

# Test Report

**Report number** : CTK-2018-02286-5

**Issue date** : 2018-07-26

<b>Applicant</b>	: KAONMEDIA Co., Ltd. KAONMEDIA Building, 884-3, Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea Phone: +82-31-724-8861
<b>Product Name</b>	: SmartTV Box (スマートテレビボックス)
<b>Model name</b>	: KSTB6043
<b>Test procedure</b>	: 5 GHz band low power data communication system Rules on certification of conformity to technical standards of specific radio equipment Radio equipment of Article 2, paragraph 1, item 19, item ^
<b>Test method</b>	: No. 88 appended table 43
<b>Date of test</b>	: 2018.06.06 - 2018.07.20
<b>Name of facility</b>	: CTK Co., Ltd. RF Test room
<b>Test results</b>	: Complied

The test results presented in this report relate only to the object tested.  
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**Tested by;**

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## TEST RESULTS

Environment of test room	Date of test	2018.06.06 - 2018.07.20
	Temperature	23 °C
	Humidity	47 %

Peak Antenna Gain	2	dBi	Result	Limit
Declaration Output Power	1	mW/MHz	----	----
	0.0000	dBm/MHz	----	----
<b>Max. E.I.R.P.</b>	<b>1.2636</b>	mW/MHz	<b>PASS</b>	2.5 mW/MHz
	<b>0.9212</b>	dBm/MHz	----	----
Input Power Voltage	12.0	VDC	----	----

Transmission Time	ON TIME	0.1404	msec
	OFF TIME	0.0992	msec
	Ratio	0.5860	%
Packet Type (Mode)		OFDM	mode

Test category ; 5GHz Band Low-Power Data Communication System (802.11ac W52 VHT80)

Measurement Channel	Ch.	42	----	----	----		
Measurement Frequency	MHz	5210	----	----	----	Result	Limit
Frequency Measurements(Tx1)	MHz	5210.024288	----	----	----	----	----
Frequency Toleranc(Tx1)	ppm	4.661804	----	----	----	<b>PASS</b>	±20×10-6(20ppm)
Frequency Measurements(Tx2)	MHz	5210.028814	----	----	----	----	----
Frequency Tolerance(Tx2)	ppm	5.530518	----	----	----	<b>PASS</b>	±20×10-6(20ppm)
Frequency Measurements(Tx3)	MHz	----	----	----	----	----	----
Frequency Tolerance(Tx3)	ppm	----	----	----	----	----	±20×10-6(20ppm)
Frequency Measurements(Tx4)	MHz	----	----	----	----	----	----
Frequency Tolerance(Tx4)	ppm	----	----	----	----	----	±20×10-6(20ppm)
Occupied Bandwidth(Tx1)	MHz	75.62	----	----	----	<b>PASS</b>	78MHz or below
Occupied Bandwidth(Tx2)	MHz	75.61	----	----	----	<b>PASS</b>	78MHz or below
Occupied Bandwidth(Tx3)	MHz	----	----	----	----	----	78MHz or below
Occupied Bandwidth(Tx4)	MHz	----	----	----	----	----	78MHz or below
RF Output Power(Tx1)	mW/MHz	0.416025	----	----	----	<b>PASS</b>	2.5mW/MHz or below
RF Output Power(Tx2)	mW/MHz	0.364015	----	----	----	<b>PASS</b>	2.5mW/MHz or below
RF Output Power(Tx3)	mW/MHz	----	----	----	----	----	2.5mW/MHz or below
RF Output Power(Tx4)	mW/MHz	----	----	----	----	----	2.5mW/MHz or below
RF Output Power (Tx1)or(Tx1+2)or(Tx1+2+3)or(Tx1+2+3+4)	mW/MHz	0.780041	----	----	----	<b>PASS</b>	2.5mW/MHz or below
RF Output Power Tolerance (Tx1)or(Tx1+2)or(Tx1+2+3)or(Tx1+2+3+4)	%	-21.996	----	----	----	<b>PASS</b>	+20% to -80%

Measurement Channel	Ch.	42						
Measurement Frequency	MHz	5210					Result	Limit
Unwanted (Spurious) Emission Strength(Tx1)	30MHz to 5020MHz	uW/MHz	0.023				PASS	2.5uW/MHz or below
		MHz	3163.720					
	5480MHz to 26GHz	uW/MHz	0.242				PASS	2.5uW/MHz or below
		MHz	25897.400					
Unwanted (Spurious) Emission Strength(Tx2)	30MHz to 5020MHz	uW/MHz	0.024				PASS	2.5uW/MHz or below
		MHz	3133.780					
	5480MHz to 26GHz	uW/MHz	0.237				PASS	2.5uW/MHz or below
		MHz	25958.960					
Unwanted (Spurious) Emission Strength(Tx3)	30MHz to 5020MHz	uW/MHz						2.5uW/MHz or below
		MHz						
	5480MHz to 26GHz	uW/MHz						2.5uW/MHz or below
		MHz						
Unwanted (Spurious) Emission Strength(Tx4)	30MHz to 5020MHz	uW/MHz						2.5uW/MHz or below
		MHz						
	5480MHz to 26GHz	uW/MHz						2.5uW/MHz or below
		MHz						
Unwanted (Spurious) Emission (Tx1)or(Tx1+2)or (Tx1+2+3)or (Tx1+2+3+4)	30MHz to 5020MHz	uW/MHz						2.5uW/MHz or below
		MHz						
	5480MHz to 26GHz	uW/MHz						2.5uW/MHz or below
		MHz						
Adjacent Channel Leakage Power (Tx1)	cf	dB	11.540					
	cf -80MHz	dB	-57.250				PASS	-25dBc or below
	cf +80MHz	dB	-58.390				PASS	-25dBc or below
Adjacent Channel Leakage Power (Tx2)	cf	dB	11.460					
	cf -80MHz	dB	-58.930				PASS	-25dBc or below
	cf +80MHz	dB	-58.910				PASS	-25dBc or below
Adjacent Channel Leakage Power (Tx3)	cf	dB						
	cf -80MHz	dB						-25dBc or below
	cf +80MHz	dB						-25dBc or below
Adjacent Channel Leakage Power (Tx4)	cf	dB						
	cf -80MHz	dB						-25dBc or below
	cf +80MHz	dB						-25dBc or below

Measurement Channel	Ch.	42					
Measurement Frequency	MHz	5210				Result	Limit
Out-Band Leakage Power (Tx1)	5020.0 to 5123.2MHz	uW/MHz	0.604			PASS	2.5uW/MHz or below
		MHz	5114.220				
	5123.2 to 5150MHz	uW/MHz	1.028			PASS	15uW/MHz or below
		MHz	5144.670				
	5250 to 5251MHz	uW/MHz	55.463			PASS	$10^{(-40)+\log(14)}$ mW/MHz or below
		MHz	5250.070				
	Limit	uW/MHz	212.785				
	5251 to 5290MHz	uW/MHz	8.035			PASS	$10^{(9/30)(-41)+1+\log(14)}$ mW/MHz or below
		MHz	5251.000				
	Limit	uW/MHz	25.000				
	5290 to 5296.7MHz	uW/MHz	0.495			PASS	$10^{(-31/10)(-40)+1+8+\log(14)}$ mW/MHz or below
		MHz	5295.170				
Out-Band Leakage Power (Tx2)	5020.0 to 5123.2MHz	uW/MHz	0.387			PASS	2.5uW/MHz or below
		MHz	5117.110				
	5123.2 to 5150MHz	uW/MHz	0.638			PASS	15uW/MHz or below
		MHz	5144.690				
	5250 to 5251MHz	uW/MHz	58.749			PASS	$10^{(-5/20)+\log(12)}$ mW/MHz or below
		MHz	5250.020				
	Limit	uW/MHz	238.748				
	5251 to 5290MHz	uW/MHz	8.710			PASS	$10^{(-9/10)(-21)+1+\log(12)}$ mW/MHz or below
		MHz	5251.230				
	Limit	uW/MHz	24.730				
	5290 to 5296.7MHz	uW/MHz	0.502			PASS	$10^{(-1.8/50)(-20)}$ mW/MHz or below
		MHz	5292.180				
Out-Band Leakage Power (Tx3)	5020.0 to 5123.2MHz	uW/MHz					2.5uW/MHz or below
		MHz					
	5123.2 to 5150MHz	uW/MHz					15uW/MHz or below
		MHz					
	5250 to 5251MHz	uW/MHz					$10^{(-5/20)+\log(12)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5251 to 5290MHz	uW/MHz					$10^{(-9/10)(-21)+1+\log(12)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5290 to 5296.7MHz	uW/MHz					$10^{(-1.8/50)(-20)}$ mW/MHz or below
		MHz					
	5296.7 to 5480MHz	uW/MHz					2.5uW/MHz or below
		MHz					

Measurement Channel	Ch.	42					
Measurement Frequency	MHz	5210				Result	Limit
Out-Band Leakage Power (Tx4)	5020.0 to 5123.2MHz	uW/MHz					2.5uW/MHz or below
		MHz					
	5123.2 to 5150MHz	uW/MHz					15uW/MHz or below
		MHz					
	5250 to 5251MHz	uW/MHz					$10^{-(6-20)+\log(1/2)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5251 to 5290MHz	uW/MHz					$10^{-(6-190)(5-21)+\log(1/2)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5290 to 5296.7MHz	uW/MHz					$10^{-1.8-(6-50)(5-20)}$ mW/MHz or below
		MHz					
Out-Band Leakage Power (Tx1) or (Tx1+2) or (Tx1+2+3) or (Tx1+2+3+4)	5020.0 to 5123.2MHz	uW/MHz					2.5uW/MHz or below
		MHz					
	5123.2 to 5150MHz	uW/MHz					15uW/MHz or below
		MHz					
	5250 to 5251MHz	uW/MHz					$10^{-(6-20)+\log(1/2)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5251 to 5290MHz	uW/MHz					$10^{-(6-190)(5-21)+\log(1/2)}$ mW/MHz or below
		MHz					
	Limit	uW/MHz					
	5290 to 5296.7MHz	uW/MHz					$10^{-1.8-(6-50)(5-20)}$ mW/MHz or below
		MHz					
	5296.7 to 5480MHz	uW/MHz					2.5uW/MHz or below
		MHz					



Measurement Channel	Ch.	42					
Measurement Frequency	MHz	5210				Result	Limit
Secondary Emitted Radio Wave Strength (Rx1)	30MHz to 1000MHz	nW	0.005			PASS	4nW or below
		MHz	836.070				
	1GHz to 10GHz	nW	0.101			PASS	20nW or below
		MHz	3475.000				
	10GHz to 26GHz	nW	0.123			PASS	20nW or below
		MHz	25936.000				
Secondary Emitted Radio Wave Strength (Rx2)	30MHz to 1000MHz	nW	0.006			PASS	4nW or below
		MHz	794.360				
	1GHz to 10GHz	nW	0.419			PASS	20nW or below
		MHz	3475.000				
	10GHz to 26GHz	nW	0.132			PASS	20nW or below
		MHz	25936.000				
Secondary Emitted Radio Wave Strength (Rx3)	30MHz to 1000MHz	nW					4nW or below
		MHz					
	1GHz to 10GHz	nW					20nW or below
		MHz					
	10GHz to 26GHz	nW					20nW or below
		MHz					
Secondary Emitted Radio Wave Strength (Rx4)	30MHz to 1000MHz	nW					4nW or below
		MHz					
	1GHz to 10GHz	nW					20nW or below
		MHz					
	10GHz to 26GHz	nW					20nW or below
		MHz					
Secondary Emitted Radio Wave Strength (Rx1)or(Rx1+2) or (Rx1+2+3) or (Rx1+2+3+4)	30MHz to 1000MHz	nW					4nW or below
		MHz					
	1GHz to 10GHz	nW					20nW or below
		MHz					
	10GHz to 26GHz	nW					20nW or below
		MHz					
Burst Length of Transmitted Signals		Good				PASS	4ms or below
Carrier Sensing Function		Good				PASS	100mV/m
Transmission Power Transmission Function		Good				PASS	3dB
Interference Prevention Function		Good				PASS	

### Measurement equipment list


USE	Equipment	Company	Model No.	Serial No.	Cal. Authority	Cal. Date	Due. Date
	AC POWER SUPPLY	KIKUSUI	PCR500L	CJ001681	SICT Co., Ltd.	Sep. 20, 2017	Sep. 20, 2018
	EPM Series Power Meter	HP	E4418A	GB38272734	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	Audio Analyzer	HP	8903B	2742A03432	SICT Co., Ltd.	Oct. 31, 2017	Oct. 31, 2018
	MICROWAVE FREQUENCY COUNTER	HP	5343A	2742A02615	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	COAXIAL STEP ATTENUATOR	HP	8494A	3308A33351	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	DC Power Supply	HP	E3632A	KR94907541	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	ATTENUATOR	BIRD	1000-WA-MFN-30	236	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	DC Power Supply	Agilent	E3632A	MY40011638	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	SPECTRUM ANALYZER	R&S	FSP	100401	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
	POWER SENSOR	HP	8487A	3318A03524	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
×	Signal Generator	R&S	SMB100A	175528	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	Digital Vibration Meter	Showa Sokki Corporation	I332A	102146	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
×	Signal Analyzer	Agilent	N9020A	MY48011598	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	SPECTRUM ANALYZER	R&S	FSP-30	100994	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	MXA Signal Analyzer	Agilent	N9020A	MY50510324	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
	30 dB ATTENUATOR	HP	8498A	1801A06913	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	BLUETOOTH TESTER	TESCOM	TC-3000C	3000C000377	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	Band Reject Filter	Wainwright Instruments GmbH	WRCT916.8/921.3-915/923.8-50/16EE	1-1	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	Band Reject Filter	Wainwright Instruments GmbH	WRCG902/930-894/938-50/12SS	SN1	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
	VECTOR SIGNAL GENERATOR	R&S	SMBV100A	258008	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
	SPECTRUM ANALYZER	R&S	FSV30	100925	SICT Co., Ltd.	Jan. 26, 2018	Jan. 26, 2019
	High Pass Filter	FILTRON	H16032FL	16060001S-4	SICT Co., Ltd.	Dec. 28, 2017	Dec. 28, 2018
	Combiner/Divider	Weinschel	Apr. 28, 1904	SQ369	SICT Co., Ltd.	Nov. 1, 2017	Nov. 1, 2018
	OSP120 BASE UNIT	R&S	OSP120	101424	SICT Co., Ltd.	Sep. 25, 2017	Sep. 25, 2018
	Temp&Humi Chamber	ESPEC CORP	SH-242	93012243	SICT Co., Ltd.	Mar. 9, 2018	Mar. 9, 2019

Note1: The calibration measurement equipment is valid for a one year period.

Note2: "X" used equipment.

About uncertainty of measured value

Humidity
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判定	Measured value and standard limit value
PASS	<p><b>Case1</b> <u>Standard limit value</u></p>  <p>Even if it takes uncertainty into consideration, a standard limit value is fulfilled.</p>
	<p><b>Case2</b></p>  <p>Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.</p>
FAIL	<p><b>Case3</b></p>  <p>Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.</p>
	<p><b>Case4</b></p>  <p>Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.</p>



## Photographs

Conducted Measurement Photo

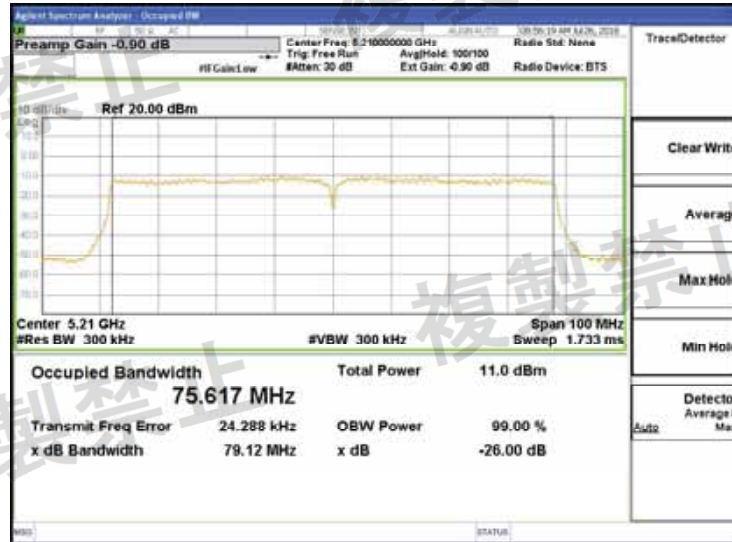


## Test chart

### Frequency tolerance

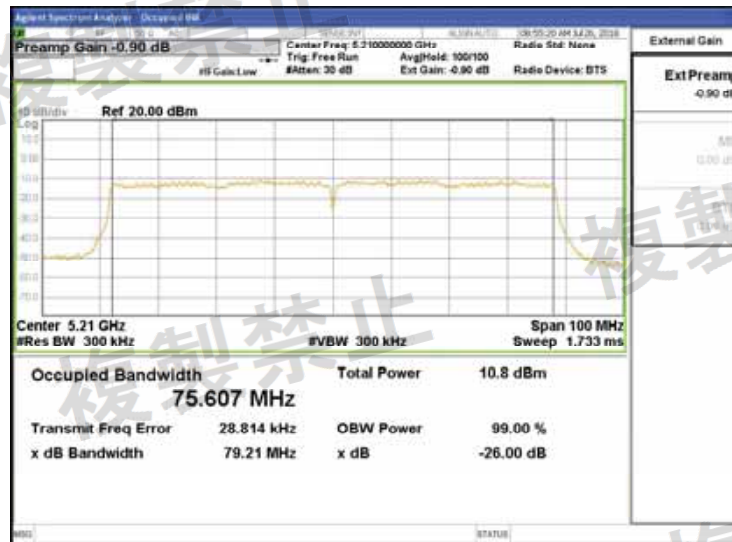
ANT 1

Ch.42: 5210MHz



ANT 2

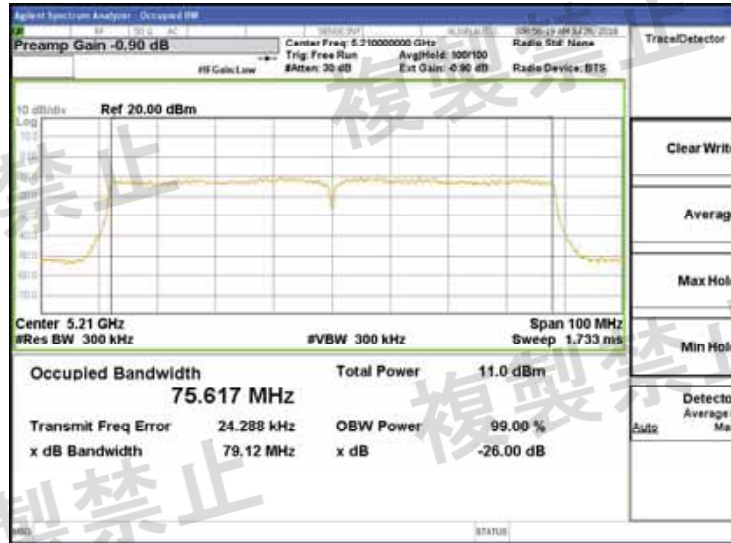
Ch.42: 5210MHz



### Occupied bandwidth

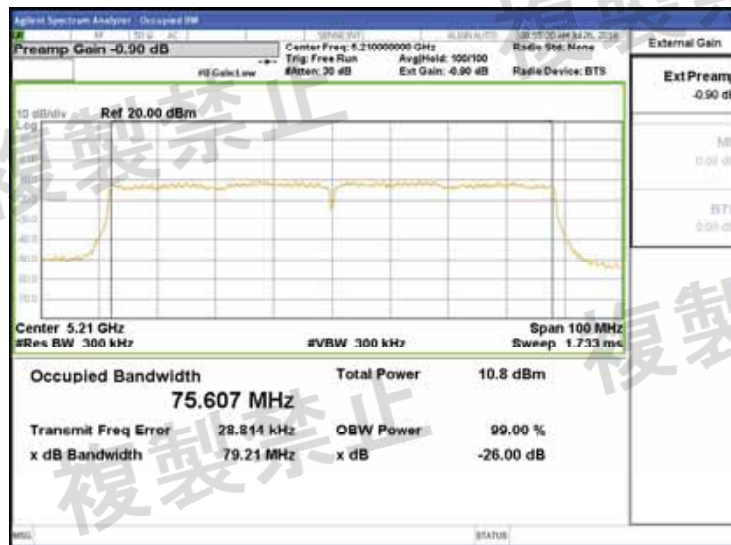
ANT 1

Ch.42: 5210MHz



ANT 2

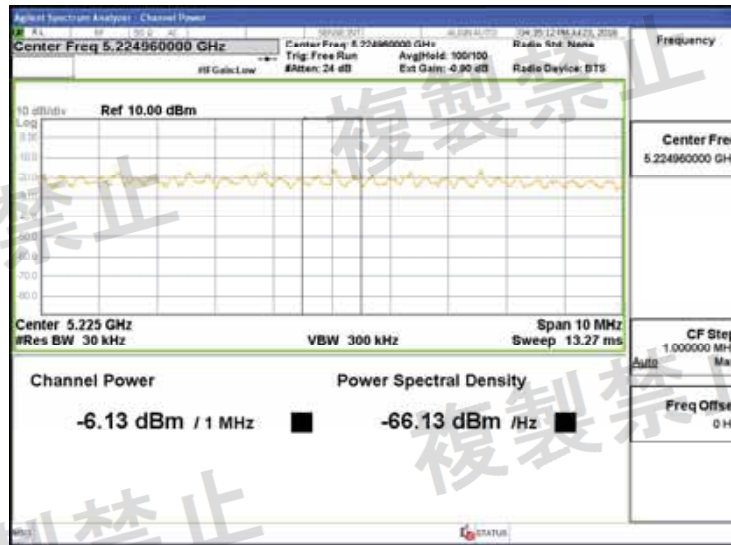
Ch.42: 5210MHz



### RF output power tolerance

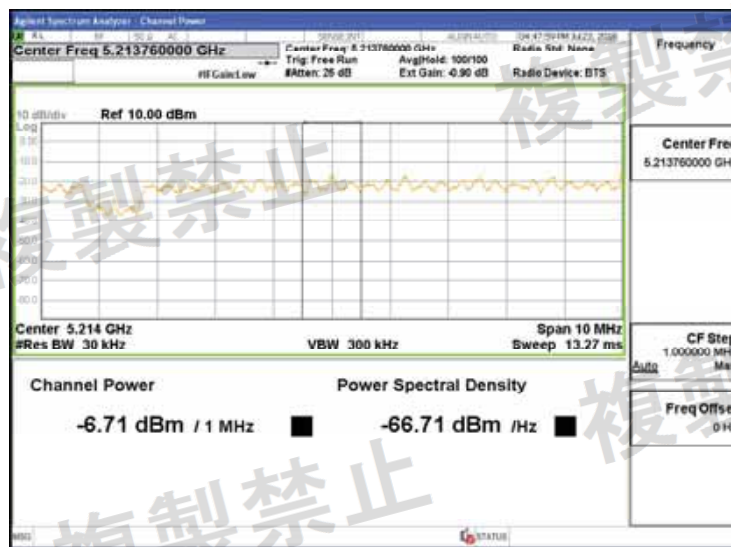
ANT 1

Ch.42: 5210MHz



ANT 2

Ch.42: 5210MHz



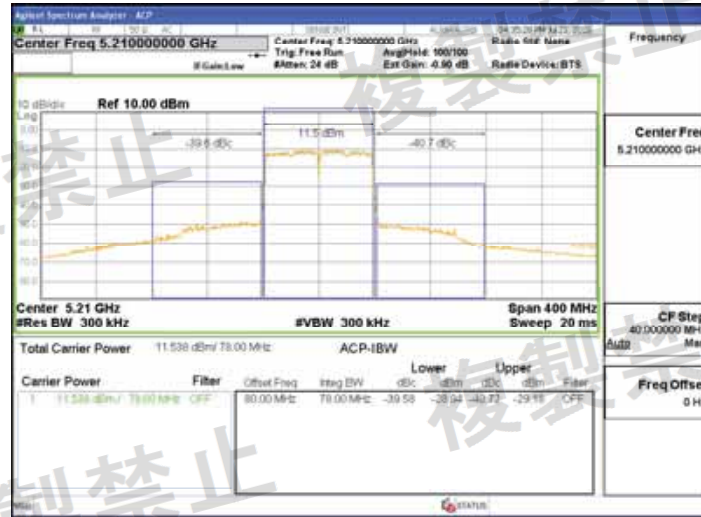
ON/OFF time



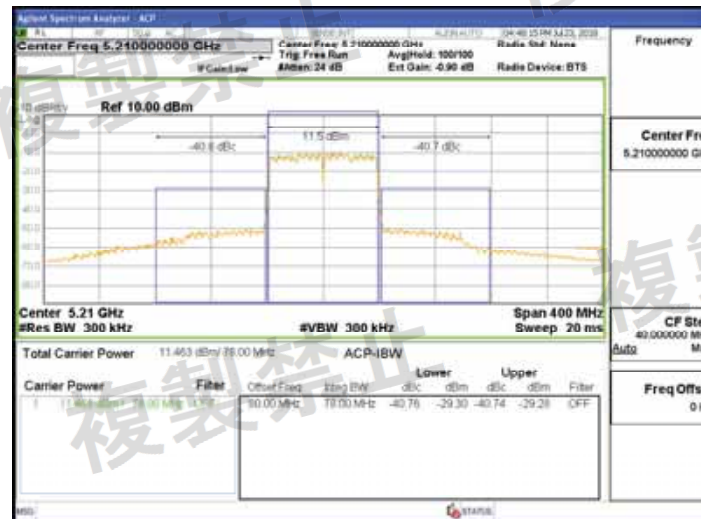


### Adjacent Channel Leakage Power

ANT 1  
Ch.42: 5210MHz



ANT 2  
Ch.42: 5210MHz



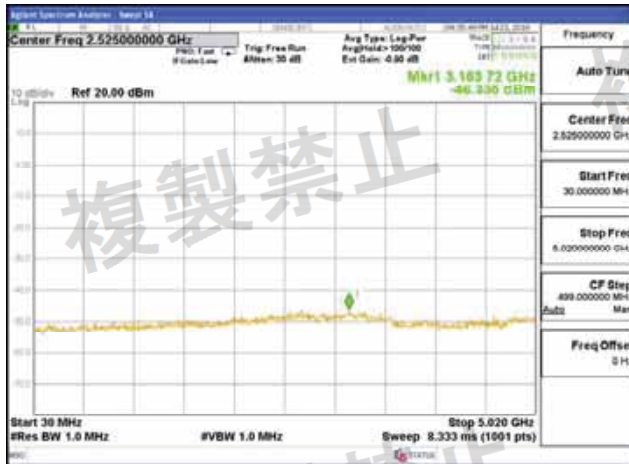
Unwanted(Spurious) emission strength

ANT 1

Ch.42: 5210MHz

30MHz-5020MHz

Limit line: -37.26 dBm



5480MHz-26GHz

Limit line: -37.26 dBm



ANT 2

Ch.42: 5210MHz

30MHz-5020MHz

Limit line: -37.26 dBm



5480MHz-26GHz

Limit line: -37.26 dBm

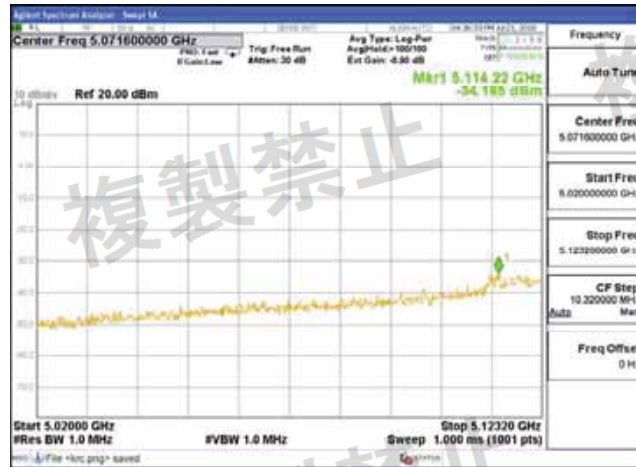


Out-band leakage power

ANT 1

Ch.42: 5210MHz

5020-5112.2MHz



5123.2-5150MHz



5250-5251MHz





5251-5290MHz



5290-5296.7MHz



5296.7-5480MHz





ANT 2  
Ch.42: 5210MHz  
5020-5112.2MHz



5123.2-5150MHz



5250-5251MHz



5251-5290MHz



5290-5296.7MHz



5296.7-5480MHz



## Secondary emitted radio wave strength

ANT 1

Ch.42: 5210MHz

30MHz-1GHz

Limit line: -65.22 dBm



1GHz-10GHz

Limit line: -58.23 dBm



10GHz-26GHz

Limit line: -58.23 dBm



ANT 2  
Ch.42: 5210MHz  
30MHz-1GHz Limit line: -65.22 dBm



1GHz-10GHz Limit line: -58.23 dBm



10GHz-26GHz Limit line: -58.23 dBm





# Burst length of transmitted signals

Ch.42: 5210MHz

