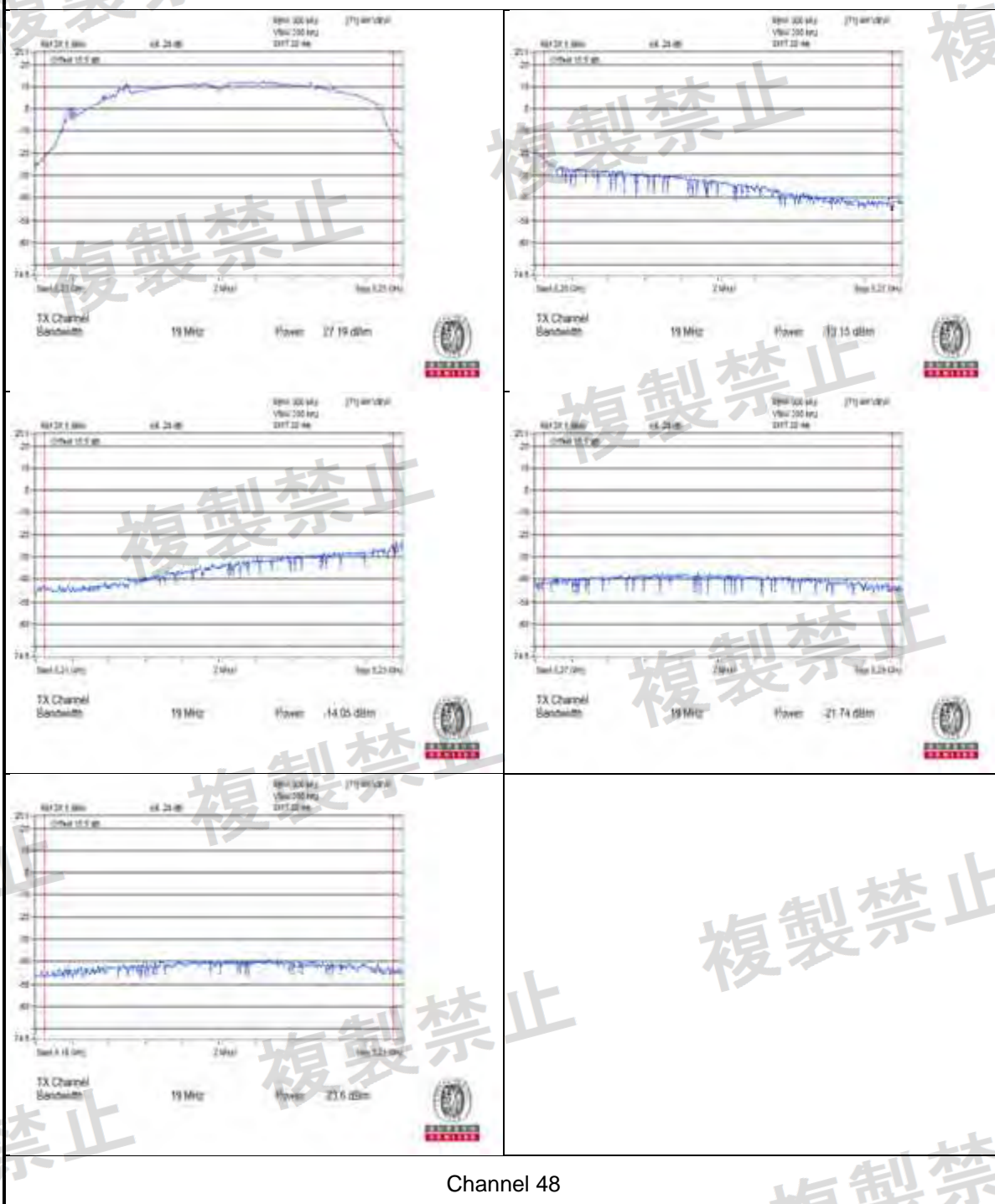
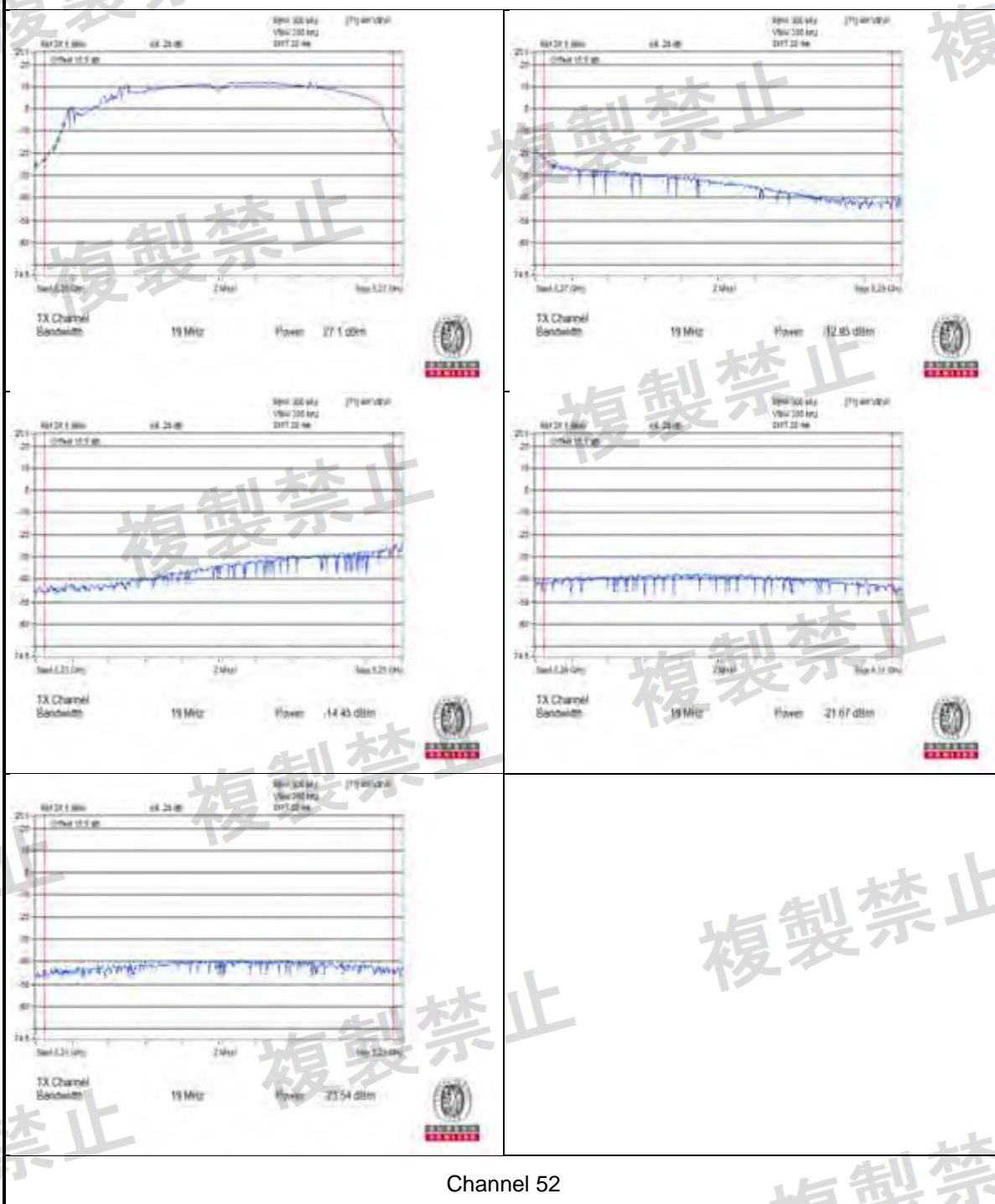


V<sub>min</sub>.

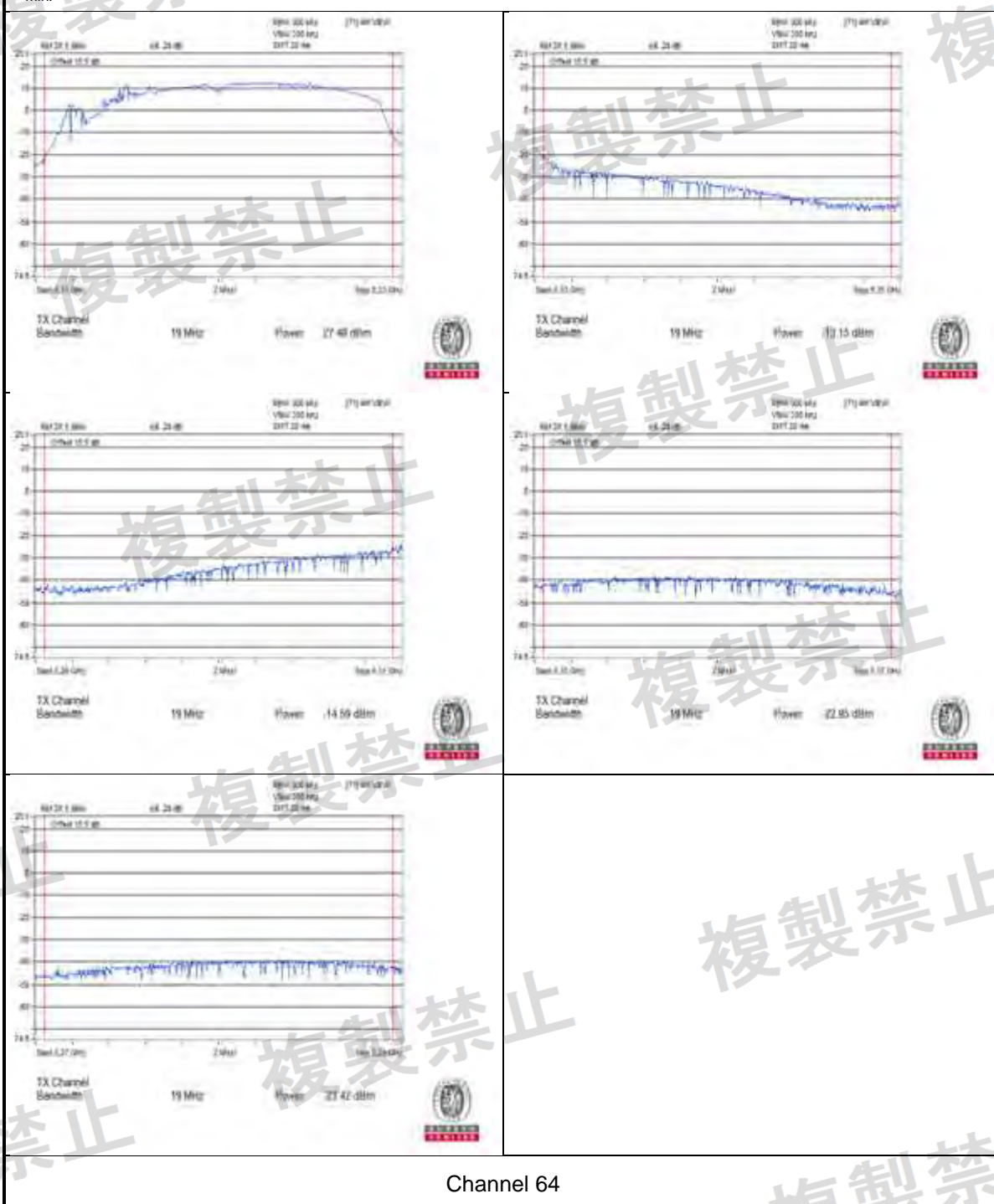


V<sub>min</sub>.



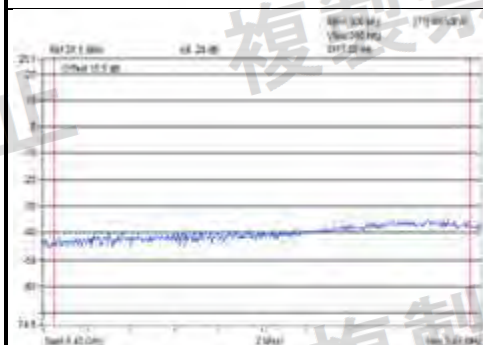
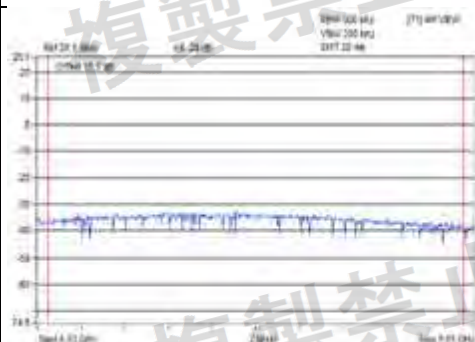
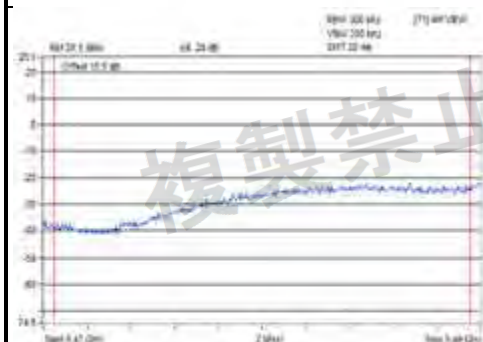
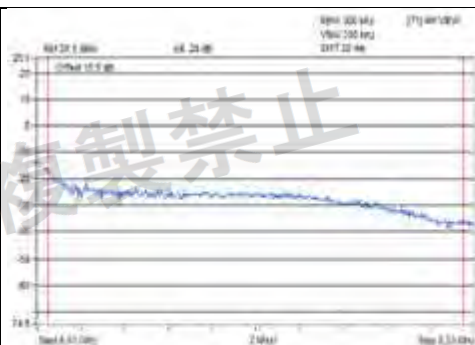
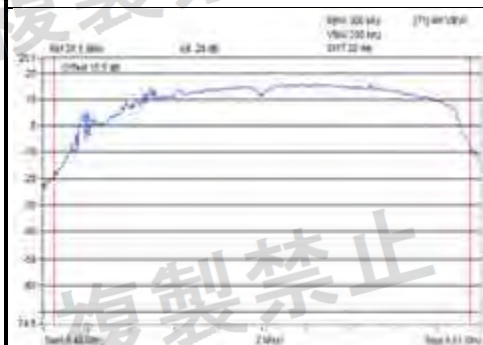
Channel 52

V<sub>min</sub>.

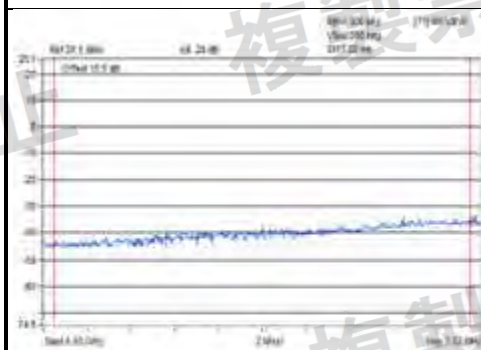
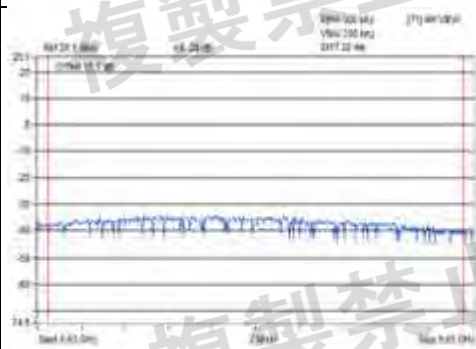
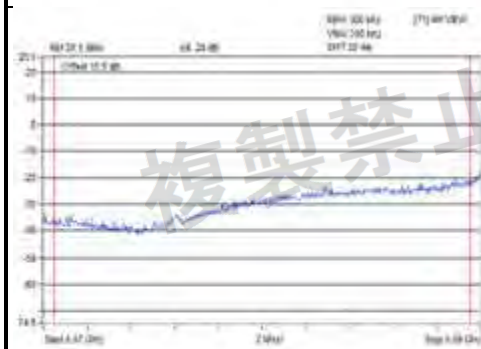
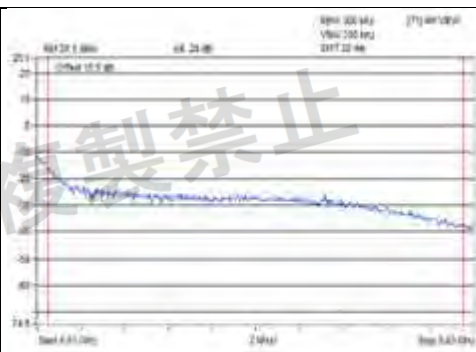
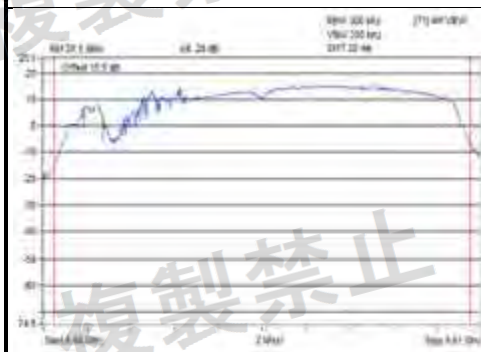




V<sub>min</sub>.

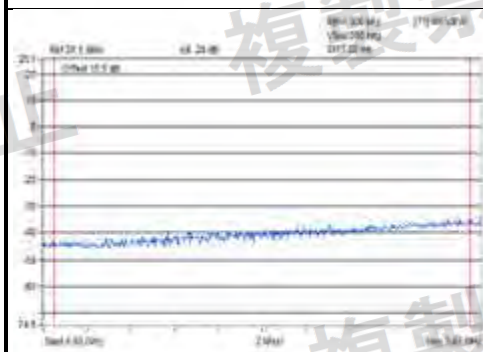
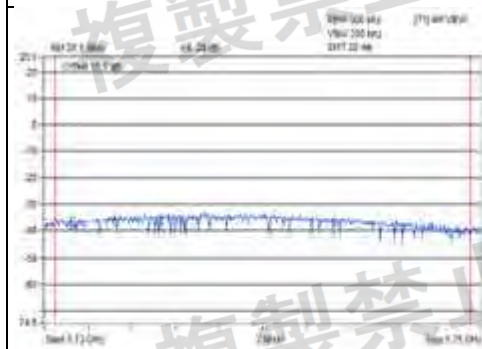
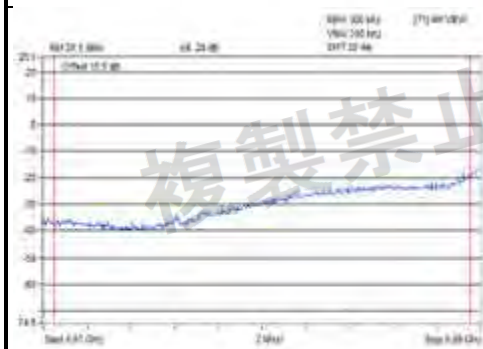
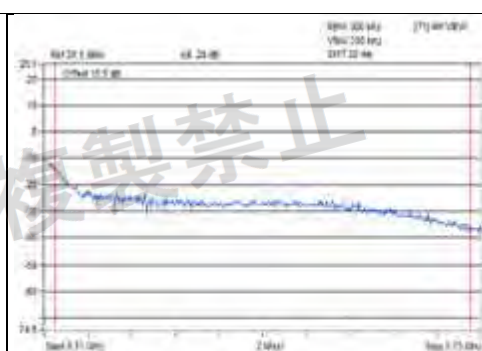
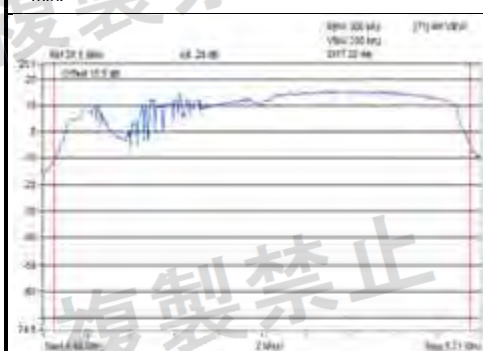


Channel 100



Channel 120

V<sub>min</sub>.



Channel 140

**W52 & W53 Bands: 802.11ac (VHT40)**

Environmental Conditions		25 deg.C, 60% RH				
Voltage	Channel	CH 38	CH 46	CH 54	CH 62	Limit (dBc)
V <sub>normal</sub>	Mean Power of Carrier (dBm)	27.32	27.62	27.52	27.84	-
	Mean Power +40MHz Distance of Carrier (dBc)	40.08	40.45	40.44	40.24	25
	Mean Power -40MHz Distance of Carrier (dBc)	41.30	41.63	41.69	42.19	25
	Mean Power +80MHz Distance of Carrier (dBc)	49.09	48.88	48.56	48.68	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.16	50.70	50.13	50.50	40
V <sub>max.</sub>	Mean Power of Carrier (dBm)	27.43	27.62	27.58	27.82	-
	Mean Power +40MHz Distance of Carrier (dBc)	40.17	40.59	40.48	40.16	25
	Mean Power -40MHz Distance of Carrier (dBc)	41.36	41.70	41.89	42.16	25
	Mean Power +80MHz Distance of Carrier (dBc)	49.23	48.85	48.68	48.58	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.19	50.74	50.16	50.51	40
V <sub>min.</sub>	Mean Power of Carrier (dBm)	27.39	27.57	27.54	27.81	-
	Mean Power +40MHz Distance of Carrier (dBc)	40.16	40.57	40.32	40.25	25
	Mean Power -40MHz Distance of Carrier (dBc)	41.33	41.69	41.70	42.11	25
	Mean Power +80MHz Distance of Carrier (dBc)	49.20	48.67	48.67	48.53	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.19	50.69	50.07	50.49	40



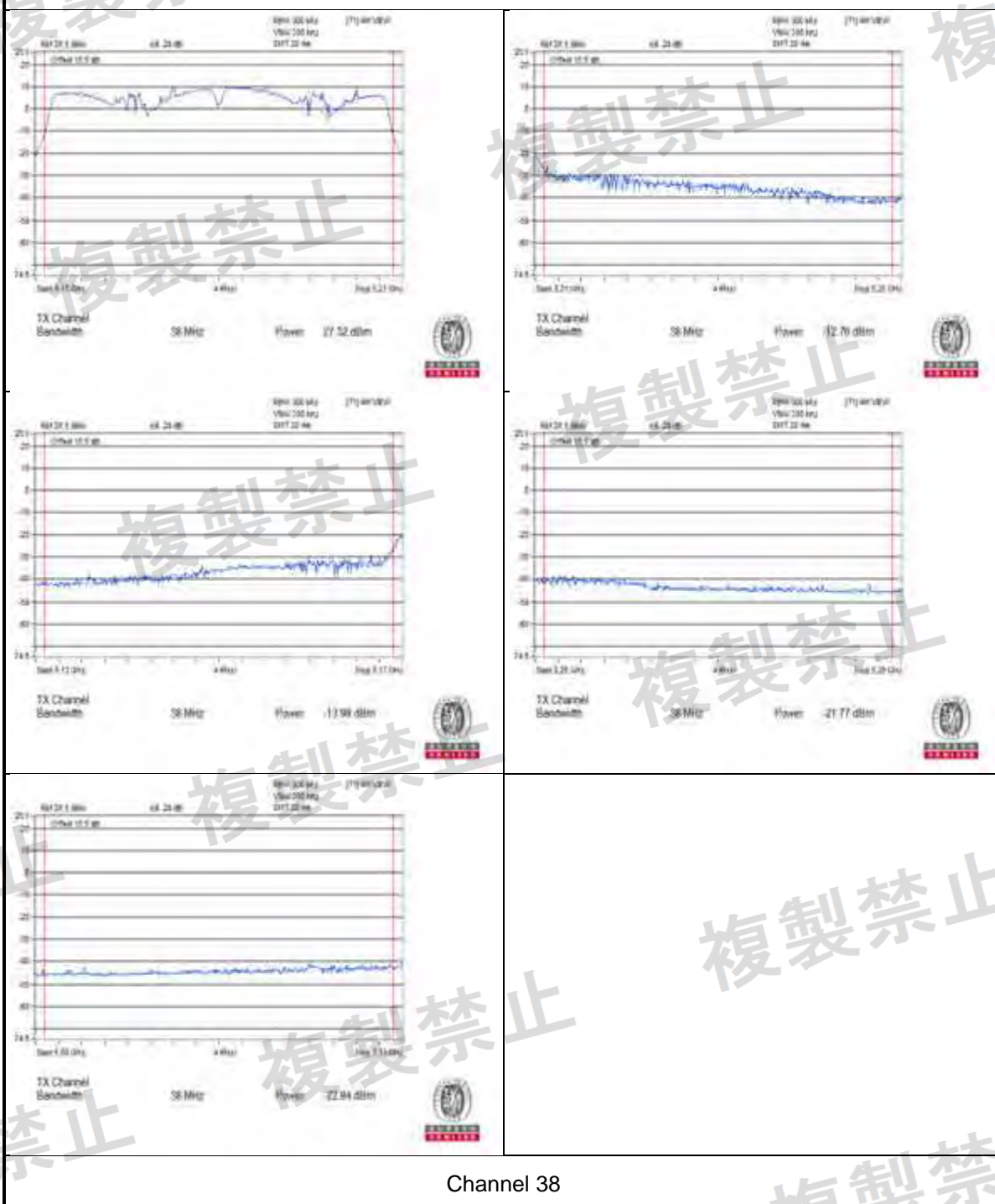
**W56 Band: 802.11ac (VHT40)**

Environmental Conditions		25 deg.C, 60% RH			
Voltage	Channel	CH 102	CH 118	CH 134	Limit (dBc)
<b>V<sub>normal</sub></b>	Mean Power of Carrier (dBm)	30.63	30.46	30.87	-
	Mean Power +40MHz Distance of Carrier (dBc)	34.84	35.17	34.51	25
	Mean Power -40MHz Distance of Carrier (dBc)	36.60	36.91	36.94	25
	Mean Power +80MHz Distance of Carrier (dBc)	48.23	48.37	48.02	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.06	51.07	51.43	40
<b>V<sub>max.</sub></b>	Mean Power of Carrier (dBm)	30.73	30.49	30.94	-
	Mean Power +40MHz Distance of Carrier (dBc)	34.92	35.09	34.61	25
	Mean Power -40MHz Distance of Carrier (dBc)	36.65	37.04	37.07	25
	Mean Power +80MHz Distance of Carrier (dBc)	48.11	48.35	48.01	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.29	51.14	51.50	40
<b>V<sub>min.</sub></b>	Mean Power of Carrier (dBm)	30.60	30.54	30.99	-
	Mean Power +40MHz Distance of Carrier (dBc)	34.74	35.19	34.58	25
	Mean Power -40MHz Distance of Carrier (dBc)	36.47	37.00	37.13	25
	Mean Power +80MHz Distance of Carrier (dBc)	47.88	48.34	48.08	40
	Mean Power -80MHz Distance of Carrier (dBc)	50.05	51.03	51.55	40

Note: 1. The spectrum plots are attached on the following pages.

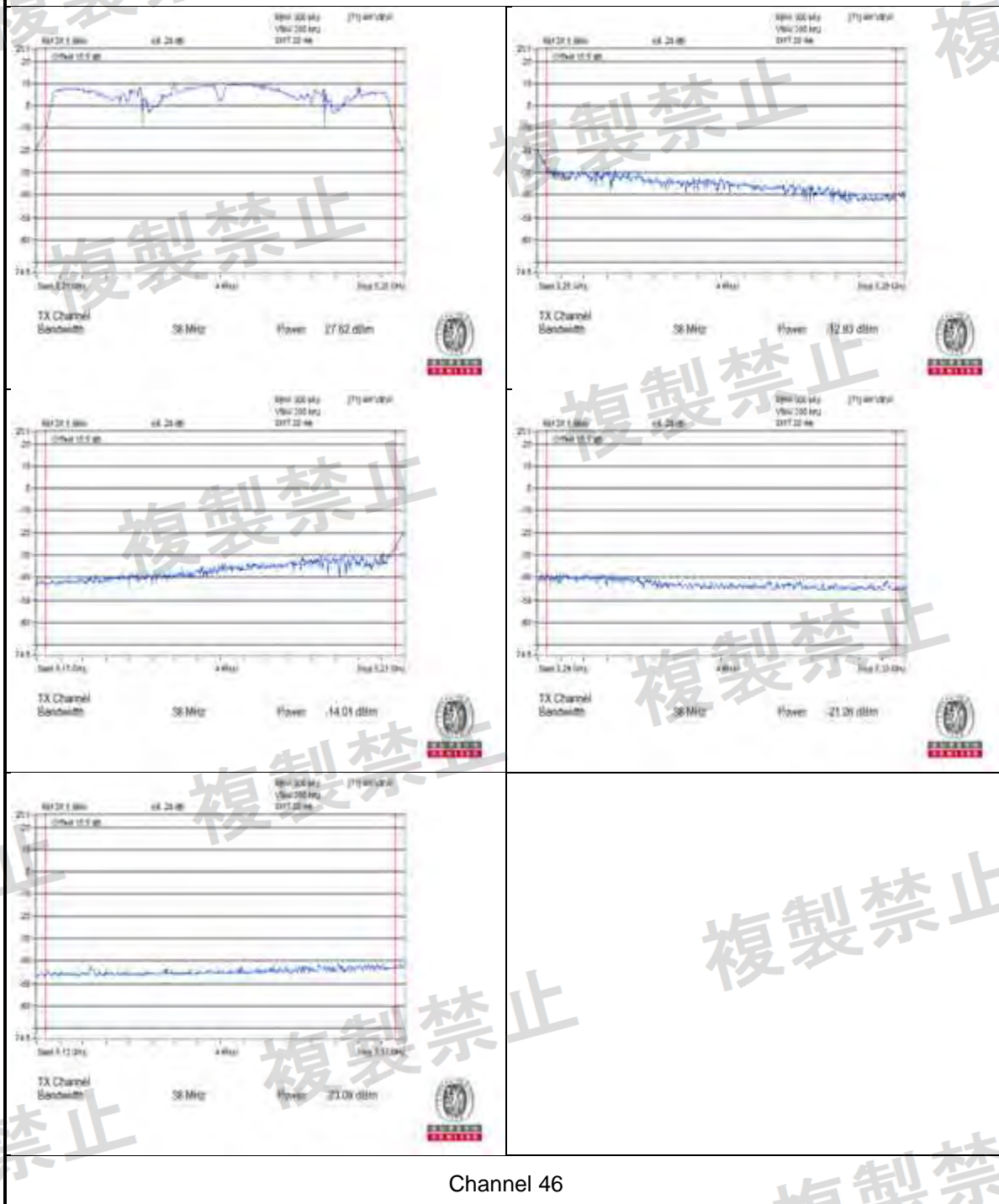


V<sub>normal</sub>



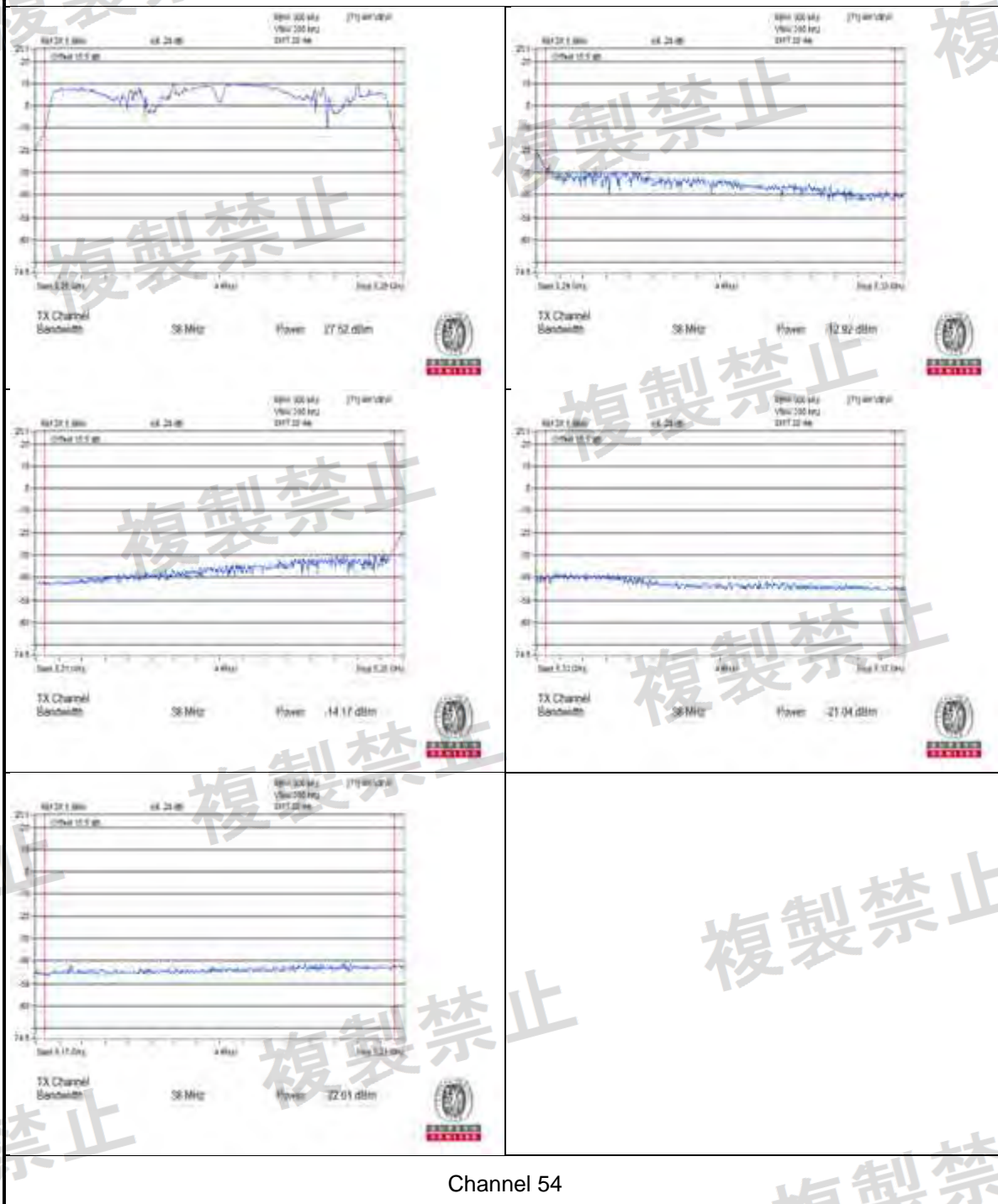
Channel 38

V<sub>normal</sub>



Channel 46

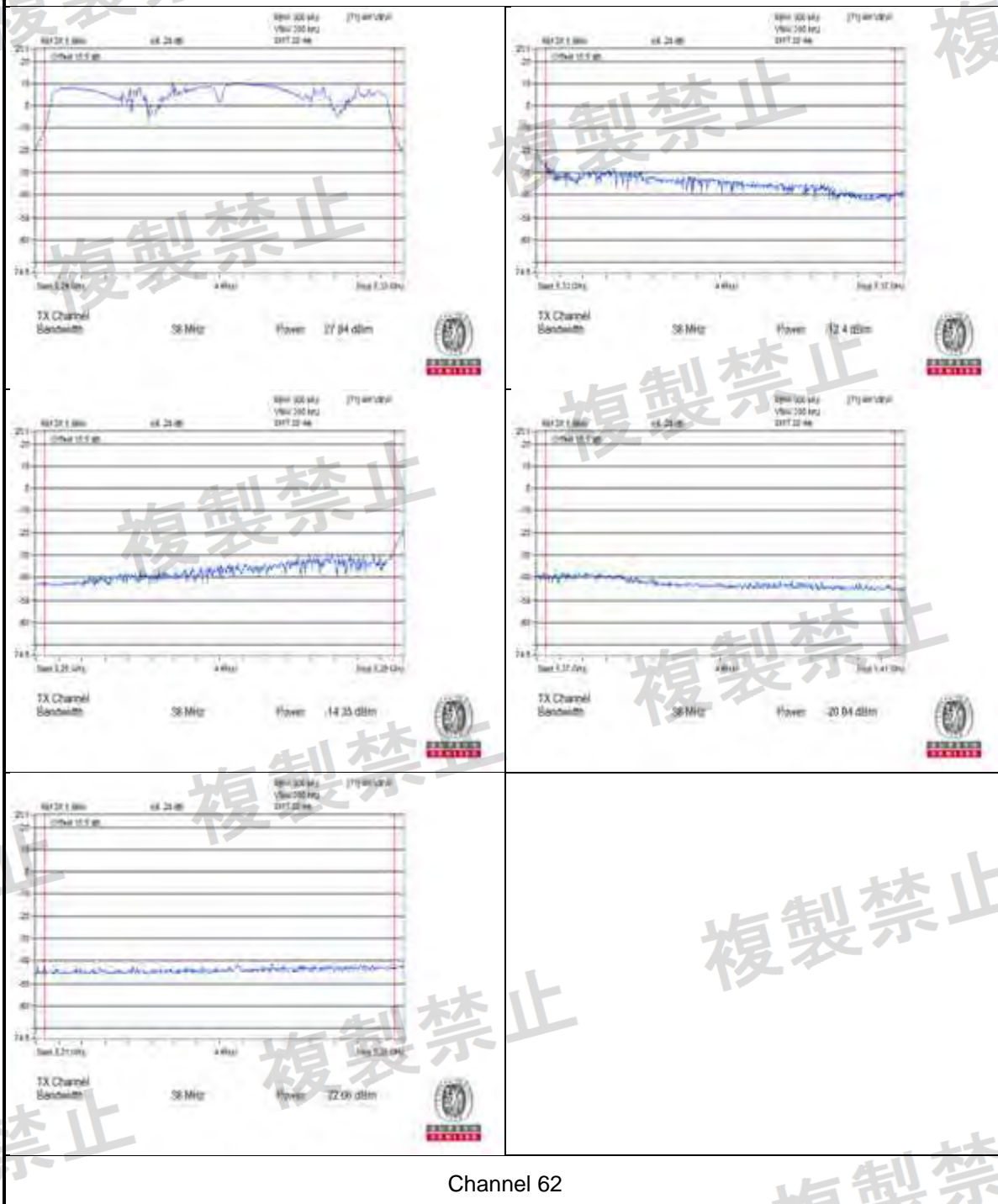
V<sub>normal</sub>



Channel 54



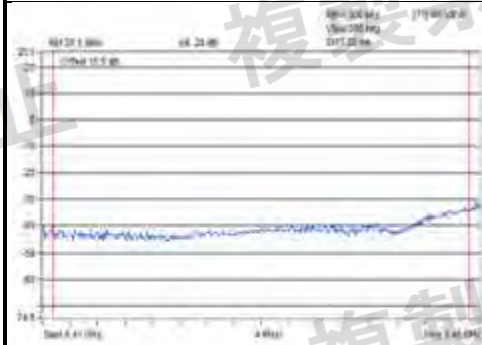
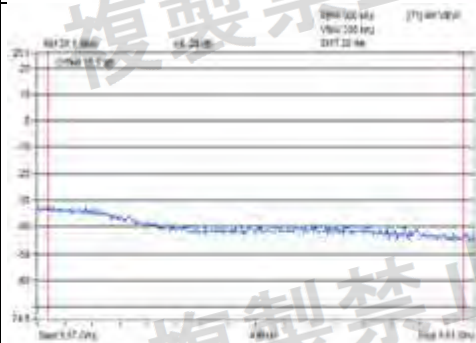
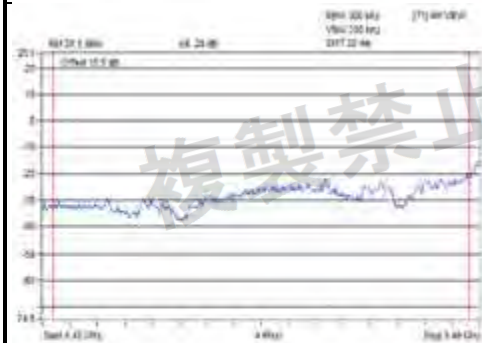
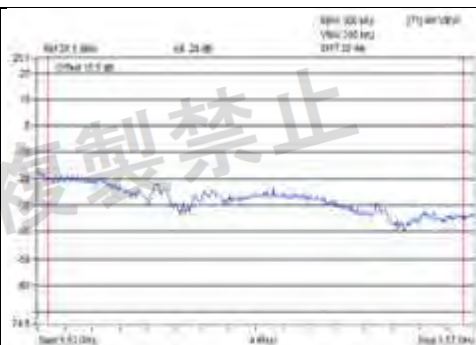
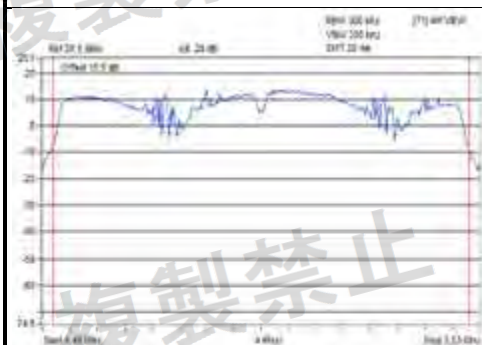
V<sub>normal</sub>



Channel 62

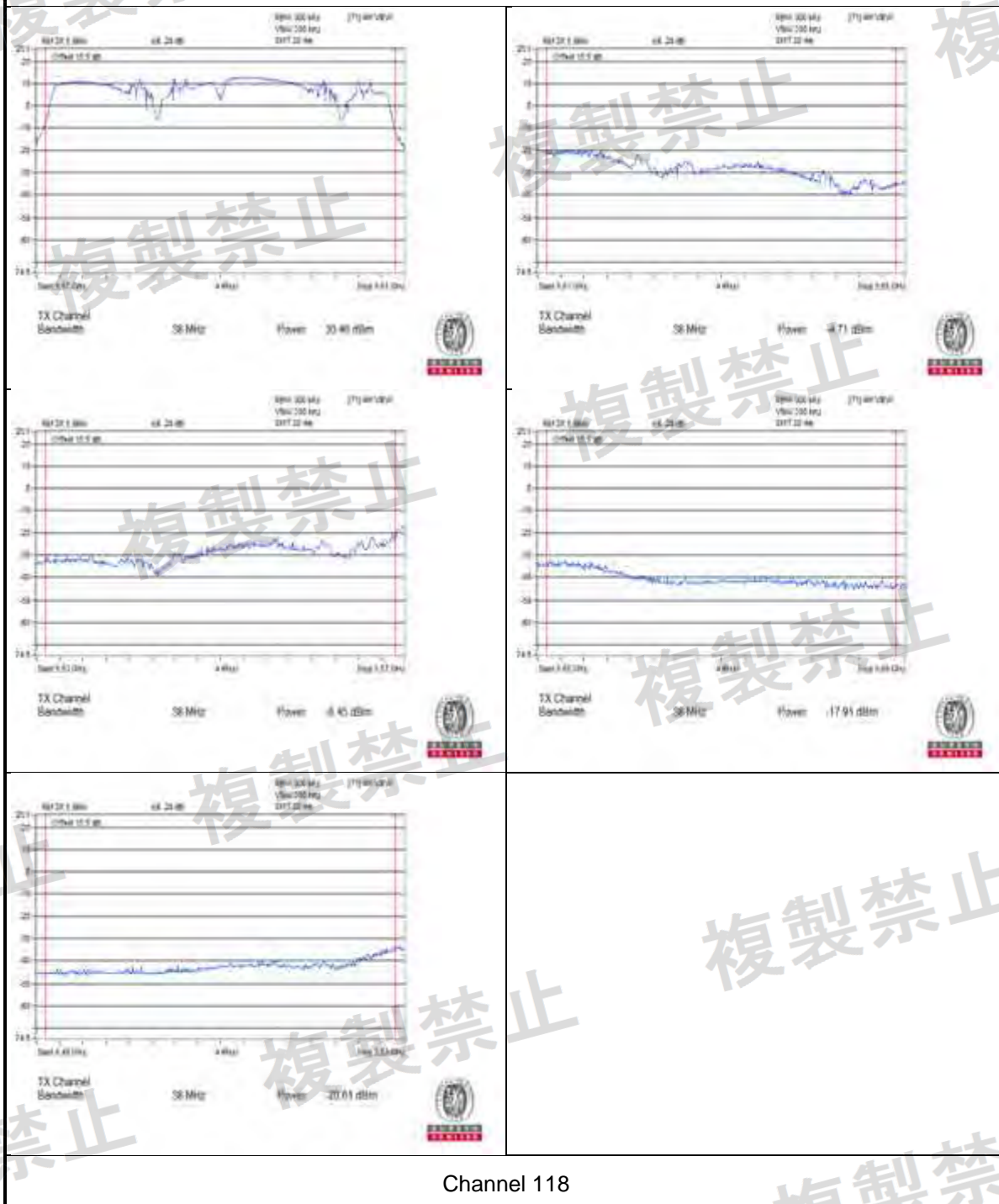


V<sub>normal</sub>



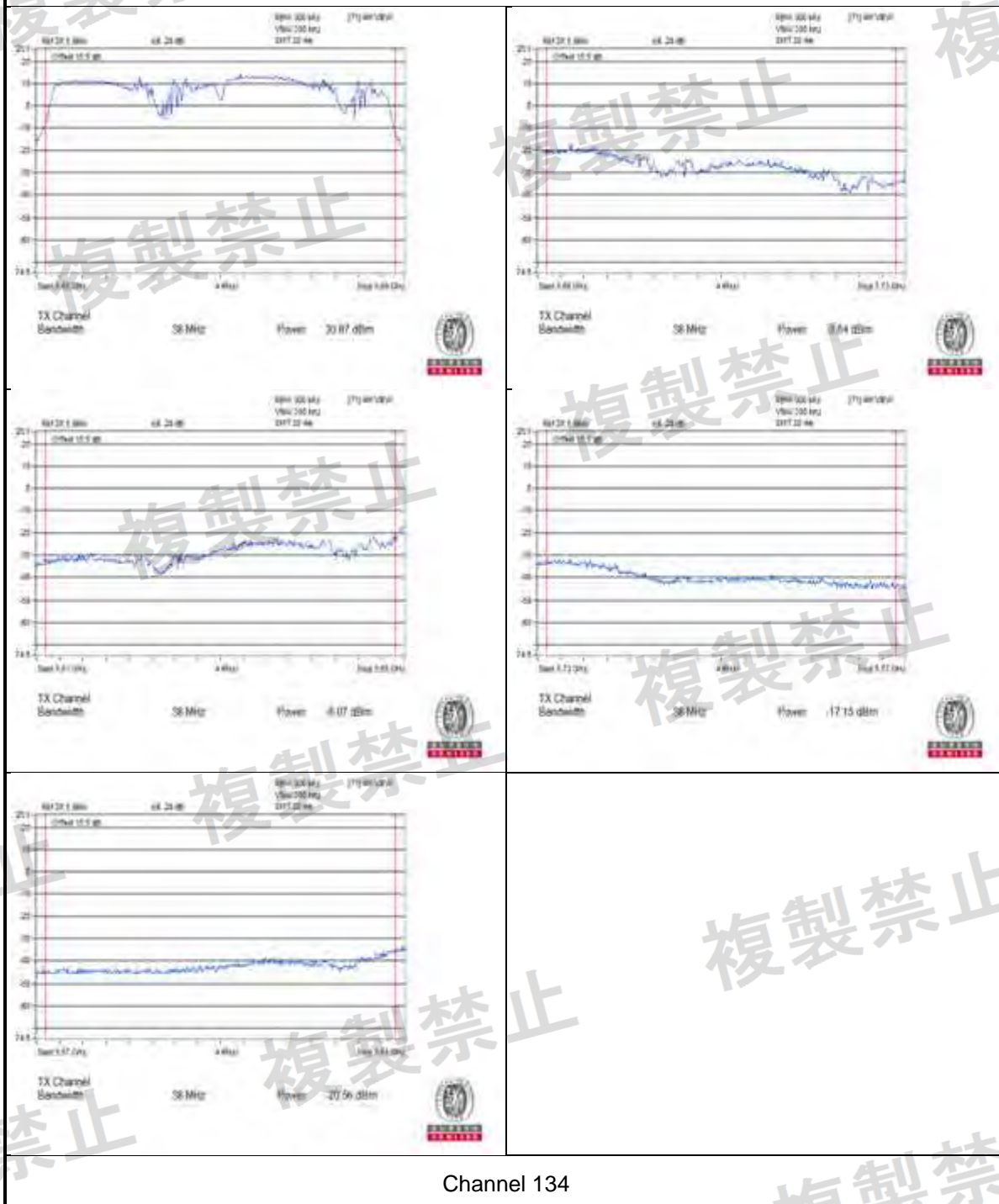
Channel 102

V<sub>normal</sub>



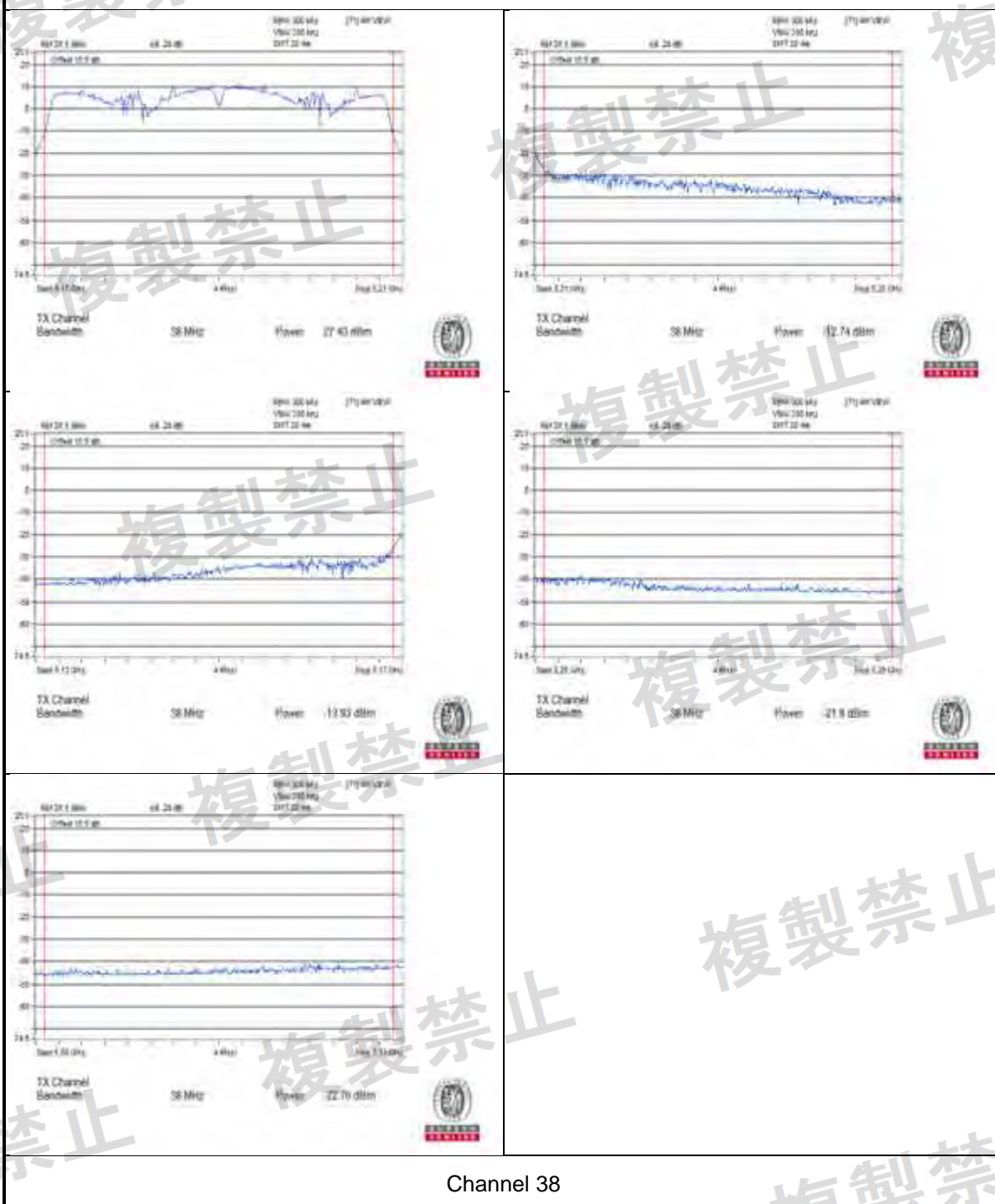
Channel 118

V<sub>normal</sub>





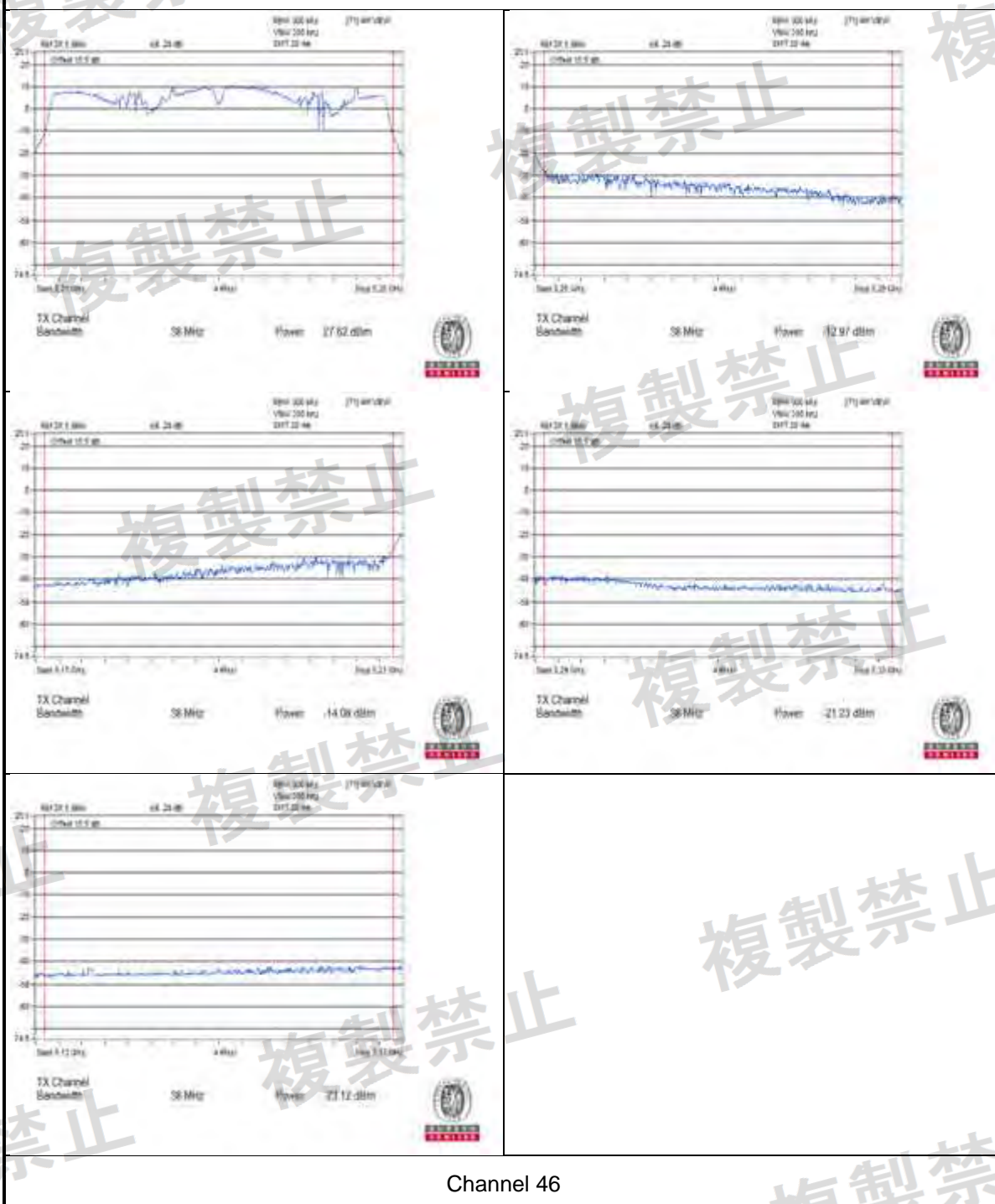
V<sub>max</sub>.



Channel 38

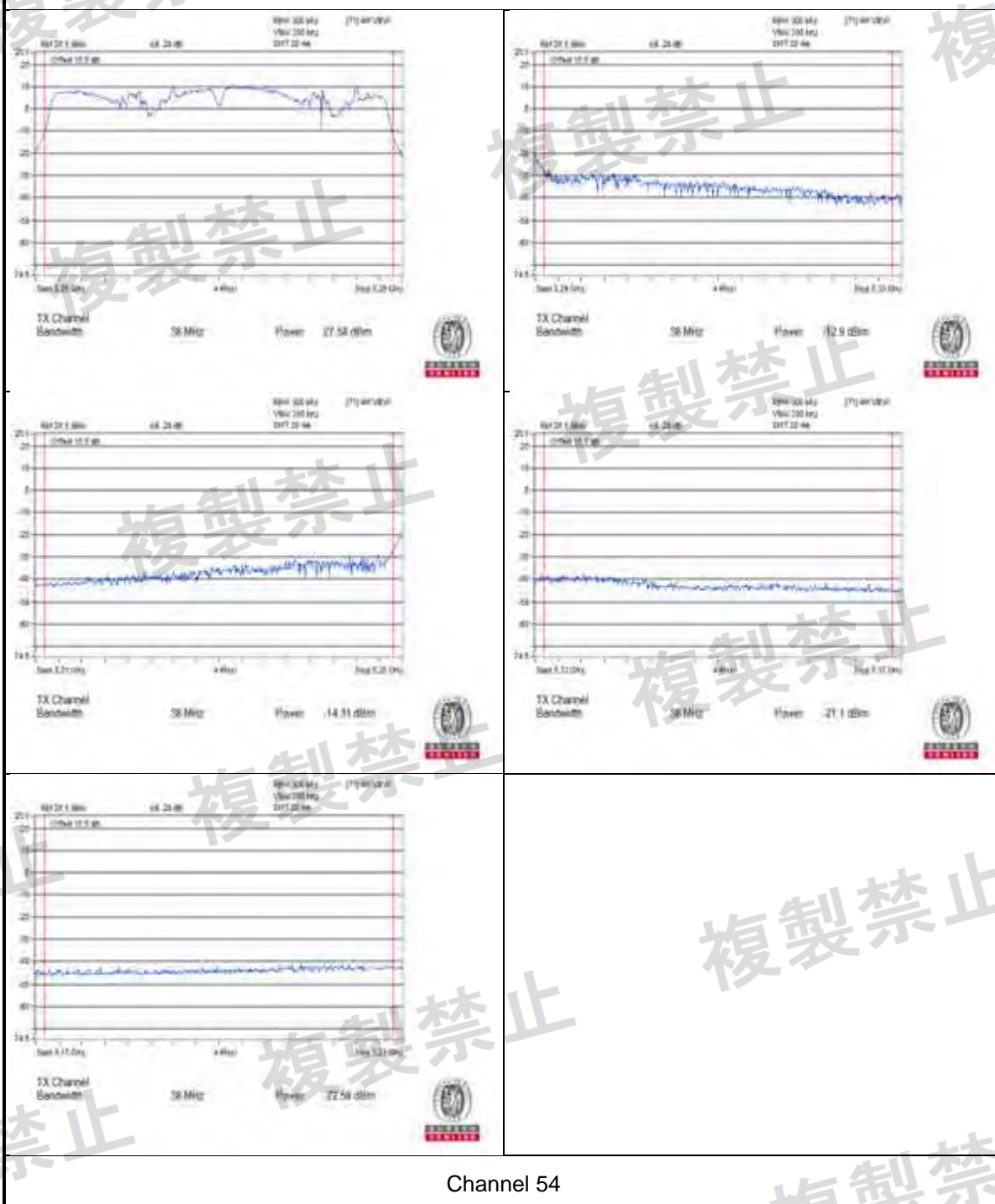


V<sub>max</sub>.



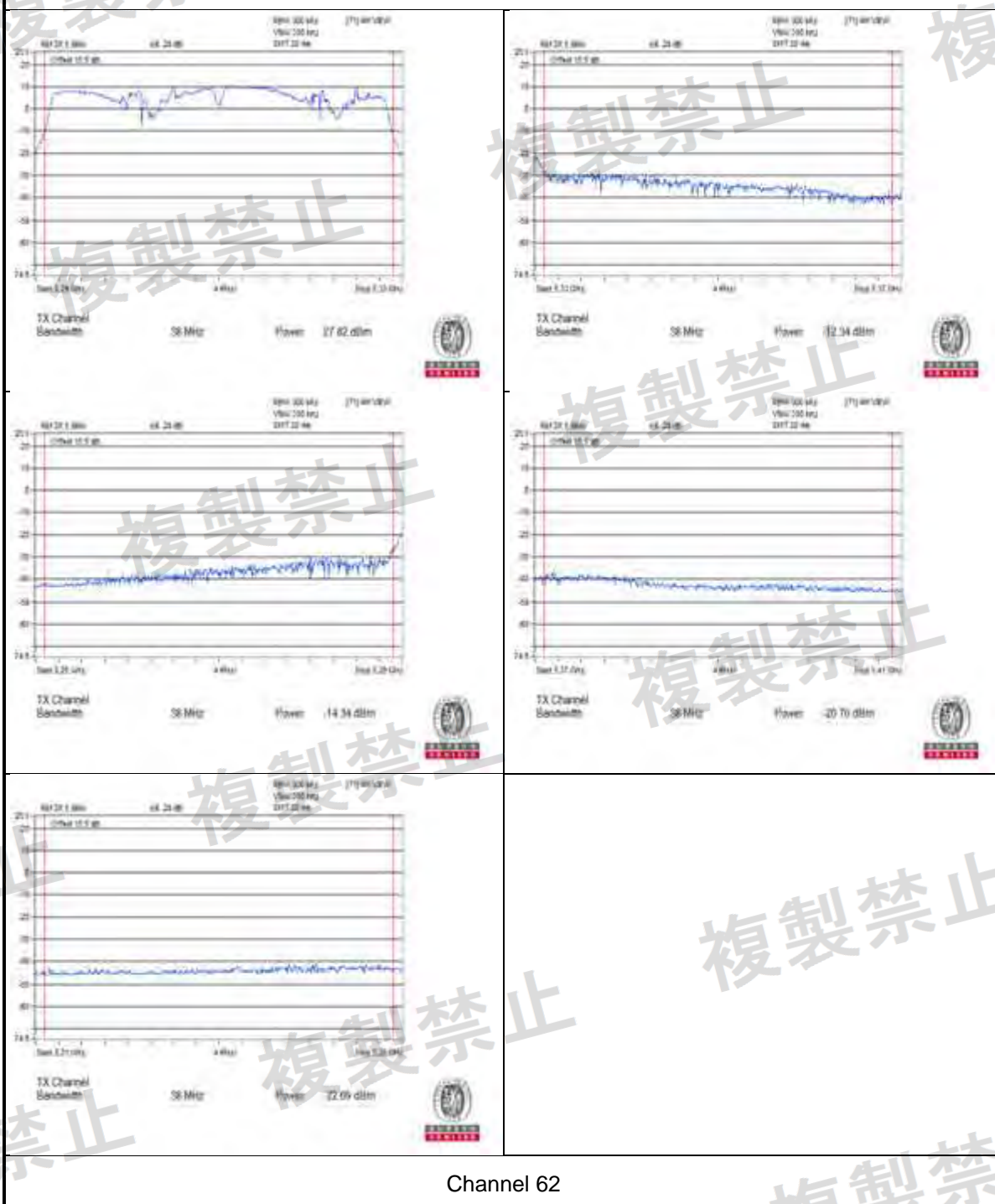
Channel 46

V<sub>max</sub>.



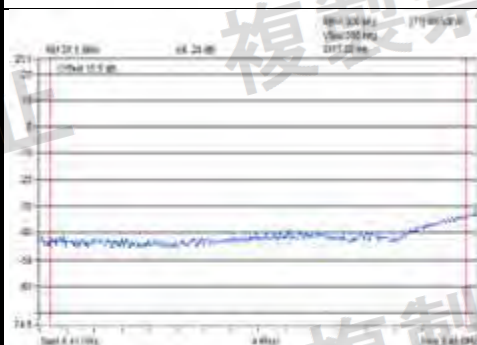
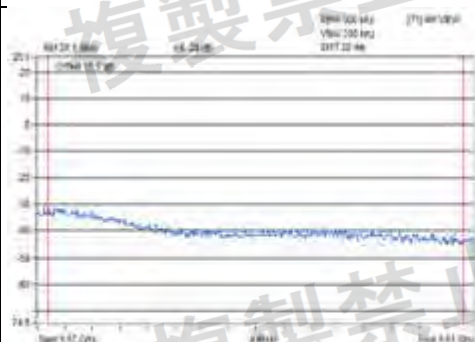
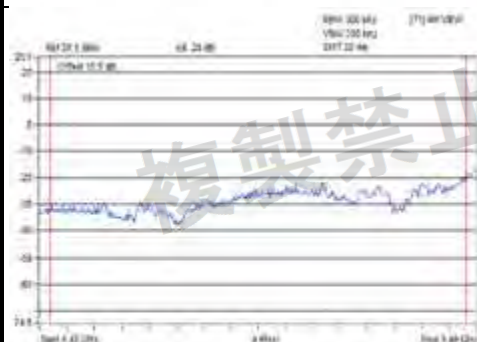
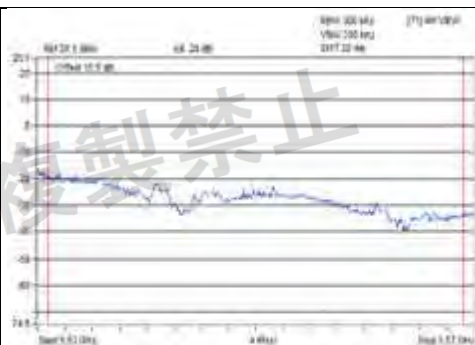
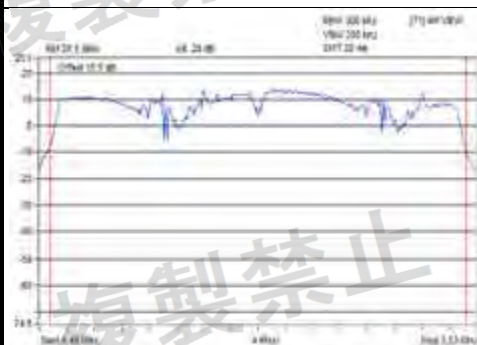
Channel 54

V<sub>max</sub>.





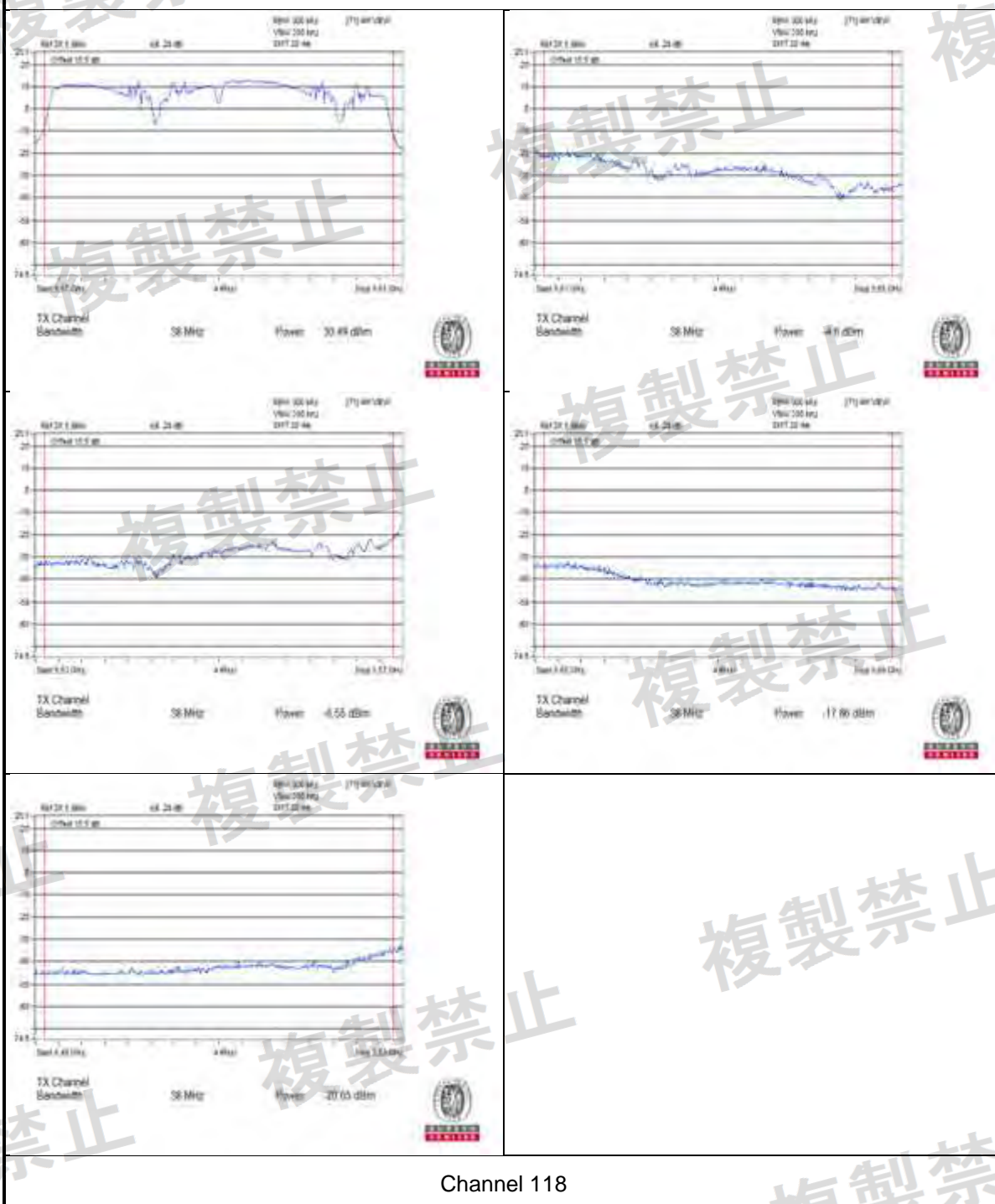
V<sub>max</sub>.



Channel 102

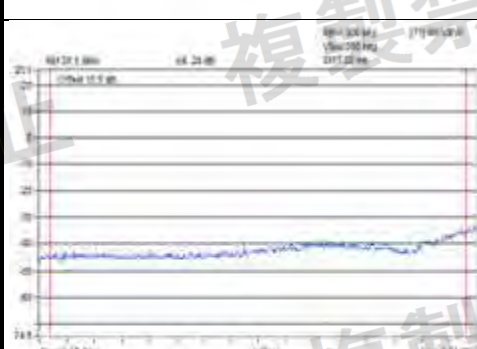
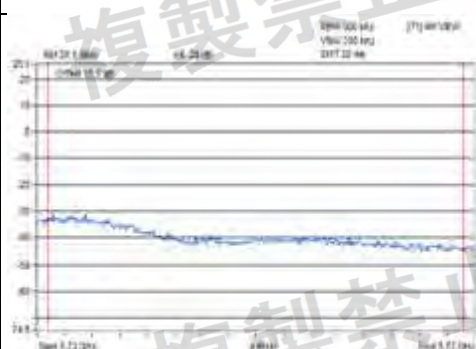
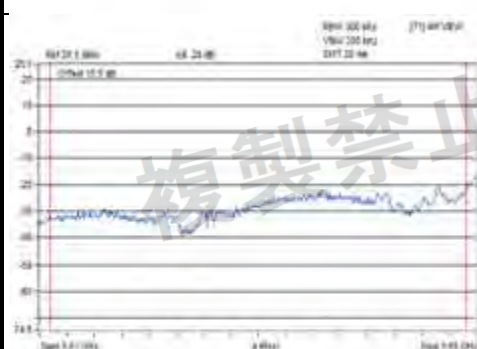
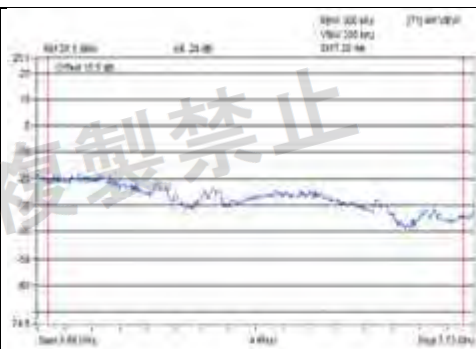
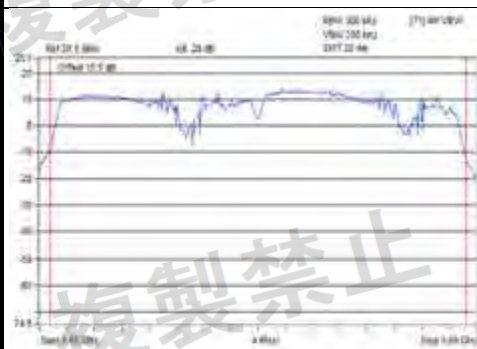


V<sub>max</sub>.



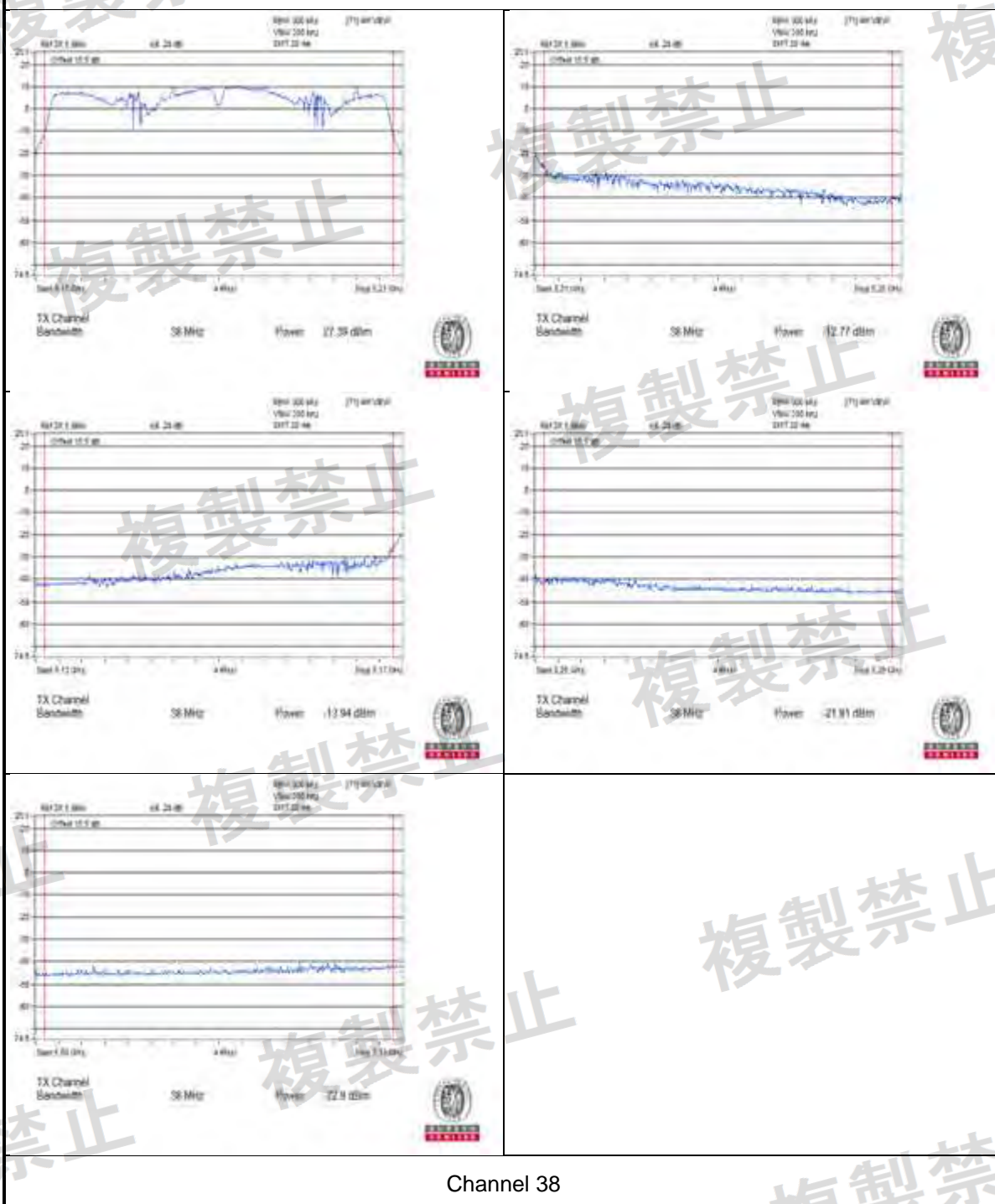
Channel 118

V<sub>max</sub>.



Channel 134

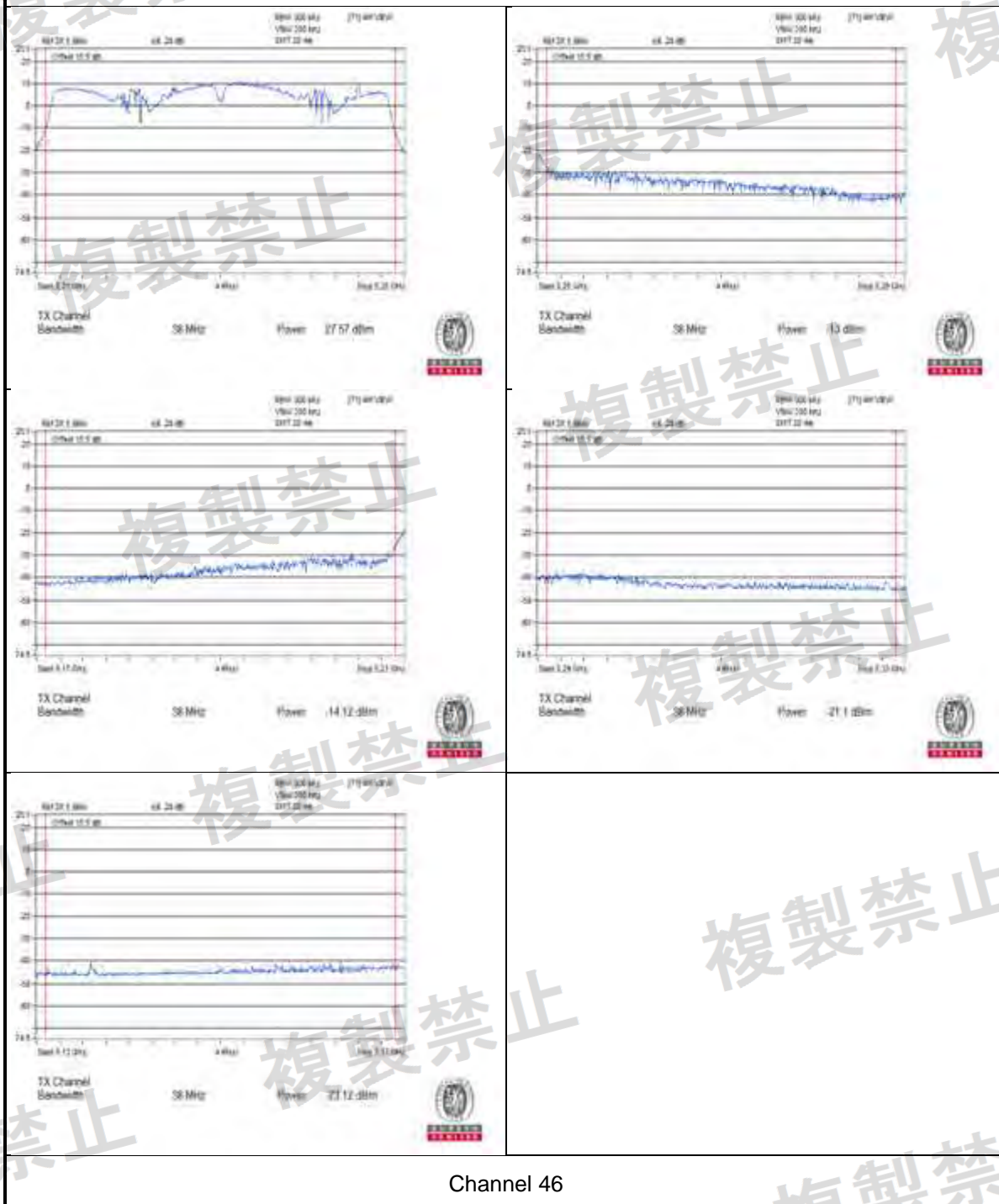
V<sub>min</sub>.



Channel 38



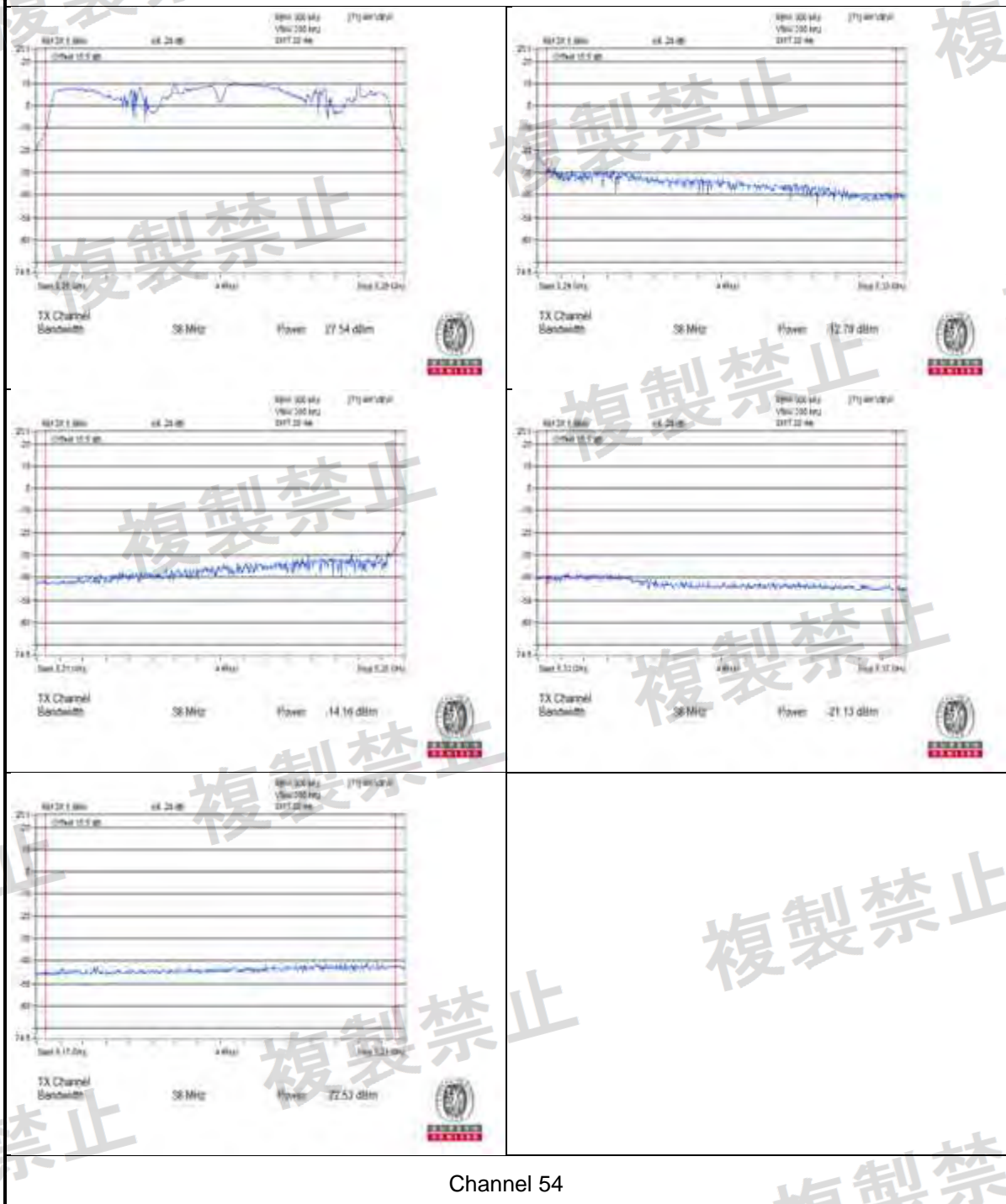
V<sub>min</sub>.



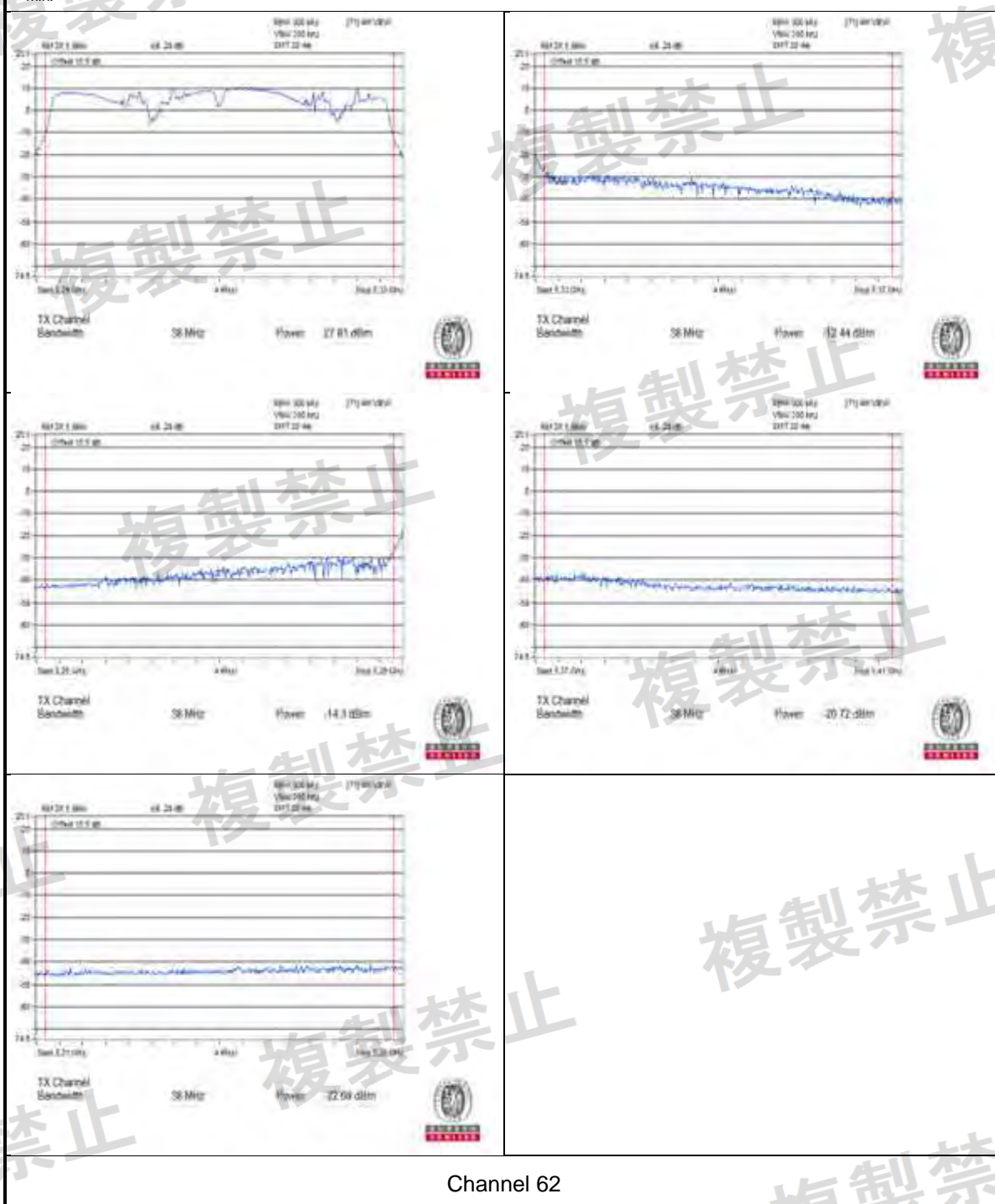
Channel 46



V<sub>min</sub>.

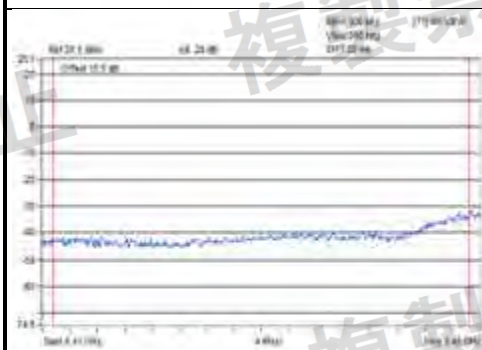
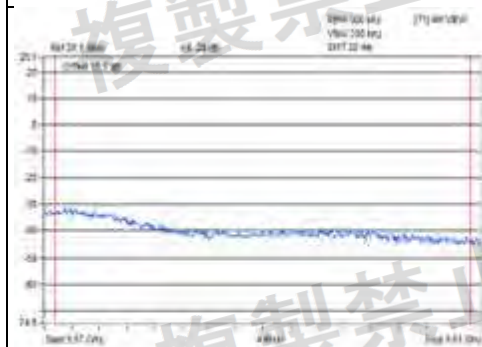
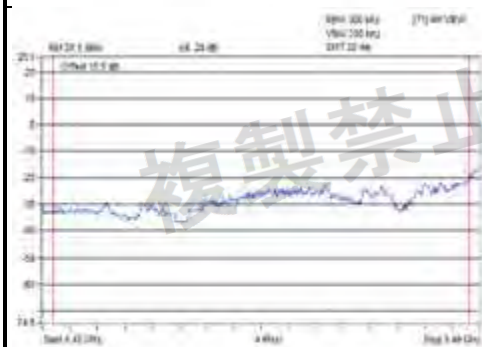
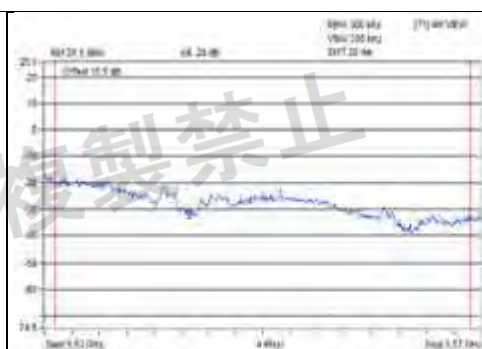
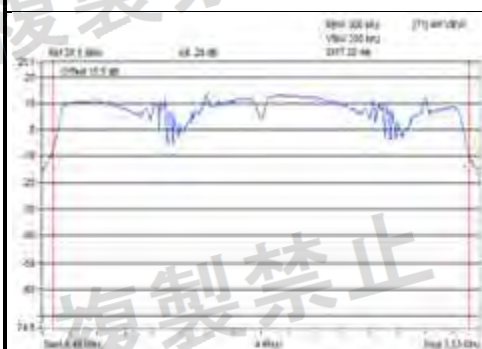


V<sub>min</sub>.



Channel 62

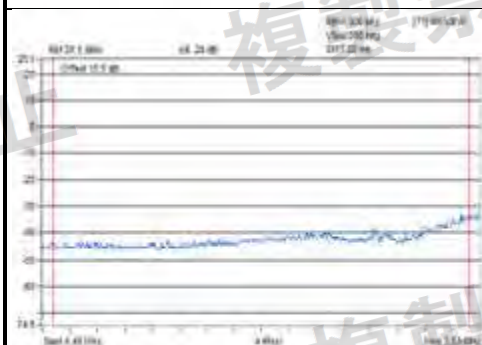
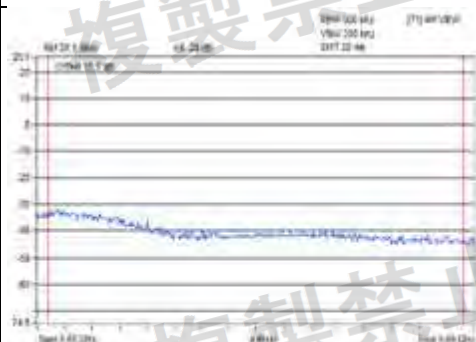
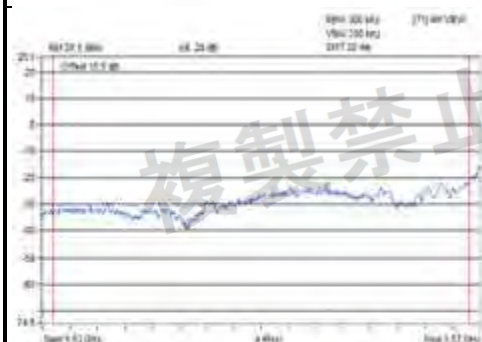
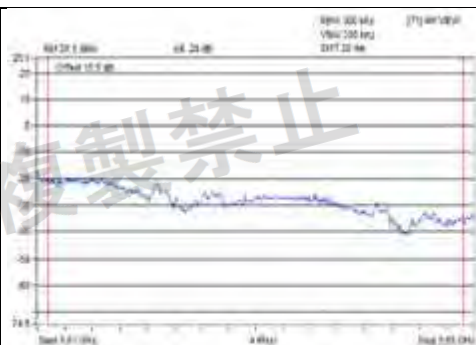
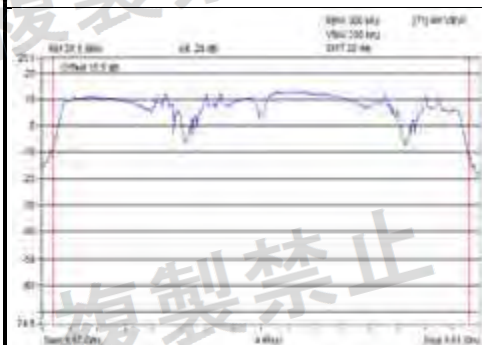
V<sub>min</sub>.



Channel 102



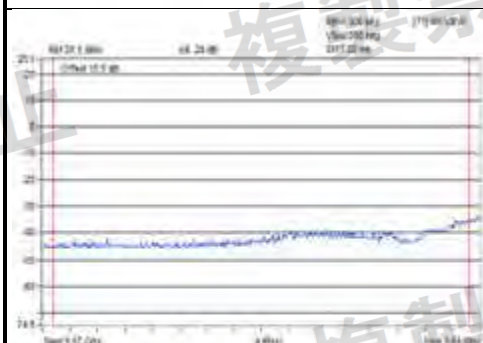
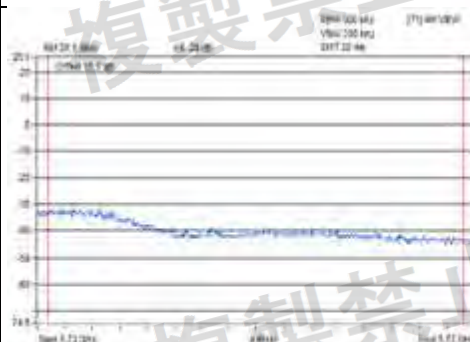
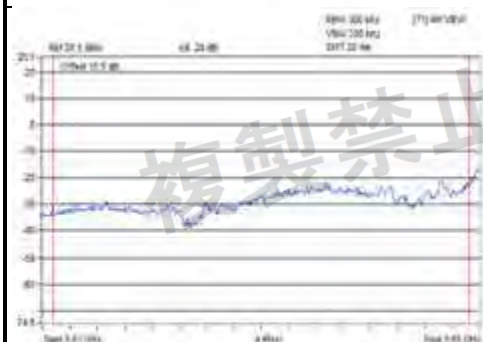
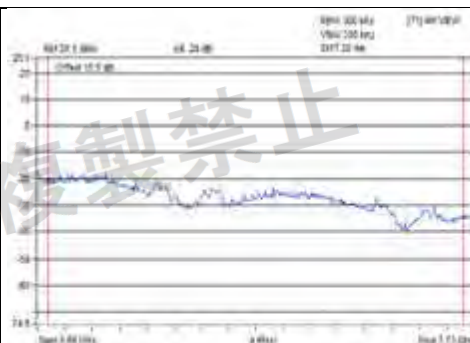
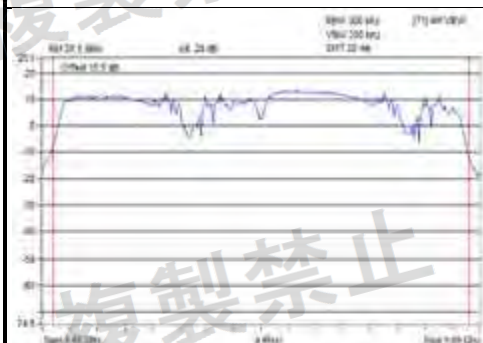
V<sub>min</sub>.



Channel 118



V<sub>min</sub>.



Channel 134

### W52 & W53 Bands: 802.11ac (VHT80)

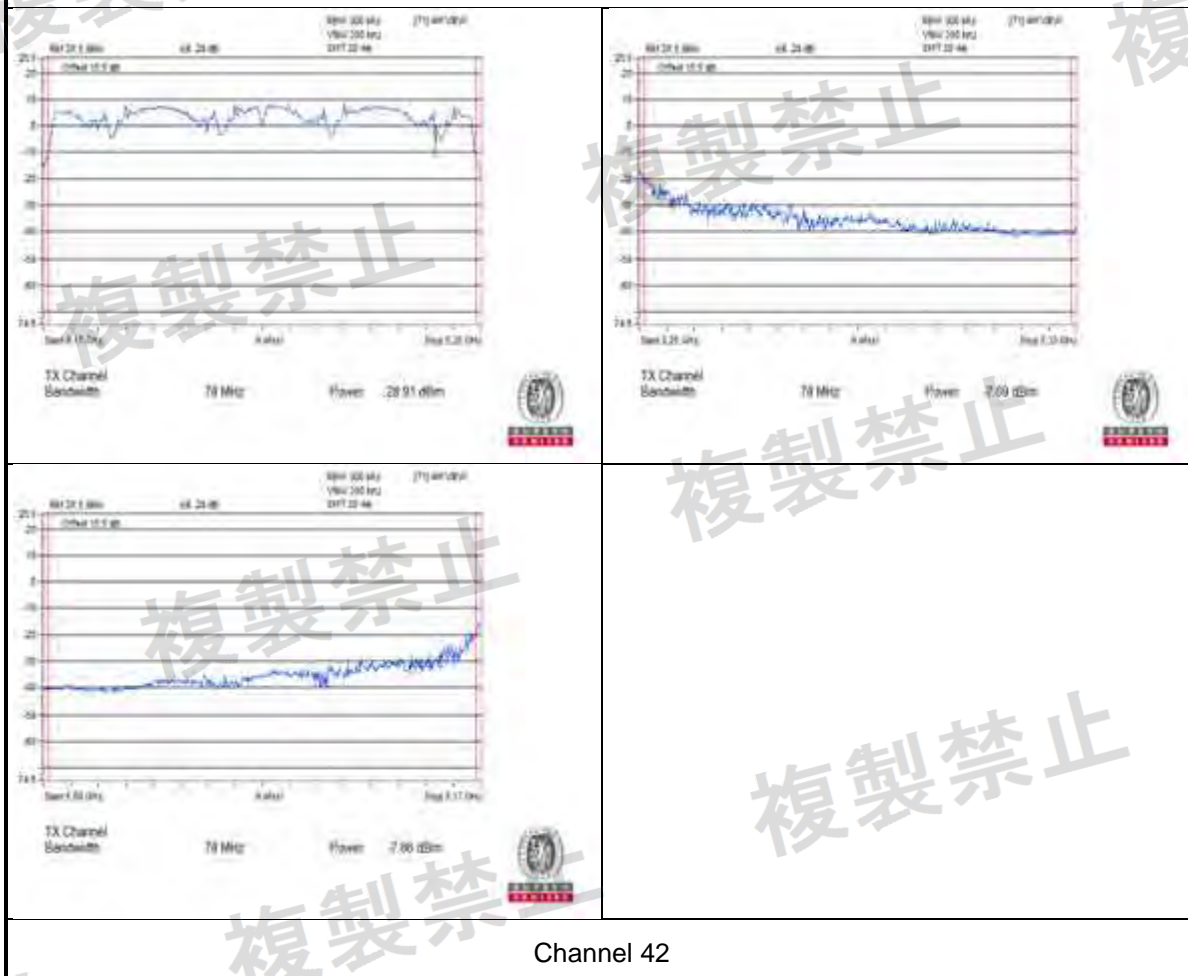
Environmental Conditions		25 deg.C, 60% RH		
Voltage	Channel	CH 42	CH 58	Limit (dBc)
V <sub>normal</sub>	Mean Power of Carrier (dBm)	28.91	28.57	-
	Mean Power +80MHz Distance of Carrier (dBc)	36.60	36.27	25
	Mean Power -80MHz Distance of Carrier (dBc)	36.57	36.71	25
V <sub>max.</sub>	Mean Power of Carrier (dBm)	28.90	28.60	-
	Mean Power +80MHz Distance of Carrier (dBc)	36.65	36.45	25
	Mean Power -80MHz Distance of Carrier (dBc)	36.45	36.53	25
V <sub>min.</sub>	Mean Power of Carrier (dBm)	28.91	28.61	-
	Mean Power +80MHz Distance of Carrier (dBc)	36.96	36.77	25
	Mean Power -80MHz Distance of Carrier (dBc)	36.46	36.62	25

### W56 Band: 802.11ac (VHT80)

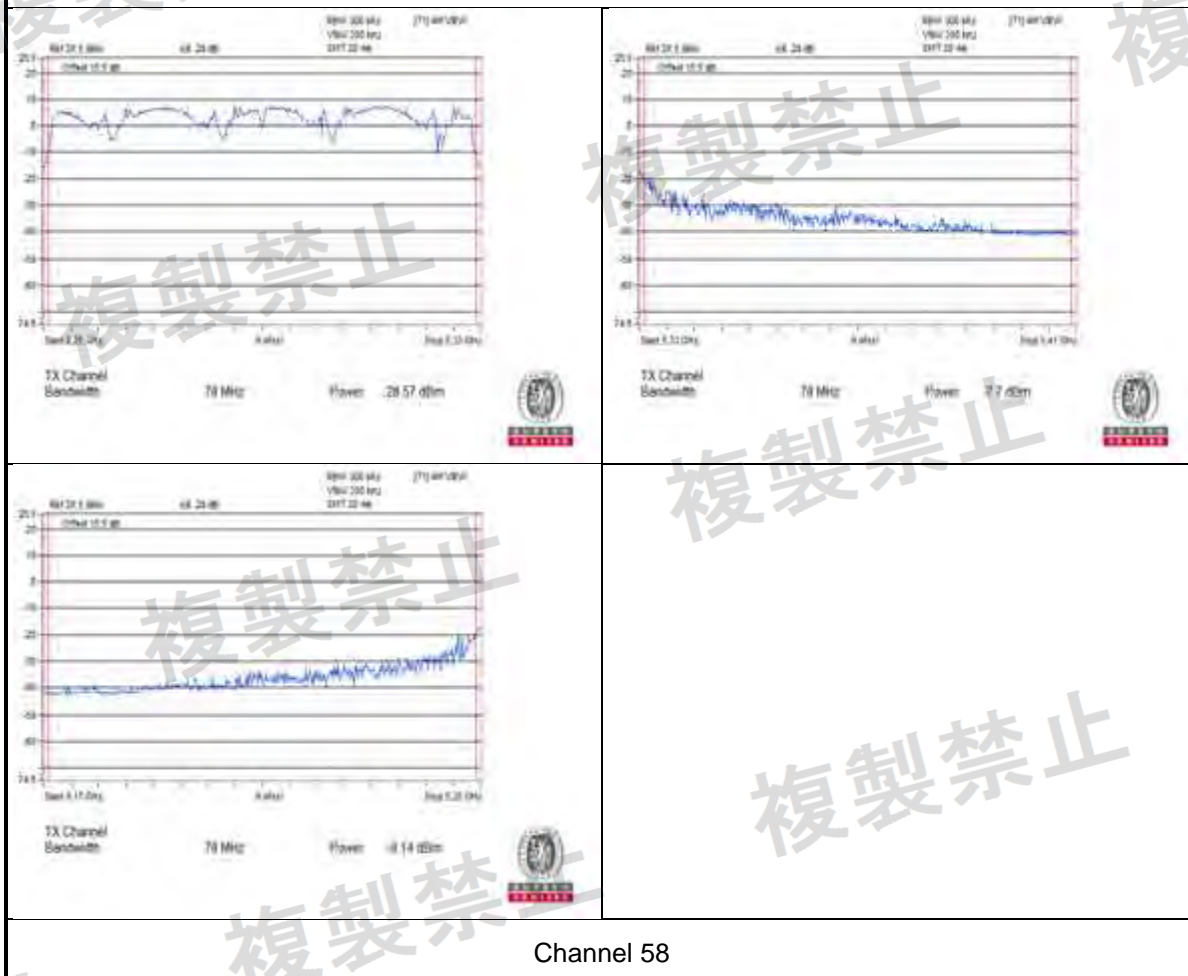
Environmental Conditions		25 deg.C, 60% RH		
Voltage	Channel	CH 106	CH 122	Limit (dBc)
V <sub>normal</sub>	Mean Power of Carrier (dBm)	32.02	31.57	-
	Mean Power +80MHz Distance of Carrier (dBc)	33.32	33.23	25
	Mean Power -80MHz Distance of Carrier (dBc)	34.46	34.57	25
V <sub>max.</sub>	Mean Power of Carrier (dBm)	32.03	31.56	-
	Mean Power +80MHz Distance of Carrier (dBc)	33.32	33.15	25
	Mean Power -80MHz Distance of Carrier (dBc)	34.42	34.40	25
V <sub>min.</sub>	Mean Power of Carrier (dBm)	32.05	31.58	-
	Mean Power +80MHz Distance of Carrier (dBc)	33.27	33.15	25
	Mean Power -80MHz Distance of Carrier (dBc)	34.43	34.50	25

Note: 1. The spectrum plots are attached on the following pages.

V<sub>normal</sub>

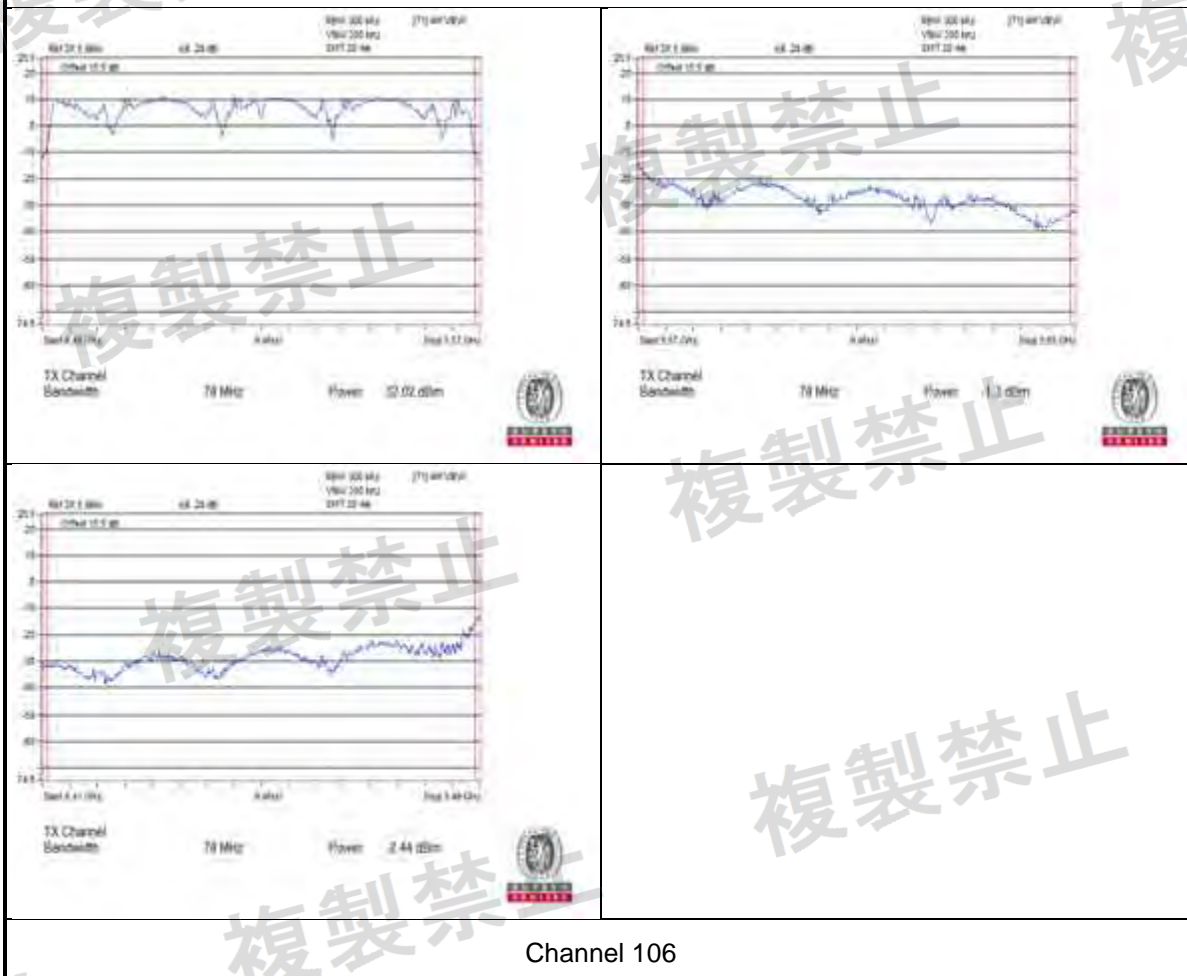


V<sub>normal</sub>

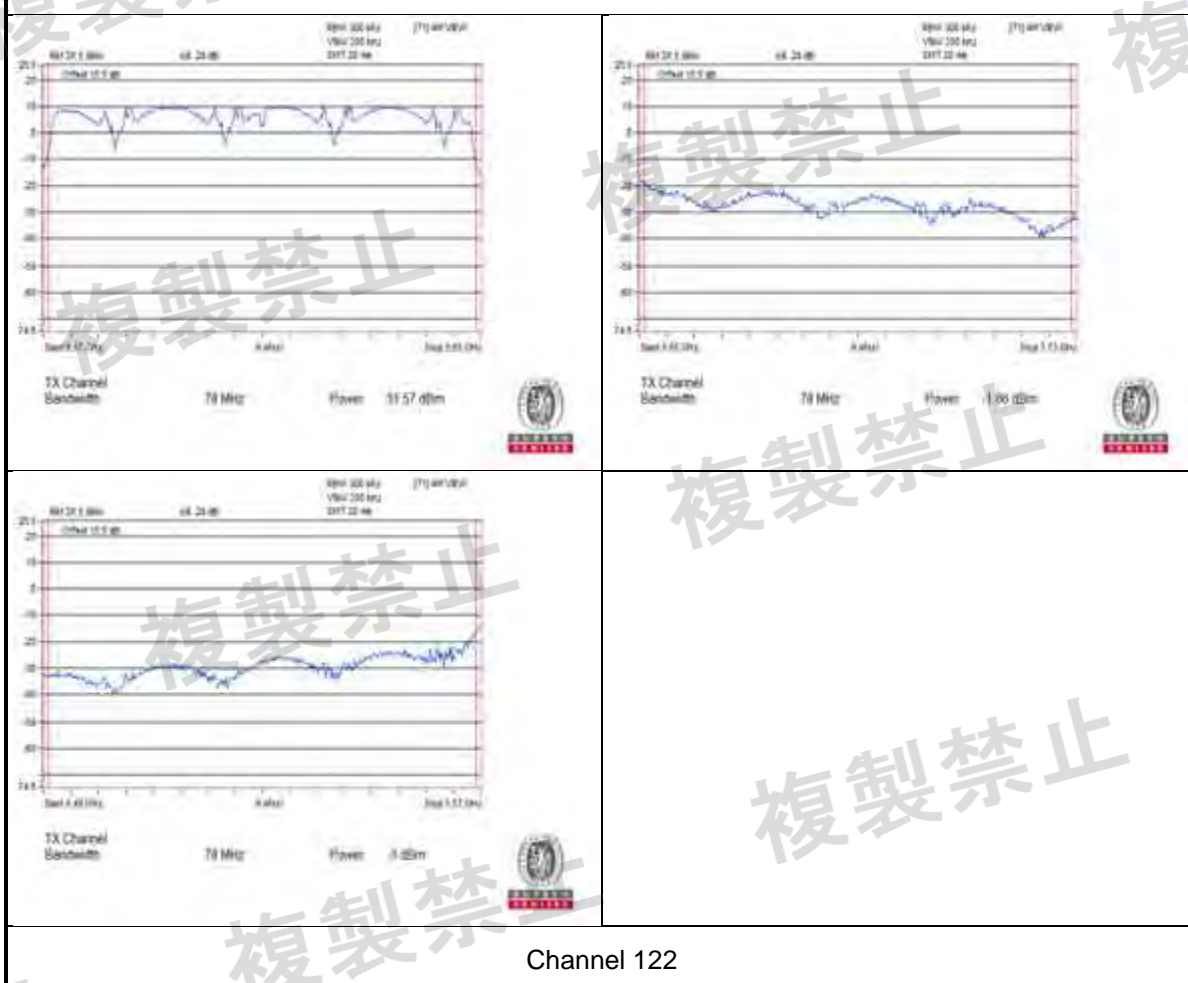




V<sub>normal</sub>

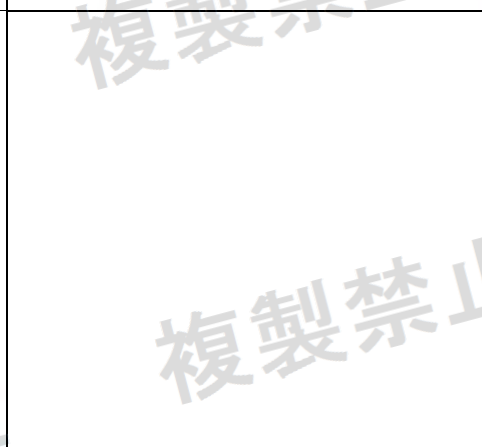
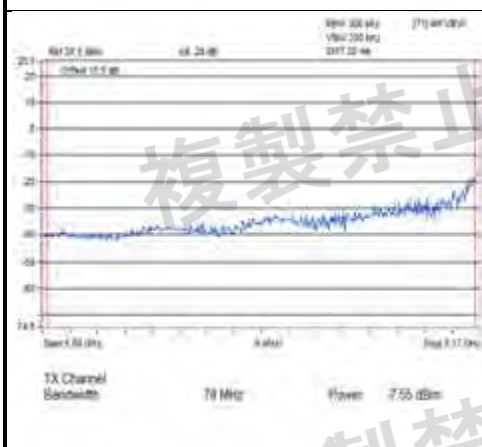
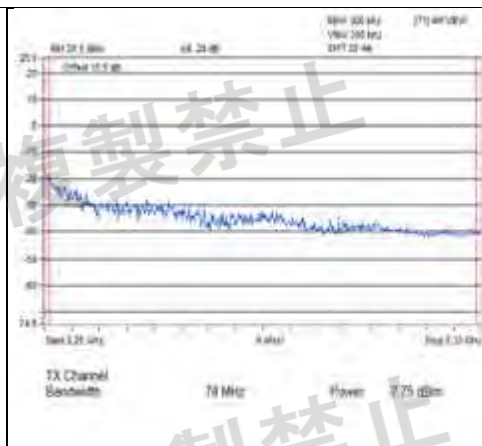
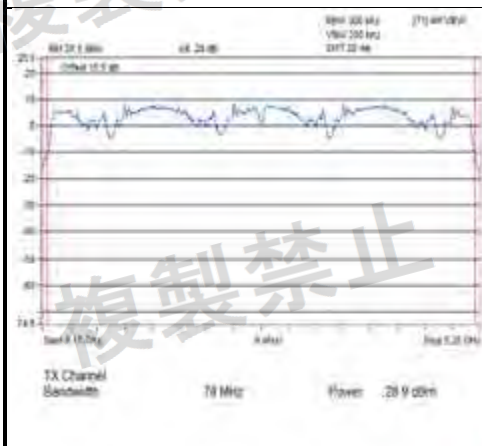


V<sub>normal</sub>



Channel 122

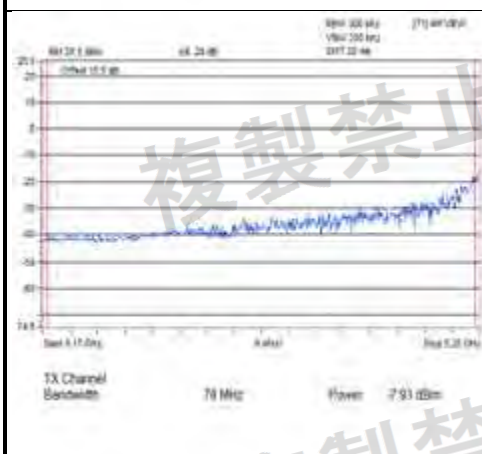
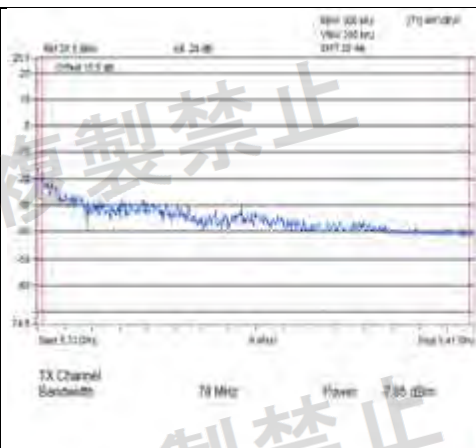
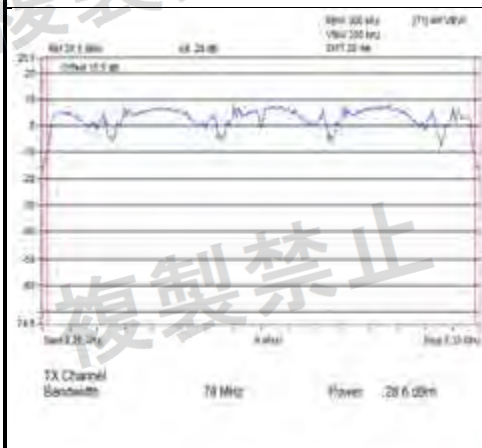
V<sub>max</sub>.



Channel 42

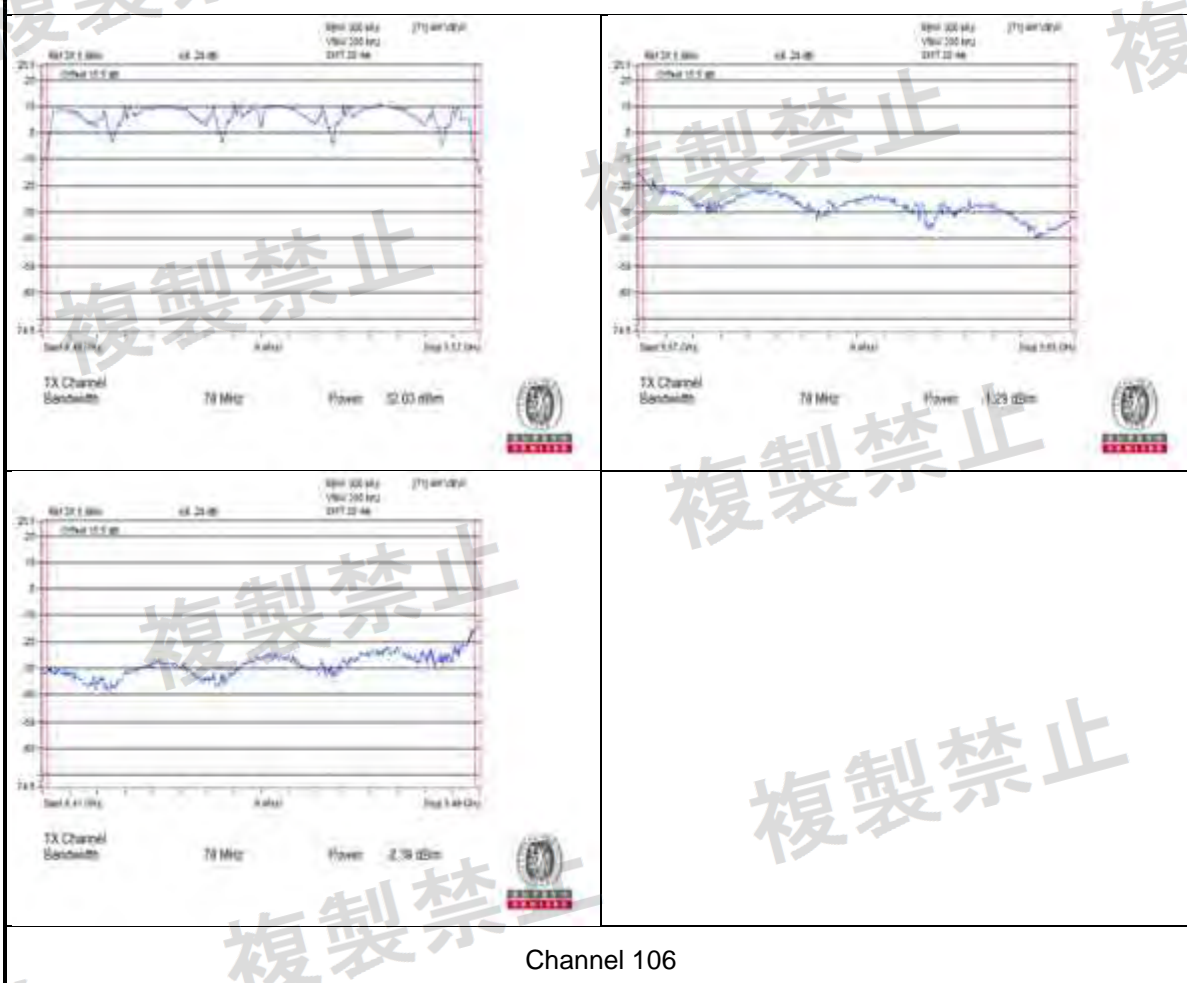


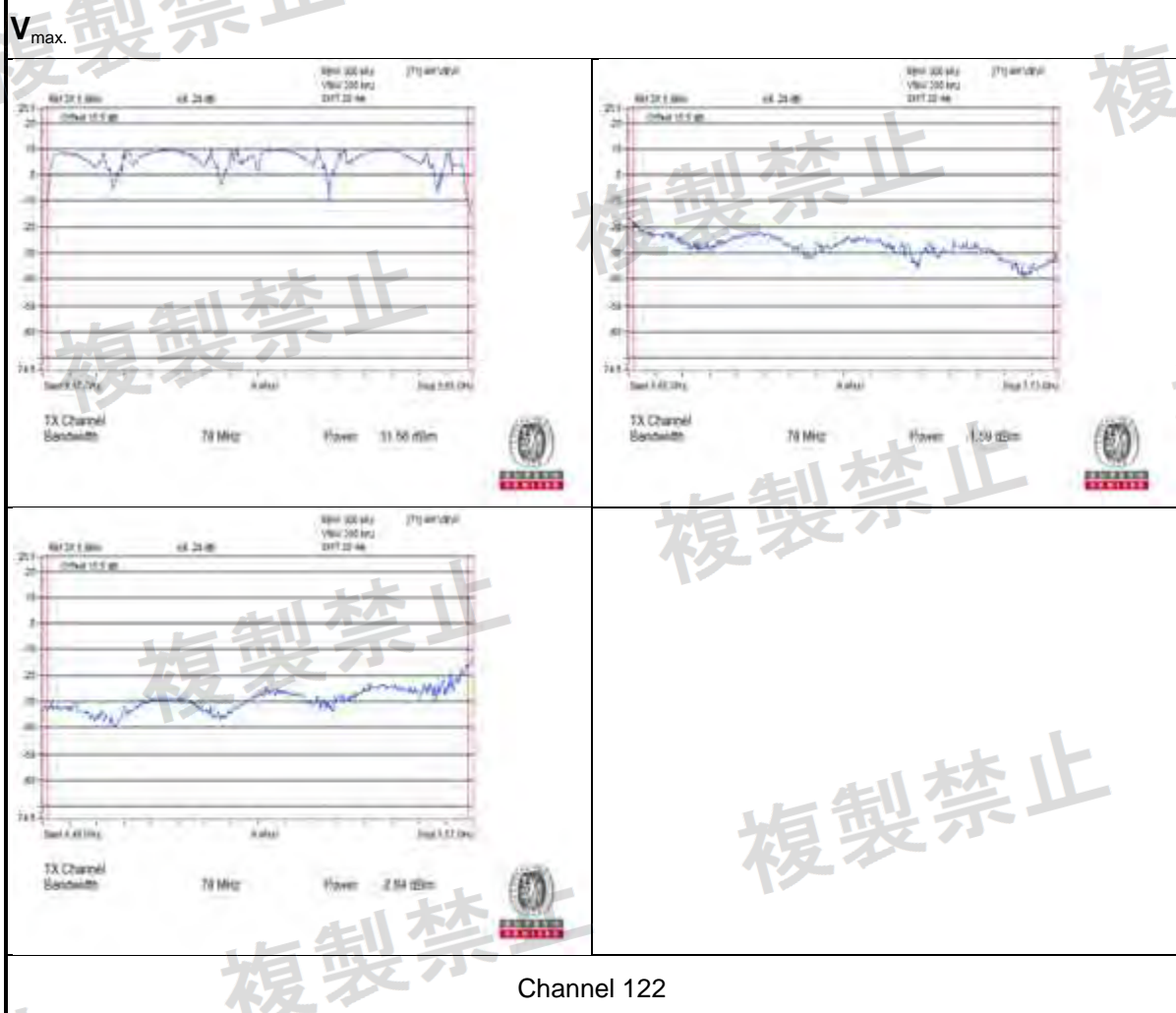
V<sub>max</sub>.



Channel 58

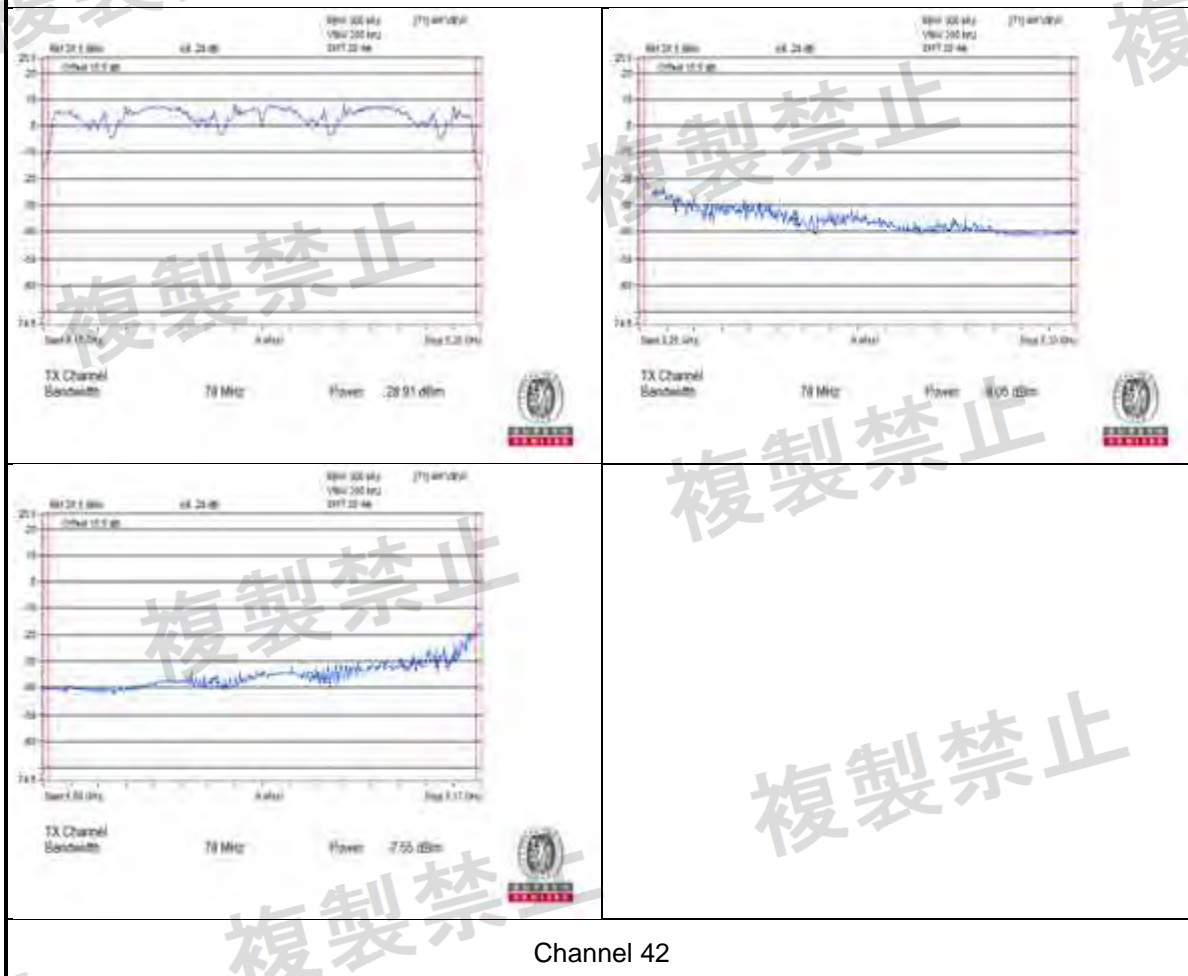
V<sub>max</sub>.



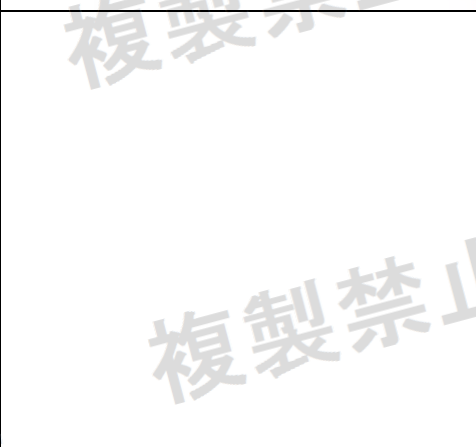
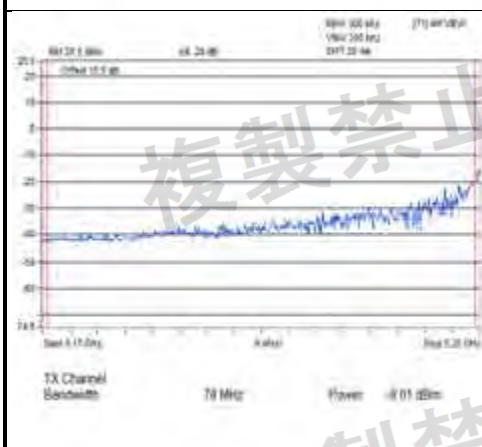
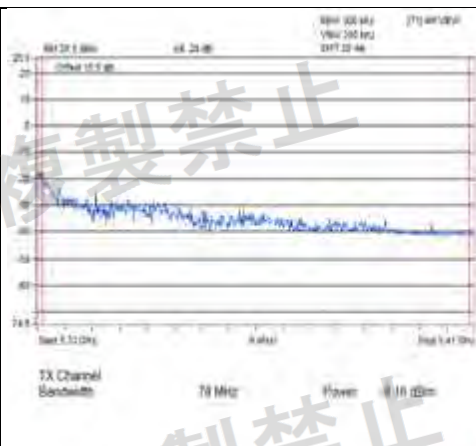
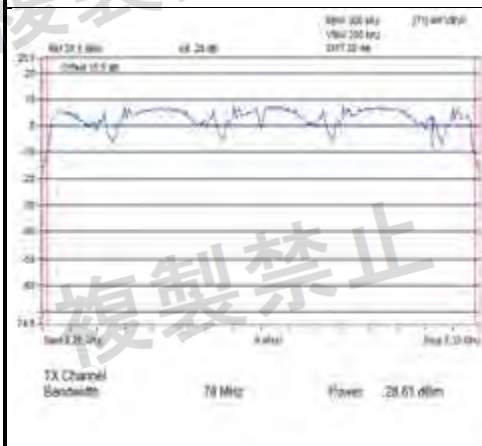




V<sub>min</sub>.

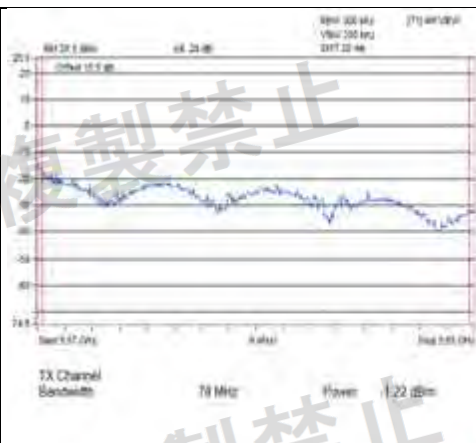
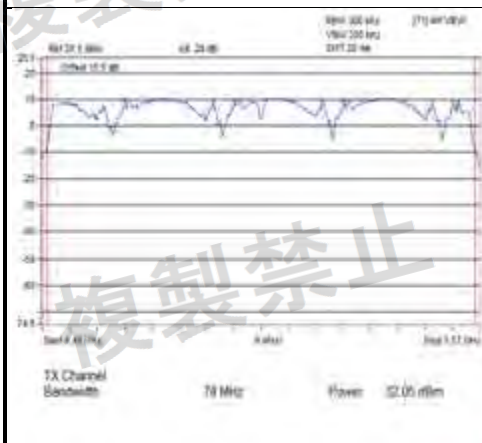


V<sub>min</sub>.



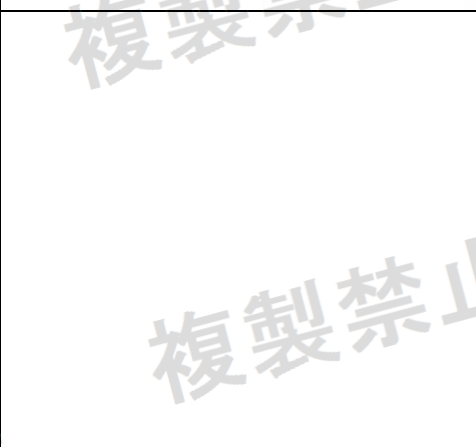
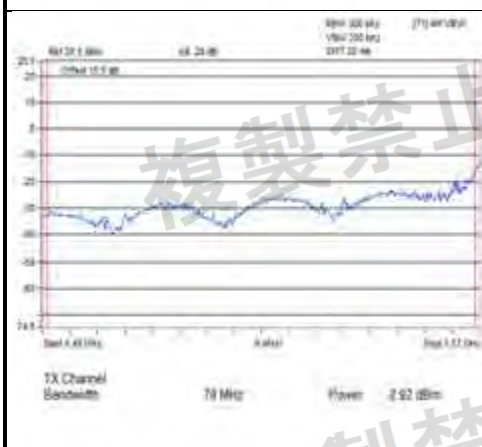
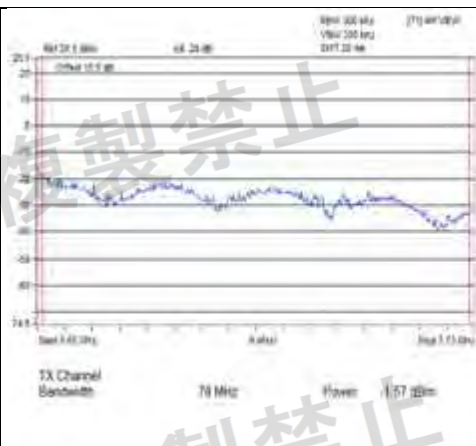
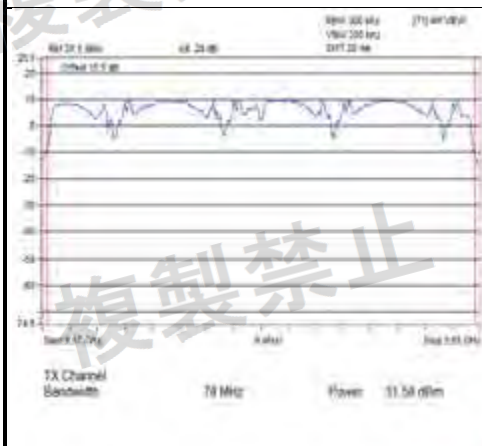
Channel 58

V<sub>min</sub>.



Channel 106

V<sub>min</sub>.



Channel 122



## 4.6 Antenna Power Measurement

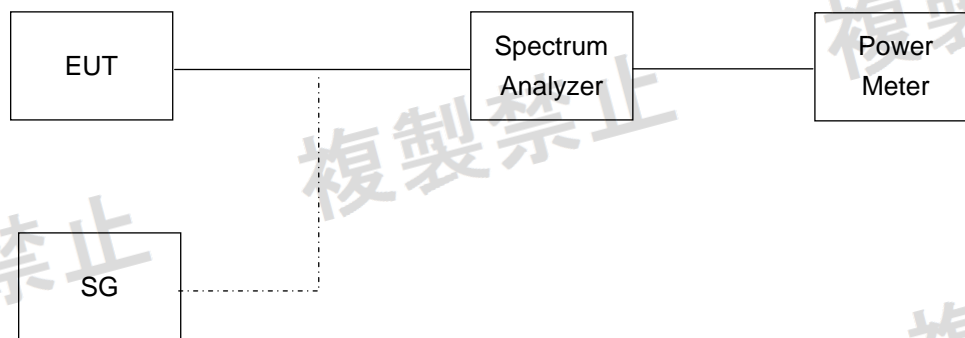
### 4.6.1 Limits of Antenna Power

W52 band			
Mode	802.11a / 802.11n (HT20) / 802.11ac (VHT20)	802.11n (HT40) / 802.11ac (VHT40)	802.11ac(VHT80)
Output power	10mW/MHz	5mW/MHz	2.5mW/MHz
EIRP	10mW/MHz	5mW/MHz	2.5mW/MHz

W53 band			
Mode	802.11a / 802.11n (HT20) / 802.11ac (VHT20)	802.11n (HT40) / 802.11ac (VHT40)	802.11ac(VHT80)
Output power	10mW/MHz	5mW/MHz	2.5mW/MHz
EIRP (with TPC)	10mW/MHz	5mW/MHz	2.5mW/MHz
EIRP (without TPC)	5mW/MHz	2.5mW/MHz	1.25mW/MHz

W56 band			
Mode	802.11a / 802.11n (HT20) / 802.11ac (VHT20)	802.11n (HT40) / 802.11ac (VHT40)	802.11ac(VHT80)
Output power	10mW/MHz	5mW/MHz	2.5mW/MHz
EIRP (with TPC)	50mW/MHz	25mW/MHz	12.5mW/MHz
EIRP (without TPC)	25mW/MHz	12.5mW/MHz	6.25mW/MHz

### 4.6.2 Test Setup



#### 4.6.3 Test Results

W52 and W53 bands: 802.11a

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
36	5180	4.075	3.927	4.267
48	5240	4.103	3.955	4.218
52	5260	4.056	3.891	3.982
64	5320	4.218	4.179	4.131
Max. Limit (mW/MHz)		10		
Rated Power		4.3		
Tolerance of Antenna Power		0.86 ~ 5.16		

PCB antenna with antenna gain: 3.6 dBi

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
36	5180	9.335	8.996	9.775
48	5240	9.399	9.06	9.663
52	5260	9.292	8.914	9.122
64	5320	9.663	9.574	9.464
Max. EIRP Limit (mW/MHz)		10		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.



**W56 band: 802.11a**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
100	5500	9.82	9.53	9.956
120	5600	9.685	9.618	9.888
140	5700	9.775	9.888	9.508
Max. Limit (mW/MHz)		10		
Rated Power		10		
Tolerance of Antenna Power		5 ~ 15		

**PCB antenna with antenna gain: 3.6 dBi**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
100	5500	22.496	21.832	22.808
120	5600	22.187	22.034	22.652
140	5700	22.393	22.652	21.782
Max. EIRP Limit (mW/MHz)		50		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.

### W52 and W53 bands: 802.11ac (VHT20)

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
36	5180	4.228	4.257	4.065
48	5240	4.296	4.247	4.218
52	5260	4.247	4.296	4.296
64	5320	4.122	4.286	4.247
Max. Limit (mW/MHz)		10		
Rated Power		4.3		
Tolerance of Antenna Power		0.86 ~ 5.16		

### PCB antenna with antenna gain: 3.6 dBi

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
36	5180	9.686	9.752	9.312
48	5240	9.842	9.729	9.663
52	5260	9.729	9.842	9.842
64	5320	9.443	9.819	9.729
Max. EIRP Limit (mW/MHz)		10		

Note: 1. The radiated RF output power density is a "calculated" value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.





**W56 band: 802.11ac (VHT20)**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
100	5500	9.574	9.618	9.956
120	5600	9.707	9.865	9.707
140	5700	9.752	9.73	9.618
Max. Limit (mW/MHz)		10		
Rated Power		10		
Tolerance of Antenna Power		5 ~ 15		

**PCB antenna with antenna gain: 3.6 dBi**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
100	5500	21.933	22.034	22.808
120	5600	22.237	22.599	22.237
140	5700	22.341	22.29	22.034
Max. EIRP Limit (mW/MHz)		50		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.

### W52 and W53 bands: 802.11ac (VHT40)

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
38	5190	2.066	2.023	1.982
46	5230	2.099	2.075	2.099
54	5270	2.099	2.095	2.052
62	5310	2.071	2.099	2.071
Max. Limit (mW/MHz)		5		
Rated Power		2.1		
Tolerance of Antenna Power		0.42 ~ 2.52		

### PCB antenna with antenna gain: 3.6 dBi

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
36	5190	4.733	4.634	4.54
48	5230	4.809	4.754	4.809
52	5270	4.809	4.799	4.701
64	5310	4.744	4.809	4.744
Max. EIRP Limit (mW/MHz)		5		

Note: 1. The radiated RF output power density is a "calculated" value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.

**W56 band: 802.11ac (VHT40)**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
102	5510	4.787	4.614	4.91
118	5590	4.743	4.854	4.787
134	5670	4.978	4.765	4.843
Max. Limit (mW/MHz)		5		
Rated Power		5		
Tolerance of Antenna Power		2.5 ~ 7.5		

**PCB antenna with antenna gain: 3.6 dBi**

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
102	5510	10.966	10.57	11.248
118	5590	10.866	11.12	10.966
134	5670	11.404	10.916	11.095
Max. EIRP Limit (mW/MHz)		25		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.

### W52 & W53 bands: 802.11ac (VHT80)

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
42	5210	0.998	0.962	0.982
58	5290	0.971	0.944	0.986
Max. Limit (mW/MHz)		2.5		
Rated Power		1		
Tolerance of Antenna Power		0.2 ~ 1.2		

### PCB antenna with antenna gain: 3.6 dBi

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
42	5210	2.286	2.204	2.25
58	5290	2.224	2.163	2.259
Max. EIRP Limit (mW/MHz)		2.5		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.



### W56 bands: 802.11ac (VHT80)

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
106	5530	2.313	2.366	2.291
122	5610	2.313	2.313	2.25
Max. Limit (mW/MHz)		2.5		
Rated Power		2.4		
Tolerance of Antenna Power		1.2 ~ 3.6		

### PCB antenna with antenna gain: 3.6 dBi

Environmental Conditions	25 deg.C, 60% RH			
Channel Number	Frequency (MHz)	Radiated RF Output Power Density (mW/MHz)		
		V <sub>normal</sub>	V <sub>max.</sub>	V <sub>min.</sub>
106	5530	5.299	5.42	5.248
122	5610	5.299	5.299	5.154
Max. EIRP Limit (mW/MHz)		12.5		

Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.

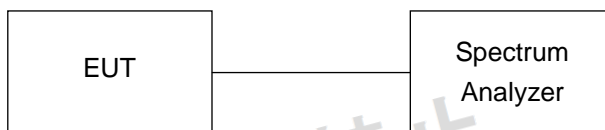
2. Formula: Radiated RF output power density = Conducted RF output power density + Maximum Antenna Gain.

#### 4.7 Spurious Emission for Receiver

##### 4.7.1 Limits of Spurious Emission for Receiver

Frequencies (MHz)	Limit
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

##### 4.7.2 Test Setup



#### 4.7.3 Test Result

W52 and W53 bands: 802.11a / 802.11ac (VHT20)

Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH36 (5180MHz)		CH48 (5240MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	430.360	<b>0.009594nW</b>	106.020	<b>0.008091nW</b>	4nW/100kHz	Pass
	Above 1GHz	21656.250	1.2218nW	21665.620	1.573983nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	846.490	0.007621nW	963.980	0.00798nW	4nW/100kHz	Pass
	Above 1GHz	24609.370	<b>1.361445nW</b>	21637.500	<b>1.909853nW</b>	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	188.470	0.007112nW	546.880	0.007516nW	4nW/100kHz	Pass
	Above 1GHz	21678.120	1.21899nW	21615.620	1.25603nW	20nW/MHz	Pass
Test Channel		CH52 (5260MHz)		CH64 (5320MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	177.680	0.007762nW	771.800	0.008375nW	4nW/100kHz	Pass
	Above 1GHz	24850.000	1.114295nW	21659.370	1.042317nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	301.840	<b>0.008551nW</b>	44.670	0.00695nW	4nW/100kHz	Pass
	Above 1GHz	24940.620	1nW	21706.250	<b>1.506607nW</b>	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	146.640	0.007328nW	143.000	<b>0.00863nW</b>	4nW/100kHz	Pass
	Above 1GHz	24690.620	<b>1.282331nW</b>	24368.750	1.049542nW	20nW/MHz	Pass

Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

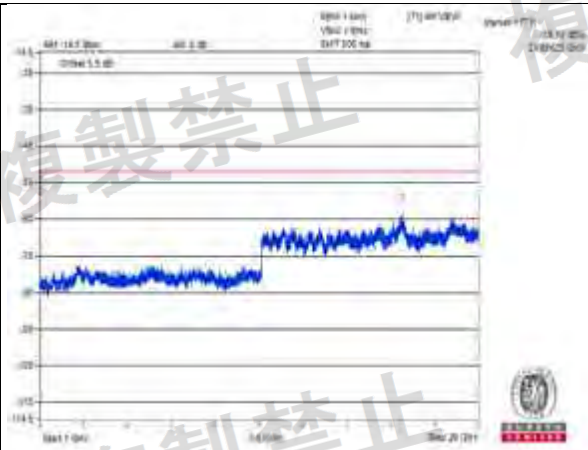
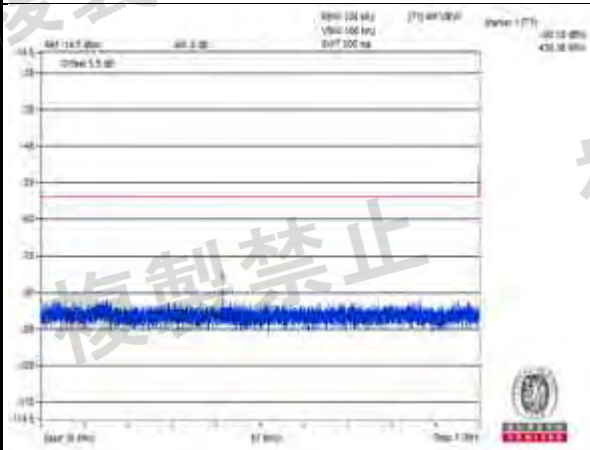
W56 band: 802.11a / 802.11ac (VHT20)

Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH100 (5500MHz)		CH120 (5600MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
V <sub>normal</sub>	Below 1GHz	173.190	0.008241nW	82.860	0.007674nW	4nW/100kHz	Pass
	Above 1GHz	21606.250	1.339677nW	21706.250	1.111732nW	20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	180.950	0.008395nW	172.830	0.008128nW	4nW/100kHz	Pass
	Above 1GHz	21653.120	1.185769nW	21618.750	1.224616nW	20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	708.510	0.007621nW	72.800	0.009354nW	4nW/100kHz	Pass
	Above 1GHz	21750.000	1.172195nW	24421.870	1.016249nW	20nW/MHz	Pass
Test Channel		CH140 (5700MHz)				Limit	Result
Test Condition	Frequency Range	Frequency (MHz)		Measured Value (nW)			
V <sub>normal</sub>	Below 1GHz	840.070		0.008453nW		4nW/100kHz	Pass
	Above 1GHz	21646.870		1.667247nW		20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	182.040		0.009226nW		4nW/100kHz	Pass
	Above 1GHz	24578.120		1.61808nW		20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	135.850		0.008551nW		4nW/100kHz	Pass
	Above 1GHz	21628.120		1.235947nW		20nW/MHz	Pass

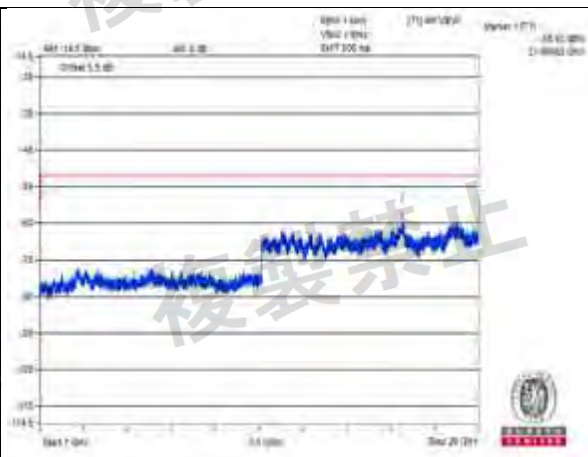
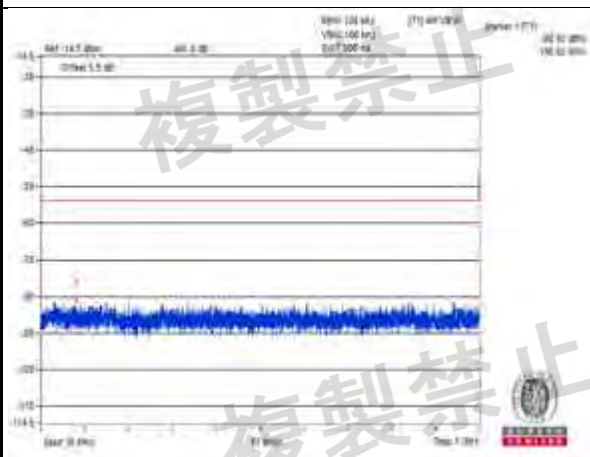
Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.  
2. The spectrum plots are attached on the following pages.



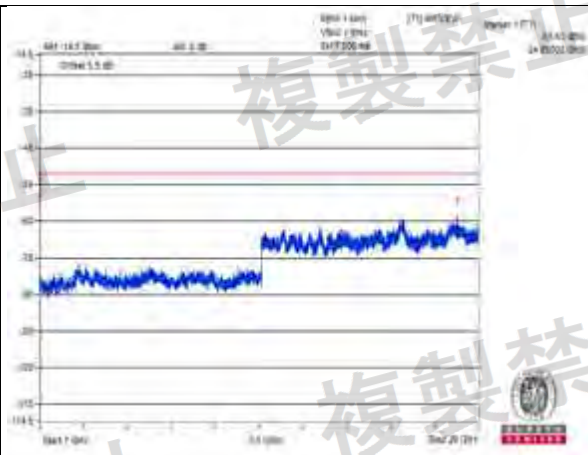
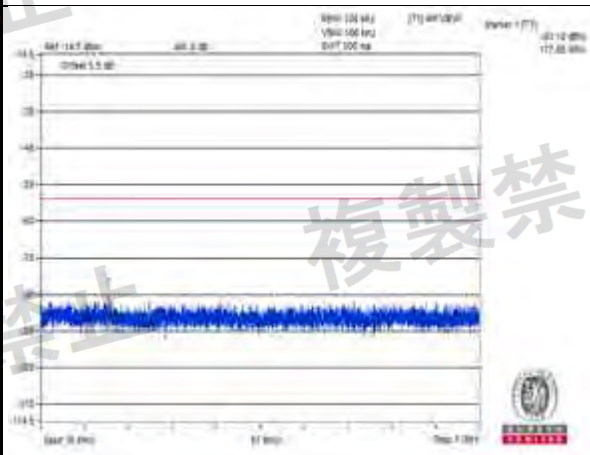
V<sub>normal</sub>



Channel 36

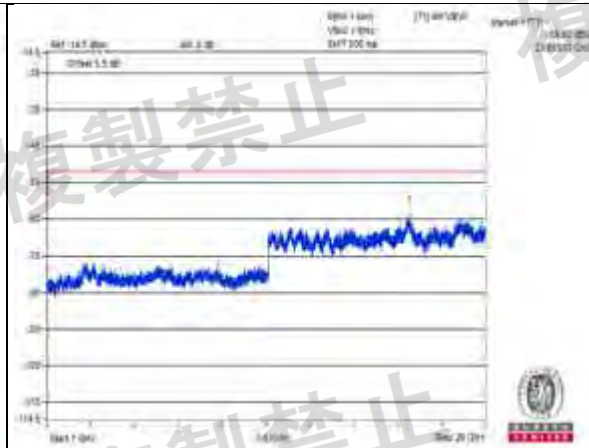
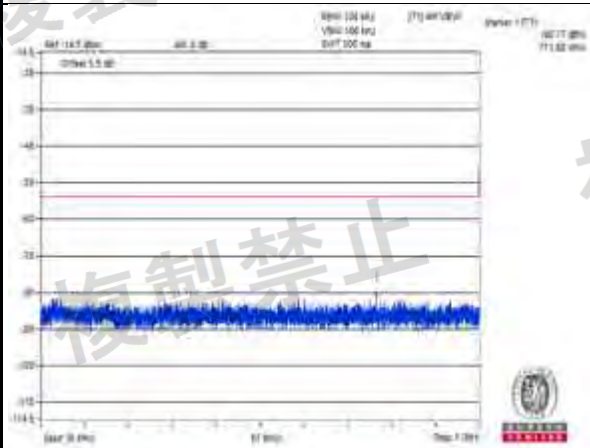


Channel 48

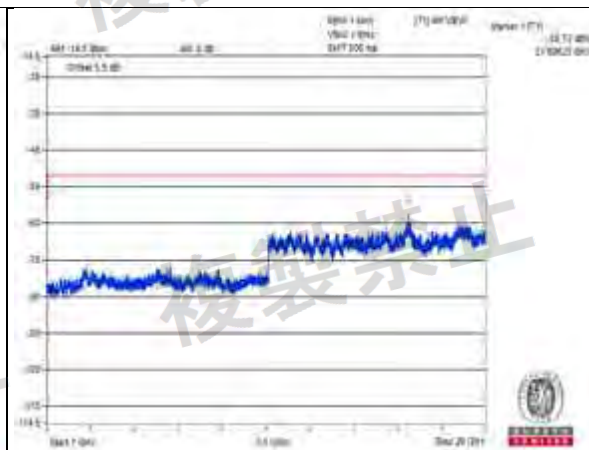
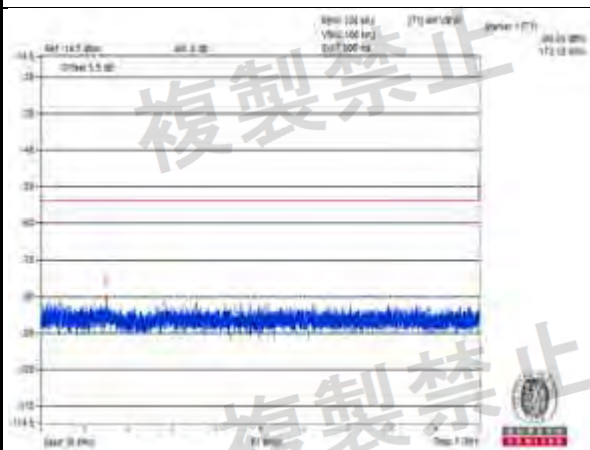


Channel 52

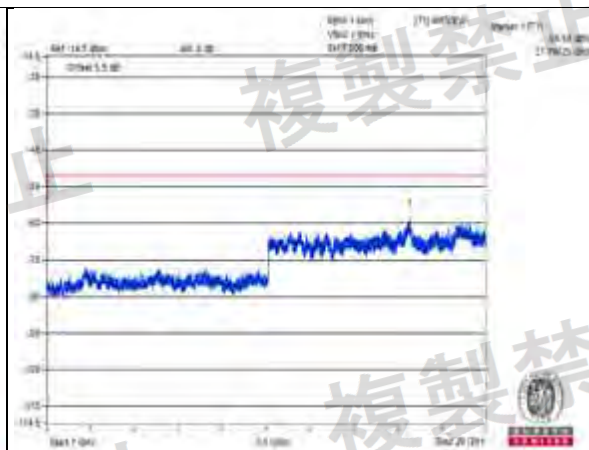
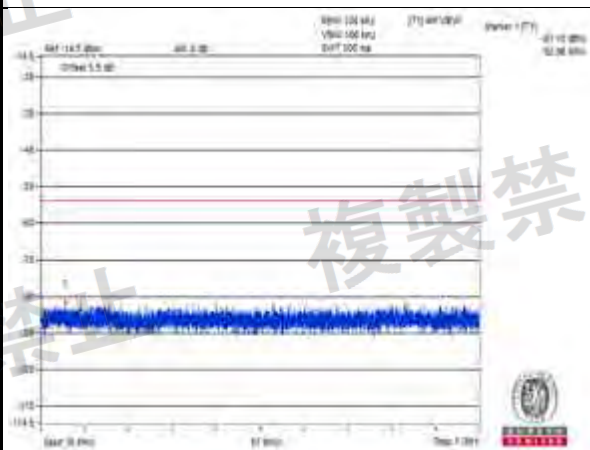
V<sub>normal</sub>



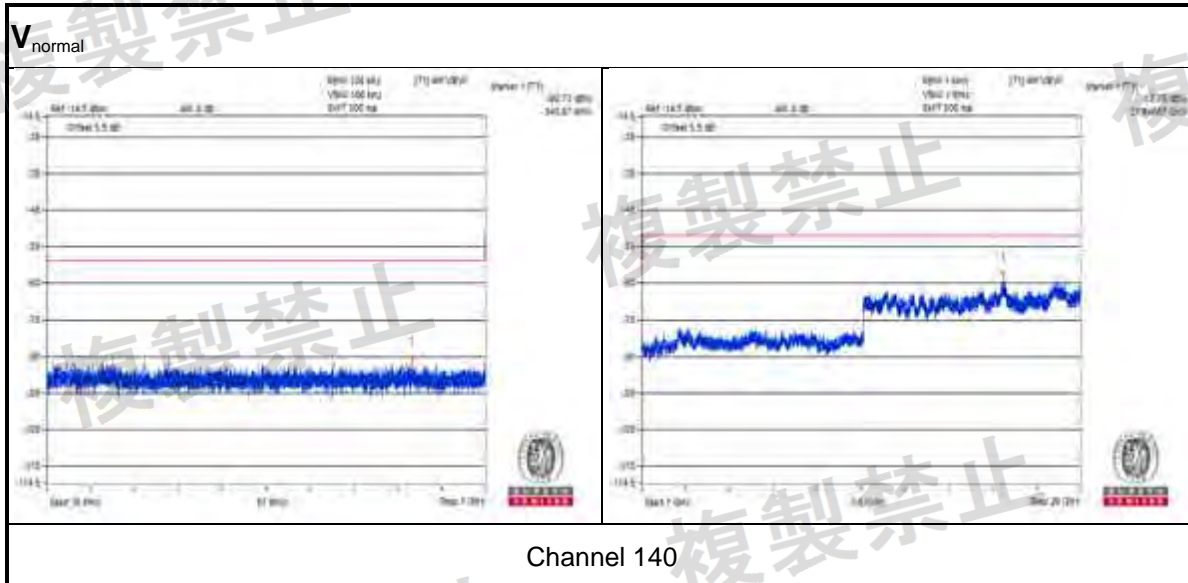
Channel 64



Channel 100

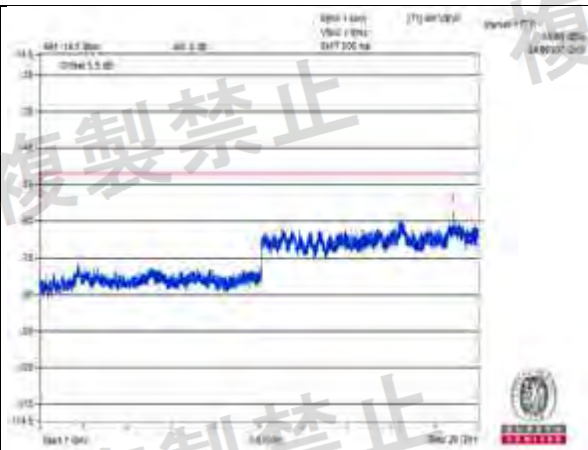
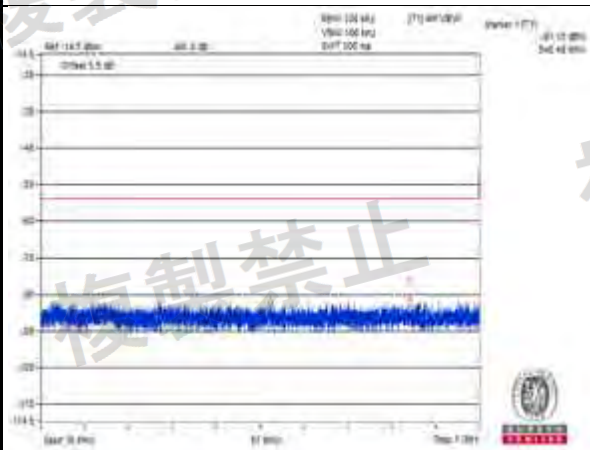


Channel 120

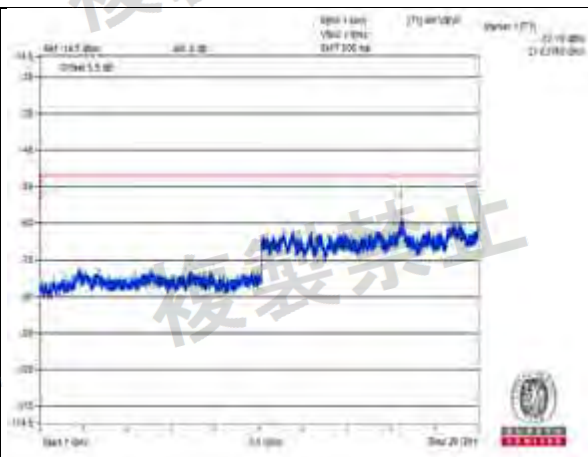
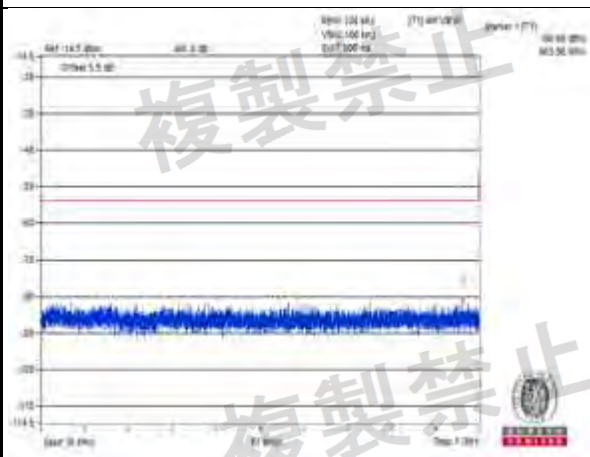




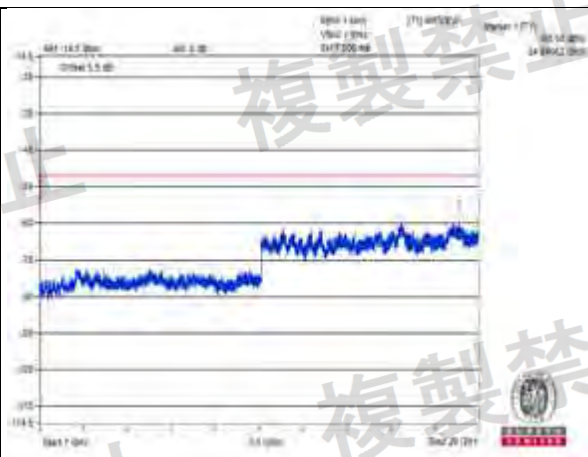
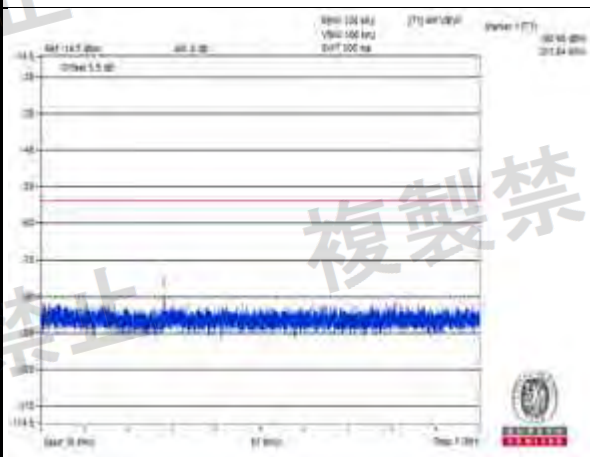
V<sub>max</sub>.



Channel 36



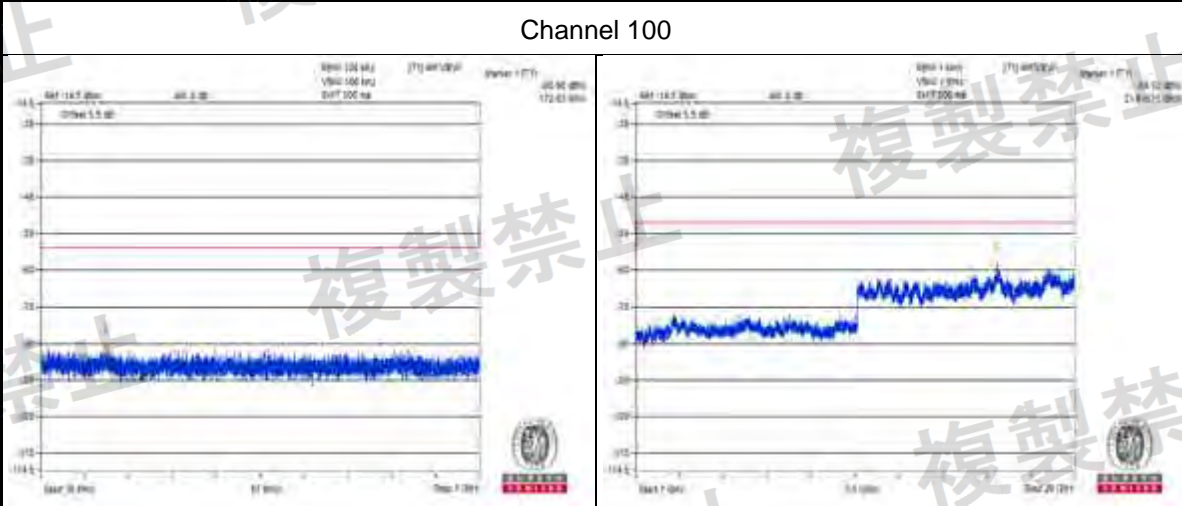
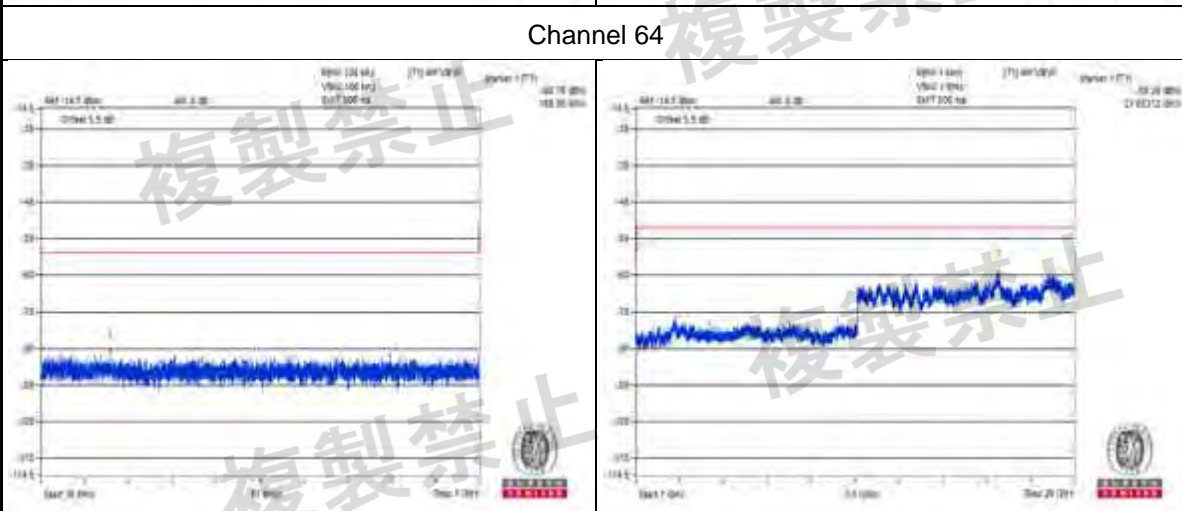
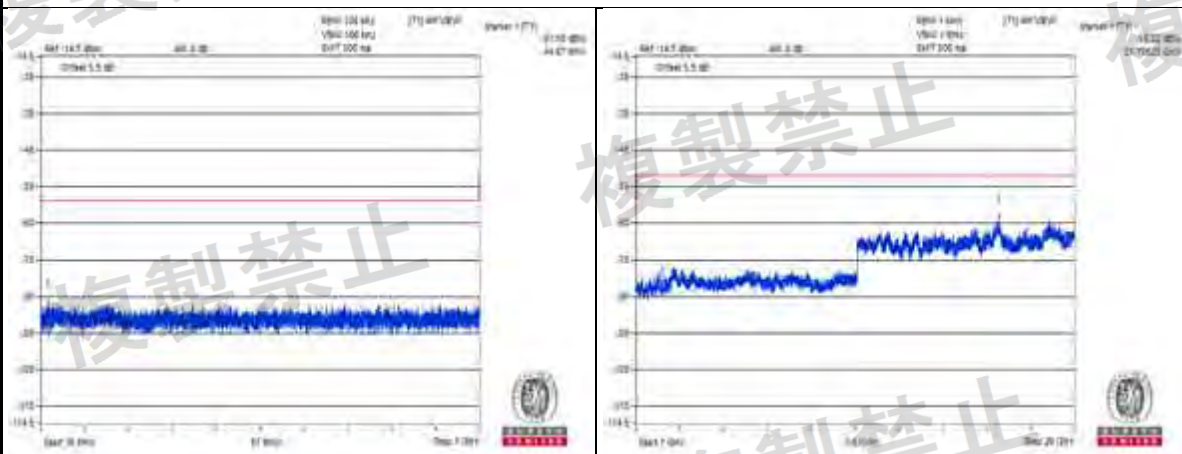
Channel 48

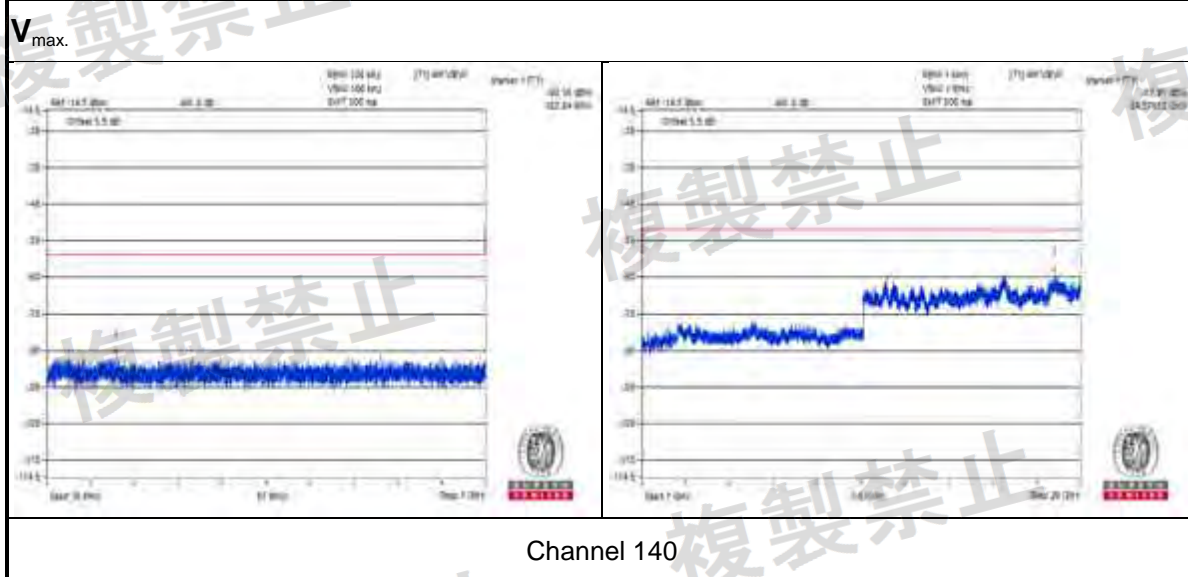


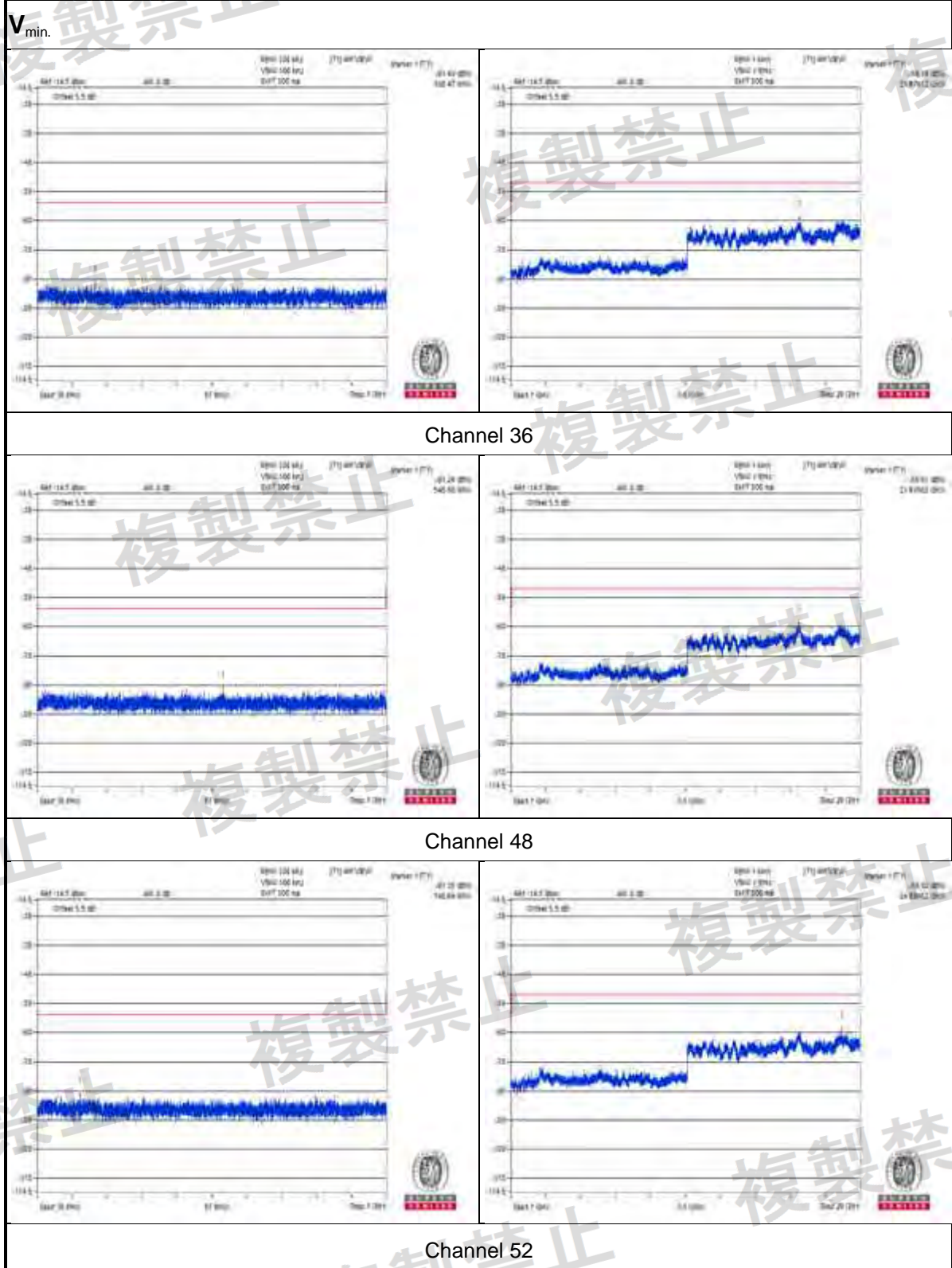
Channel 52



V<sub>max</sub>.

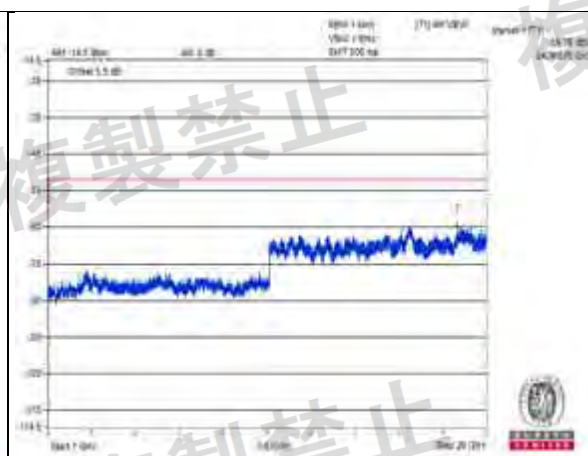
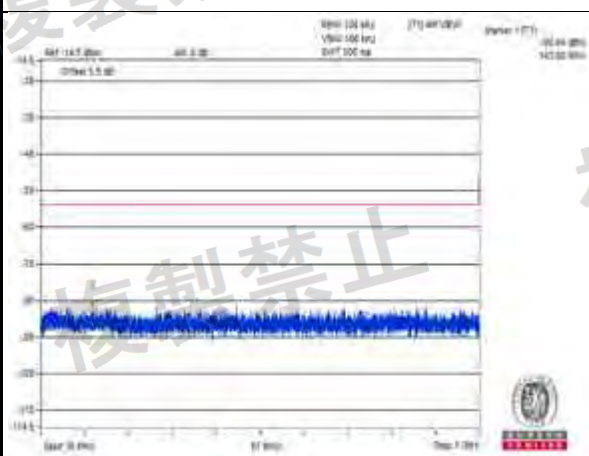




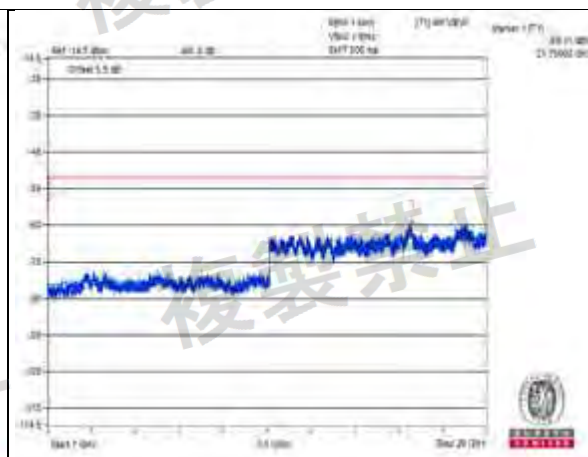
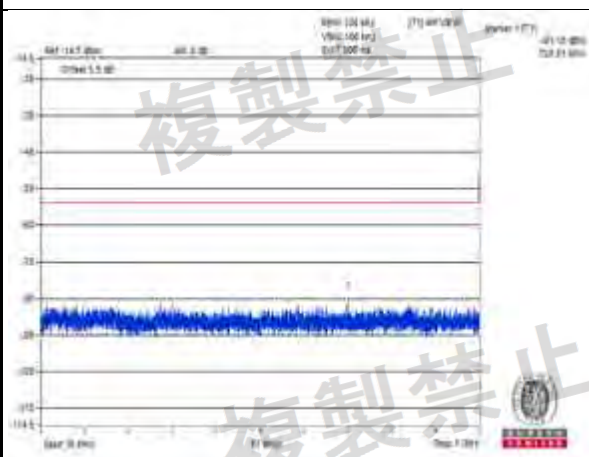




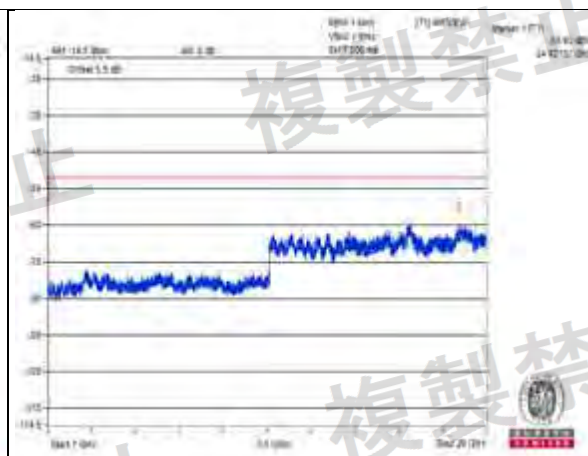
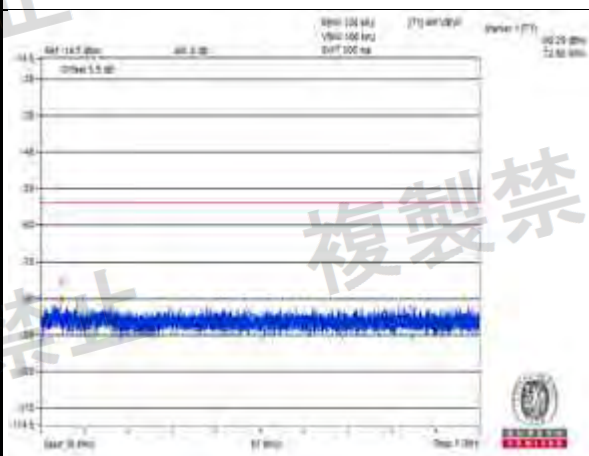
V<sub>min</sub>.



Channel 64



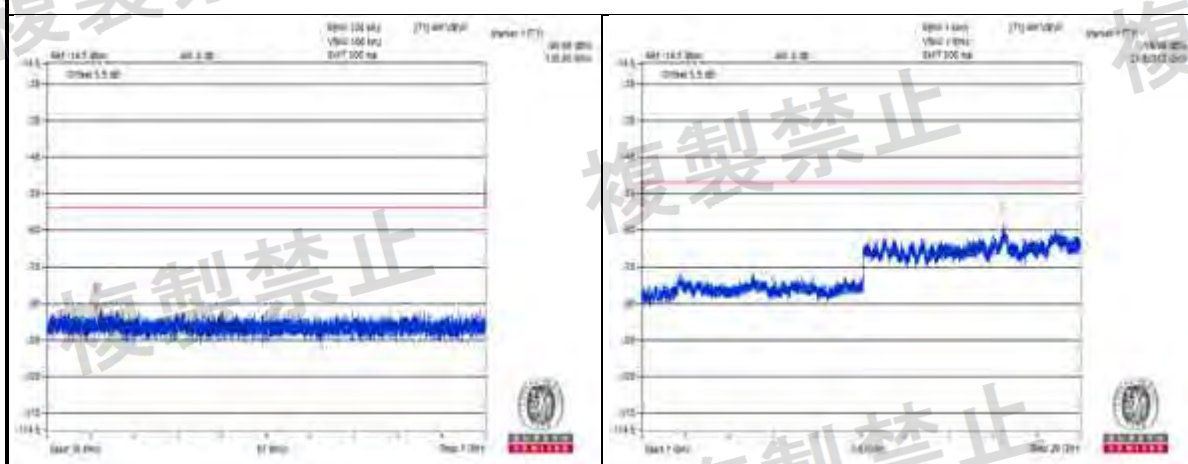
Channel 100



Channel 120



V<sub>min</sub>.



Channel 140

W52 and W53 bands: 802.11ac (VHT40)

Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH38 (5190MHz)		CH46 (5230MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	56.060	0.008395nW	548.220	<b>0.007925nW</b>	4nW/100kHz	Pass
	Above 1GHz	21568.750	1.099006nW	24578.120	1.14025nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	150.030	<b>0.00869nW</b>	578.770	0.007178nW	4nW/100kHz	Pass
	Above 1GHz	21562.500	1.210598nW	24634.370	1.142878nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	645.100	0.00826nW	156.340	0.007178nW	4nW/100kHz	Pass
	Above 1GHz	21621.870	<b>1.327394nW</b>	21556.250	<b>1.216186nW</b>	20nW/MHz	Pass
Test Channel		CH54 (5270MHz)		CH 62 (5310MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	169.800	0.007907nW	537.180	0.008375nW	4nW/100kHz	Pass
	Above 1GHz	21625.000	1.08893nW	21518.750	1.202264nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	585.930	0.008054nW	72.920	<b>0.009638nW</b>	4nW/100kHz	Pass
	Above 1GHz	21640.620	1.253141nW	21596.870	<b>1.276439nW</b>	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	175.860	<b>0.011668nW</b>	324.750	0.008204nW	4nW/100kHz	Pass
	Above 1GHz	21640.620	<b>1.318257nW</b>	25087.500	1.185769nW	20nW/MHz	Pass

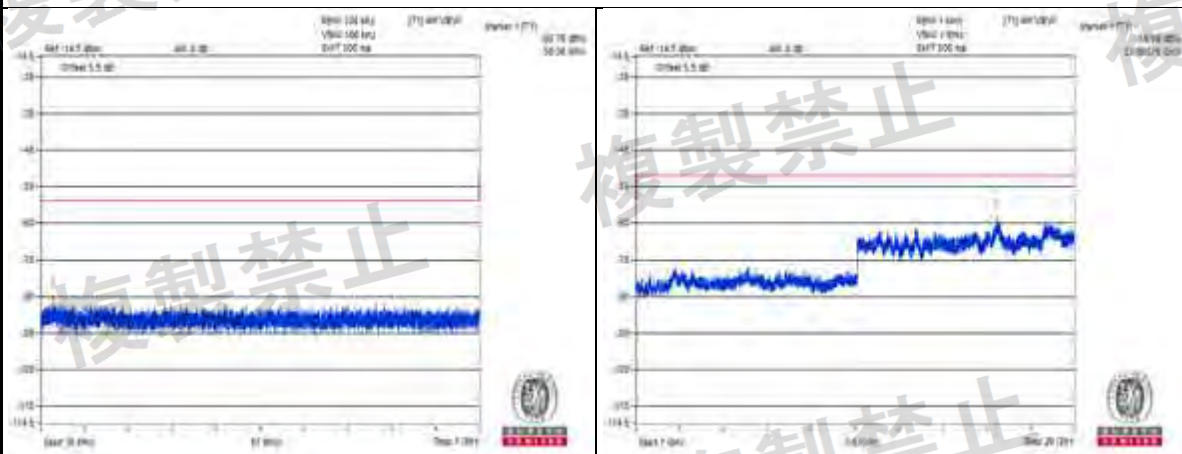
Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

W56 band: 802.11ac (VHT40)

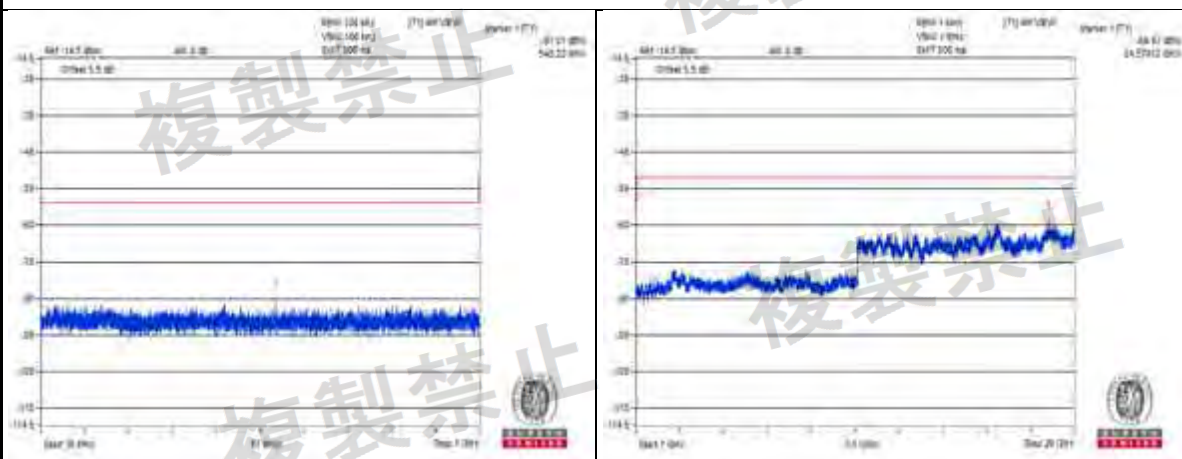
Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH102 (5510MHz)		CH118 (5590MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
V <sub>normal</sub>	Below 1GHz	976.590	0.00859nW	182.040	0.008222nW	4nW/100kHz	Pass
	Above 1GHz	24650.000	1.545254nW	21618.750	1.610646nW	20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	824.180	0.00863nW	56.430	0.011066nW	4nW/100kHz	Pass
	Above 1GHz	21756.250	1.207814nW	24634.370	1.013911nW	20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	382.230	0.007943nW	929.430	0.007852nW	4nW/100kHz	Pass
	Above 1GHz	24690.620	0.948418nW	21687.500	1.049542nW	20nW/MHz	Pass
Test Channel		CH134 (5670MHz)				Limit	Result
Test Condition	Frequency Range	Frequency (MHz)		Measured Value (nW)			
V <sub>normal</sub>	Below 1GHz	183.620		0.007161nW		4nW/100kHz	Pass
	Above 1GHz	21656.250		1.054387nW		20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	94.260		0.007379nW		4nW/100kHz	Pass
	Above 1GHz	24587.500		1.250259nW		20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	156.820		0.009141nW		4nW/100kHz	Pass
	Above 1GHz	21665.620		1.210598nW		20nW/MHz	Pass

Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.  
2. The spectrum plots are attached on the following pages.

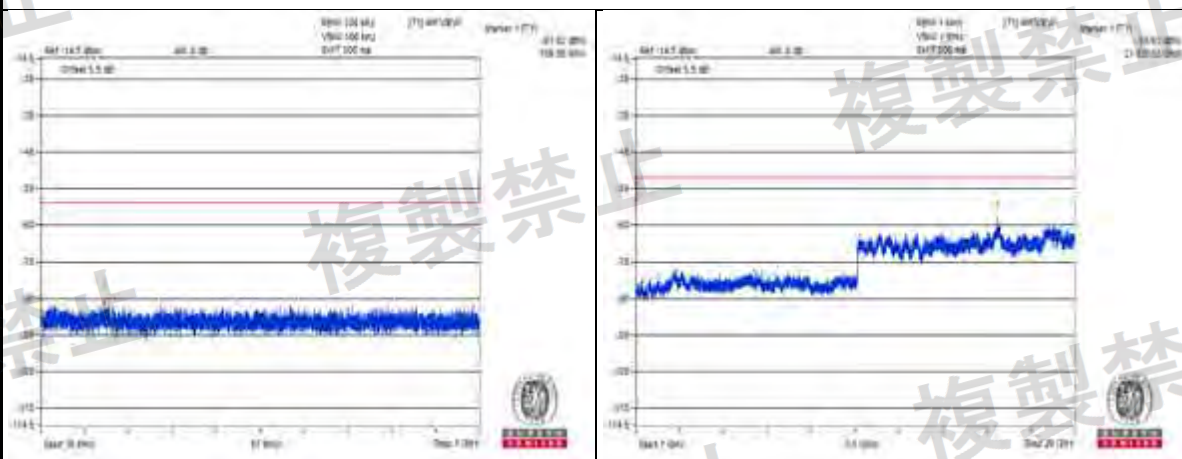
V<sub>normal</sub>



Channel 38



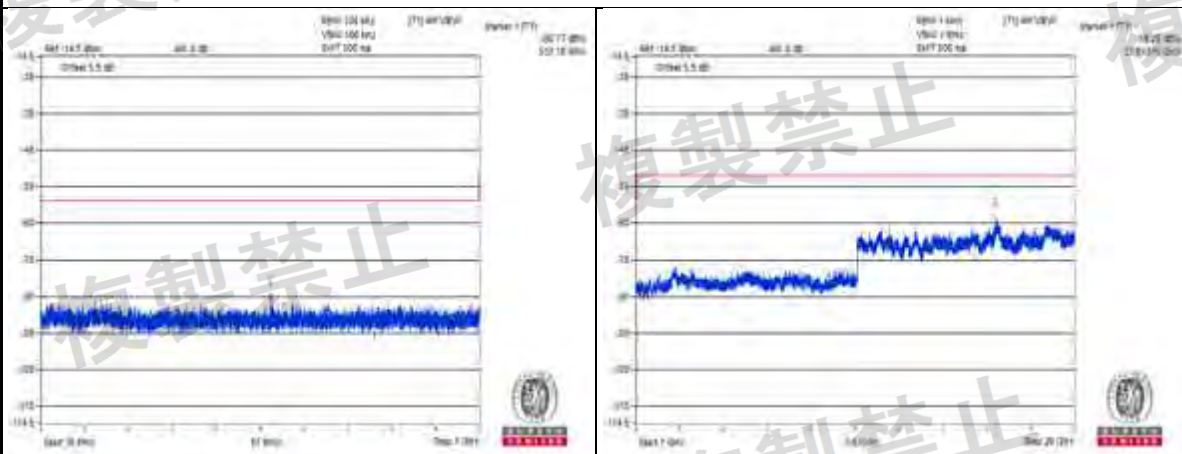
Channel 46



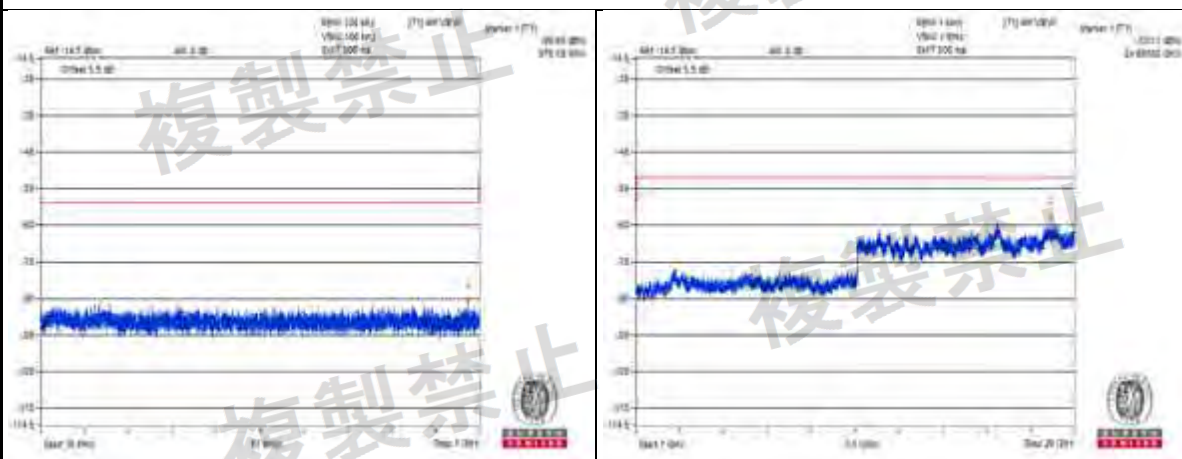
Channel 54



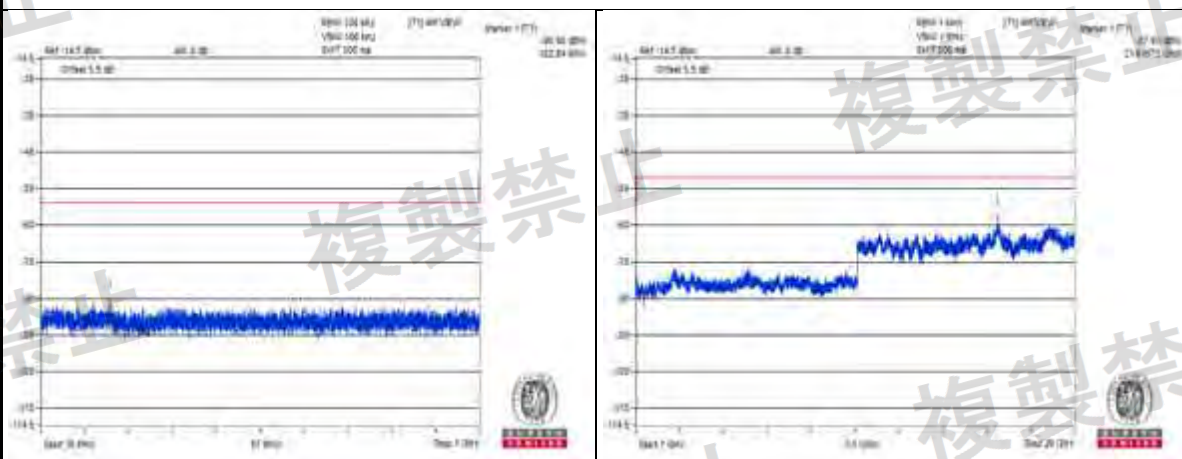
V<sub>normal</sub>



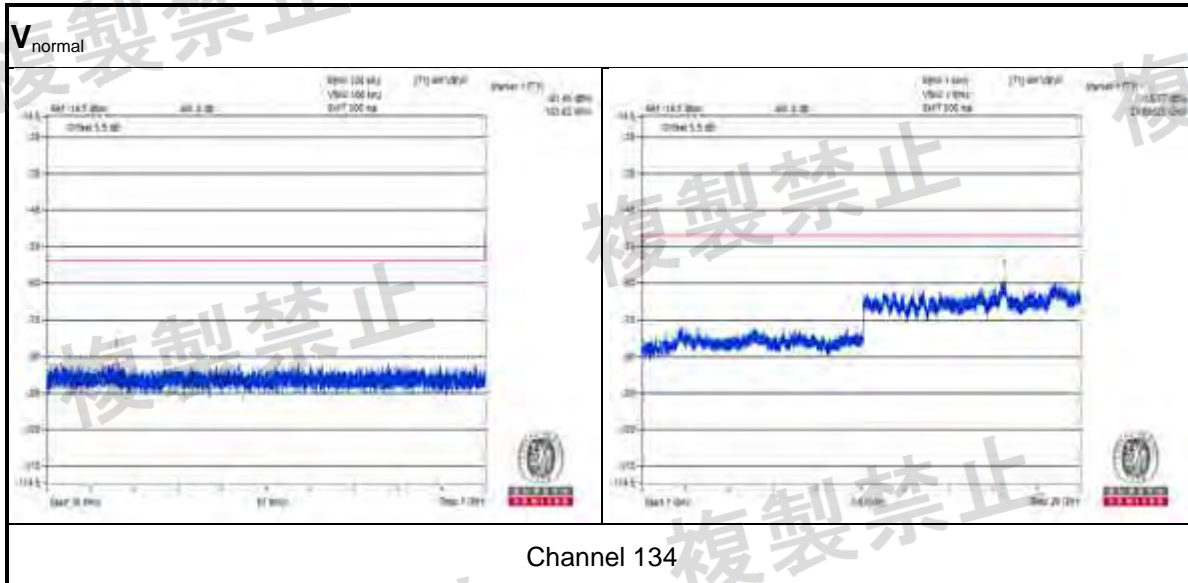
Channel 62



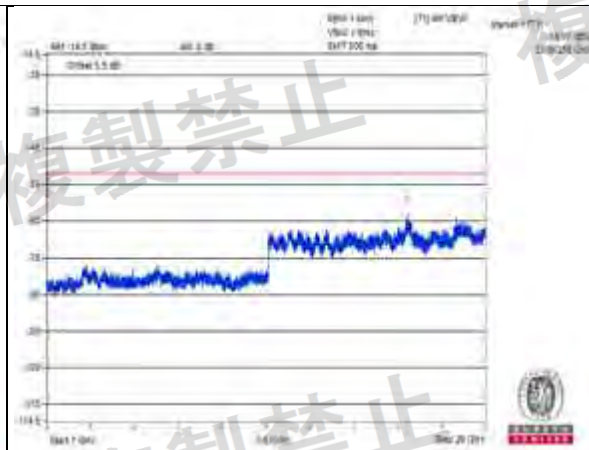
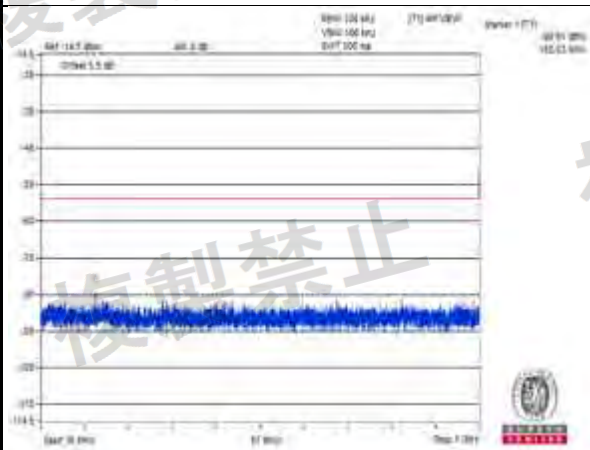
Channel 102



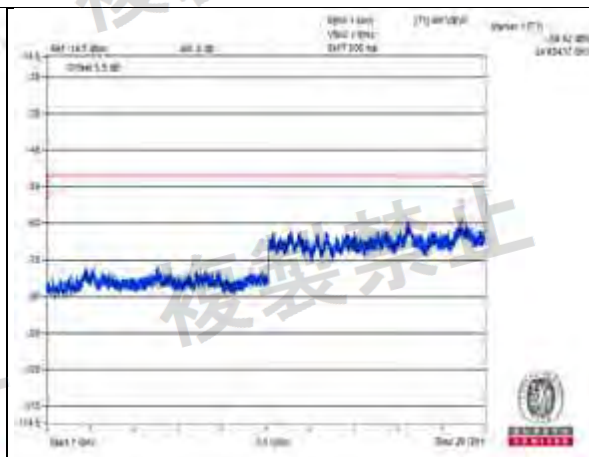
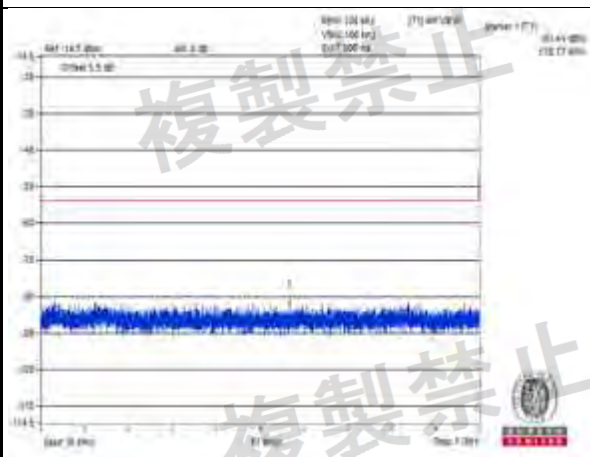
Channel 118



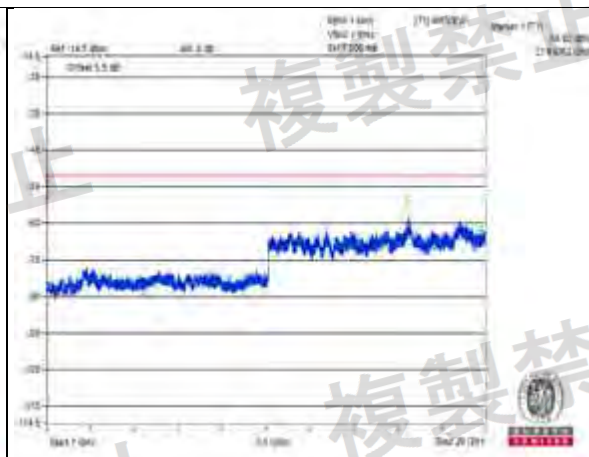
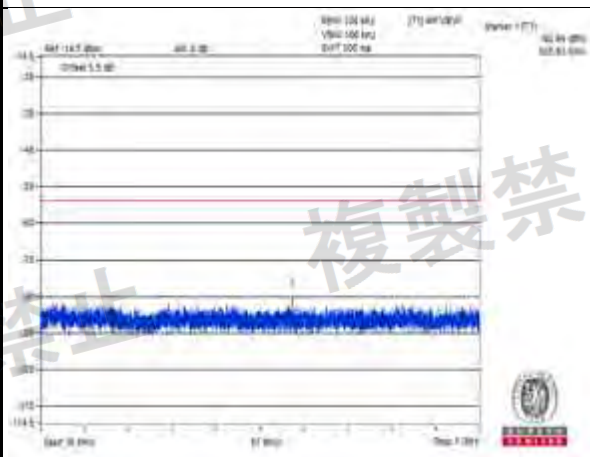
V<sub>max</sub>.



Channel 38



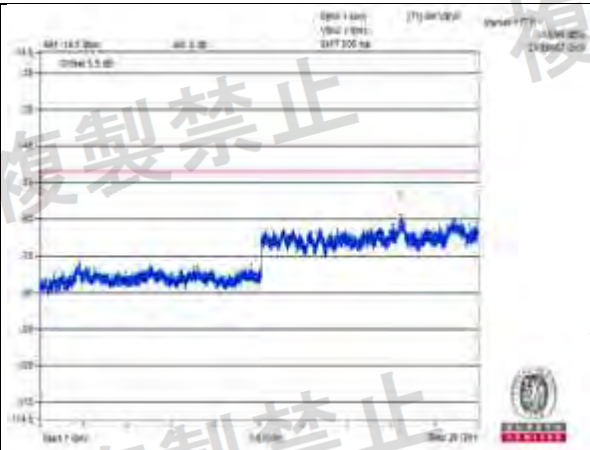
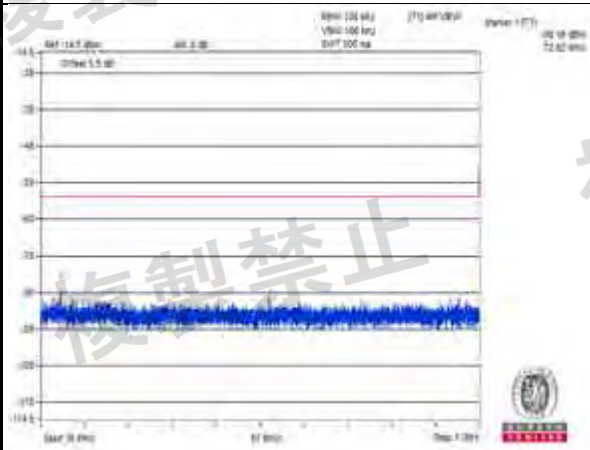
Channel 46



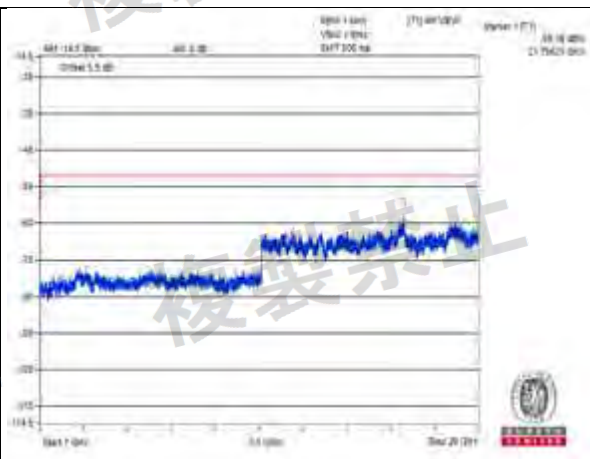
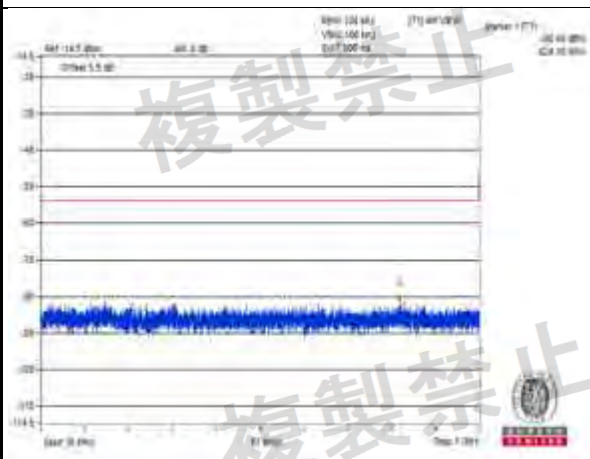
Channel 54



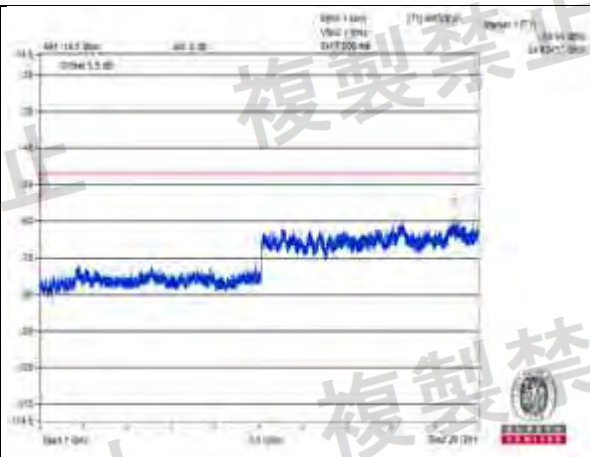
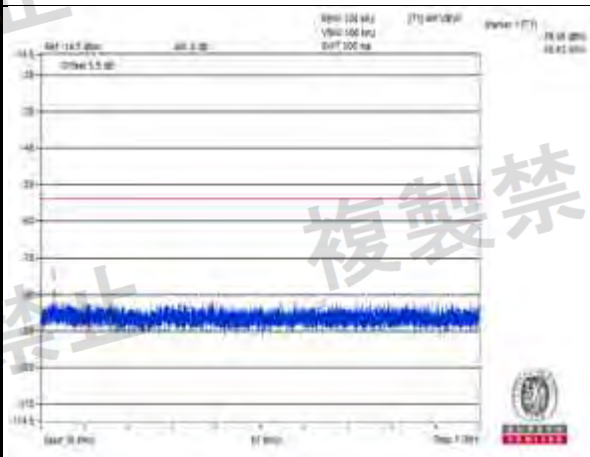
V<sub>max</sub>.



Channel 62

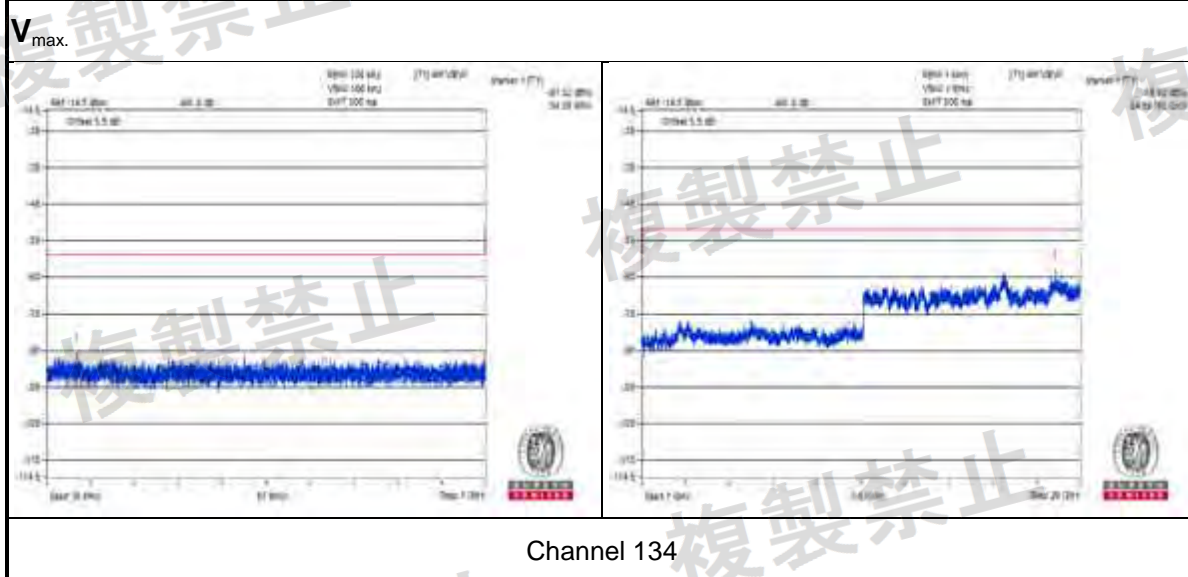


Channel 102

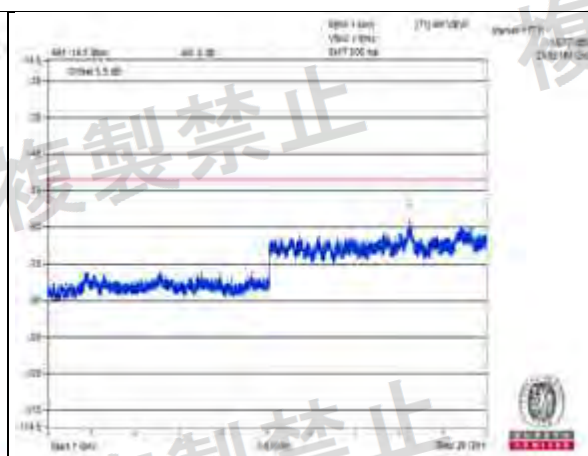
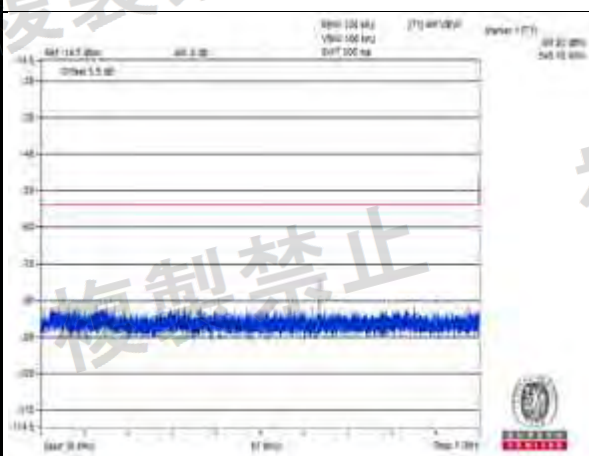


Channel 118

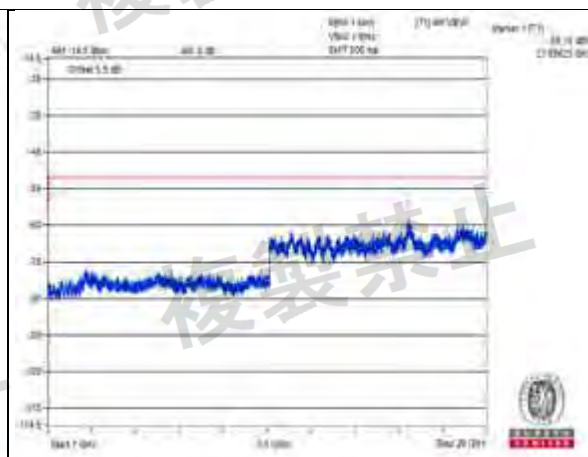
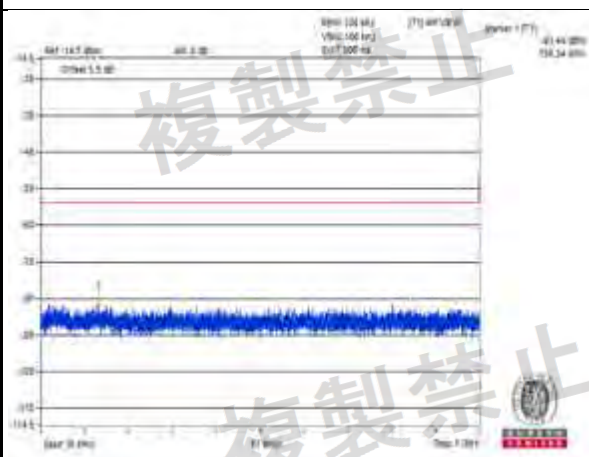




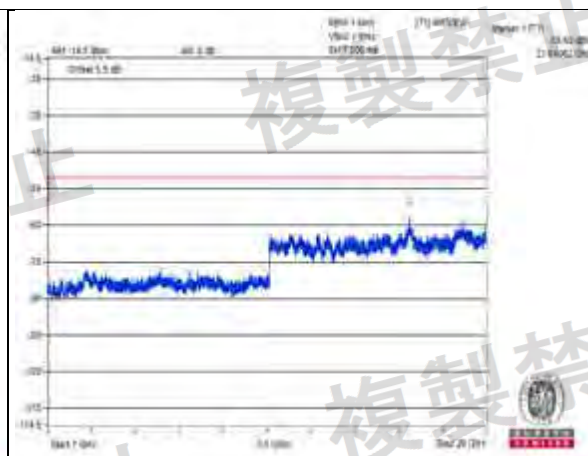
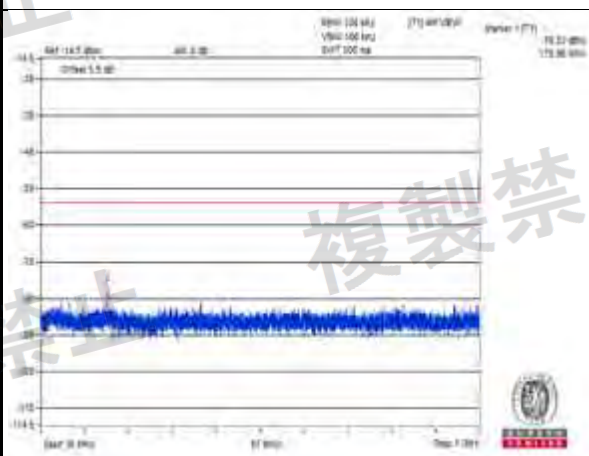
V<sub>min</sub>.



Channel 38

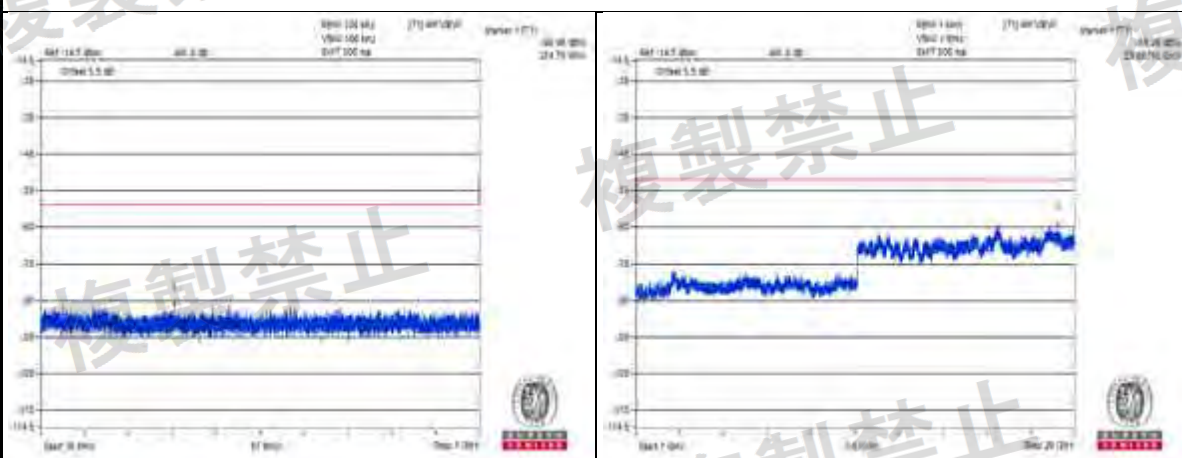


Channel 46

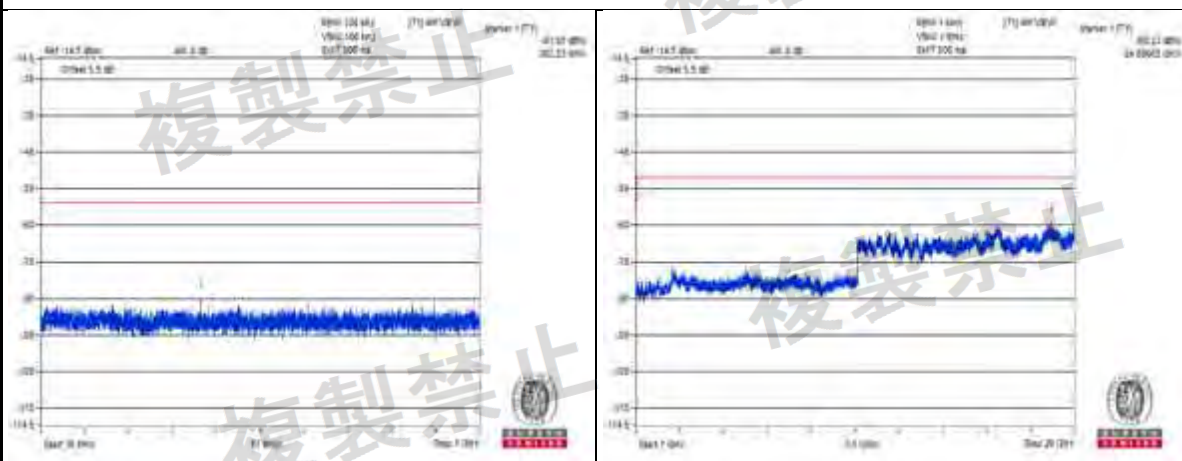


Channel 54

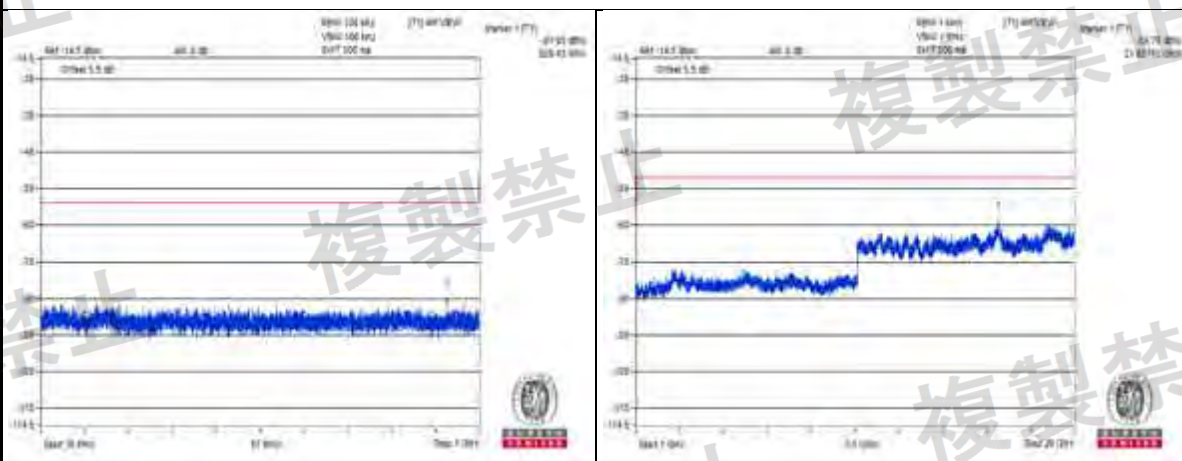
V<sub>min</sub>.



Channel 62



Channel 102



Channel 118

V<sub>min</sub>.



Channel 134



### W52 and W53 bands: 802.11ac (VHT80)

Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH42 (5210MHz)		CH58 (5290MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	78.860	<b>0.008395nW</b>	566.410	0.007161nW	4nW/100kHz	Pass
	Above 1GHz	21643.750	1.191242nW	21690.620	<b>1.253141nW</b>	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	179.250	0.007047nW	276.380	0.007464nW	4nW/100kHz	Pass
	Above 1GHz	24509.370	<b>1.364583nW</b>	24612.500	1.119438nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	120.330	0.007178nW	549.070	<b>0.007798nW</b>	4nW/100kHz	Pass
	Above 1GHz	24712.500	1.2218nW	21653.120	1.185769nW	20nW/MHz	Pass

Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

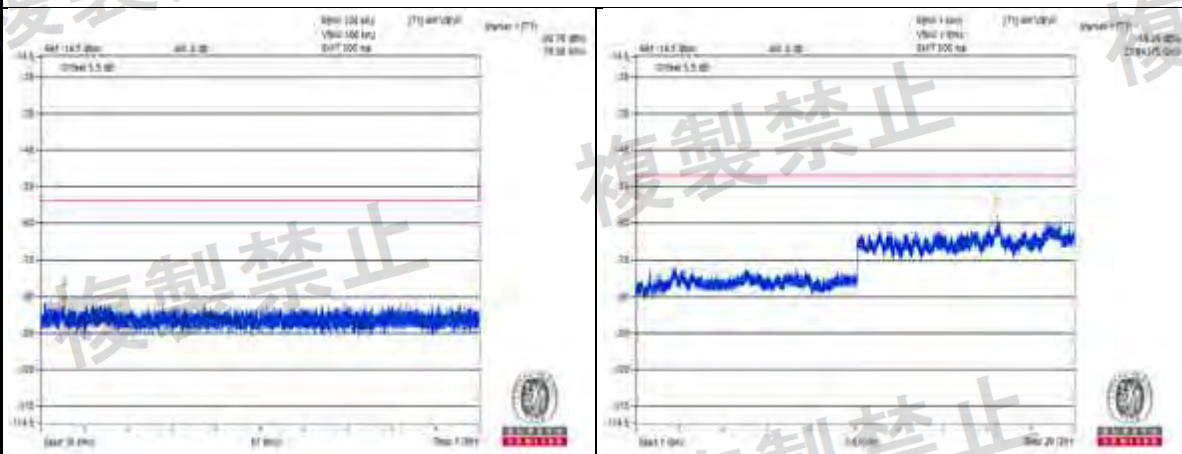
### W56 band: 802.11ac (VHT80)

Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH106 (5530MHz)		CH122 (5610MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
$V_{normal}$	Below 1GHz	807.690	<b>0.009311nW</b>	173.920	0.007499nW	4nW/100kHz	Pass
	Above 1GHz	24868.750	1.011579nW	24621.870	<b>1.438799nW</b>	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	47.210	0.008091nW	149.180	0.007962nW	4nW/100kHz	Pass
	Above 1GHz	24575.000	<b>1.205036nW</b>	21618.750	1.032761nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	617.570	0.007889nW	85.040	<b>0.009057nW</b>	4nW/100kHz	Pass
	Above 1GHz	21684.370	1.056818nW	21678.120	0.954993nW	20nW/MHz	Pass

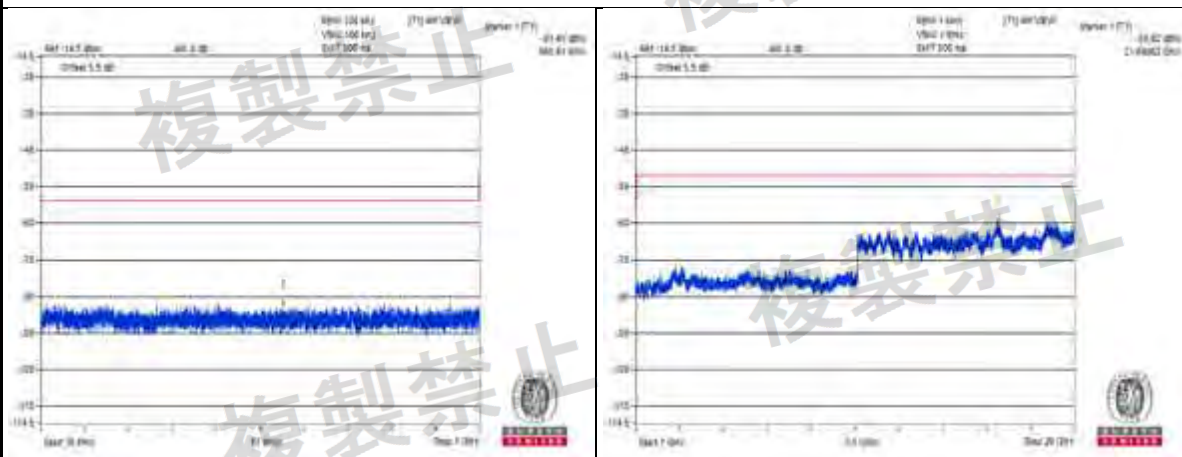
Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

2. The spectrum plots are attached on the following pages.

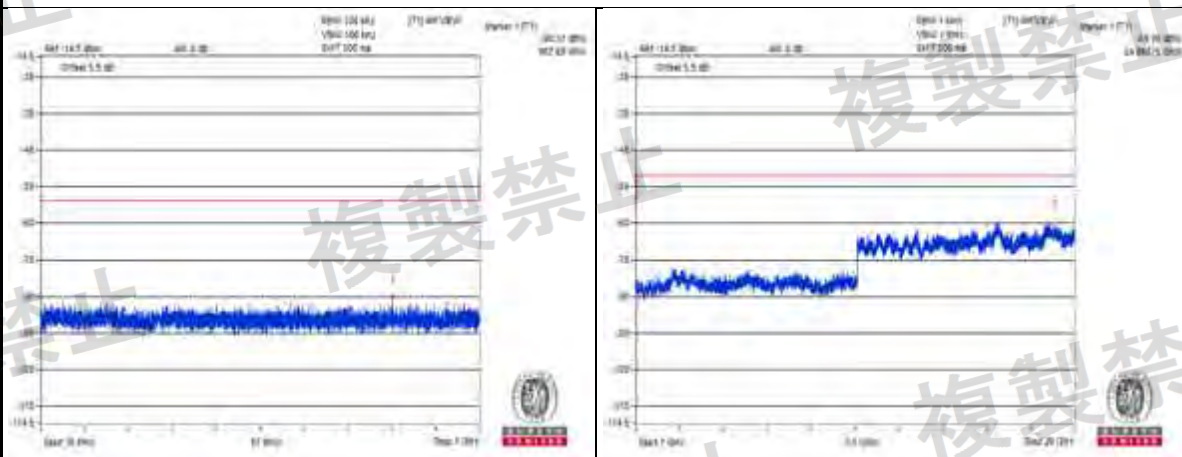
V<sub>normal</sub>



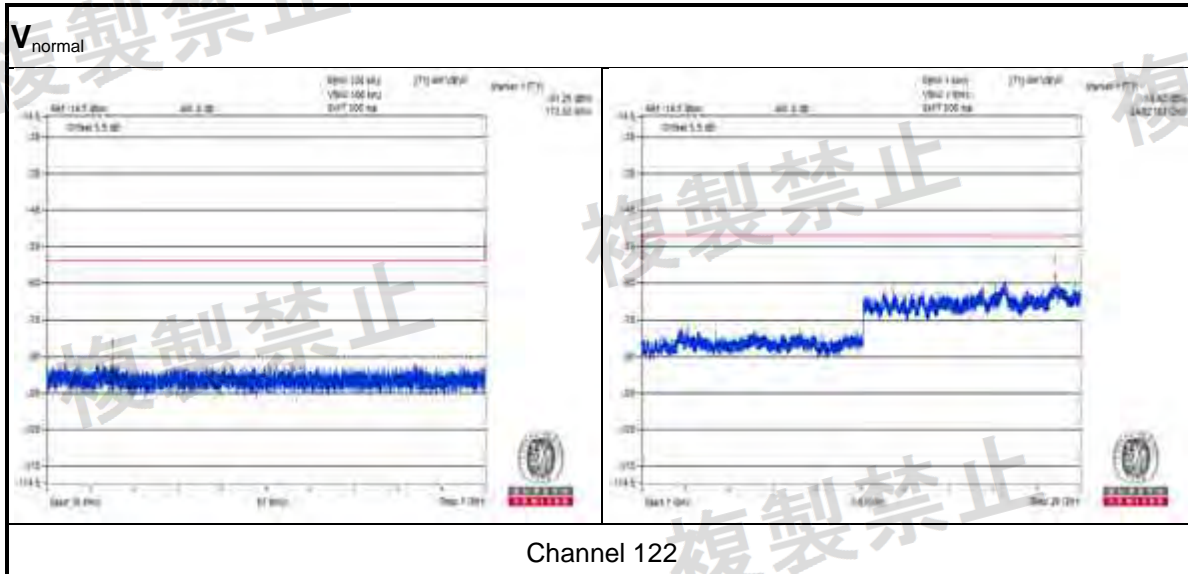
Channel 42



Channel 58

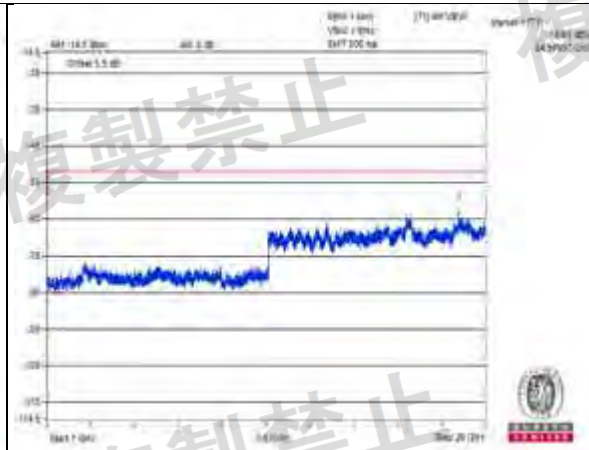
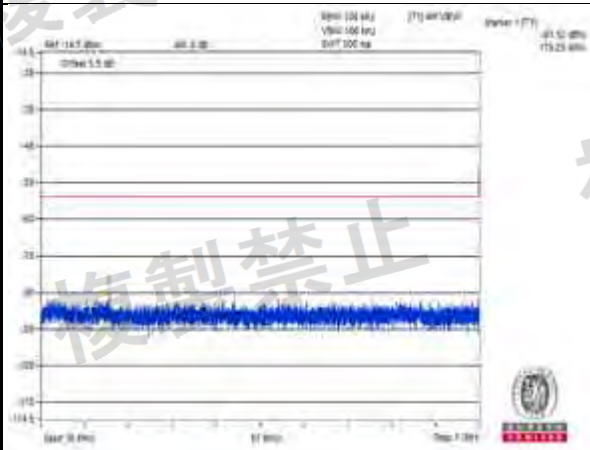


Channel 106

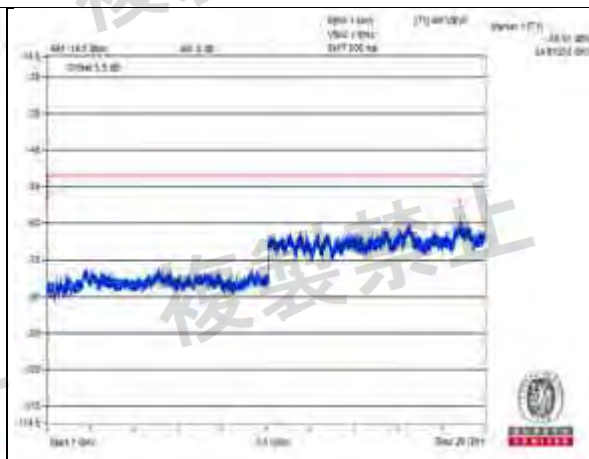
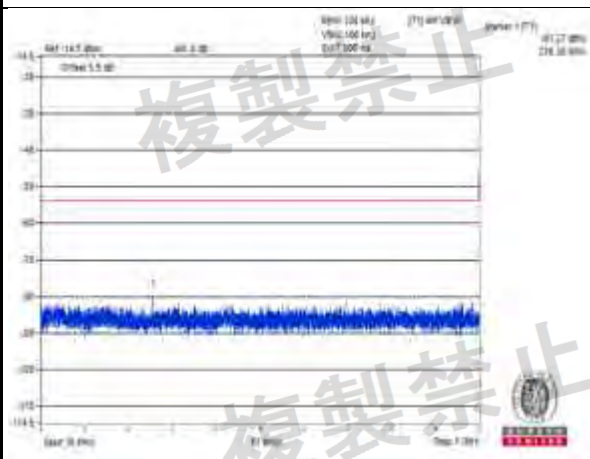




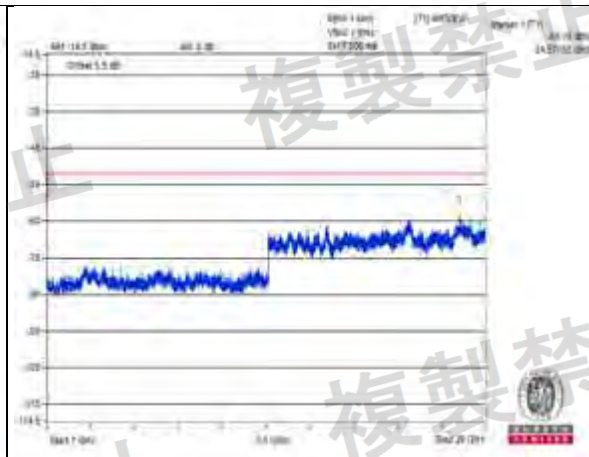
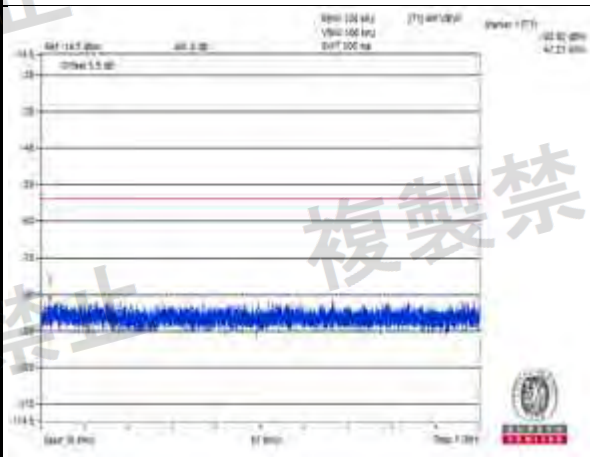
V<sub>max</sub>.



Channel 42

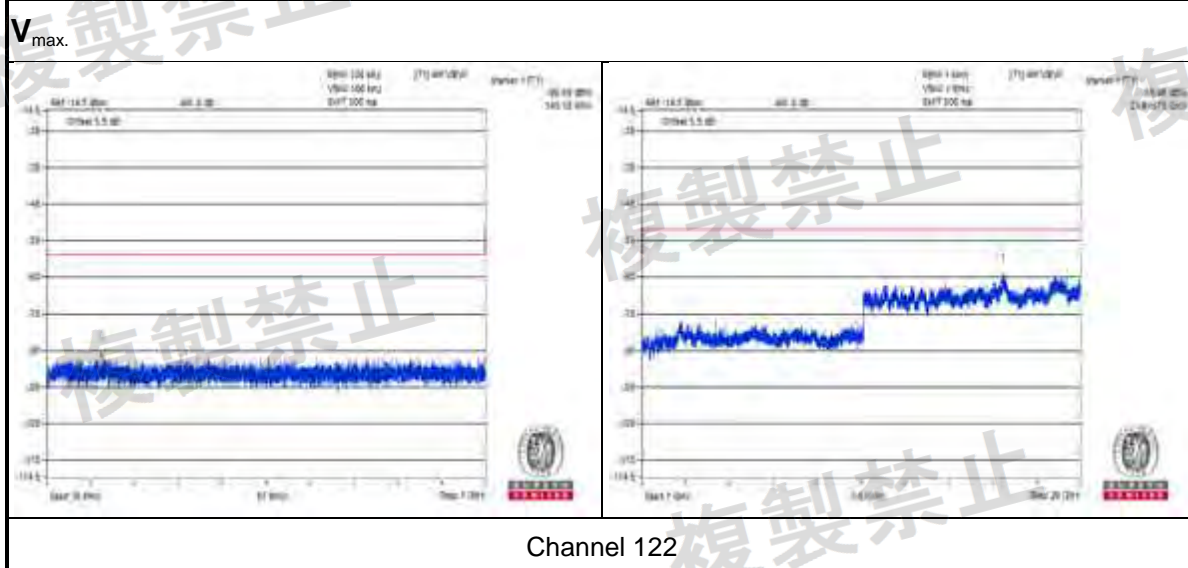


Channel 58

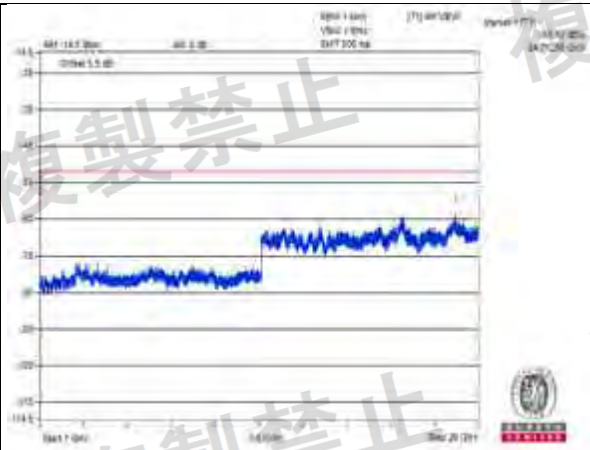
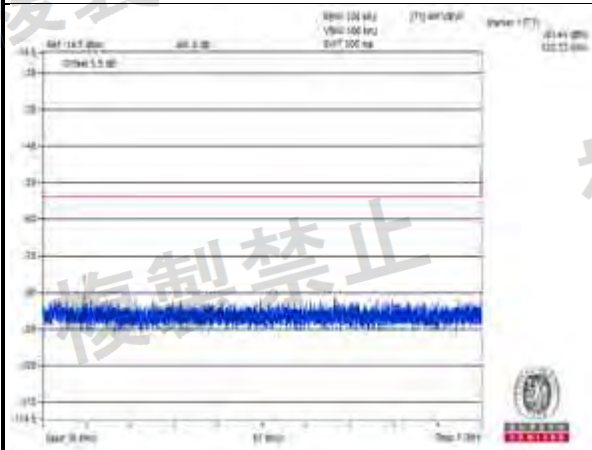


Channel 106

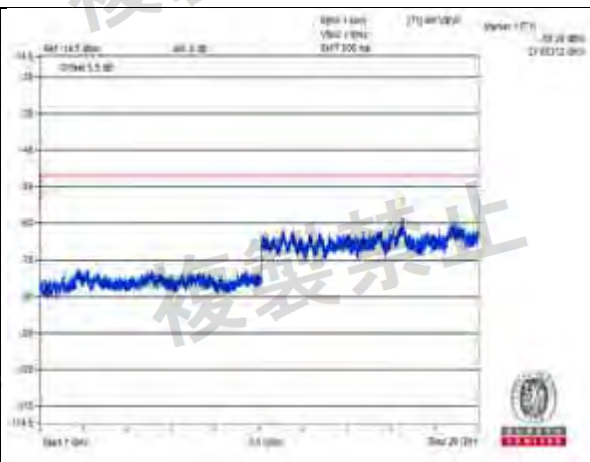
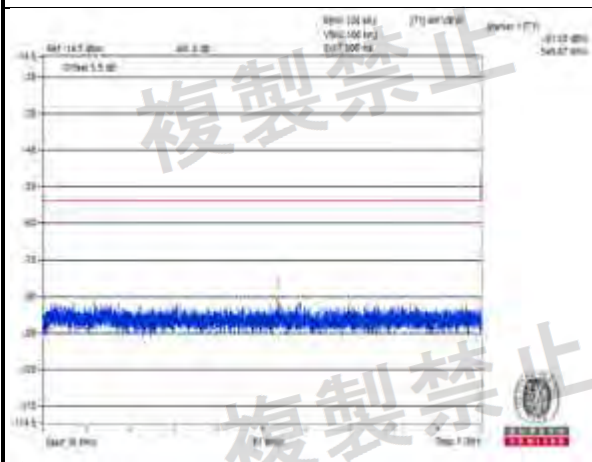




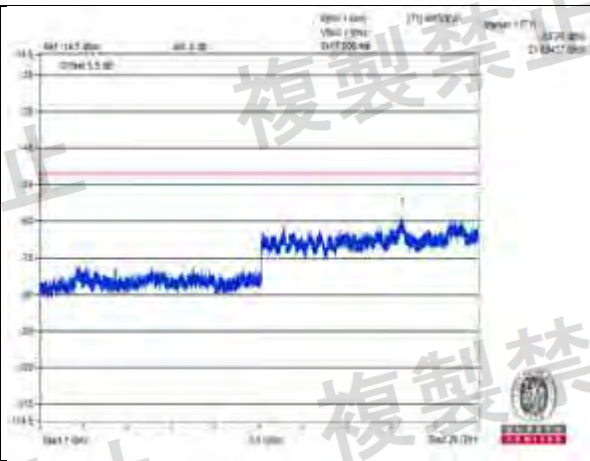
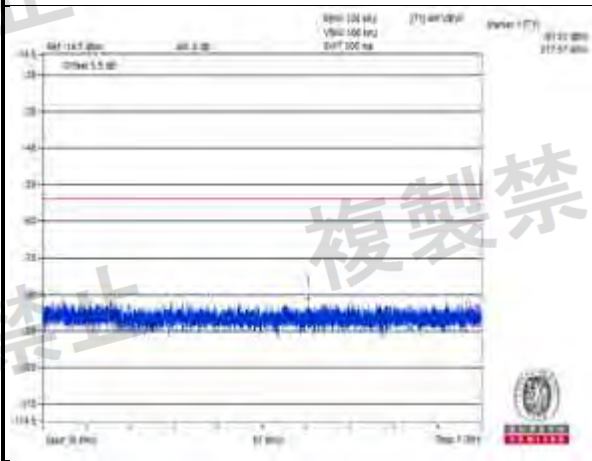
V<sub>min</sub>.



Channel 42



Channel 58



Channel 106

V<sub>min</sub>.



Channel 122

## 4.8 Burst Length

### 4.8.1 Limits of Burst Length

Frequencies (MHz)	Limit
Transmitter Operating	$\leq 4\text{ms}$

### 4.8.2 Test Setup





#### 4.8.3 Test Result

##### W52 & W53 bands: 802.11a

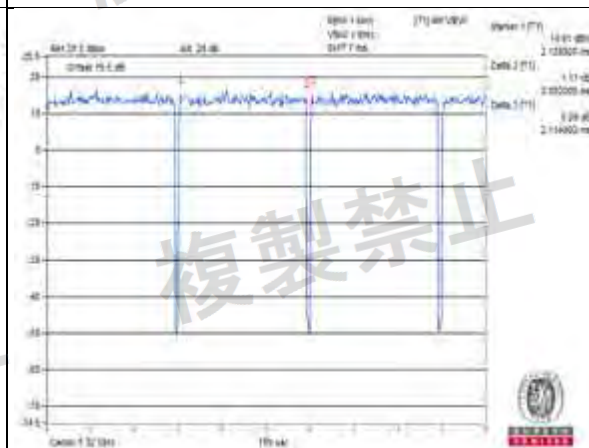
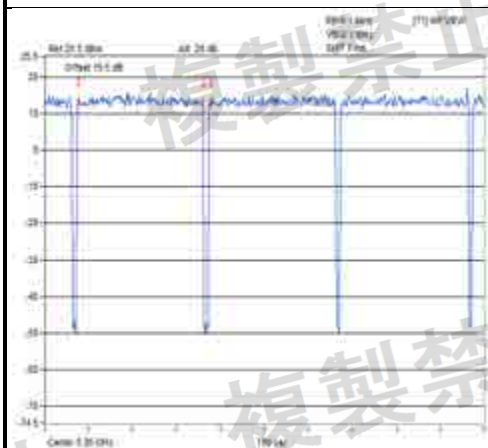
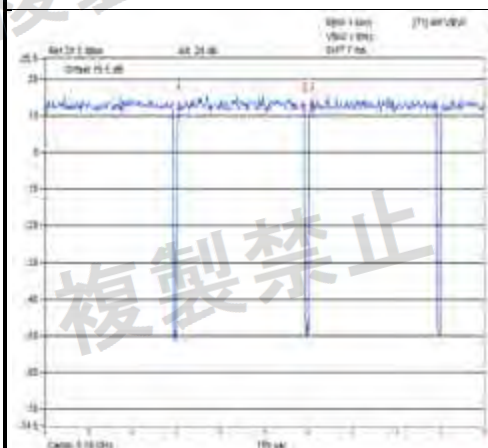
Environmental Conditions	25 deg.C, 60% RH			
Test Condition	Burst Length (ms)			
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz
$V_{normal}$	2.00	1.98	2.00	2.00
$V_{max.}$	1.98	1.98	1.98	1.96
$V_{min.}$	2.00	1.98	1.98	1.97

##### W56 band: 802.11a

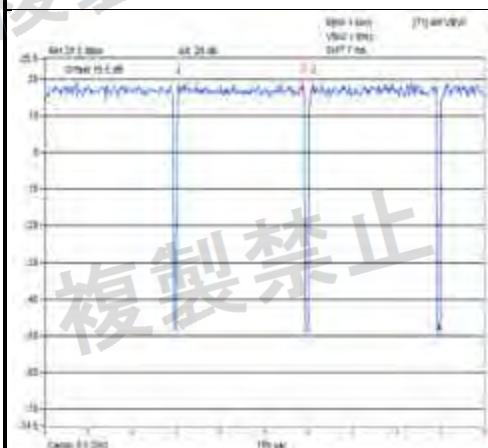
Environmental Conditions	25 deg.C, 60% RH		
Test Condition	Burst Length (ms)		
	CH 100 5500MHz	CH 120 5600MHz	CH140 5700MHz
$V_{normal}$	1.97	2.00	1.98
$V_{max.}$	2.00	2.00	1.98
$V_{min.}$	1.98	1.96	1.97

Note: The spectrum plots are attached on the following pages.

V<sub>normal</sub>



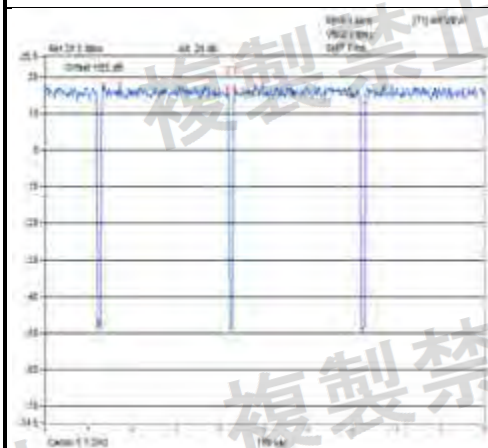
V<sub>normal</sub>



Channel 100

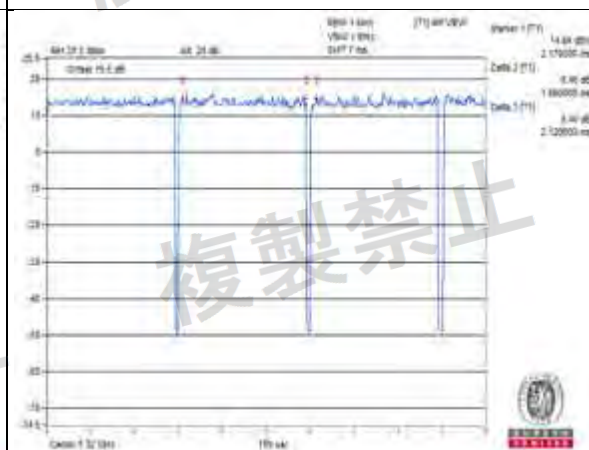


Channel 120



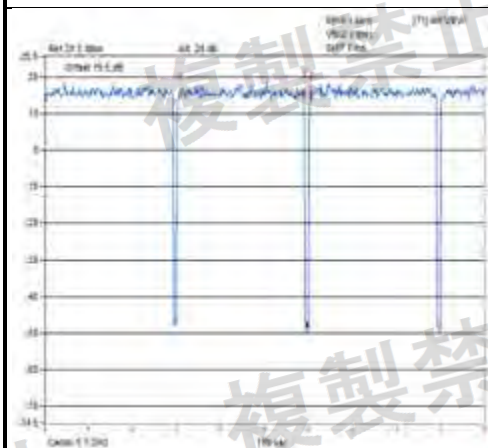
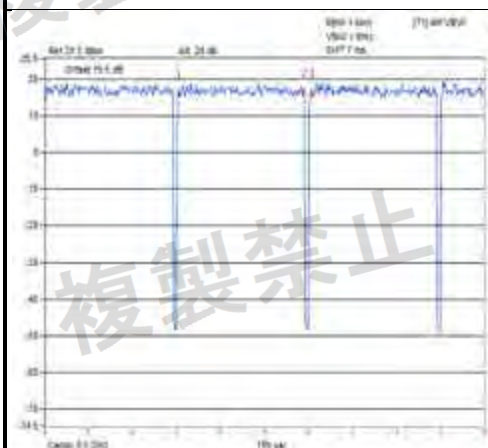
Channel 140

V<sub>max</sub>.





V<sub>max</sub>.



V<sub>min</sub>.



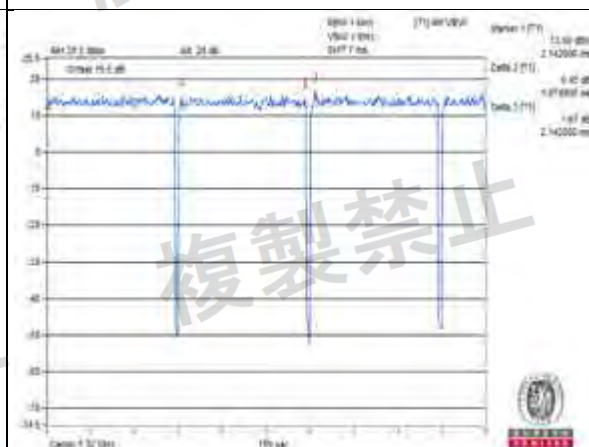
Channel 36



Channel 48

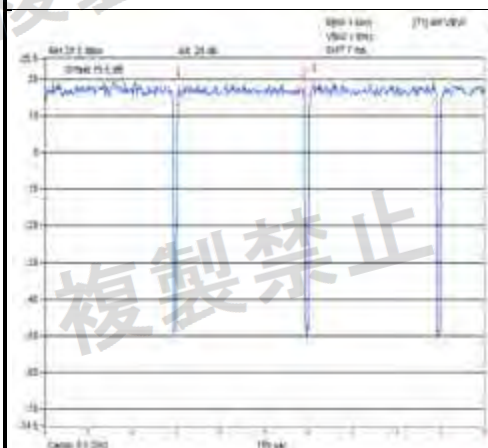


Channel 52



Channel 64

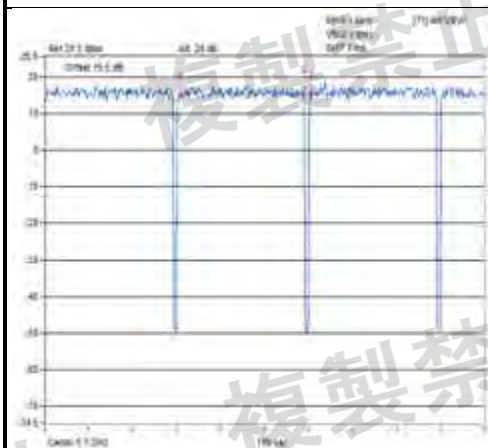
V<sub>min</sub>



Channel 100



Channel 120



Channel 140

### W52 & W53 bands: 802.11ac (VHT20)

Environmental Conditions	25 deg.C, 60% RH			
Test Condition	Burst Length (ms)			
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz
$V_{normal}$	3.28	3.28	3.30	3.28
$V_{max.}$	3.30	3.34	3.28	3.24
$V_{min.}$	3.30	3.32	3.30	3.30

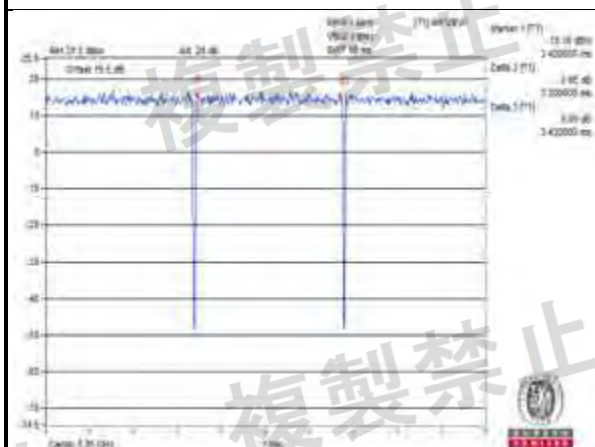
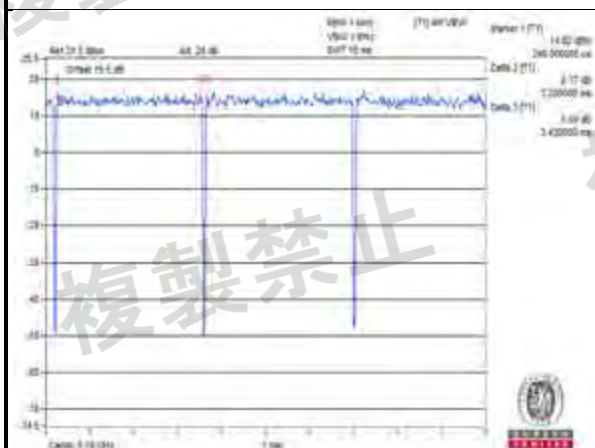
### W56 band: 802.11ac (VHT20)

Environmental Conditions	25 deg.C, 60% RH		
Test Condition	Burst Length (ms)		
	CH 100 5500MHz	CH 120 5600MHz	CH140 5700MHz
$V_{normal}$	3.32	3.32	3.30
$V_{max.}$	3.30	3.30	3.28
$V_{min.}$	3.30	3.28	3.26

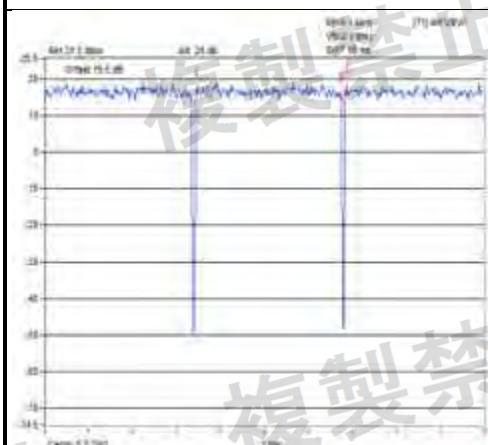
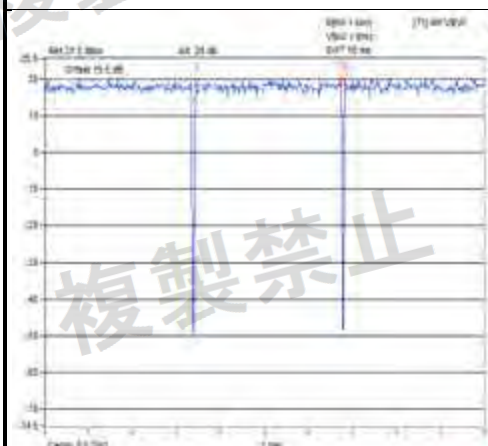
Note: The spectrum plots are attached on the following pages.



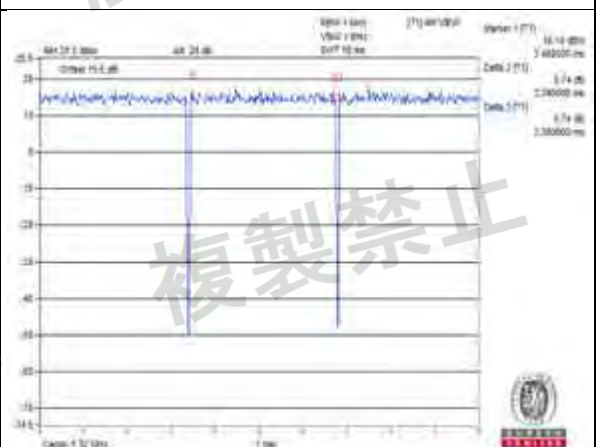
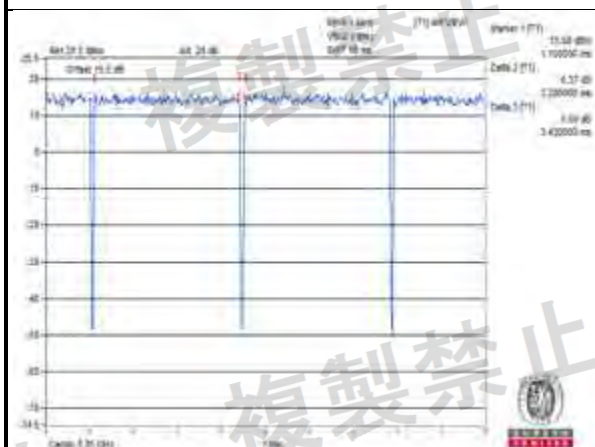
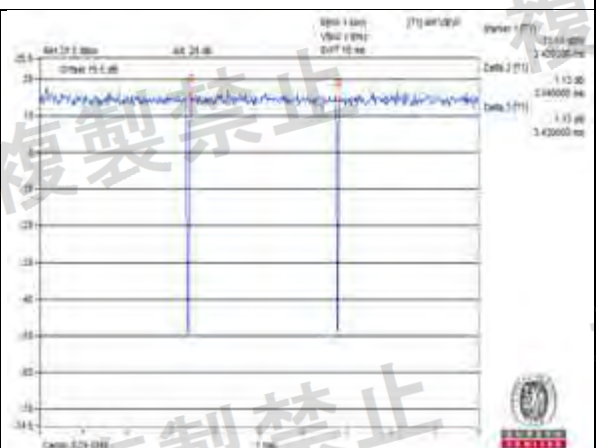
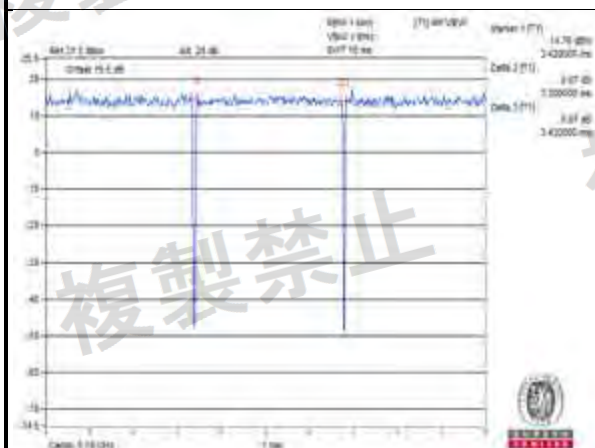
V<sub>normal</sub>



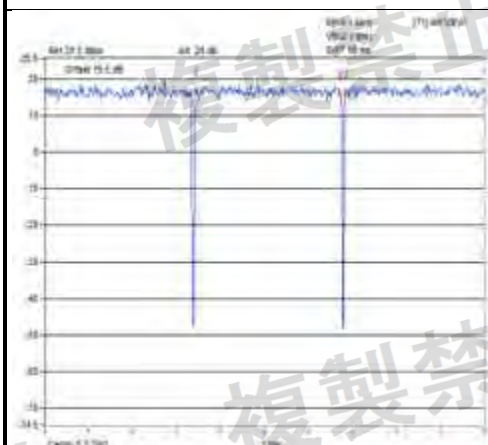
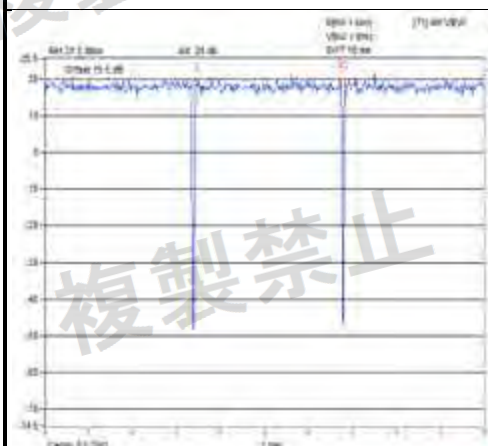
V<sub>normal</sub>



V<sub>max</sub>



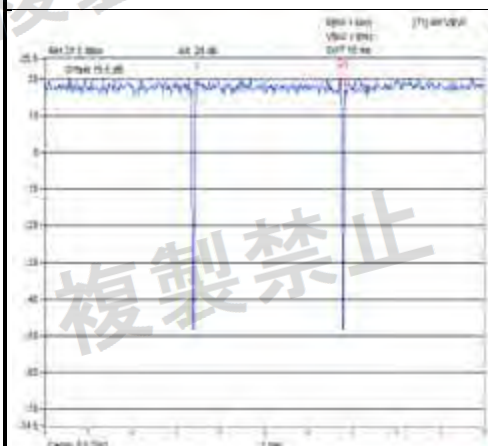
V<sub>max</sub>







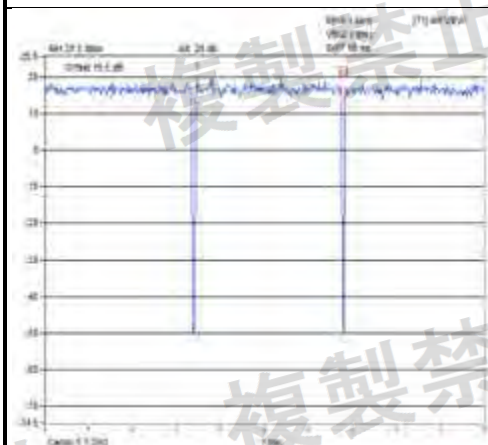
V<sub>min</sub>.



Channel 100



Channel 120



Channel 140

#### W52 & W53 bands: 802.11ac (VHT40)

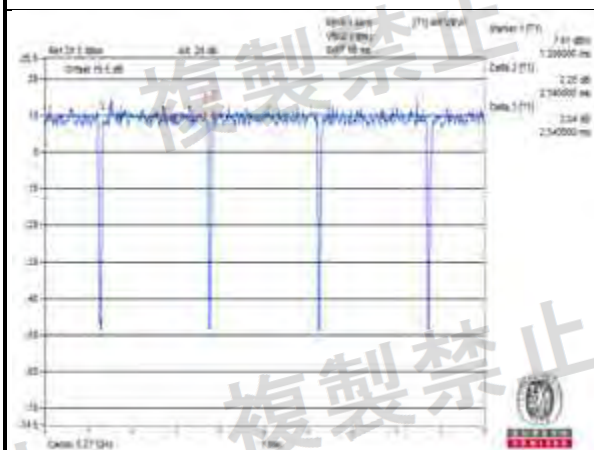
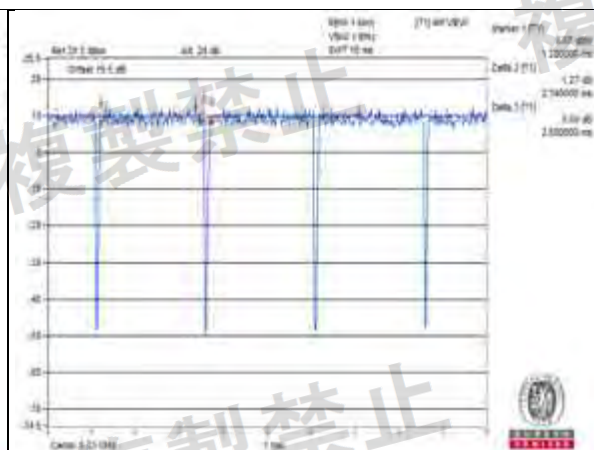
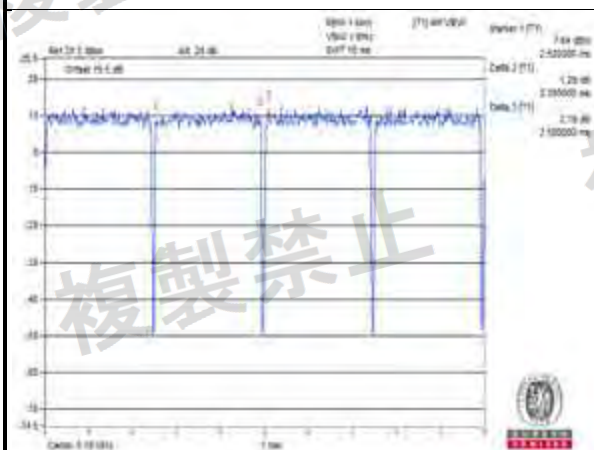
Environmental Conditions	25 deg.C, 60% RH			
Test Condition	Burst Length (ms)			
	CH 38 5190MHz	CH 46 5230MHz	CH 54 5270MHz	CH 62 5310MHz
$V_{normal}$	2.36	2.34	2.34	2.34
$V_{max.}$	2.26	2.34	2.38	2.36
$V_{min.}$	2.32	2.36	2.30	2.36

#### W56 band: 802.11ac (VHT40)

Environmental Conditions	25 deg.C, 60% RH		
Test Condition	Burst Length (ms)		
	CH 102 5510MHz	CH 118 5590MHz	CH 134 5670MHz
$V_{normal}$	2.38	2.32	2.38
$V_{max.}$	2.38	2.38	2.34
$V_{min.}$	2.36	2.32	2.38

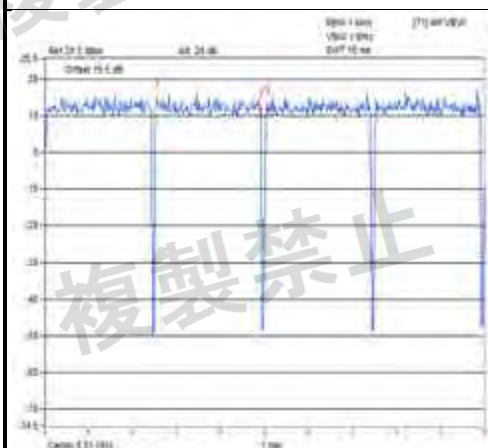
Note: The spectrum plots are attached on the following pages.

V<sub>normal</sub>

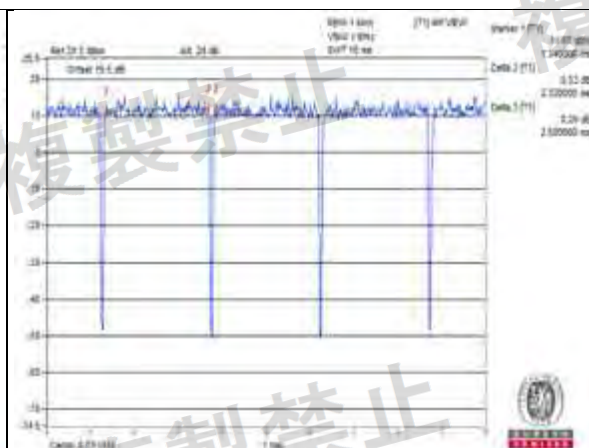




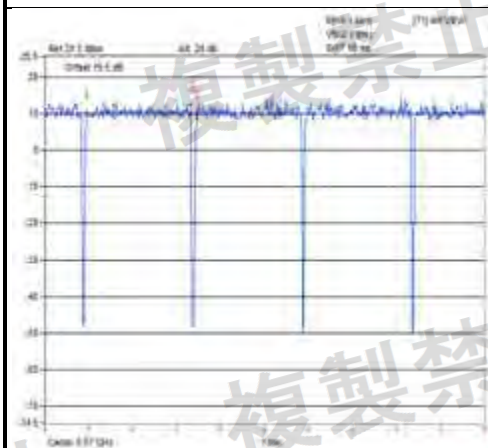
V<sub>normal</sub>



Channel 102

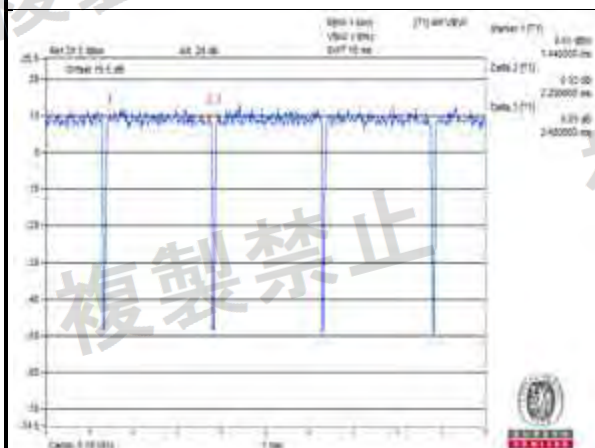


Channel 118



Channel 134

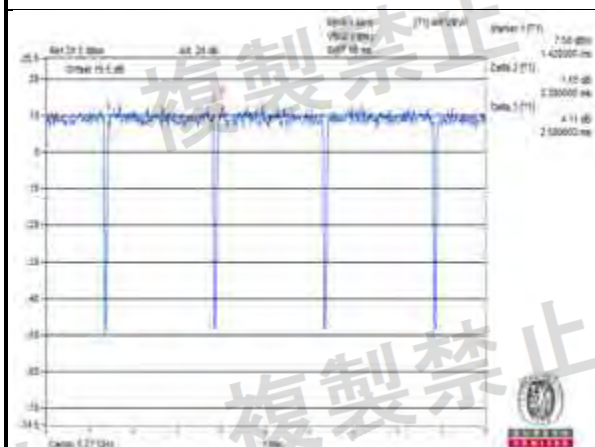
V<sub>max</sub>.



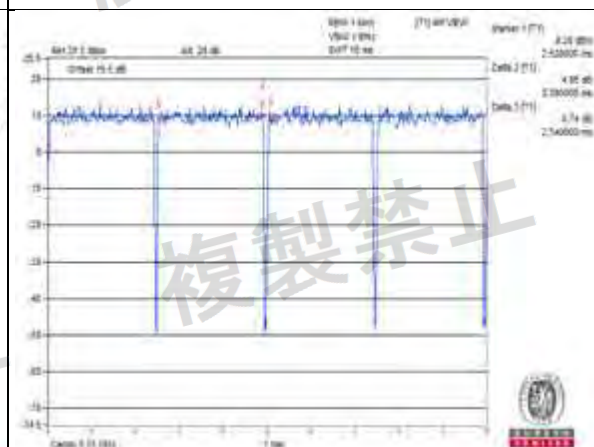
Channel 38



Channel 46

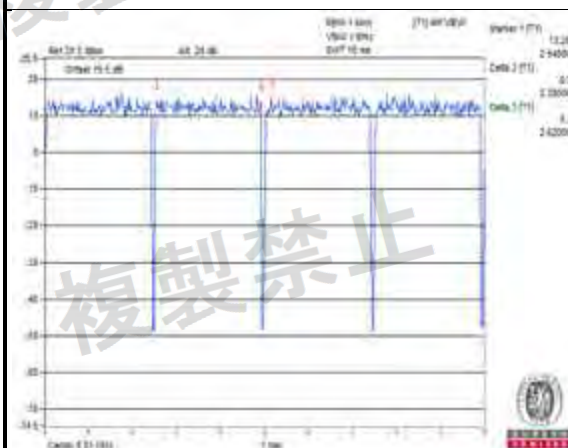


Channel 54

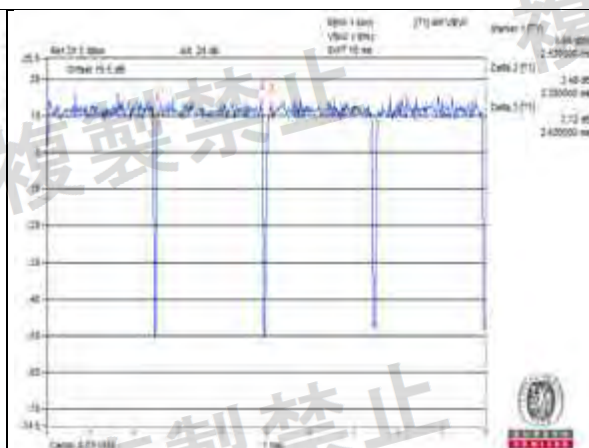


Channel 62

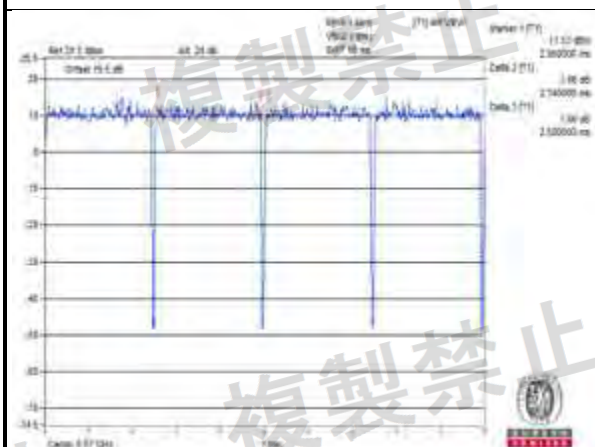
V<sub>max</sub>.



Channel 102



Channel 118

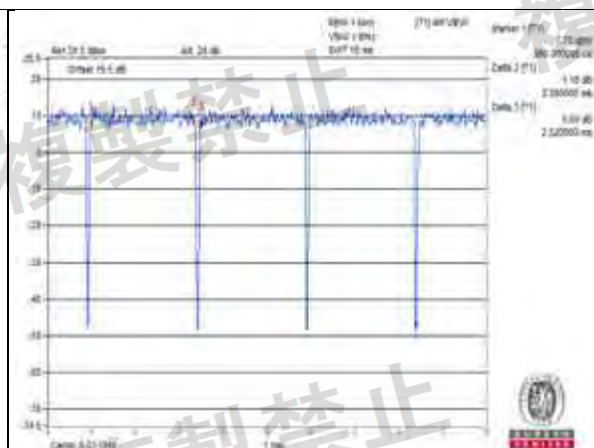


Channel 134

V<sub>min</sub>.



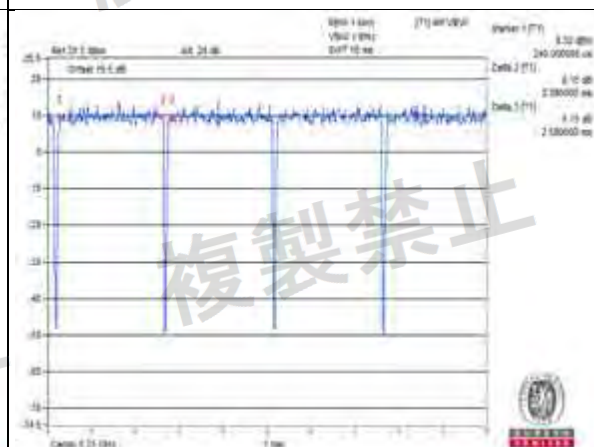
Channel 38



Channel 46

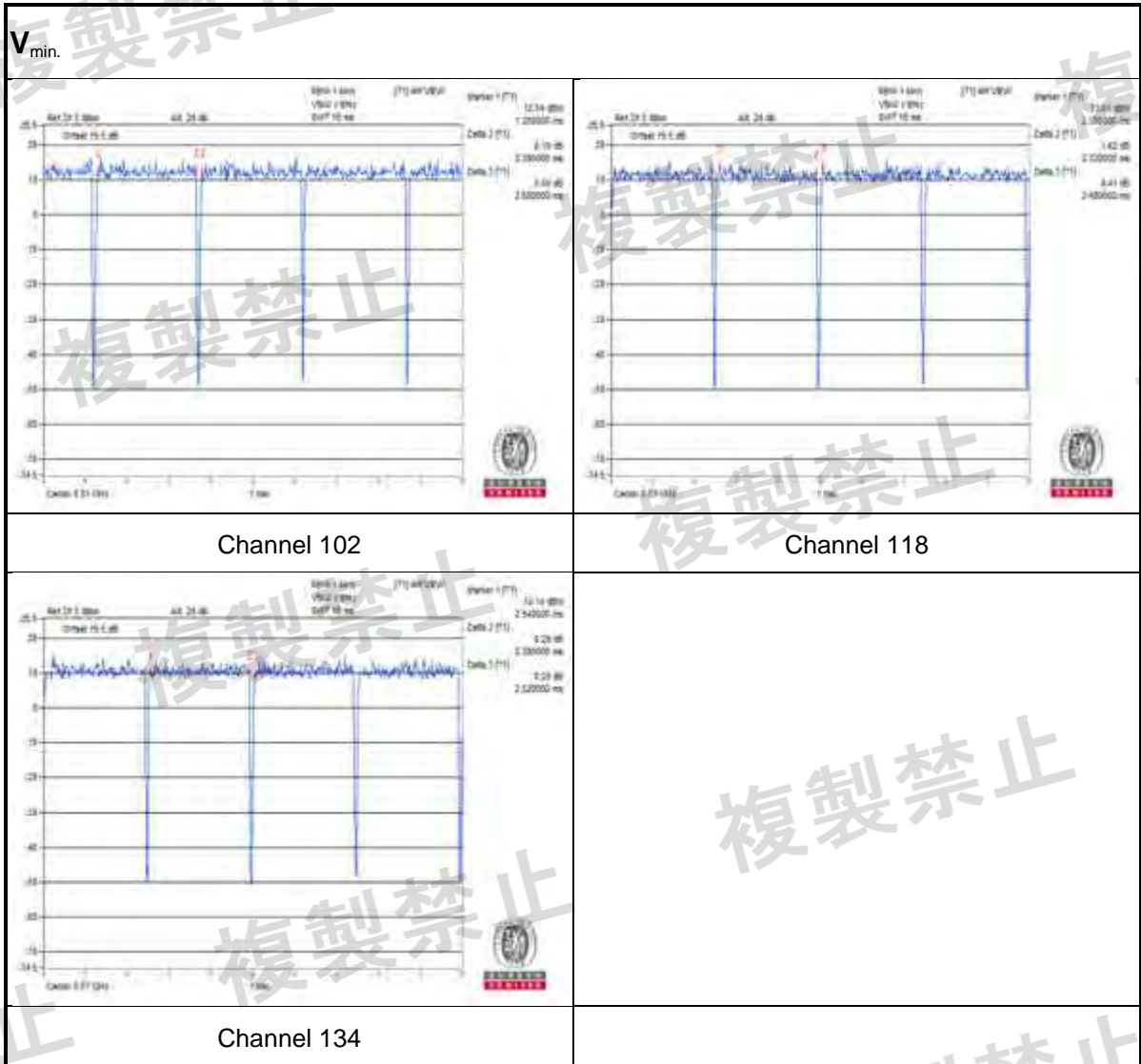


Channel 54



Channel 62





#### W52 & W53 bands: 802.11ac (VHT80)

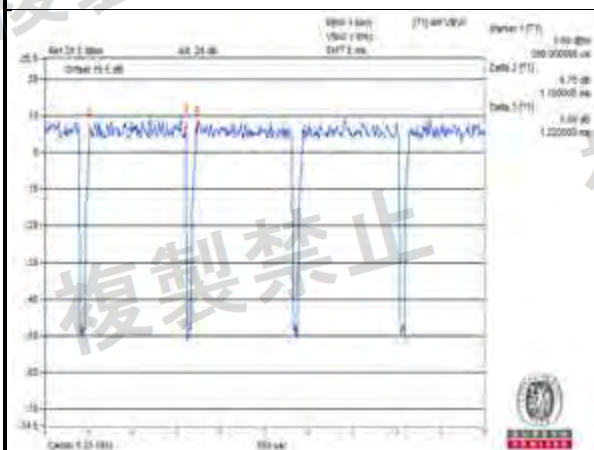
Environmental Conditions	25 deg.C, 60% RH	
Test Condition	Burst Length (ms)	
	CH 42 5210MHz	CH 58 5290MHz
$V_{normal}$	1.10	1.10
$V_{max.}$	1.12	1.10
$V_{min.}$	1.11	1.12

#### W56 band: 802.11ac (VHT80)

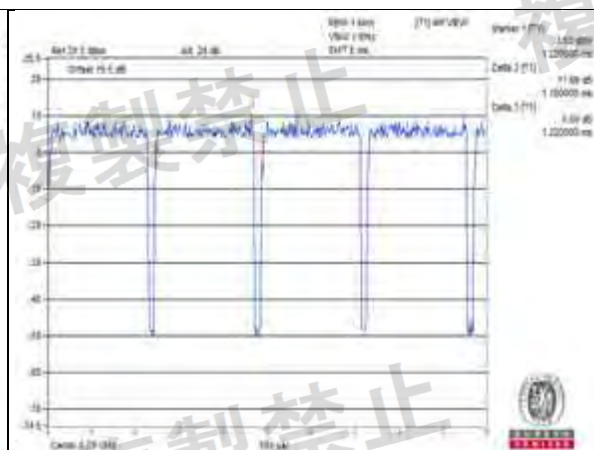
Environmental Conditions	25 deg.C, 60% RH	
Test Condition	Burst Length (ms)	
	CH 106 5530MHz	CH 122 5610MHz
$V_{normal}$	1.09	1.08
$V_{max.}$	1.08	1.10
$V_{min.}$	1.12	1.09

Note: The spectrum plots are attached on the following pages.

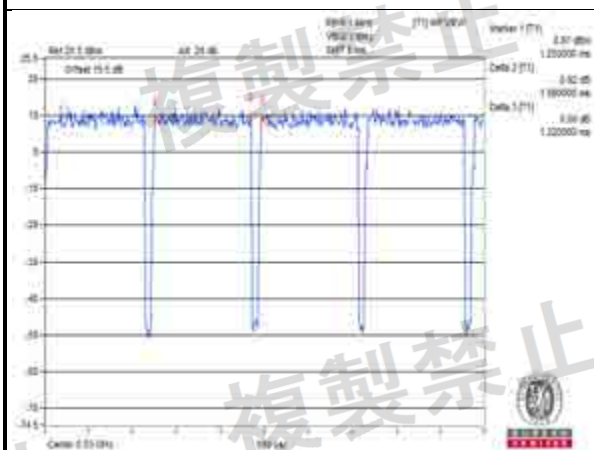
V<sub>normal</sub>



Channel 42



Channel 58

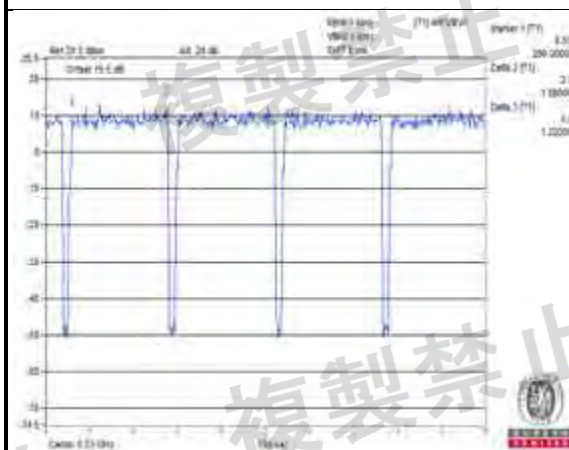
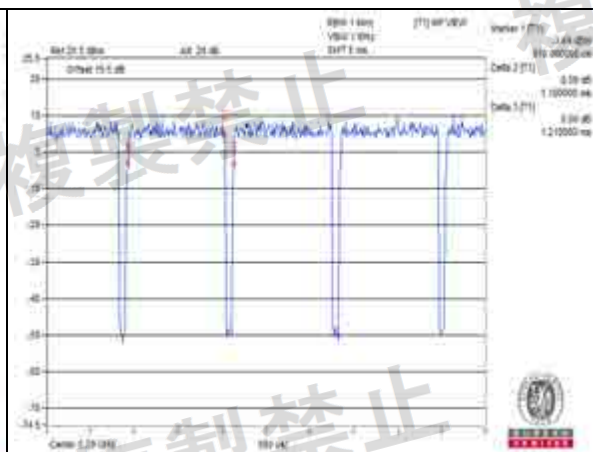
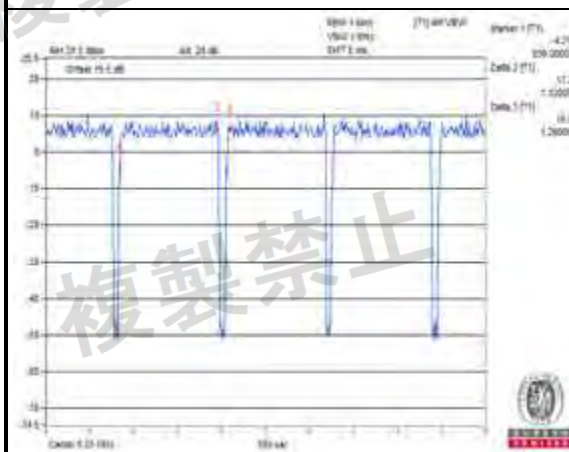


Channel 106



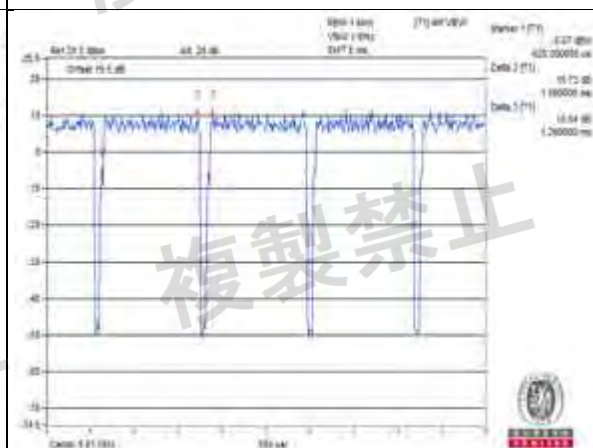
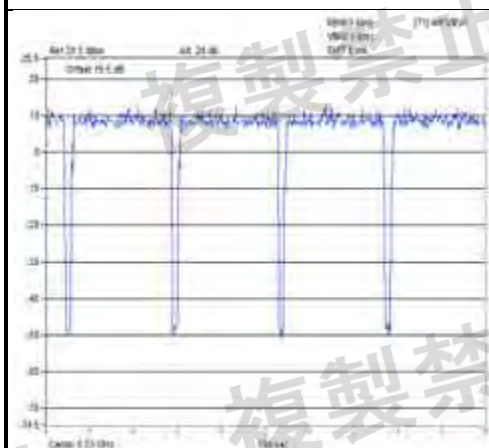
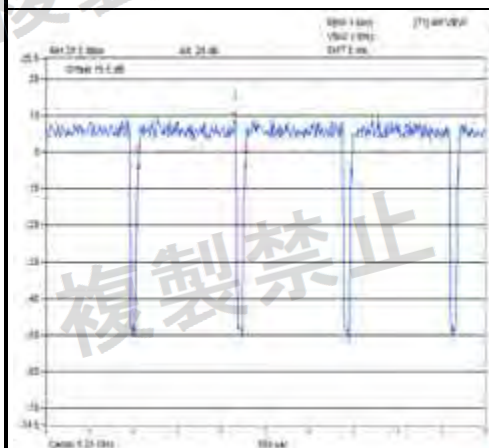
Channel 122

V<sub>max</sub>





V<sub>min</sub>.

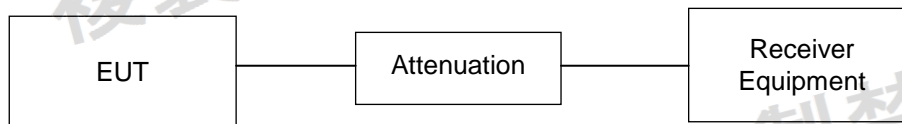


## 4.9 Interference Prevention Function

### 4.9.1 Limits of Interference Prevention Function

Radio equipment used mainly on the same premises and automatically transmits or receives identification code.

### 4.9.2 Test Setup

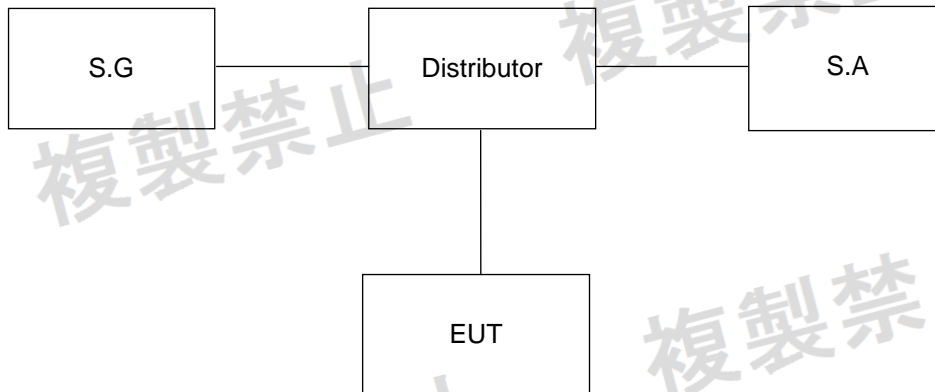


### 4.9.3 Test Results

Environmental Conditions	25 deg.C, 60% RH
Link Mode	Test Result
WiFi	Pass

#### 4.10 Carrier Sense Capability

##### 4.10.1 Measuring System Block Diagram



##### 4.10.2 Measuring Operation Procedures

- Turn the standard signal generator output OFF. Leave the equipment under test to be ready for transmission and verify the transmission with the spectrum analyzer.
- Set the equipment under test to the receiving state.
- Turn the standard signal generator ON and leave the equipment under test to be ready for transmission and verify with the spectrum analyzer that no transmission is being made.

#### 4.10.3 Level of the Ambient Carrier

##### 802.11a / 802.11ac (VHT20)

Frequency (MHz)	Pcs (dBm)
5180	-48.00
5240	-48.10
5260	-48.13
5320	-48.23
5500	-48.52
5600	-48.68
5700	-48.83

Note:

$Pcs (dBm) = 22.79 + Gr - 20\log(F)$ .

Gr: Antenna gain (5GHz 3.5dBi).

F: Transmission frequency (MHz).

##### 802.11ac (VHT40)

Frequency (MHz)	Pcs (dBm)
5190	-48.02
5230	-48.08
5270	-48.15
5310	-48.21
5510	-48.54
5590	-48.66
5670	-48.78

Note:

$Pcs (dBm) = 22.79 + Gr - 20\log(F)$ .

Gr: Antenna gain (5GHz 3.5dBi).

F: Transmission frequency (MHz).

##### 802.11ac (VHT80)

Frequency (MHz)	Pcs (dBm)
5210	-48.05
5290	-48.18
5530	-48.57
5610	-48.69

Note:

$Pcs (dBm) = 22.79 + Gr - 20\log(F)$ .

Gr: Antenna gain (5GHz 3.5dBi).

F: Transmission frequency (MHz).

#### 4.10.4 Test Result

Pass



#### 4.11. Number of Carriers within 1 MHz Bandwidth in OFDM

##### 4.11.1 Limit of Number of Carriers

For each 1MHz bandwidth in OFDM, there should be at least 1 carrier.

##### 4.11.2 Test Setup



##### 4.11.3 Test Result

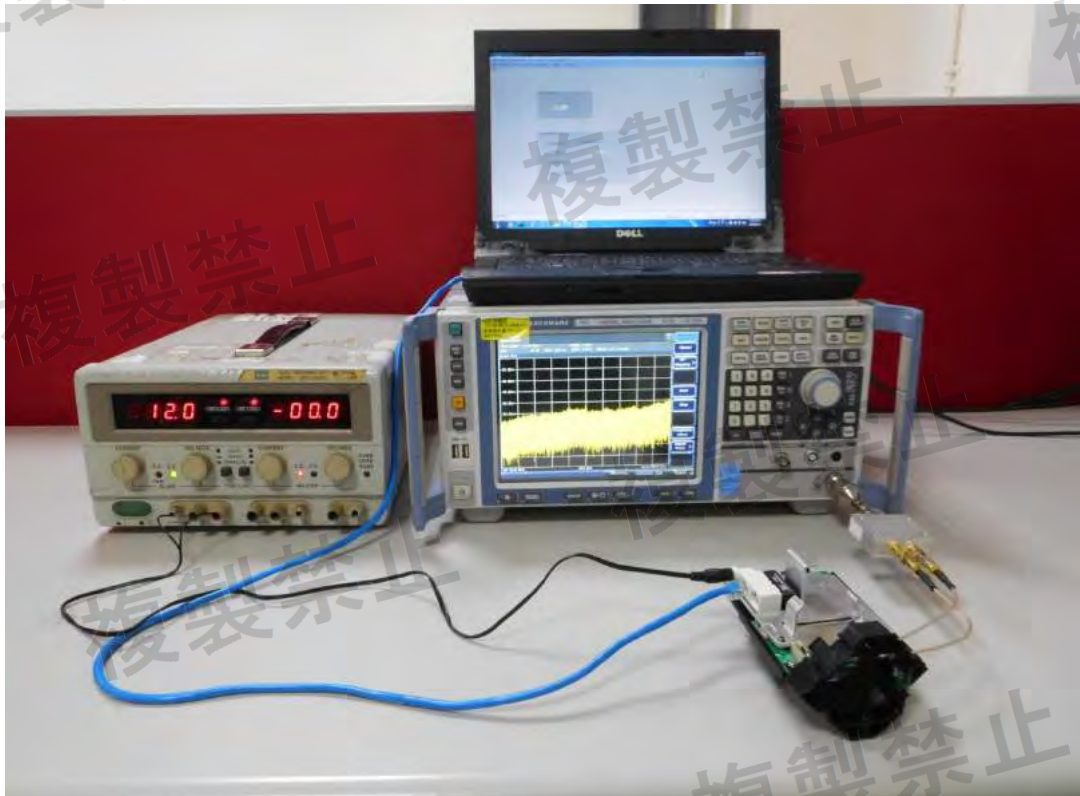
About OFDM Technical, one OFDM Channel will have 52 sub-carriers. At present, we observe this product via the spectrum, and we know that there are 3 carriers in 1 MHz bandwidth in OFDM.

## 5 Test Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority
Spectrum Analyzer R&S	FSV40	100964	July 01, 2017	June 30, 2018	ETC
ESG Vector signal generator Agilent	E4438C	MY47271330 506 602 UNJ	Oct. 11, 2017	Oct. 10, 2018	ETC
Detector Narda	4503A	0306	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019	ETC
Power Sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019	ETC
Digital Oscilloscope R&S	RTO1012	300053	June 28, 2017	June 27, 2018	ETC
DC Power Supply Topward	6603D	795558	NA	NA	NA
AC Power Source Extech Electronics	6205	1440452	NA	NA	NA
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019	ETC
Power Combiner Mini-circuits	ZFRSC-123-S+	F698501347_02	Dec. 27, 2017	Dec. 26, 2018	BV CPS E&E
Power Divide Warison	WDIV-4R4029	0001	Feb. 09, 2018	Feb. 08, 2019	BV CPS E&E

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. Tested Date: June 08, 2018

## 6 Photographs of the Test Configuration





## Appendix - Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

### Linkou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

### Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

### Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

Web Site: [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

--- END ---