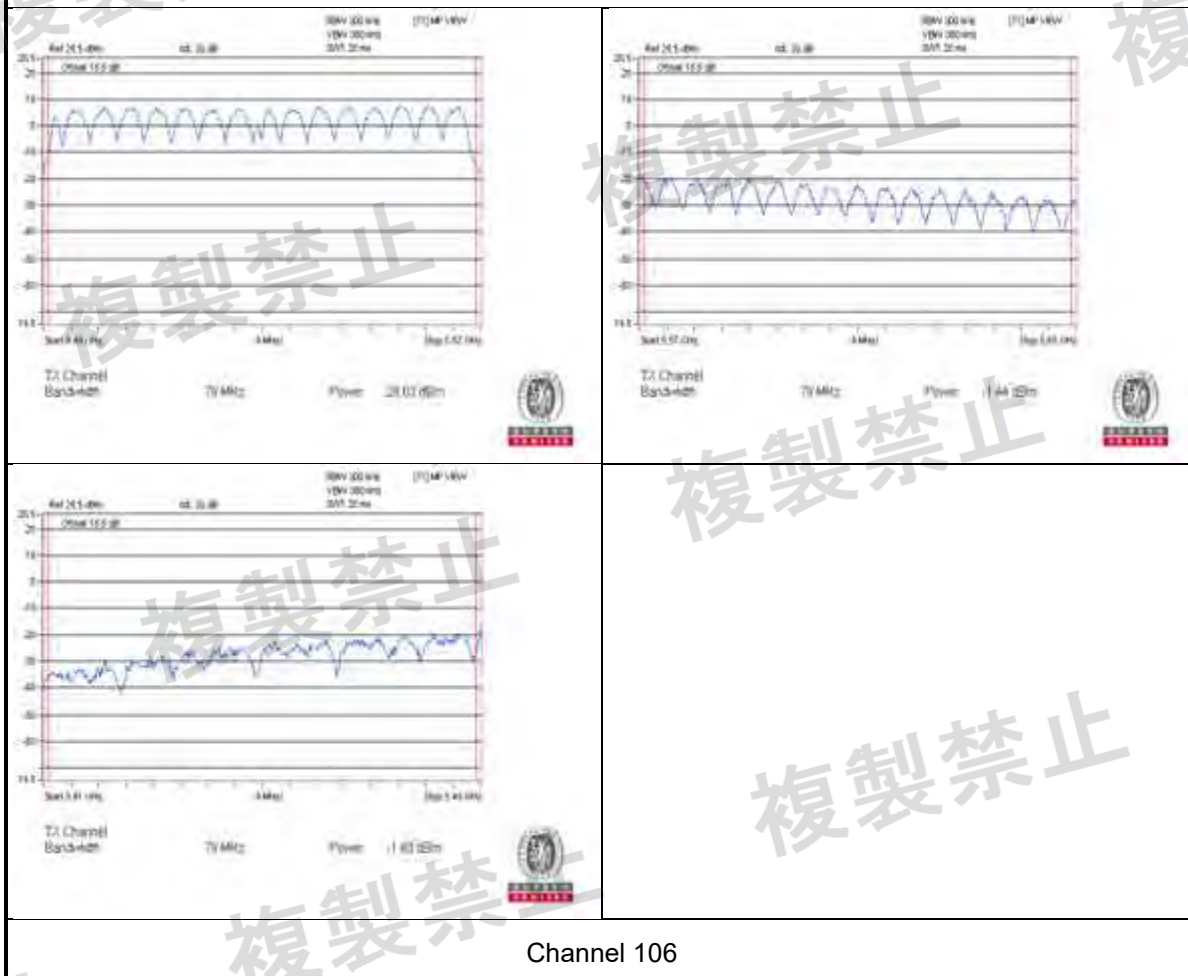
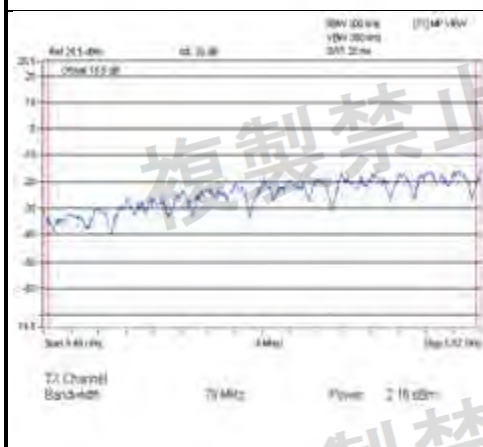
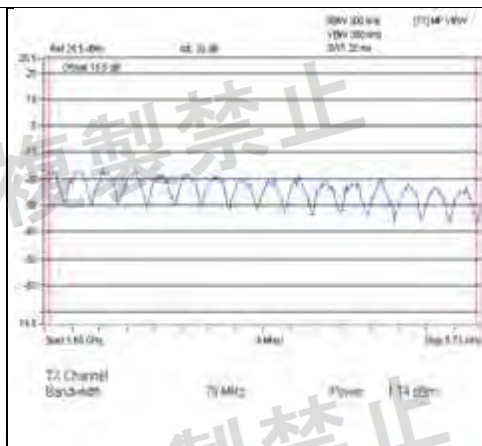
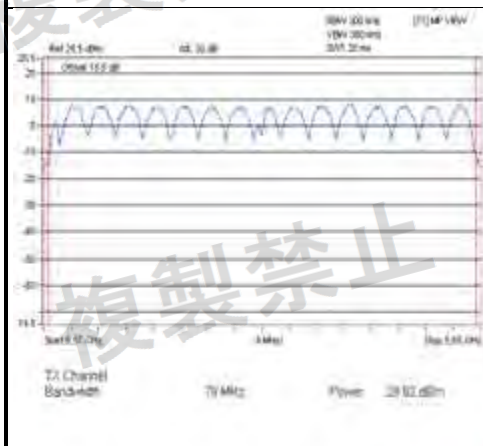


V<sub>min</sub>.



Channel 106

V<sub>min</sub>.



Channel 122

## 4.6 Antenna Power Measurement

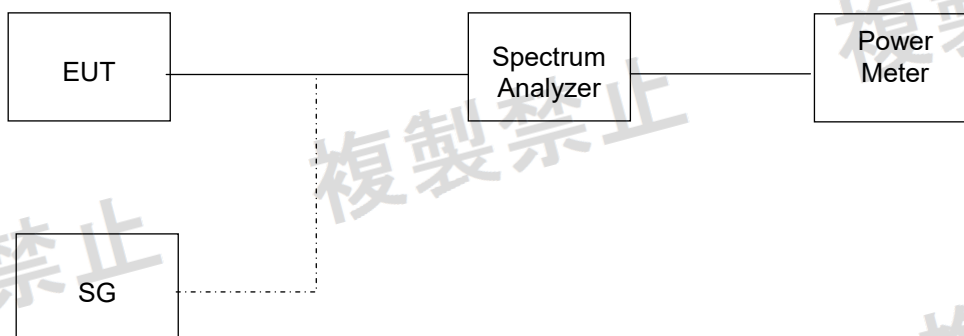
### 4.6.1 Limits of Antenna Power

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, 64% RH				
Test Condition	Conducted RF Output Power Density (mW/MHz)				
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	2.356	2.53	2.698	2.972	10
V <sub>+10%</sub>	2.27	2.438	2.589	2.945	10
V <sub>-10%</sub>	2.467	2.601	2.649	2.911	10
Rated Power	3				
Tolerance of Antenna Power	0.6 ~ 3.6				

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH				
Test Condition	Radiated RF Output Power Density (mW/MHz)				
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	7.73	8.301	8.852	9.751	10
V <sub>+10%</sub>	7.448	7.999	8.494	9.662	10
V <sub>-10%</sub>	8.094	8.534	8.691	9.551	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, 64% RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	CH 100 5500MHz	CH 120 5600MHz	CH 140 5700MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	5.225	5.31	5.599	10
V <sub>+10%</sub>	5.071	5.273	5.664	10
V <sub>-10%</sub>	5.298	5.421	5.446	10
Rated Power	6			
Tolerance of Antenna Power	3 ~ 9			

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	CH 100 5500MHz	CH 120 5600MHz	CH 140 5700MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	17.143	17.422	18.37	50
V <sub>+10%</sub>	16.638	17.3	18.583	50
V <sub>-10%</sub>	17.382	17.786	17.868	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, 64% RH				
Test Condition	Conducted RF Output Power Density (mW/MHz)				
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	2.761	2.613	2.774	2.852	10
V <sub>+10%</sub>	2.78	2.583	2.806	2.965	10
V <sub>-10%</sub>	2.655	2.565	2.806	2.938	10
Rated Power	3				
Tolerance of Antenna Power	0.6 ~ 3.6				

# PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH				
Test Condition	Radiated RF Output Power Density (mW/MHz)				
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	9.059	8.573	9.101	9.357	10
V <sub>+10%</sub>	9.121	8.475	9.206	9.728	10
V <sub>-10%</sub>	8.711	8.416	9.206	9.639	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, 64% RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	CH 100 5500MHz	CH 120 5600MHz	CH 140 5700MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	4.944	5.742	5.286	10
V <sub>+10%</sub>	4.967	5.836	5.273	10
V <sub>-10%</sub>	5.142	5.742	5.213	10
Rated Power	6			
Tolerance of Antenna Power	3 ~ 9			

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	CH 100 5500MHz	CH 120 5600MHz	CH 140 5700MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	16.221	18.839	17.343	50
V <sub>+10%</sub>	16.296	19.178	18.839	50
V <sub>-10%</sub>	17.343	17.3	17.104	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 + Antenna Gain.



W52 and W53 bands: 802.11ac (VHT40)

Environmental Conditions	25 deg.C, 64% RH				
Test Condition	Conducted RF Output Power Density (mW/MHz)				
	CH 38 5190MHz	CH 46 5230MHz	CH 54 5270MHz	CH 62 5310MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	1.343	1.462	1.49	1.387	5
V <sub>+10%</sub>	1.316	1.446	1.486	1.406	5
V <sub>-10%</sub>	1.289	1.462	1.456	1.387	5
Rated Power	1.5				
Tolerance of Antenna Power	0.3 ~ 1.8				

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH				
Test Condition	Radiated RF Output Power Density (mW/MHz)				
	CH 38 5190MHz	CH 46 5230MHz	CH 54 5270MHz	CH 62 5310MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	4.406	4.797	4.889	4.551	5
V <sub>+10%</sub>	4.318	4.744	4.875	4.613	5
V <sub>-10%</sub>	4.229	4.797	4.777	4.551	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, 64% RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	CH 102 5510MHz	CH 118 5590MHz	CH 134 5670MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	2.153	2.736	2.472	5
V <sub>+10%</sub>	2.075	2.8	2.366	5
V <sub>-10%</sub>	2.208	2.761	2.405	5
Rated Power	3			
Tolerance of Antenna Power	1.5 ~ 4.5			

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	CH 102 5510MHz	CH 118 5590MHz	CH 134 5670MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	7.064	8.977	8.111	25
V <sub>+10%</sub>	6.808	9.187	7.763	25
V <sub>-10%</sub>	7.244	9.059	7.891	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 + Antenna Gain.

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

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Conducted RF Output Power Density (mW/MHz)		
	CH 42 5210MHz	CH 58 5290MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	0.697	0.662	2.5
V <sub>+10%</sub>	0.672	0.644	2.5
V <sub>-10%</sub>	0.686	0.673	2.5
Rated Power	0.7		
Tolerance of Antenna Power	0.14 ~ 0.84		

### PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Radiated RF Output Power Density (mW/MHz)		
	CH 42 5210MHz	CH 58 5290MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	2.287	2.172	2.5
V <sub>+10%</sub>	2.205	2.113	2.5
V <sub>-10%</sub>	2.251	2.208	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, 64% RH		
Test Condition	Conducted RF Output Power Density (mW/MHz)		
	CH 106 5530MHz	CH 122 5610MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	1.117	1.49	2.5
V <sub>+10%</sub>	1.143	1.49	2.5
V <sub>-10%</sub>	1.107	1.449	2.5
Rated Power	1.5		
Tolerance of Antenna Power	0.75 ~ 2.25		

PIFA antenna with antenna gain: 5.16dBi

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Radiated RF Output Power Density (mW/MHz)		
	CH 106 5530MHz	CH 122 5610MHz	Max. Limit (mW/MHz)
V <sub>normal</sub>	3.665	4.889	12.5
V <sub>+10%</sub>	3.75	4.889	12.5
V <sub>-10%</sub>	3.632	4.754	12.5

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

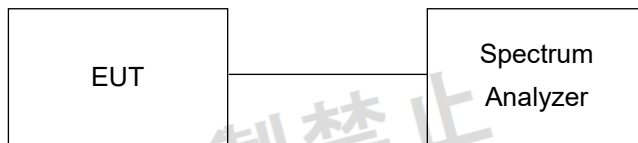
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.

#### 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

##### Spurious Emissions for Receiver

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

Environmental Conditions		25 deg.C, 64% 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	519.850	0.005662nW	341.240	<b>0.006637nW</b>	4nW/100kHz	PASS
	Above 1GHz	24731.250	1.406048nW	24859.370	1.682674nW	20nW/MHz	PASS
$V_{+10\%}$	Below 1GHz	947.370	<b>0.006194nW</b>	760.650	0.005848nW	4nW/100kHz	PASS
	Above 1GHz	24821.870	1.548817nW	21921.870	<b>1.774189nW</b>	20nW/MHz	PASS
$V_{-10\%}$	Below 1GHz	828.670	0.006026nW	370.950	0.005916nW	4nW/100kHz	PASS
	Above 1GHz	24965.620	<b>1.64059nW</b>	24834.370	1.706082nW	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	841.640	0.006053nW	301.230	<b>0.007031nW</b>	4nW/100kHz	PASS
	Above 1GHz	24925.000	<b>1.475707nW</b>	24868.750	1.545254nW	20nW/MHz	PASS
$V_{+10\%}$	Below 1GHz	862.620	<b>0.006209nW</b>	202.290	0.00631nW	4nW/100kHz	PASS
	Above 1GHz	24850.000	1.327394nW	25081.250	<b>1.625549nW</b>	20nW/MHz	PASS
$V_{-10\%}$	Below 1GHz	605.570	0.005585nW	866.260	0.006442nW	4nW/100kHz	PASS
	Above 1GHz	24903.120	1.415794nW	21878.120	1.415794nW	20nW/MHz	PASS

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

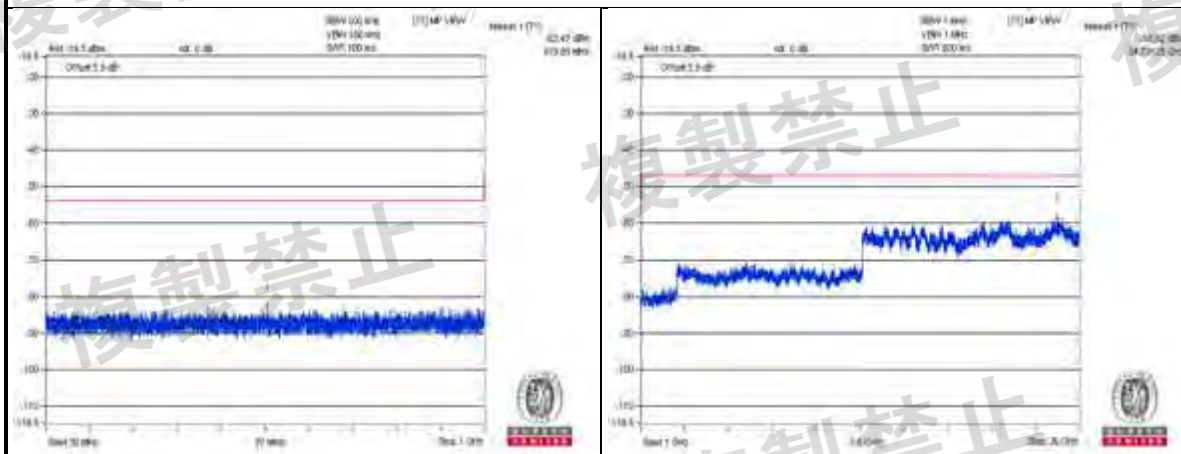


W56 band: 802.11a / 802.11ac (VHT20)

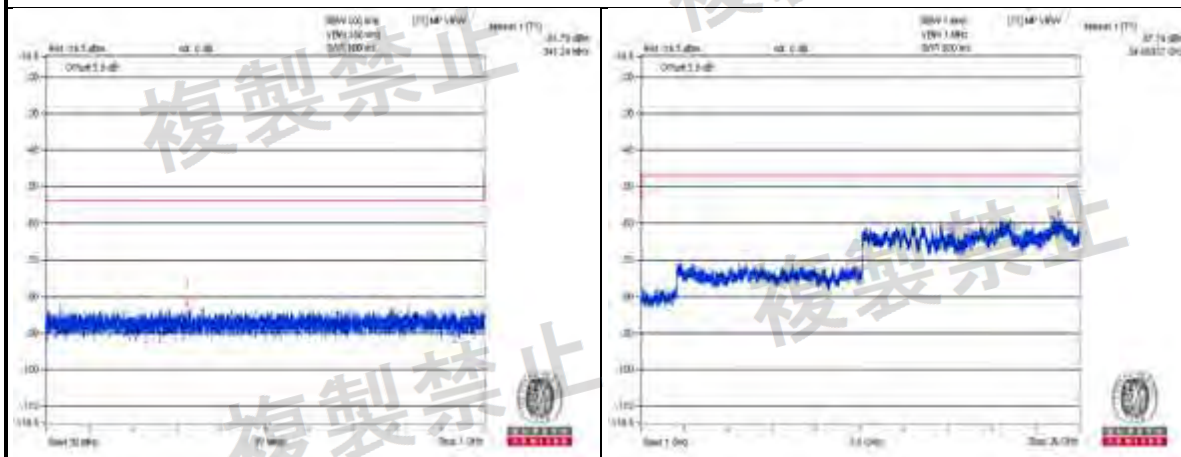
Environmental Conditions		25 deg.C, 64% RH					
Test Channel		CH100 (5500MHz)		CH120 (5600MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
V <sub>normal</sub>	Below 1GHz	926.280	0.006792nW	942.770	0.006442nW	4nW/100kHz	PASS
	Above 1GHz	25003.120	1.399587nW	24946.870	1.499685nW	20nW/MHz	PASS
V <sub>+10%</sub>	Below 1GHz	817.030	0.005728nW	124.330	0.006368nW	4nW/100kHz	PASS
	Above 1GHz	24965.620	1.475707nW	24503.120	1.442115nW	20nW/MHz	PASS
V <sub>-10%</sub>	Below 1GHz	869.530	0.00618nW	662.070	0.007031nW	4nW/100kHz	PASS
	Above 1GHz	21993.750	1.503142nW	24581.250	1.412538nW	20nW/MHz	PASS
Test Channel		CH140 (5700MHz)				Limit	Result
Test Condition	Frequency Range	Frequency (MHz)		Measured Value (nW)			
V <sub>normal</sub>	Below 1GHz	274.800		0.006839nW		4nW/100kHz	PASS
	Above 1GHz	21540.620		1.452112nW		20nW/MHz	PASS
V <sub>+10%</sub>	Below 1GHz	414.720		0.006266nW		4nW/100kHz	PASS
	Above 1GHz	24975.000		1.489361nW		20nW/MHz	PASS
V <sub>-10%</sub>	Below 1GHz	670.800		0.005284nW		4nW/100kHz	PASS
	Above 1GHz	24734.370		1.455459nW		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.

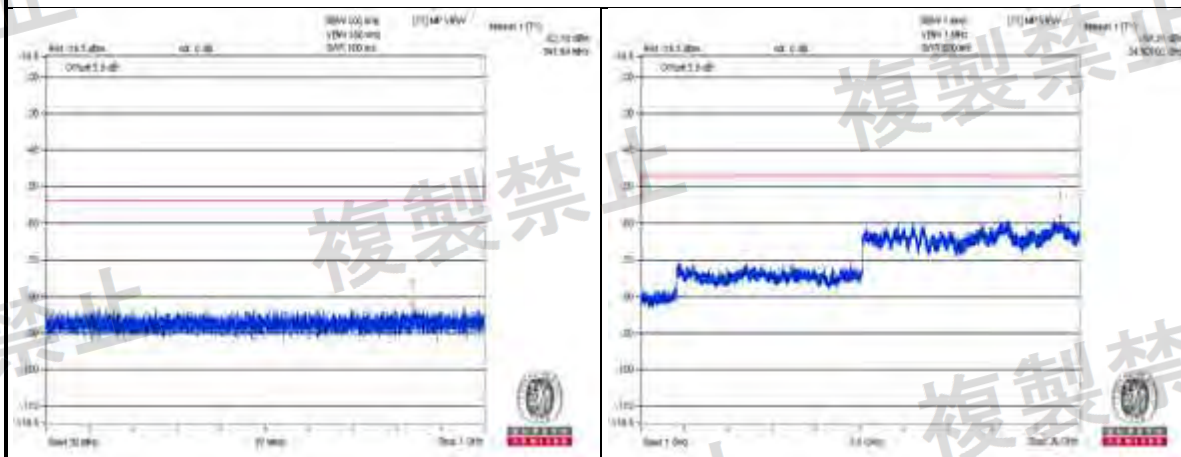
### Vnormal



### Channel 36

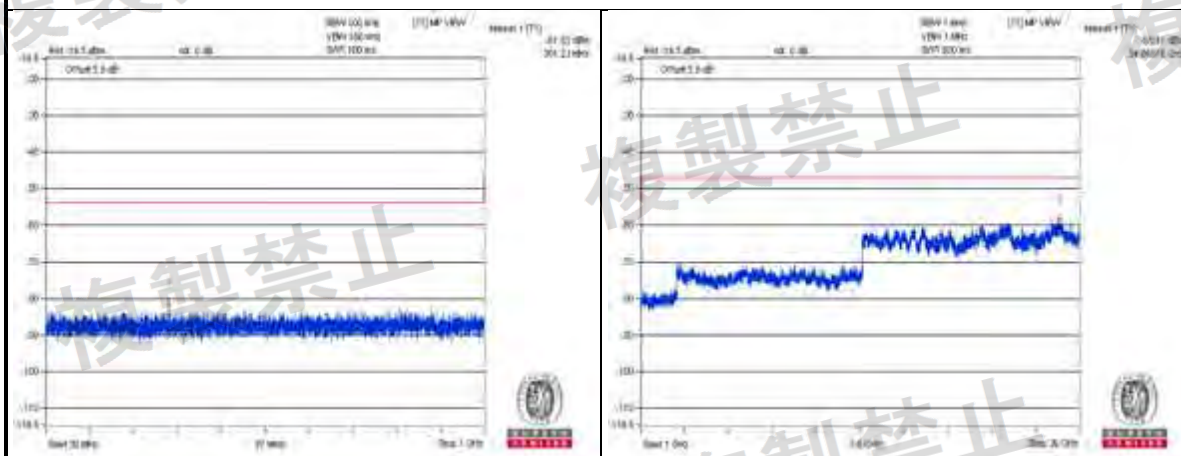


### Channel 48

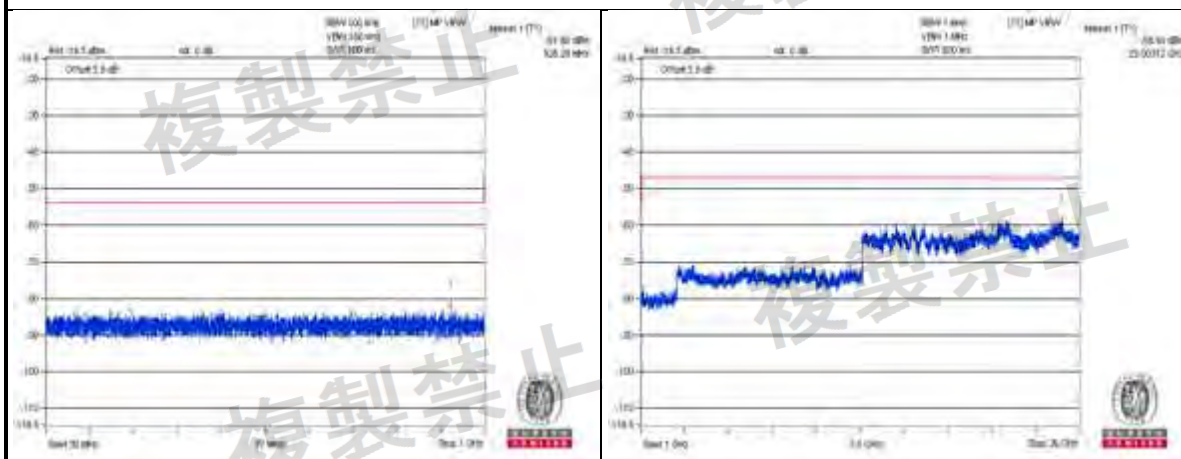


### Channel 52

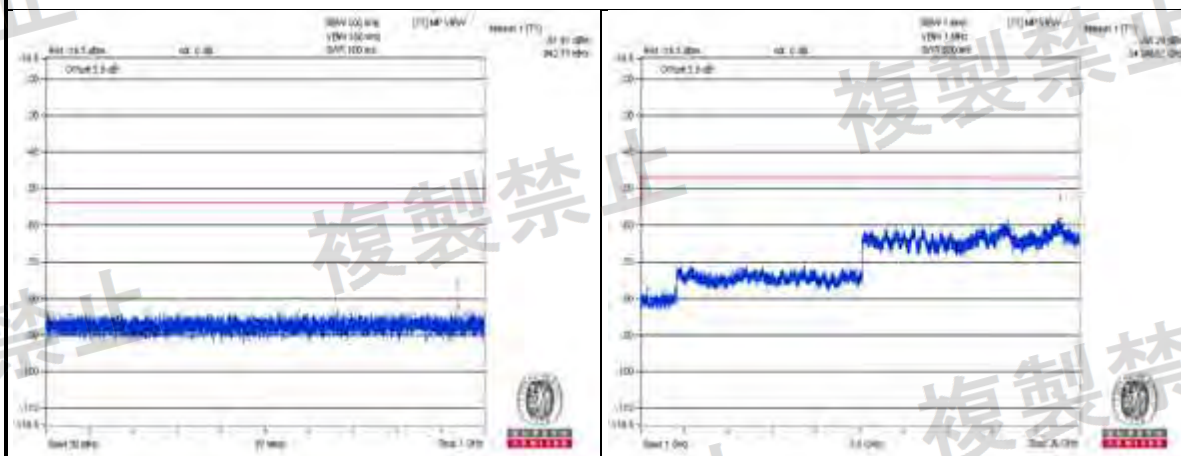
### Vnormal



### Channel 64

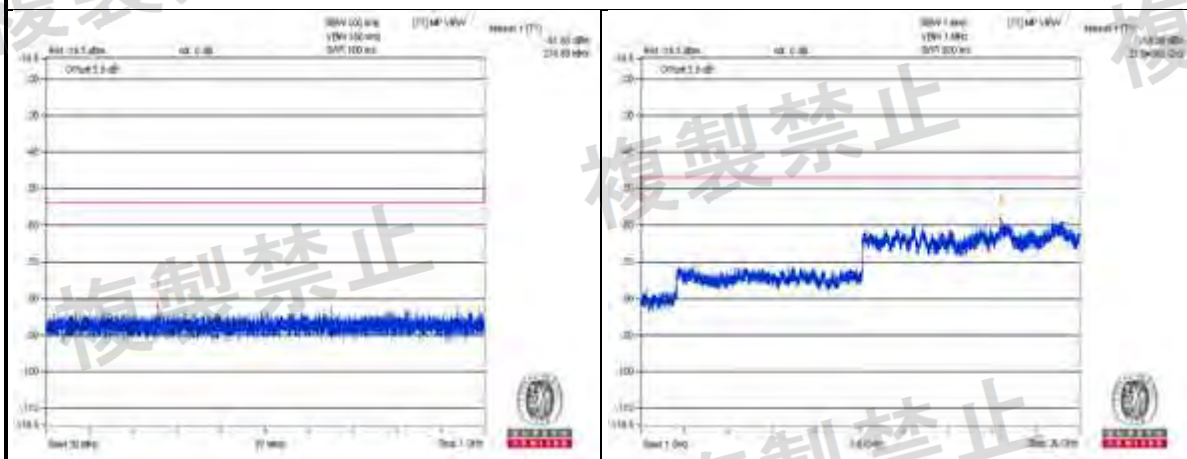


### Channel 100



### Channel 120

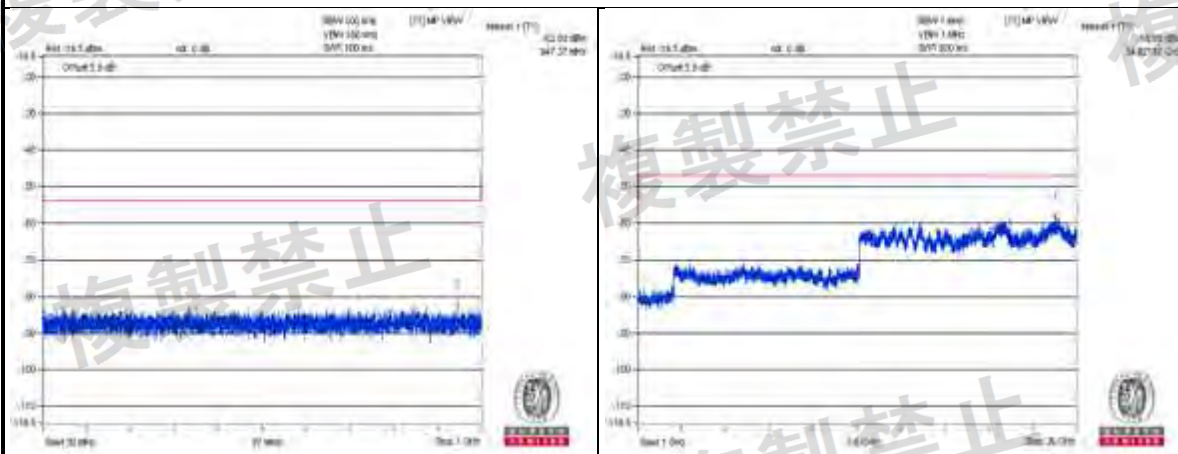
Vnormal



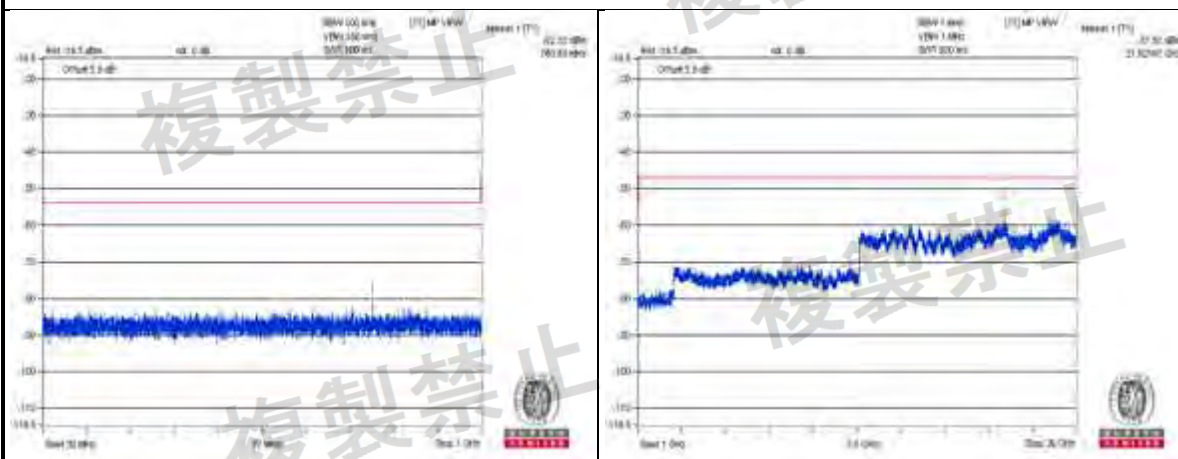
Channel 140



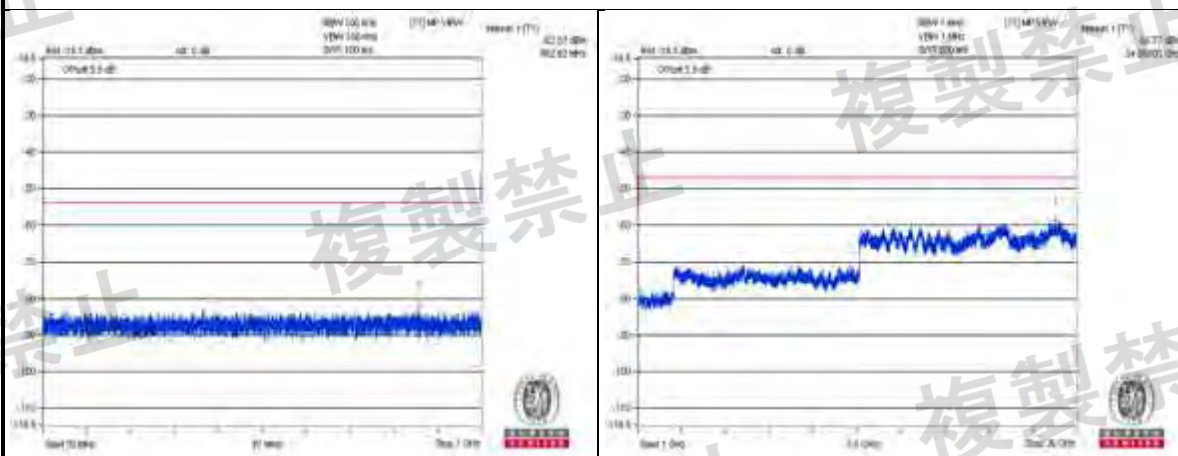
V<sub>+10%</sub>



Channel 36



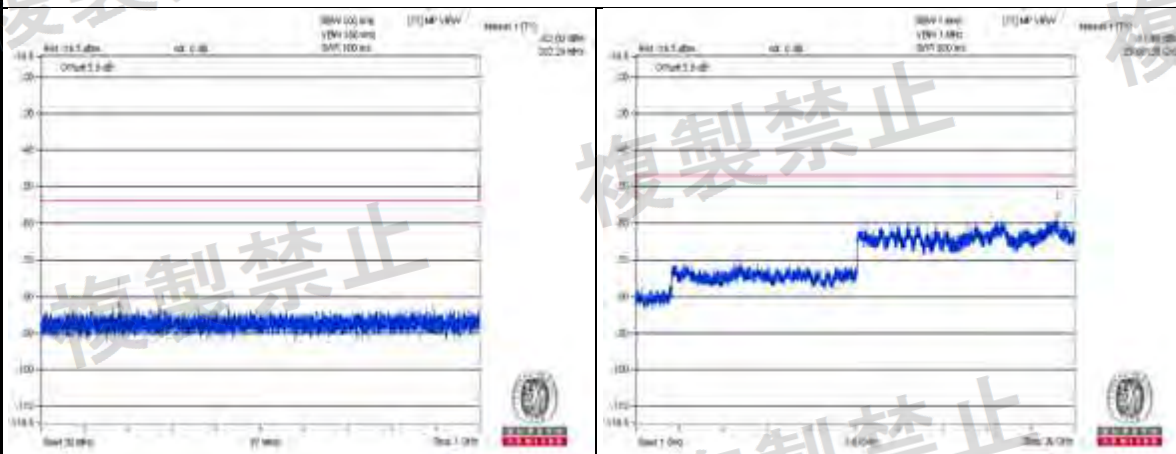
Channel 48



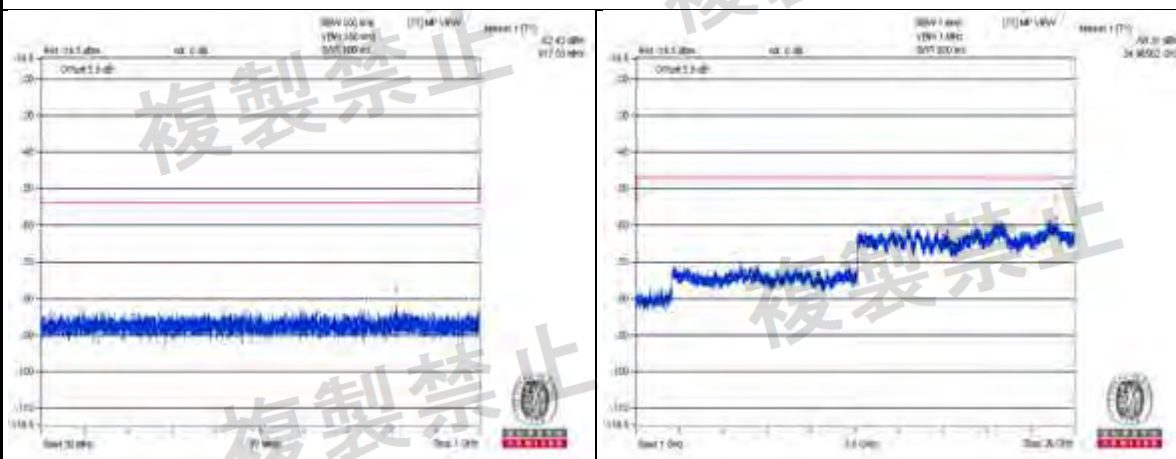
Channel 52



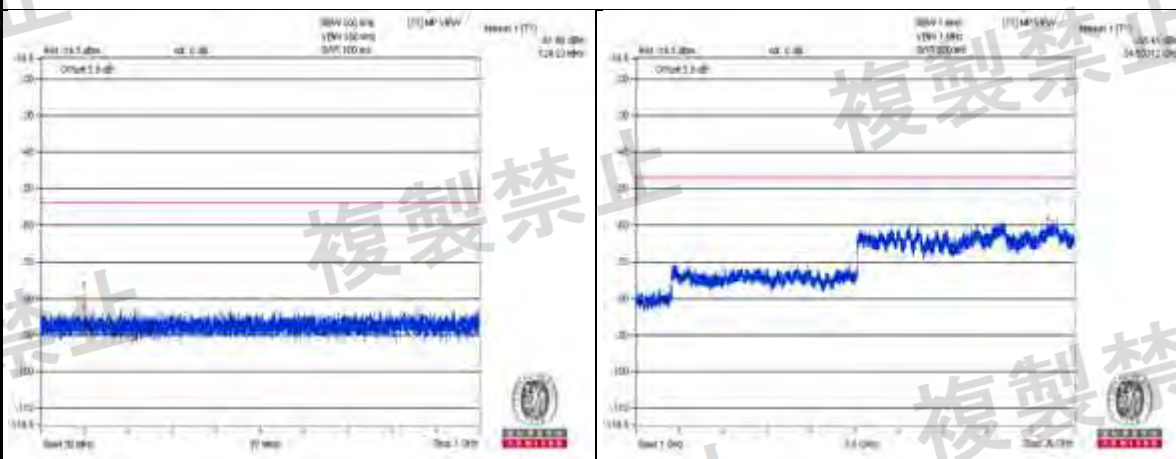
V+10%



Channel 64

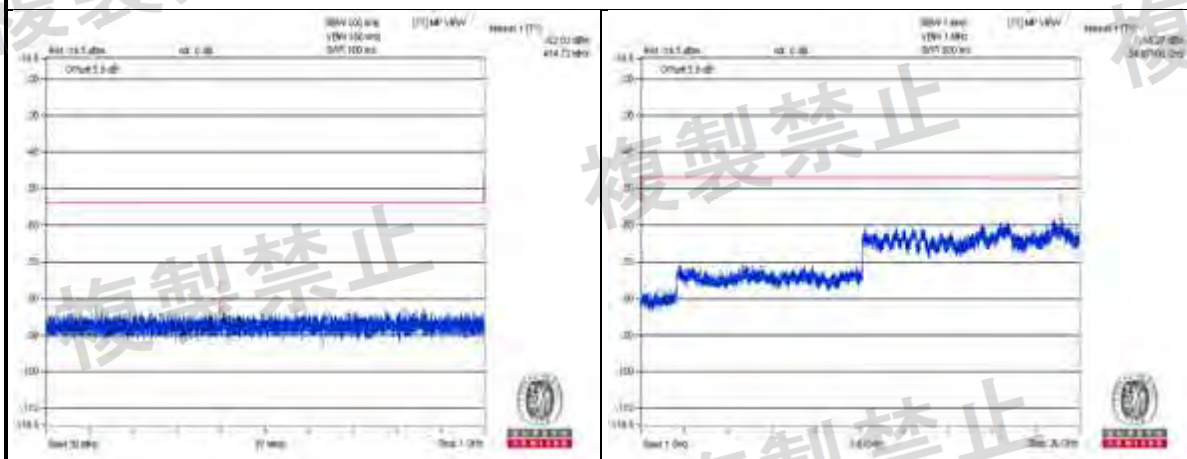


Channel 100



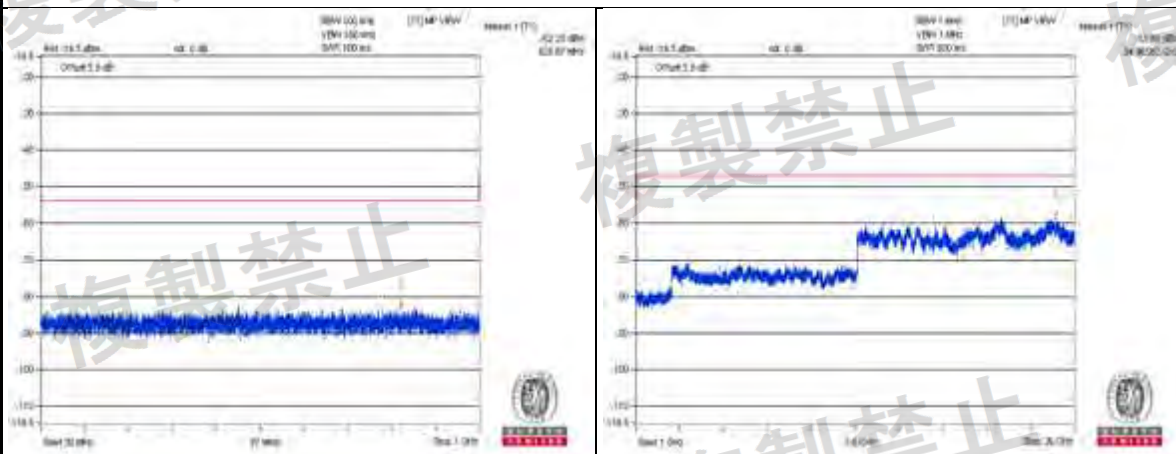
Channel 120

V+10%

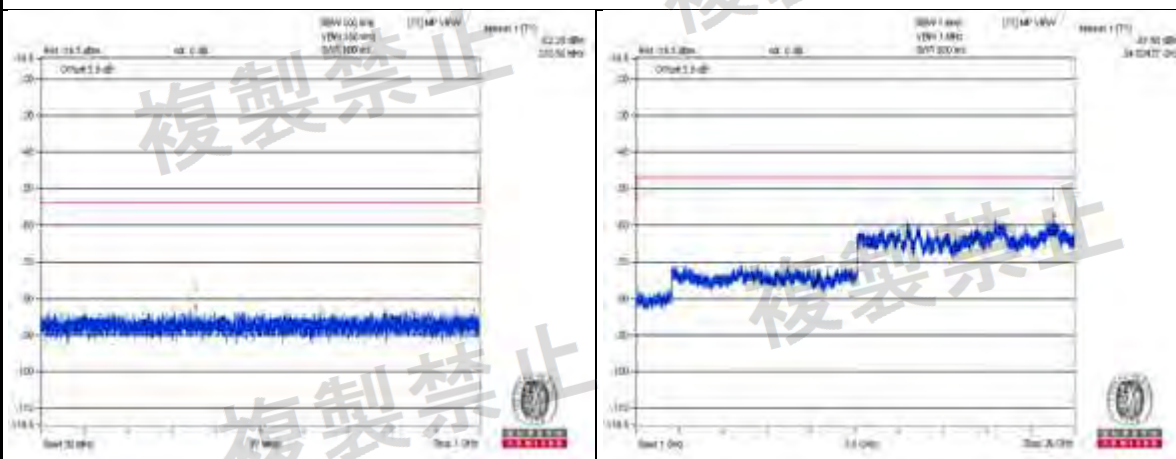


Channel 140

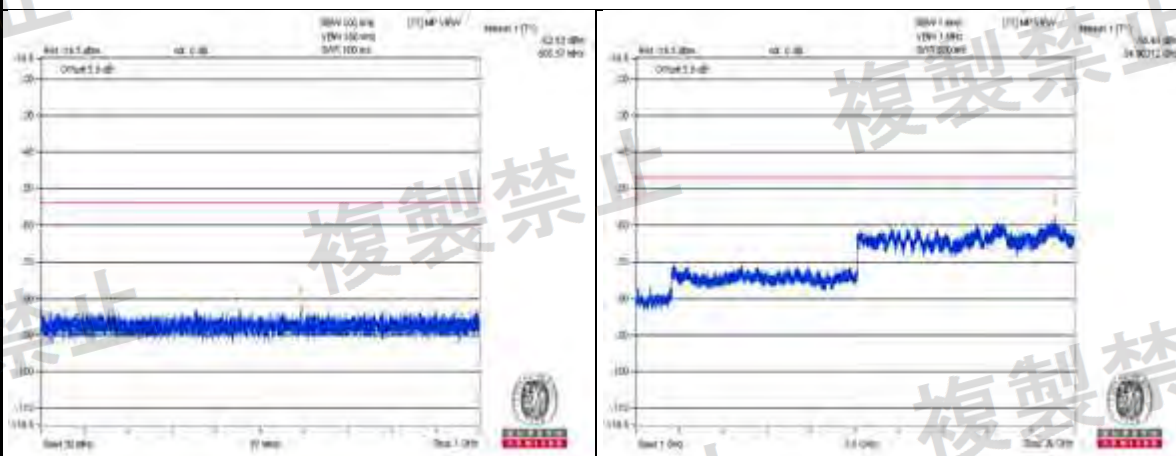
V-10%



Channel 36



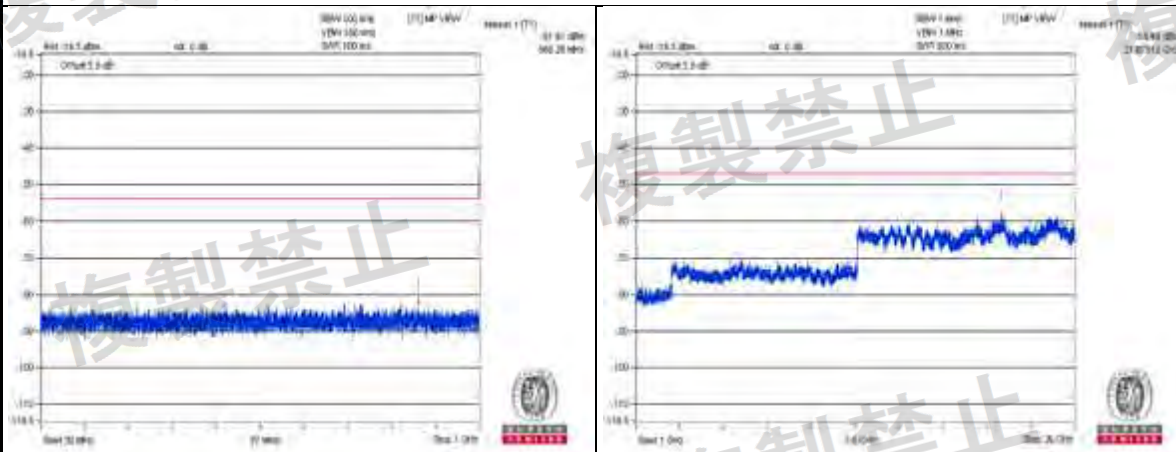
Channel 48



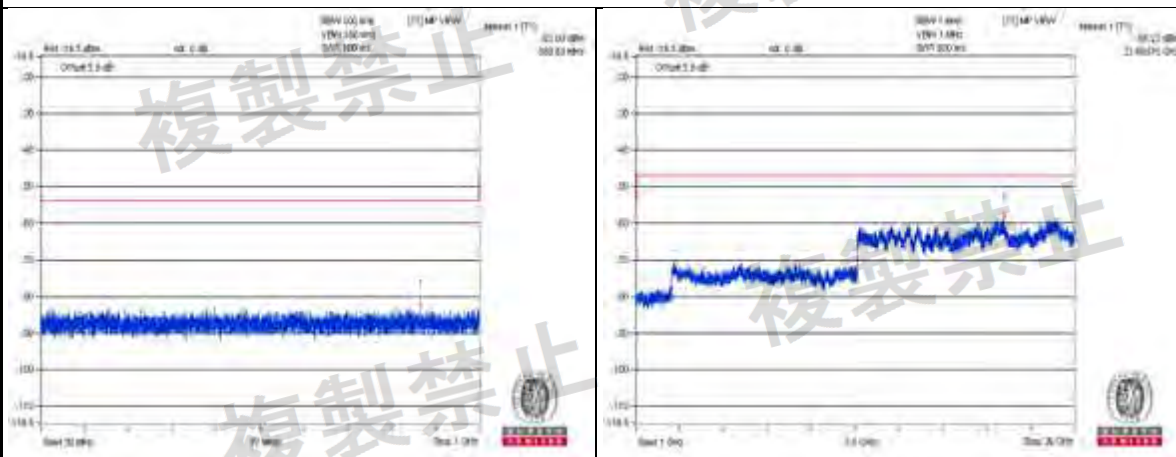
Channel 52



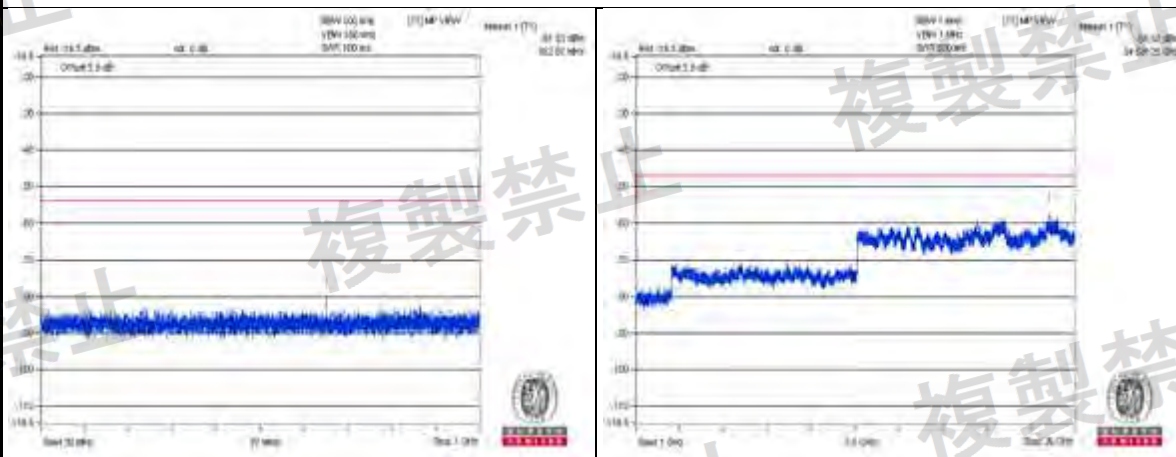
V-10%



Channel 64



Channel 100



Channel 120

V-10%



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	848.550	<b>0.005768nW</b>	841.160	0.005458nW	4nW/100kHz	Pass
	Above 1GHz	25071.870	<b>1.853532nW</b>	25109.370	1.393157nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	373.500	0.005559nW	868.920	<b>0.006266nW</b>	4nW/100kHz	Pass
	Above 1GHz	21903.120	1.725838nW	25000.000	1.383566nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	855.220	0.005636nW	677.470	0.005888nW	4nW/100kHz	Pass
	Above 1GHz	21840.620	1.294196nW	24978.120	<b>1.399587nW</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	389.380	<b>0.007762nW</b>	367.800	<b>0.00618nW</b>	4nW/100kHz	Pass
	Above 1GHz	24609.370	<b>1.62181nW</b>	24478.120	<b>1.940886nW</b>	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	814.970	0.006427nW	829.280	0.005458nW	4nW/100kHz	Pass
	Above 1GHz	21521.870	1.5417nW	21915.620	1.389953nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	277.470	0.006761nW	280.130	0.00537nW	4nW/100kHz	Pass
	Above 1GHz	21865.620	1.358313nW	25003.120	1.482518nW	20nW/MHz	Pass

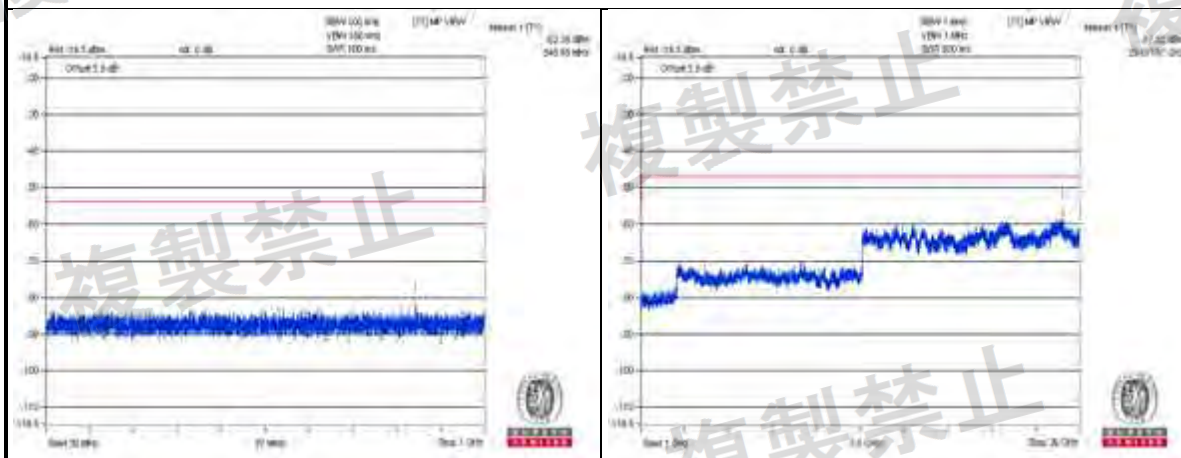
Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

W56 band: 802.11ac (VHT40)

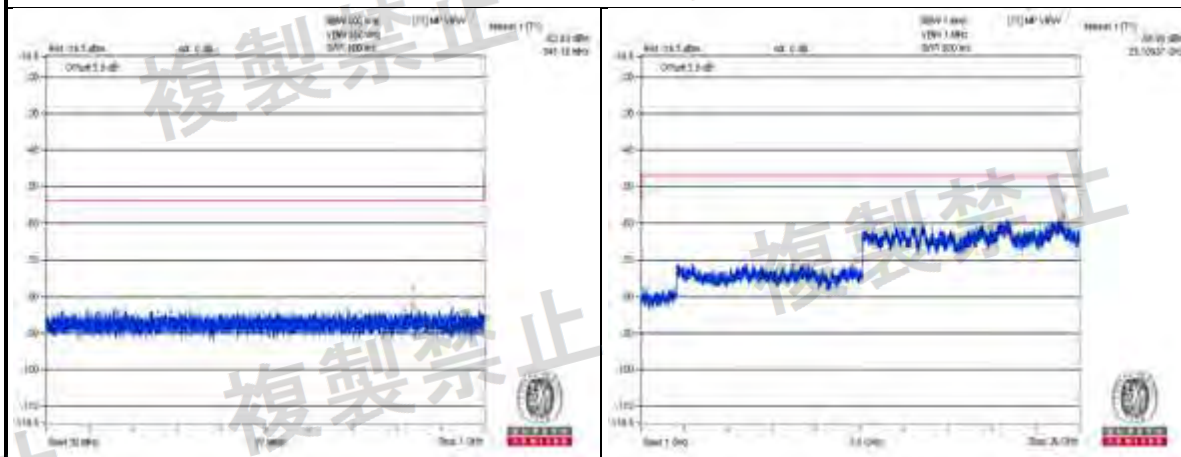
Environmental Conditions		25 deg.C, 60% RH					
Test Channel		CH102 (5510MHz)		CH118 (5590MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value (nW)	Frequency (MHz)	Measured Value (nW)		
V <sub>normal</sub>	Below 1GHz	305.600	0.006095nW	683.900	0.006427nW	4nW/100kHz	Pass
	Above 1GHz	24921.870	1.475707nW	24818.750	1.396368nW	20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	906.150	0.005321nW	647.760	0.005888nW	4nW/100kHz	Pass
	Above 1GHz	24768.750	1.452112nW	24881.250	1.51008nW	20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	63.460	0.005888nW	832.190	0.005821nW	4nW/100kHz	Pass
	Above 1GHz	24965.620	1.462177nW	24571.870	1.383566nW	20nW/MHz	Pass
Test Channel		CH134 (5670MHz)				Limit	Result
Test Condition	Frequency Range	Frequency (MHz)		Measured Value (nW)			
V <sub>normal</sub>	Below 1GHz	845.400		0.006026nW		4nW/100kHz	Pass
	Above 1GHz	25009.370		1.753881nW		20nW/MHz	Pass
V <sub>max.</sub>	Below 1GHz	840.670		0.005559nW		4nW/100kHz	Pass
	Above 1GHz	24756.250		1.339677nW		20nW/MHz	Pass
V <sub>min.</sub>	Below 1GHz	893.050		0.006353nW		4nW/100kHz	Pass
	Above 1GHz	24671.870		1.710015nW		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.

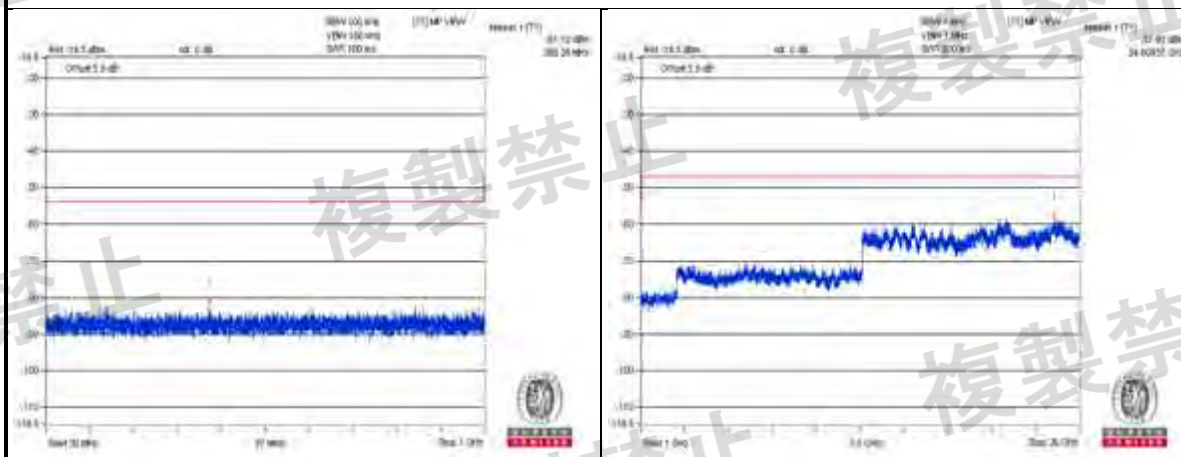
Vnormal



Channel 38



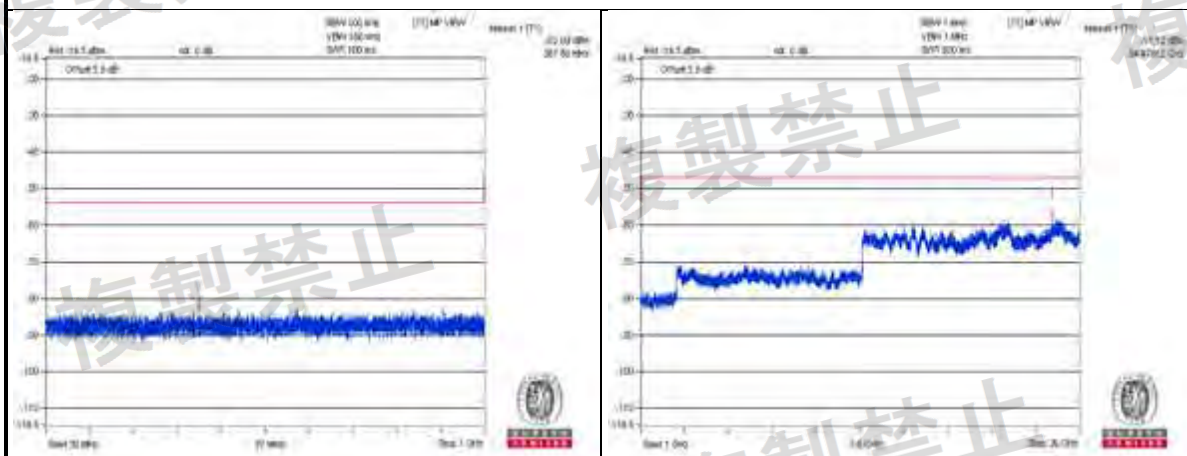
Channel 46



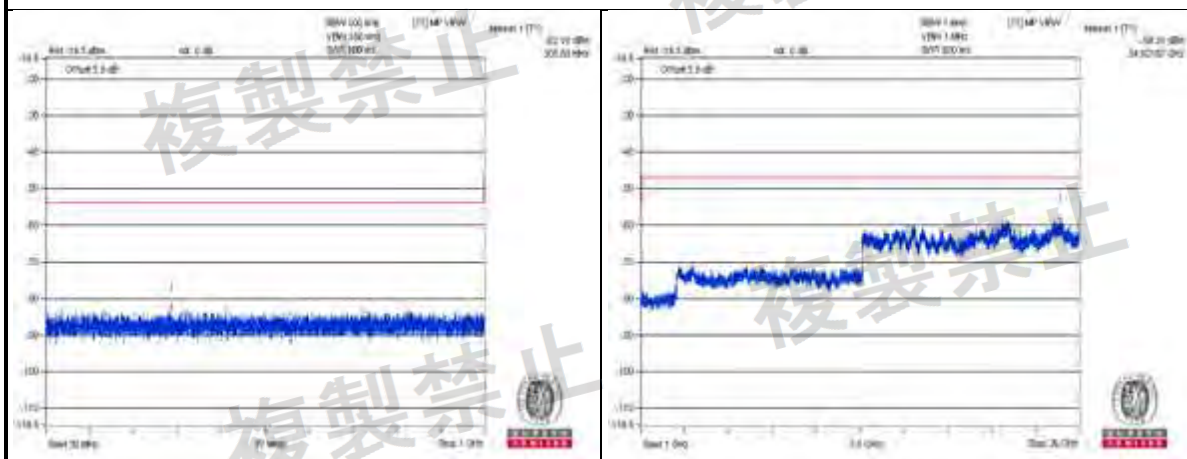
Channel 54



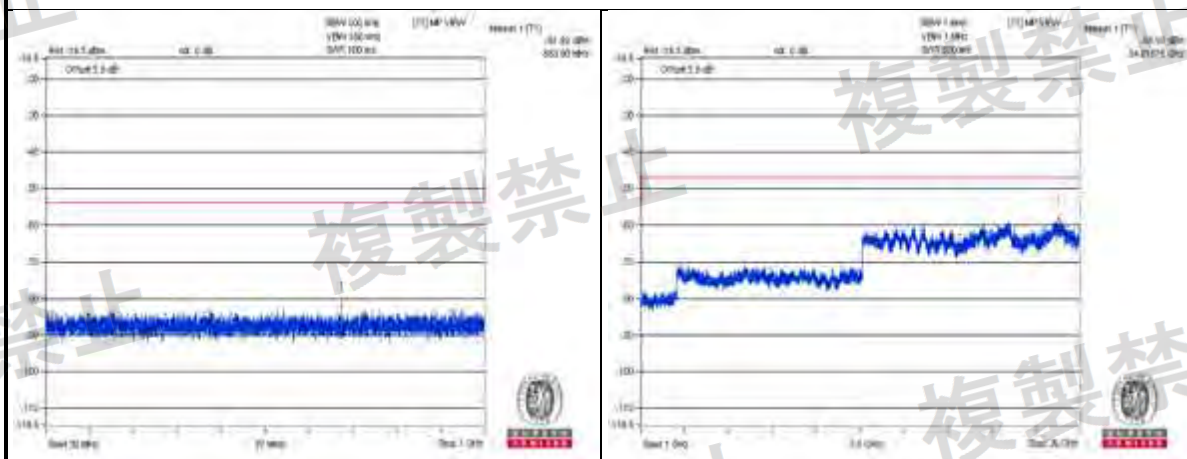
### Vnormal



### Channel 62

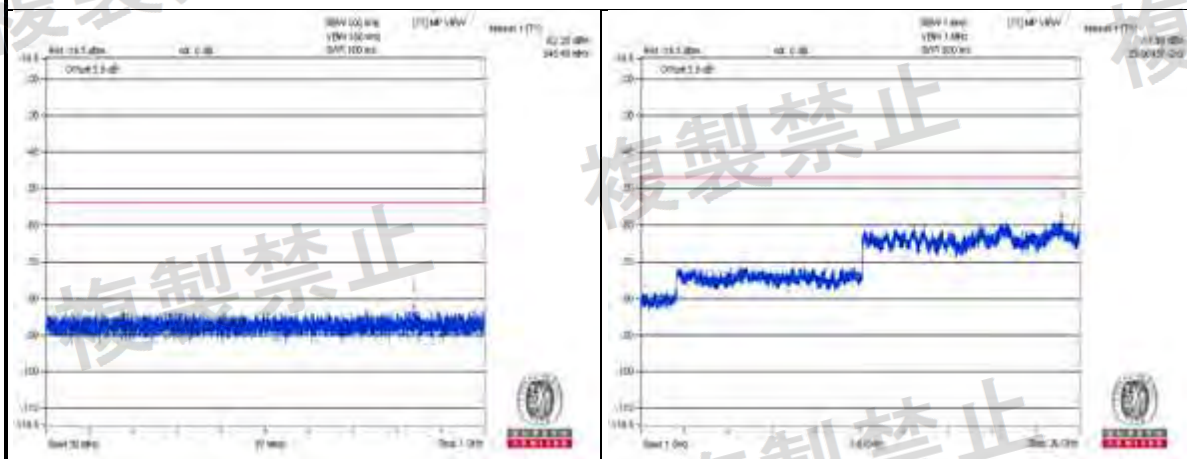


### Channel 102



### Channel 118

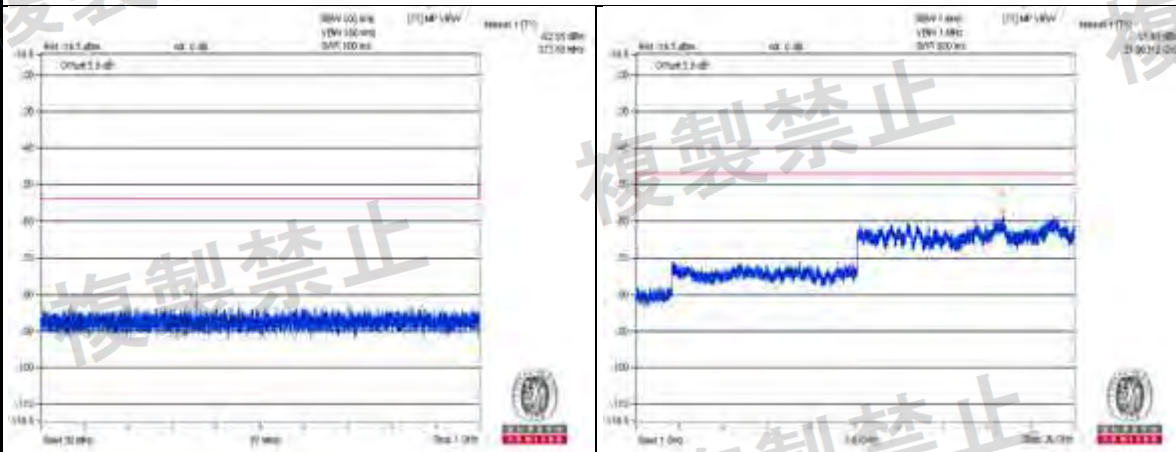
Vnormal



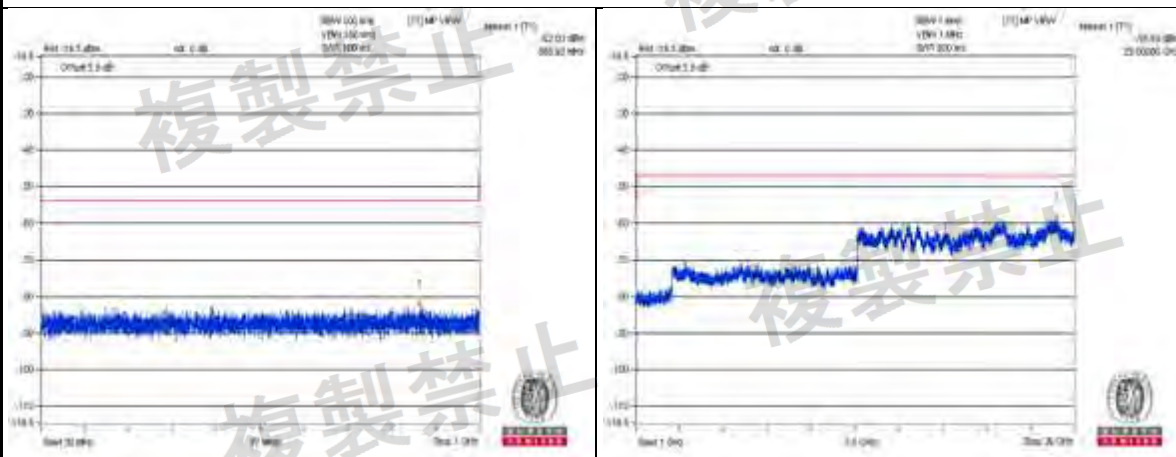
Channel 134



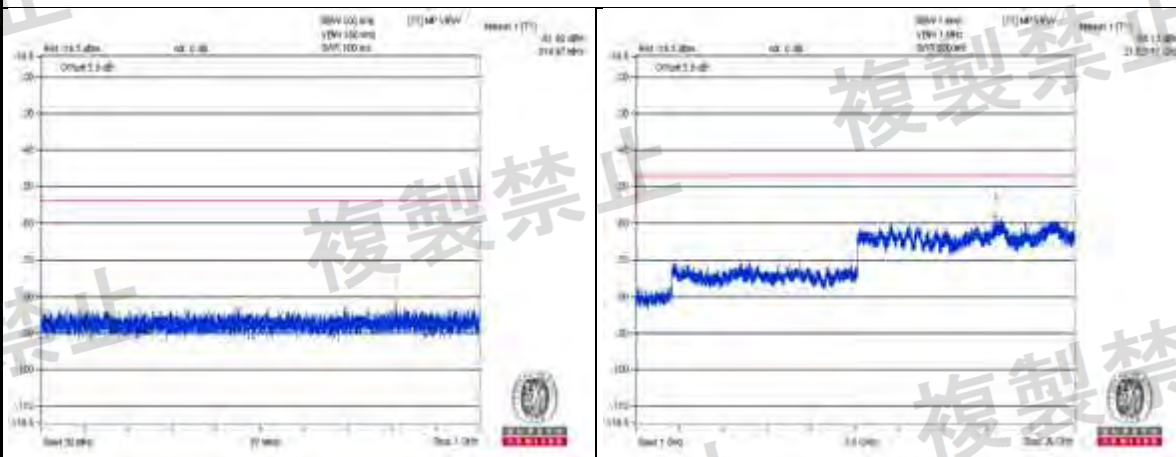
V+10%



Channel 38

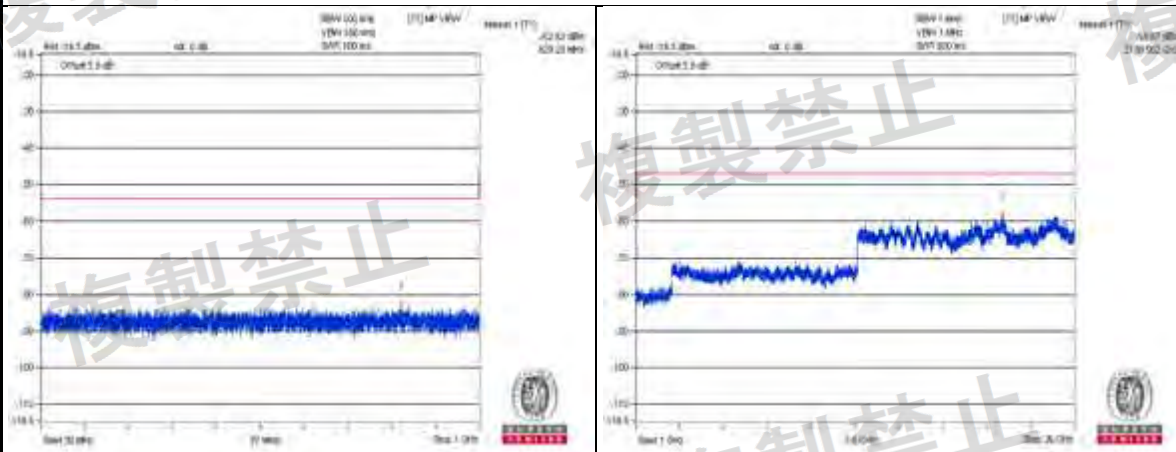


Channel 46

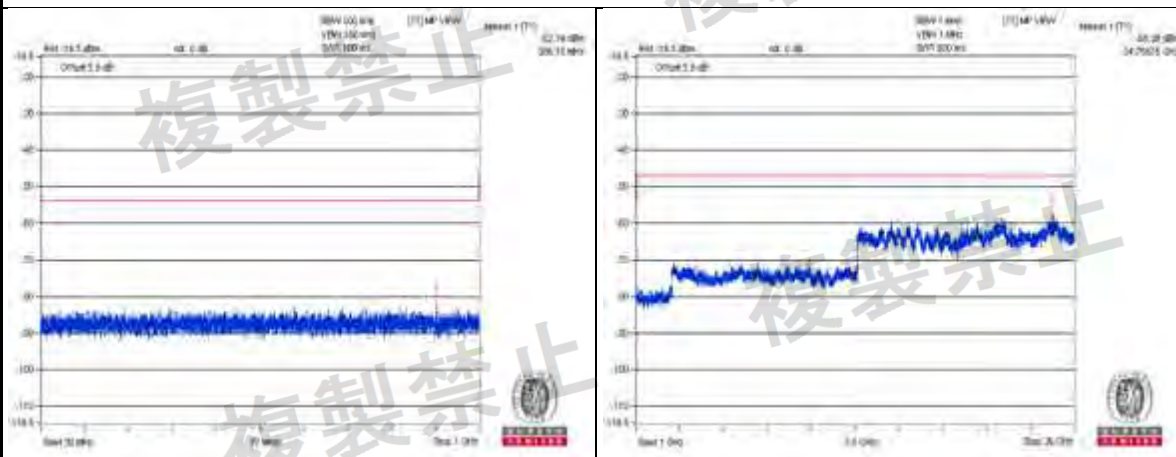


Channel 54

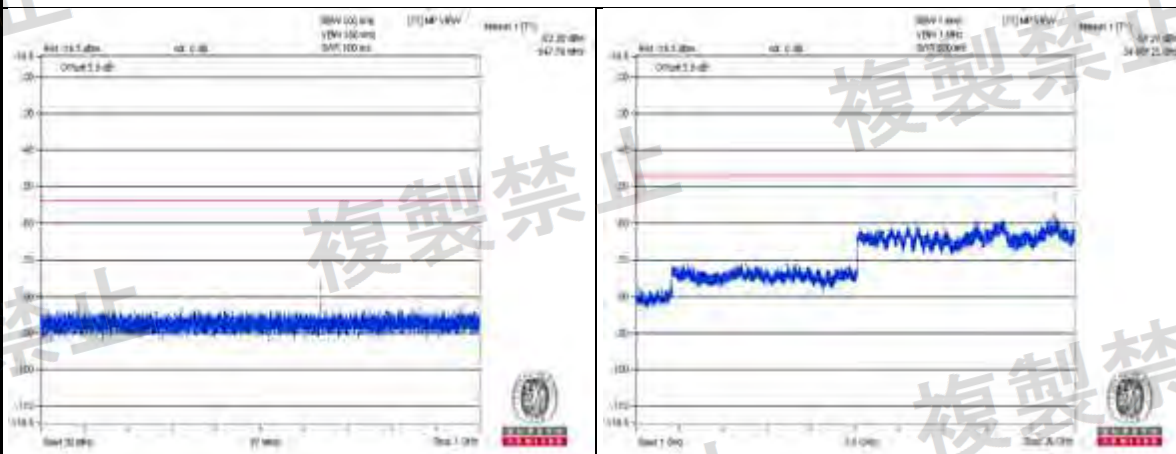
V<sub>+10%</sub>



Channel 62

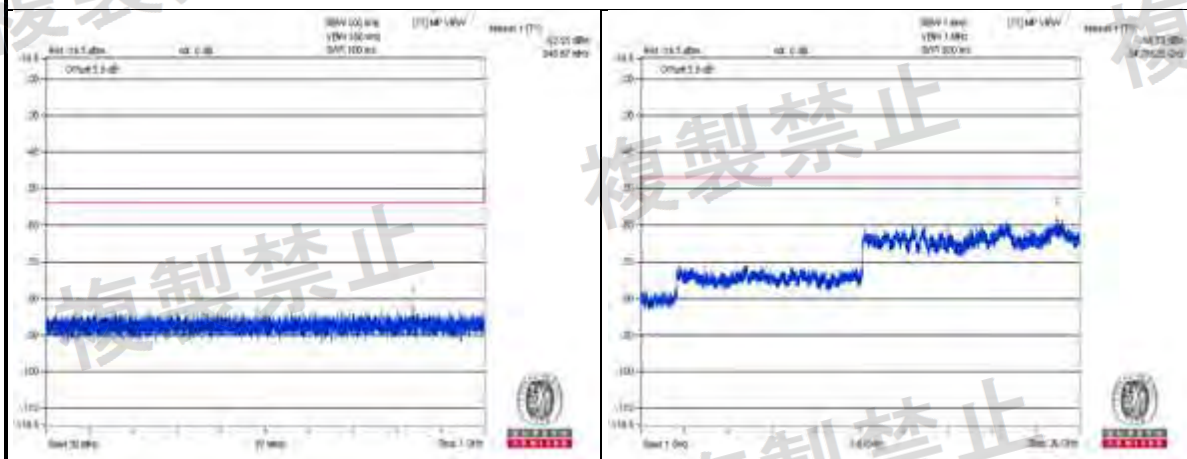


Channel 102



Channel 118

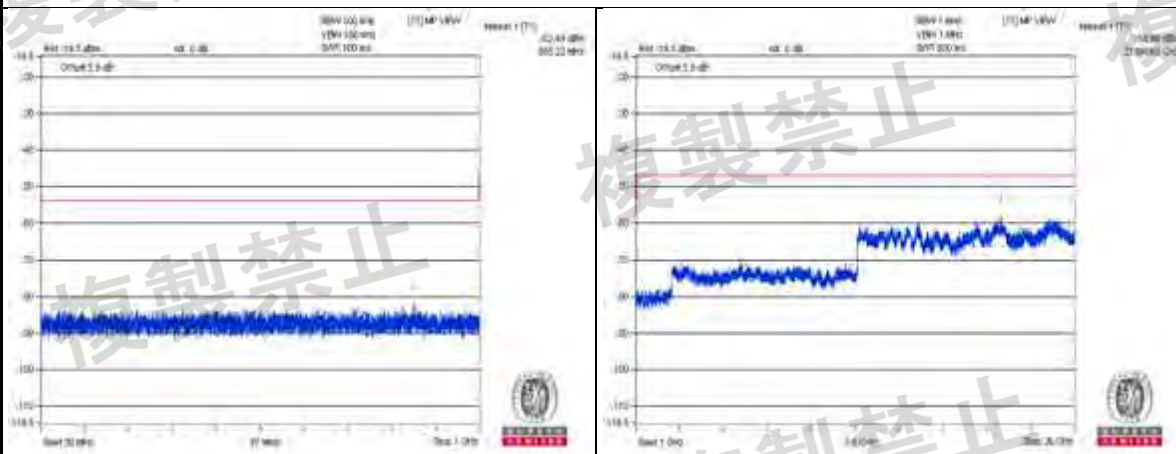
V+10%



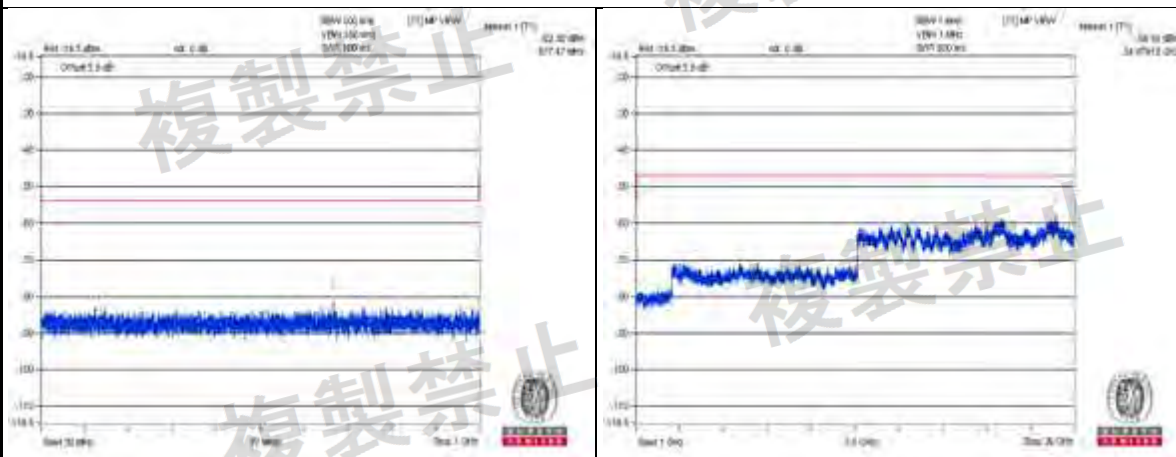
Channel 134



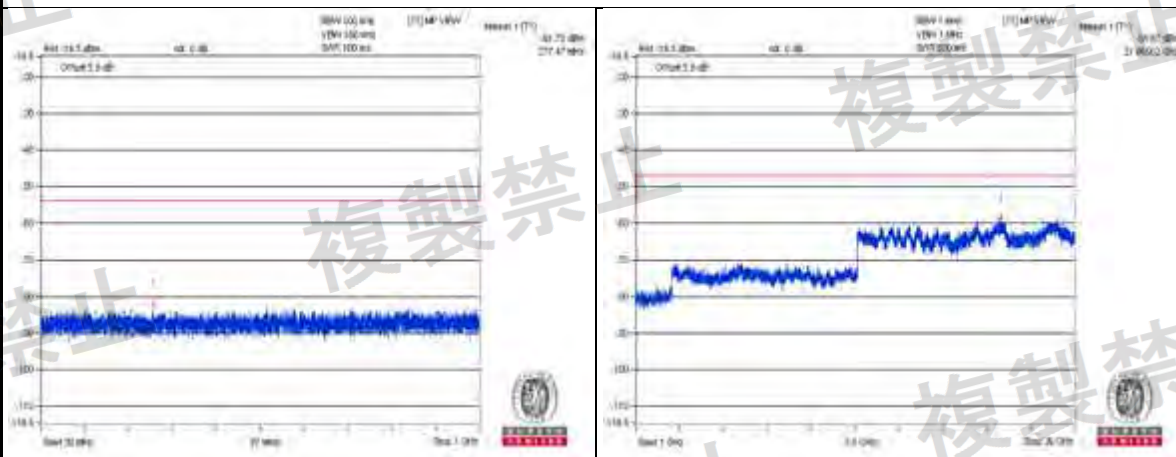
V-10%



Channel 38



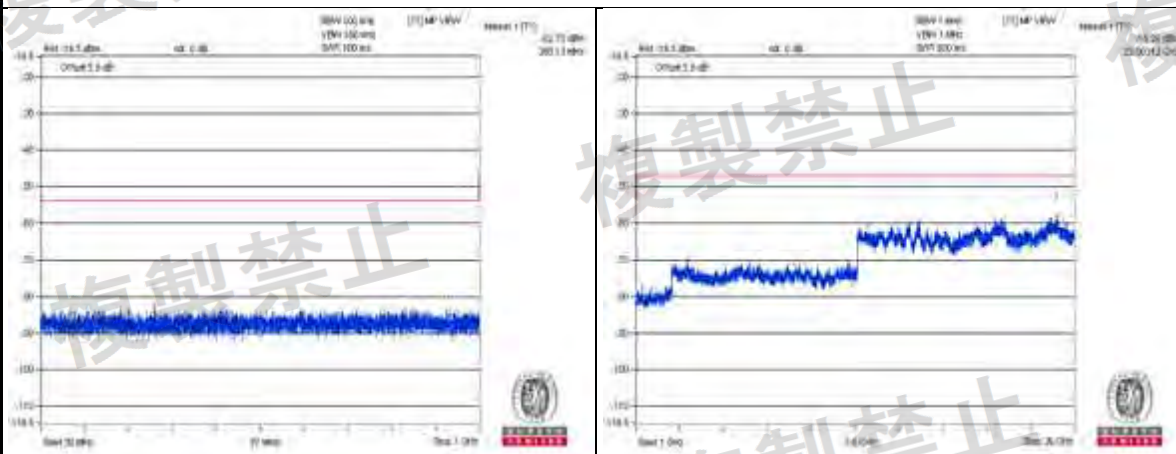
Channel 46



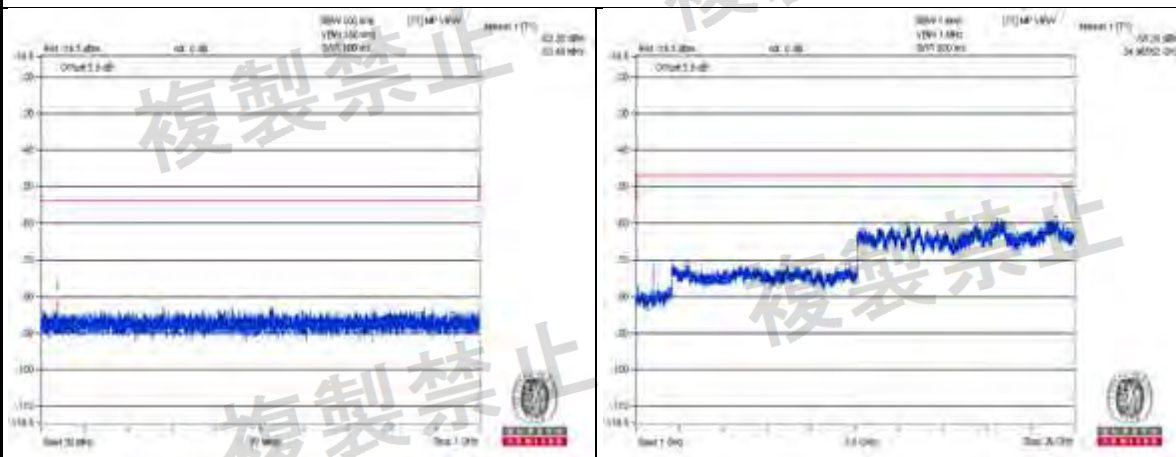
Channel 54



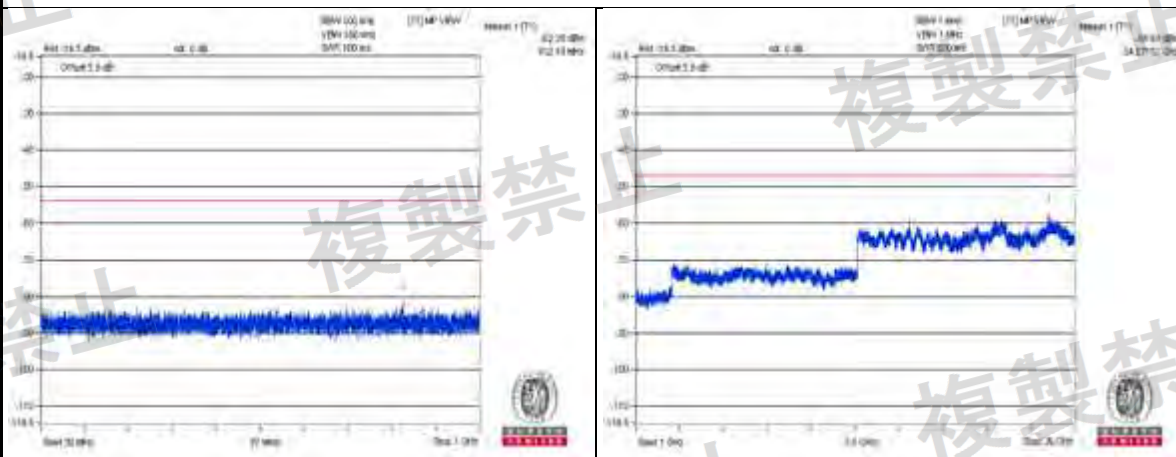
V-10%



Channel 62

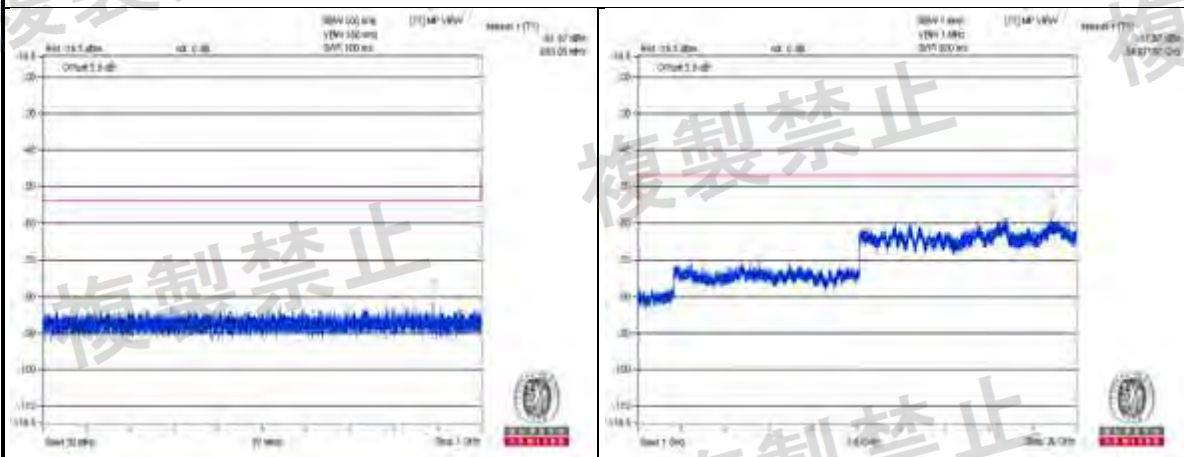


Channel 102



Channel 118

V-10%



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	717.480	0.005781nW	499.230	<b>0.008375nW</b>	4nW/100kHz	Pass
	Above 1GHz	25028.120	<b>1.753881nW</b>	25003.120	<b>1.610646nW</b>	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	356.760	0.005546nW	976.230	0.006653nW	4nW/100kHz	Pass
	Above 1GHz	25012.500	1.438799nW	24921.870	1.361445nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	980.960	<b>0.005794nW</b>	130.880	0.006353nW	4nW/100kHz	Pass
	Above 1GHz	24984.370	1.472313nW	21940.620	1.51705nW	20nW/MHz	Pass

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

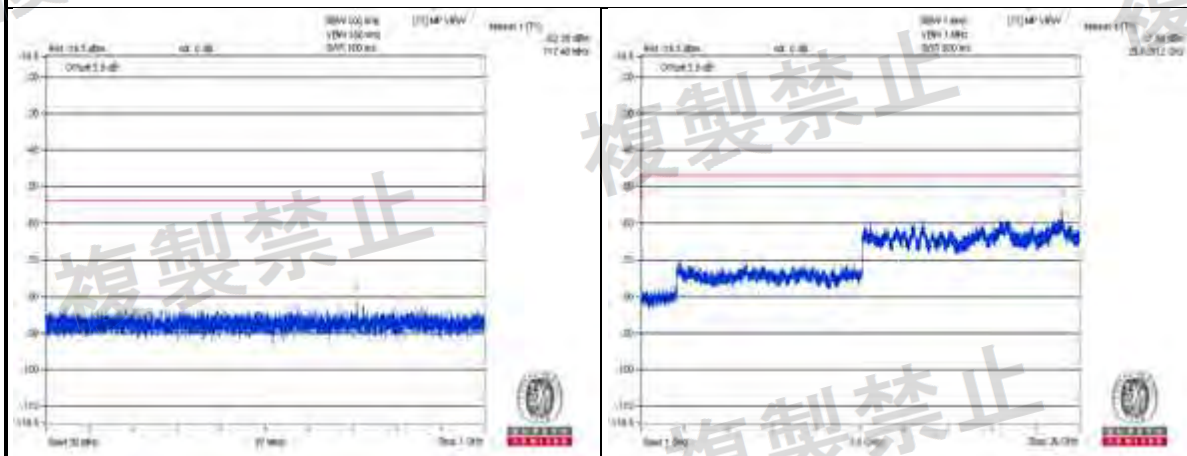
### W56 band: 802.11ac (VHT80)

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	711.540	0.006397nW	870.140	0.006012nW	4nW/100kHz	Pass
	Above 1GHz	21940.620	<b>1.503142nW</b>	24909.370	1.448772nW	20nW/MHz	Pass
$V_{max.}$	Below 1GHz	345.610	0.00743nW	899.720	<b>0.00787nW</b>	4nW/100kHz	Pass
	Above 1GHz	24540.620	1.472313nW	21987.500	1.435489nW	20nW/MHz	Pass
$V_{min.}$	Below 1GHz	853.650	<b>0.007621nW</b>	252.850	0.005521nW	4nW/100kHz	Pass
	Above 1GHz	21850.000	1.230269nW	24993.750	<b>1.485936nW</b>	20nW/MHz	Pass

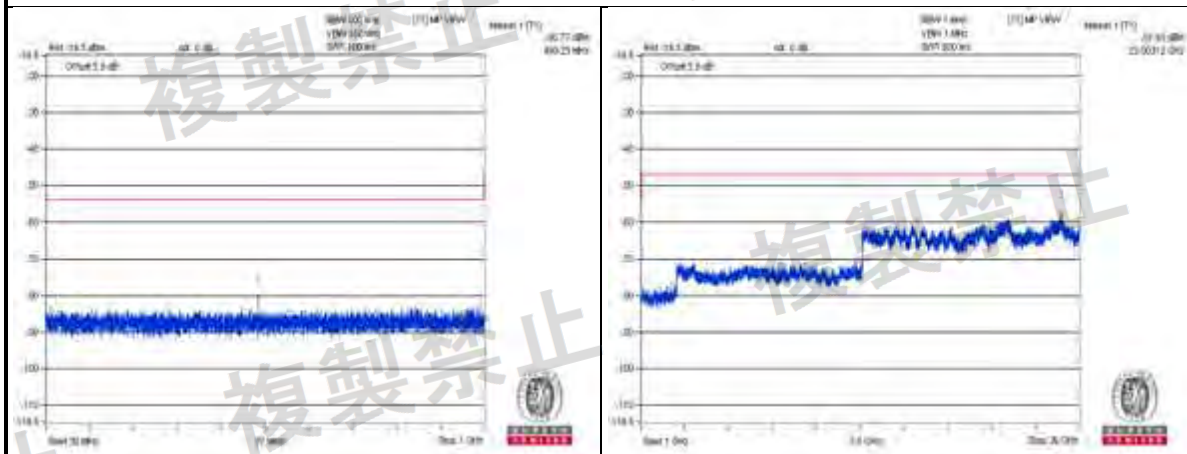
Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.

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

### Vnormal



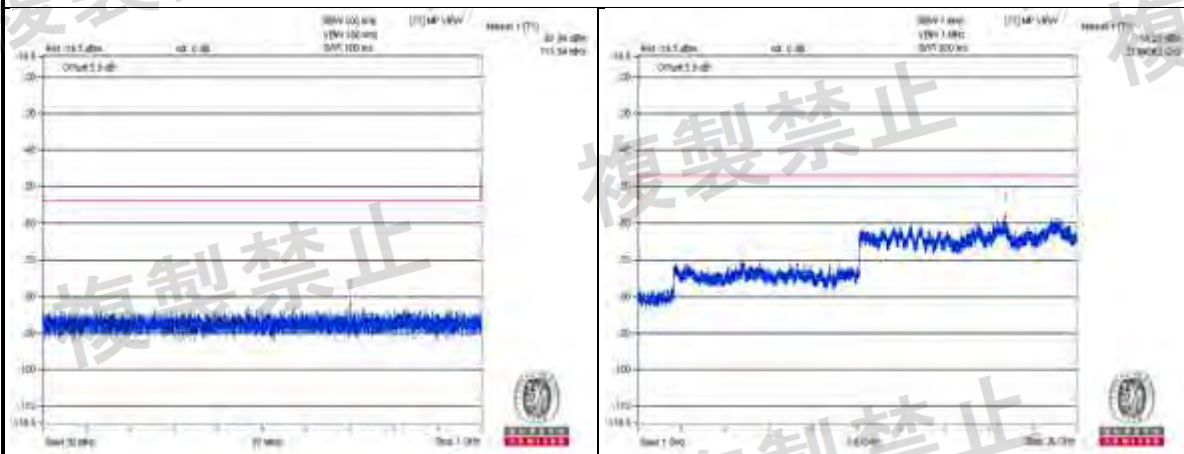
### Channel 42



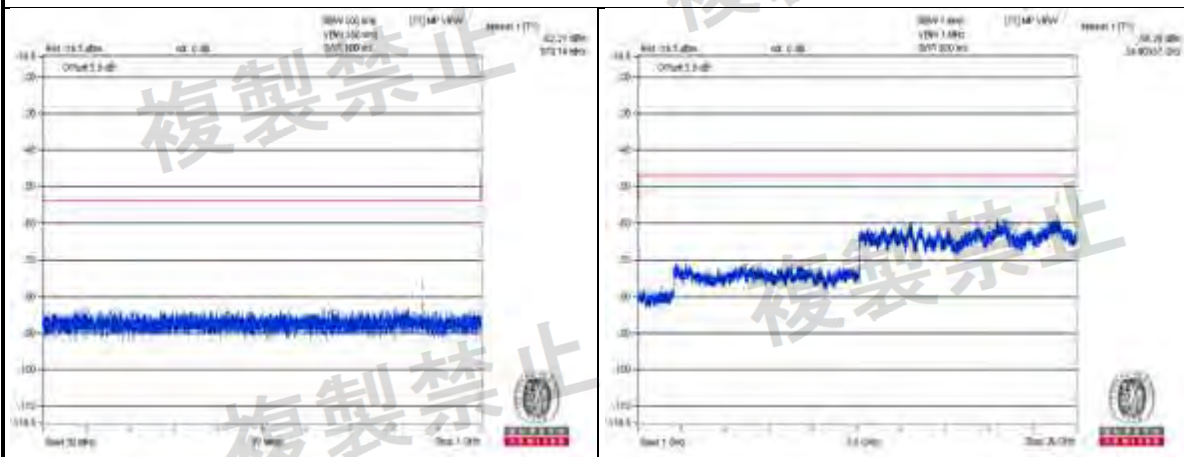
### Channel 58



# Vnormal

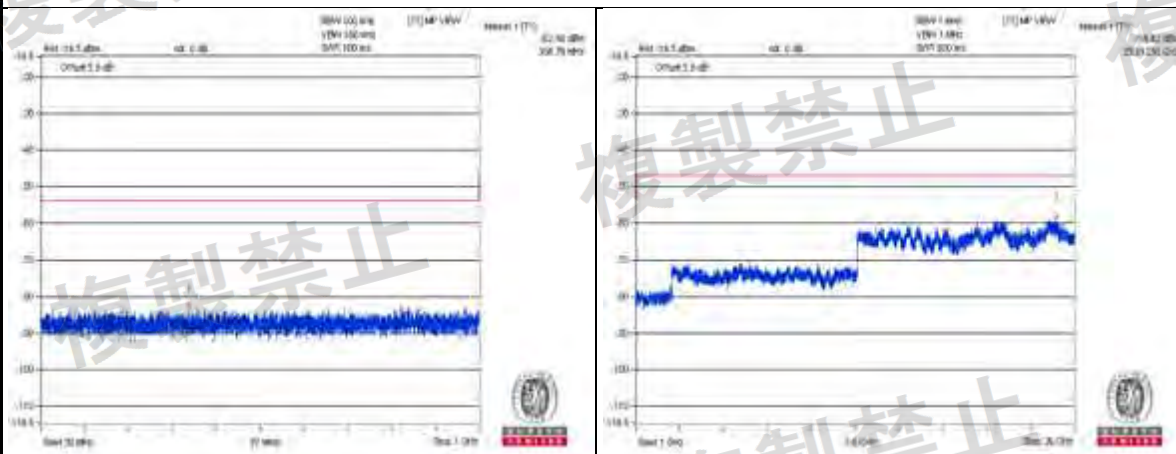


# Channel 106

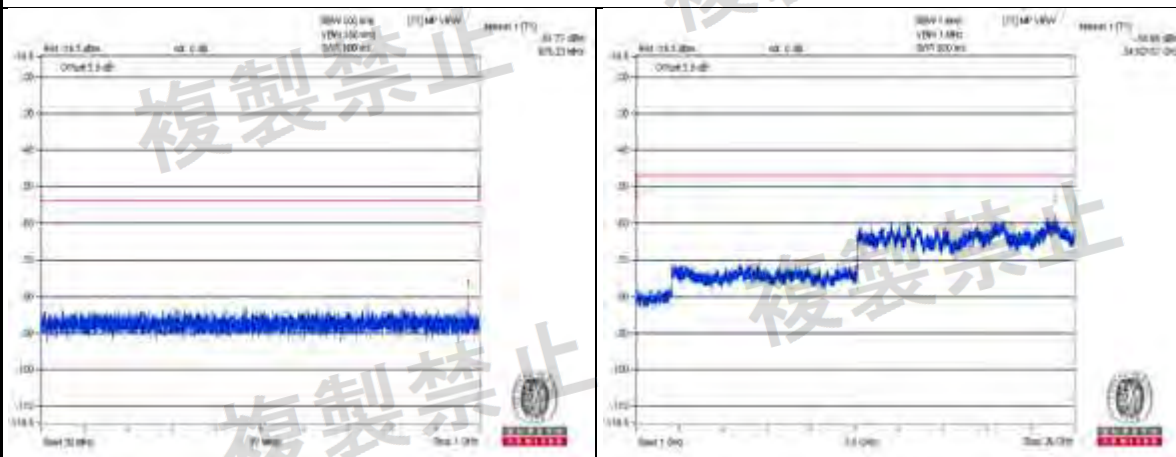


# Channel 122

V<sub>+10%</sub>

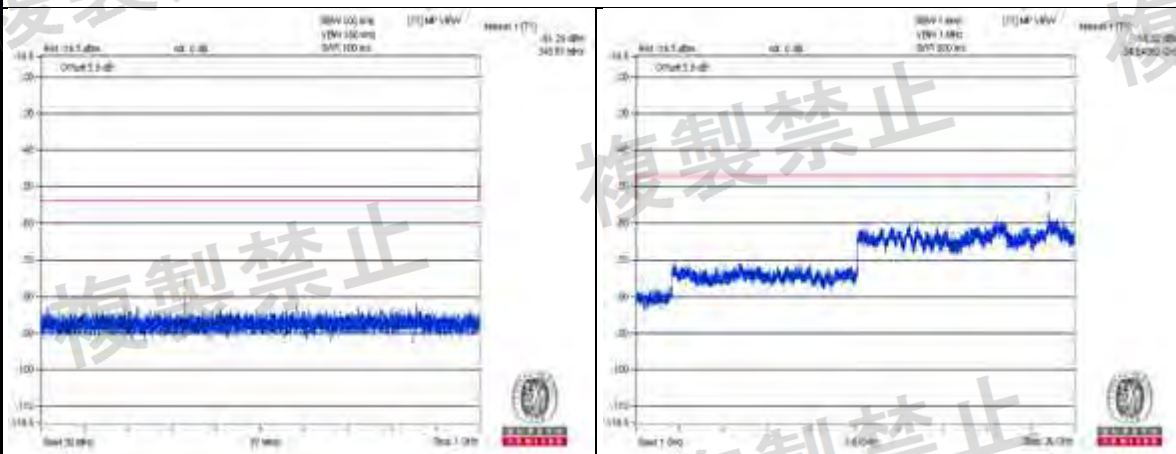


Channel 42

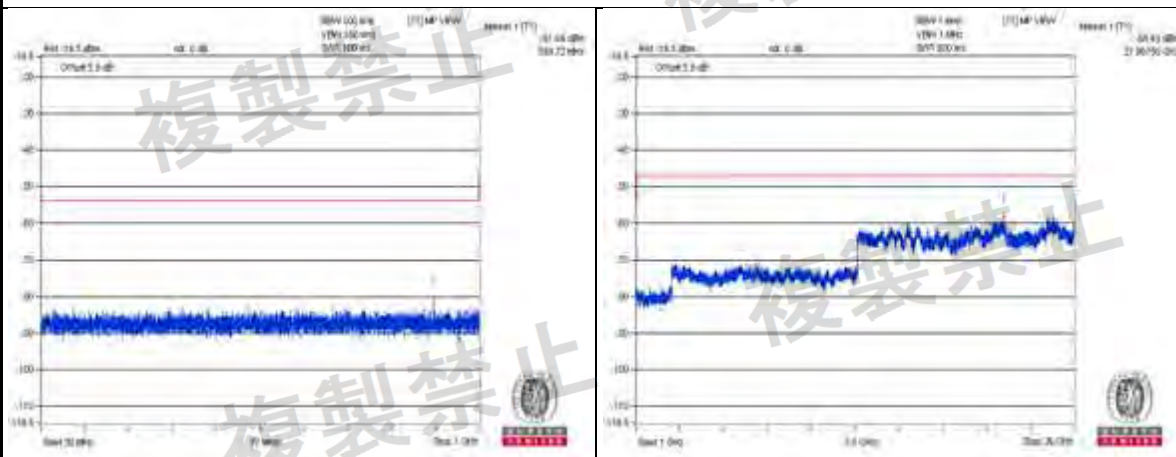


Channel 58

V+10%

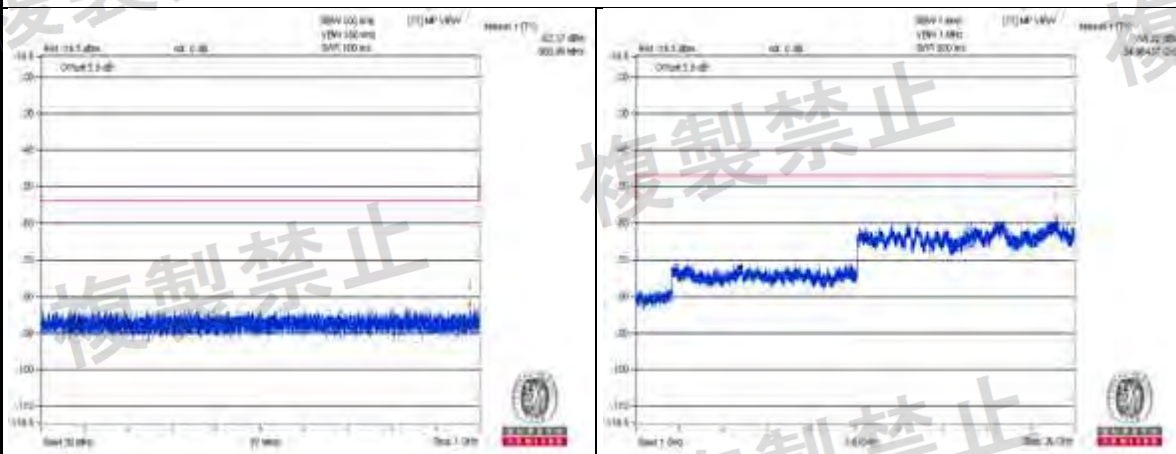


Channel 106

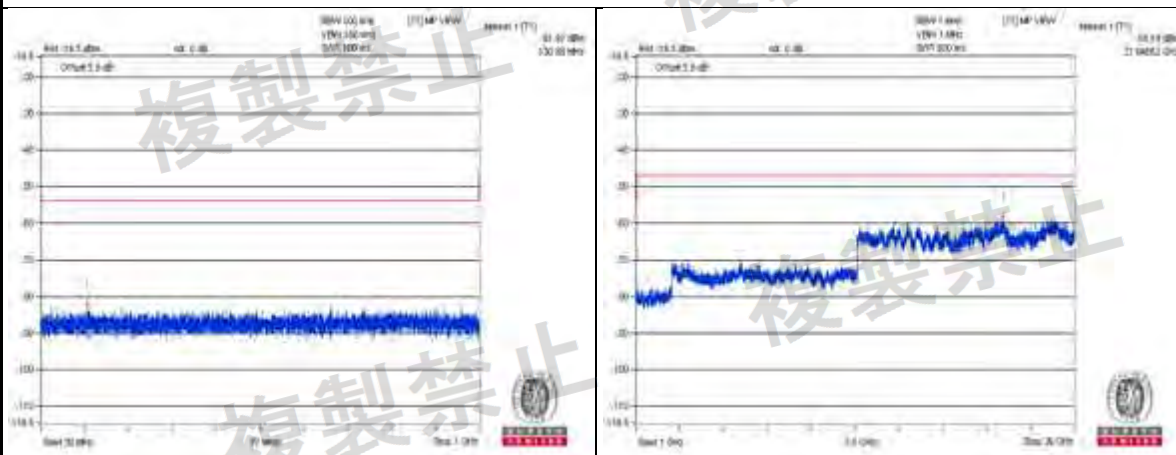


Channel 122

V-10%



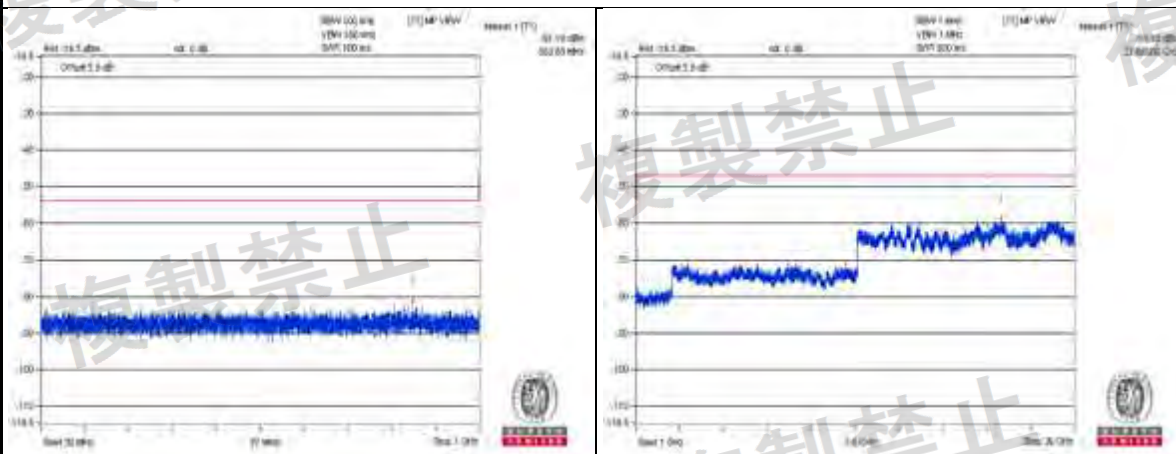
Channel 42



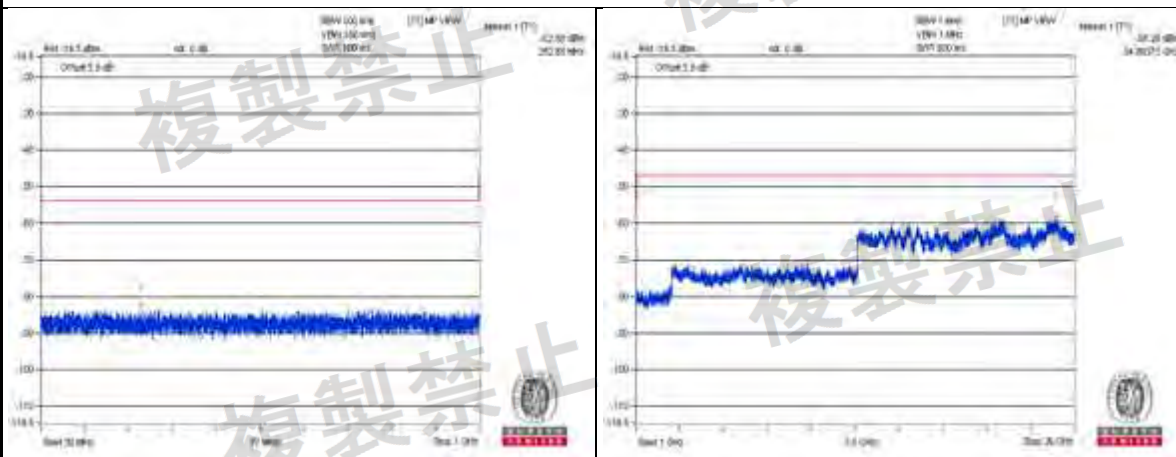
Channel 58



V-10%



Channel 106



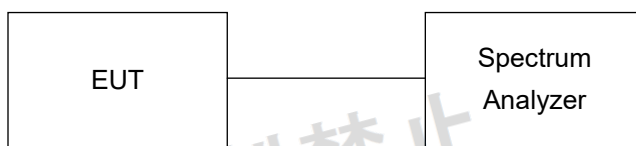
Channel 122

#### 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, 64% RH			
Test Condition	Burst Length (ms)			
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz
V <sub>normal</sub>	3.00	2.88	2.94	2.94
V <sub>+10%</sub>	2.94	2.88	3.00	3.00
V <sub>-10%</sub>	2.94	3.00	3.06	3.06

##### W56 band: 802.11a

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Burst Length (ms)		
	CH 100 5500MHz	CH 120 5600MHz	CH140 5700MHz
V <sub>normal</sub>	3.00	2.94	3.06
V <sub>+10%</sub>	3.06	3.00	3.00
V <sub>-10%</sub>	3.00	2.94	2.82

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

Environmental Conditions	25 deg.C, 64% RH			
Test Condition	Burst Length (ms)			
	CH 36 5180MHz	CH 48 5240MHz	CH 52 5260MHz	CH 64 5320MHz
$V_{normal}$	2.28	2.22	2.34	2.34
$V_{normal}$	2.76	2.34	2.34	2.46
$V_{normal}$	2.28	2.40	2.40	2.34

### W56 band: 802.11ac (VHT20)

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Burst Length (ms)		
	CH 100 5500MHz	CH 120 5600MHz	CH140 5700MHz
$V_{normal}$	2.28	2.34	2.34
$V_{normal}$	2.22	2.16	2.34
$V_{normal}$	2.34	2.34	2.34



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

Environmental Conditions	25 deg.C, 64% RH			
Test Condition	Burst Length (ms)			
	CH 38 5190MHz	CH 46 5230MHz	CH 54 5270MHz	CH 62 5310MHz
$V_{normal}$	2.16	2.10	2.04	2.10
$V_{normal}$	2.10	2.28	2.16	2.10
$V_{normal}$	2.16	2.28	2.22	2.10

### W56 band: 802.11ac (VHT40)

Environmental Conditions	25 deg.C, 64% RH		
Test Condition	Burst Length (ms)		
	CH 102 5510MHz	CH 118 5590MHz	CH 134 5670MHz
$V_{normal}$	2.16	1.98	2.22
$V_{normal}$	2.16	2.16	2.10
$V_{normal}$	2.28	2.16	2.22



W52 & W53 bands: 802.11ac (VHT80)

Environmental Conditions	25 deg.C, 64% RH	
Test Condition	Burst Length (ms)	
	CH 42 5210MHz	CH 58 5290MHz
V <sub>normal</sub>	0.84	0.96
V <sub>normal</sub>	0.96	1.02
V <sub>normal</sub>	0.96	0.90

W56 band: 802.11ac (VHT80)

Environmental Conditions	25 deg.C, 64% RH	
Test Condition	Burst Length (ms)	
	CH 106 5530MHz	CH 122 5610MHz
V <sub>normal</sub>	0.96	0.90
V <sub>normal</sub>	0.96	0.96
V <sub>normal</sub>	0.84	0.90

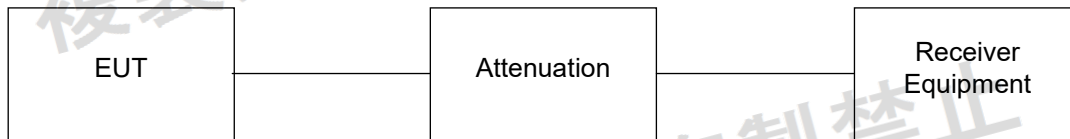


## 4.9 Interference Prevention Function

### 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

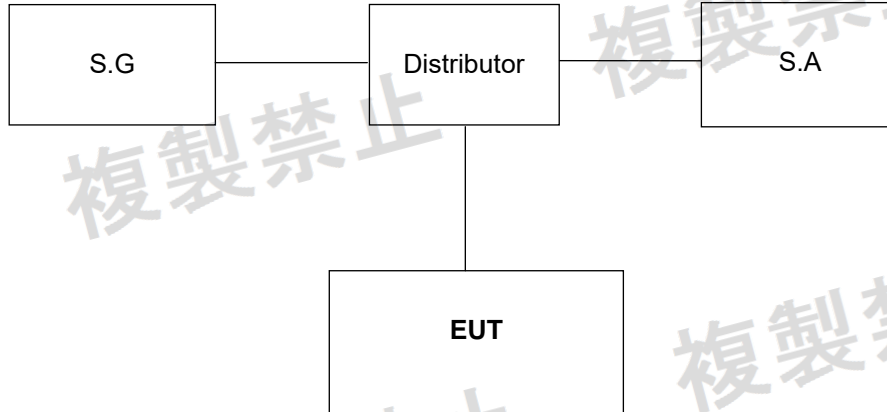


### 4.9.3 Test Results

Environmental Conditions	24 deg.C, 64% 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	-46.34
5240	-46.44
5260	-46.47
5320	-46.57
5500	-46.86
5600	-47.02
5700	-47.17

Note:

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

Gr: Antenna gain (5GHz 5.16dBi).

F: Transmission frequency (MHz).

##### 802.11ac (VHT40)

Frequency (MHz)	Pcs (dBm)
5190	-46.36
5230	-46.42
5270	-46.49
5310	-46.55
5510	-46.88
5590	-47.00
5670	-47.12

Note:

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

Gr: Antenna gain (5GHz 5.16dBi).

F: Transmission frequency (MHz).

##### 802.11ac (VHT80)

Frequency (MHz)	Pcs (dBm)
5210	-46.39
5290	-46.52
5530	-46.91
5610	-47.03

Note:

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

Gr: Antenna gain (5GHz 5.16dBi).

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	June 28, 2016	June 27, 2017	ETC
ESG Vector signal generator Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	Nov. 25, 2016	Nov. 24, 2017	ETC
Detector Narda	4503A	0306	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	May 05, 2016	May 04, 2017	ETC
Power Sensor Anritsu	MA2411B	0917122	May 05, 2016	May 04, 2017	ETC
Digital Oscilloscope R&S	RTO1012	300053	June 28, 2016	June 27, 2017	ETC
DC Power Supply Topward	6603D	795558	NA	NA	NA
Digital Multimeter FLUKE	87III	73680266	Nov. 10, 2016	Nov. 09, 2017	ETC
Power Combiner Mini-circuits	ZFRSC-123-S +	F698501347_02	Dec. 24, 2016	Dec. 23, 2017	BV CPS E&E
Power Combiner SigaTek	SP63409	NA	Dec. 24, 2016	Dec. 23, 2017	BV CPS E&E
Power Combiner Mini-circuits	ZN4PD-642W -S+	408501327_01	Apr. 28, 2016	Apr. 27, 2017	BV CPS E&E
Power Combiner SigaTek	SP63409	NA	Dec. 24, 2016	Dec. 23, 2017	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: Jan. 03 to 16, 2017

## 6 Photographs of the Test Configuration

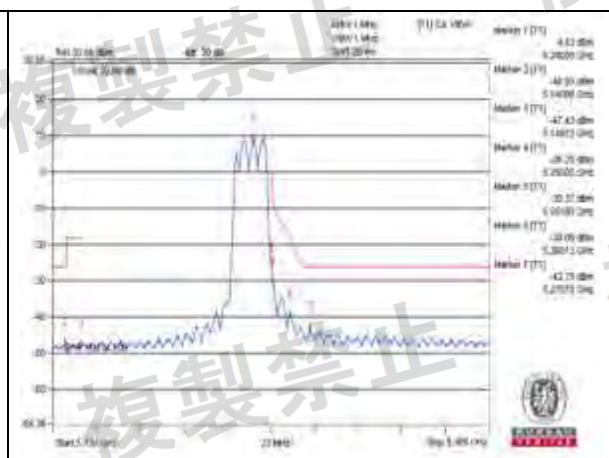
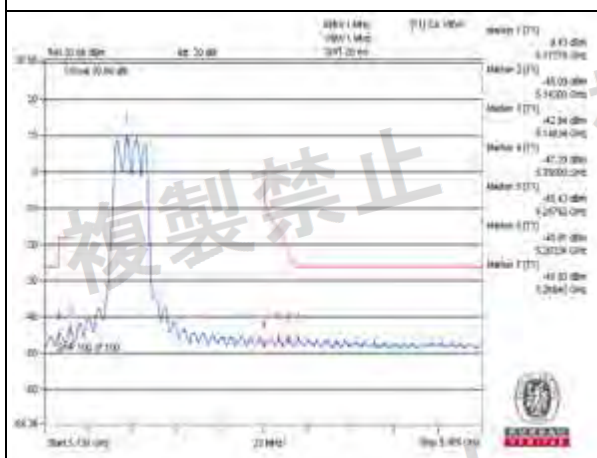




## Appendix A - Test Plots of Out-Band Leakage Power

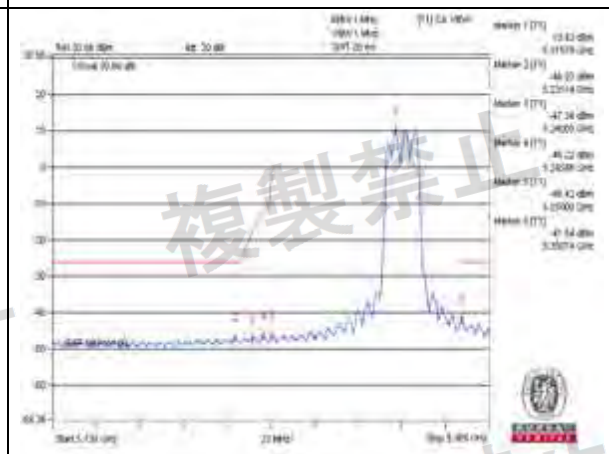
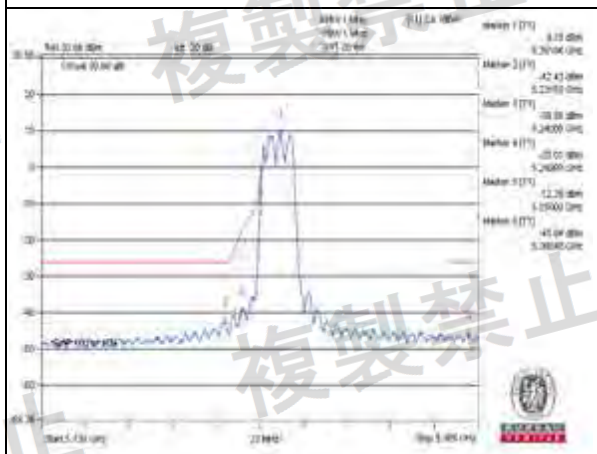
### 802.11a (W52 & W53)

V<sub>normal</sub>



Channel 36

Channel 48



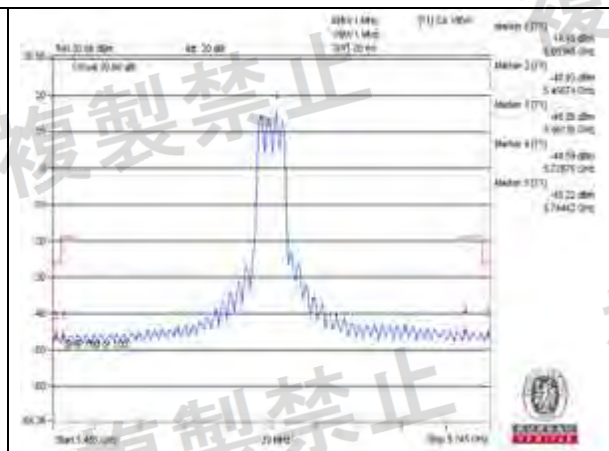
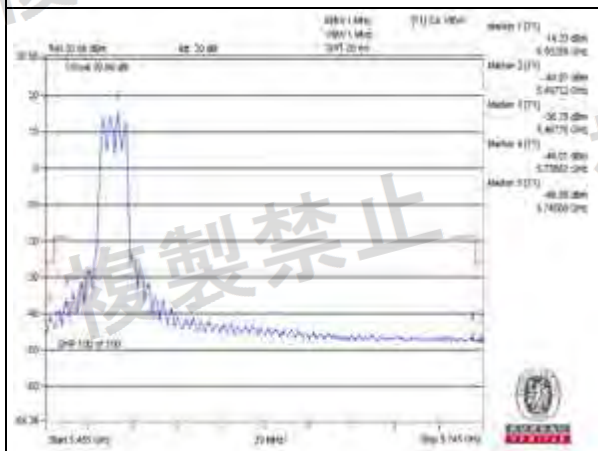
Channel 52

Channel 64

Note: Test results have been corrected with antenna gain.

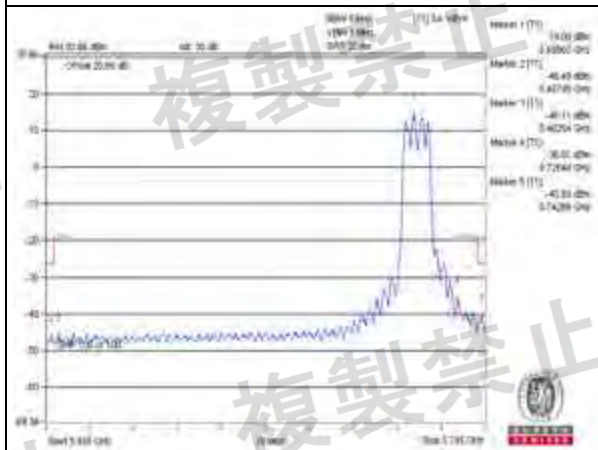
802.11a (W56)

V<sub>normal</sub>



Channel 100

Channel 120

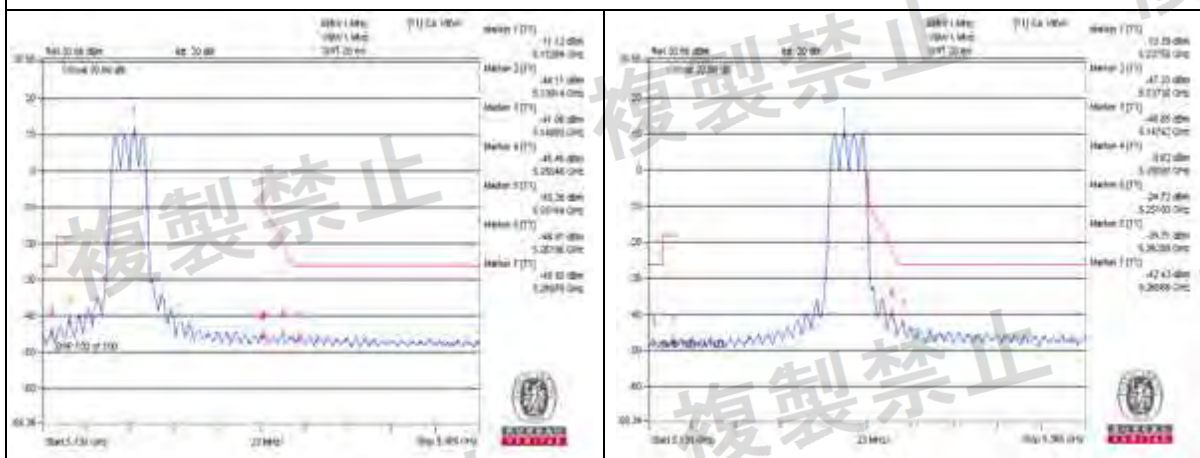


Channel 140

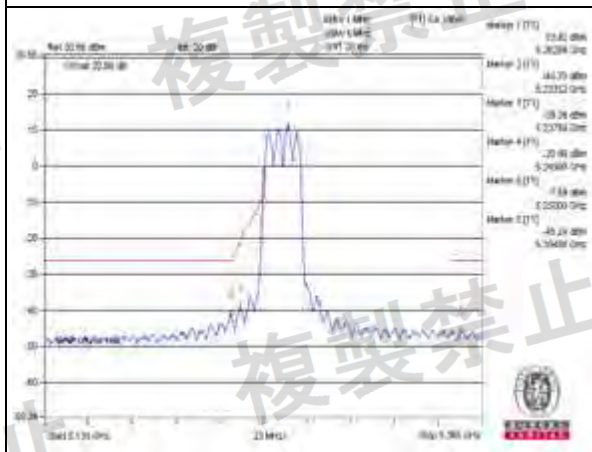
Note: Test results have been corrected with antenna gain.

# 802.11ac (VHT20) (W52 & W53)

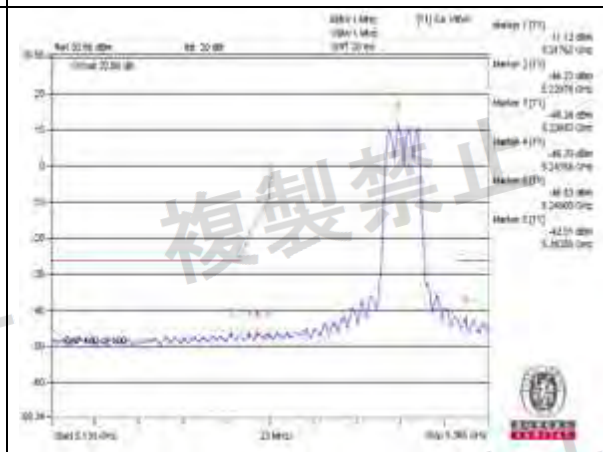
V<sub>normal</sub>



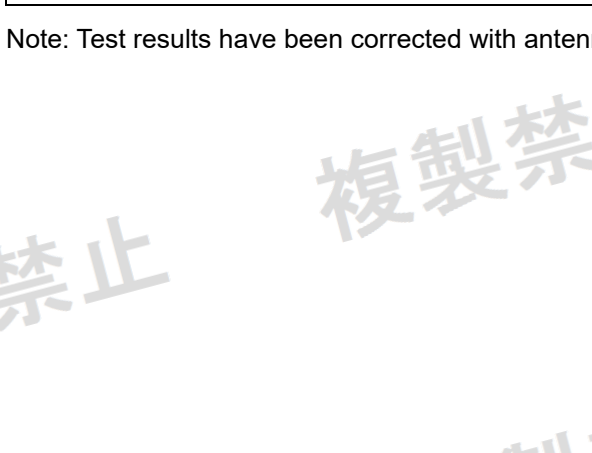
Channel 36



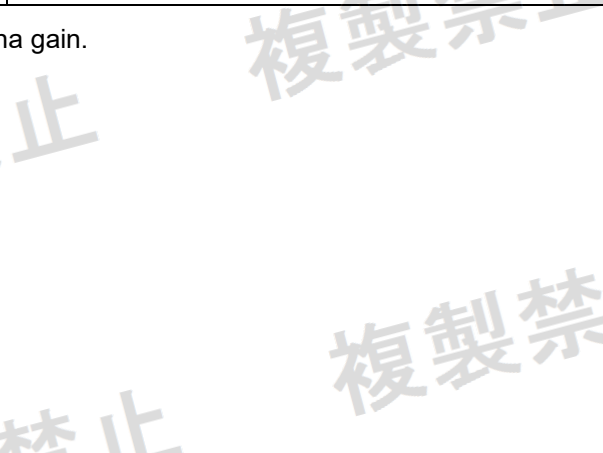
Channel 48



Channel 52



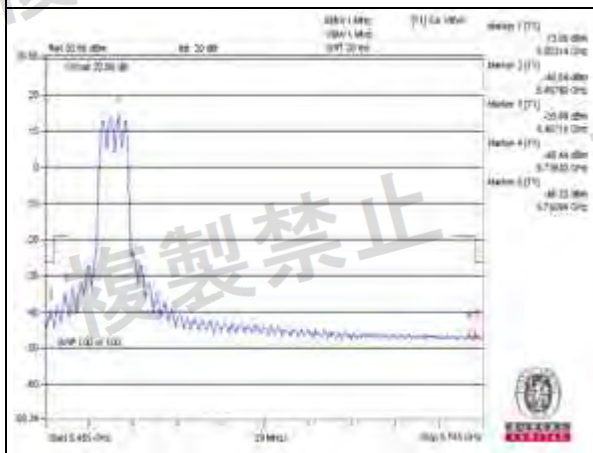
Channel 64



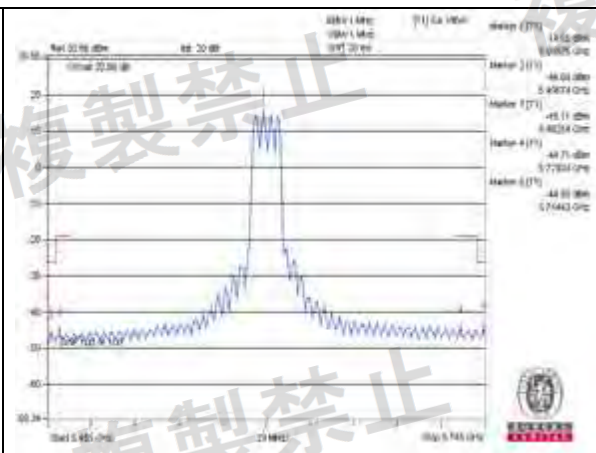
Note: Test results have been corrected with antenna gain.

# 802.11ac (VHT20) (W56)

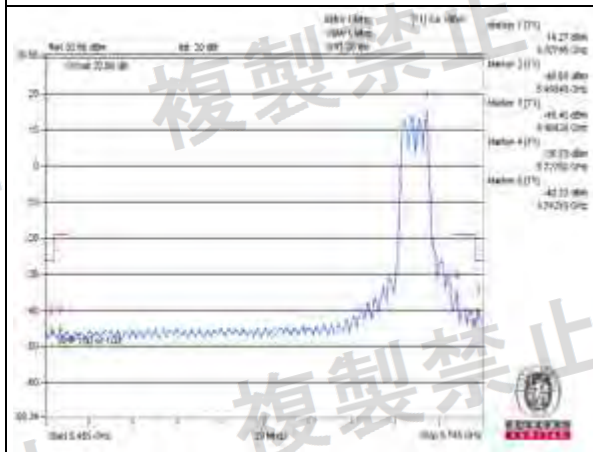
V<sub>normal</sub>



Channel 100



Channel 120



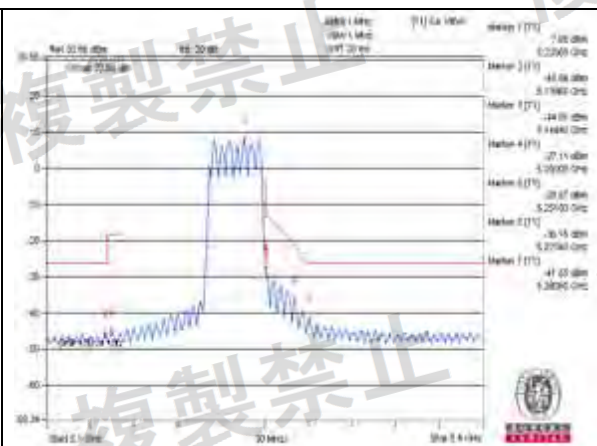
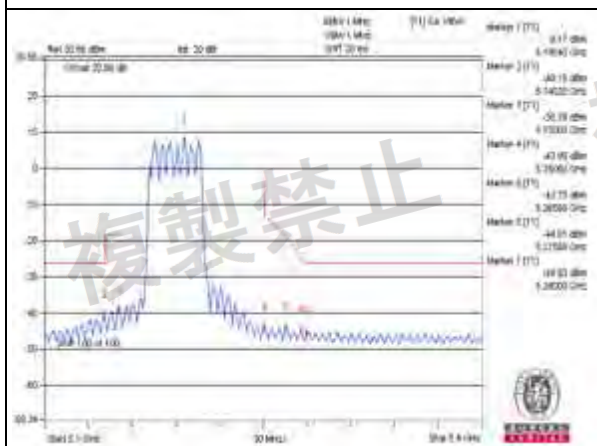
Channel 140

Note: Test results have been corrected with antenna gain.



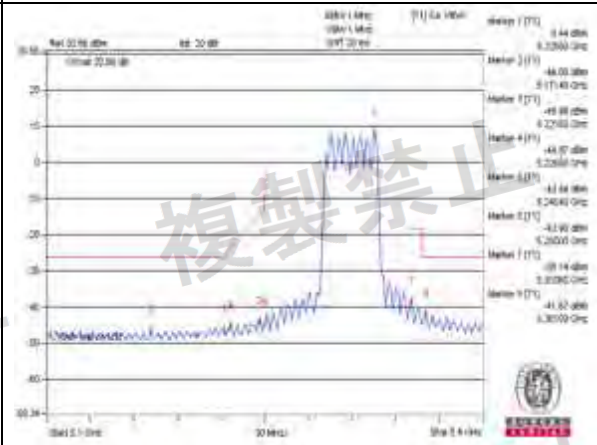
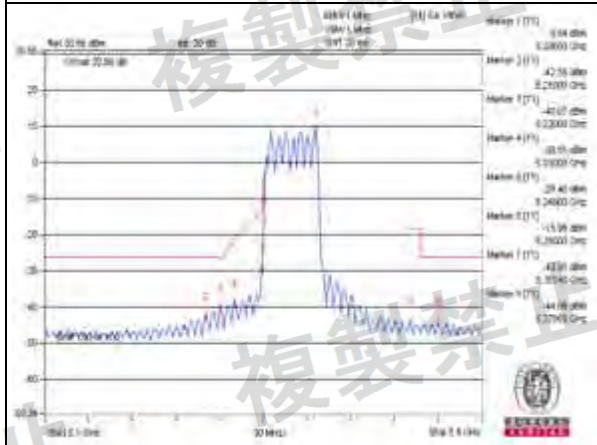
# 802.11ac (VHT40) (W52 & W53)

V normal



Channel 38

Channel 46



Channel 54

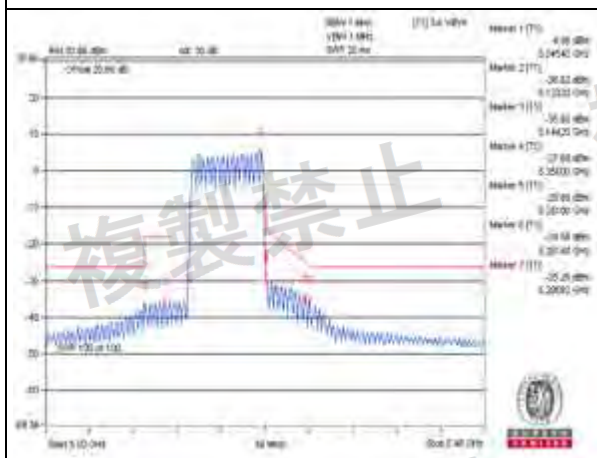
Channel 62

Note: Test results have been corrected with antenna gain.

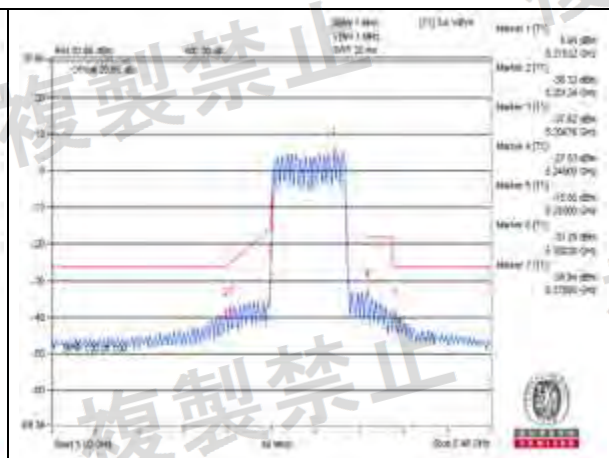


## 802.11ac (VHT80) (W52 & W53)

V<sub>normal</sub>



Channel 42

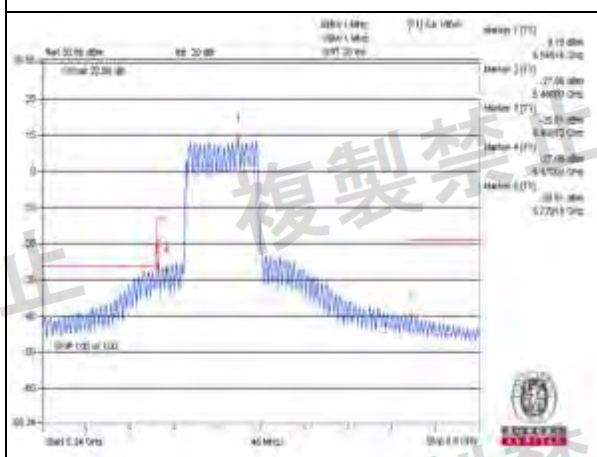


Channel 58

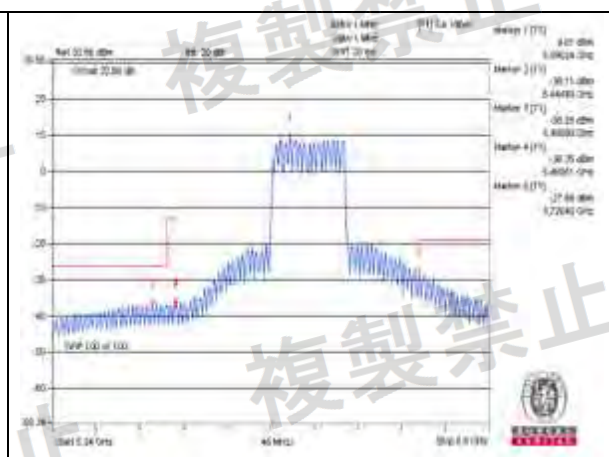
Note: Test results have been corrected with antenna gain.

## 802.11ac (VHT80) (W56)

V<sub>normal</sub>



Channel 106



Channel 122

Note: Test results have been corrected with antenna gain.



## Appendix B - 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.

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

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