



EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	103.19	8.56	111.75	-	-	peak
@	5825.000	93.12	8.56	101.68	-	-	AVG
-	5876.500	56.45	8.86	65.31	104.09	-38.78	peak
#	5934.083	47.02	9.03	56.05	68.20	-12.15	peak
-	11650.000	50.94	9.45	60.39	74.00	-13.61	peak
-	11650.000	41.81	9.45	51.26	54.00	-2.74	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	110.11	8.56	118.67	-	-	peak
@	5825.000	99.93	8.56	108.49	-	-	AVG
-	5876.950	71.20	8.86	80.06	103.76	-23.70	peak
#	5934.600	53.02	9.03	62.05	68.20	-6.15	peak
-	11650.000	52.58	9.45	62.03	74.00	-11.97	peak
-	11650.000	44.08	9.45	53.53	54.00	-0.47	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**802.11ac (VHT40)**

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5148.170	45.74	7.86	53.60	74.00	-20.40	peak
@	5190.000	88.25	7.79	96.04	-	-	peak
-	5150.000	33.30	7.86	41.16	54.00	-12.84	AVG
@	5190.000	78.52	7.79	86.31	-	-	AVG
#	10380.000	38.17	8.82	46.99	68.20	-21.21	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5149.330	61.48	7.86	69.34	74.00	-4.66	peak
@	5190.000	99.73	7.79	107.52	-	-	peak
-	5150.000	45.93	7.86	53.79	54.00	-0.21	AVG
@	5190.000	91.11	7.79	98.90	-	-	AVG
#	10380.000	37.44	8.82	46.26	68.20	-21.94	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX ) :+886-3-583-7948



EUT Test Condition		Measurement Detail	
Channel	Channel 46	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5147.740	46.35	7.86	54.21	74.00	-19.79	peak
@	5230.000	96.70	7.50	104.20	-	-	peak
-	5150.000	35.04	7.86	42.90	54.00	-11.10	AVG
@	5230.000	86.71	7.50	94.21	-	-	AVG
#	10460.000	42.83	9.08	51.91	68.20	-16.29	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5149.600	57.69	7.86	65.55	74.00	-8.45	peak
@	5230.000	106.67	7.50	114.17	-	-	peak
-	5150.000	45.78	7.86	53.64	54.00	-0.36	AVG
@	5230.000	96.32	7.50	103.82	-	-	AVG
#	10460.000	45.59	9.08	54.67	68.20	-13.53	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 151	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5646.317	47.93	8.03	55.96	68.20	-12.24	peak
-	5696.750	58.15	8.07	66.22	102.80	-36.58	peak
@	5755.000	98.73	8.40	107.13	-	-	peak
@	5755.000	90.26	8.40	98.66	-	-	AVG
-	11510.000	49.14	9.94	59.08	74.00	-14.92	peak
-	11510.000	40.09	9.94	50.03	54.00	-3.97	AVG
#	17265.000	38.63	16.45	55.08	68.20	-13.12	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5647.983	59.13	8.04	67.17	68.20	-1.03	peak
-	5694.100	73.97	8.07	82.04	100.83	-18.79	peak
@	5755.000	106.97	8.40	115.37	-	-	peak
@	5755.000	97.99	8.40	106.39	-	-	AVG
-	11510.000	50.57	9.94	60.51	74.00	-13.49	peak
-	11510.000	41.62	9.94	51.56	54.00	-2.44	AVG
#	17265.000	45.32	16.45	61.77	68.20	-6.43	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 159	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5795.000	99.94	8.44	108.38	-	-	peak
@	5795.000	90.29	8.44	98.73	-	-	AVG
-	5879.000	53.82	8.87	62.69	102.24	-39.55	peak
#	5929.250	46.70	9.03	55.73	68.20	-12.47	peak
-	11590.000	47.56	9.63	57.19	74.00	-16.81	peak
-	11590.000	40.05	9.63	49.68	54.00	-4.32	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5795.000	107.92	8.44	116.36	-	-	peak
@	5795.000	98.33	8.44	106.77	-	-	AVG
-	5877.050	71.44	8.86	80.30	103.68	-23.38	peak
#	5929.417	58.10	9.03	67.13	68.20	-1.07	peak
-	11590.000	49.16	9.63	58.79	74.00	-15.21	peak
-	11590.000	40.47	9.63	50.10	54.00	-3.90	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**802.11ac (VHT80)**

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5144.400	45.91	7.84	53.75	74.00	-20.25	peak
@	5210.000	83.95	7.68	91.63	-	-	peak
-	5150.000	34.69	7.86	42.55	54.00	-11.45	AVG
@	5210.000	75.04	7.68	82.72	-	-	AVG
#	10420.000	37.59	8.96	46.55	68.20	-21.65	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5147.440	56.76	7.85	64.61	74.00	-9.39	peak
@	5210.000	95.74	7.68	103.42	-	-	peak
-	5150.000	45.83	7.86	53.69	54.00	-0.31	AVG
@	5210.000	86.61	7.68	94.29	-	-	AVG
#	10420.000	37.30	8.96	46.26	68.20	-21.94	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 155	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5775.000	94.71	8.42	103.13	-	-	peak
@	5775.000	86.14	8.42	94.56	-	-	AVG
#	5609.400	45.75	8.01	53.76	68.20	-14.44	peak
-	5694.817	52.46	8.07	60.53	101.36	-40.83	peak
*	11550.000	43.12	9.78	52.90	74.00	-21.10	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5646.333	59.11	8.03	67.14	68.20	-1.06	peak
-	5694.733	75.30	8.07	83.37	101.30	-17.93	peak
@	5775.000	102.53	8.42	110.95	-	-	peak
@	5775.000	92.81	8.42	101.23	-	-	AVG
*	11550.000	41.92	9.78	51.70	74.00	-22.30	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. "\*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
7. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**Co-Location Mode**

**802.11b + 802.11a**

EUT Test Condition		Measurement Detail	
Channel	Channel 6 + Channel 48	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	1334.100	52.62	-10.01	42.61	74.00	-31.39	peak
*	4874.000	49.60	-3.02	46.58	74.00	-27.42	peak
-	15720.000	46.94	12.34	59.28	74.00	-14.72	peak
-	15720.000	39.83	12.34	52.17	54.00	-1.83	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	4874.000	62.01	-3.02	58.99	74.00	-15.01	peak
-	4874.000	56.53	-3.02	53.51	54.00	-0.49	AVG
-	15720.000	43.93	12.34	56.27	74.00	-17.73	peak
-	15720.000	41.02	12.34	53.36	54.00	-0.64	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " \* ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
 Telephone :+886-2-7737-3000  
 Facsimile (FAX ) :+886-3-583-7948





### 9 kHz ~ 30 MHz Data

For 9 kHz to 30 MHz radiated emission have performed all modes of operation were investigated. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

No non-compliance noted:

#### **KDB 414788 D01 OATS and Chamber Correlation Justification**

- Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test results is the worst case test result.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

#### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



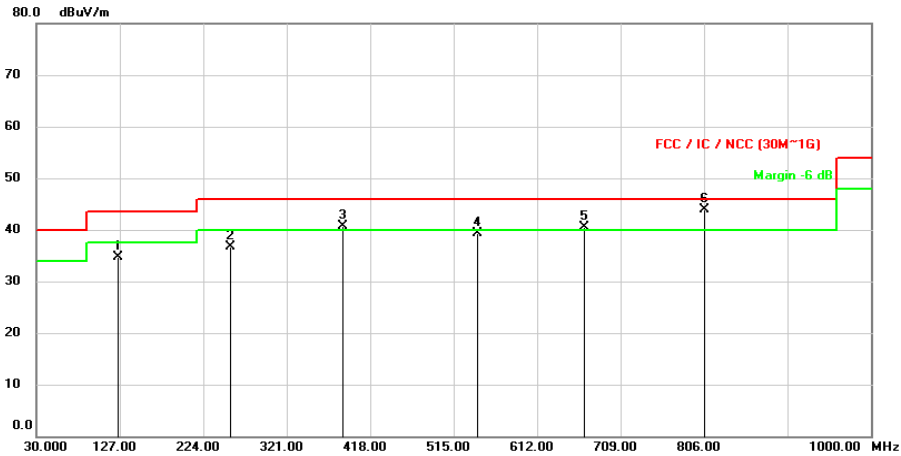
### 30 MHz ~ 1 GHz Data

### Non-Beamforming Mode

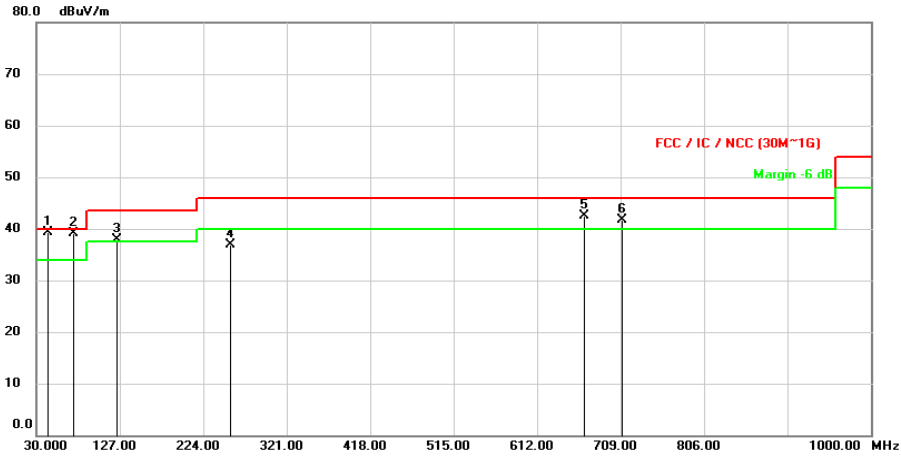
### 802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	30 MHz ~ 1 GHz

### Horizontal



### Vertical



### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	125.0277	52.26	-17.46	34.80	43.50	-8.70	peak
*	255.0077	52.27	-15.65	36.62	46.00	-9.38	peak
*	385.9577	52.56	-11.86	40.70	46.00	-5.30	peak
*	543.8736	47.79	-8.47	39.32	46.00	-6.68	peak
*	666.6757	46.41	-5.99	40.42	46.00	-5.58	peak
*	807.0670	47.71	-3.83	43.88	46.00	-2.12	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	43.8710	54.60	-15.25	39.35	40.00	-0.65	QP
-	73.5530	57.41	-18.23	39.18	40.00	-0.82	QP
*	124.9953	55.31	-17.46	37.85	43.50	-5.65	peak
*	255.0077	52.63	-15.65	36.98	46.00	-9.02	peak
*	666.6757	48.42	-5.99	42.43	46.00	-3.57	peak
*	710.5197	47.00	-5.26	41.74	46.00	-4.26	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " \* ": The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

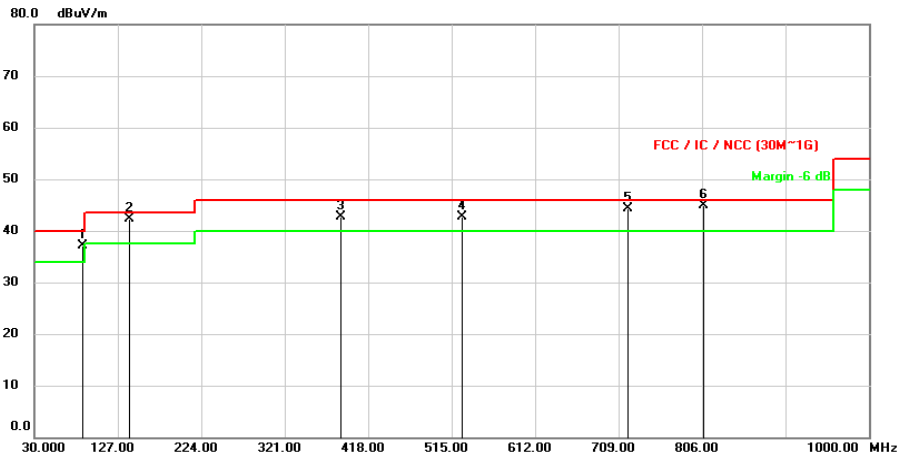


### Beamforming Mode

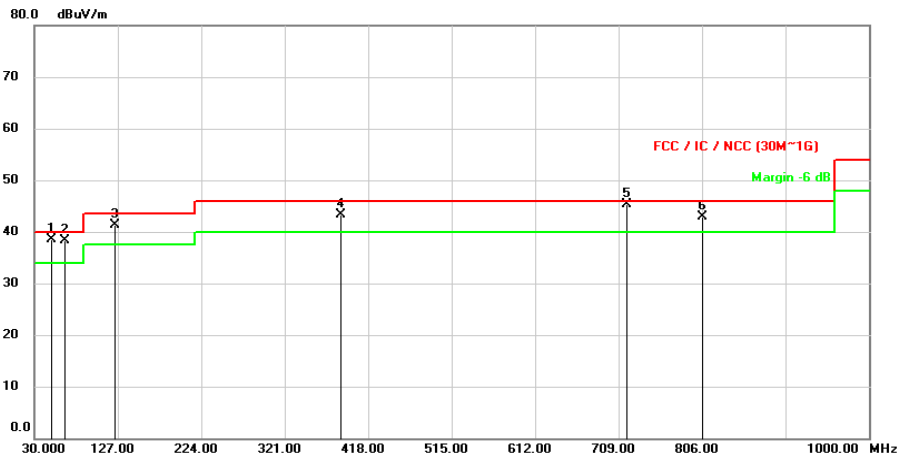
#### 802.11ac (VHT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	30 MHz ~ 1 GHz

#### Horizontal



#### Vertical



### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	85.8720	57.99	-20.85	37.14	40.00	-2.86	peak
-	140.3537	58.02	-15.69	42.33	43.50	-1.17	peak
-	385.8929	54.63	-11.86	42.77	46.00	-3.23	peak
-	526.3167	51.66	-8.87	42.79	46.00	-3.21	peak
-	719.3467	49.48	-5.15	44.33	46.00	-1.67	peak
-	807.0347	48.72	-3.83	44.89	46.00	-1.11	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	51.2753	53.60	-15.01	38.59	40.00	-1.41	peak
-	66.2132	55.01	-16.74	38.27	40.00	-1.73	peak
-	124.9953	58.79	-17.46	41.33	43.50	-2.17	peak
-	385.9900	55.21	-11.86	43.35	46.00	-2.65	peak
-	719.3790	50.49	-5.15	45.34	46.00	-0.66	peak
-	807.0670	46.81	-3.83	42.98	46.00	-3.02	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

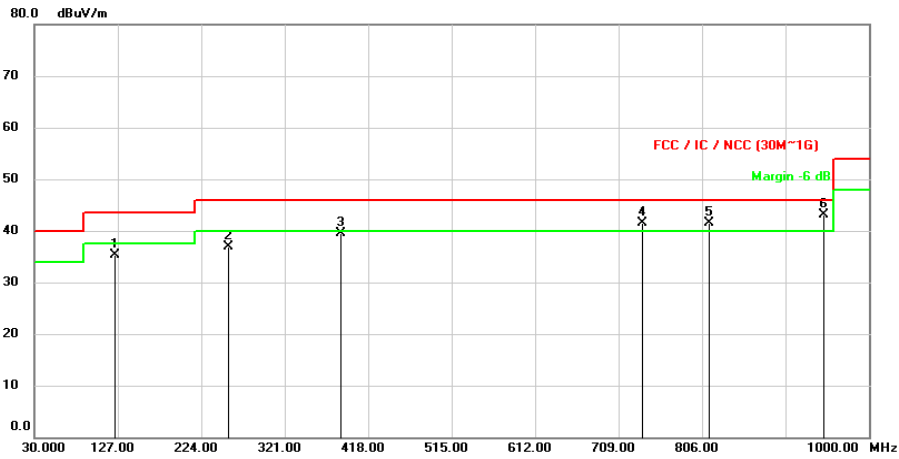


### Co-Location Mode

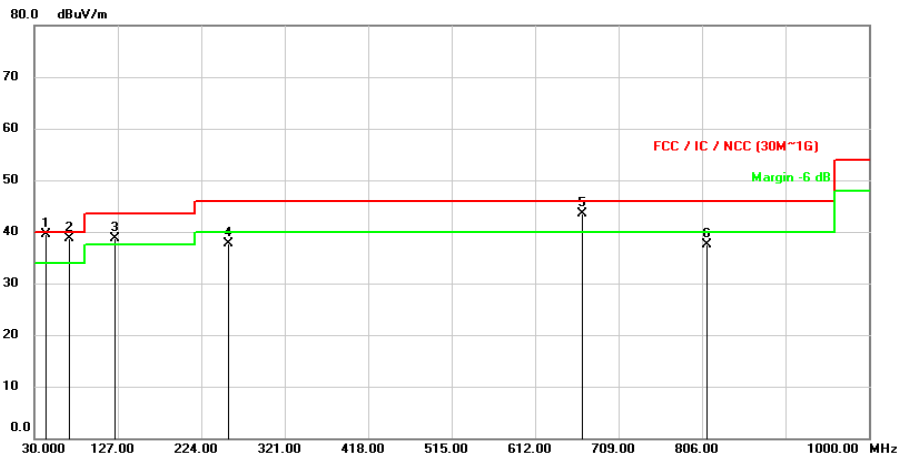
#### 802.11b + 802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 6 + Channel 48	Frequency Range	30 MHz ~ 1 GHz

#### Horizontal



#### Vertical



### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	124.9953	52.78	-17.46	35.32	43.50	-8.18	peak
*	255.0077	52.56	-15.65	36.91	46.00	-9.09	peak
*	385.9900	51.43	-11.86	39.57	46.00	-6.43	peak
*	736.8713	46.31	-4.81	41.50	46.00	-4.50	peak
*	813.3397	45.31	-3.75	41.56	46.00	-4.44	peak
*	947.4907	44.66	-1.65	43.01	46.00	-2.99	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	44.2590	54.70	-15.22	39.48	40.00	-0.52	QP
-	70.4490	56.33	-17.61	38.72	40.00	-1.28	QP
*	124.9953	56.08	-17.46	38.62	43.50	-4.88	peak
*	255.0077	53.38	-15.65	37.73	46.00	-8.27	peak
*	666.6433	49.54	-5.99	43.55	46.00	-2.45	peak
*	811.8523	41.24	-3.77	37.47	46.00	-8.53	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " \* " : The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



## 9.8. AC Power Line Conducted Emission

### Requirements

Frequency (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### Test Procedures

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

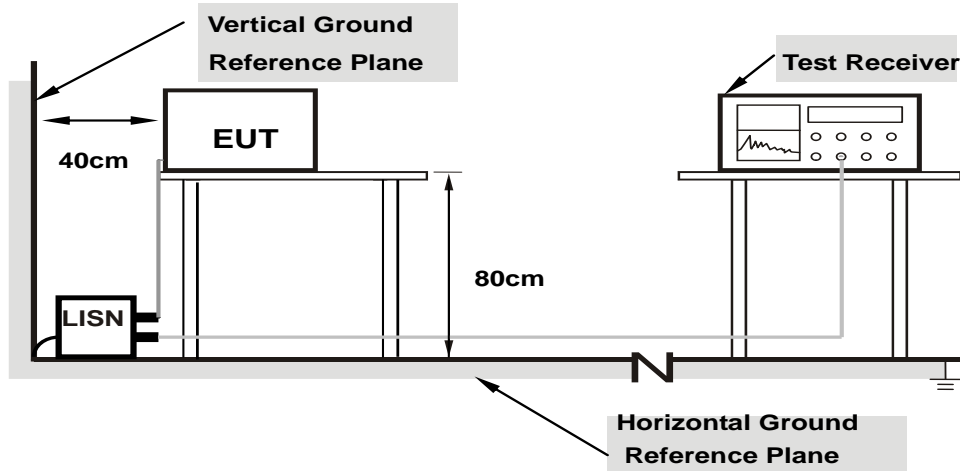
Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0





## Test Setup



**Note: 1.Support units were connected to second LISN.**

For the actual test configuration, please refer to the Setup Configurations.

### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

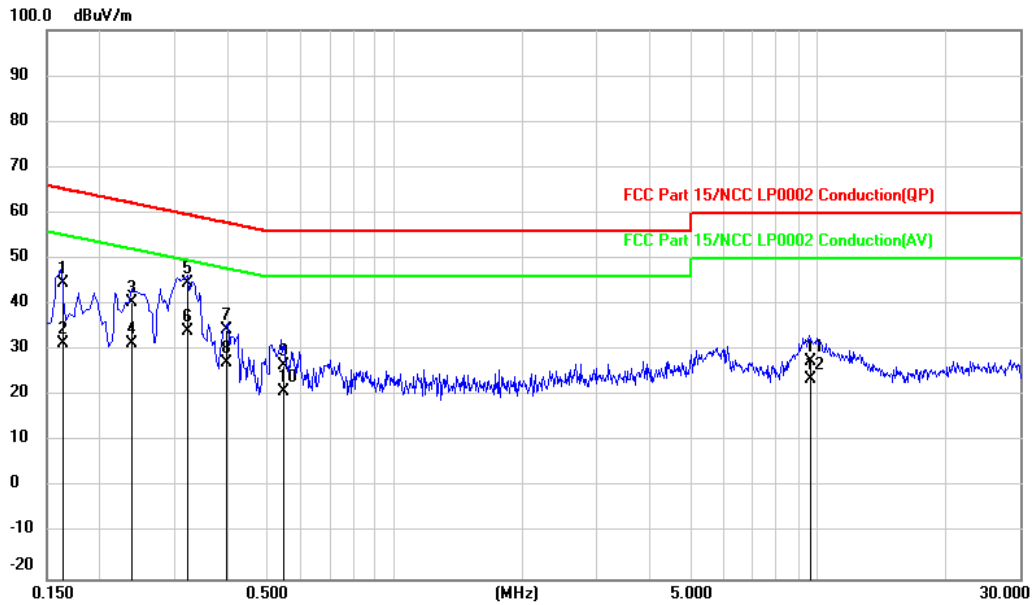


## Test Data

### 802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	150 kHz ~ 30 MHz

### Phase of Power : Line (L)



## Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1633	25.02	19.62	44.64	65.29	-20.65	QP
2	0.1633	11.89	19.62	31.51	55.29	-23.78	AVG
3	0.2382	20.97	19.61	40.58	62.16	-21.58	QP
4	0.2382	11.71	19.61	31.32	52.16	-20.84	AVG
5	0.3224	24.95	19.61	44.56	59.64	-15.08	QP
6	0.3224	14.69	19.61	34.30	49.64	-15.34	AVG
7	0.3984	14.91	19.61	34.52	57.89	-23.37	QP
8	0.3984	7.54	19.61	27.15	47.89	-20.74	AVG
9	0.5445	7.16	19.61	26.77	56.00	-29.23	QP
10	0.5445	1.40	19.61	21.01	46.00	-24.99	AVG
11	9.6128	7.77	19.75	27.52	60.00	-32.48	QP
12	9.6128	3.90	19.75	23.65	50.00	-26.35	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

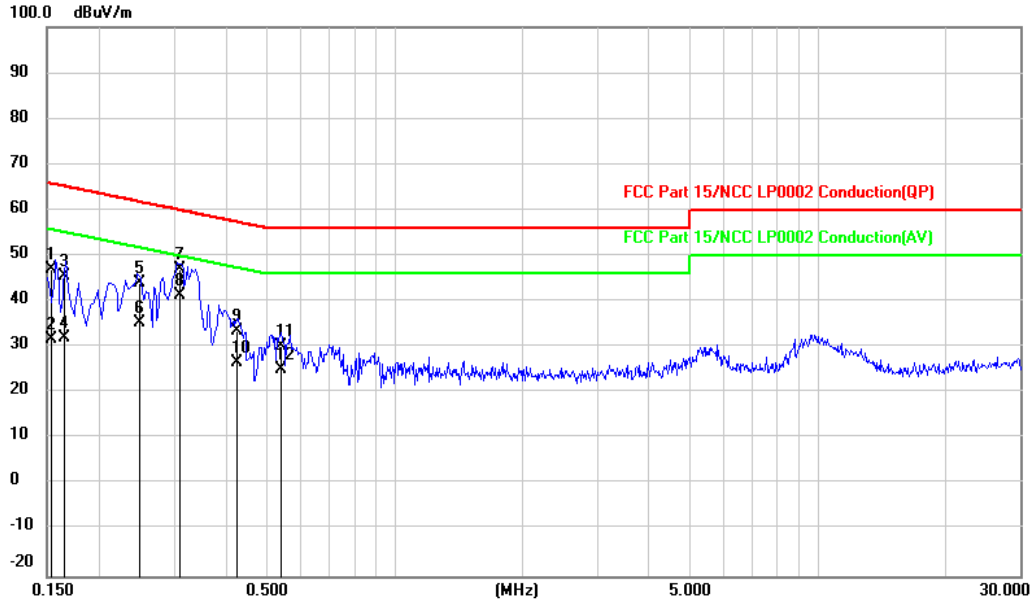
Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**Phase of Power : Neutral (N)**



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1539	27.31	19.62	46.93	65.79	-18.86	QP
2	0.1539	11.99	19.62	31.61	55.79	-24.18	AVG
3	0.1650	25.80	19.62	45.42	65.21	-19.79	QP
4	0.1650	12.37	19.62	31.99	55.21	-23.22	AVG
5	0.2483	24.34	19.62	43.96	61.81	-17.85	QP
6	0.2483	15.63	19.62	35.25	51.81	-16.56	AVG
7	0.3101	27.47	19.62	47.09	59.97	-12.88	QP
8	0.3101	21.73	19.62	41.35	49.97	-8.62	AVG
9	0.4209	14.01	19.62	33.63	57.43	-23.80	QP
10	0.4209	7.02	19.62	26.64	47.43	-20.79	AVG
11	0.5383	10.62	19.62	30.24	56.00	-25.76	QP
12	0.5383	5.42	19.62	25.04	46.00	-20.96	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

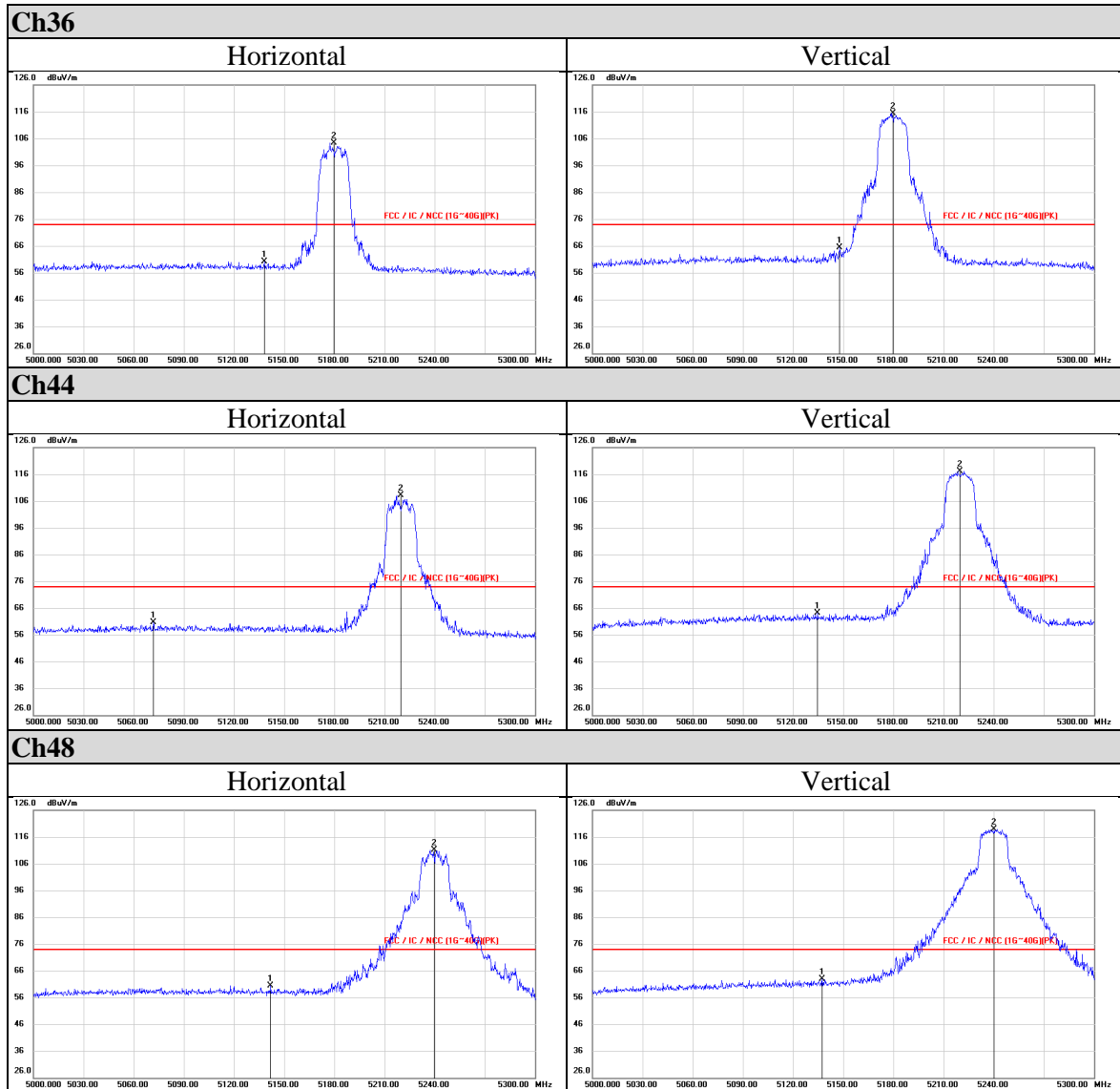


## Appendix I Radiated Band Edge and OOB Measurement

### Non-Beamforming Mode

#### 802.11a

#### Peak



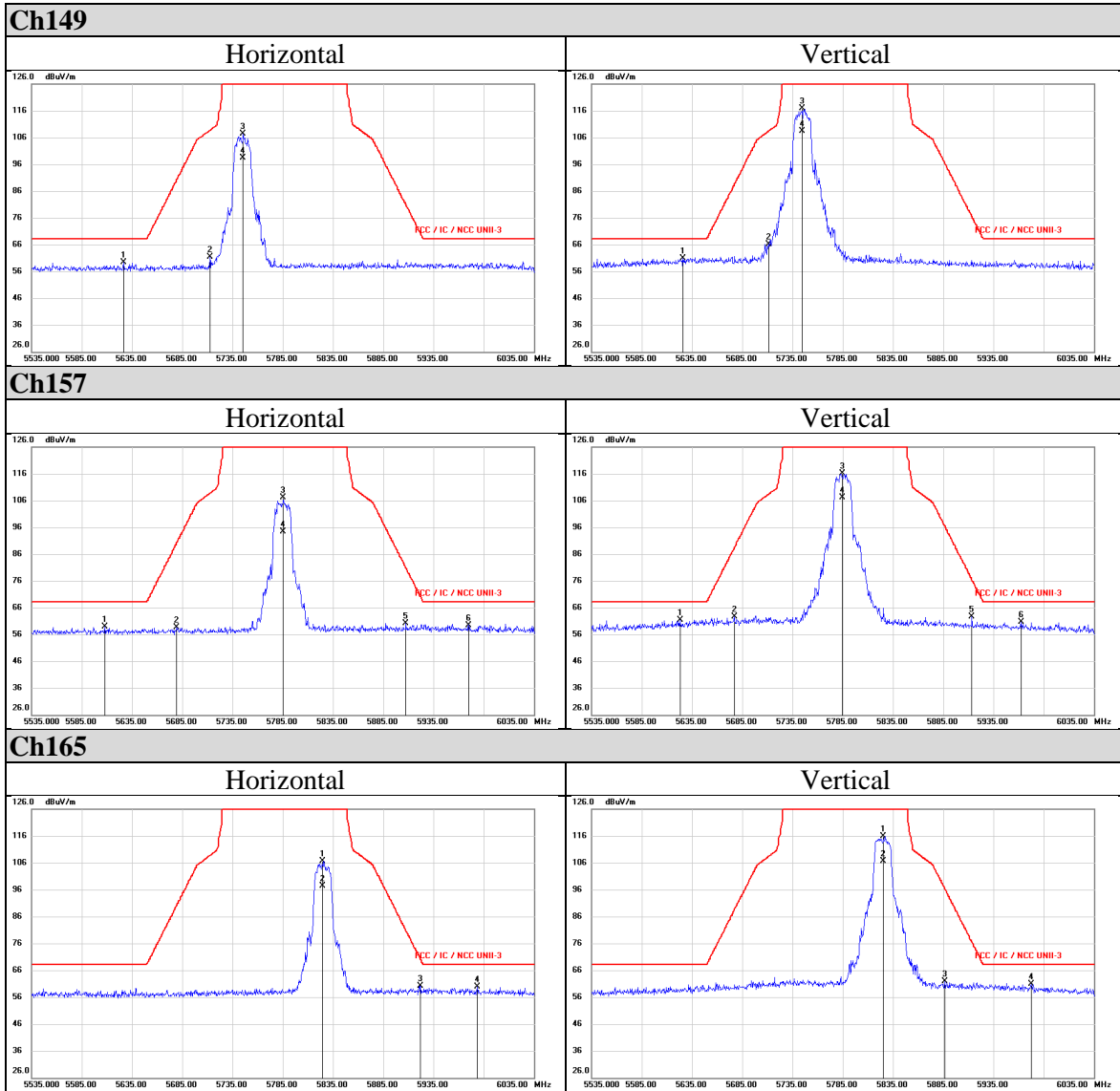
### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**Underwriters Laboratories Taiwan Co., Ltd.**

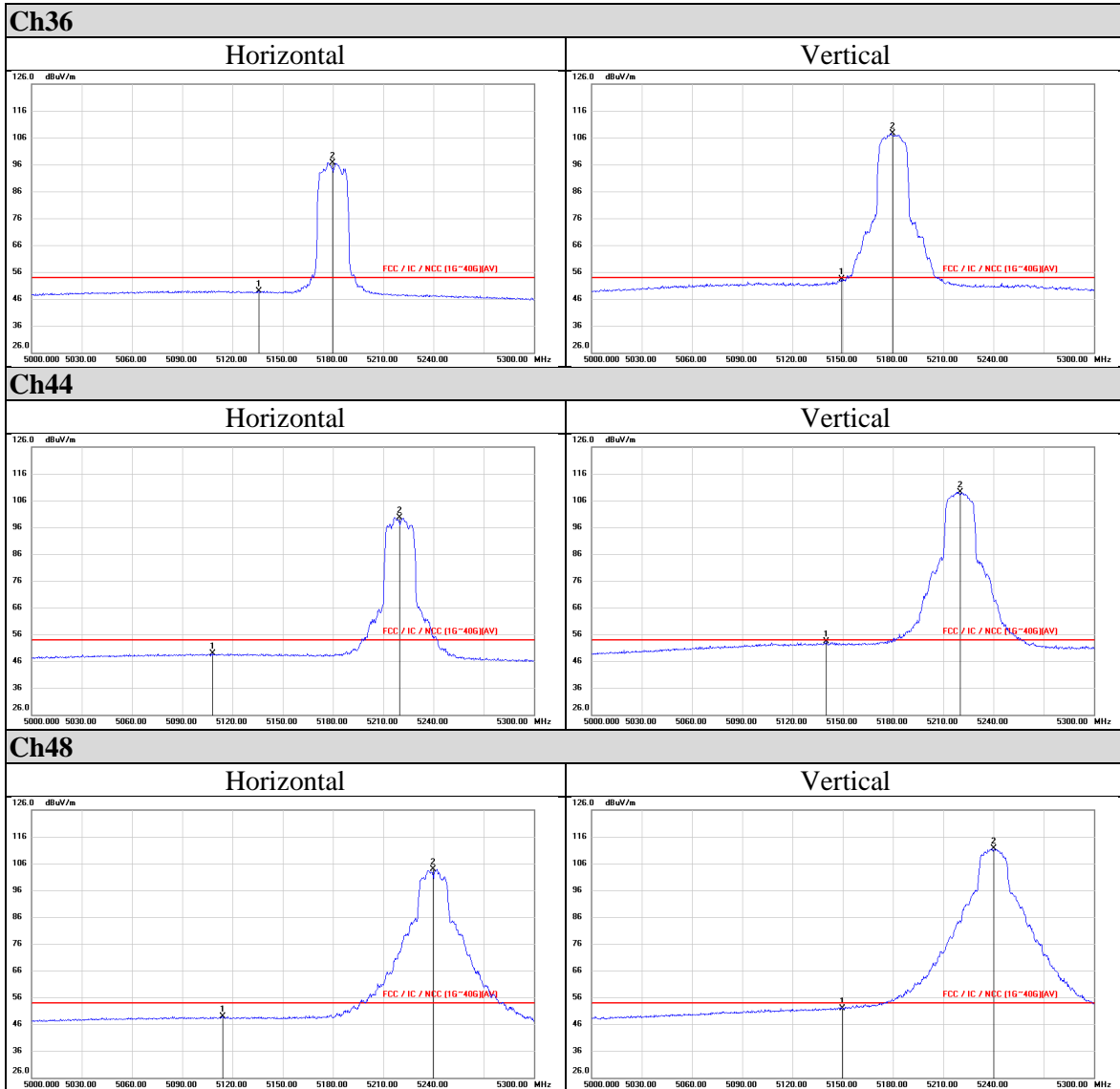
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



Average



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

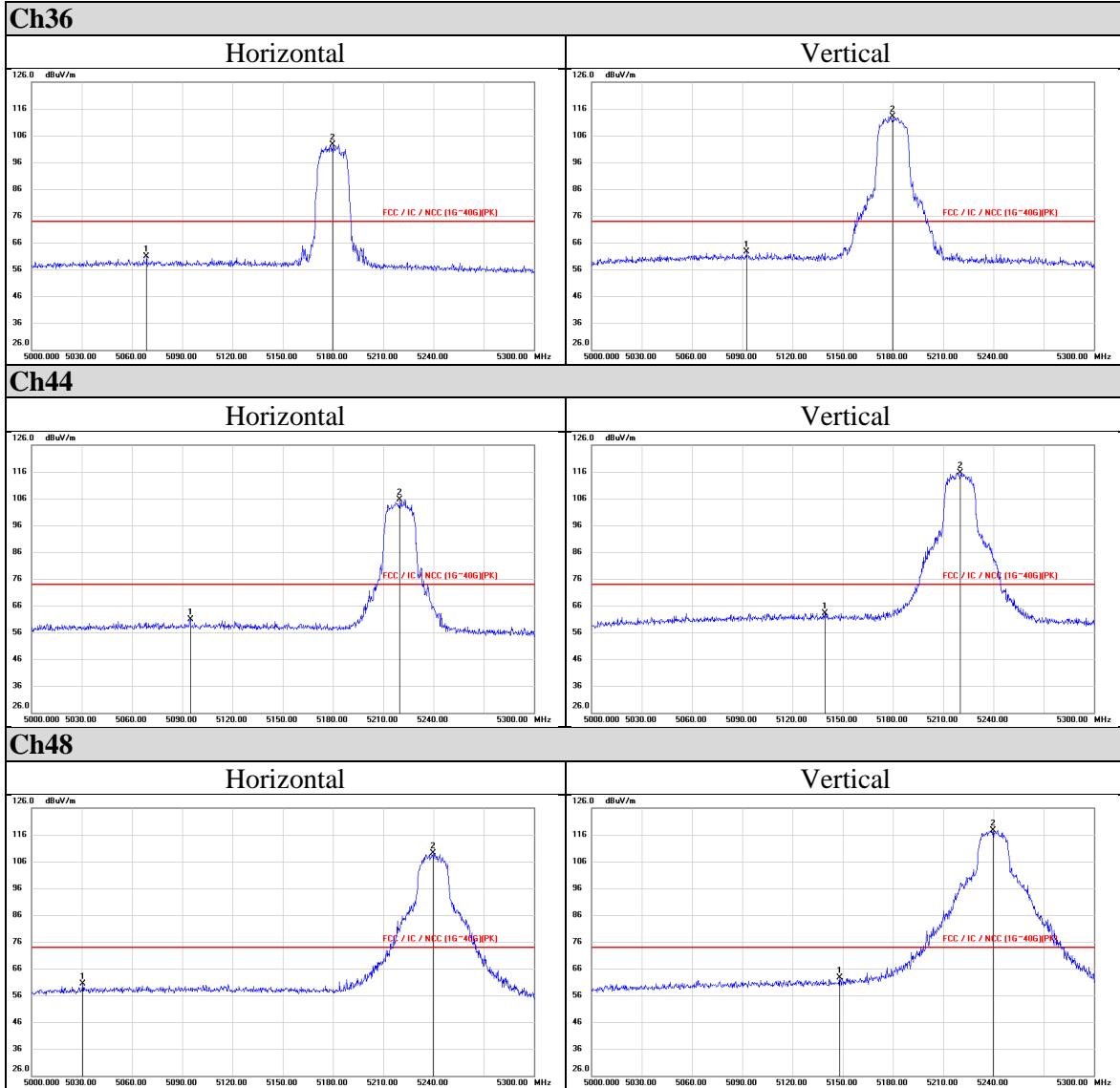
Facsimile (FAX ) :+886-3-583-7948





### 802.11ac (VHT20)

#### Peak



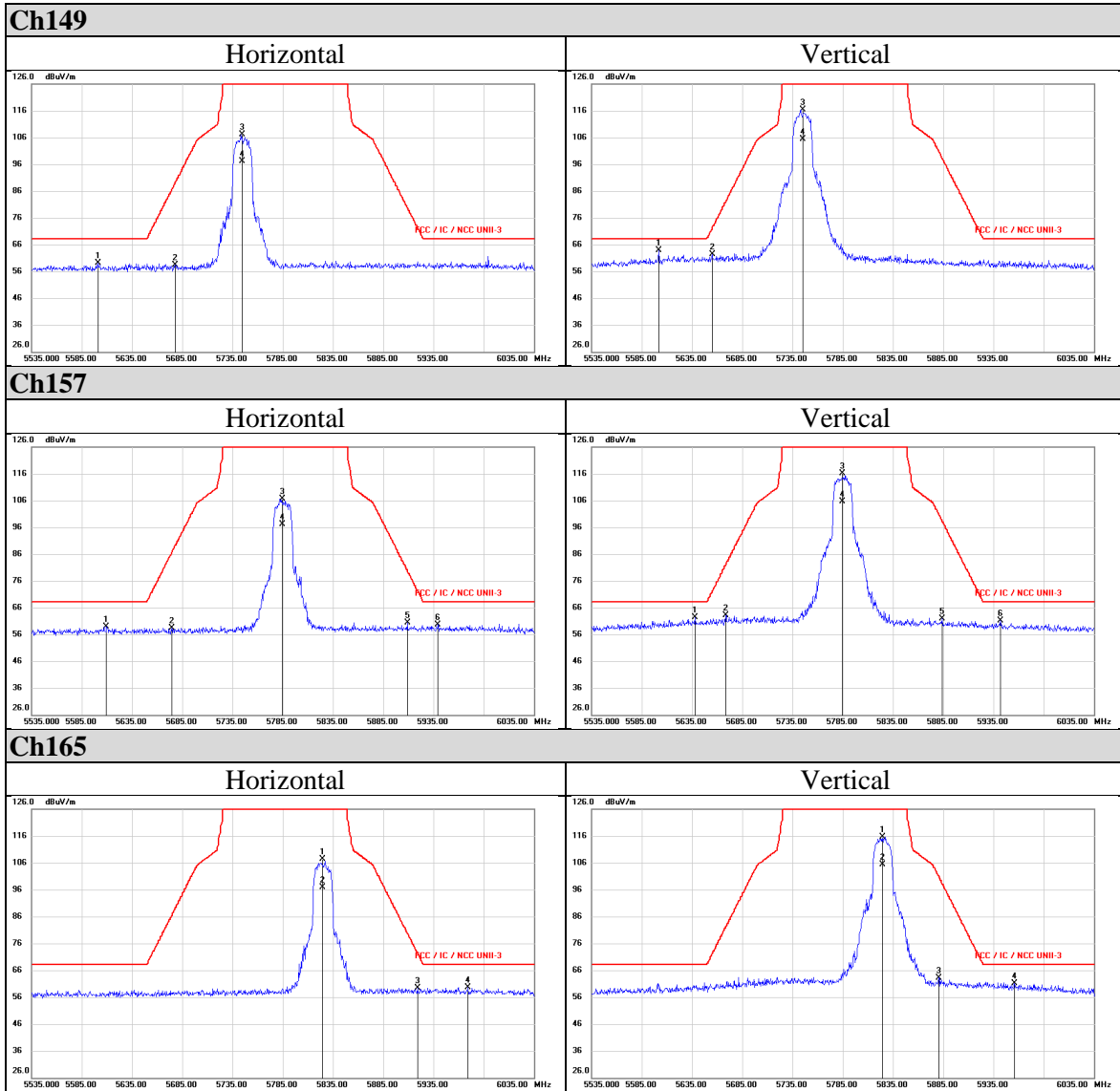
### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



**Underwriters Laboratories Taiwan Co., Ltd.**

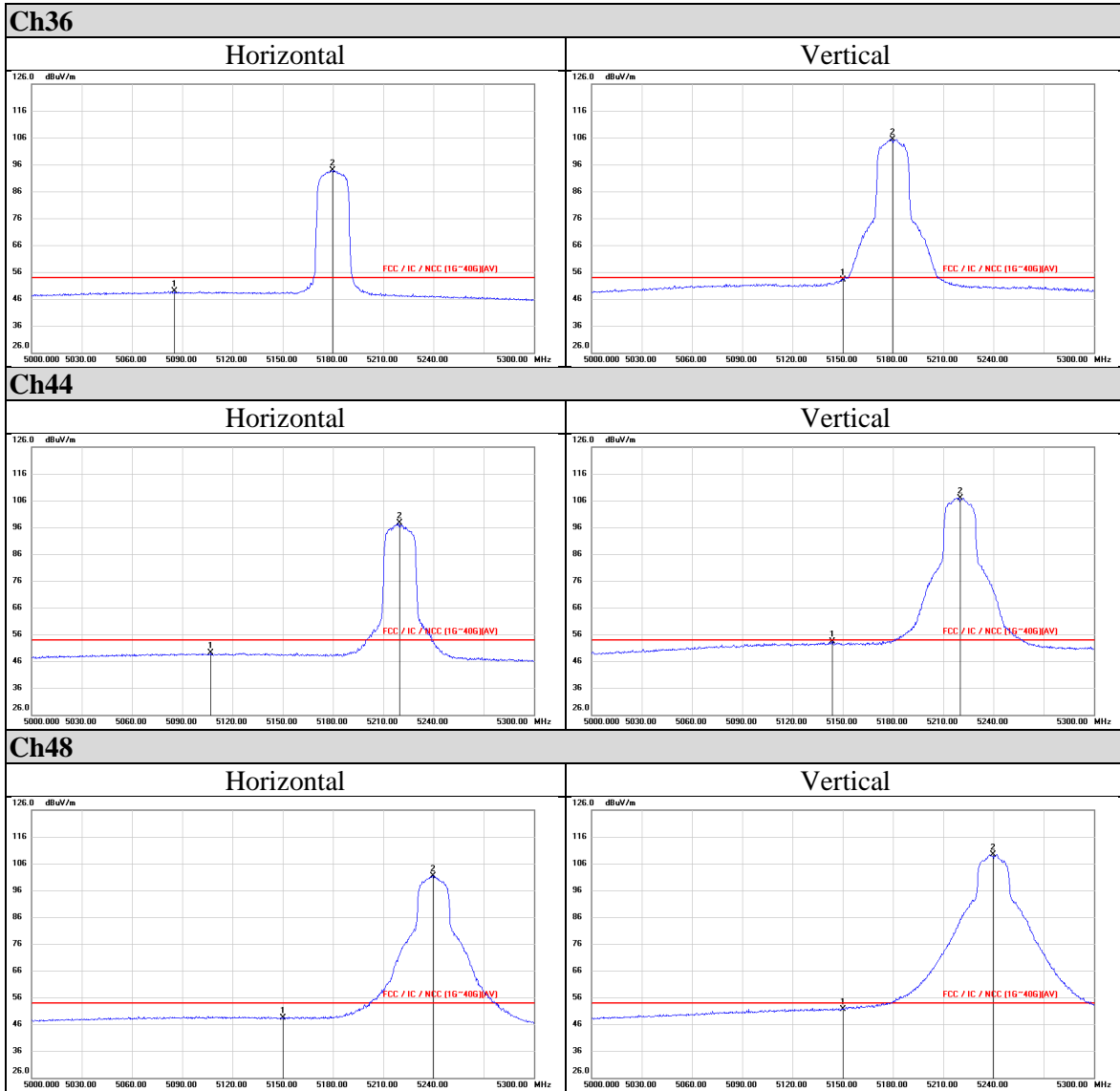
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948



Average



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

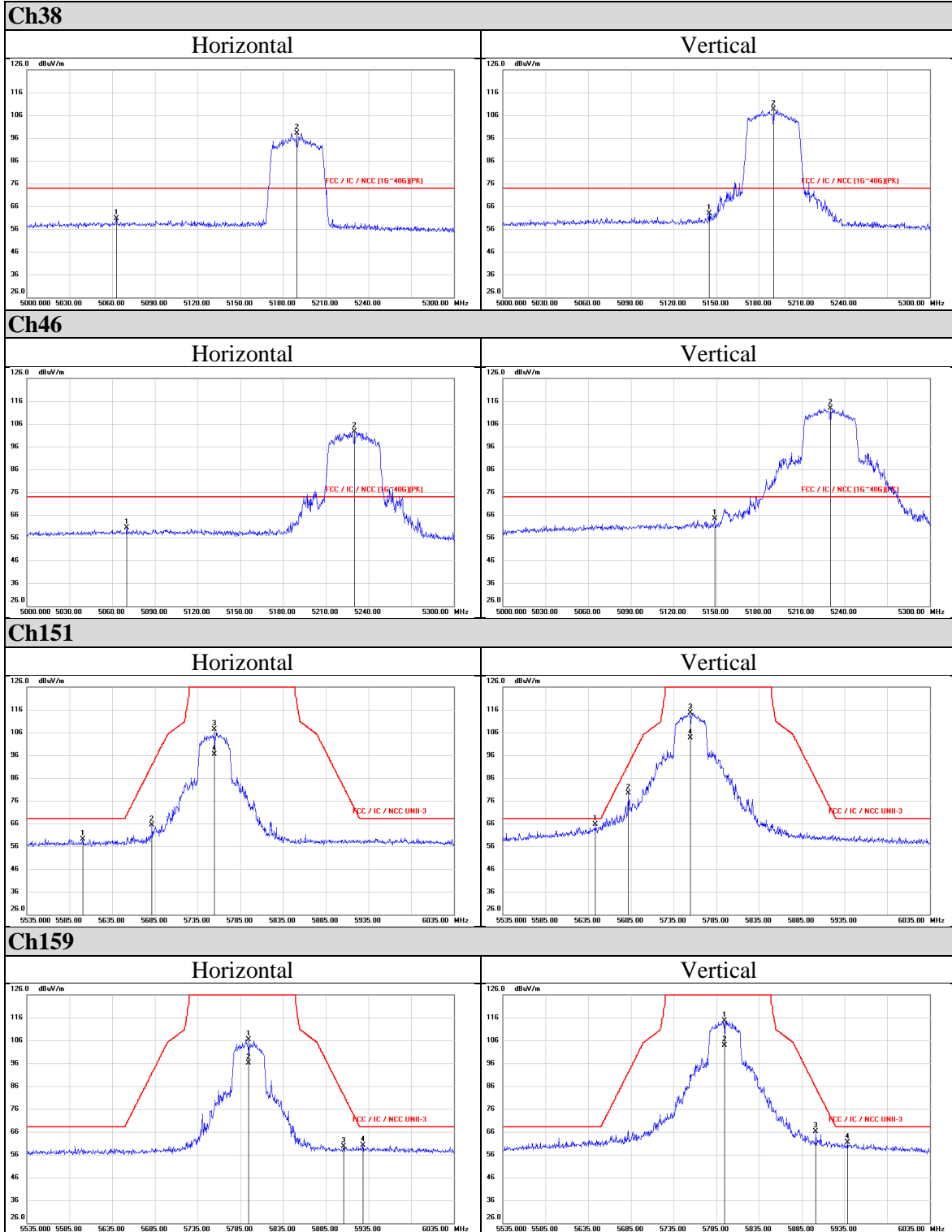
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



### 802.11ac (VHT40)

#### Peak



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

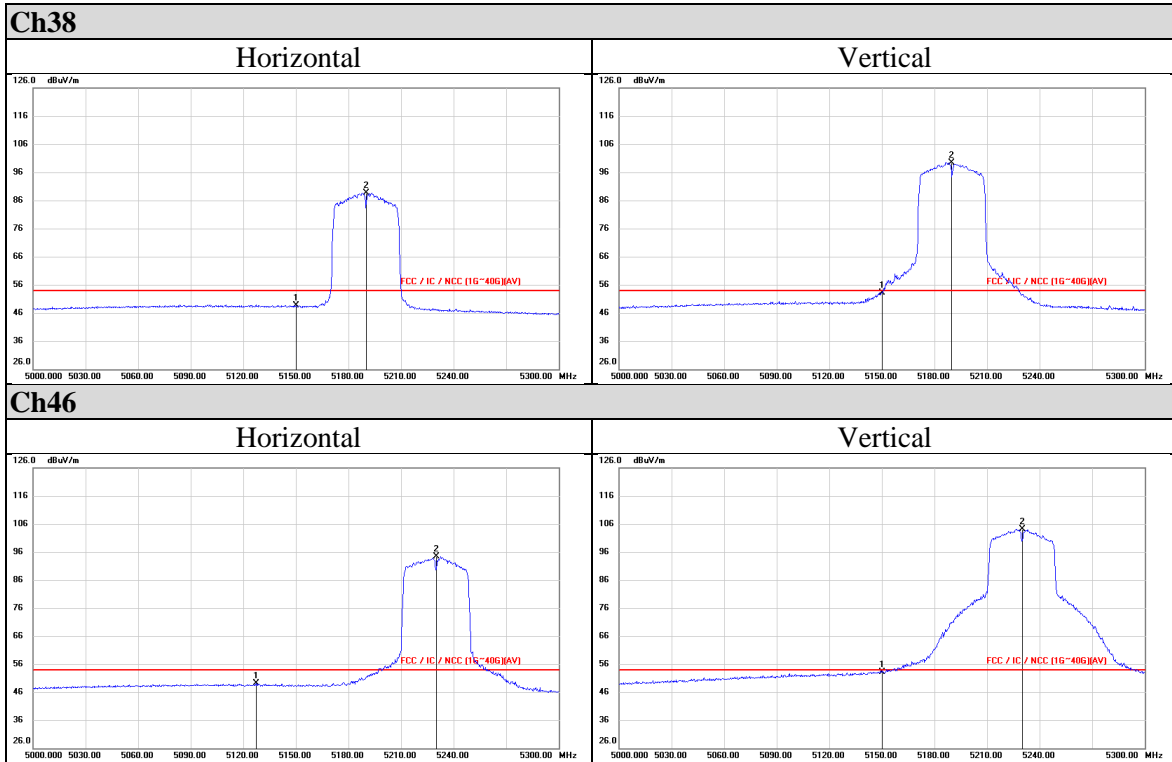
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



Average



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

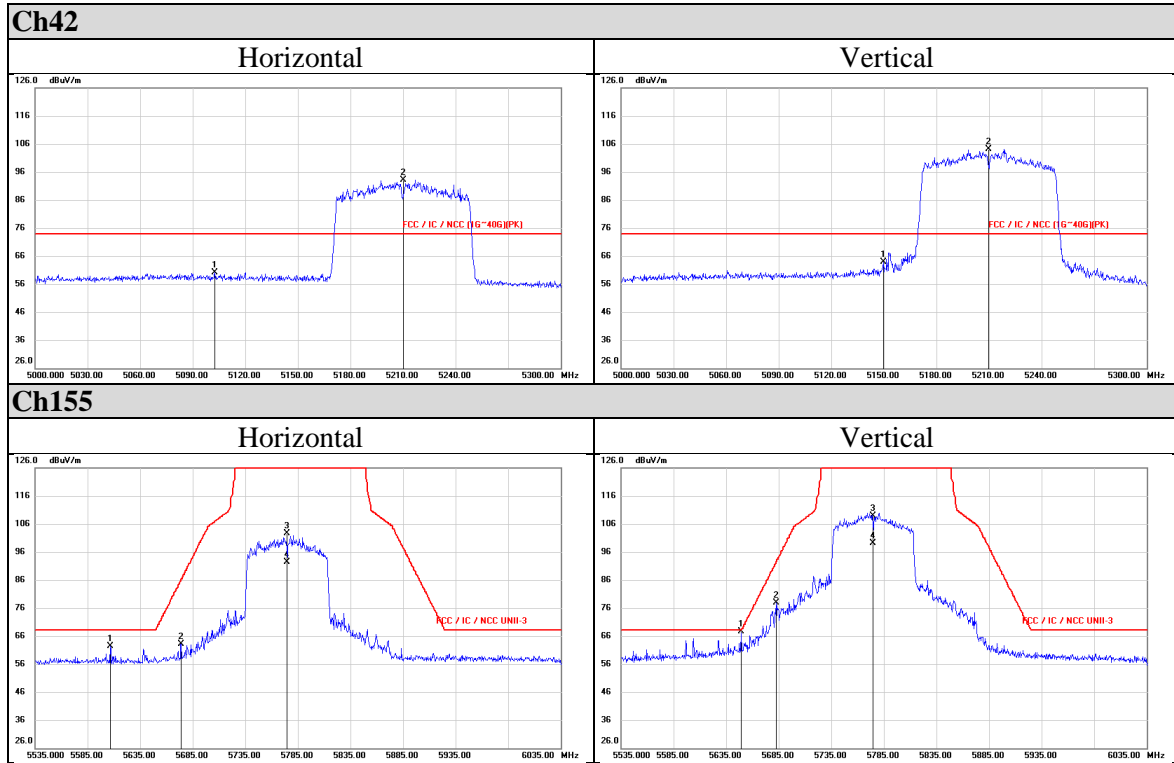
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

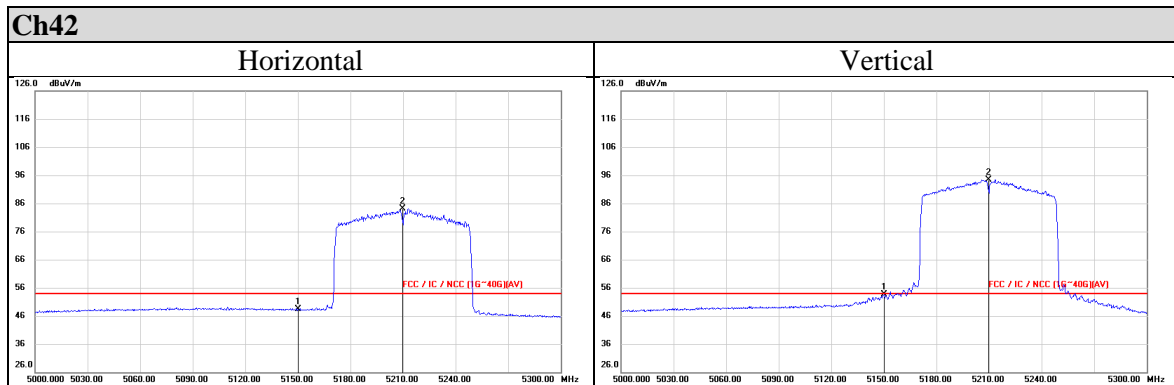


### 802.11ac (VHT80)

#### Peak



#### Average

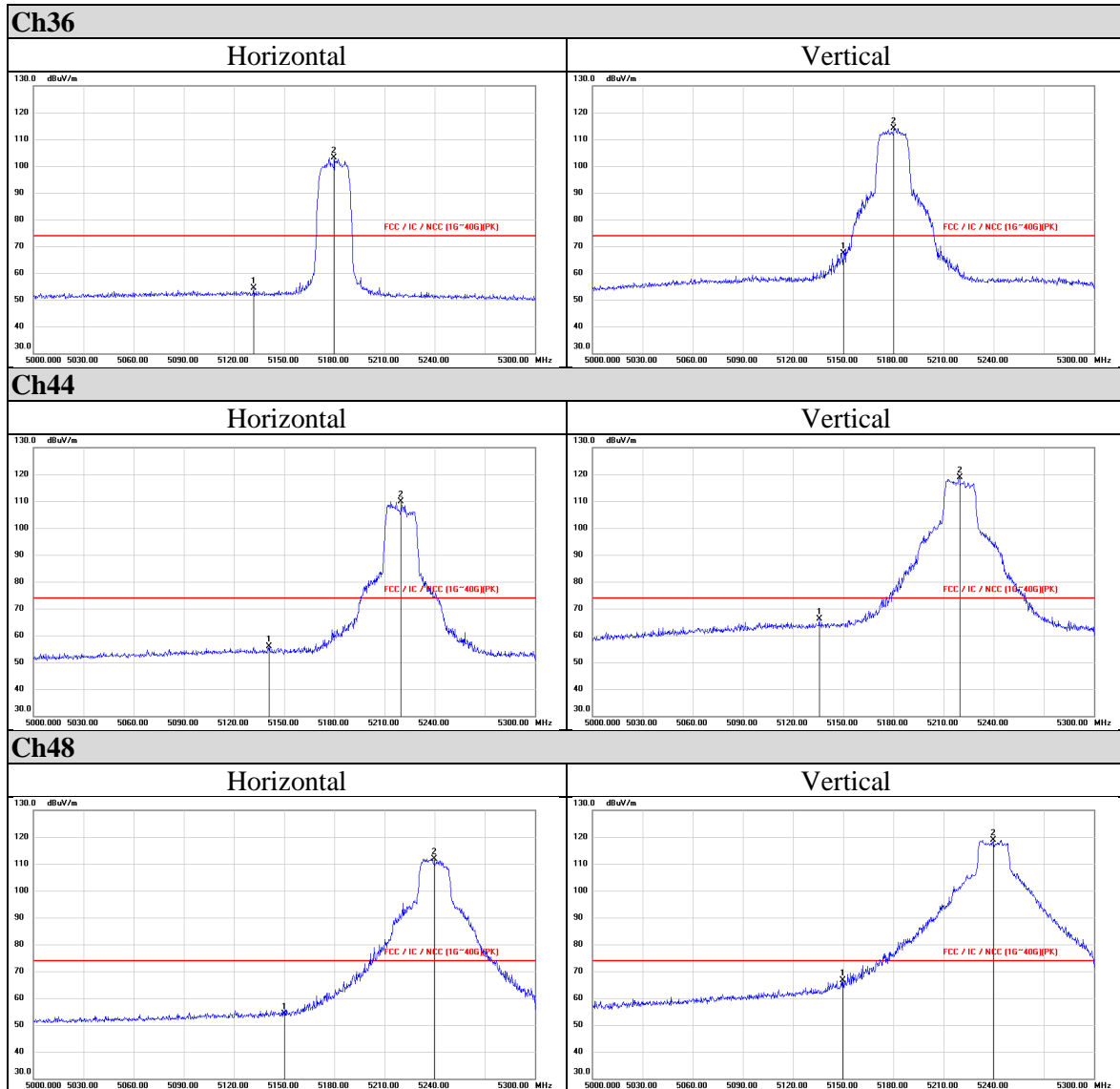




### Beamforming Mode

### 802.11ac (VHT20)

### Peak

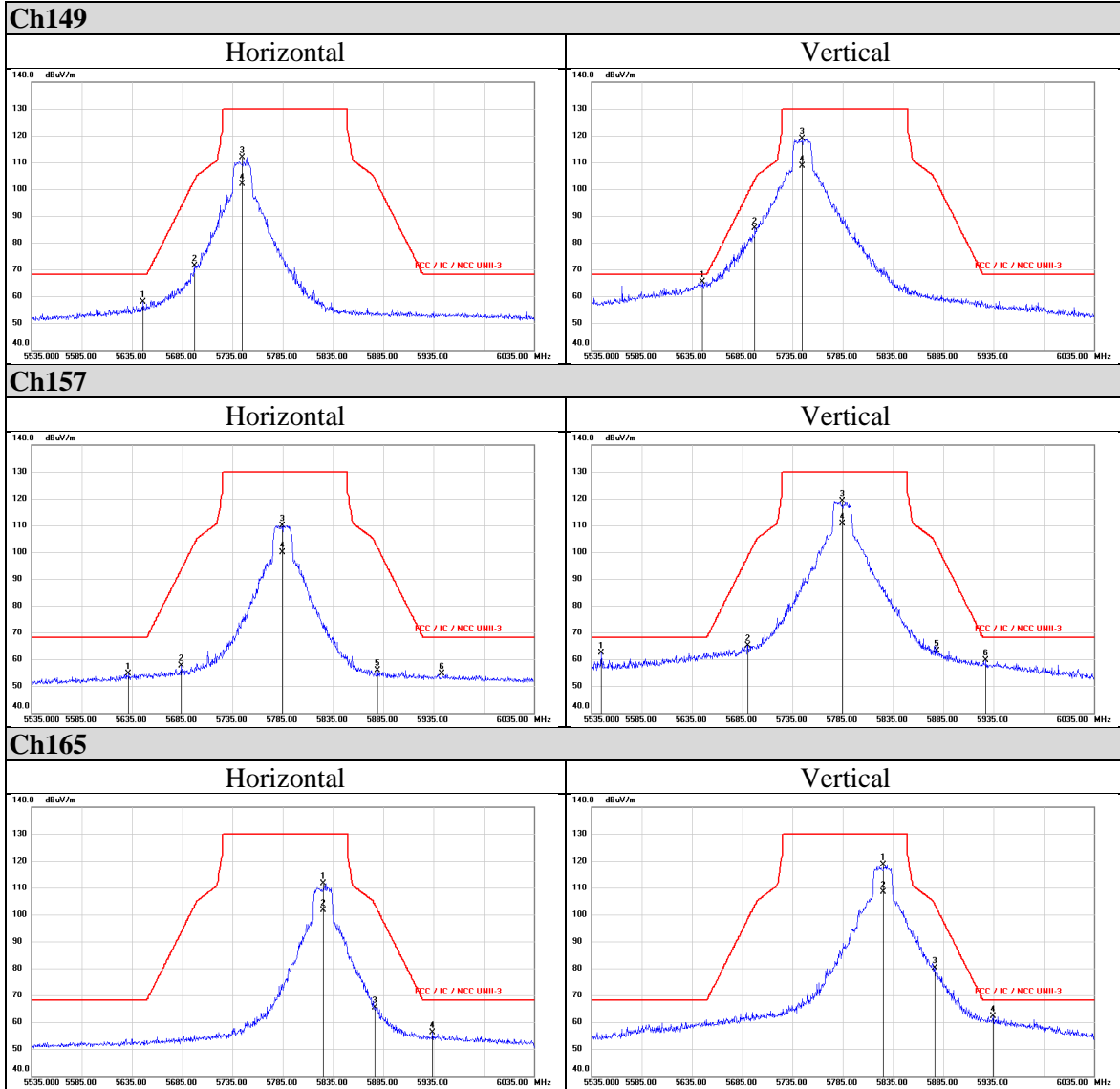


### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

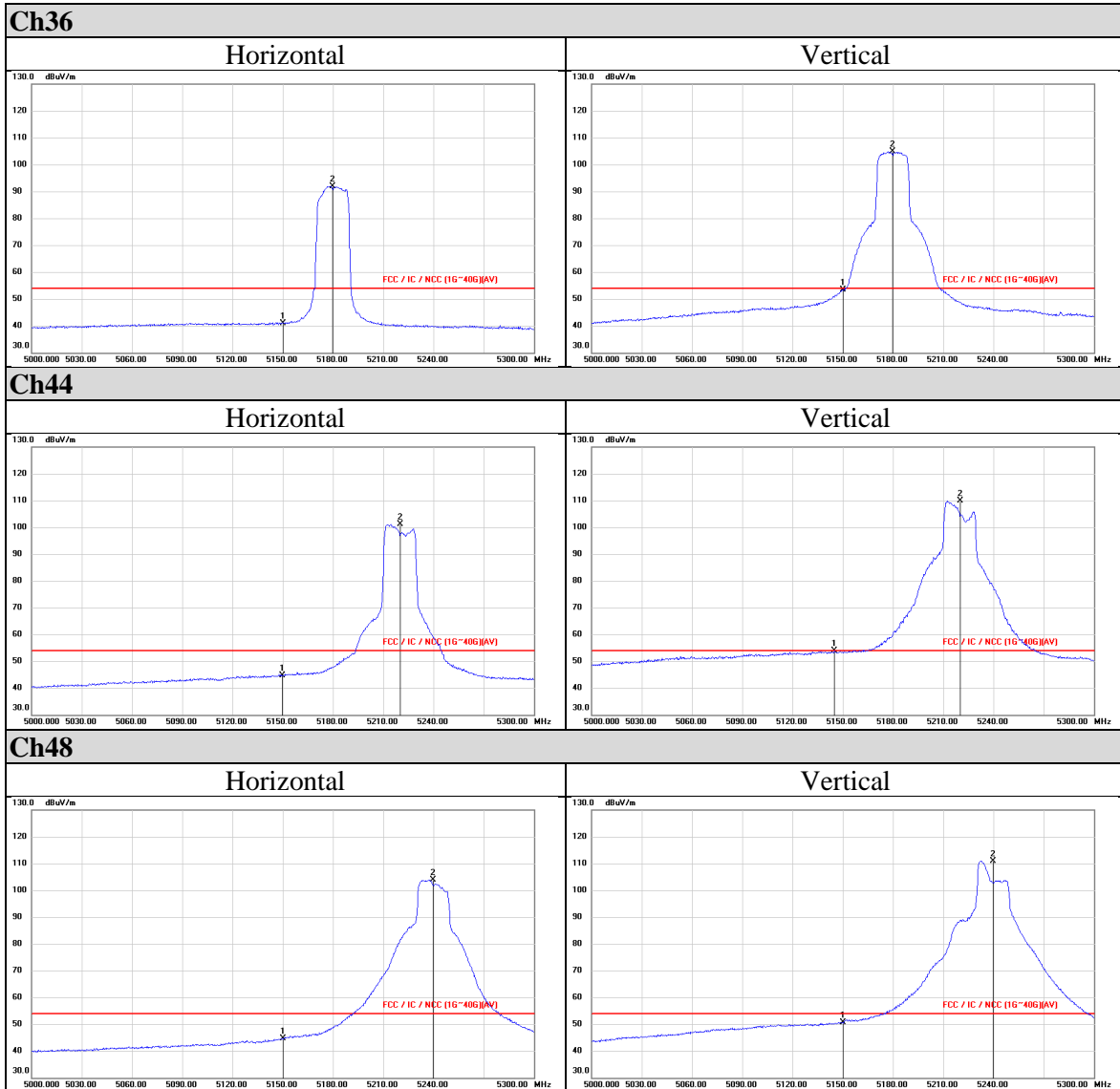
Facsimile (FAX ) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0





Average



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

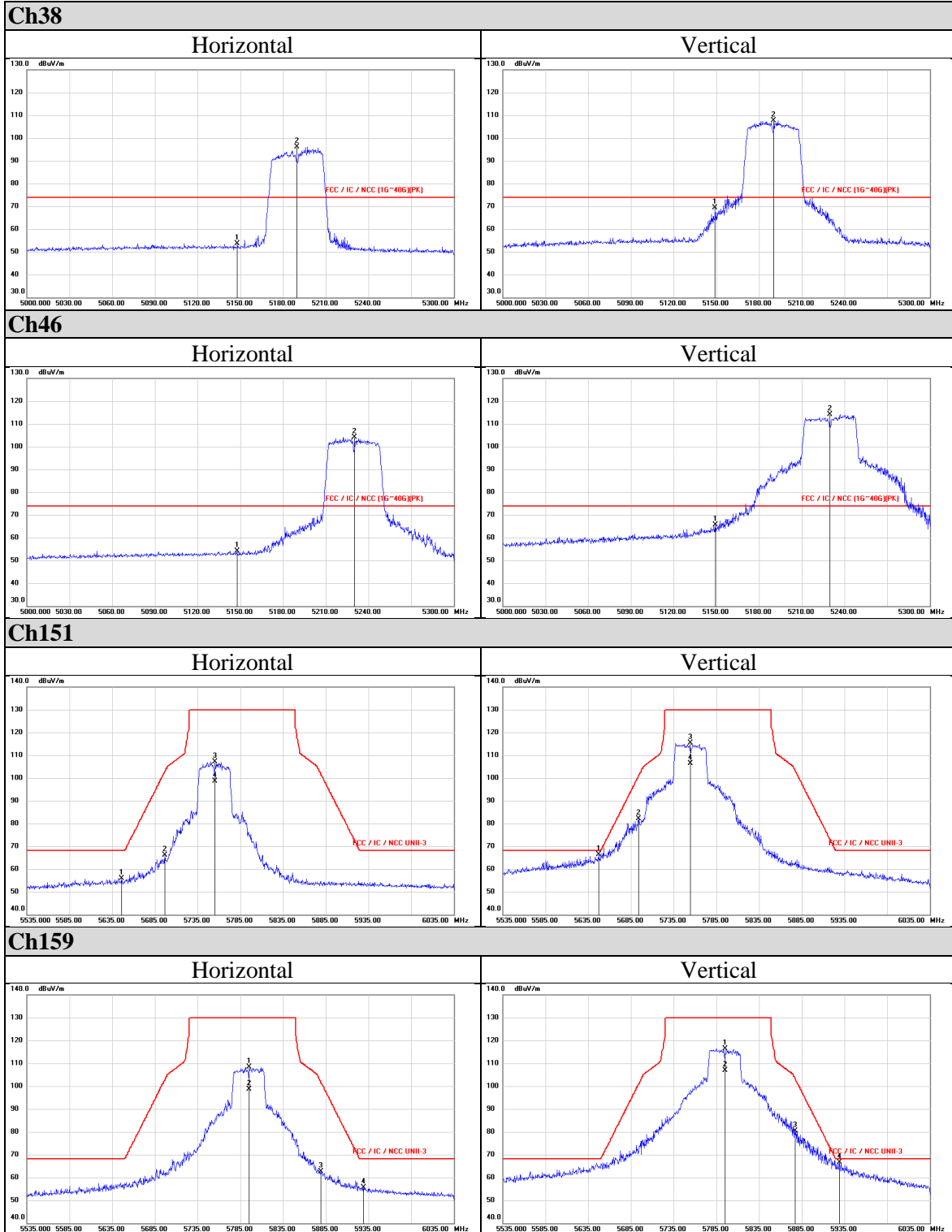
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



### 802.11ac (VHT40)

#### Peak



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

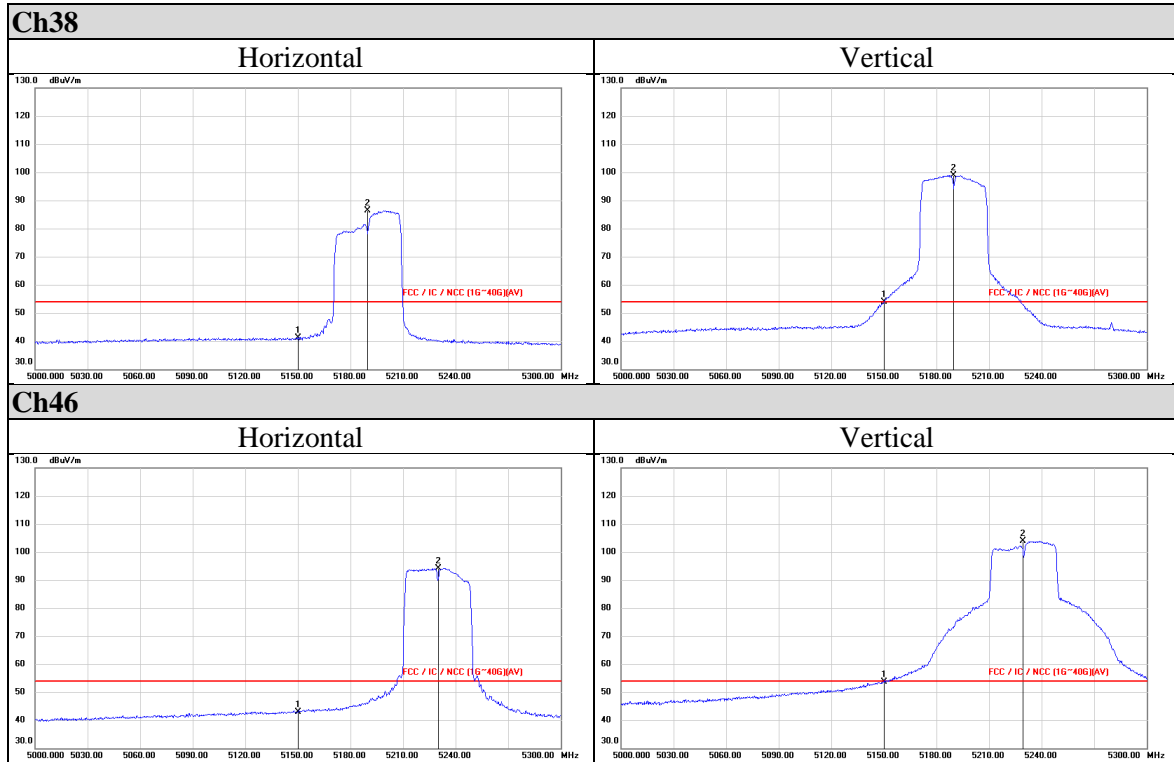
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



Average



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

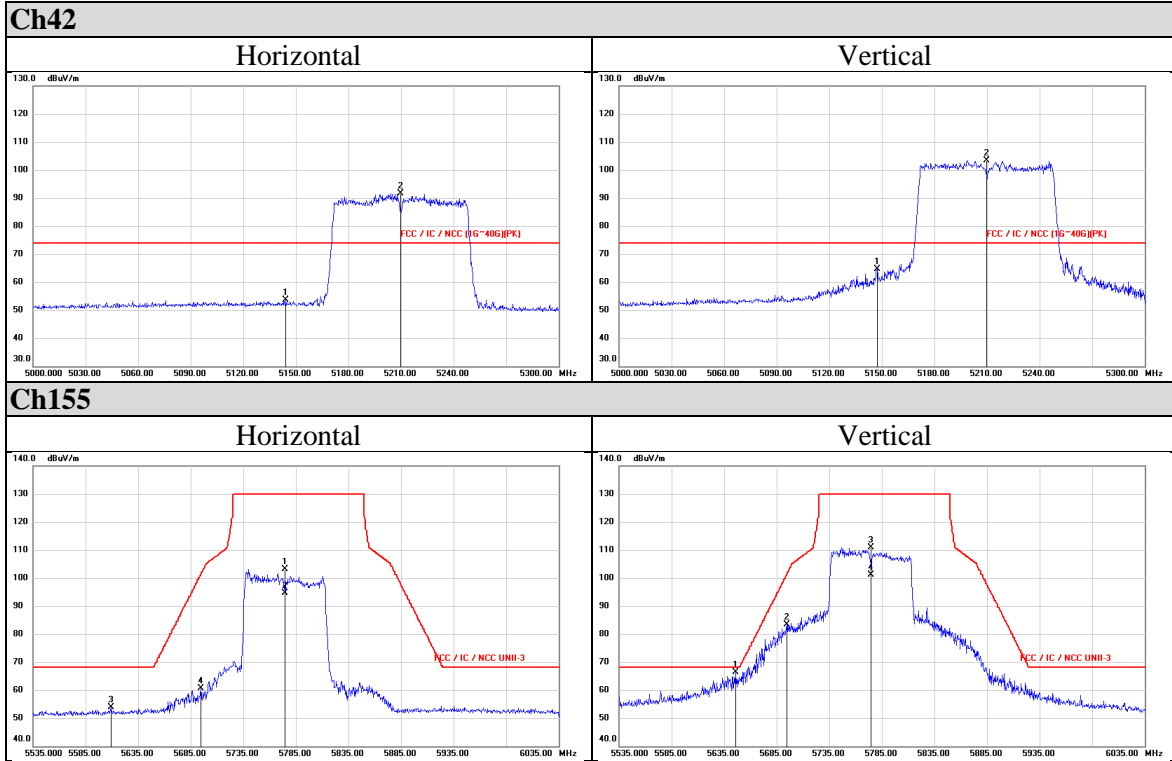
Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0

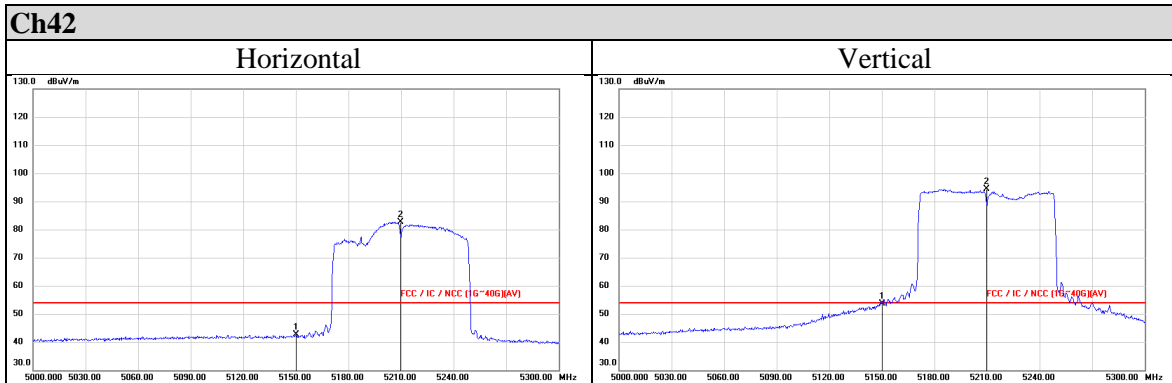


### 802.11ac (VHT80)

#### Peak



#### Average



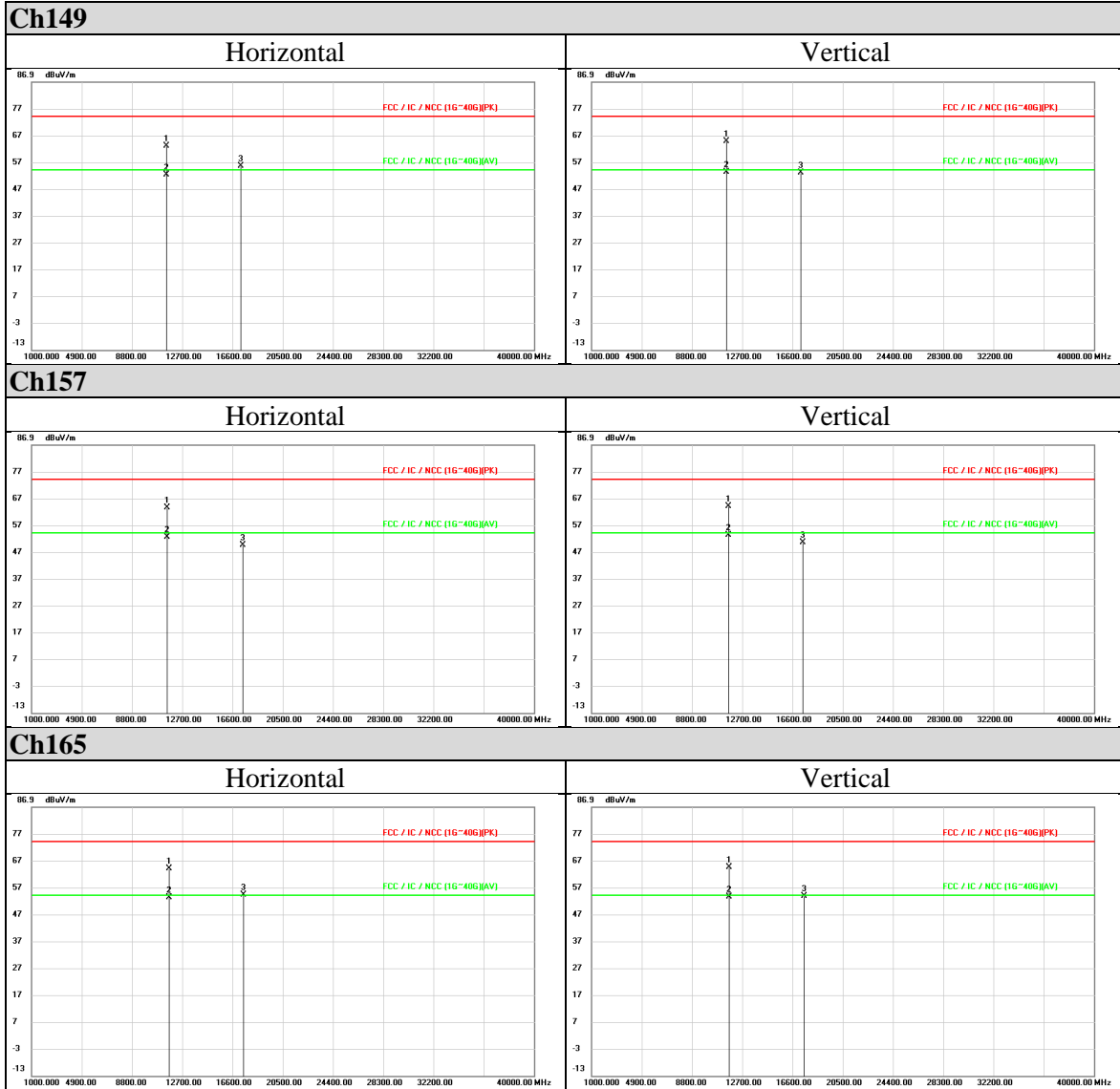


## Appendix II Radiated Spurious Emission Measurement

### Non-Beamforming Mode

#### 802.11a







802.11ac (VHT20)



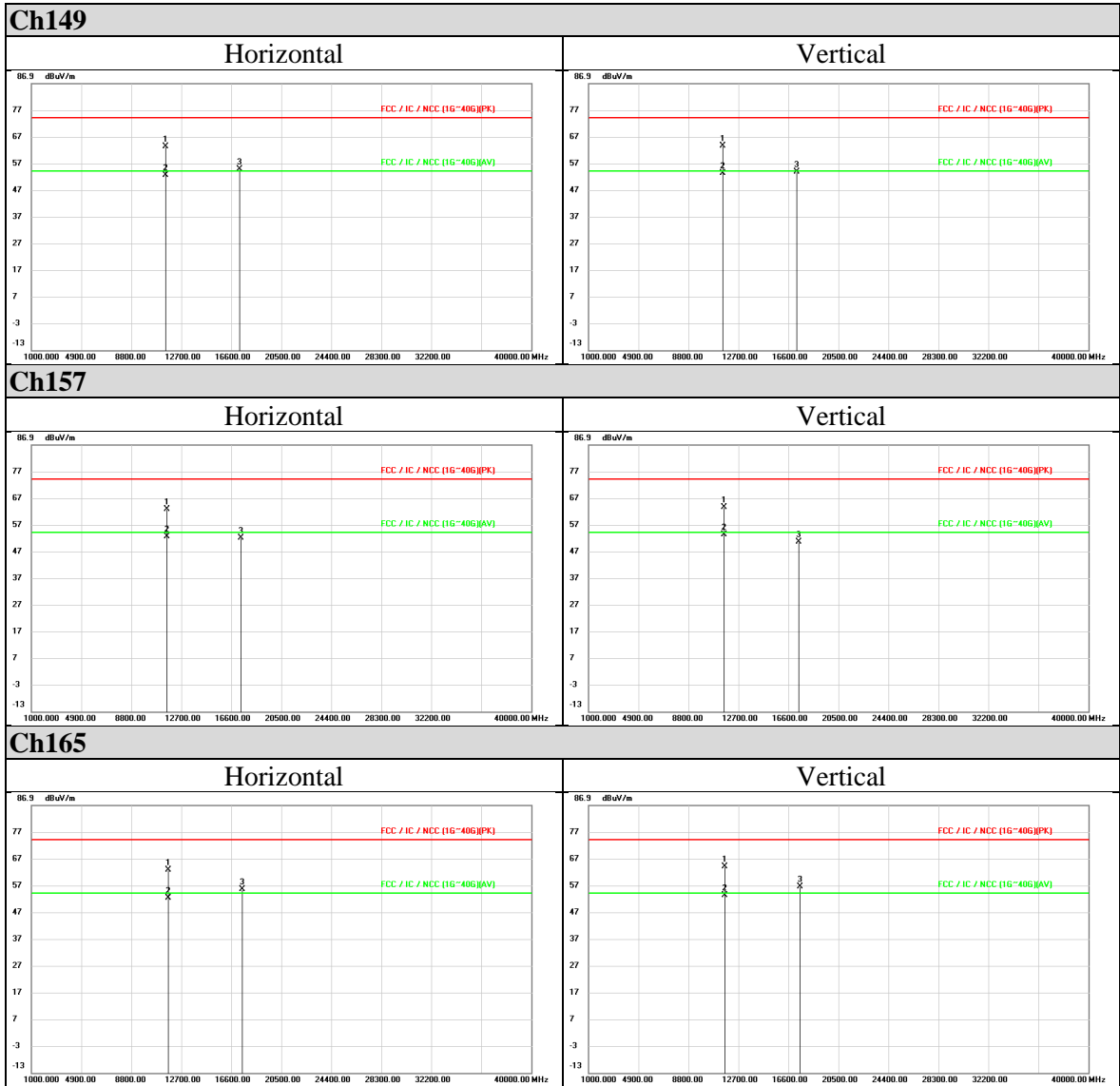
**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

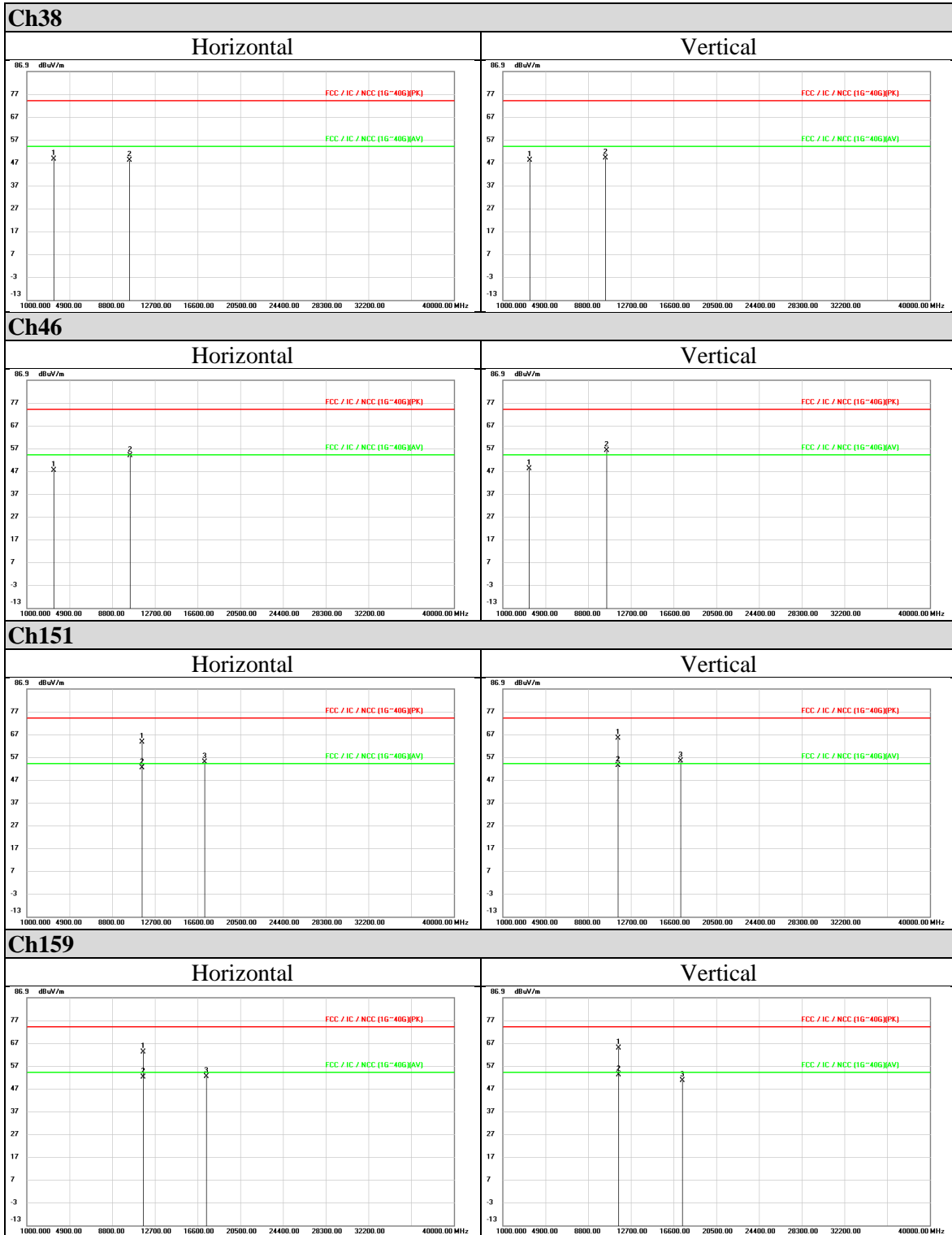
Doc No: 17-EM-F0878 / 5.0





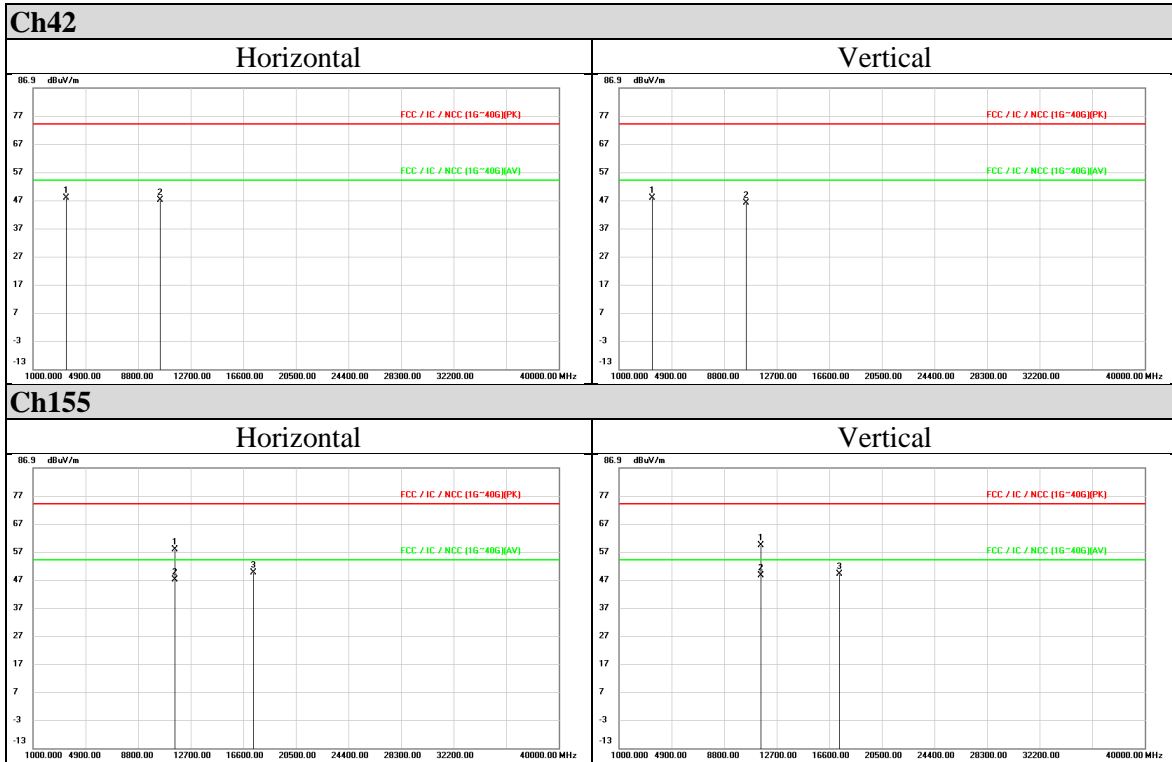


802.11ac (VHT40)





802.11ac (VHT80)



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

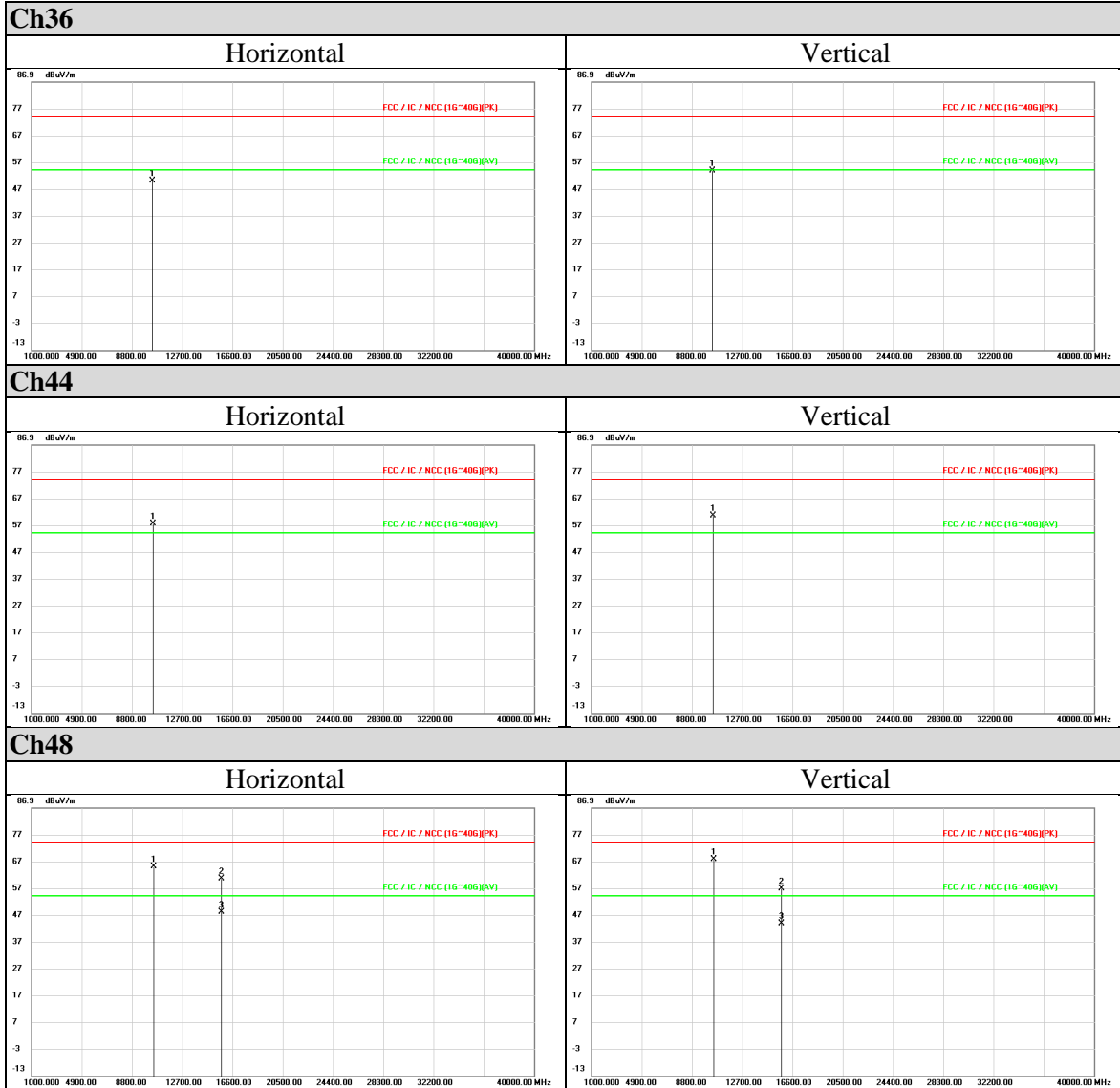
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



### Beamforming Mode

### 802.11ac (VHT20)

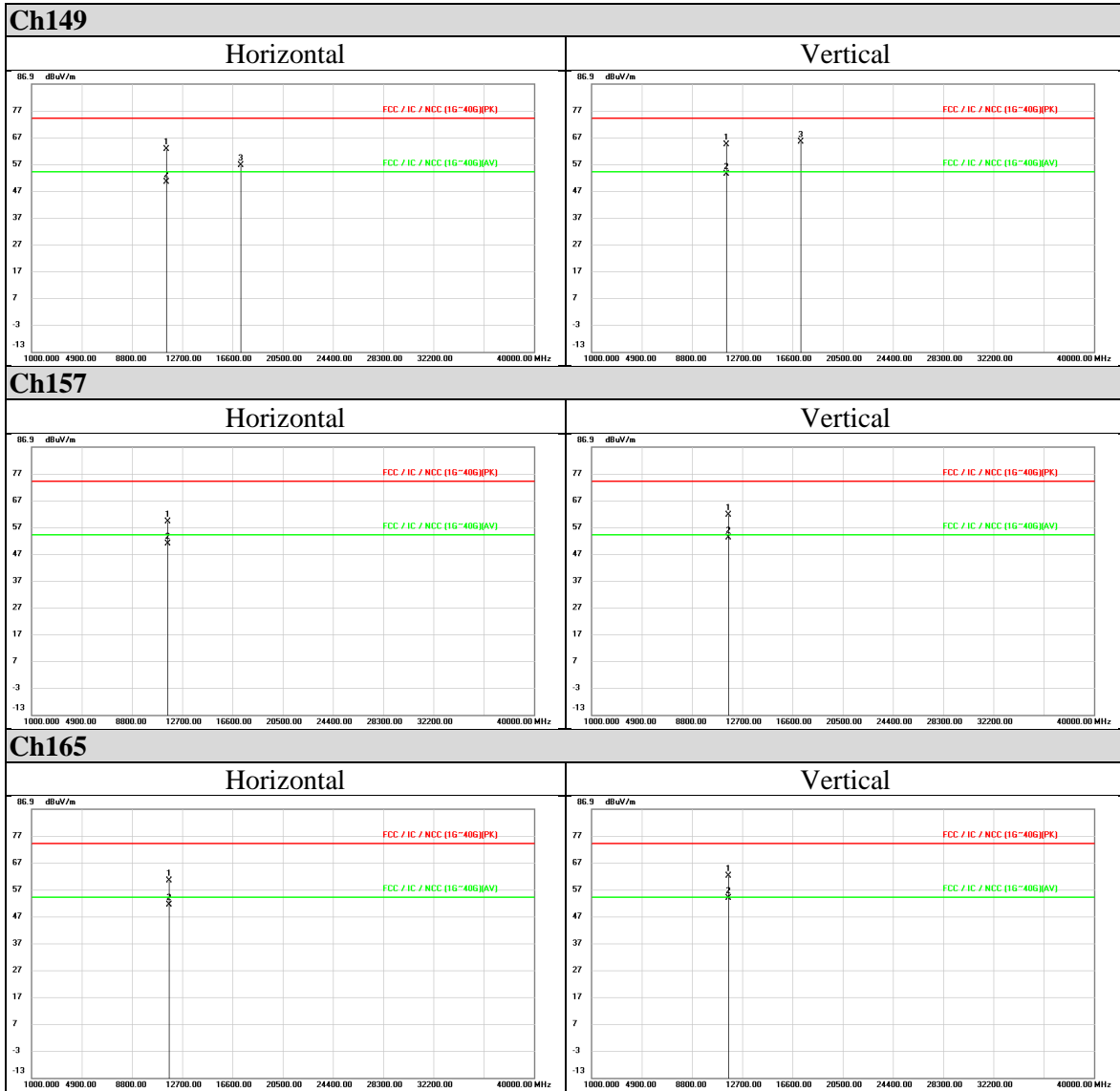


### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948



**Underwriters Laboratories Taiwan Co., Ltd.**

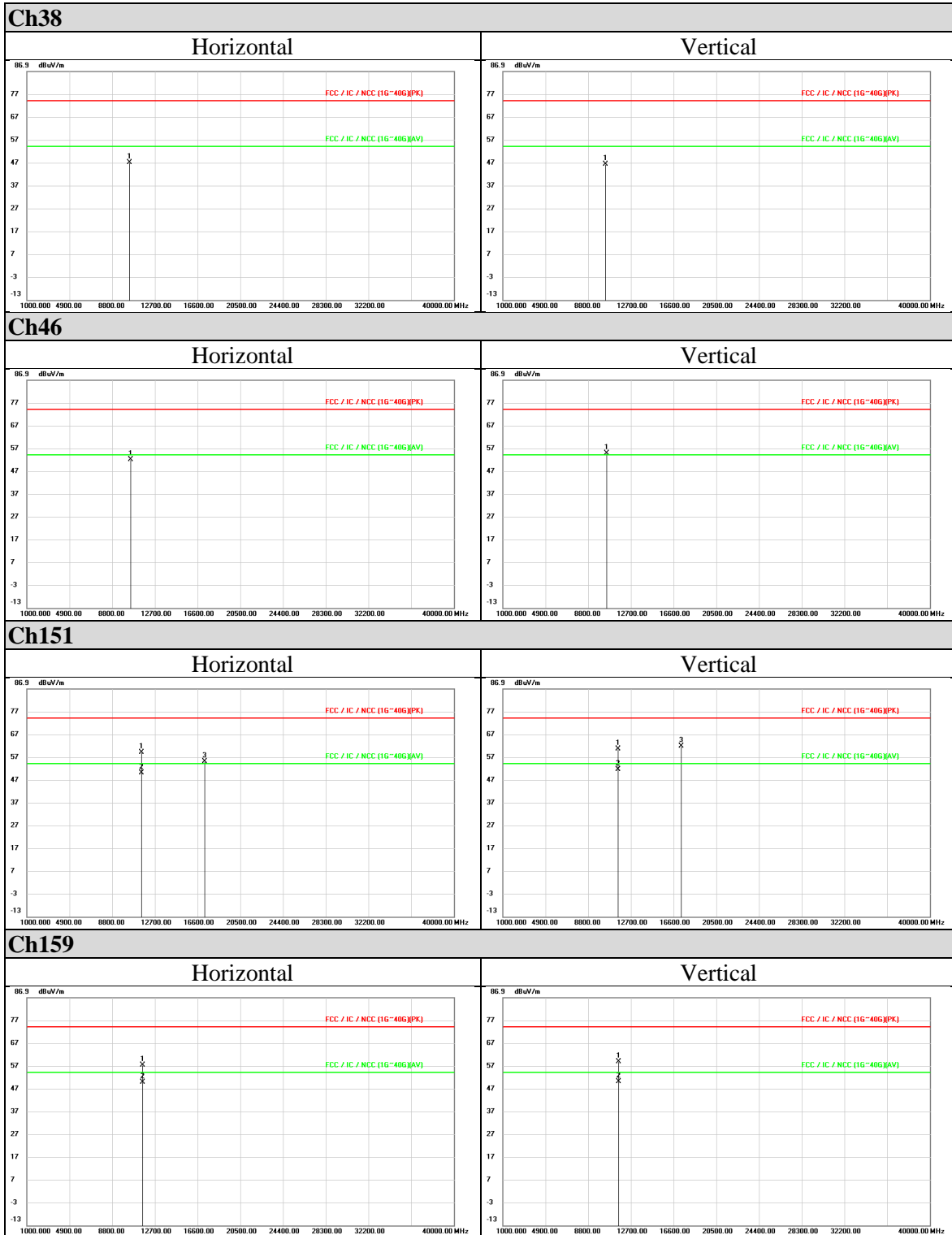
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

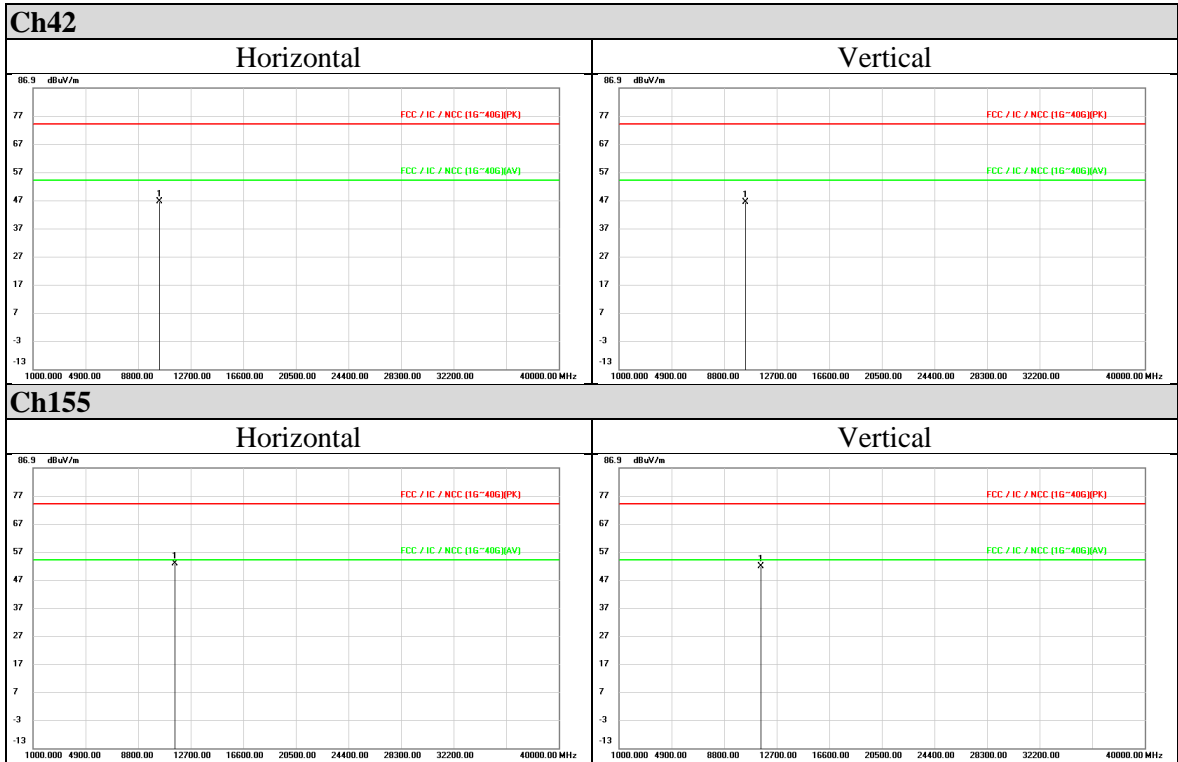


802.11ac (VHT40)





802.11ac (VHT80)



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

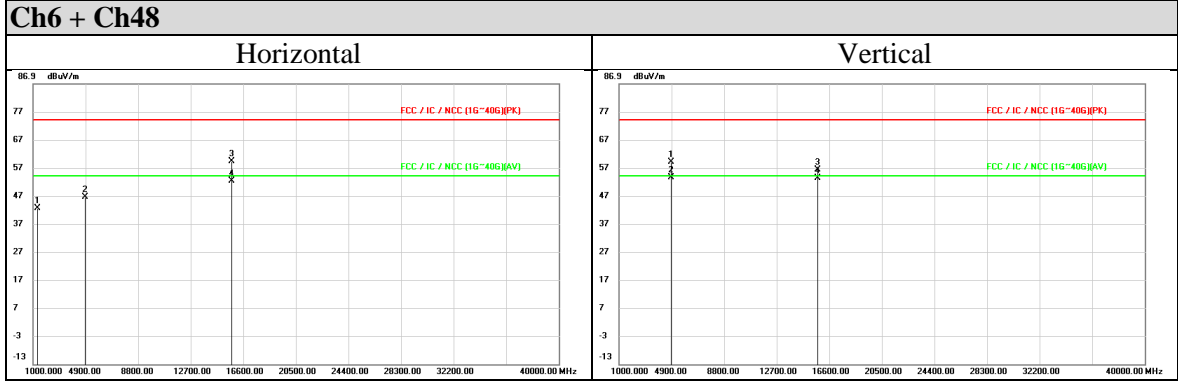
Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0



Co-Location Mode

802.11b + 802.11a



**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX ) :+886-3-583-7948

Doc No: 17-EM-F0878 / 5.0