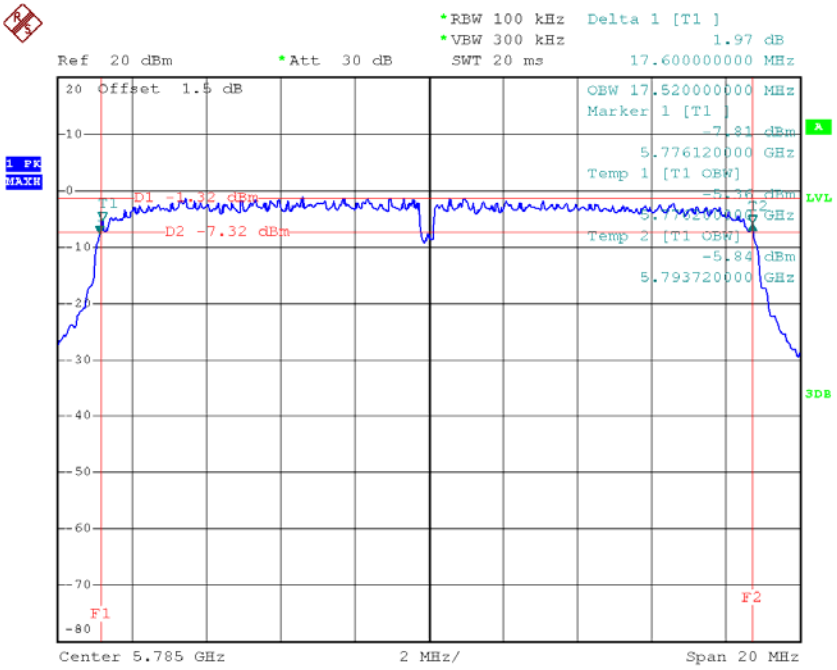
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH149	5745	17.60	17.52	PASS
CH157	5785	17.60	17.52	PASS
CH165	5825	17.60	17.48	PASS

TX CH149

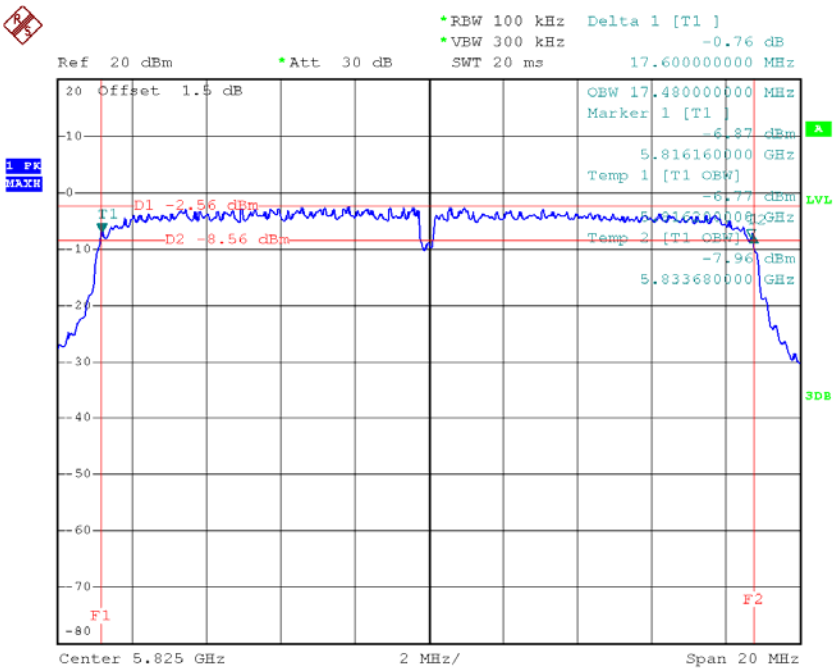


TX CH157



Date: 28.AUG.2013 15:38:02

TX CH165

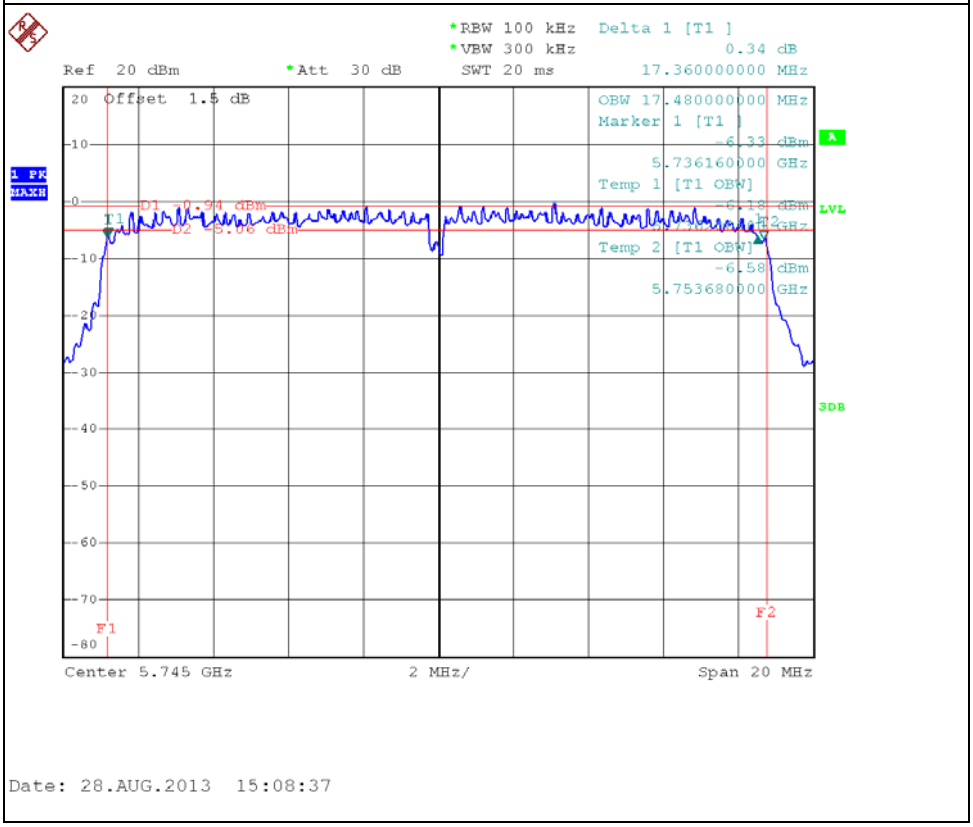


Date: 28.AUG.2013 15:26:57

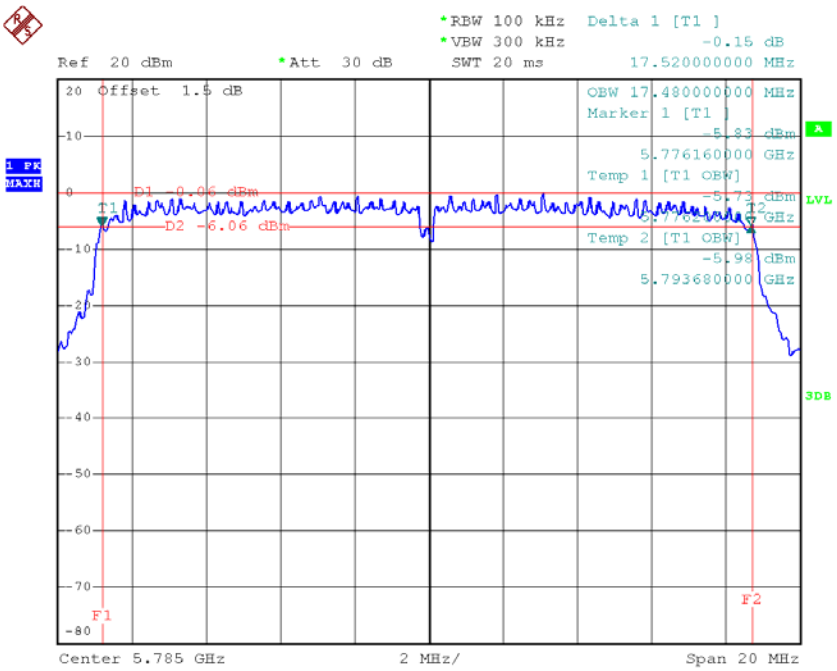
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH149	5745	17.36	17.48	PASS
CH157	5785	17.52	17.48	PASS
CH165	5825	17.60	17.48	PASS

TX CH149

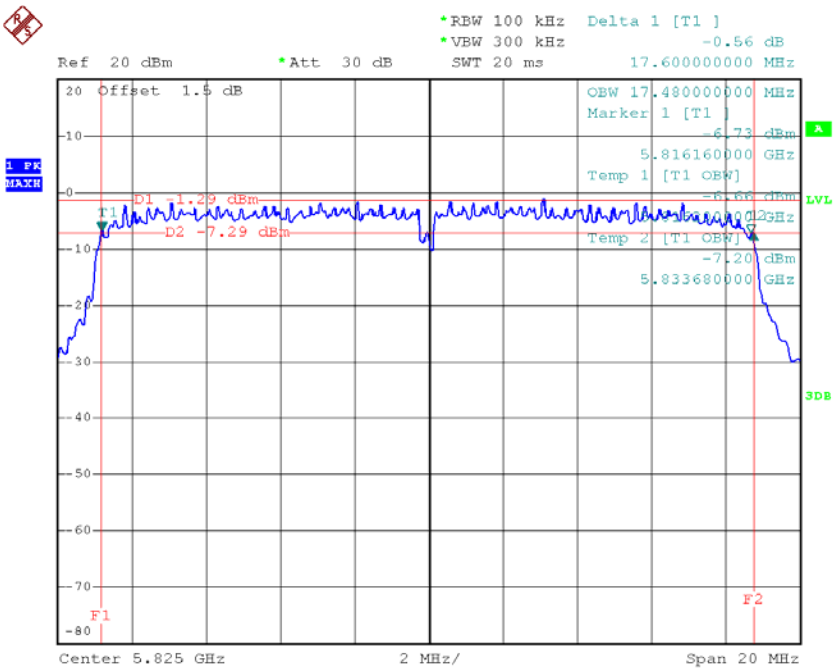


TX CH157



Date: 28.AUG.2013 15:36:26

TX CH165

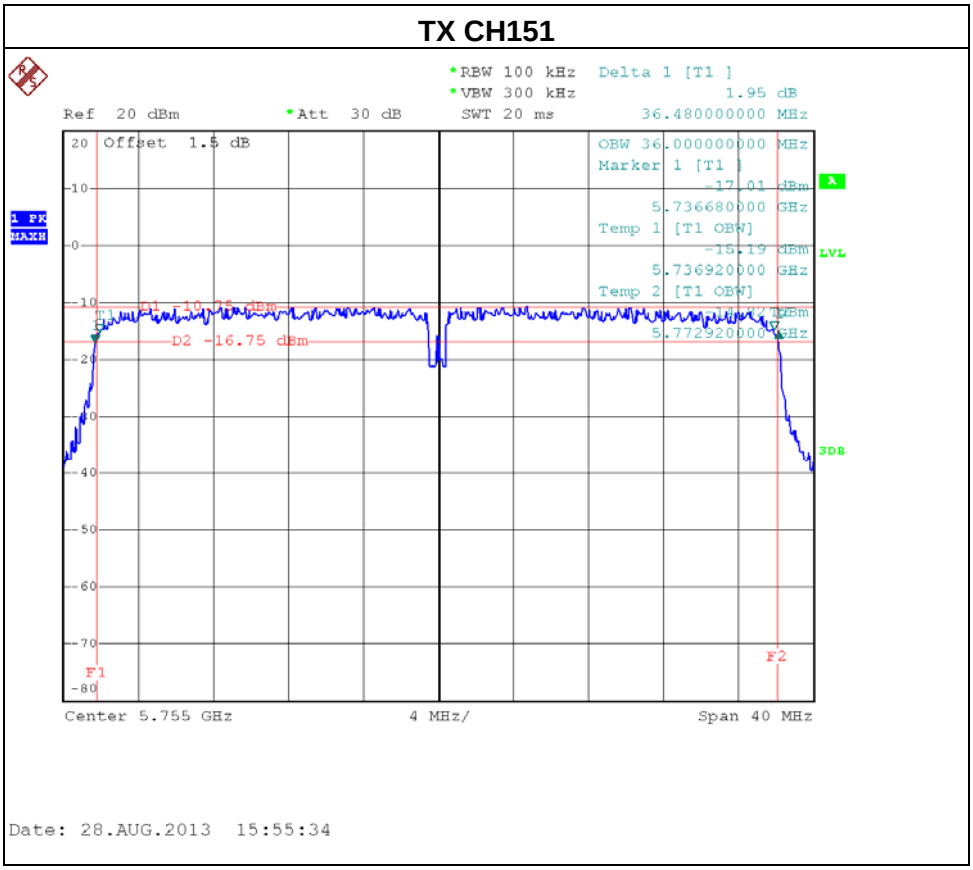


Date: 28.AUG.2013 15:28:56

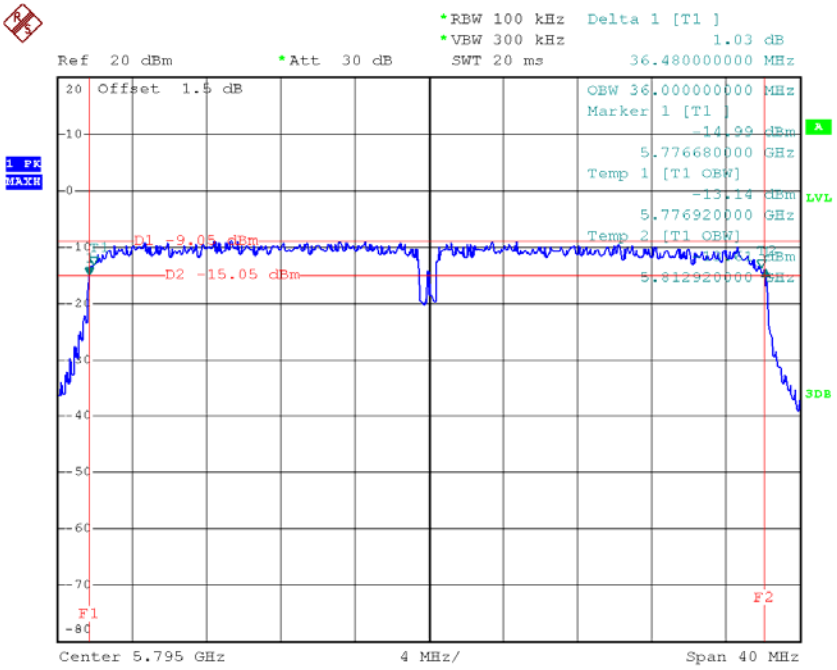
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH151	5755	36.48	36.00	PASS
CH159	5795	36.48	36.00	PASS

TX CH151



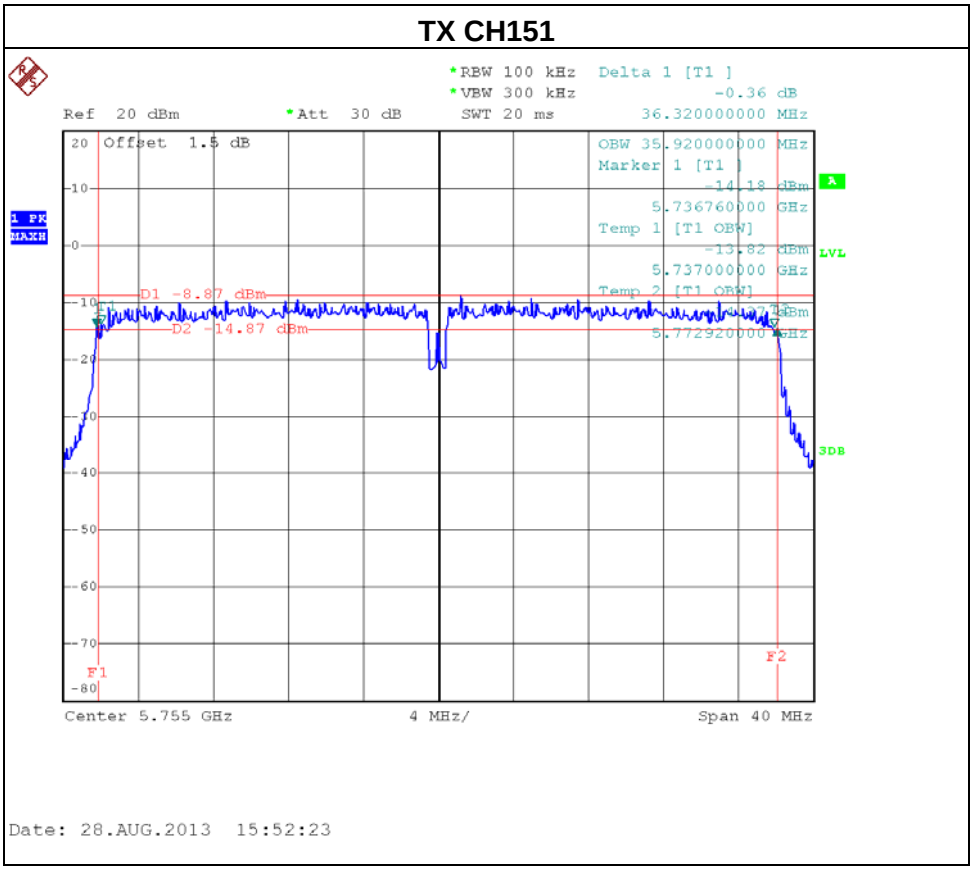
TX CH159


*RBW 100 kHz
*VBW 300 kHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
Delta 1 [T1]
1.03 dB
36.480000000 MHz
Offset 1.5 dB
OBW 36.000000000 MHz
Marker 1 [T1]
-14.99 dBm
5.776680000 GHz
Temp 1 [T1 OBW]
-13.14 dBm
5.776920000 GHz
Temp 2 [T1 OBW]
5.812920000 GHz
1 PK MAXH
LVL
3DB
D1 -9.05 dBm
D2 -15.05 dBm
F1
F2
Center 5.795 GHz
4 MHz/
Span 40 MHz
Date: 28.AUG.2013 16:07:23

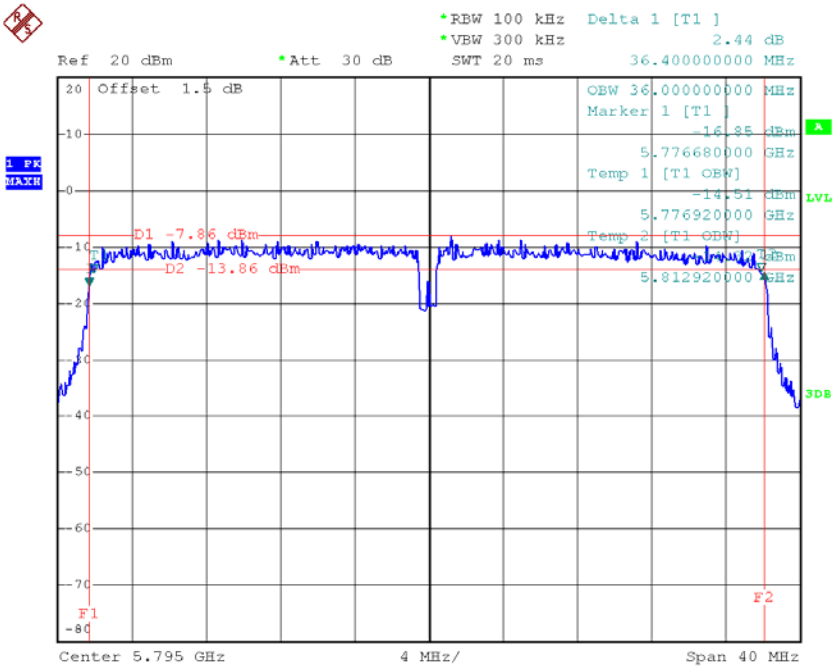
EUT:	Cisco Edge 340	Model Name. :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
CH151	5755	36.32	35.92	PASS
CH159	5795	36.40	36.00	PASS

TX CH151



TX CH159



Date: 28.AUG.2013 16:08:36

6. MAXIMUM OUTPUT POWER TEST

6.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C/ RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3) RSS-210 Annex 8.4(4)	Maximum Output Power	1 watt or 30dBm	5725 - 5825	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Apr. 25, 2014
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Apr. 25, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
b. The maximum peak conducted output power was performed in accordance with method 9.1.3 of FCC KDB 558074 D01 DTS Meas Guidance v03r01(A,N20,N40 mode) and 662911 D01 Multiple Transmitter Output v01r02(N20,N40 mode)

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP

6.1.5 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.

6.1.6 TEST RESULTS

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / Integral Antenna		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	17.89	30	1
CH157	5785 MHz	17.72	30	1
CH165	5825 MHz	17.88	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	17.76	30	1
CH157	5785 MHz	17.79	30	1
CH165	5825 MHz	17.85	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	20.84	30	1
CH157	5785 MHz	20.77	30	1
CH165	5825 MHz	20.88	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=3.6.

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / Integral Antenna		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	18.65	30	1
CH157	5785 MHz	18.87	30	1
CH165	5825 MHz	18.53	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	18.57	30	1
CH157	5785 MHz	18.95	30	1
CH165	5825 MHz	19.05	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	21.62	30	1
CH157	5785 MHz	21.92	30	1
CH165	5825 MHz	21.81	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=3.6.

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / Integral Antenna		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	13.20	30	1
CH159	5795 MHz	13.72	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	13.15	30	1
CH159	5795 MHz	13.47	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	16.19	30	1
CH159	5795 MHz	16.61	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=3.6.

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / Dipole Antenna with external cable		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	17.75	30	1
CH157	5785 MHz	17.63	30	1
CH165	5825 MHz	17.83	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	17.72	30	1
CH157	5785 MHz	17.65	30	1
CH165	5825 MHz	17.81	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	20.75	30	1
CH157	5785 MHz	20.65	30	1
CH165	5825 MHz	20.83	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=2.82.

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / Dipole Antenna with external cable		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	18.59	30	1
CH157	5785 MHz	18.45	30	1
CH165	5825 MHz	18.46	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	18.62	30	1
CH157	5785 MHz	18.73	30	1
CH165	5825 MHz	18.77	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH149	5745 MHz	21.62	30	1
CH157	5785 MHz	21.60	30	1
CH165	5825 MHz	21.63	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=2.82.

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / Dipole Antenna with external cable		

ANT 1				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	13.15	30	1
CH159	5795 MHz	13.58	30	1

ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	13.17	30	1
CH159	5795 MHz	13.51	30	1

ANT 1 + ANT 2				
Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH151	5755 MHz	16.17	30	1
CH159	5795 MHz	16.56	30	1

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = G_{ANT}, that is Directional gain=2.82.

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 Applied procedures / limit

20dB in any 100 KHz bandwidth outside the operating frequency band, In case the emission fall within the restricted band specified on 15.205(a) & RSS-210 section 2.2& Annex 8 (A8.5), then the 15.209(a) & RSS-GEN limit in the table below has to be followed.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 16, 2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

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 Setting : RBW= 100KHz, VBW=300KHz, Sweep time =20 ms.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP

7.1.5 EUT OPERATION CONDITIONS

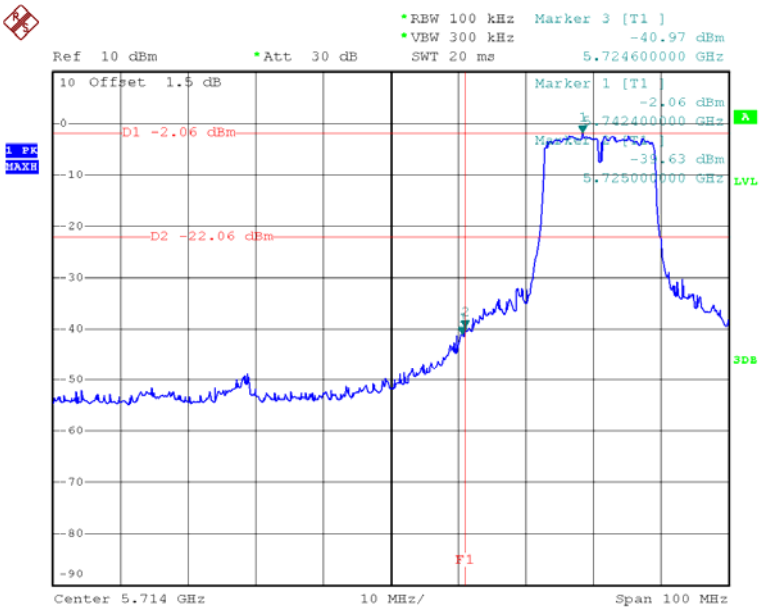
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1 / Integral Antenna		

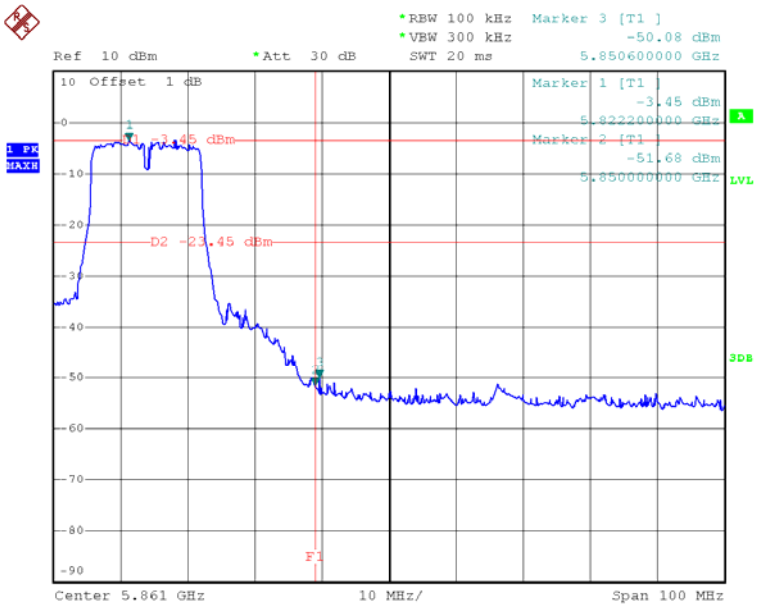
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-39.63	5850.60	-50.08
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



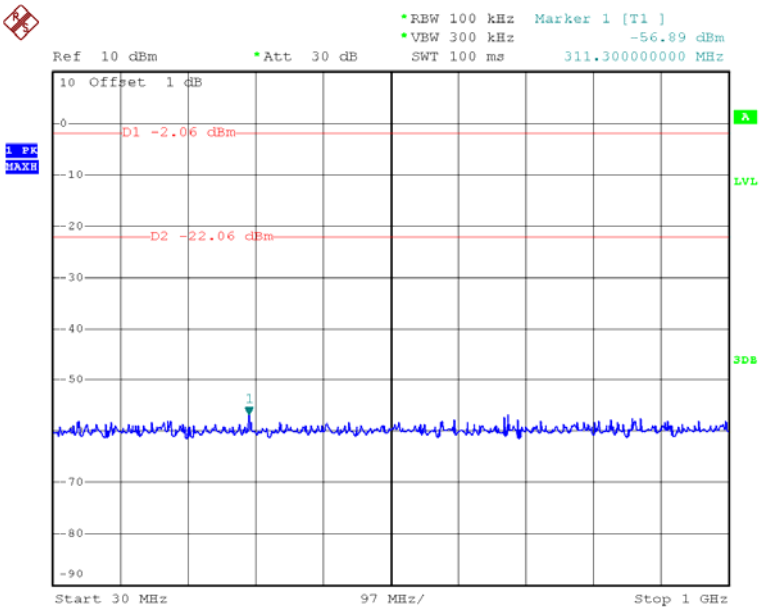
Date: 5.SEP.2013 21:00:19

TX mode CH165



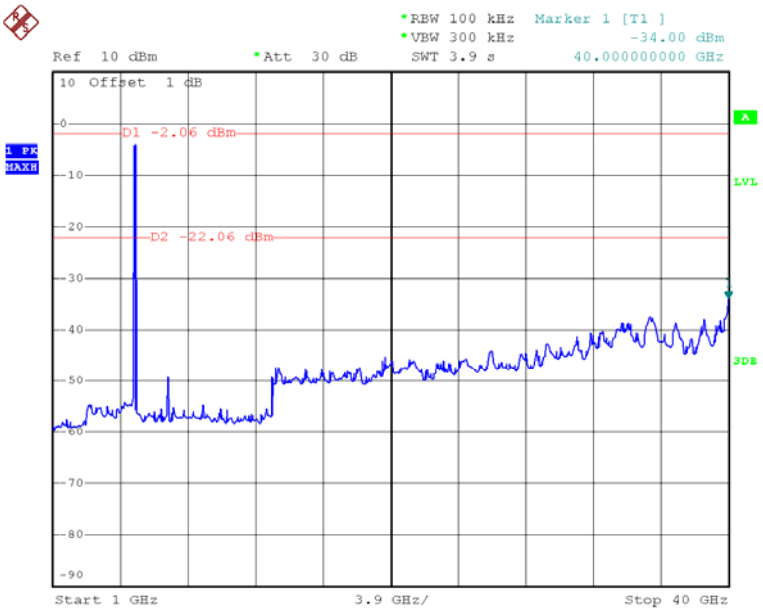
Date: 5.SEP.2013 21:10:37

TX mode CH149 (30M~1000MHz)



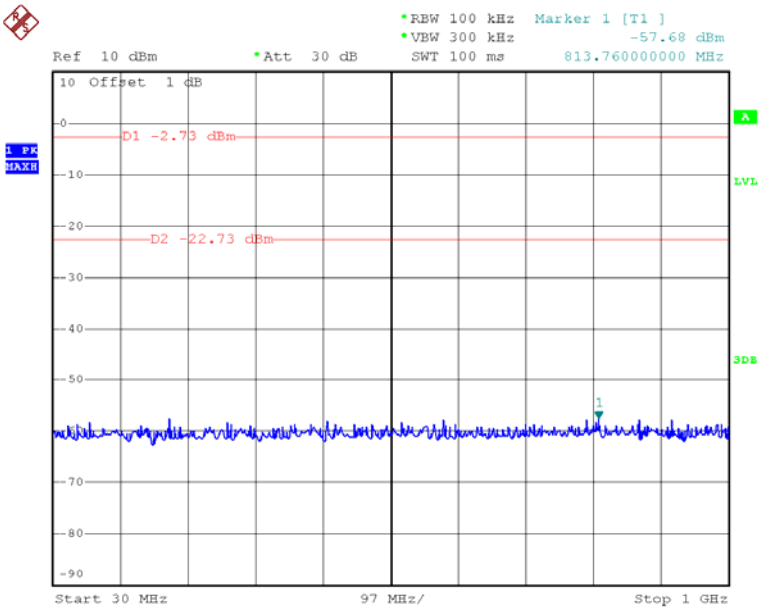
Date: 5.SEP.2013 21:00:34

TX mode CH149 (1000MHz~10th Harmonic)



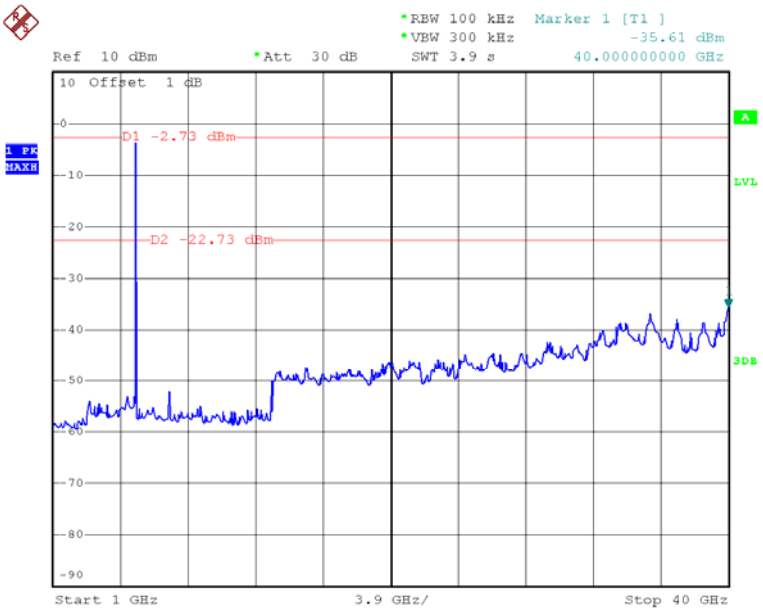
Date: 5.SEP.2013 21:01:22

TX mode CH157 (30M~1000MHz)



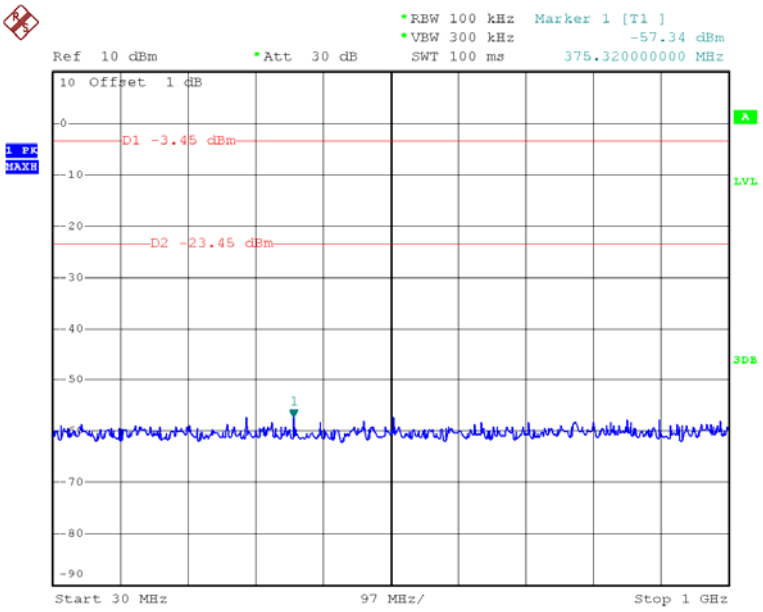
Date: 5.SEP.2013 21:18:32

TX mode CH157 (1000MHz~10th Harmonic)



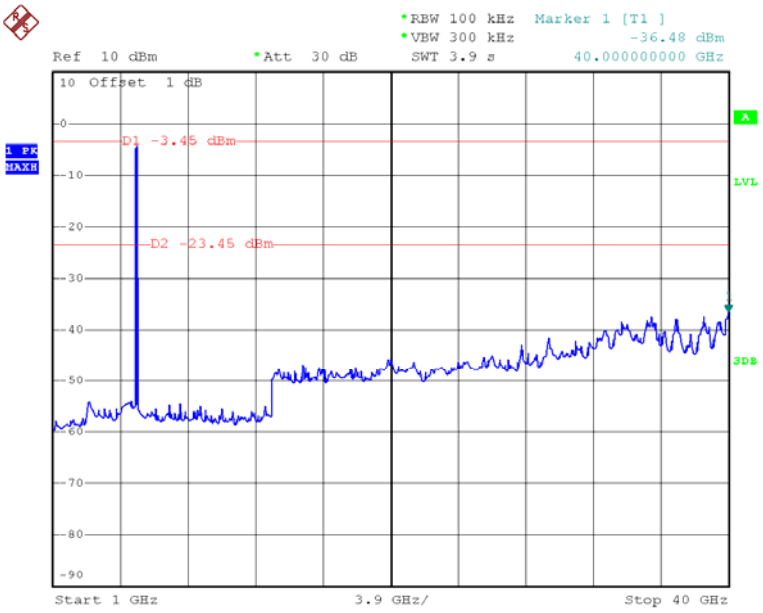
Date: 5.SEP.2013 21:18:25

TX mode CH165 (30M~1000MHz)



Date: 5.SEP.2013 21:10:47

TX mode CH165 (1000MHz~10th Harmonic)

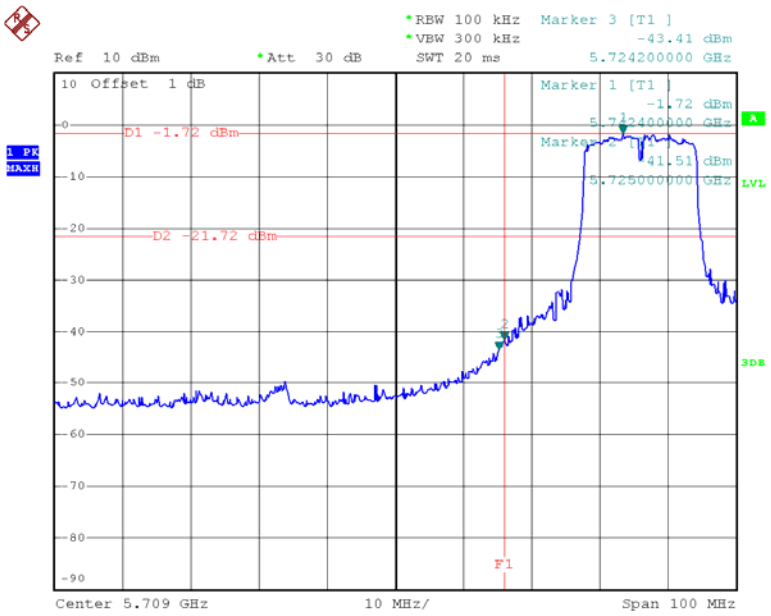


Date: 5.SEP.2013 21:10:59

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 2 / Integral Antenna		

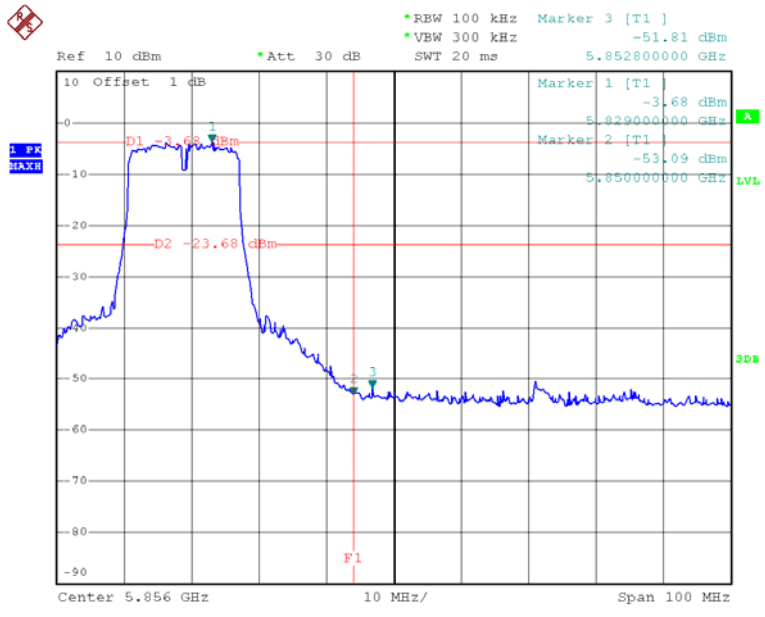
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-41.51	5852.80	-51.81
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



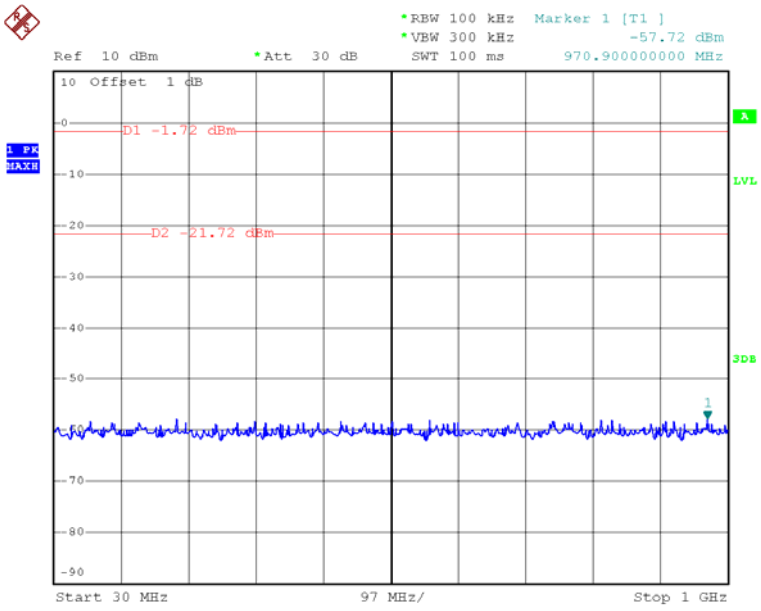
Date: 5.SEP.2013 20:58:48

TX mode CH165



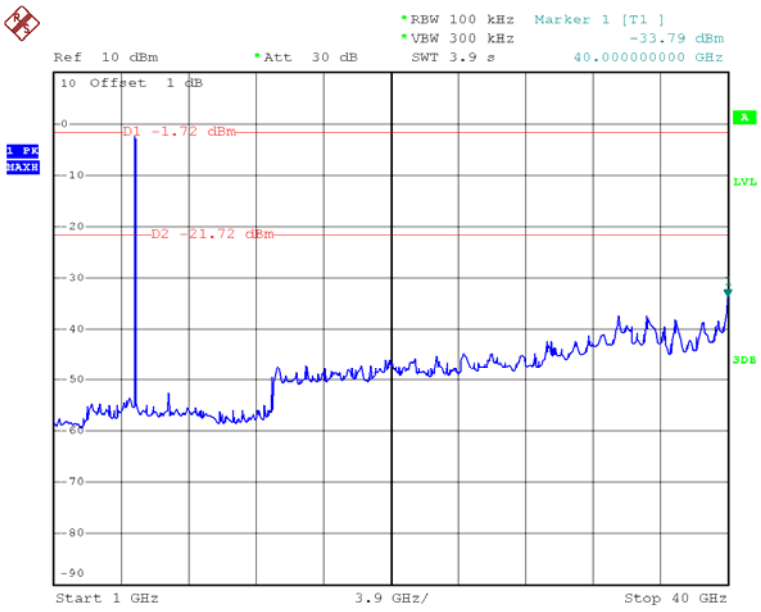
Date: 5.SEP.2013 21:07:02

TX mode CH149 (30M~1000MHz)



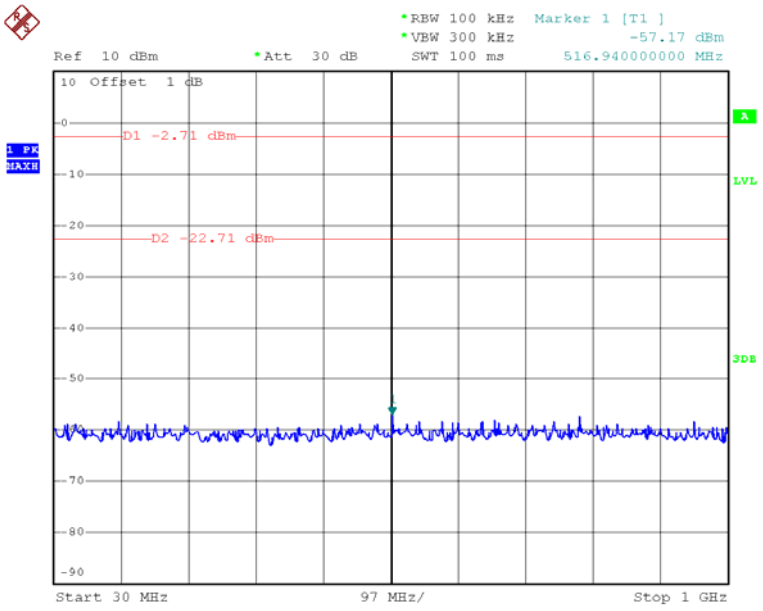
Date: 5.SEP.2013 20:58:59

TX mode CH149 (1000MHz~10th Harmonic)



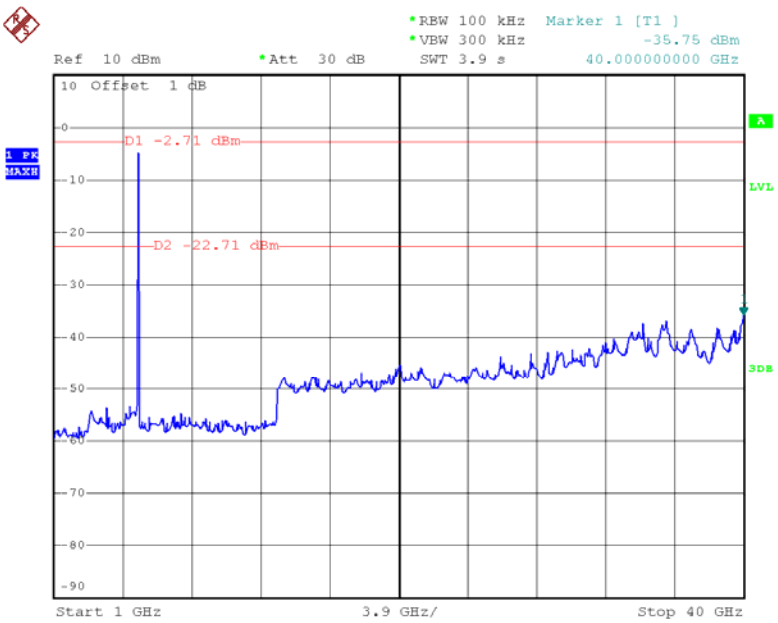
Date: 5.SEP.2013 20:59:15

TX mode CH157 (30M~1000MHz)



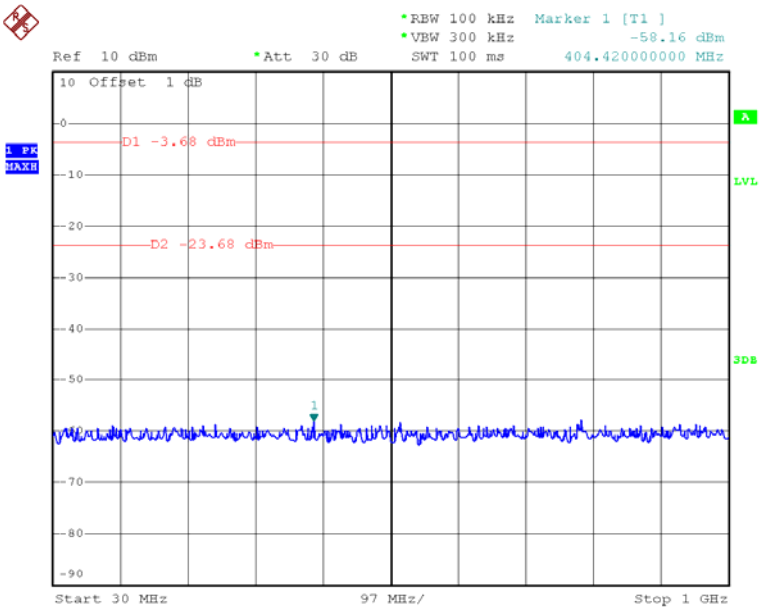
Date: 5.SEP.2013 21:16:49

TX mode CH157 (1000MHz~10th Harmonic)



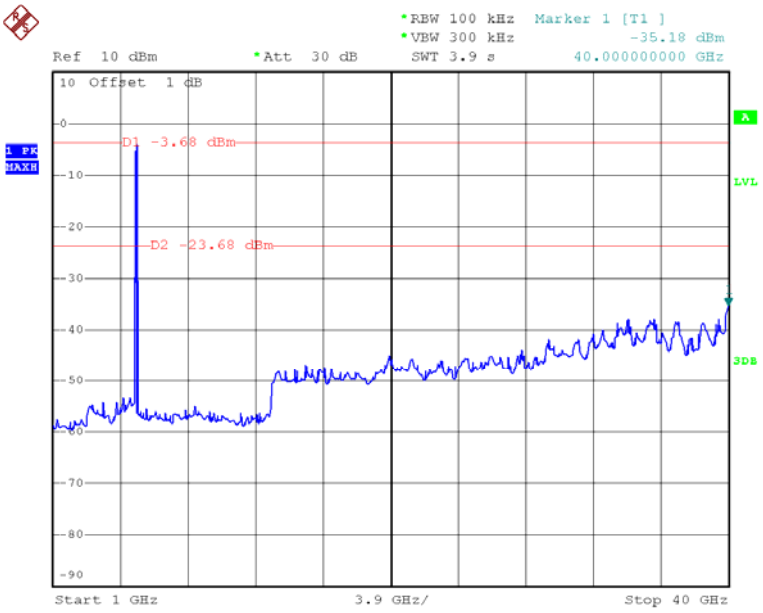
Date: 5.SEP.2013 21:16:43

TX mode CH165 (30M~1000MHz)



Date: 5.SEP.2013 21:07:12

TX mode CH165 (1000MHz~10th Harmonic)

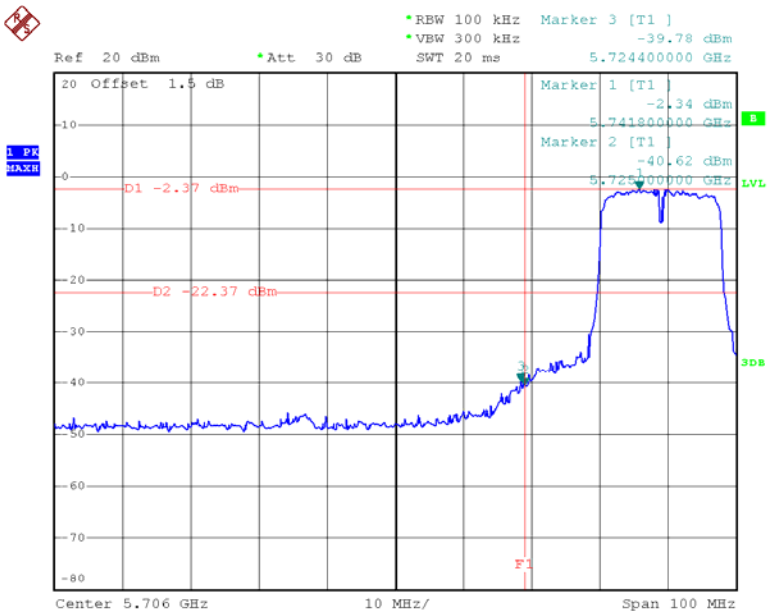


Date: 5.SEP.2013 21:07:24

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20Mode /CH149, CH157, CH165 / ANT 1 / Integral Antenna		

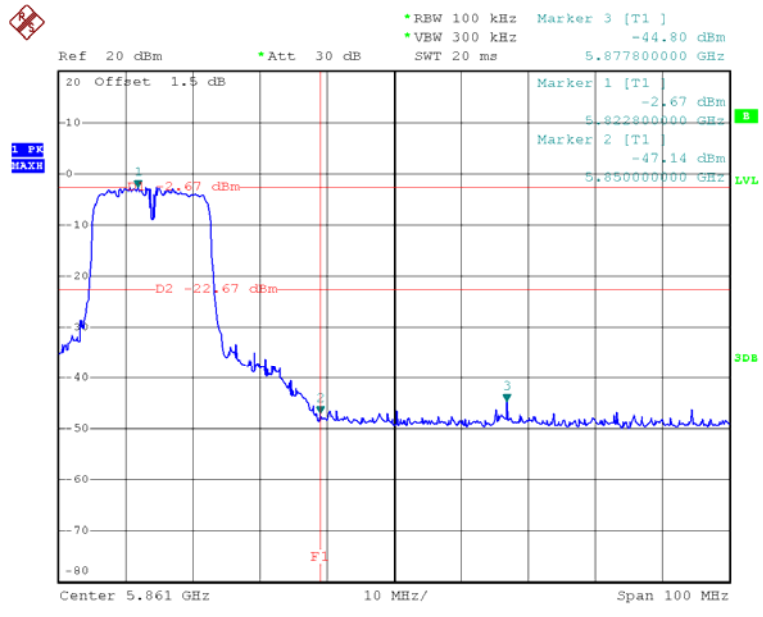
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.40	-39.78	5877.80	-44.80
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



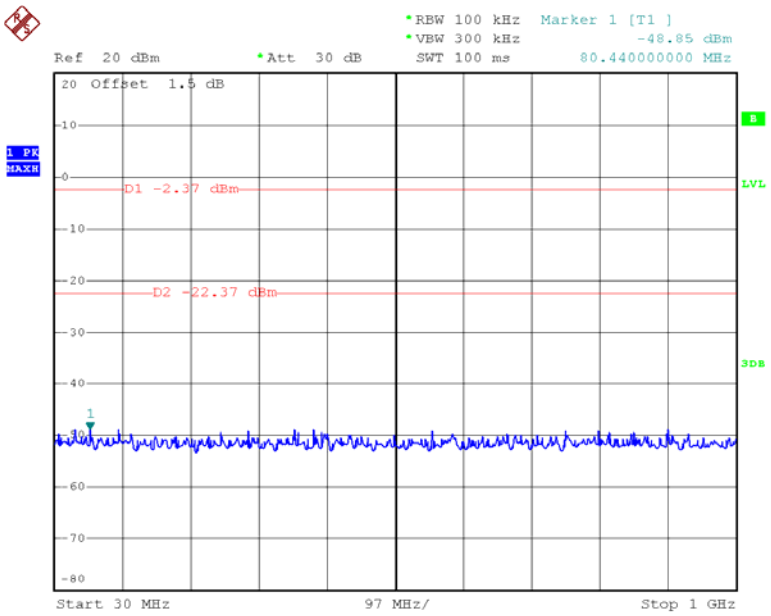
Date: 28.AUG.2013 15:14:13

TX mode CH165



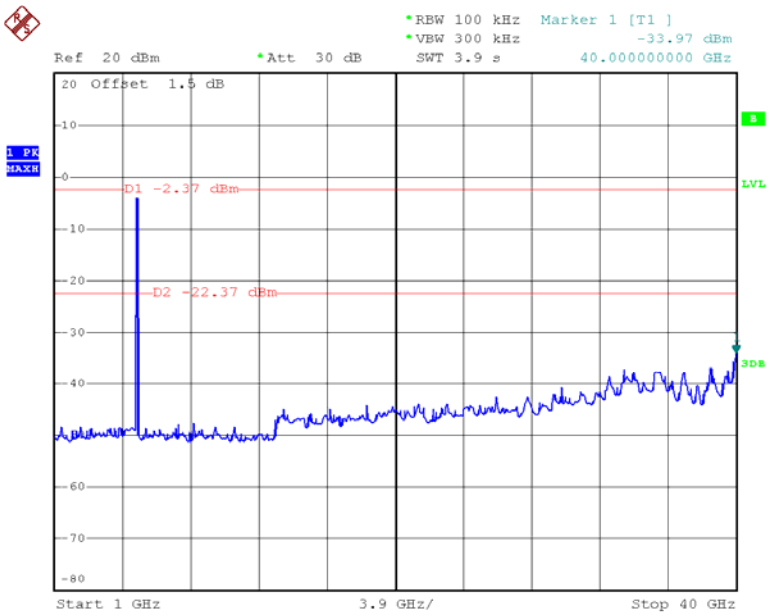
Date: 28.AUG.2013 15:31:08

TX mode CH149 (30M~1000MHz)



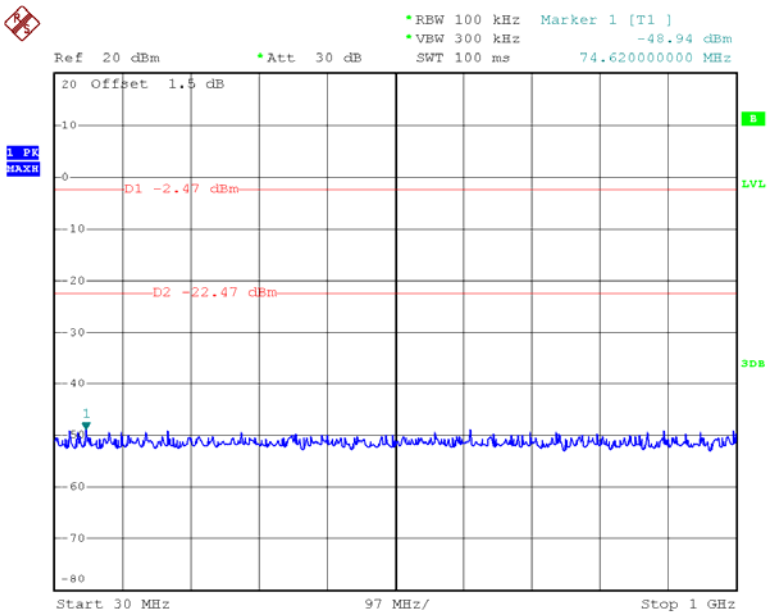
Date: 28.AUG.2013 15:14:23

TX mode CH149 (1000MHz~10th Harmonic)



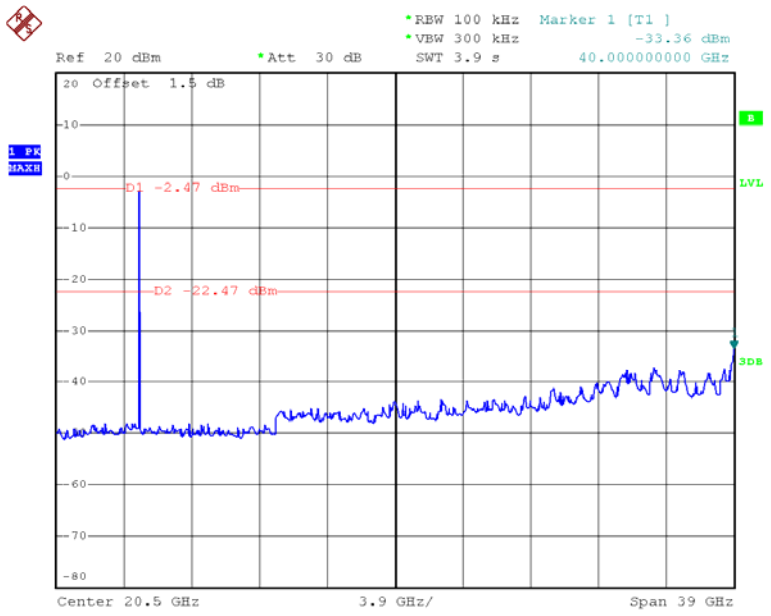
Date: 28.AUG.2013 15:14:37

TX mode CH157 (30M~1000MHz)



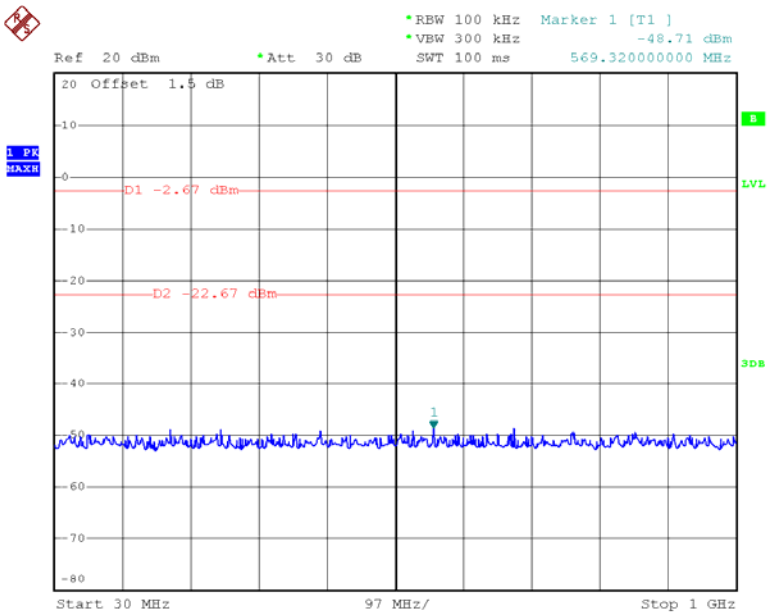
Date: 28.AUG.2013 15:39:07

TX mode CH157 (1000MHz~10th Harmonic)



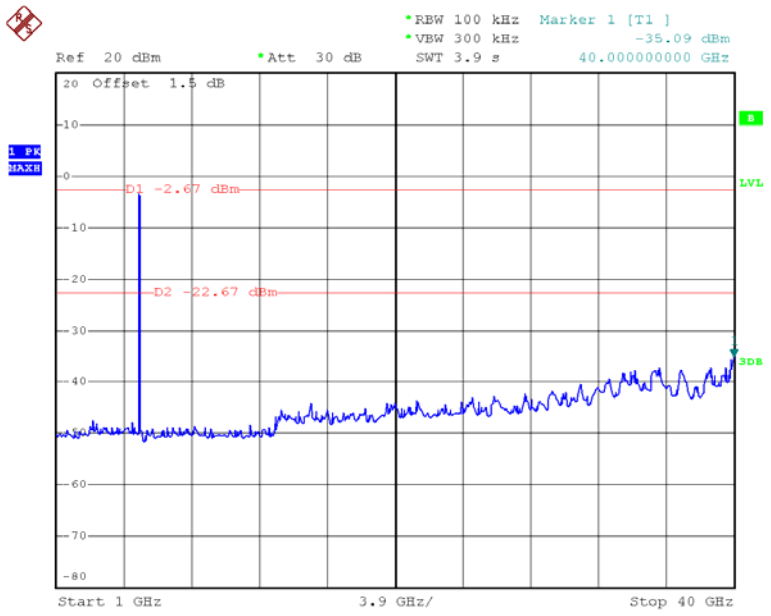
Date: 28.AUG.2013 15:38:58

TX mode CH165 (30M~1000MHz)



Date: 28.AUG.2013 15:31:18

TX mode CH165 (1000MHz~10th Harmonic)

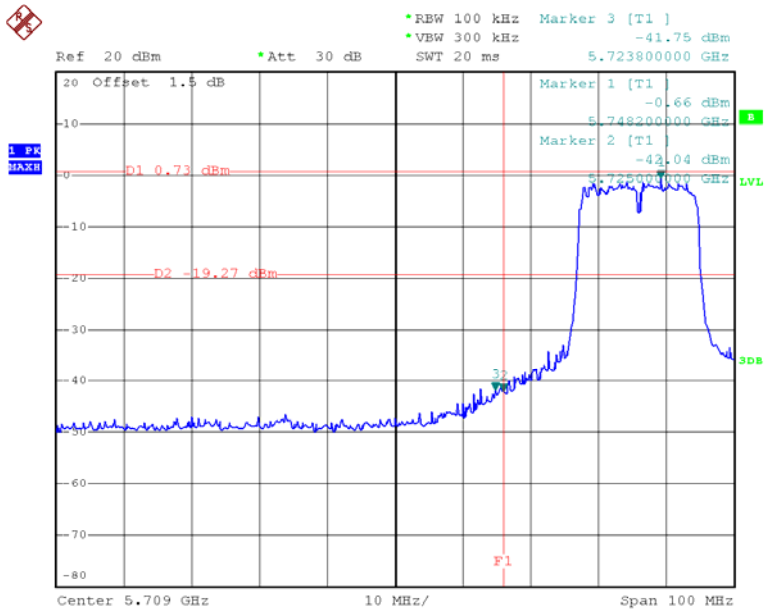


Date: 28.AUG.2013 15:31:31

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20Mode /CH149, CH157, CH165 / ANT 2 / Integral Antenna		

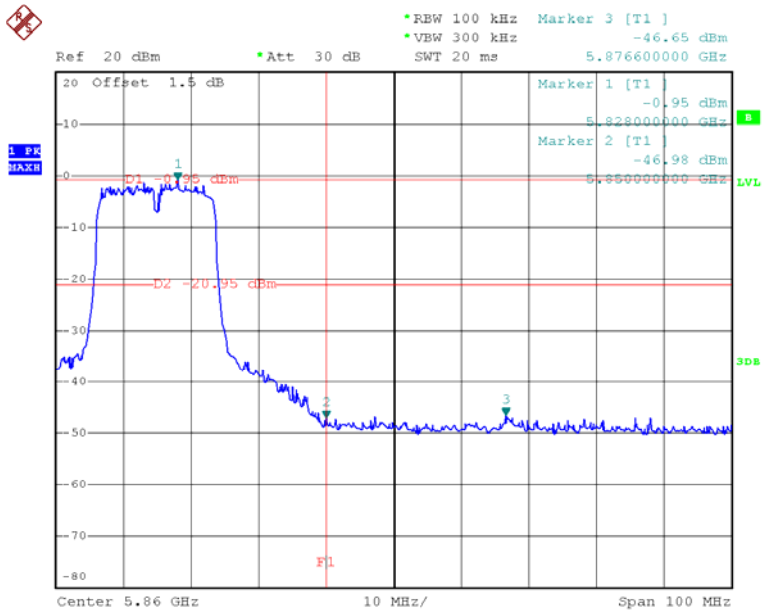
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5723.80	-41.75	5876.60	-46.65
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



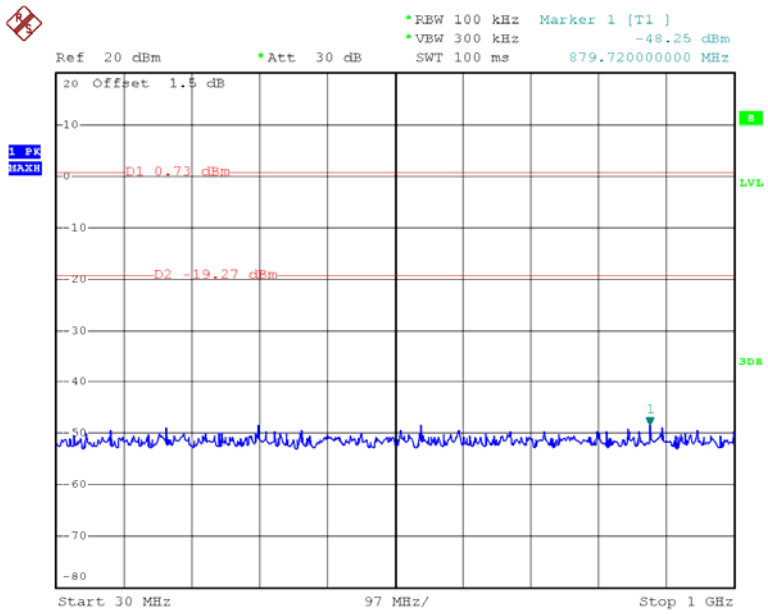
Date: 28.AUG.2013 15:17:11

TX mode CH165



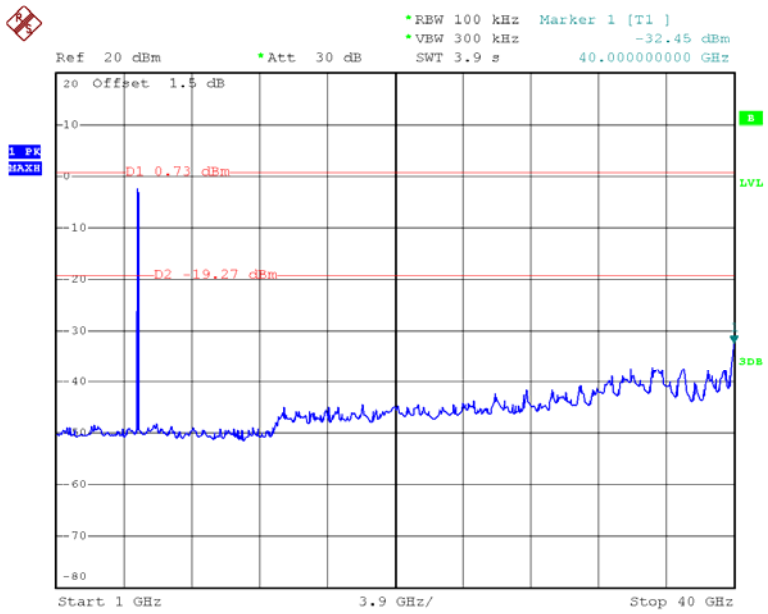
Date: 28.AUG.2013 15:33:23

TX mode CH149 (30M~1000MHz)



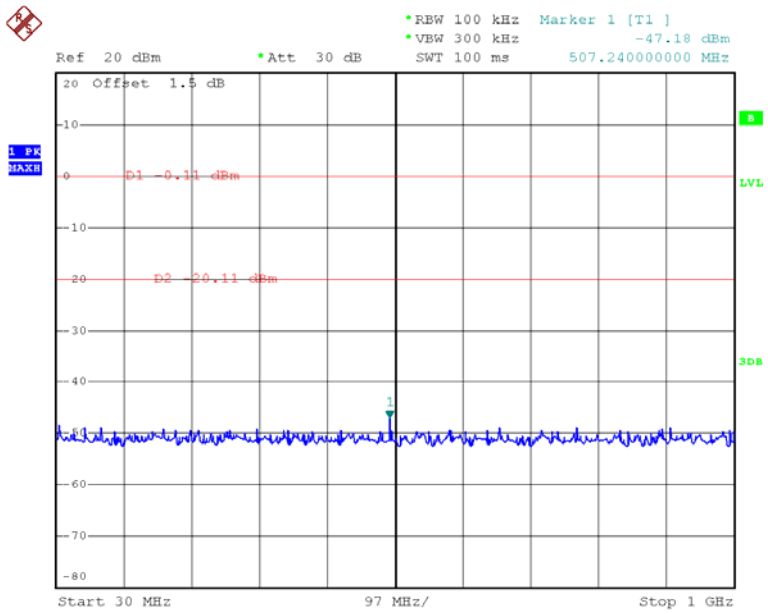
Date: 28.AUG.2013 15:17:23

TX mode CH149 (1000MHz~10th Harmonic)



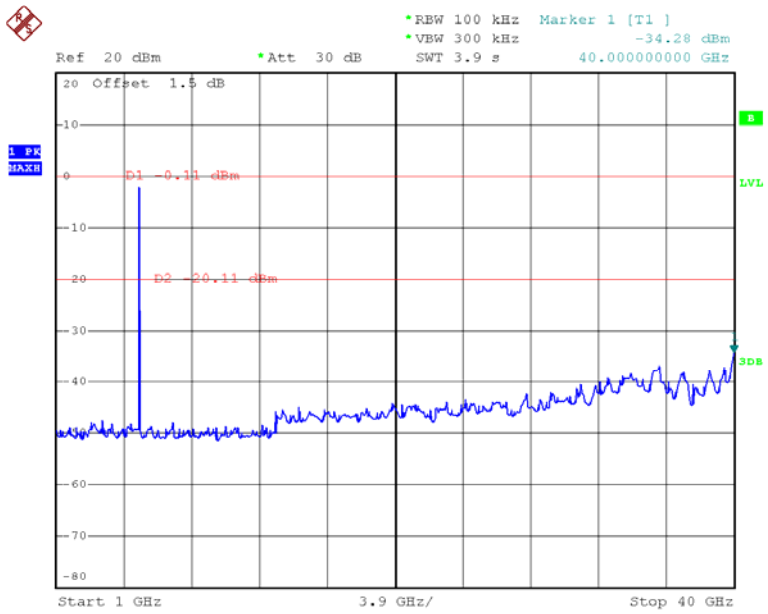
Date: 28.AUG.2013 15:17:36

TX mode CH157 (30M~1000MHz)



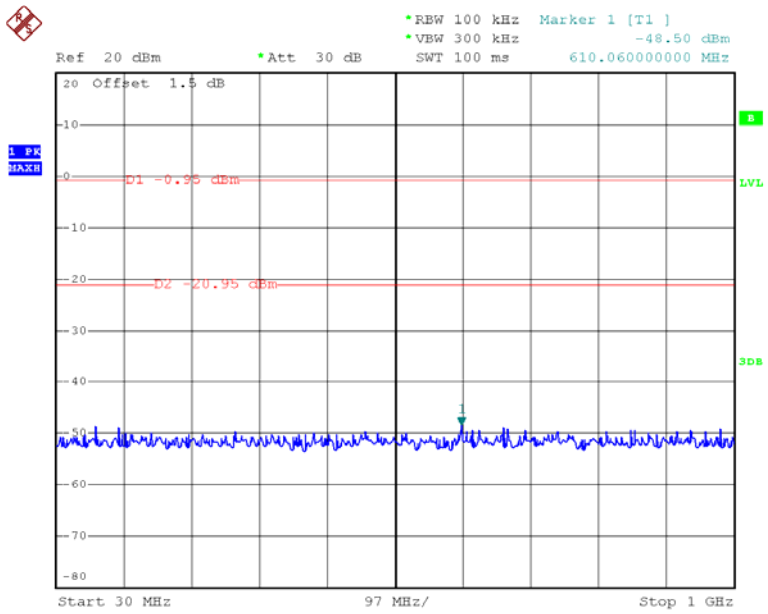
Date: 28.AUG.2013 15:43:11

TX mode CH157 (1000MHz~10th Harmonic)



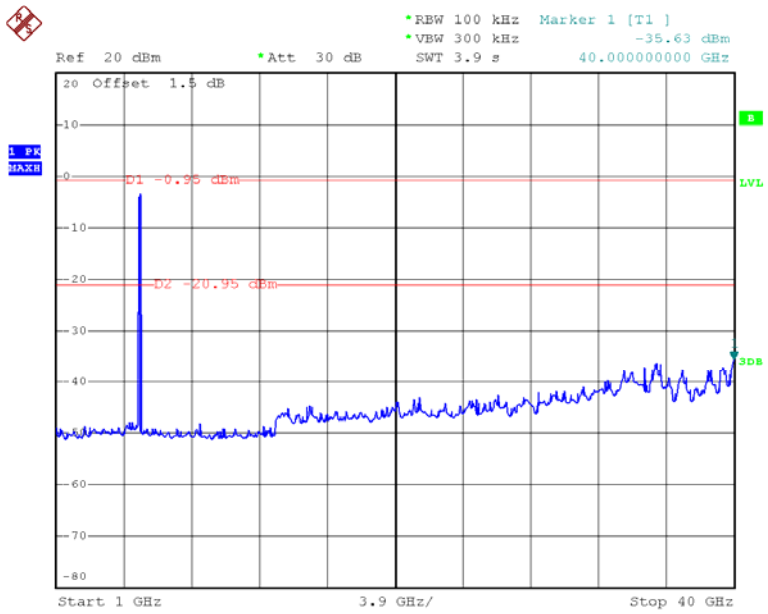
Date: 28.AUG.2013 15:43:02

TX mode CH165 (30M~1000MHz)



Date: 28.AUG.2013 15:33:35

TX mode CH165 (1000MHz~10th Harmonic)

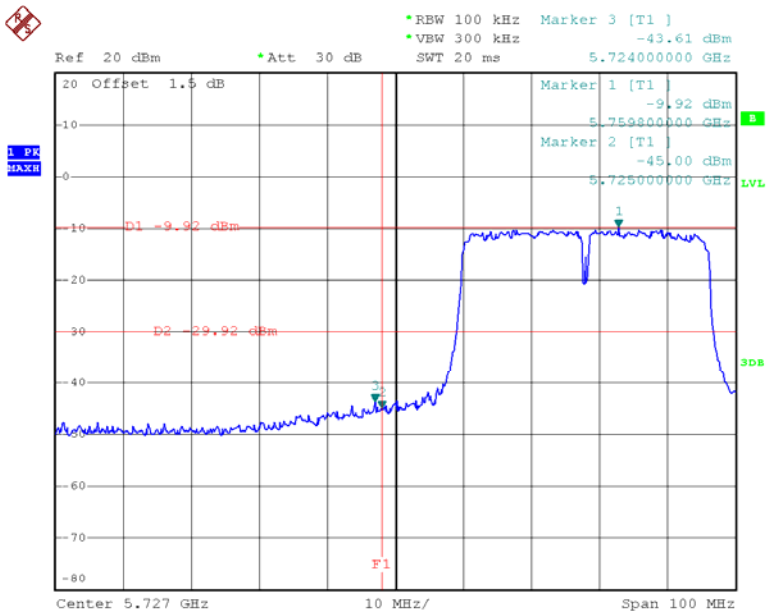


Date: 28.AUG.2013 15:33:48

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40Mode /CH151, CH159 / ANT 1 / Integral Antenna		

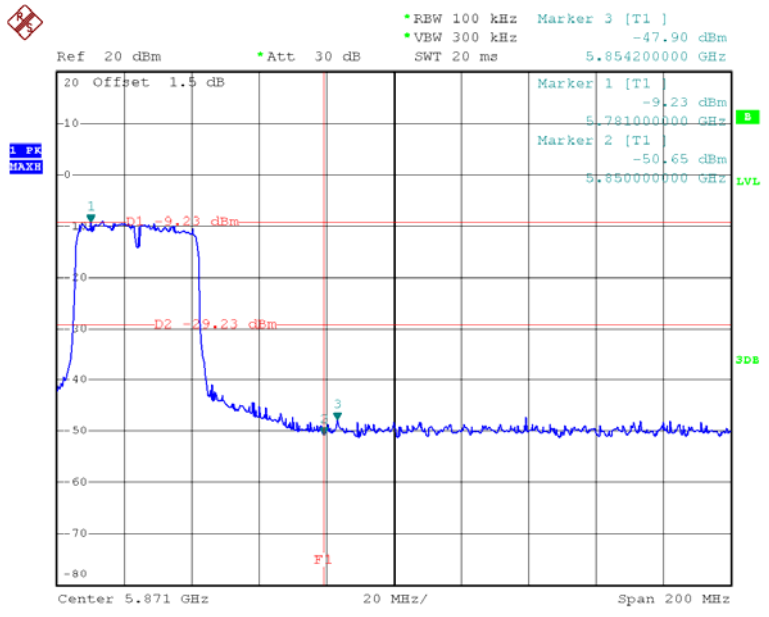
Channel of Worst Data: CH151			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.00	-43.61	5854.20	-47.90
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH151



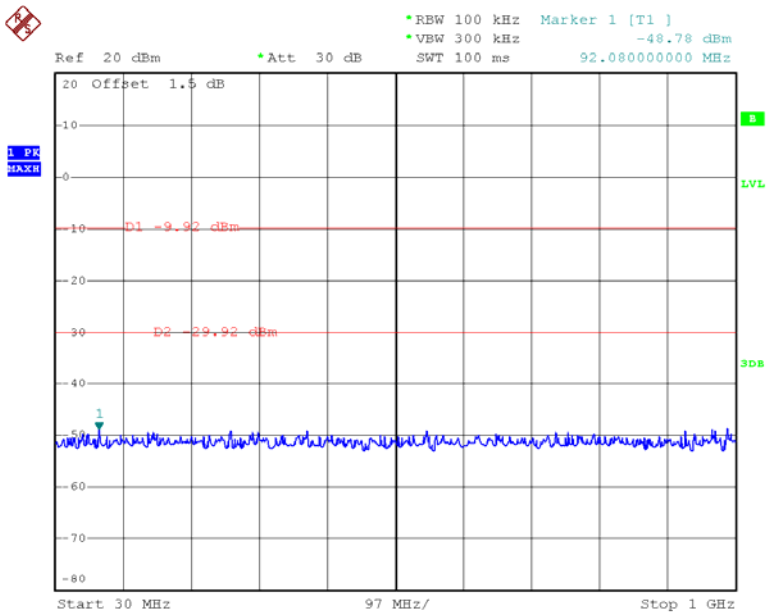
Date: 28.AUG.2013 16:00:44

TX mode CH159



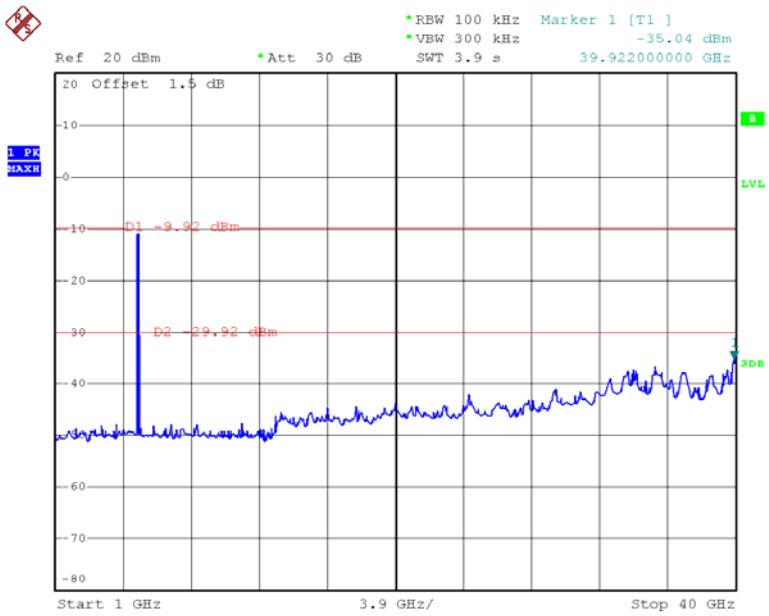
Date: 28.AUG.2013 16:14:01

TX mode CH151(30M~1000MHz)



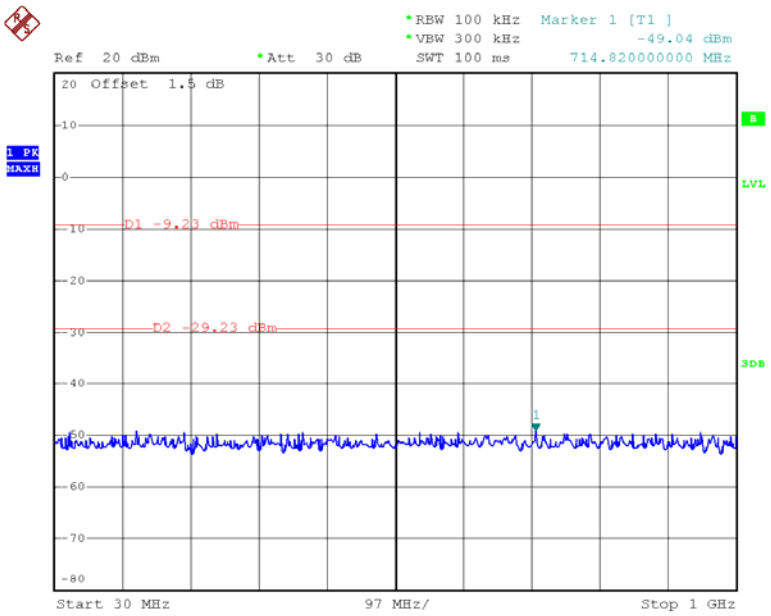
Date: 28.AUG.2013 16:00:57

TX mode CH151 (1000MHz~10th Harmonic)



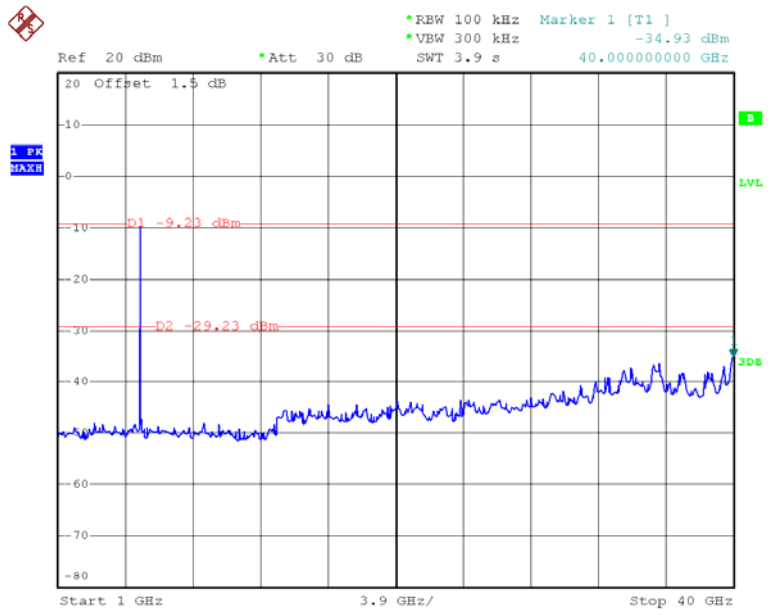
Date: 28.AUG.2013 16:01:12

TX mode CH159 (30M~1000MHz)



Date: 28.AUG.2013 16:14:10

TX mode CH159 (1000MHz~10th Harmonic)

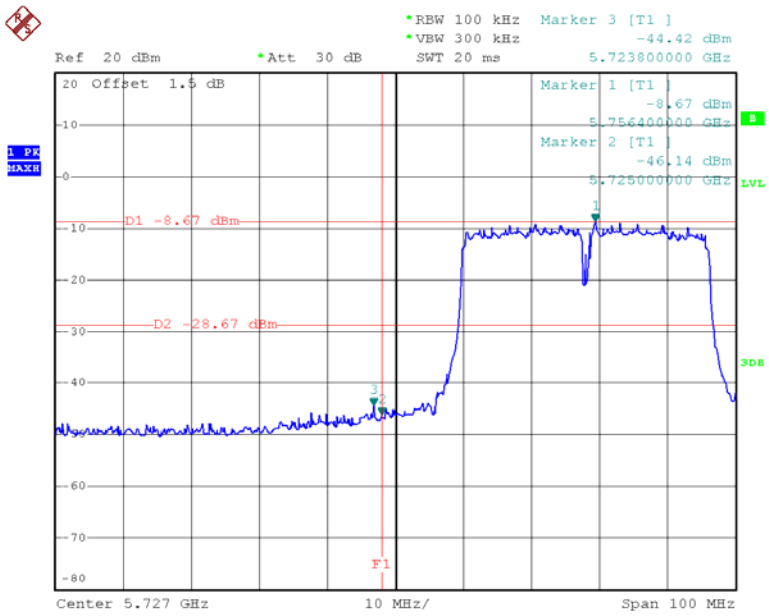


Date: 28.AUG.2013 16:14:24

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40Mode /CH151, CH159 / ANT 2 / Integral Antenna		

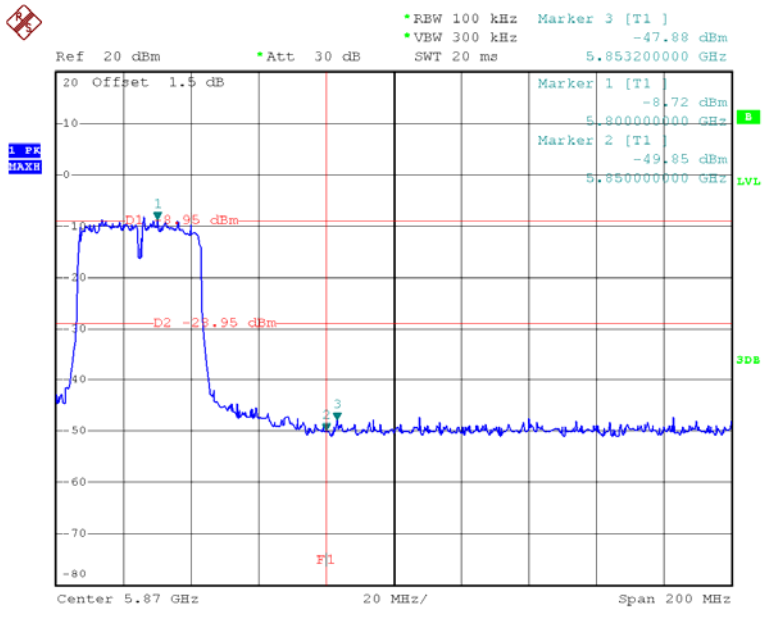
Channel of Worst Data: CH151			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5723.80	-44.42	5853.20	-47.88
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH151



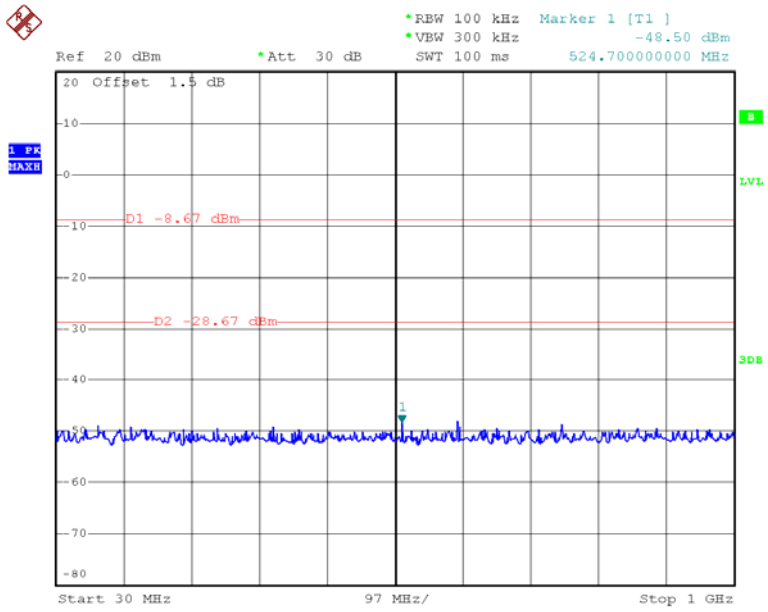
Date: 28.AUG.2013 15:57:38

TX mode CH159



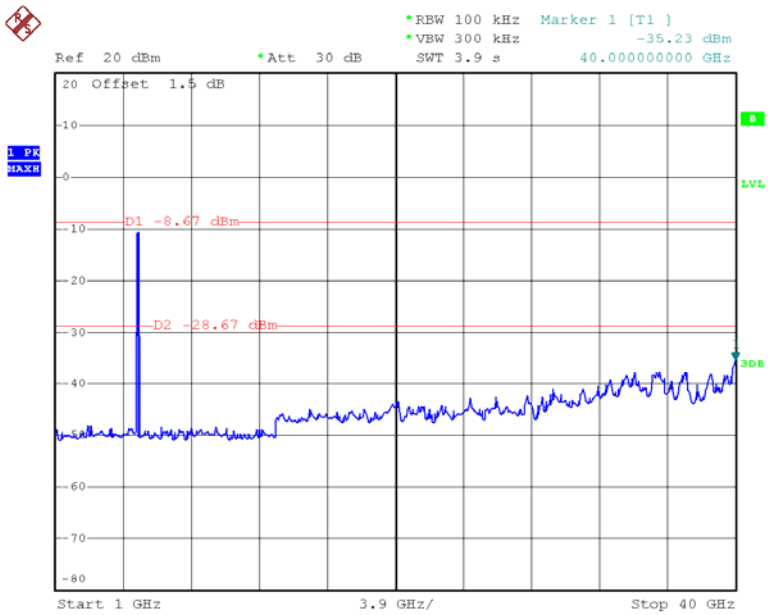
Date: 28.AUG.2013 16:10:41

TX mode CH151(30M~1000MHz)



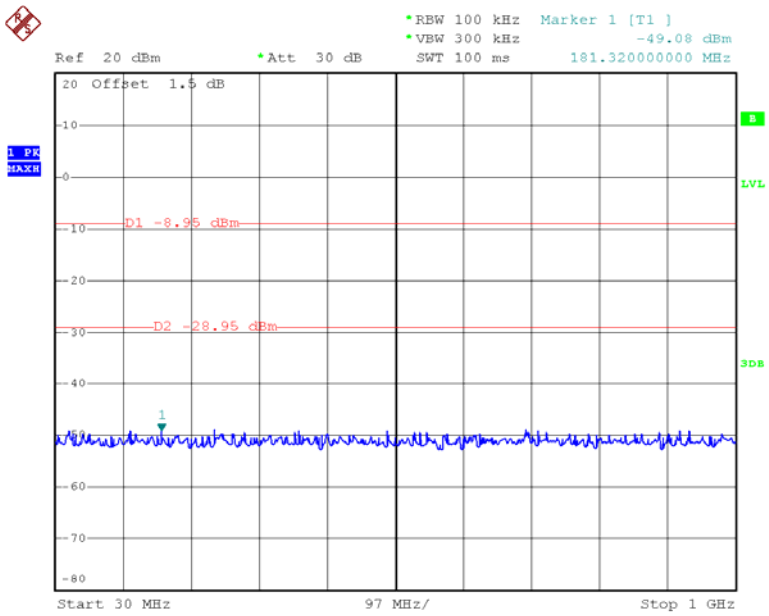
Date: 28.AUG.2013 15:57:50

TX mode CH151 (1000MHz~10th Harmonic)



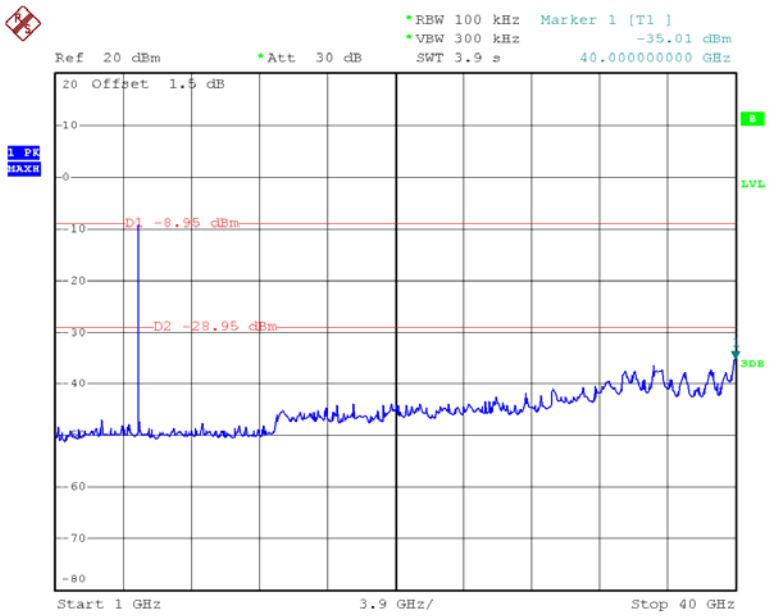
Date: 28.AUG.2013 15:58:09

TX mode CH159 (30M~1000MHz)



Date: 28.AUG.2013 16:10:53

TX mode CH159 (1000MHz~10th Harmonic)

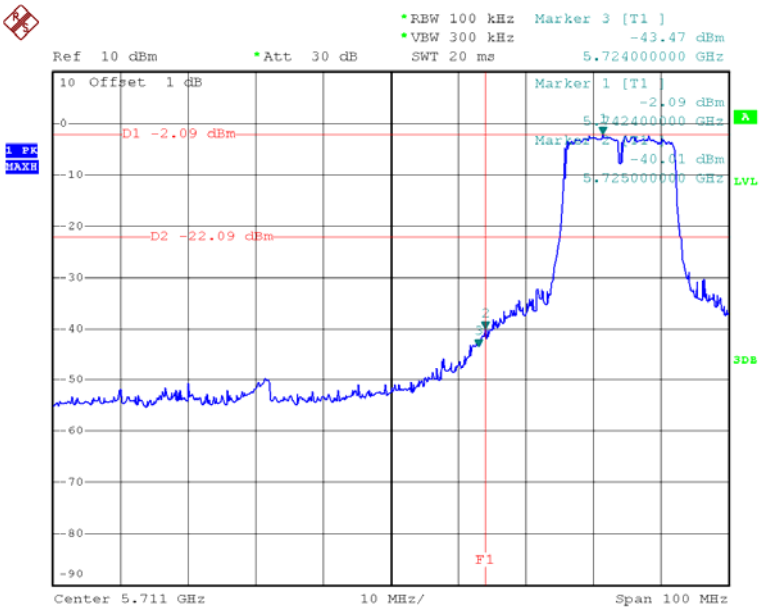


Date: 28.AUG.2013 16:11:12

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

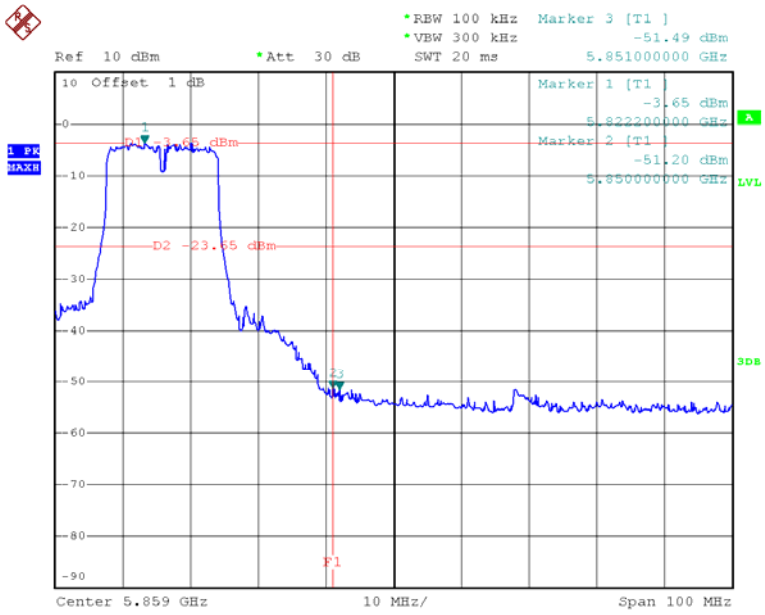
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-40.01	5850.00	-51.20
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



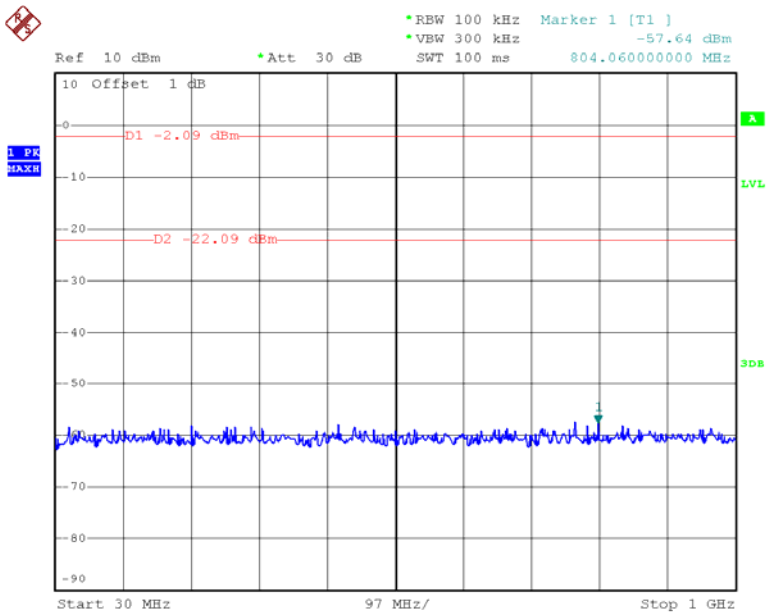
Date: 5.SEP.2013 21:01:49

TX mode CH165



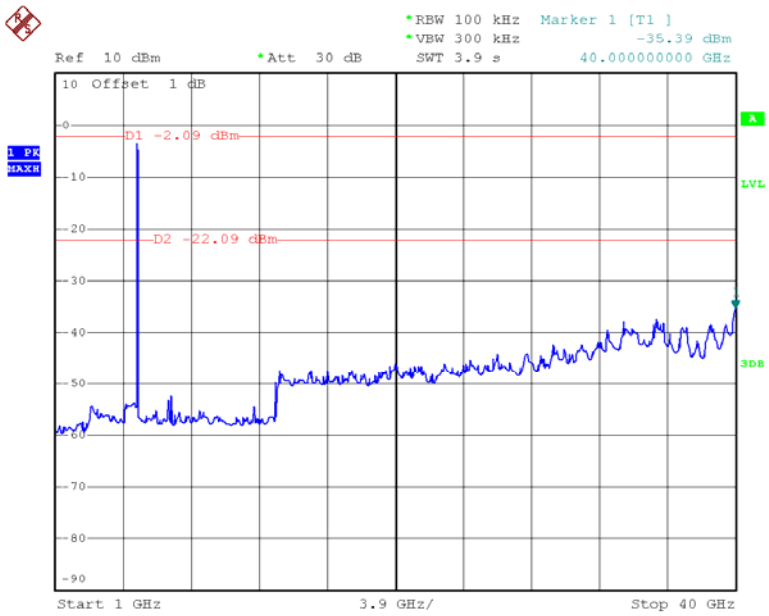
Date: 5.SEP.2013 21:11:28

TX mode CH149 (30M~1000MHz)



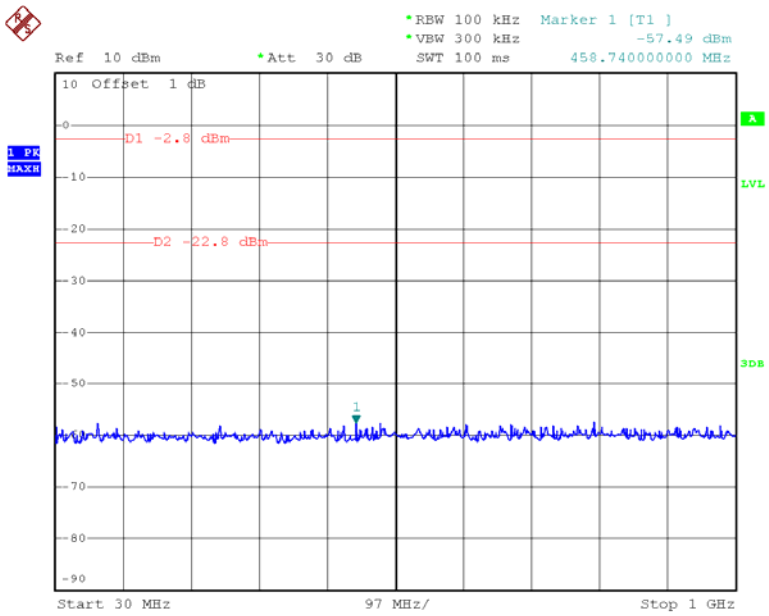
Date: 5.SEP.2013 21:02:37

TX mode CH149 (1000MHz~10th Harmonic)



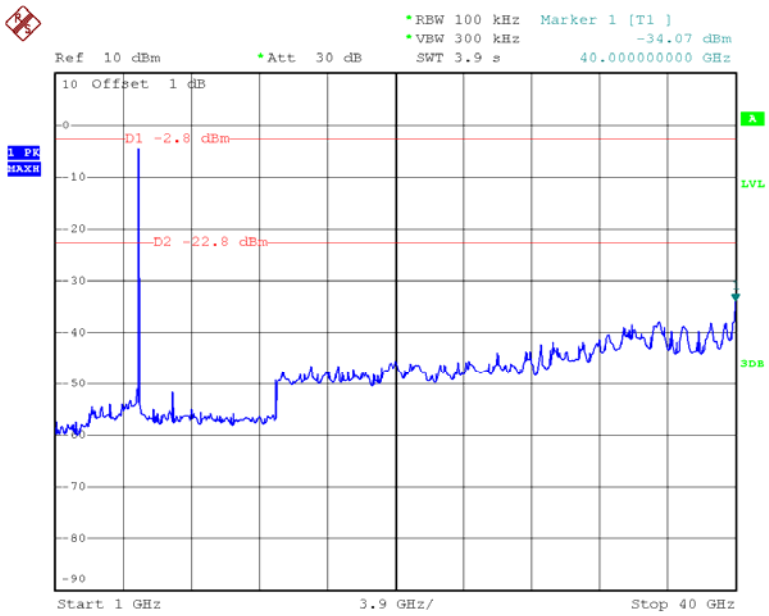
Date: 5.SEP.2013 21:02:50

TX mode CH157 (30M~1000MHz)



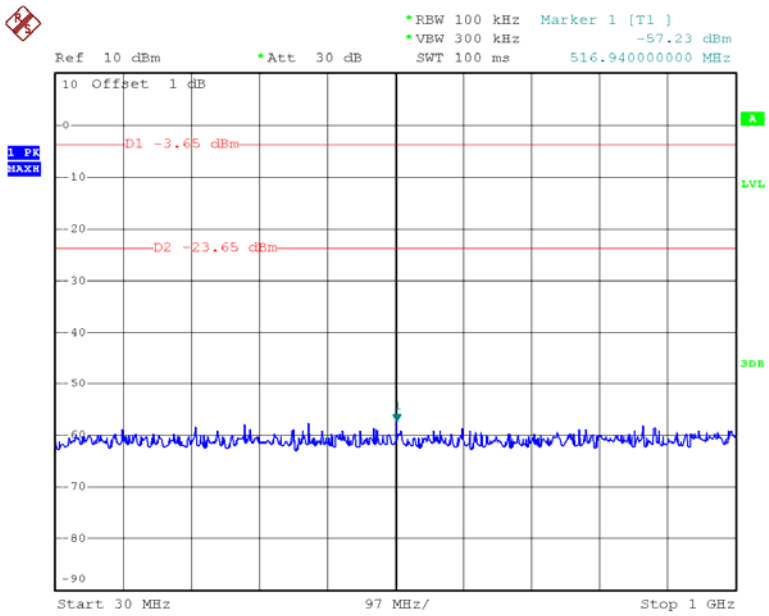
Date: 5.SEP.2013 21:17:35

TX mode CH157 (1000MHz~10th Harmonic)



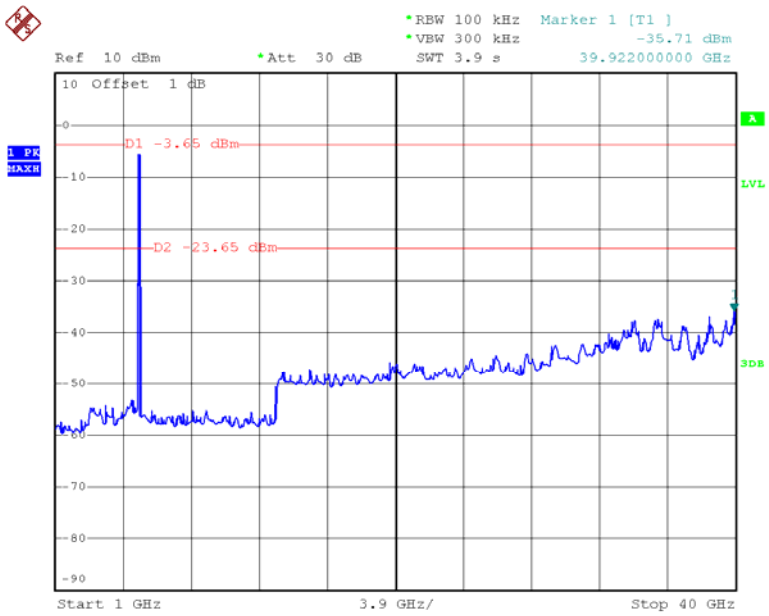
Date: 5.SEP.2013 21:17:50

TX mode CH165 (30M~1000MHz)



Date: 5.SEP.2013 21:11:36

TX mode CH165 (1000MHz~10th Harmonic)

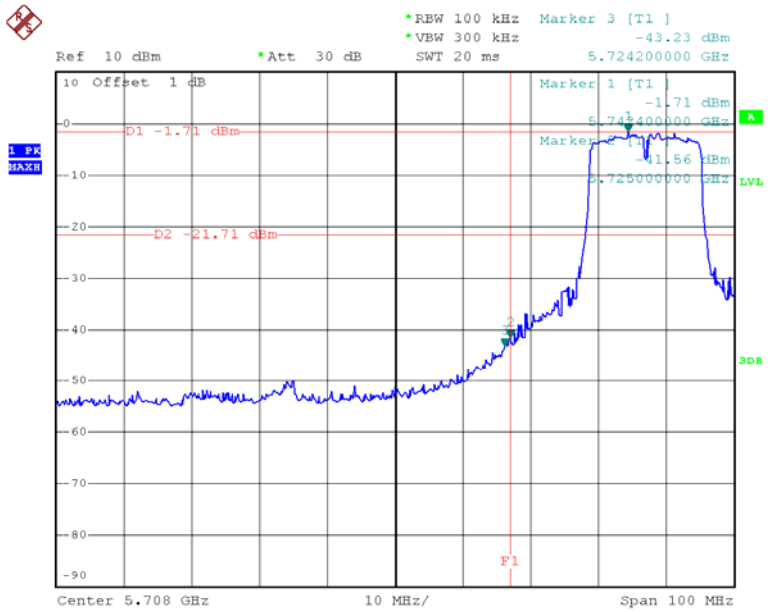


Date: 5.SEP.2013 21:11:48

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

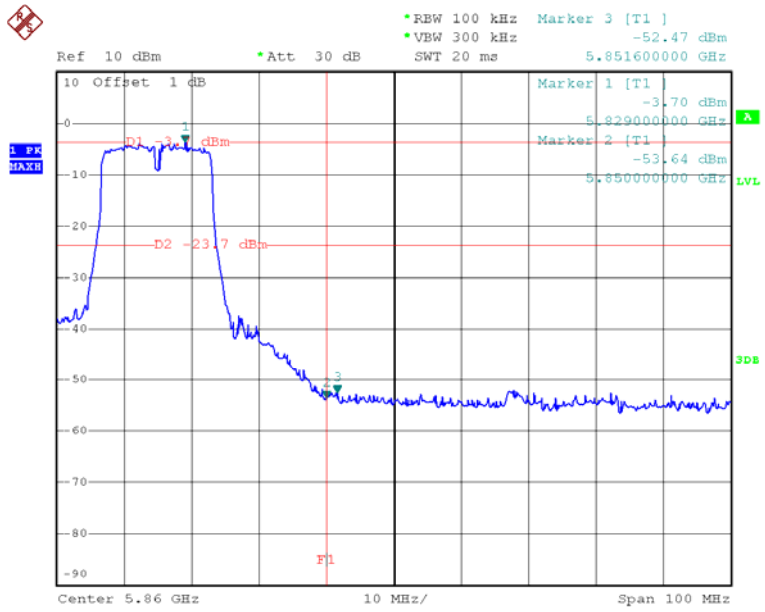
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-41.56	5851.60	-52.47
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



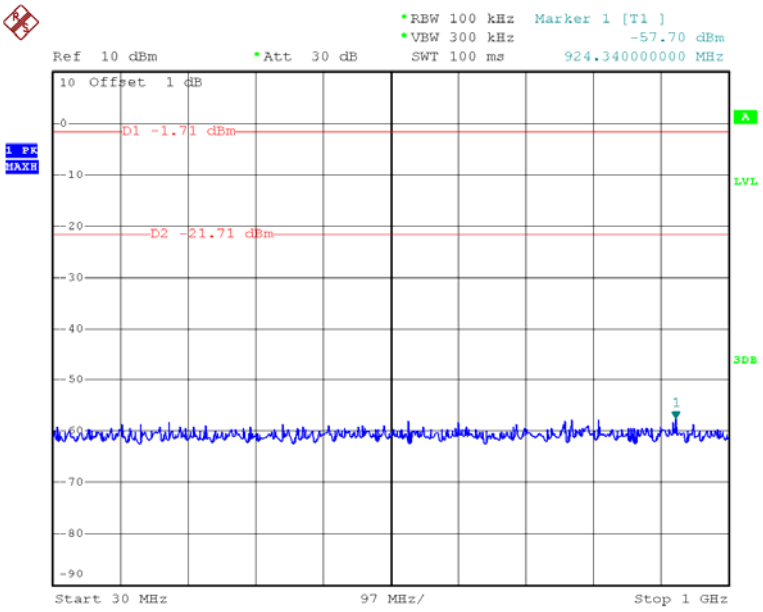
Date: 5.SEP.2013 20:57:40

TX mode CH165



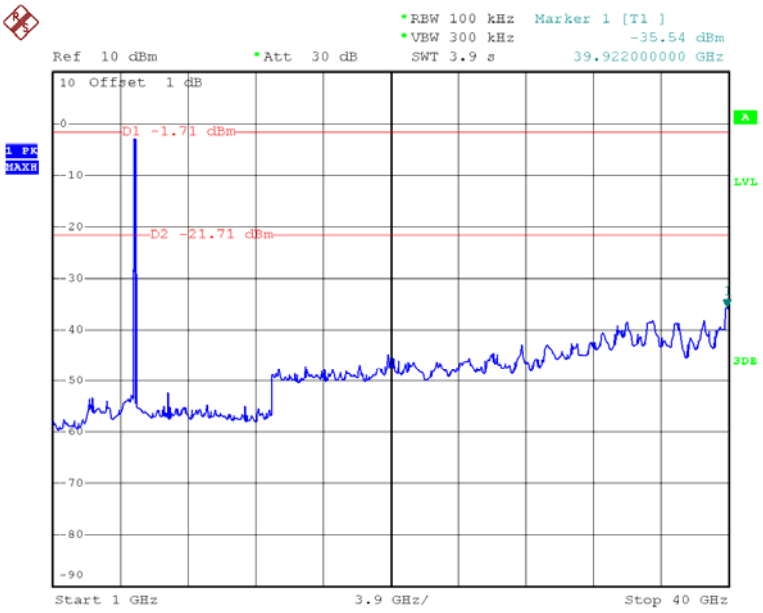
Date: 5.SEP.2013 21:07:56

TX mode CH149 (30M~1000MHz)



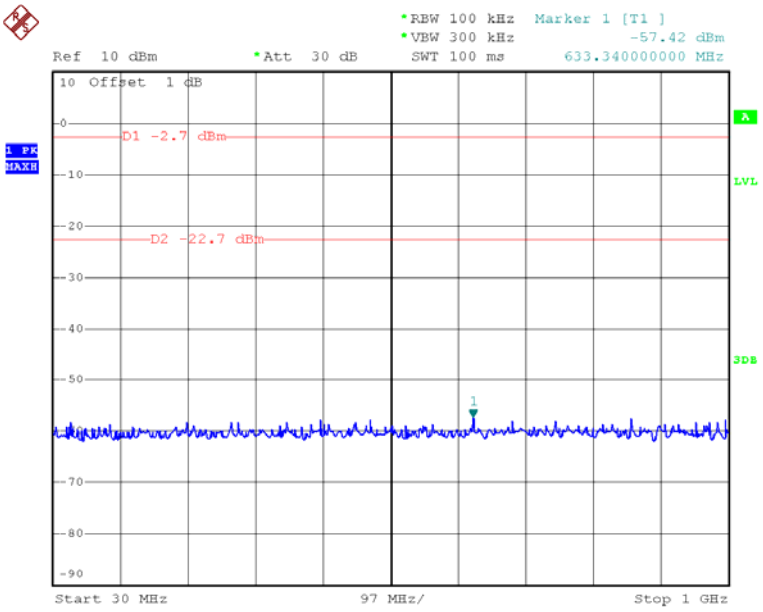
Date: 5.SEP.2013 20:57:50

TX mode CH149 (1000MHz~10th Harmonic)



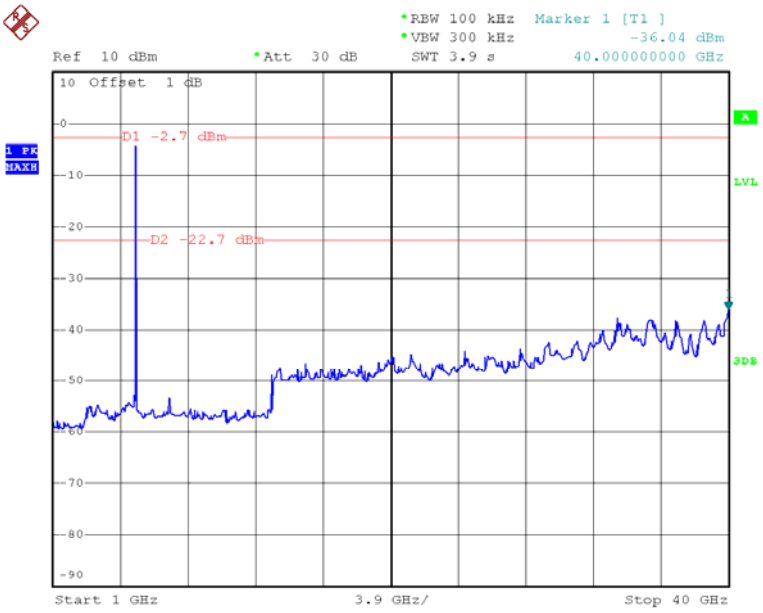
Date: 5.SEP.2013 20:58:10

TX mode CH157 (30M~1000MHz)



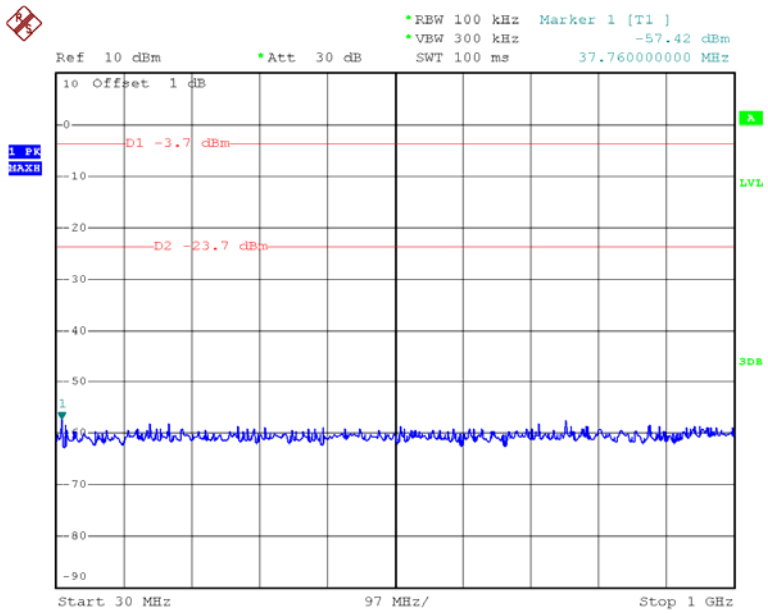
Date: 5.SEP.2013 21:15:39

TX mode CH157 (1000MHz~10th Harmonic)



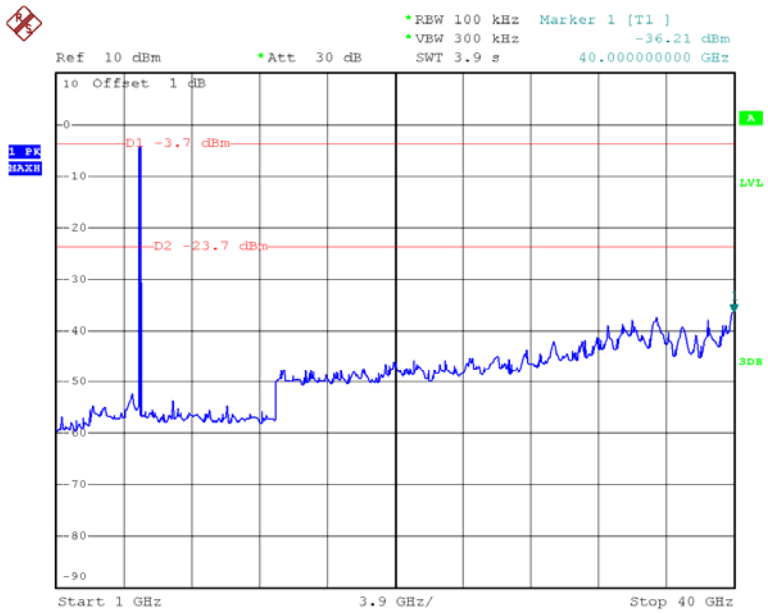
Date: 5.SEP.2013 21:15:55

TX mode CH165 (30M~1000MHz)



Date: 5.SEP.2013 21:08:06

TX mode CH165 (1000MHz~10th Harmonic)

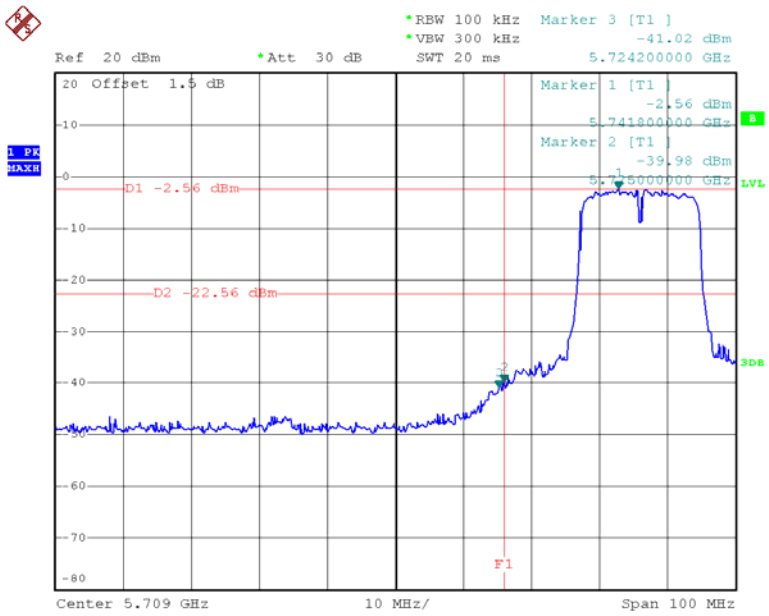


Date: 5.SEP.2013 21:08:18

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

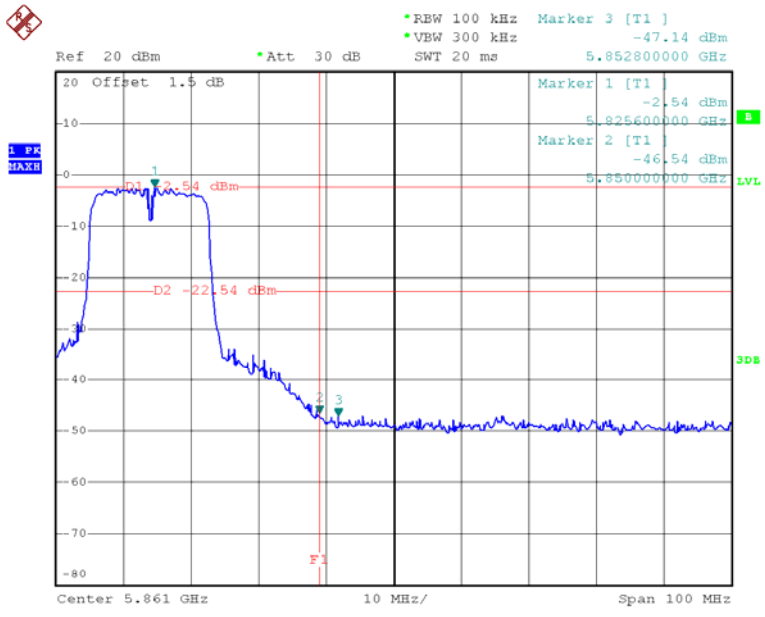
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-39.98	5850.00	-46.54
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



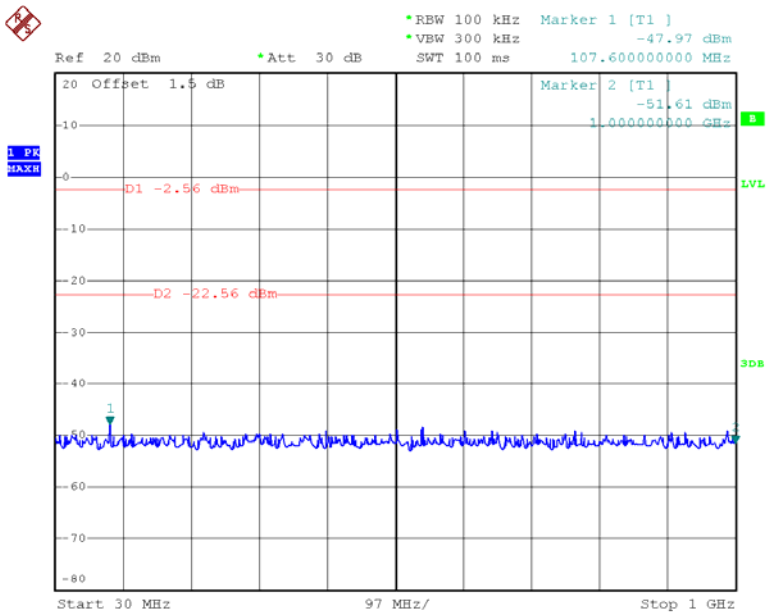
Date: 28.AUG.2013 15:15:21

TX mode CH165



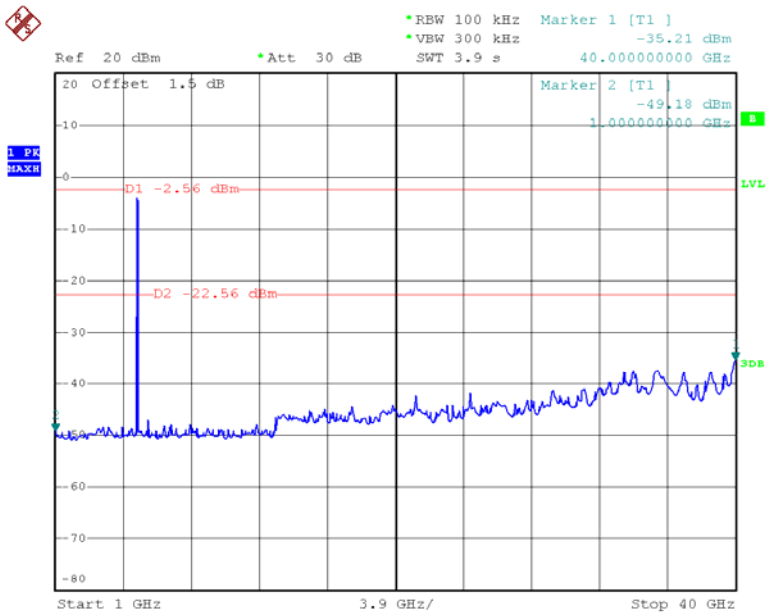
Date: 28.AUG.2013 15:32:04

TX mode CH149 (30M~1000MHz)



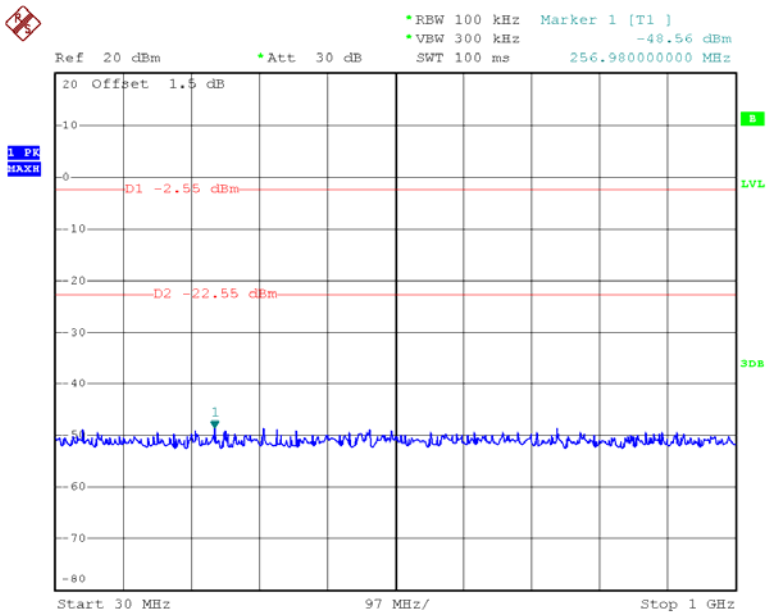
Date: 28.AUG.2013 15:15:35

TX mode CH149 (1000MHz~10th Harmonic)



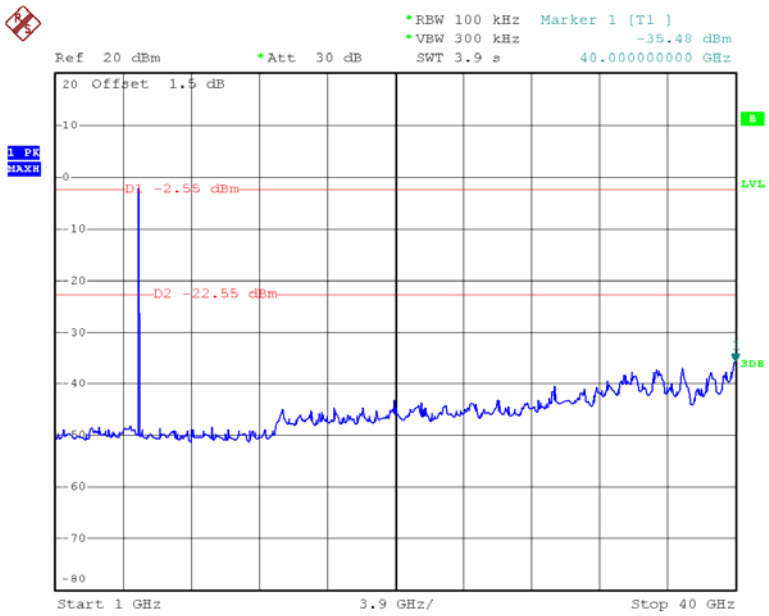
Date: 28.AUG.2013 15:15:51

TX mode CH157 (30M~1000MHz)



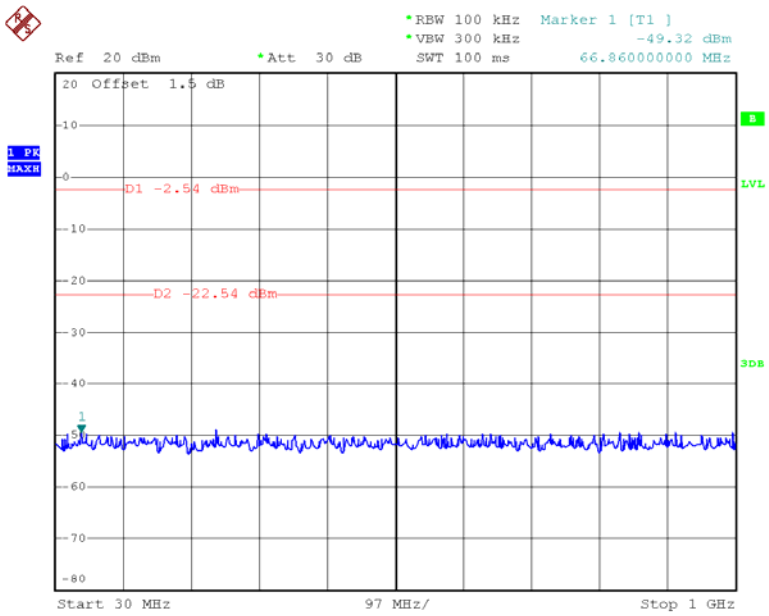
Date: 28.AUG.2013 15:42:10

TX mode CH157 (1000MHz~10th Harmonic)



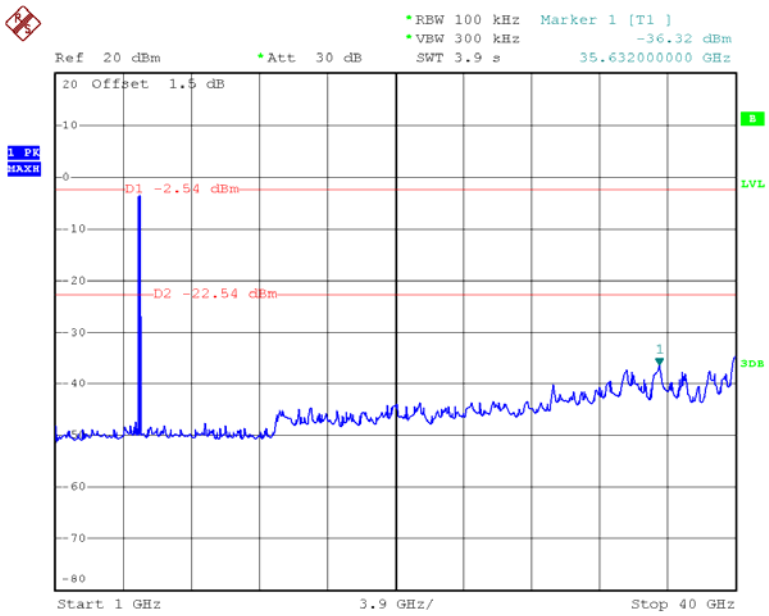
Date: 28.AUG.2013 15:42:23

TX mode CH165 (30M~1000MHz)



Date: 28.AUG.2013 15:32:14

TX mode CH165 (1000MHz~10th Harmonic)

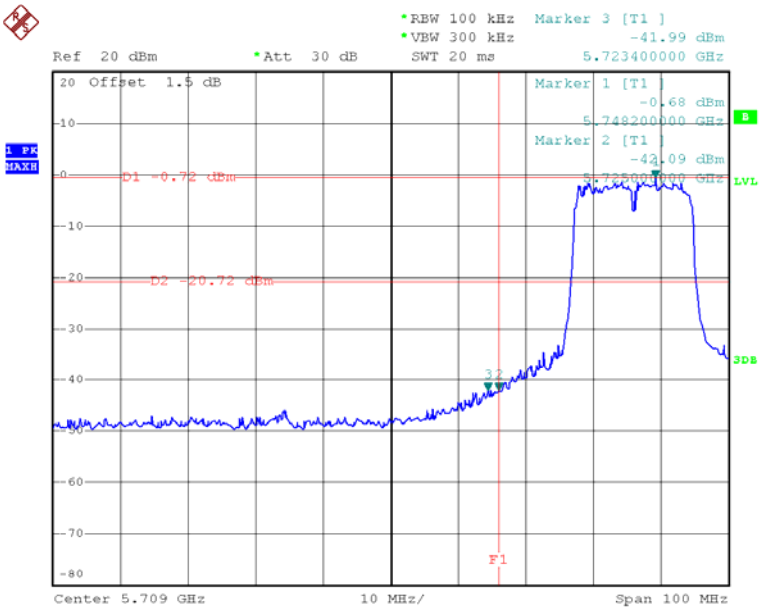


Date: 28.AUG.2013 15:32:29

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

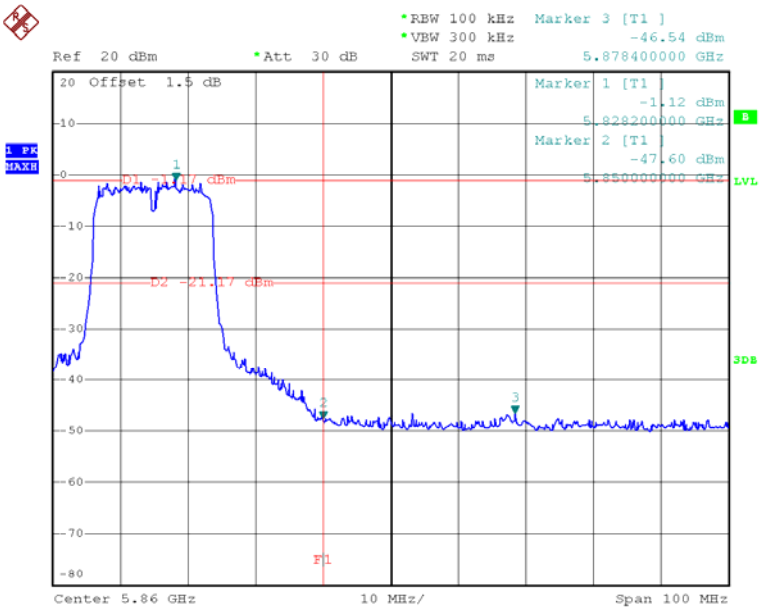
Channel of Worst Data: CH149			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5725.00	-42.09	5878.40	-46.54
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH149



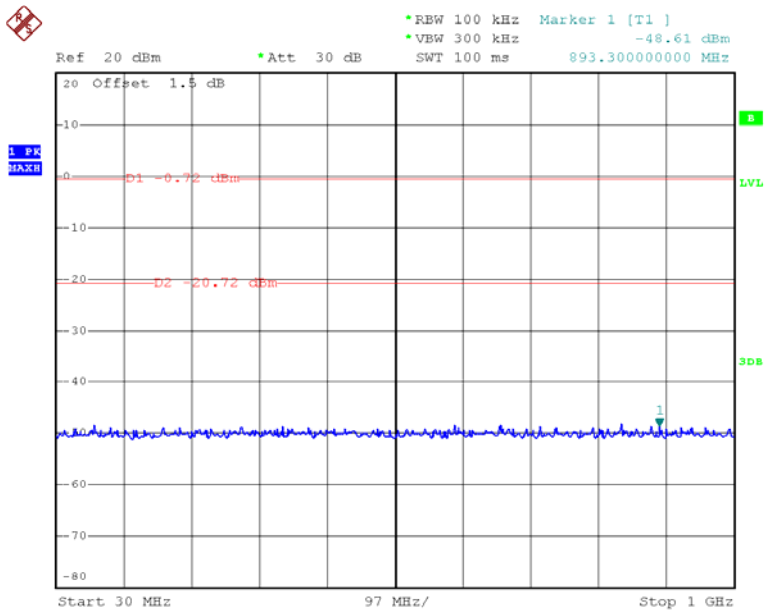
Date: 28.AUG.2013 15:18:53

TX mode CH165



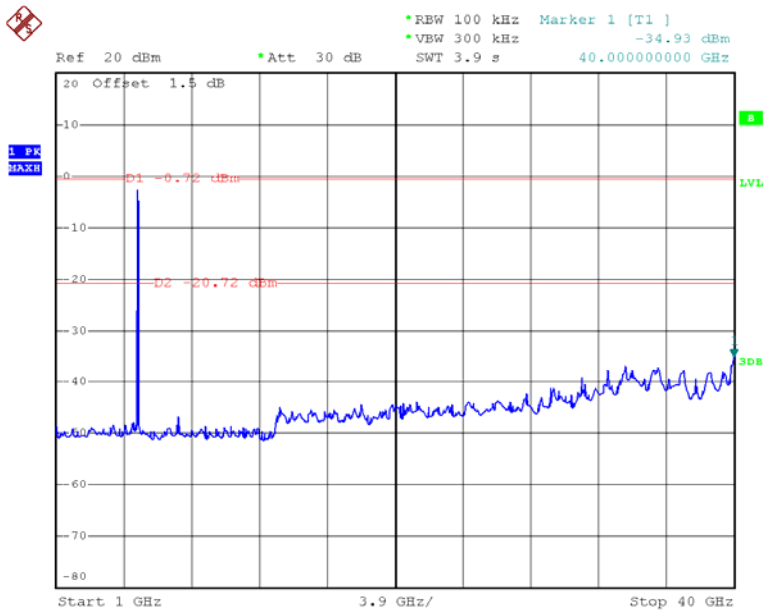
Date: 28.AUG.2013 15:34:26

TX mode CH149 (30M~1000MHz)



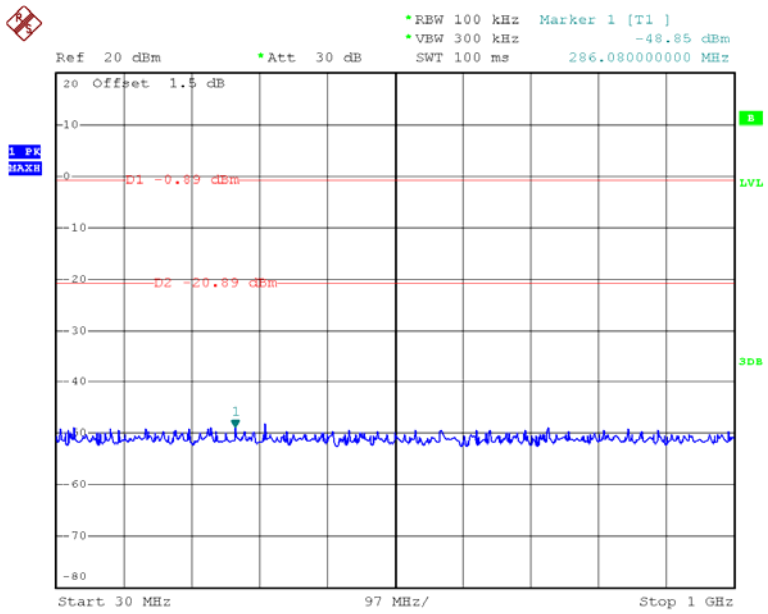
Date: 28.AUG.2013 15:22:28

TX mode CH149 (1000MHz~10th Harmonic)



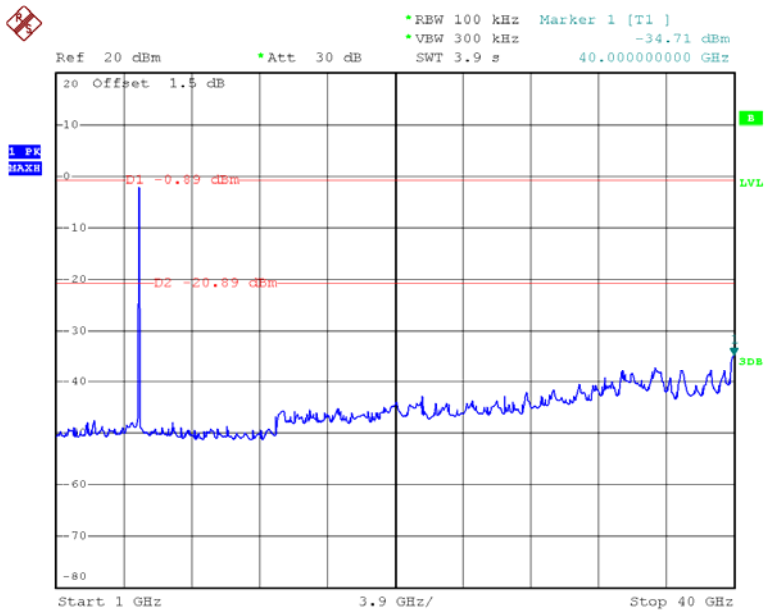
Date: 28.AUG.2013 15:22:41

TX mode CH157 (30M~1000MHz)



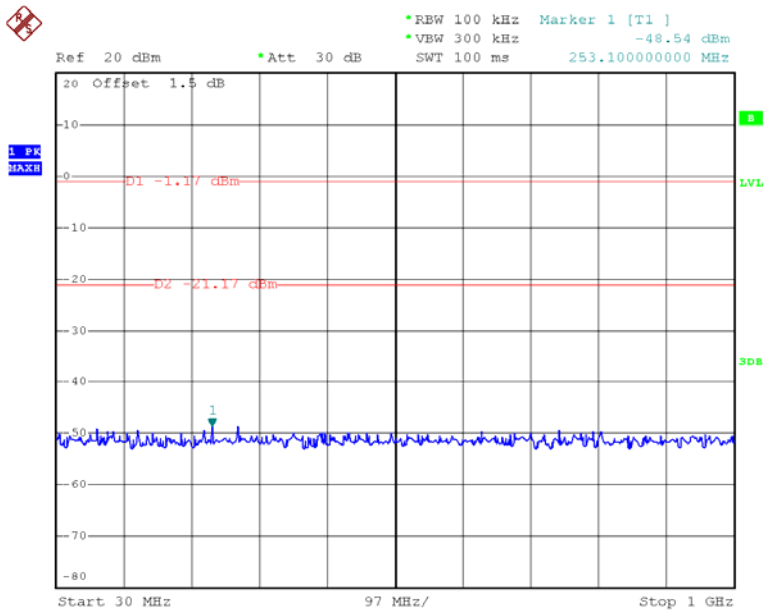
Date: 28.AUG.2013 15:44:31

TX mode CH157 (1000MHz~10th Harmonic)



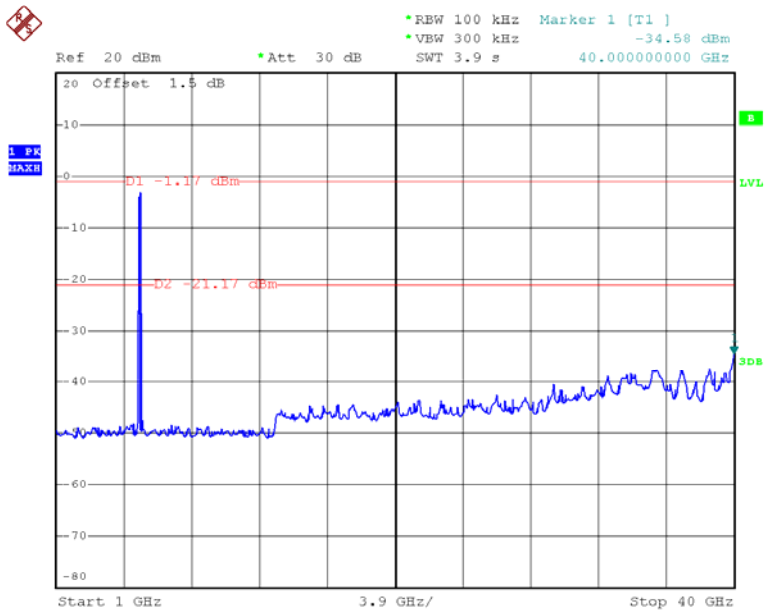
Date: 28.AUG.2013 15:44:44

TX mode CH165 (30M~1000MHz)



Date: 28.AUG.2013 15:34:37

TX mode CH165 (1000MHz~10th Harmonic)

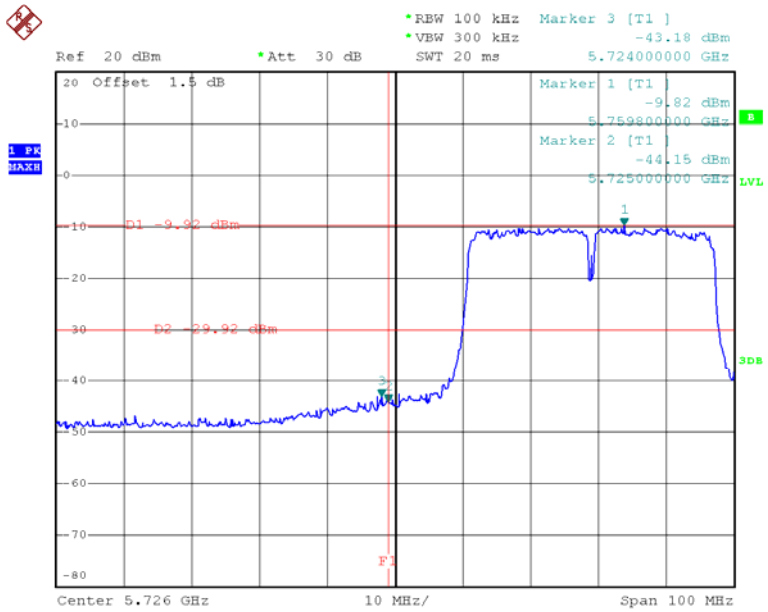


Date: 28.AUG.2013 15:34:52

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40Mode /CH151, CH159 / ANT 1 / Dipole Antenna with external cable		

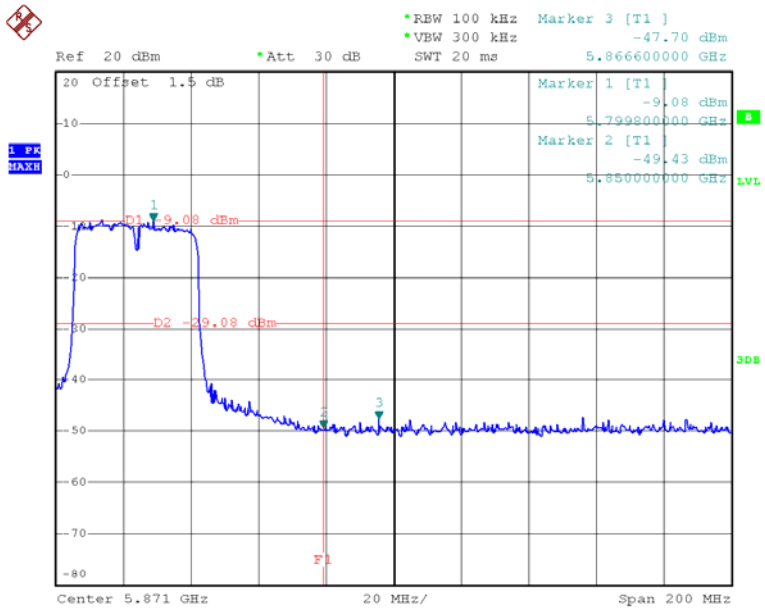
Channel of Worst Data: CH151			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.00	-43.18	5866.60	-47.70
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH151



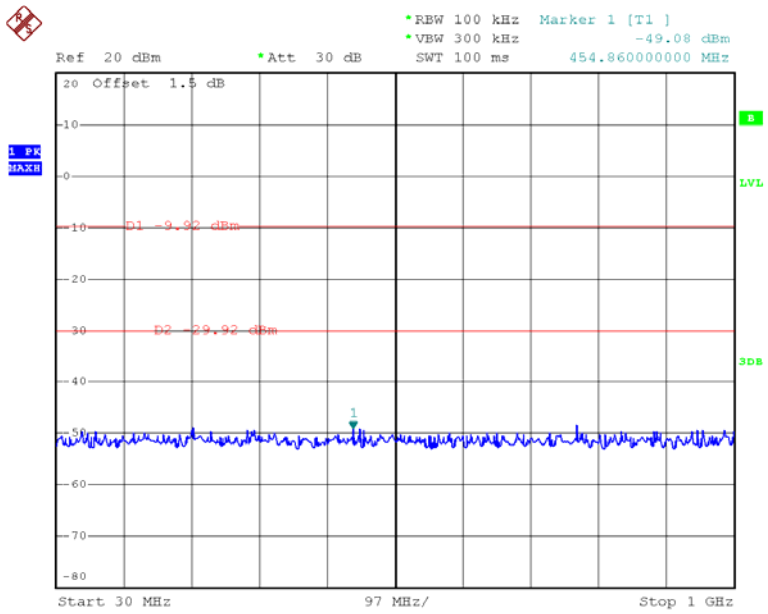
Date: 28.AUG.2013 16:04:57

TX mode CH159



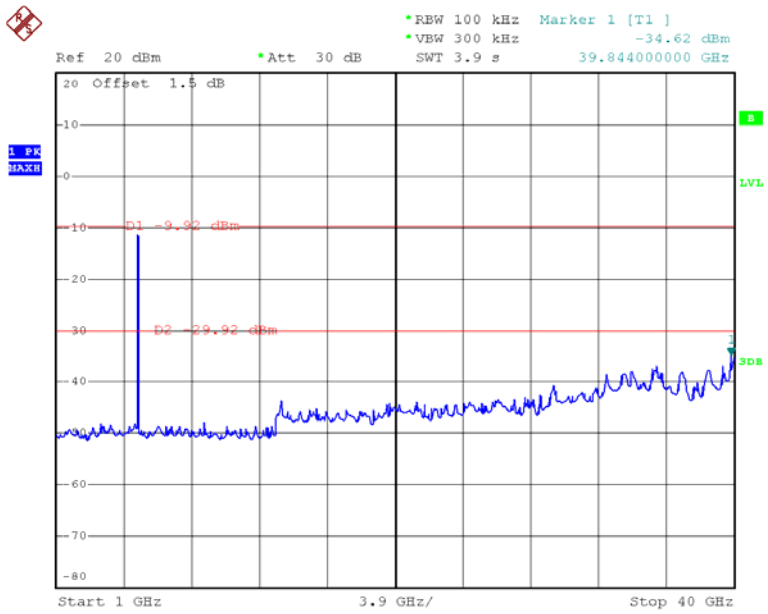
Date: 28.AUG.2013 16:15:07

TX mode CH151(30M~1000MHz)



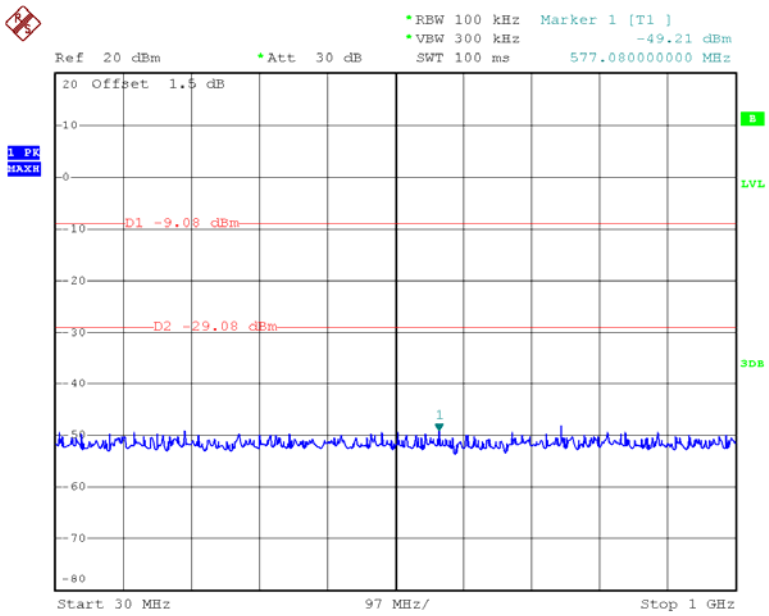
Date: 28.AUG.2013 16:05:12

TX mode CH151 (1000MHz~10th Harmonic)



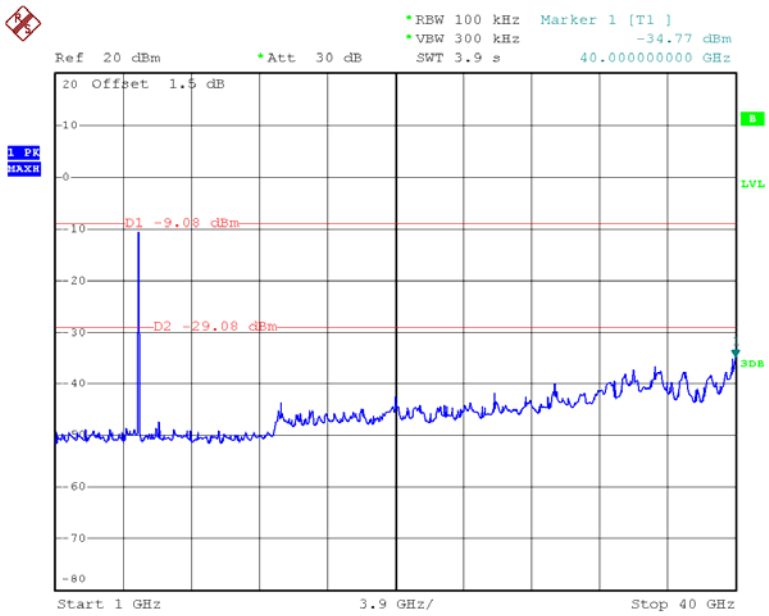
Date: 28.AUG.2013 16:05:27

TX mode CH159 (30M~1000MHz)



Date: 28.AUG.2013 16:15:19

TX mode CH159 (1000MHz~10th Harmonic)

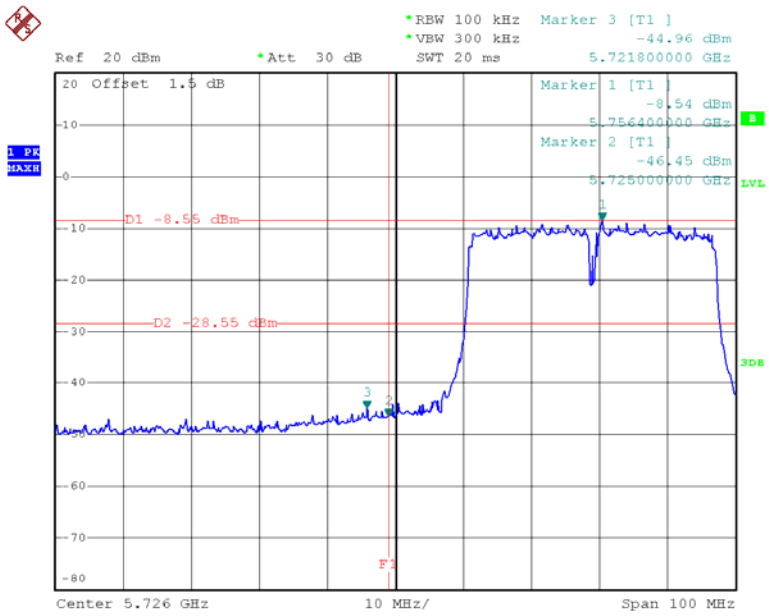


Date: 28.AUG.2013 16:15:41

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40Mode /CH151, CH159 / ANT 2 / Dipole Antenna with external cable		

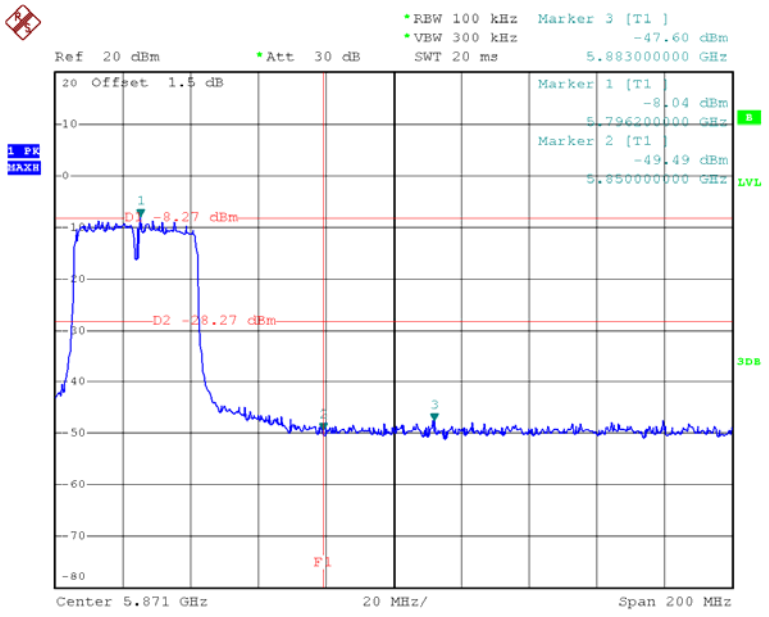
Channel of Worst Data: CH151			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5721.80	-44.96	5883.00	-47.60
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH151



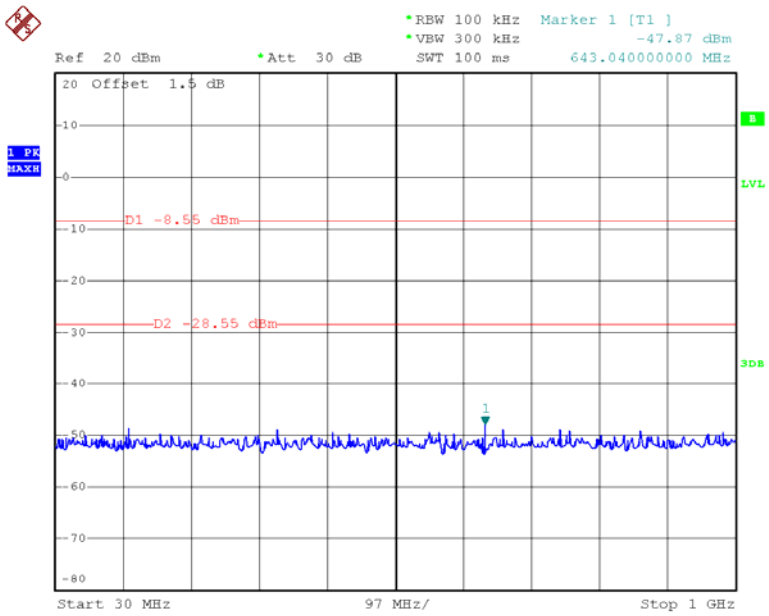
Date: 28.AUG.2013 15:59:19

TX mode CH159



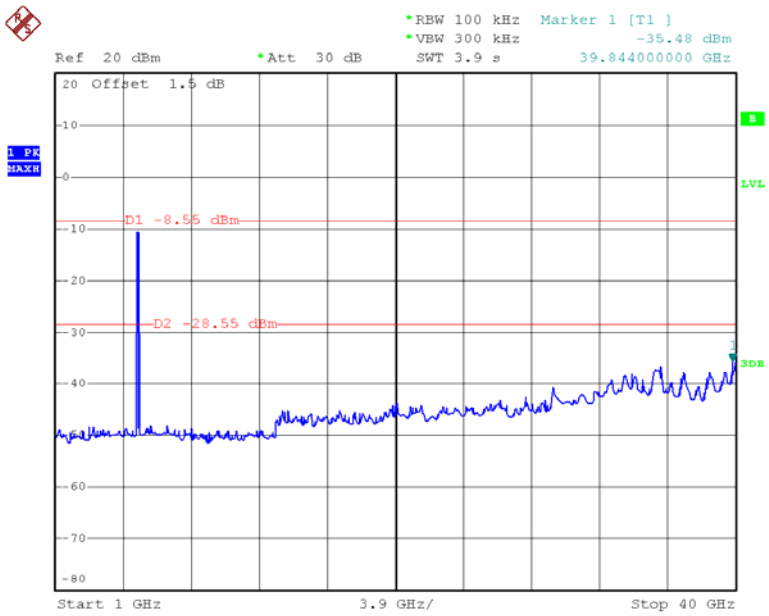
Date: 28.AUG.2013 16:12:14

TX mode CH151(30M~1000MHz)



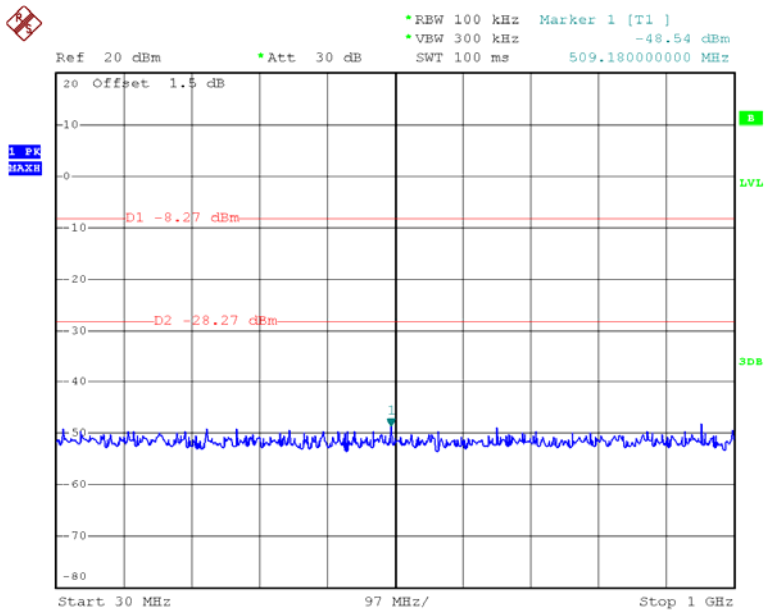
Date: 28.AUG.2013 15:59:29

TX mode CH151 (1000MHz~10th Harmonic)



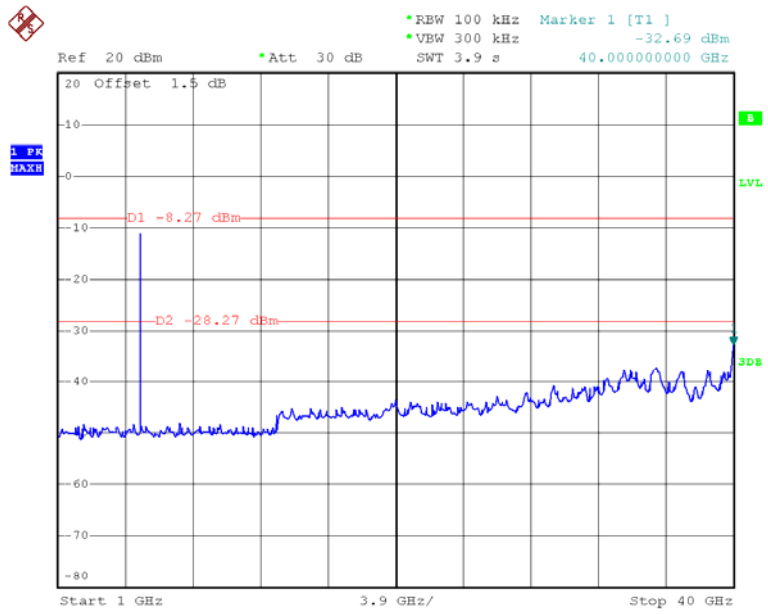
Date: 28.AUG.2013 15:59:43

TX mode CH159 (30M~1000MHz)



Date: 28.AUG.2013 16:12:25

TX mode CH159 (1000MHz~10th Harmonic)



Date: 28.AUG.2013 16:12:41

8. POWER SPECTRAL DENSITY TEST

8.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C / RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e) RSS-210 Annex 8(A8.2(b))	Power Spectral Density	8 dBm (in any 3KHz)	5745 - 5825	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 16, 2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

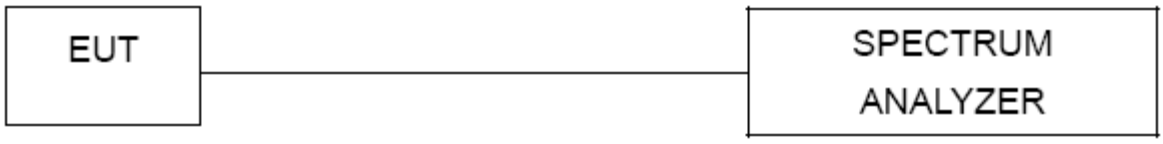
8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW=3KHz, VBW=10KHz, Sweep time = auto.
c. The power spectral density was performed in accordance with method 10.2 of FCC KDB 558074 D01 DTS Meas Guidance v03r01 (A, N20, N40 mode) and 662911 D01 Multiple Transmitter Output v01r02. (N20,N40 mode)

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

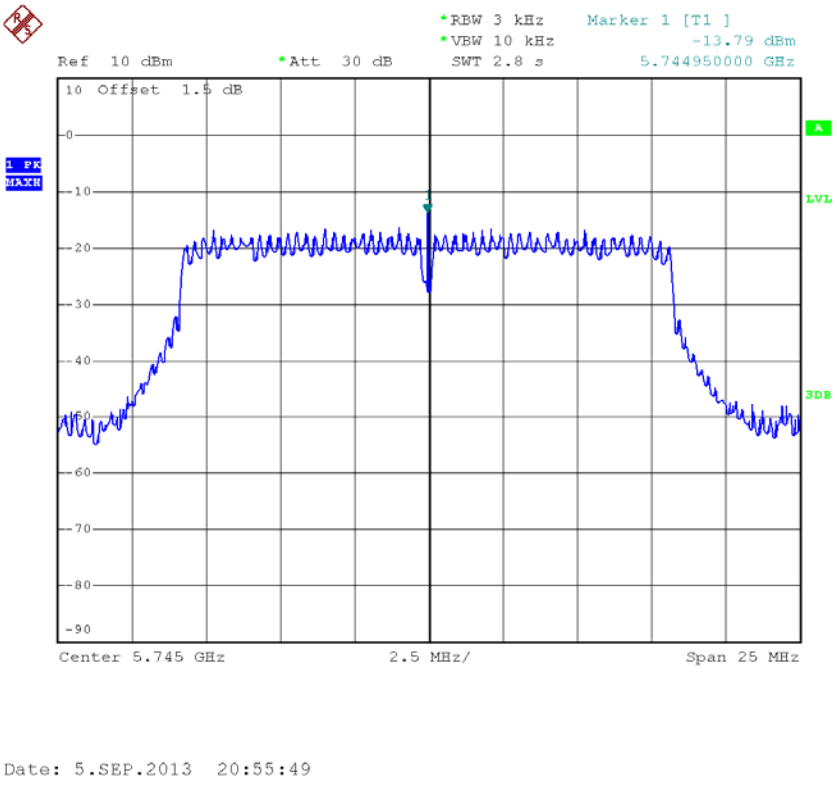
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

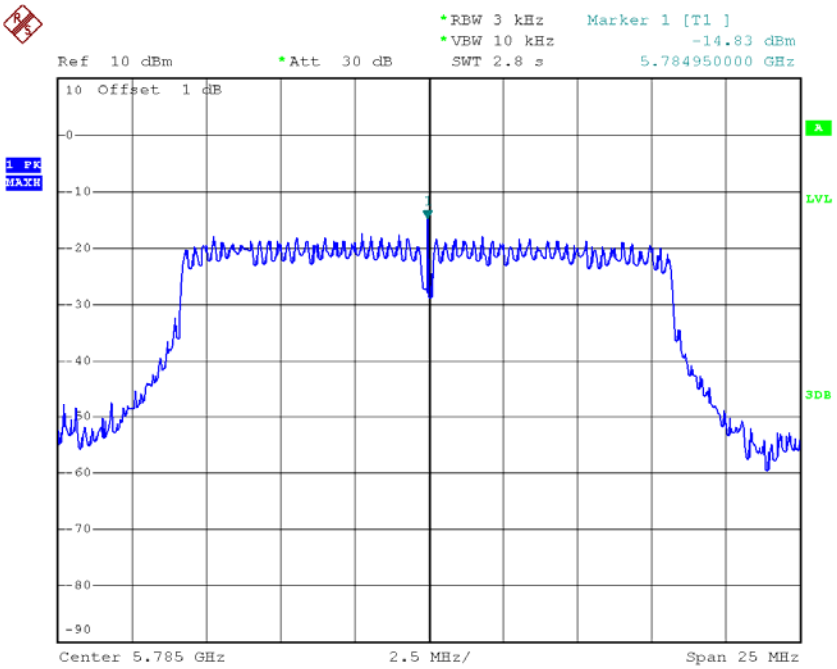
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-13.79	8
CH157	5785 MHz	-14.83	8
CH165	5825 MHz	-16.03	8

TX CH149

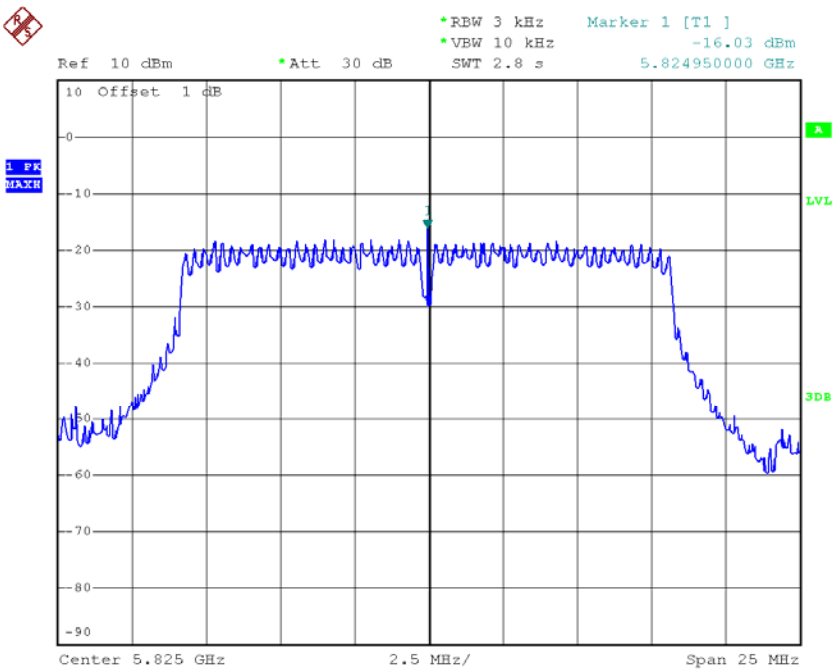


TX CH157



Date: 5.SEP.2013 21:19:18

TX CH165

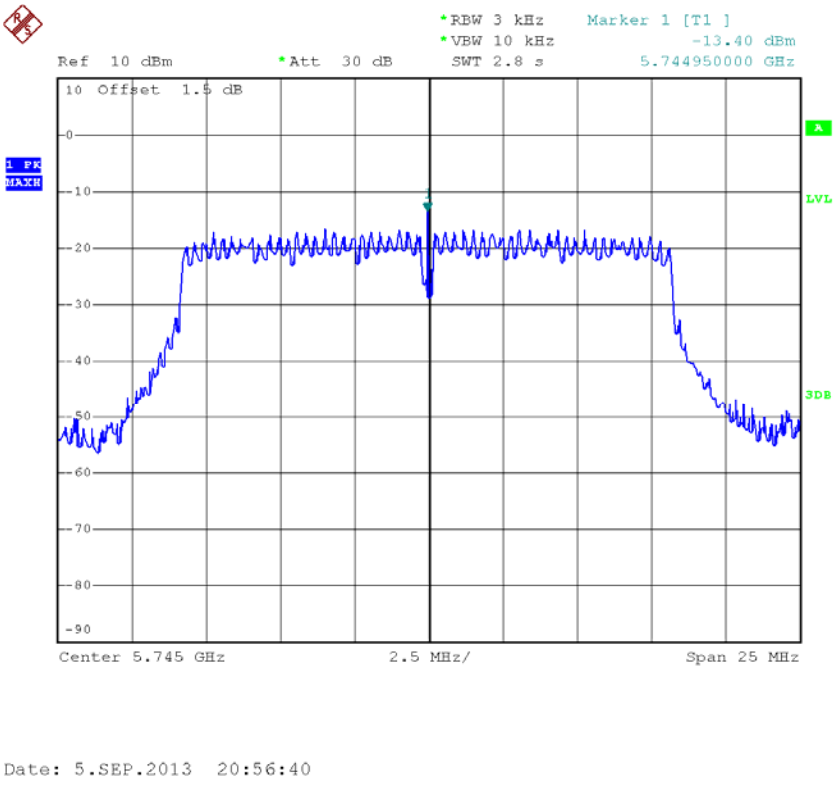


Date: 5.SEP.2013 21:09:15

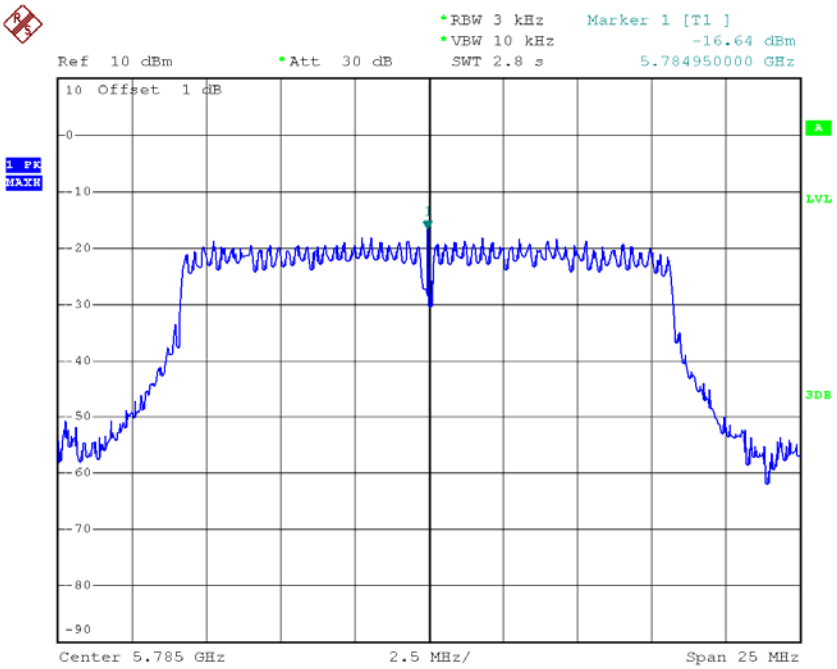
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 2 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-13.40	8
CH157	5785 MHz	-16.64	8
CH165	5825 MHz	-16.05	8

TX CH149

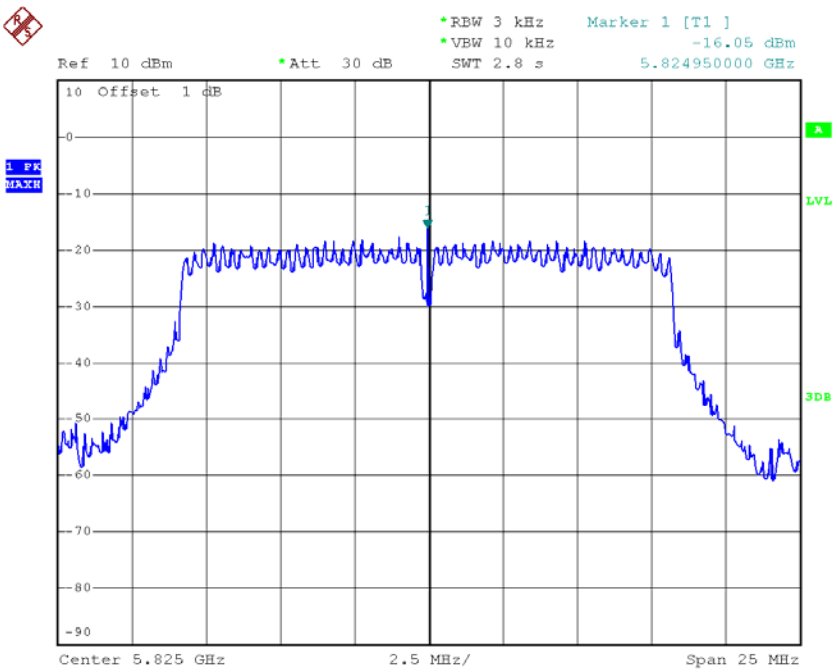


TX CH157



Date: 5.SEP.2013 21:19:39

TX CH165



Date: 5.SEP.2013 21:08:56

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1+ ANT 2 / Integral Antenna		

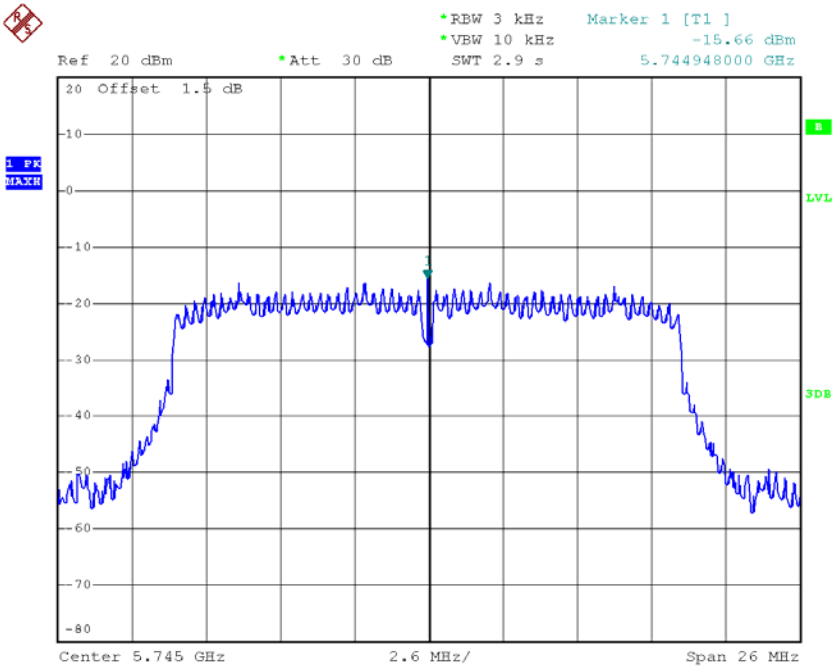
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-10.58	8
CH157	5785 MHz	-12.63	8
CH165	5825 MHz	-13.03	8

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=3.6.

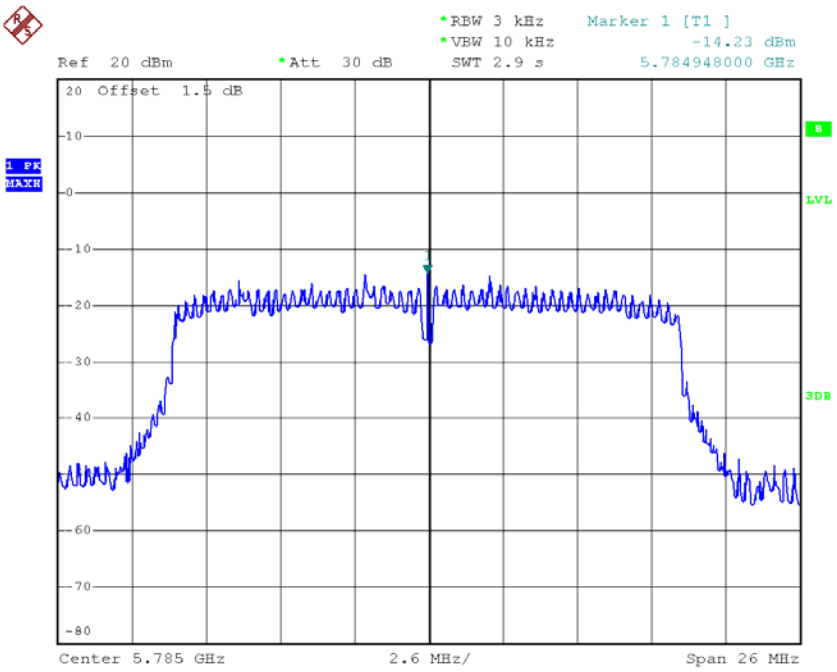
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 1 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-15.66	8
CH157	5785 MHz	-14.23	8
CH165	5825 MHz	-15.30	8

TX CH149

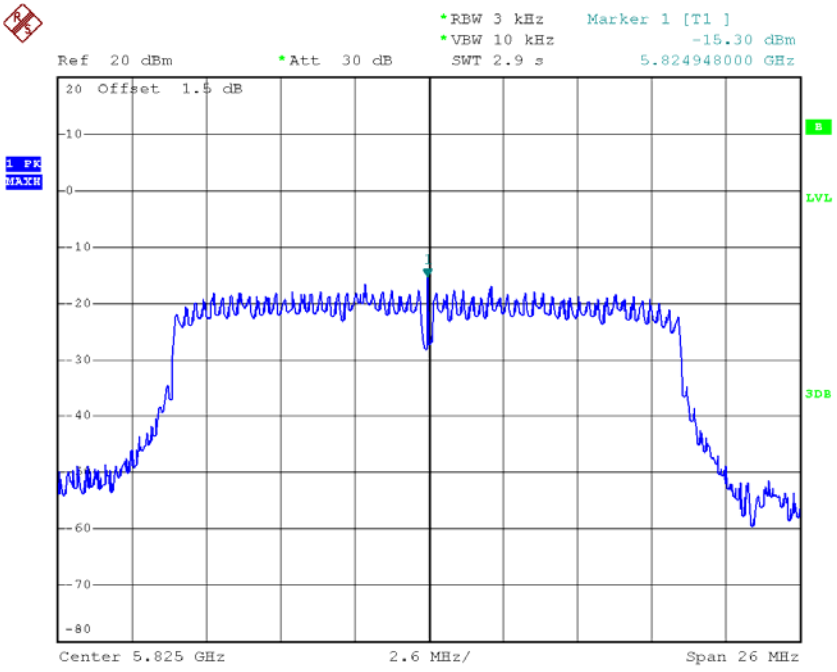


TX CH157



Date: 28.AUG.2013 15:48:20

TX CH165-

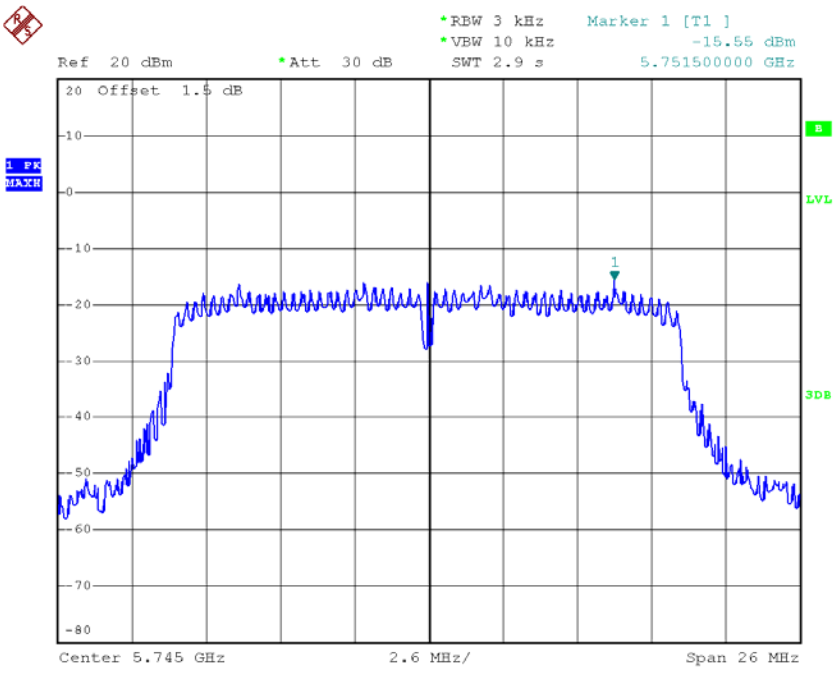


Date: 28.AUG.2013 15:29:46

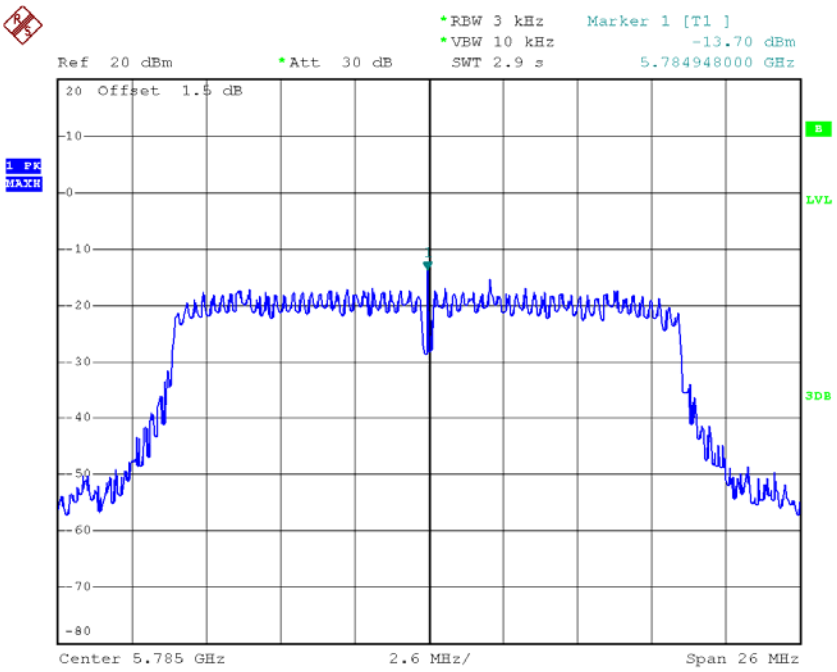
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 2 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-15.55	8
CH157	5785 MHz	-13.70	8
CH165	5825 MHz	-14.92	8

TX CH149

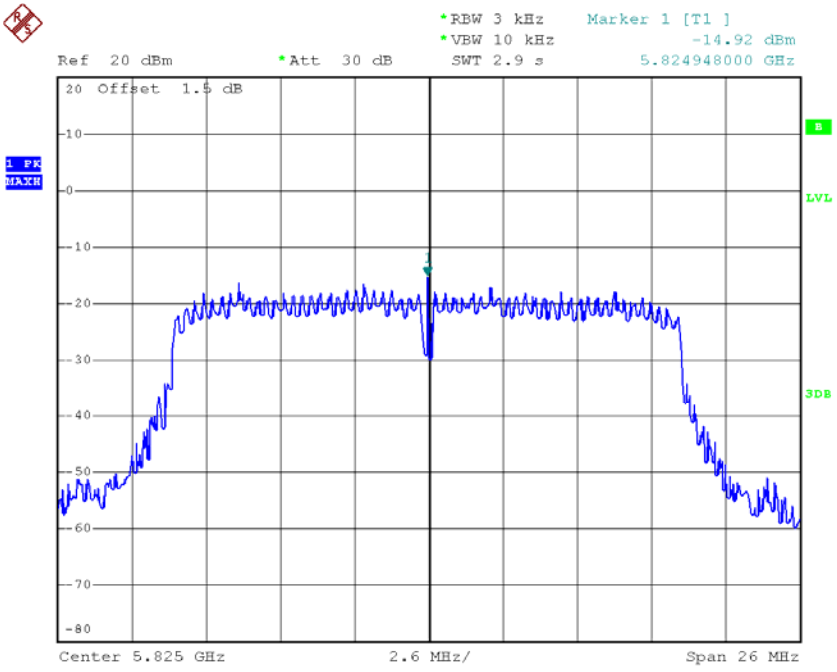


TX CH157



Date: 28.AUG.2013 15:48:40

TX CH165-



Date: 28.AUG.2013 15:29:25

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 1+ ANT 2 / Integral Antenna		

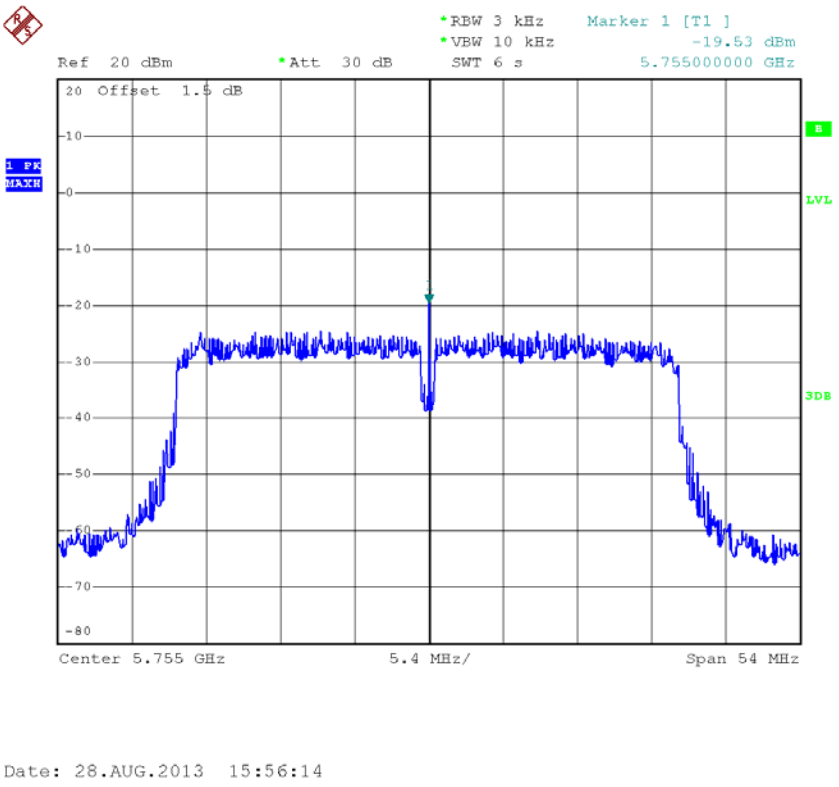
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-12.59	8
CH157	5785 MHz	-10.95	8
CH165	5825 MHz	-12.10	8

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=3.6.

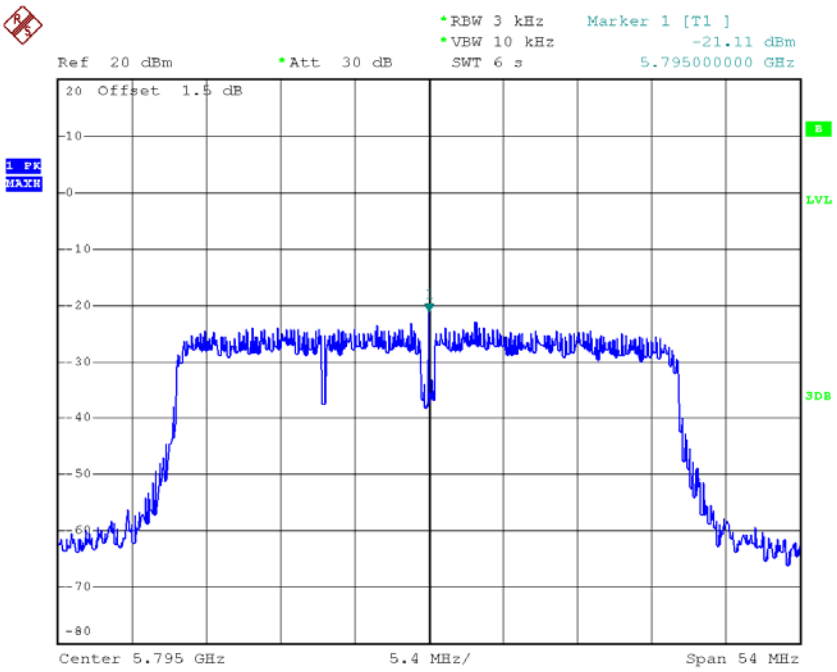
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 1 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-19.53	8
CH159	5795 MHz	-21.11	8

TX CH151



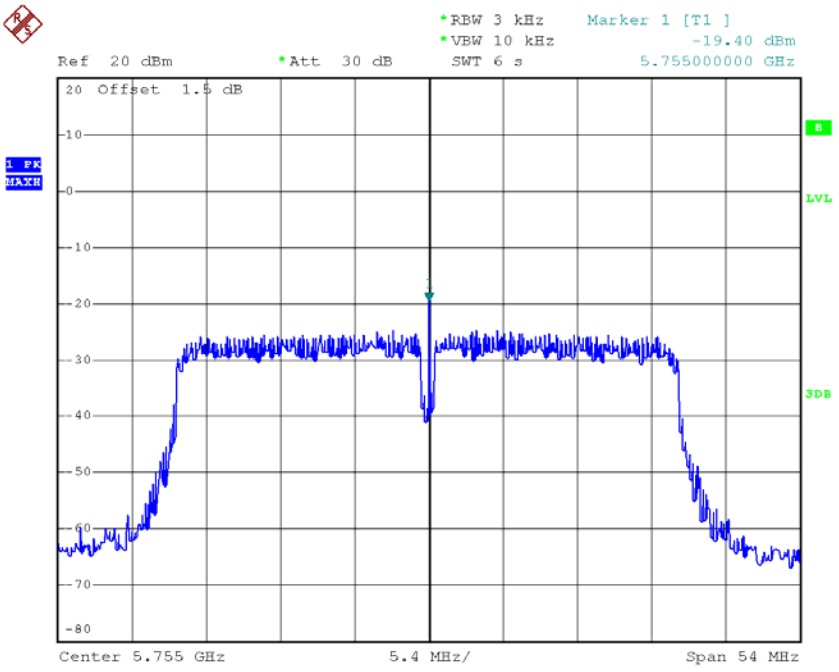
TX CH159


*RBW 3 kHz
*VBW 10 kHz
Marker 1 [T1]
-21.11 dBm
5.795000000 GHz
Ref 20 dBm
*Att 30 dB
SWT 6 s
20 Offset 1.5 dB
1 PK MAXH
B
LVL
3DB
Center 5.795 GHz
5.4 MHz/
Span 54 MHz
Date: 28.AUG.2013 16:16:55

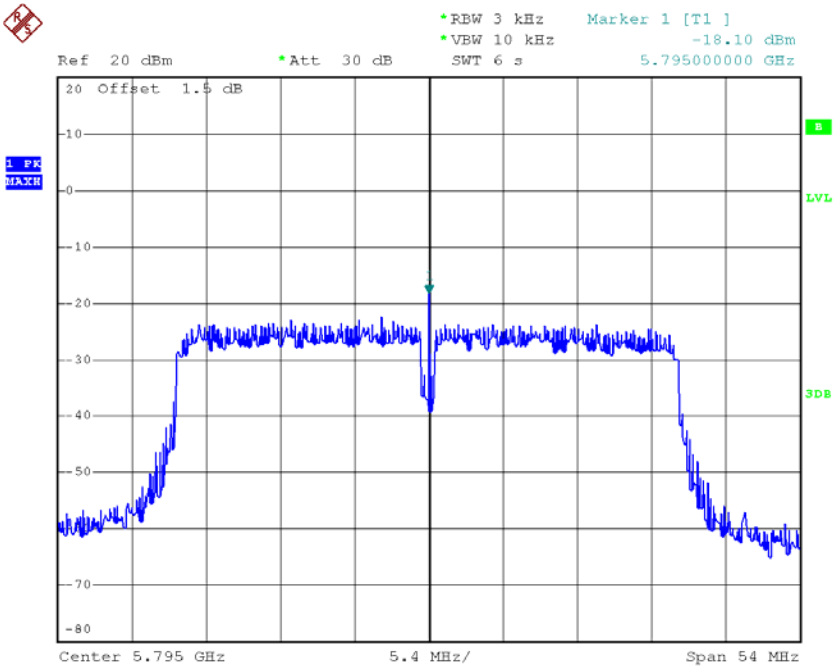
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 2 / Integral Antenna		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-19.40	8
CH159	5795 MHz	-18.10	8

TX CH151



TX CH159


*RBW 3 kHz
*VBW 10 kHz
SWT 6 s
Marker 1 [T1]
-18.10 dBm
5.795000000 GHz
Ref 20 dBm
*Att 30 dB
Offset 1.5 dB
1 PK MAXH
B
LVL
3DB
Center 5.795 GHz
5.4 MHz/
Span 54 MHz
Date: 28.AUG.2013 16:16:26

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 1+ ANT 2 / Integral Antenna		

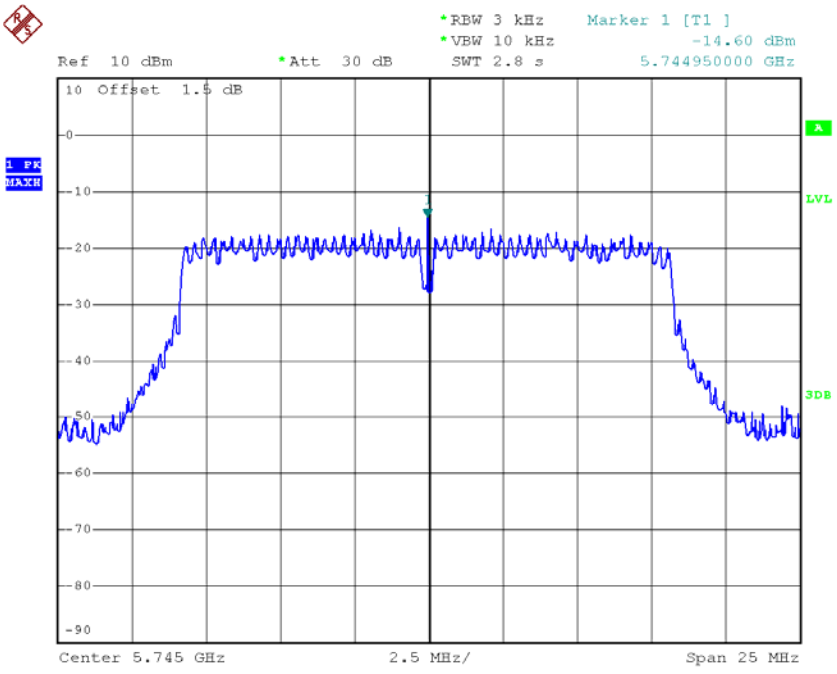
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-16.45	8
CH159	5795 MHz	-16.34	8

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=3.6.

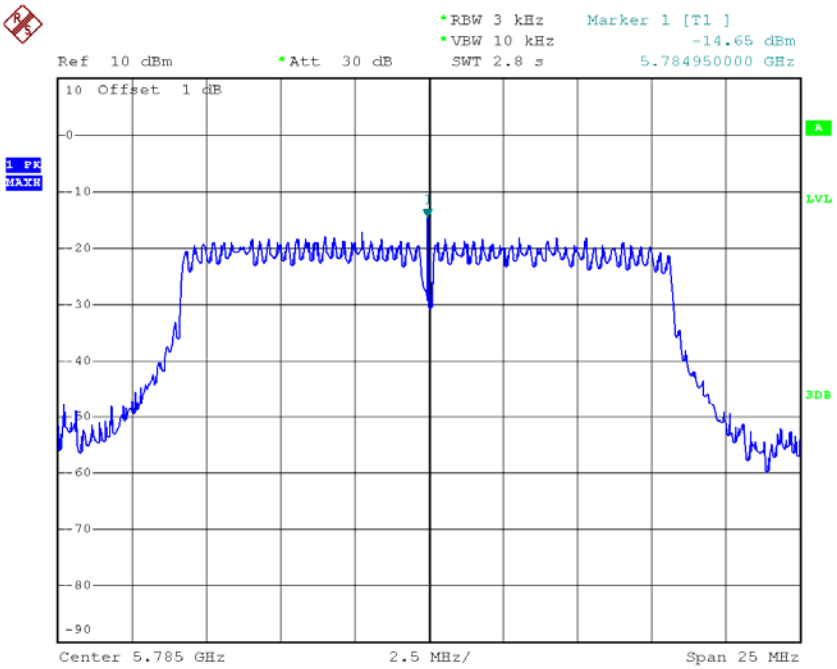
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-14.60	8
CH157	5785 MHz	-14.65	8
CH165	5825 MHz	-17.02	8

TX CH149

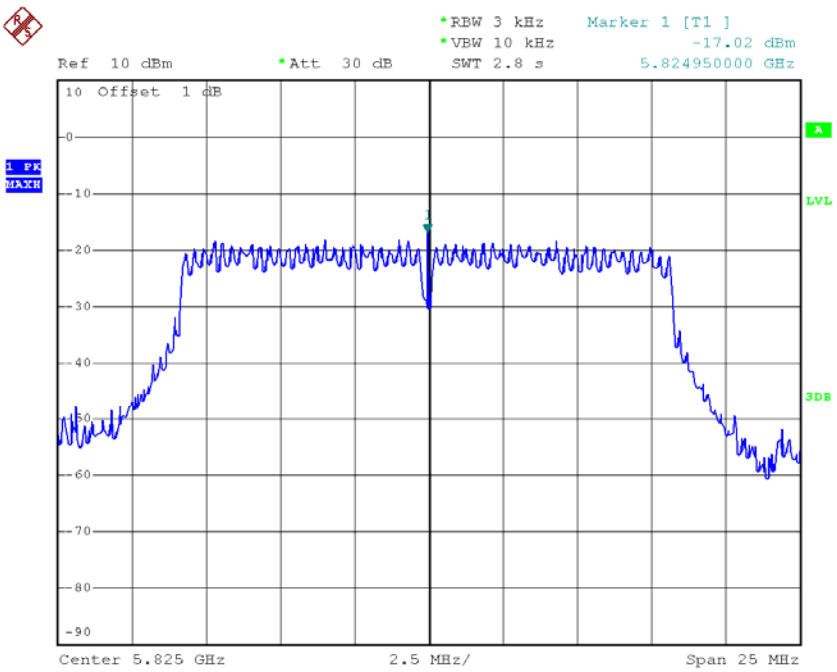


TX CH157



Date: 5.SEP.2013 21:19:26

TX CH165

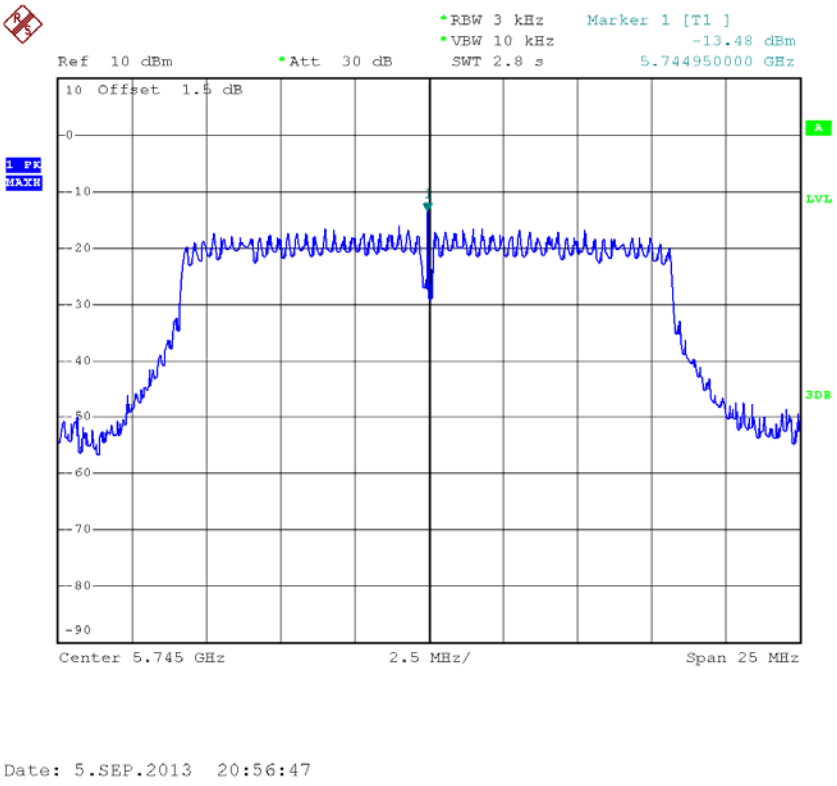


Date: 5.SEP.2013 21:09:12

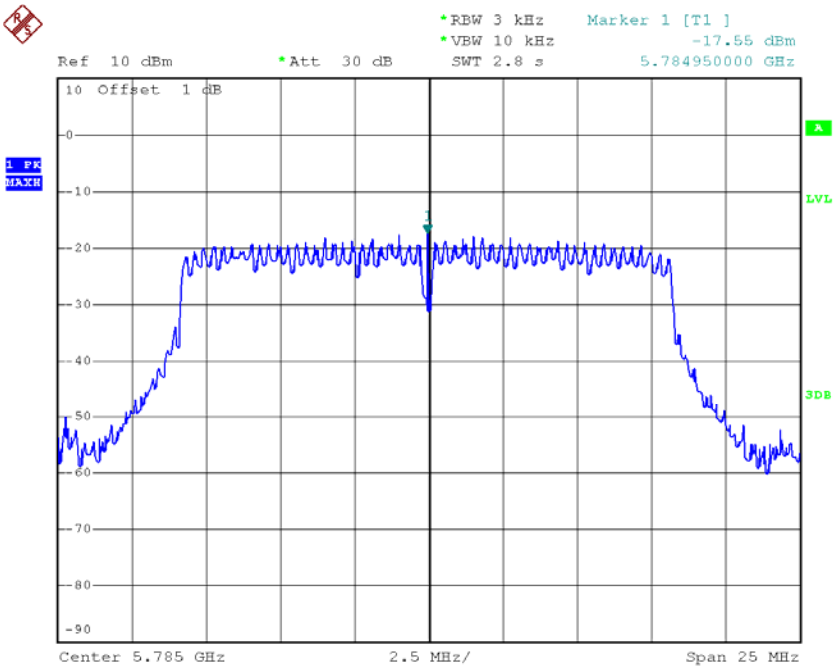
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-13.48	8
CH157	5785 MHz	-17.55	8
CH165	5825 MHz	-15.33	8

TX CH149

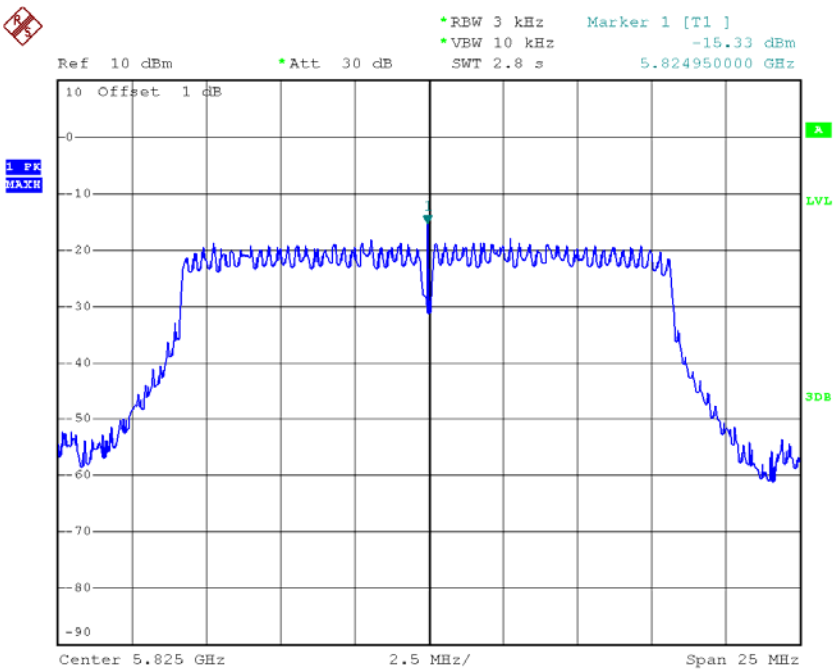


TX CH157



Date: 5.SEP.2013 21:19:46

TX CH165



Date: 5.SEP.2013 21:08:47

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX A Mode /CH149, CH157, CH165 / ANT 1+ ANT 2 / Dipole Antenna with external cable		

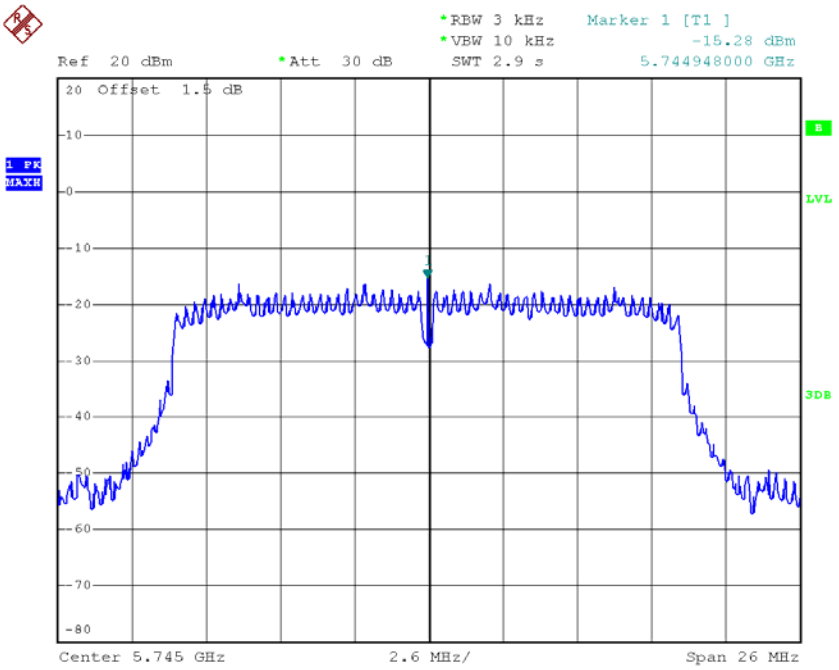
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-10.99	8
CH157	5785 MHz	-12.85	8
CH165	5825 MHz	-13.08	8

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=2.82.

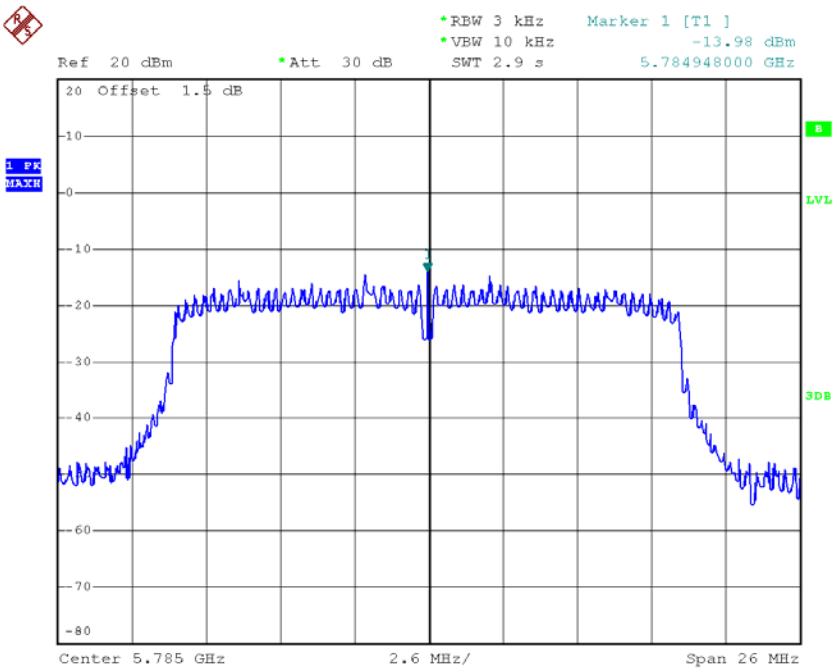
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-15.28	8
CH157	5785 MHz	-13.98	8
CH165	5825 MHz	-14.75	8

TX CH149

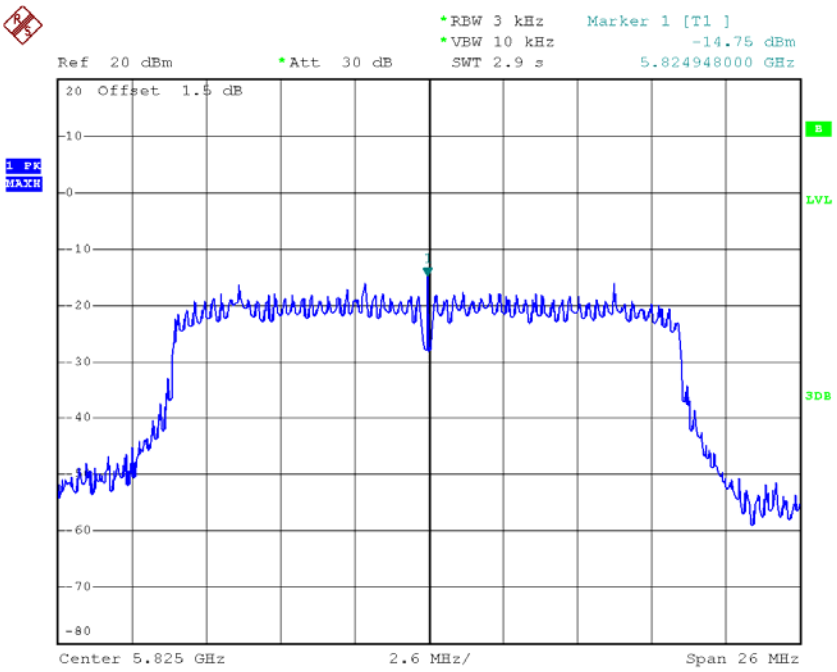


TX CH157



Date: 28.AUG.2013 15:48:25

TX CH165-

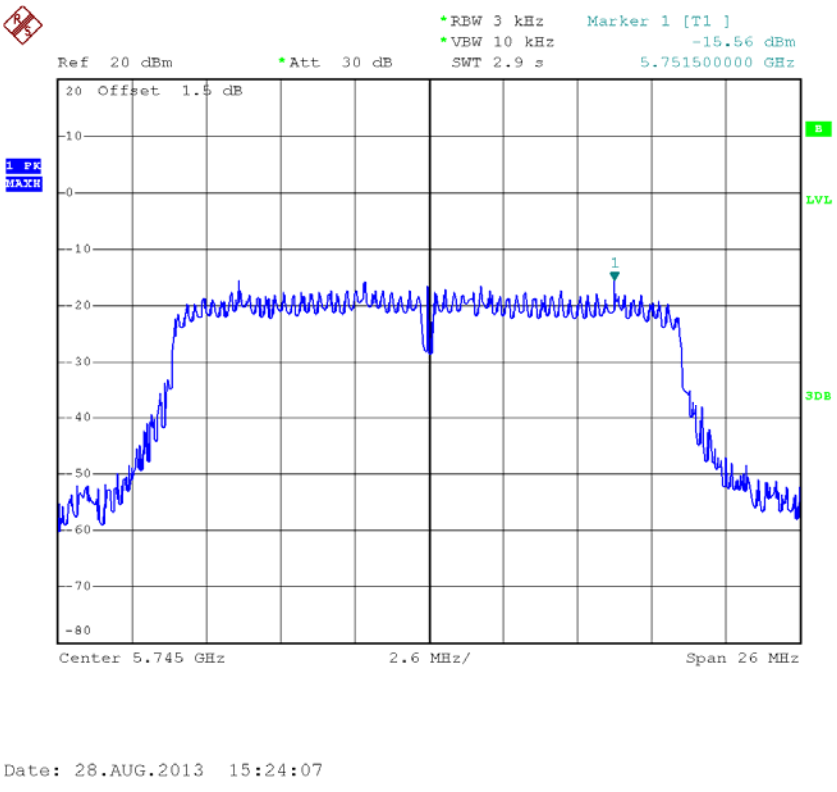


Date: 28.AUG.2013 15:29:55

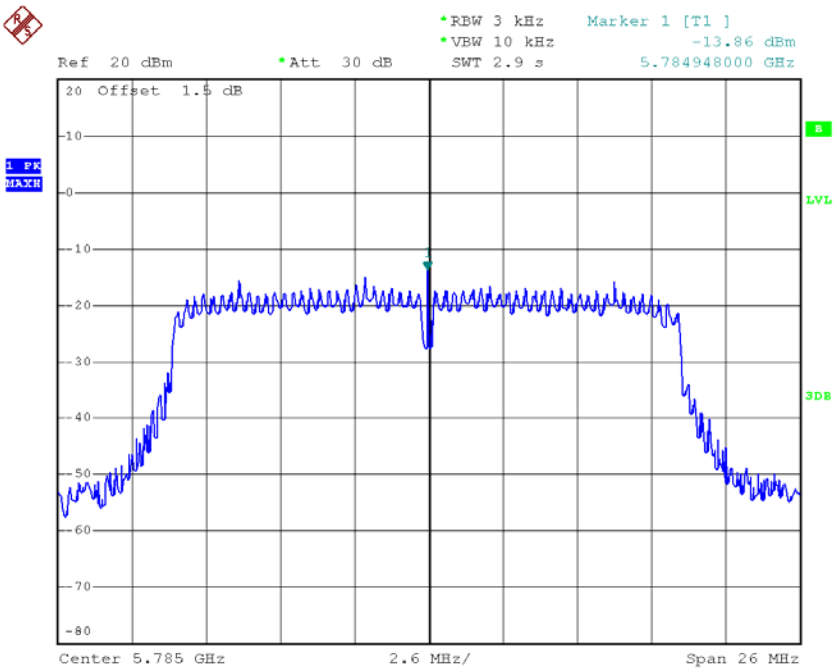
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-15.56	8
CH157	5785 MHz	-13.86	8
CH165	5825 MHz	-14.88	8

TX CH149

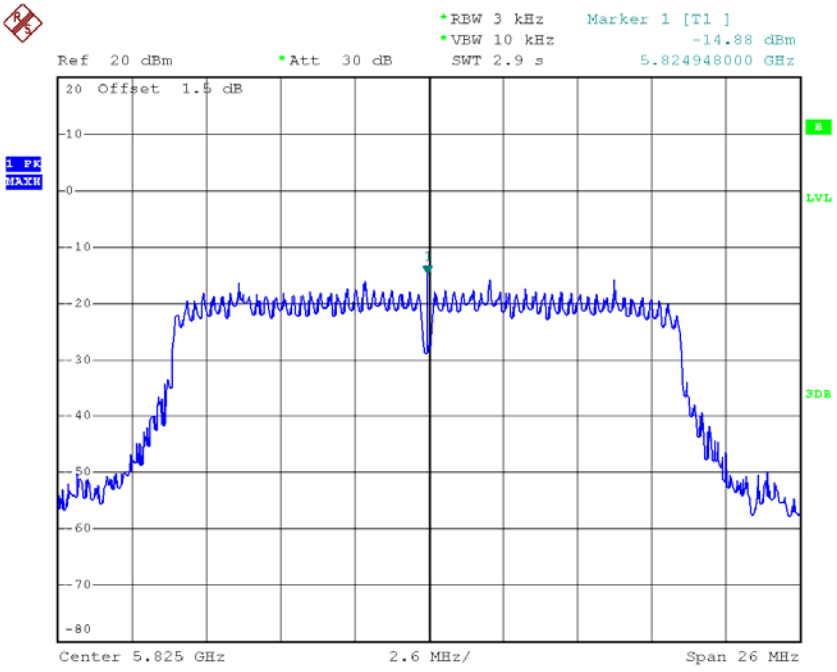


TX CH157



Date: 28.AUG.2013 15:48:51

TX CH165-



Date: 28.AUG.2013 15:29:30

EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N20 Mode /CH149, CH157, CH165 / ANT 1+ ANT 2 / Dipole Antenna with external cable		

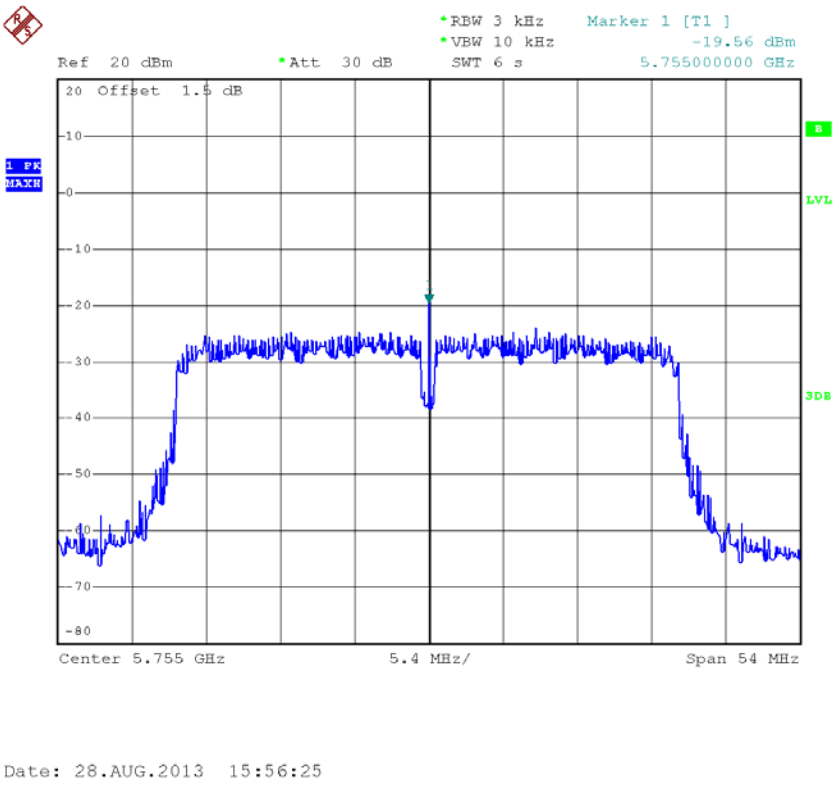
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH149	5745 MHz	-12.41	8
CH157	5785 MHz	-10.91	8
CH165	5825 MHz	-11.80	8

Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=2.82.

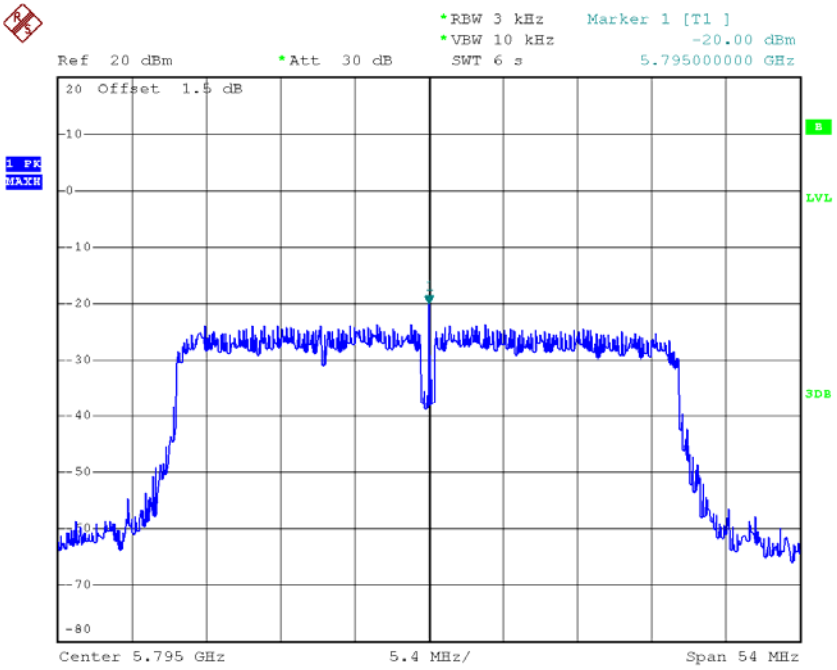
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 1 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-19.56	8
CH159	5795 MHz	-20.00	8

TX CH151



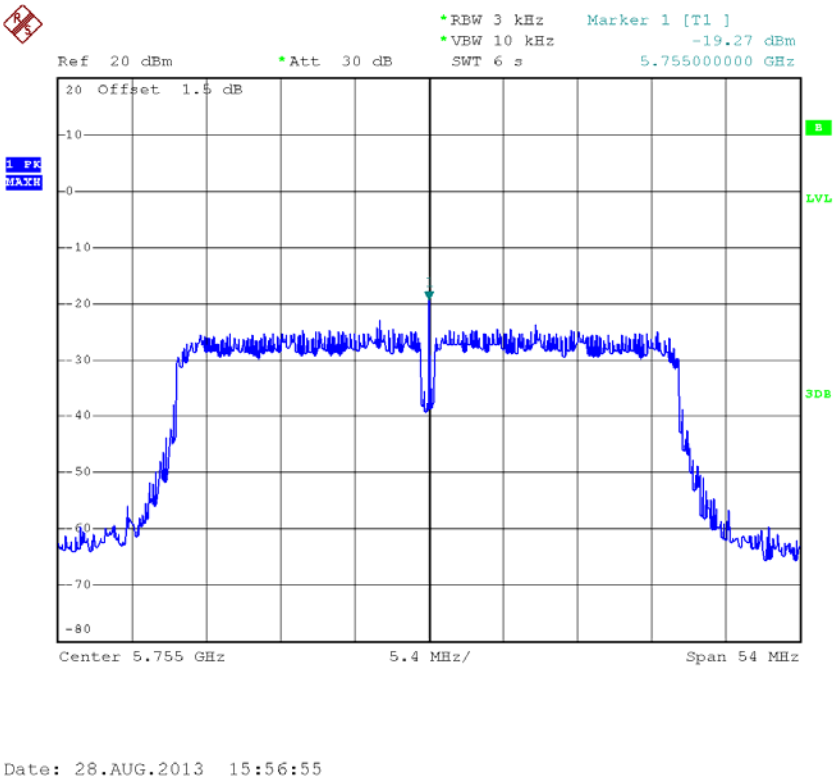
TX CH159


*RBW 3 kHz
*VBW 10 kHz
SWT 6 s
Marker 1 [T1]
-20.00 dBm
5.795000000 GHz
Ref 20 dBm
*Att 30 dB
Offset 1.5 dB
1 PK MAXH
B
LVL
3DB
Center 5.795 GHz
5.4 MHz/
Span 54 MHz
Date: 28.AUG.2013 16:17:04

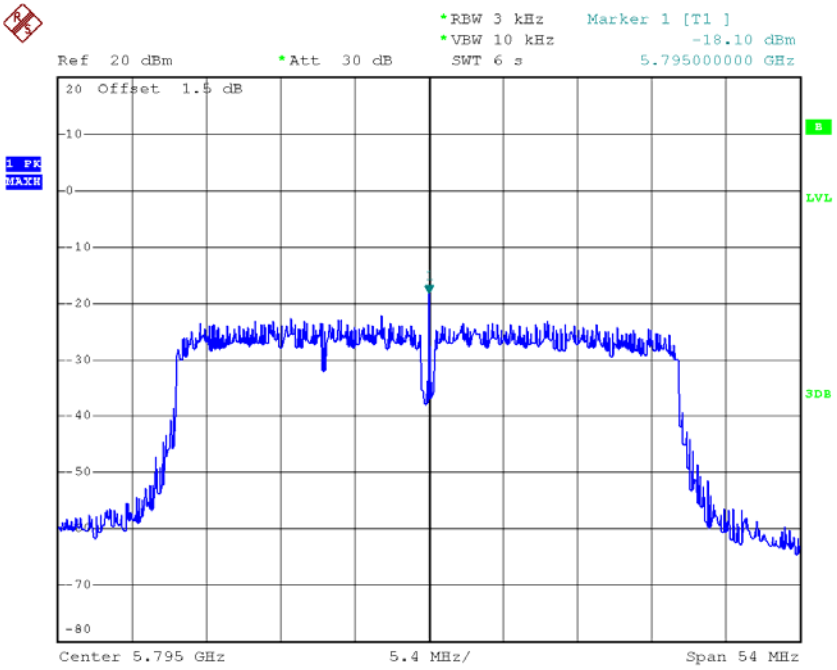
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-19.27	8
CH159	5795 MHz	-18.10	8

TX CH151



TX CH159


*RBW 3 kHz
*VBW 10 kHz
SWT 6 s
Marker 1 [T1]
-18.10 dBm
5.795000000 GHz
Ref 20 dBm
*Att 30 dB
Offset 1.5 dB
1 PK MAXH
B
LVL
3DB
Center 5.795 GHz
5.4 MHz/
Span 54 MHz
Date: 28.AUG.2013 16:16:37

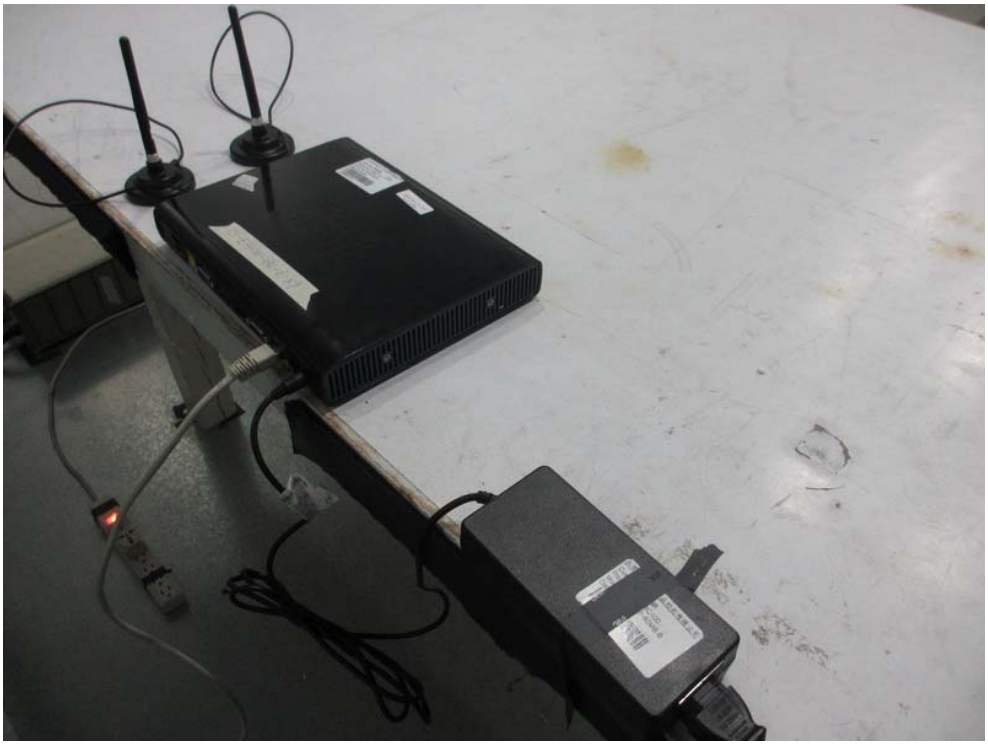
EUT:	Cisco Edge 340	Model Name :	CS-E340W
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N40 Mode /CH151, CH159 / ANT 1+ ANT 2 / Dipole Antenna with external cable		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH151	5755 MHz	-16.40	8
CH159	5795 MHz	-15.94	8

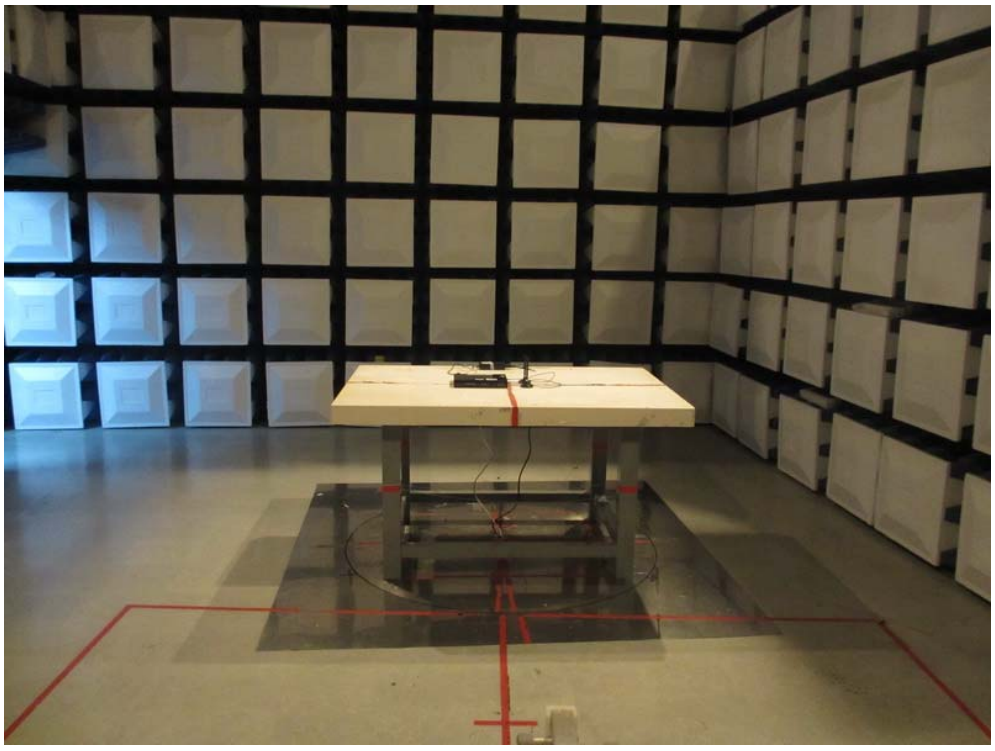
Note: The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R) , all transmit signals are completely uncorrelated, then,**Direction gain = G_{ANT}**, that is Directional gain=2.82.

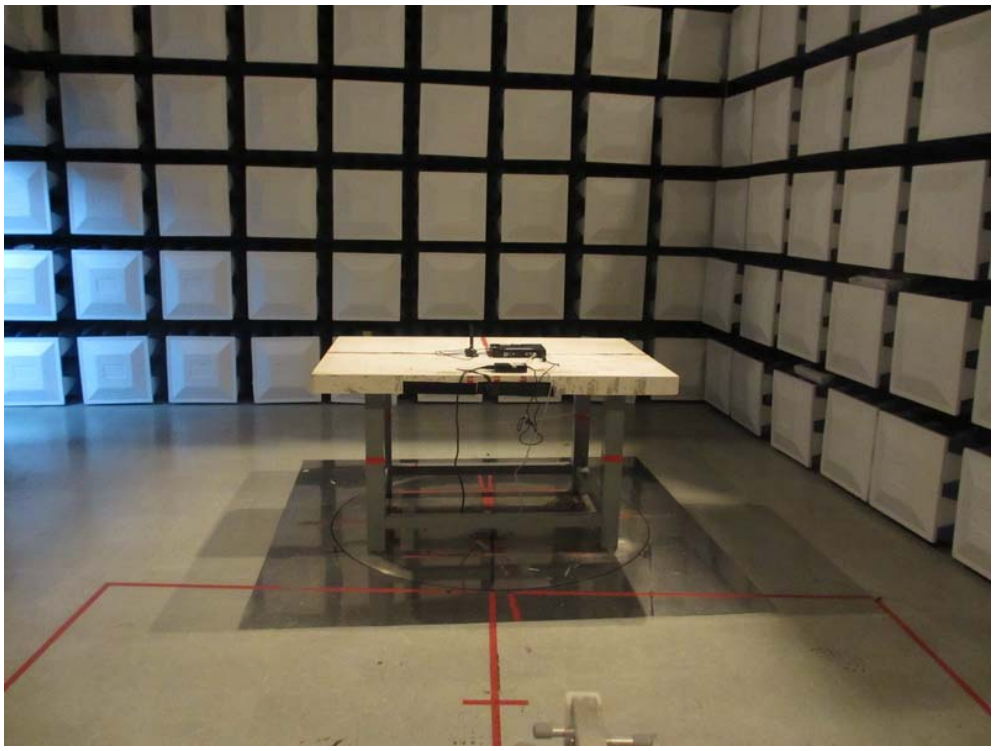
9. EUT TEST PHOTO

Conducted Measurement Photos



Radiated Measurement Photos
30M~1000MHz





Radiated Measurement Photos
Above 1000MHz