

TEST REPORT

REPORT NUMBER: 4788421773

COMPANY NAME: GP Electronics (HK) Ltd.

EUT DESCRIPTION: Wireless Speaker

MODEL: LSX (Master)

SERIAL NUMBER: KMLSXXXXXXYWWR1G

ISSUE DATE: 14-Jun-18

DATE TESTED: 7-Jun-18

APPLICABLE STANDARDS: JAPAN RADIO LAW RADIO EQUIPMENT REGULATIONS

TEST METHOD: Notice 88 of Ordinance Concerning Technical Regulations Conformity Certification of Specified Radio Equipment

Place of Testing: UL Verification Services (Guangzhou) Co., Ltd., Song Shan Lake Branch
Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech
Development Zone Dongguan, People's Republic of China

Test Result: Pass

Classification of Specified
Radio Equipment: Article 2 Clause 1 Item 19-3

Type of radio wave, Frequency
and antenna power: G1D, D1D 5190-5230MHz (Interval of 40MHz 2ch) 0.000694W/MHz

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services (Guangzhou) Co., Ltd., Song Shan Lake Branch and all revisions are duly noted

Approved & Released By:

Stephen



Tested By:

Kebo



Engineer Full Name:

Stephen Guo

Engineer Title:

Laboratory Manager

UL Verification Services (Guangzhou) Co., LTD.
Songshan Lake Branch

Engineer Full Name:

Kebo Zhang

Engineer Title:

Engineer

UL Verification Services (Guangzhou) Co., LTD.
Songshan Lake Branch

1. EUT Information

Report No. : 4788421773
Applicant : GP Electronics (HK) Ltd.
Equipment Description: Wireless Speaker
Model No. : LSX (Master)
SerialNo. : KMLSXXXXXYWWR1G
The number of Tx Antenna : 2
Max Antenna Gain : 2.60dBi
Note: The equipment has two antennas but only one antenna active at any moment in time The two antennas have the same power setting only one antenna test data record in the report which has the max antenna gain
Mode : IEEE802.11n40
Type of Radio wave : G1D, D1D

Supply Voltage
<input type="radio"/> DC <input checked="" type="radio"/> AC 100.00V
-

Voltage Condition
<input checked="" type="radio"/> Non-Extreme <input type="radio"/> Extreme
Normal AC100V
Normal-10% -
Normal+10% -

Band
<input checked="" type="radio"/> W52 <input type="radio"/> W53

Modulation
<input type="radio"/> OFDM (OBW<19MHz)
<input checked="" type="radio"/> OFDM (OBW<19-38MHz)
<input type="radio"/> OS (OBW<18MHz)
<input type="radio"/> Other Modulation (OBW<18MHz)

EUT has
<input checked="" type="radio"/> ANT Connector
<input type="radio"/> No ANT Connector distance -

TEUT has
<input type="radio"/> TPC Function
<input checked="" type="radio"/> No TPG Funciton

The worst-case data rate for each mode is determined to be as follows, based on preliminary test of the chipset utilized in this radio.
All final tests were made at the Lowest Rate.

Factors

	[MHz]	Other than for Power and ACP		For Power	
		Cable Loss [dB]	ATT/ [dB]	Cable Loss [dB]	ATT/ [dB]
Low Channel (Tx1)	5190	1.00	10.00	1.00	10.00
High Channel (Tx3)	5230	1.00	10.00	1.00	10.00

* Cable loss and ATT are not taken into account for ACP.

2.TEST Result

2.1. Frequency Tolerance

Job No. 4788421773

Remark1 Antenna 1

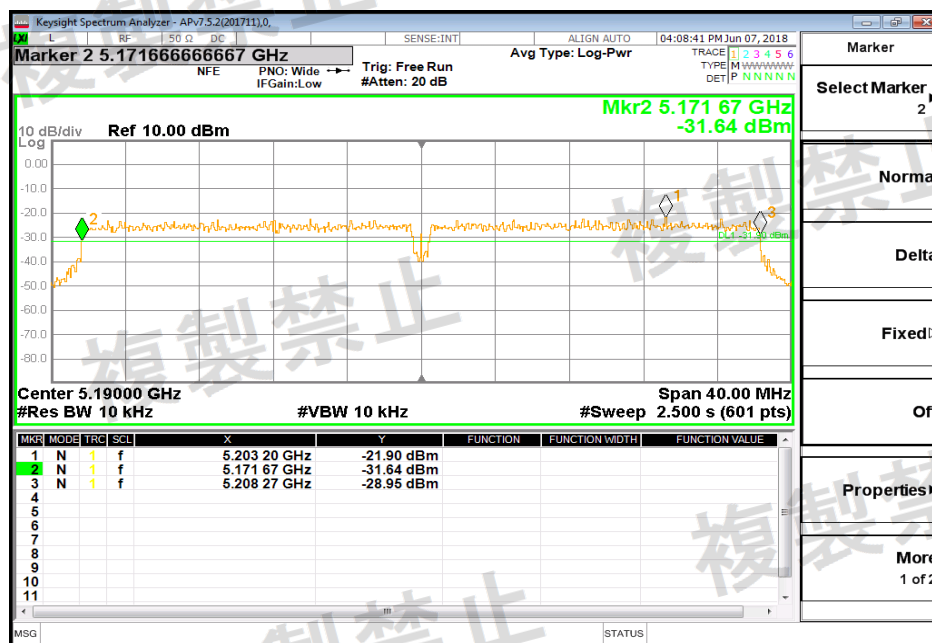
Remark2

[DATA]

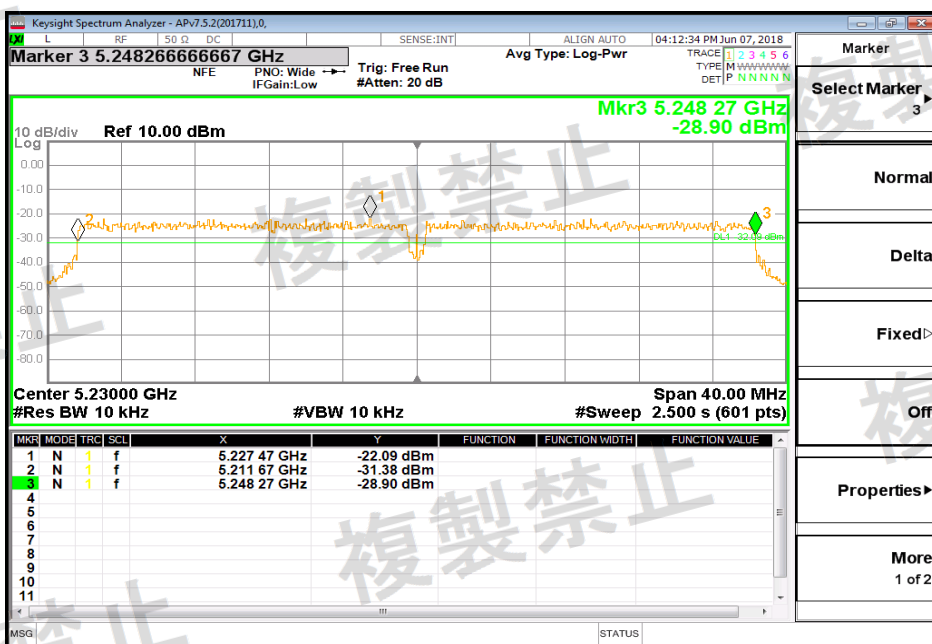
Voltage	Freq. [MHz]	Test Freq.1 [MHz]	Test Freq.2 [MHz]	Result [MHz]	Tolerance [kHz]	Tolerance [ppm]	Limit [ppm]
AC100V	5190	5171.670	5208.270	5189.9700	-30.0000	-5.78	±20.0
	5230	5211.670	5248.270	5229.9700	-30.0000	-5.74	±20.0

Note: Result=(Test Freq.1+Test Freq.2)/2

Tx1_Freq_Nom



Tx3_Freq_Nom



2.2. Occupied Bandwidth

Job No. 4788421773

Remark1 Antenna 1

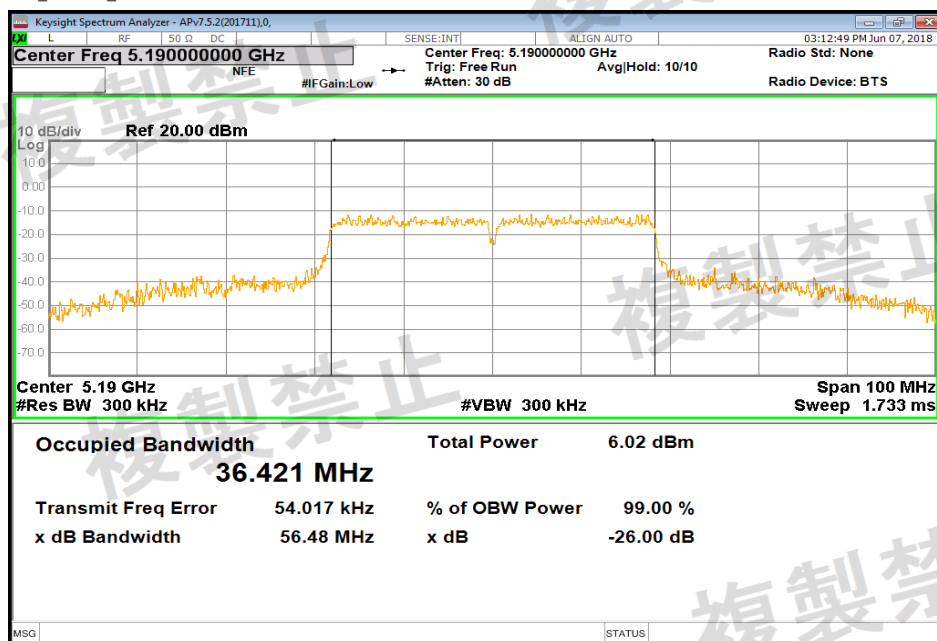
Remark2

[DATA]

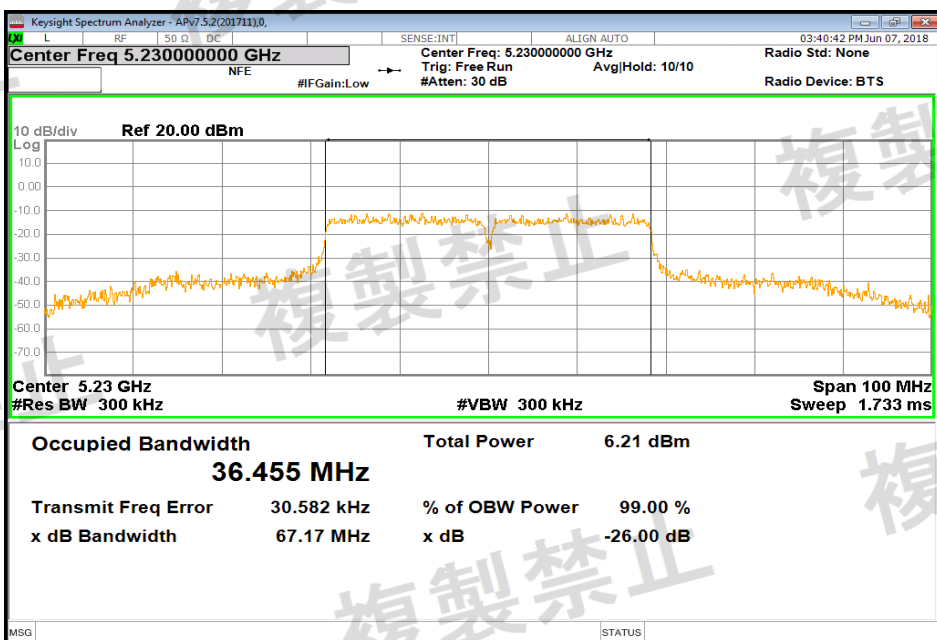
99% Occupied Frequency Bandwidth

Voltage	Freq. [MHz]	Result [MHz]	Limit [MHz]
AC100V	5190	36.4210	38
	5230	36.4550	38

Tx1_99OBW_Nom



Tx3_99OBW_Nom



2.3.Unwanted Emission Strength (Normal Voltage)

Job No. 4788421773

Remark1 Antenna 1

Remark2

[DATA]

Voltage	Freq.	Freq.	S/A Reading	Cable Loss	Atten. Loss	Result	Result	Limit	Remark
	[MHz]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[uW]	[uW]	
AC100V	5190	840.00	-61.80	1.00	10.00	-50.80	0.008	2.500	♣1
		4743.00	-53.95	1.00	10.00	-42.95	0.051	2.500	♣1
		5133.00	-48.91	1.00	10.00	-37.91	0.162	2.500	♣1
		5095.83	-52.48	1.00	10.00	-41.48	0.071	2.500	♣1
		14333.00	-57.34	1.00	10.00	-46.34	0.023	2.500	♣2
		19158.00	-56.63	1.00	10.00	-45.63	0.027	2.500	♣2
	5230	25765.00	-54.12	1.00	10.00	-43.12	0.049	2.500	♣2
		727.60	-61.33	1.00	10.00	-50.33	0.009	2.500	♣1
		4793.00	-54.47	1.00	10.00	-43.47	0.045	2.500	♣1
		5129.00	-52.91	1.00	10.00	-41.91	0.064	2.500	♣1
		5367.00	-53.49	1.00	10.00	-42.49	0.056	2.500	♣1
		14333.00	-58.45	1.00	10.00	-47.45	0.018	2.500	♣2
		19508.00	-55.88	1.00	10.00	-44.88	0.033	2.500	♣2
		25045.00	-54.29	1.00	10.00	-43.29	0.047	2.500	♣2

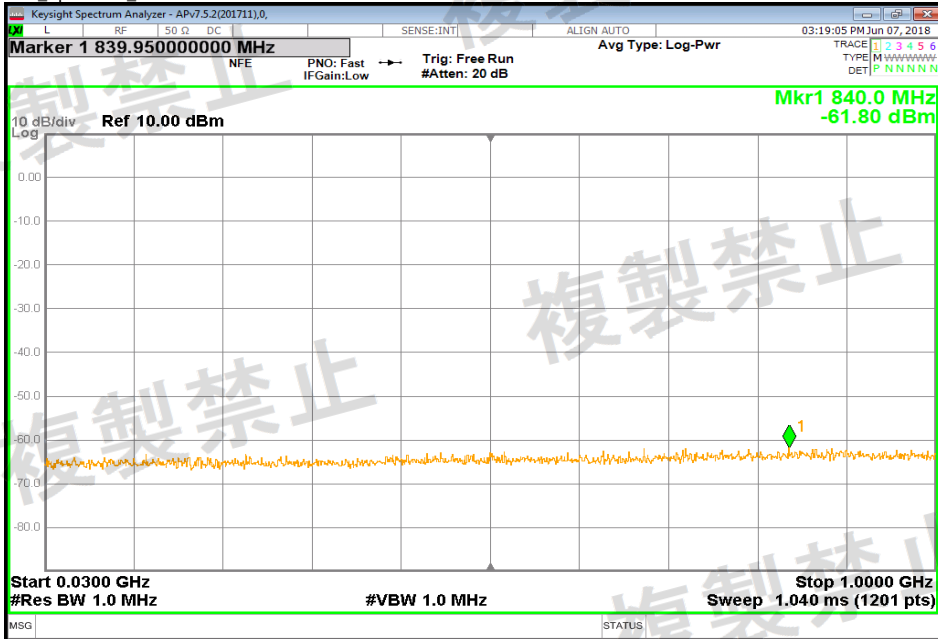
Sample Calculation :

Result = Reading + Cable Loss + Attenuator

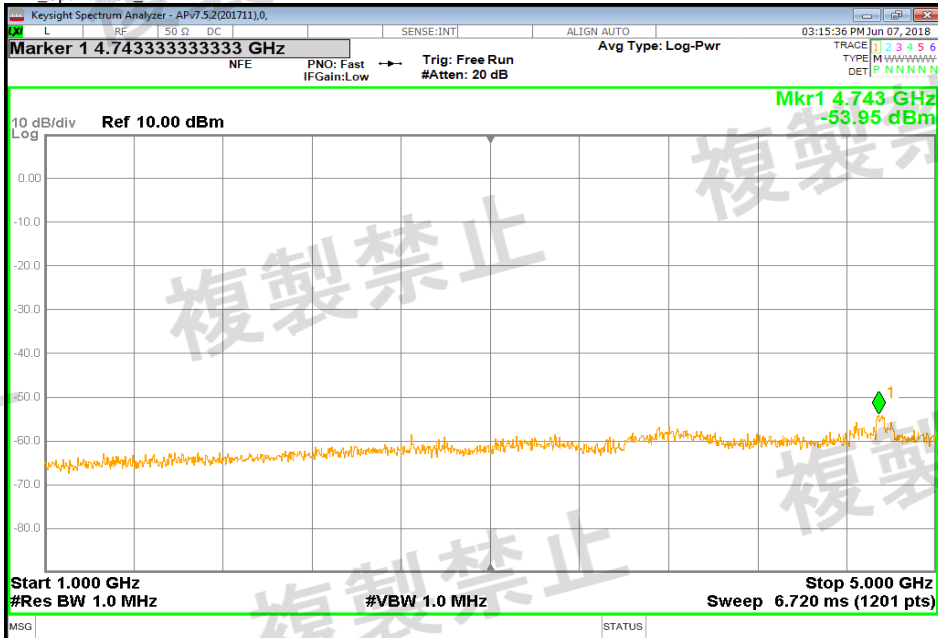
♣1:Freq Range1 (< 5,100MHz)

♣2:Freq Range2 (> 5,400MHz)

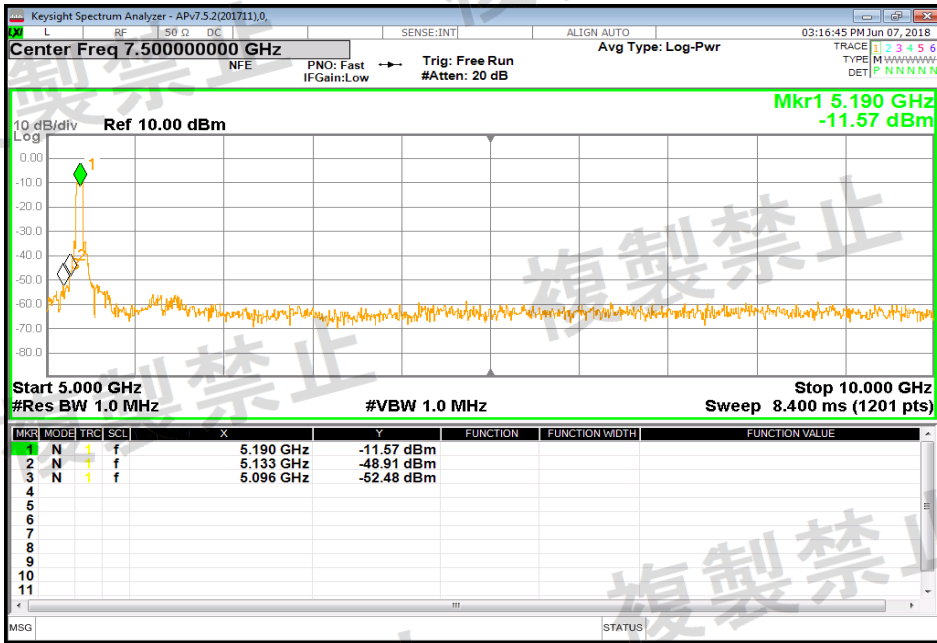
Tx1_SpuriousM_Nom



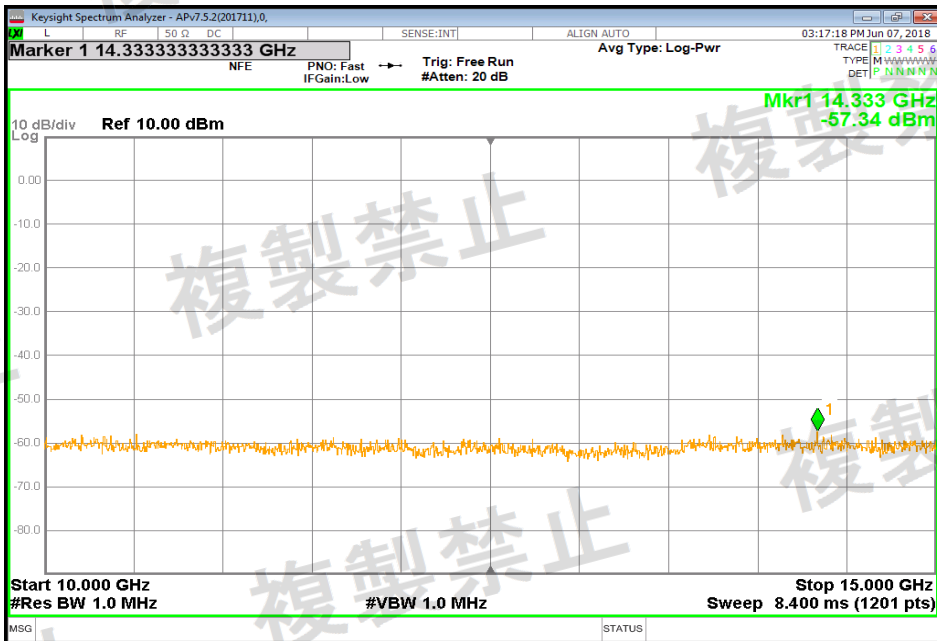
Tx1_SpuriousG1_Nom



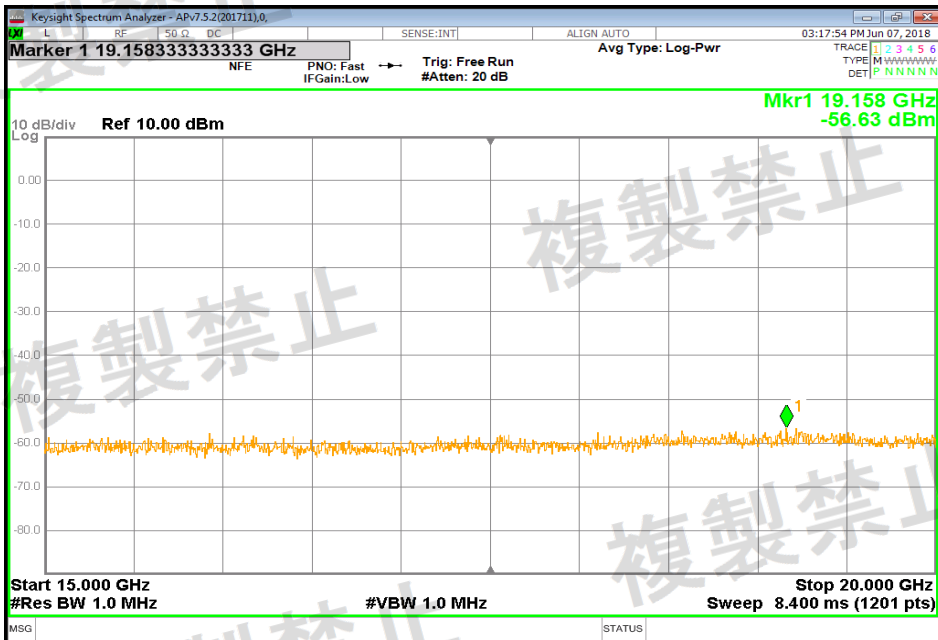
Tx1_SpuriousG2_Nom



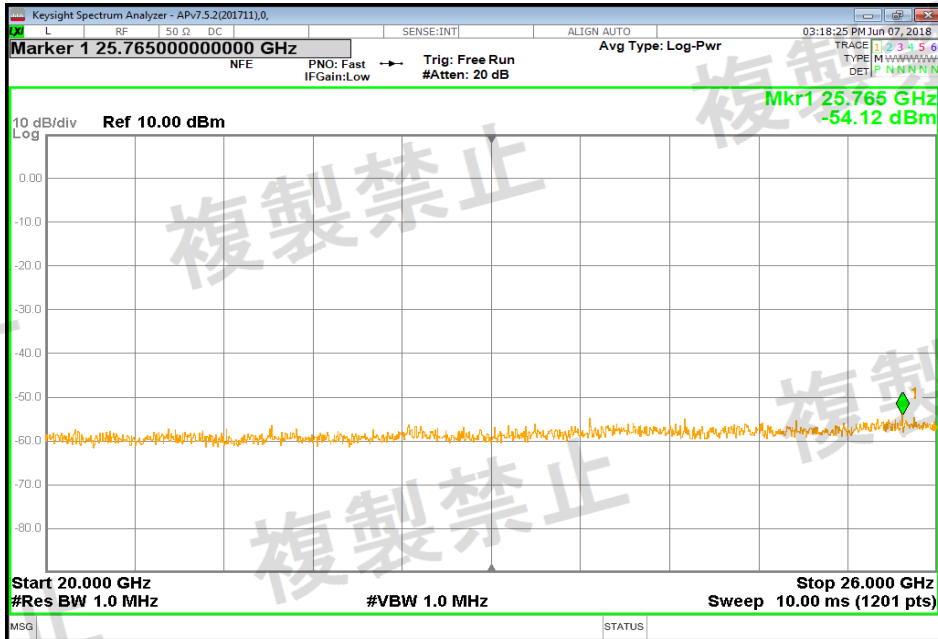
Tx1_SpuriousG3_Nom



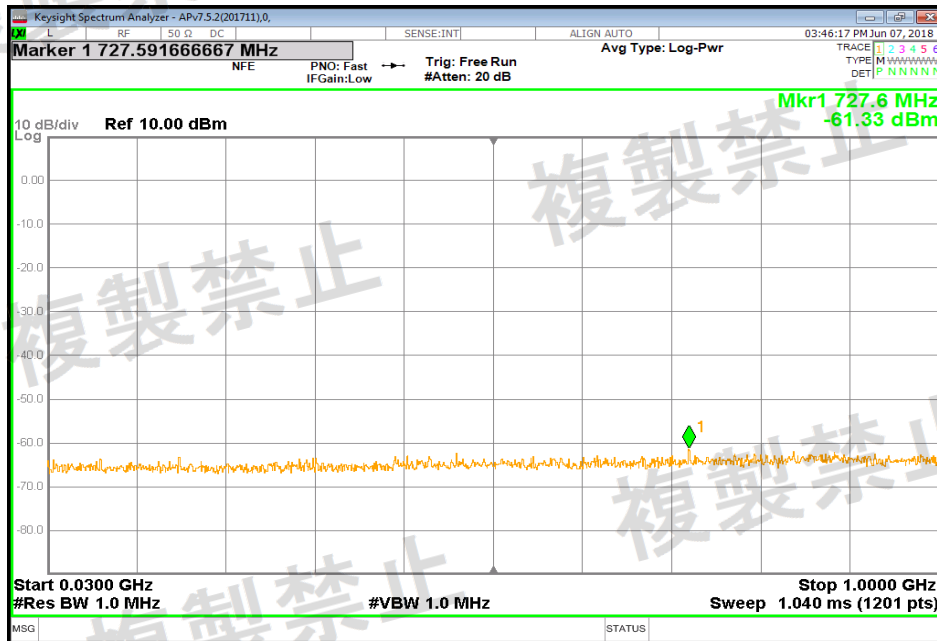
Tx1_SpuriousG4_Nom



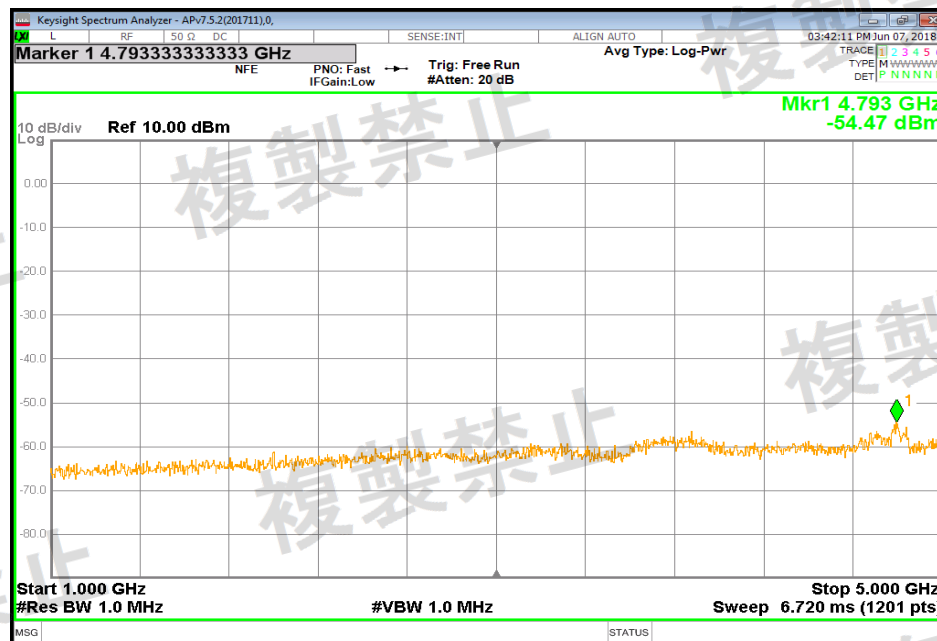
Tx1_SpuriousG5_Nom



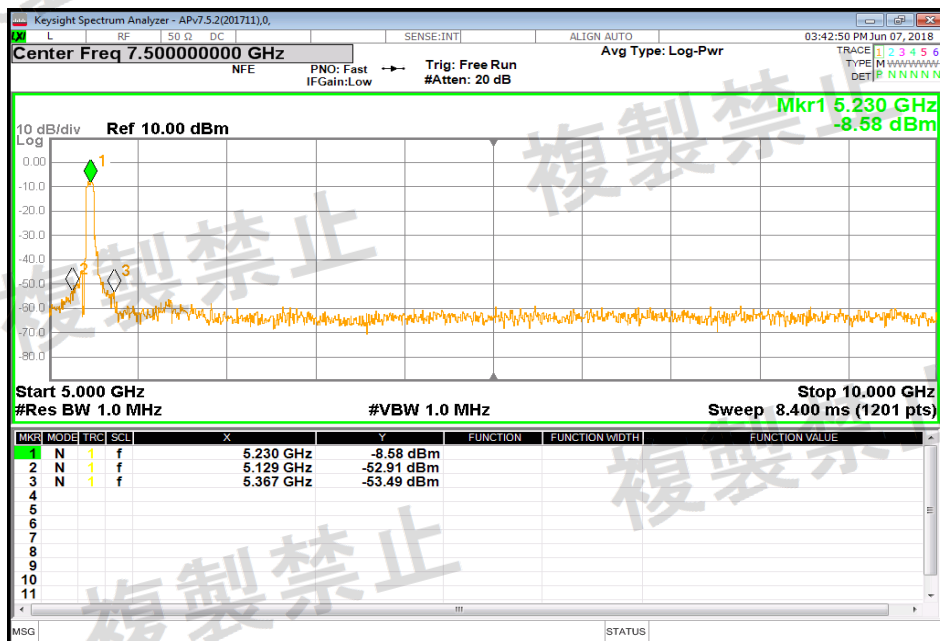
Tx3_SpuriousM_Nom



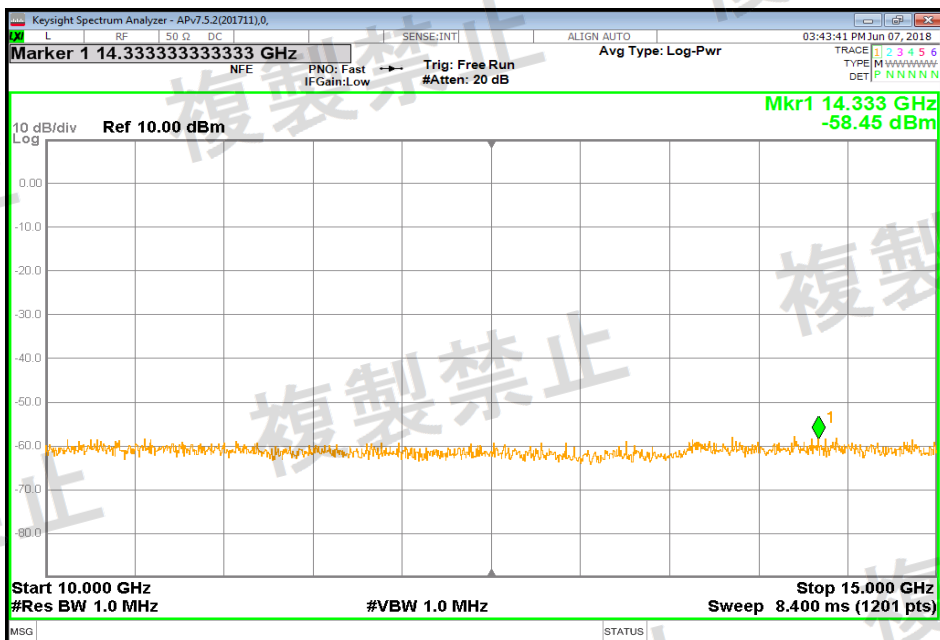
Tx3_SpuriousG1_Nom



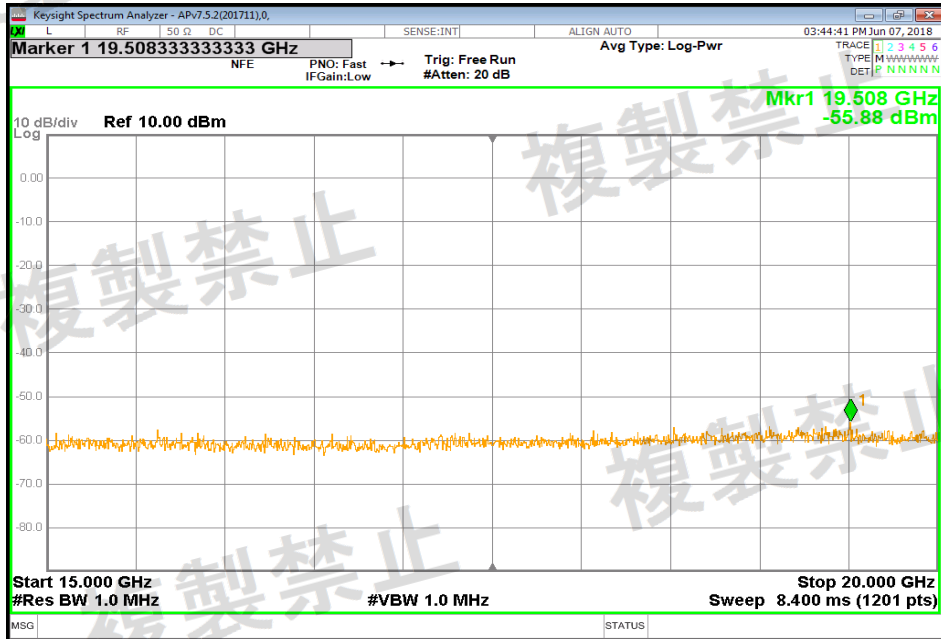
Tx3_SpuriousG2_Nom



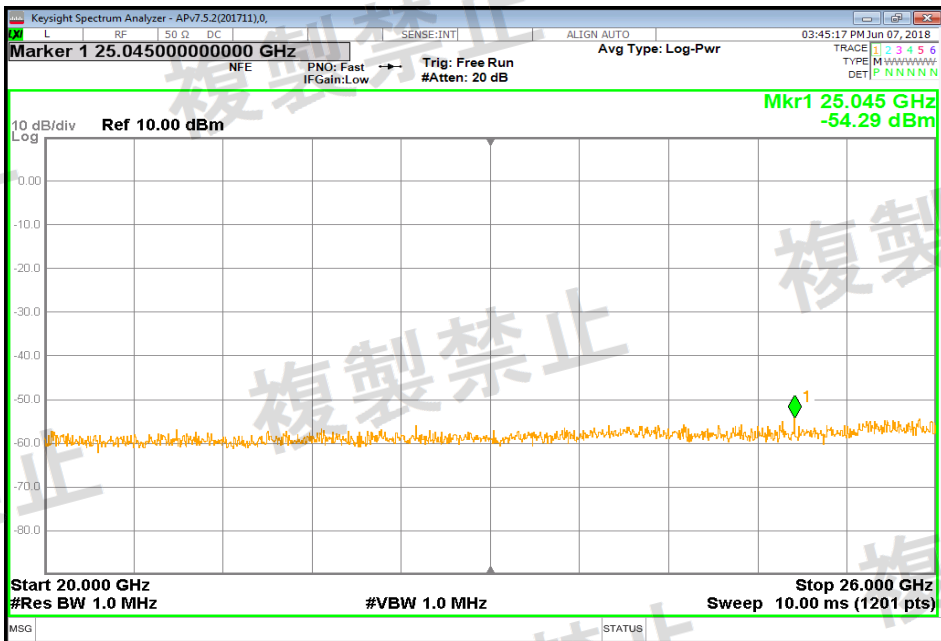
Tx3_SpuriousG3_Nom



Tx3_SpuriousG4_Nom



Tx3_SpuriousG5_Nom



2.4. Output Power/ E.I.R.P

Job No. 4788421773

Remark1 Antenna 1

Remark2

[DATA]

Voltage	Port No.	Freq.	Reading	Cable Loss	Atten. Loss	Burst Rate	Output Power (A)	Antenna Gain	E.I.R.P. (A)
		[MHz]	[dBm]	[dB]	[dB]		[W/MHz]	[dBi]	[W/MHz]
AC100V	1	5190	-14.25	1.00	10.00	1.02	0.000482	2.60	0.000876
		5230	-14.17	1.00	10.00	1.02	0.000491	2.60	0.000893

Sample Calculation :

Output Power (A) = {Reading + Cable Loss + Atten. Loss} * Burst Rate

E.I.R.P. (A) = Output Power (A) * 10^(Antenna Gain[dBi]/10)

[Total Power / Result and Limit]

Voltage	Freq. [MHz]	Output Power				E.I.R.P.	
		Result (B) [W/MHz]	Tolerance Result [%]	Limit [W/MHz]	Tolerance Limit [%]	Result (B) [W/MHz]	Limit [W/MHz]
AC100V	5190	0.000482	-30.6	0.005000	+20 ~ -80	0.000876	0.005000
	5230	0.000491	-29.4	0.005000	+20 ~ -80	0.000893	0.005000

Sample Calculation :

Tolerance = Output Power Result (B) / Declared Output Power * 100 - 100.

Output Power Result (B) : Sum of all "Output Power (A)" at same Freq.

E.I.R.P. Result (B): Sum of all "E.I.R.P. (A)" at same Freq.

[Declared Output Power]

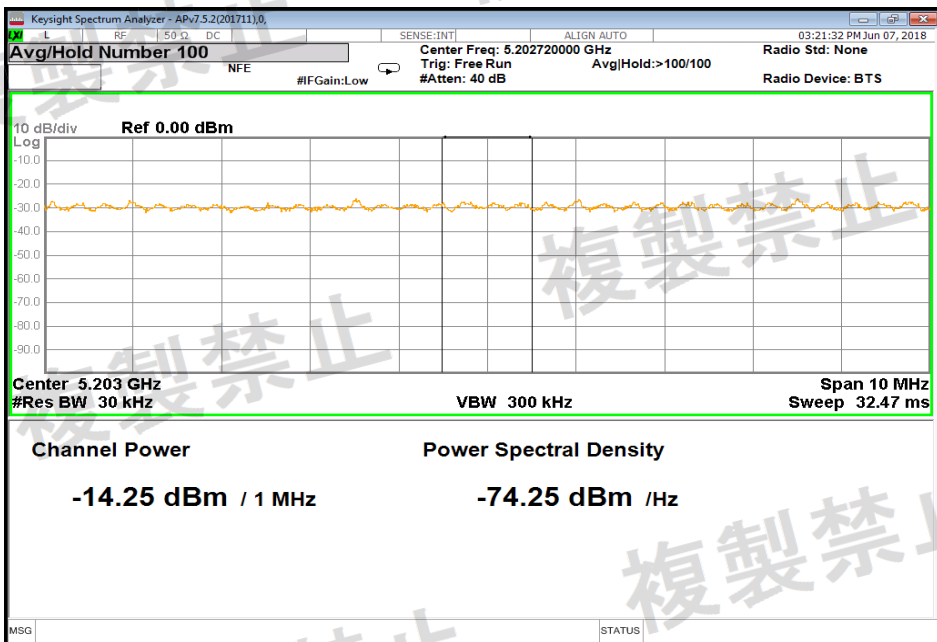
Average of Output Power Result (B)	0.000486	W/MHz	Average of E.I.R.P. Result(B)	0.000884	W/MHz
Declared Output Power	0.000694	W/MHz	E.I.R.P. for Declared Output Power	0.001264	W/MHz
+20	0.000833	W/MHz			
Middle (Declared Output Power -30%)	0.000486	W/MHz			
-80	0.000139	W/MHz			

Sample Calculation :

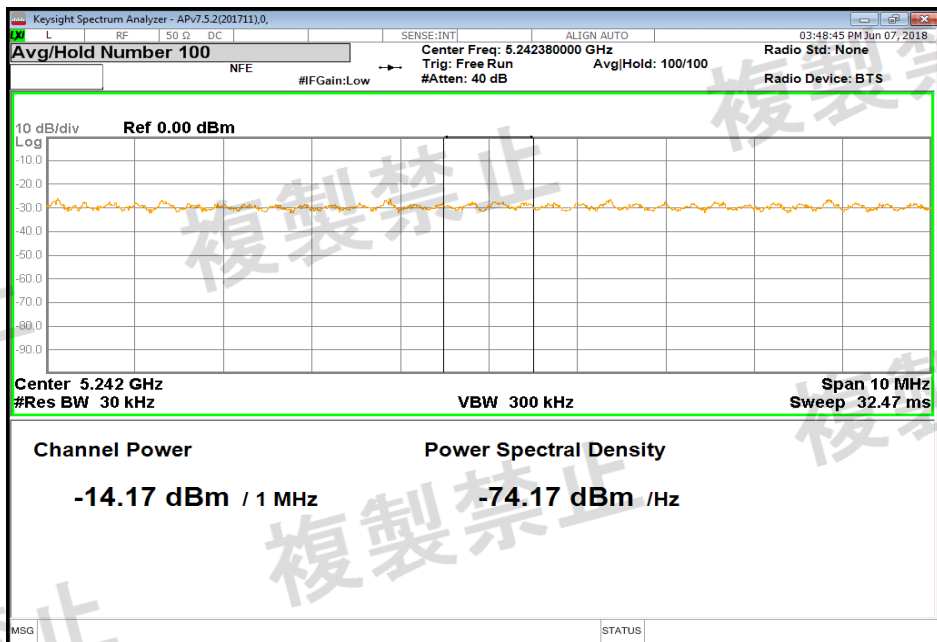
E.I.R.P. for Declared Output Power

= Average of E.I.R.P. Result (B) * (Declared Output Power / Average of Output Power Result (B))

Tx1_Power_Chain0_Nom



Tx3_Power_Chain0_Nom



2.5.Secondary Radiated Emission Strength(Normal Voltage)

Job No. 4788421773

Remark1 Antenna 1

Remark2

[DATA]

Voltage	Freq.	Freq.	S/A Reading	Cable Loss	Atten. Loss	Result	Result	Limit	Remark
[V]	[MHz]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[nW]	[nW]	
AC100V	5190	903.0	-85.19	0.00	0.00	-85.19	0.003	4.000	◆9
		4000.0	-78.92	0.00	0.00	-78.92	0.013	20.000	◆10
		5133.3	-79.08	0.00	0.00	-79.08	0.012	20.000	◆10
		14175.0	-79.57	0.00	0.00	-79.57	0.011	20.000	◆10
		19295.8	-76.88	0.00	0.00	-76.88	0.021	20.000	◆10
		23910.0	-74.94	0.00	0.00	-74.94	0.032	20.000	◆10

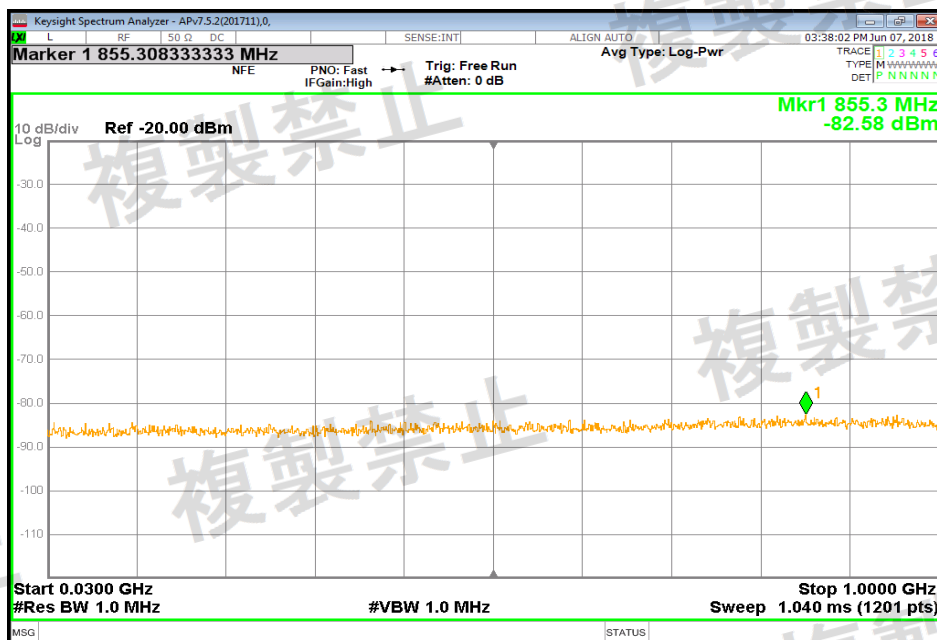
Sample Calculation :

Result = Reading + Cable Loss

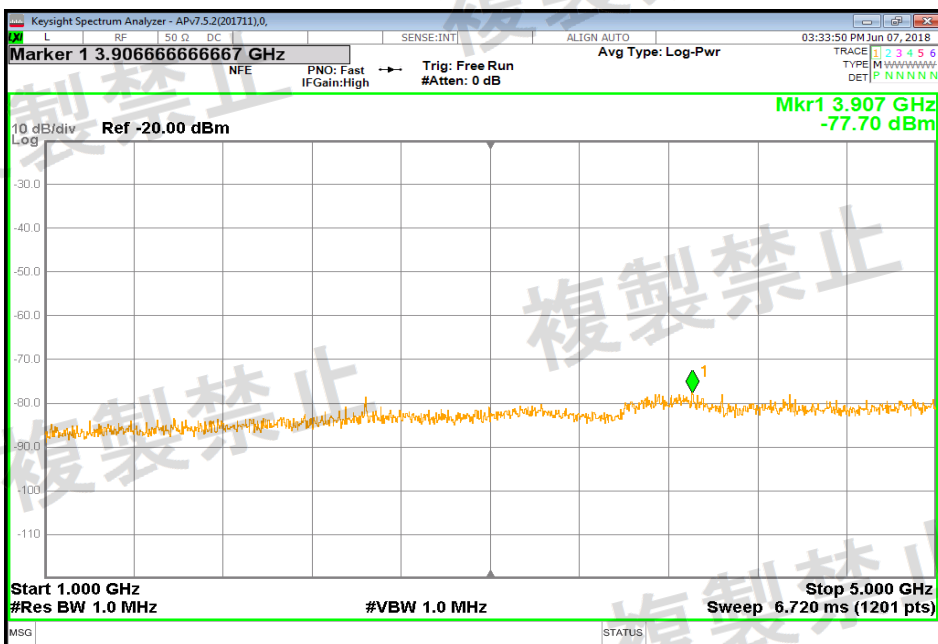
◆9:Freq Range9 (< 1GHz)

◆10:Freq Range10 (≥ 1GHz)

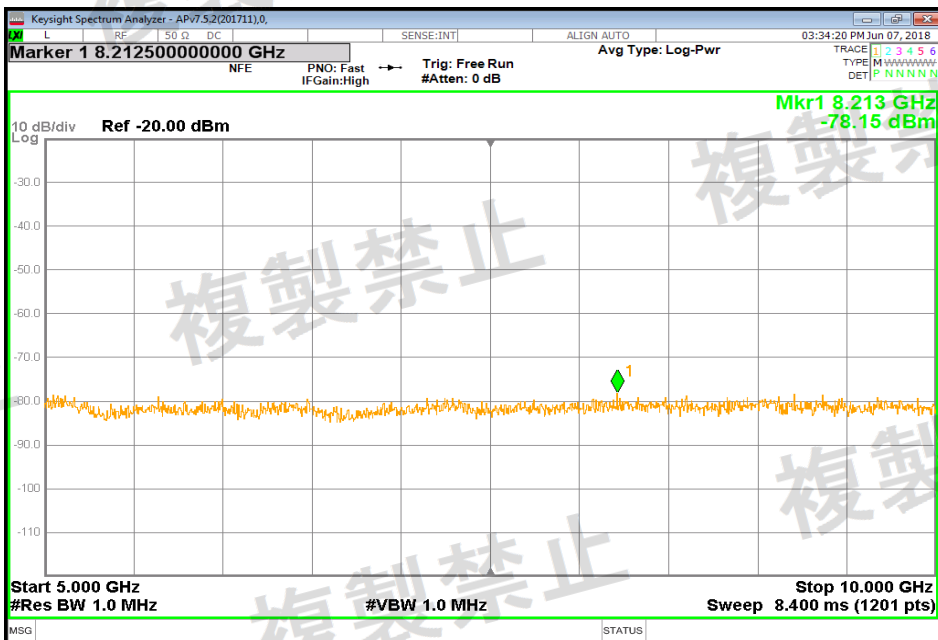
Rx1_SpuriousM_Nom



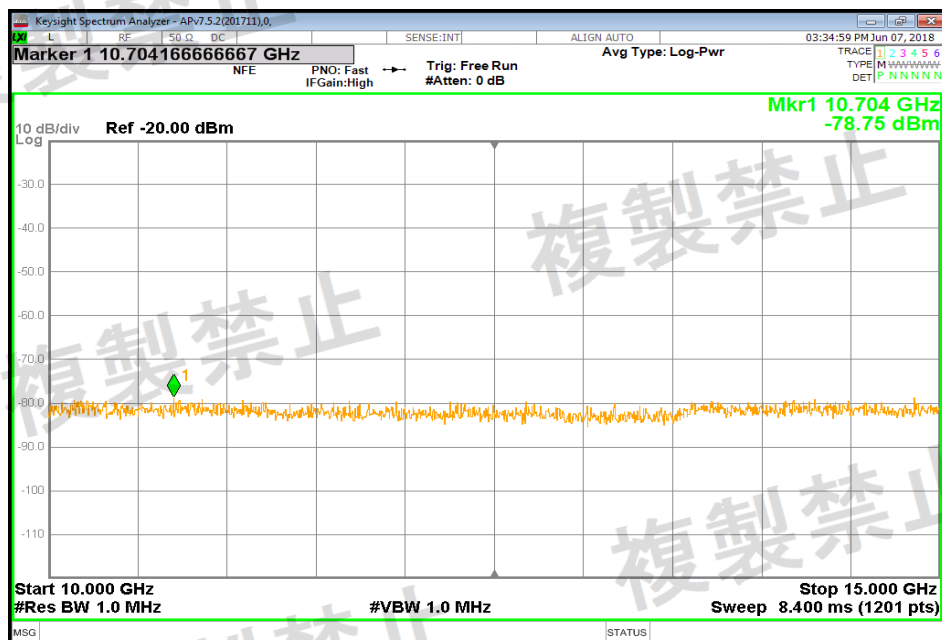
Rx1_SpuriousG1_Nom



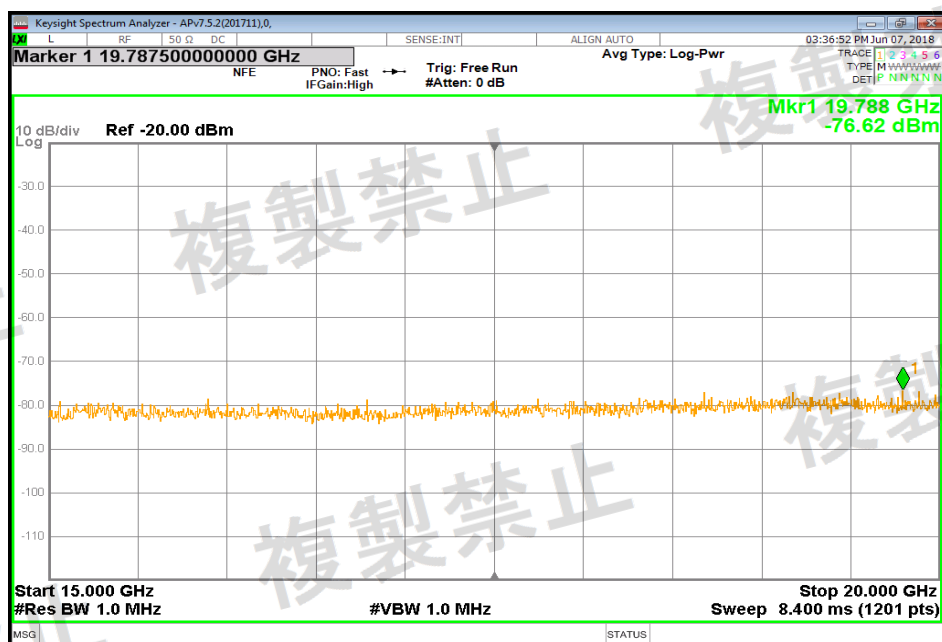
Rx1_SpuriousG2_Nom



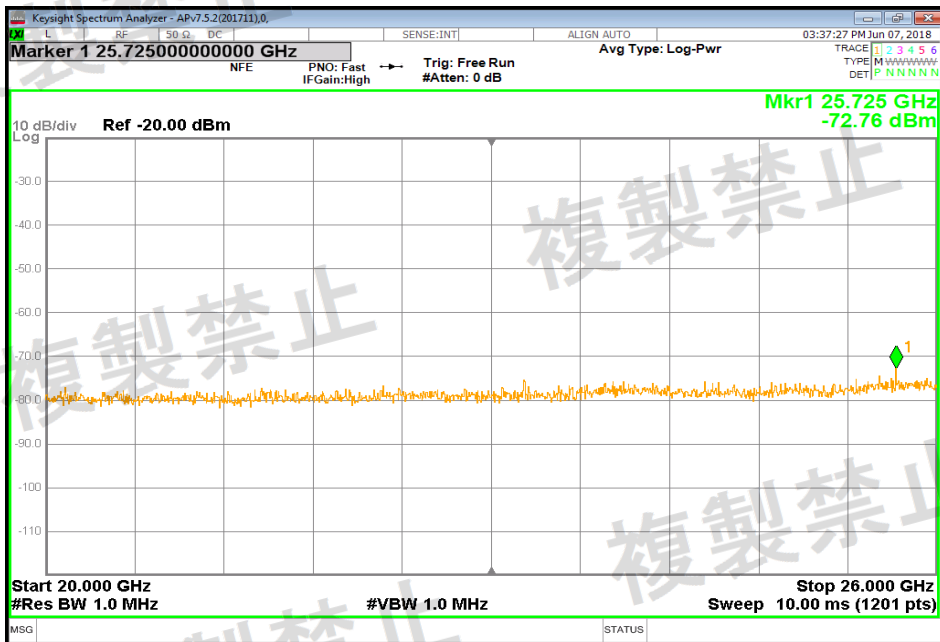
Rx1_SpuriousG3_Nom



Rx1_SpuriousG4_Nom



Rx1_SpuriousG5_Nom



2.6. Burst Length / Duty

Job No. 4788421773

Remark1 Antenna 1

Remark2

[DATA]

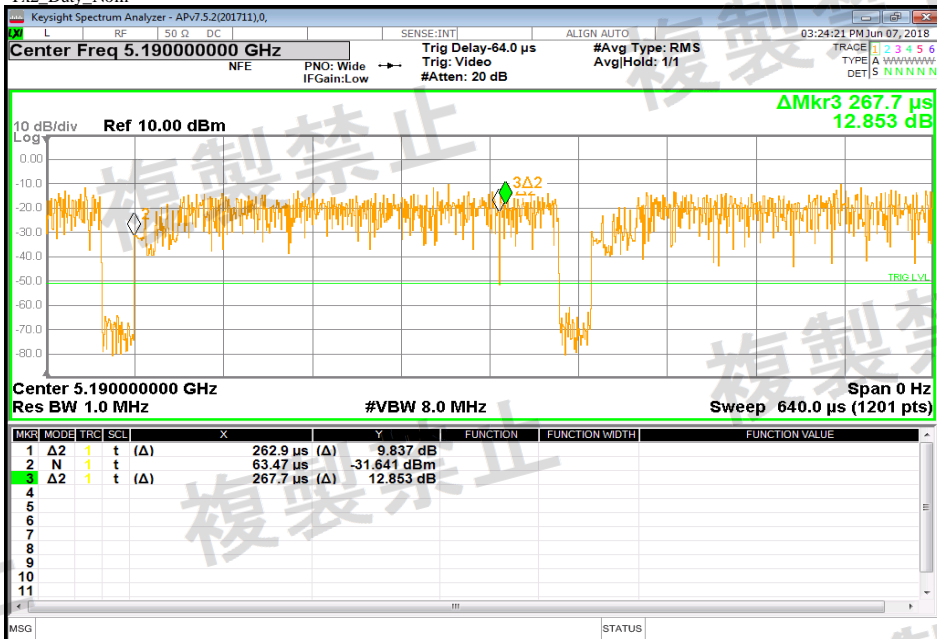
Voltage	Freq.	On Time	Period	Result (Duty)	Result (Burst Rate)	Limit
[V]	[MHz]	[msec]	[msec]	[%]		[msec]
AC100V	5190	0.263	0.268	98.2	1.018	4

Sample Calculation :

Result(Duty) = On Time / Period * 100

Result(Burst Rate) = Period / On Time

Tx2_Duty_Nom



2.7.1. Adjacent Channel Power(Chain0)

Job No. 4788421773

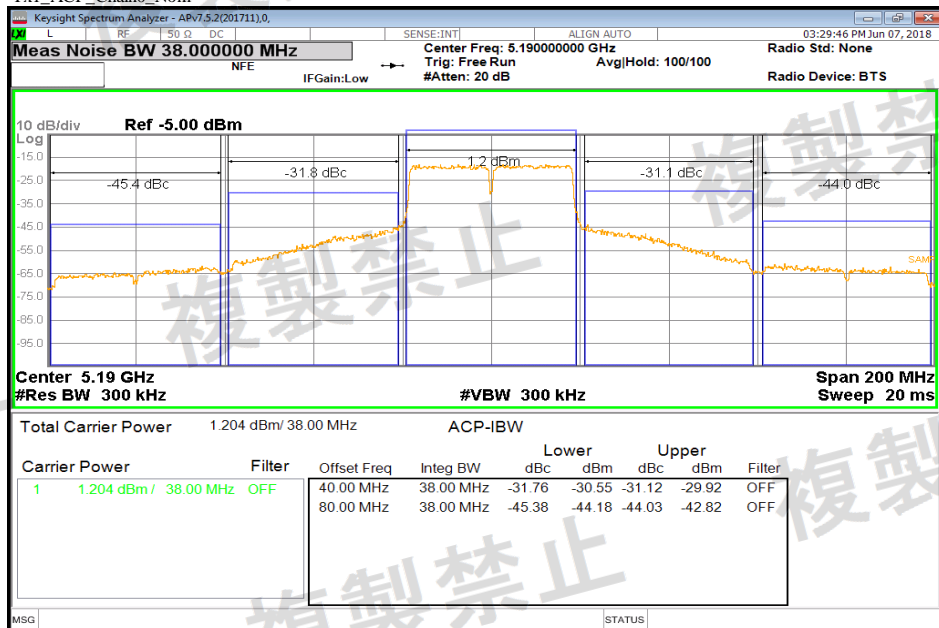
Remark1 Antenna 1

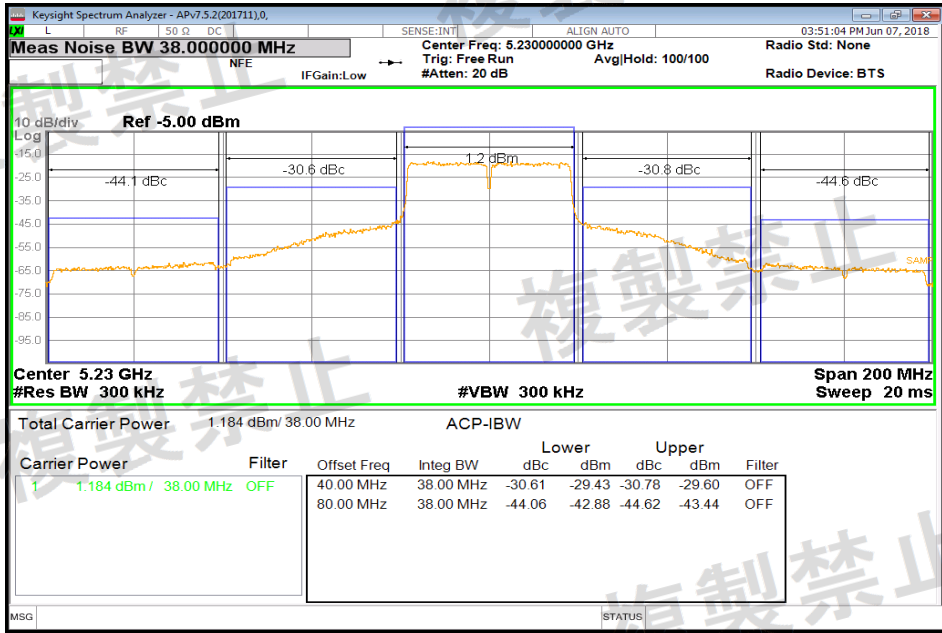
Remark2

[DATA]

Voltage	Freq.	Separation	Lower Side Result	Upper Side Result	Limit	Remark
[V]	[MHz]	[MHz]	[dBc]	[dBc]	[dBc]	
AC100V	5190	40	-31.76	-31.12	-25.00	
		80	-45.38	-44.03	-40.00	
	5230	40	-30.61	-30.78	-25.00	
		80	-44.06	-44.62	-40.00	

Tx1_ACP_Chain0_Nom





2.8.Outband Leakage Power Strength (Normal Voltage)

Job No. 4788421773

Remark1 Antenna 1

Remark2

[DATA]

Voltage	Freq.	Freq.	S/A Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	Result	Limit	Remark
[V]	[MHz]	[MHz]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[uW/MHz]	[uW/MHz]	
AC100V	5190	5141.18	-52.70	1.00	10.00	2.60	-39.10	0.123	2.500	◆3
		5149.61	-31.89	1.00	10.00	2.60	-18.29	14.825	15.000	◆4
	5230	5250.03	-22.68	1.00	10.00	2.60	-9.08	123.595	466.627	◆5
		5251.00	-38.27	1.00	10.00	2.60	-24.67	3.412	50.000	◆6
		5271.00	-47.54	1.00	10.00	2.60	-33.94	0.404	6.902	◆7
		5278.00	-51.85	1.00	10.00	2.60	-38.25	0.150	2.500	◆8

Sample Calculation :

Result = Reading + Cable Loss + Attenuator+Antenna Gain

◆3:Freq Range3 (≥ 5,100MHz, ≤ 5,141.6MHz)

◆4:Freq Range4 (> 5,141.6MHz, ≤ 5,150MHz)

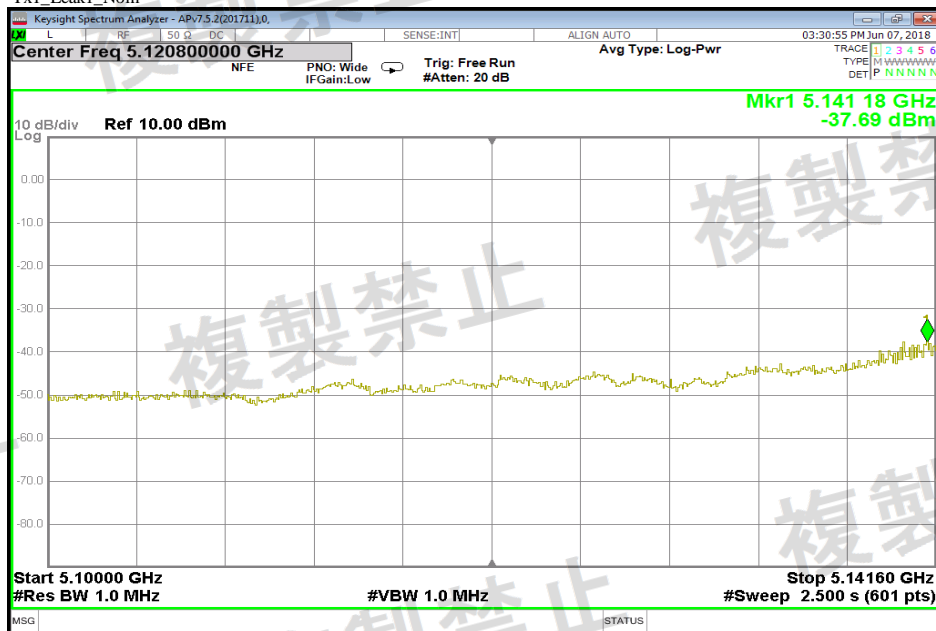
◆5:Freq Range5 (≥ 5,250MHz, < 5,251MHz)

◆6:Freq Range6 (≥ 5,251MHz, < 5,270MHz)

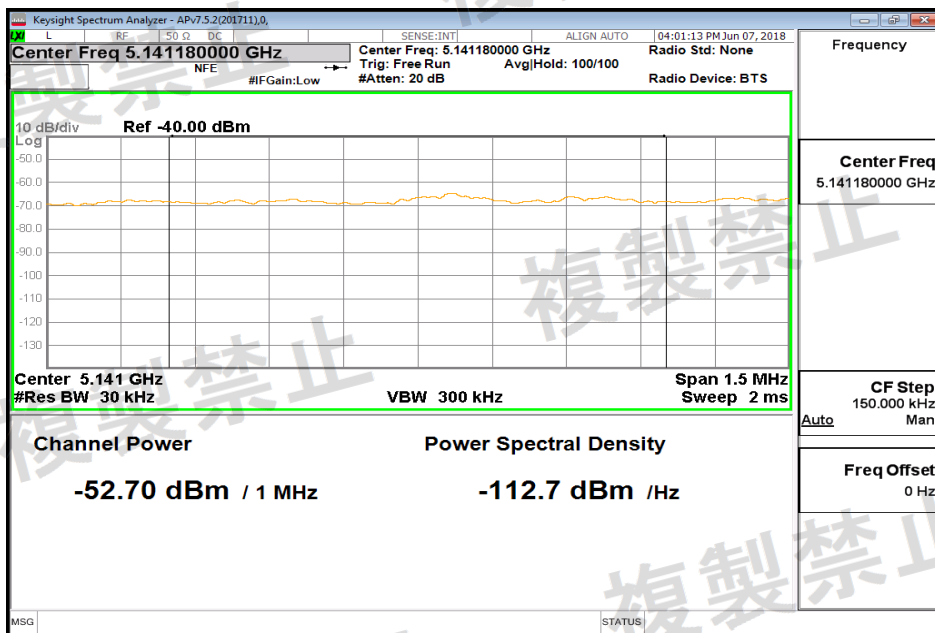
◆7:Freq Range7 (≥ 5,270MHz, < 5,278.4MHz)

◆8:Freq Range8 (≥ 5,278.4MHz, ≤ 5,400MHz)

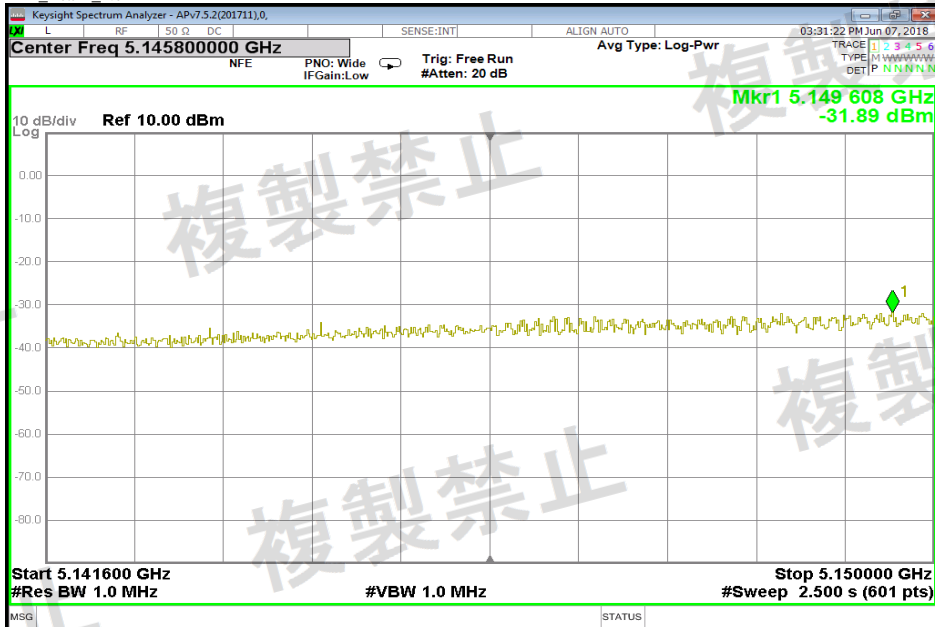
Tx1_Leak1_Nom



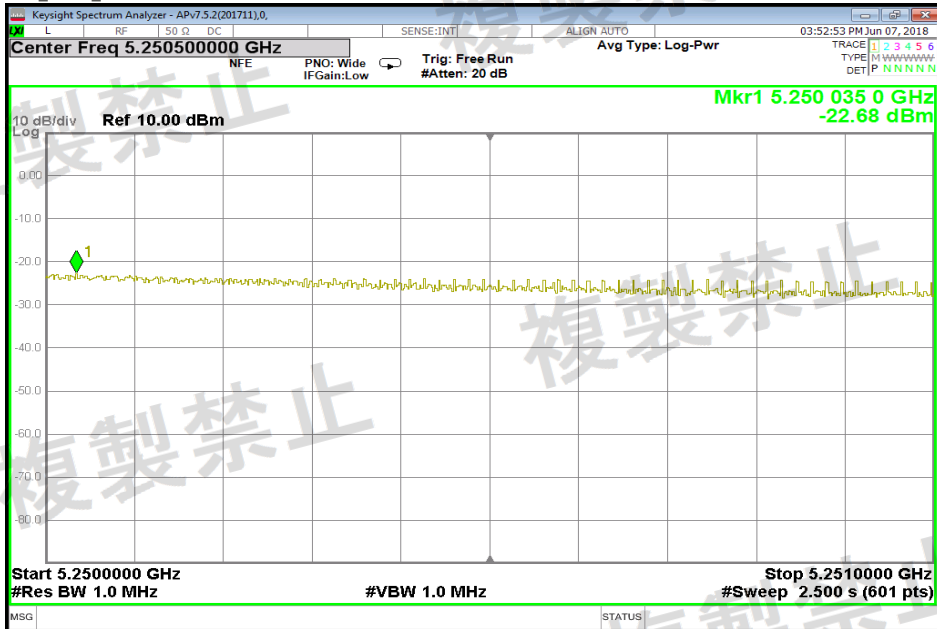
Tx1_Leak1Zoom_Nom



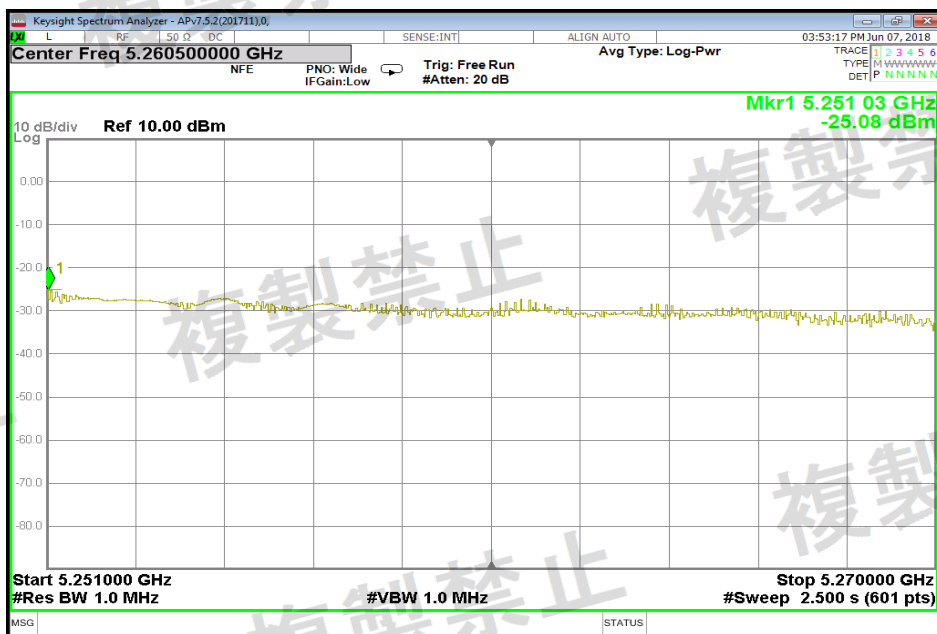
Tx1_Leak2_Nom



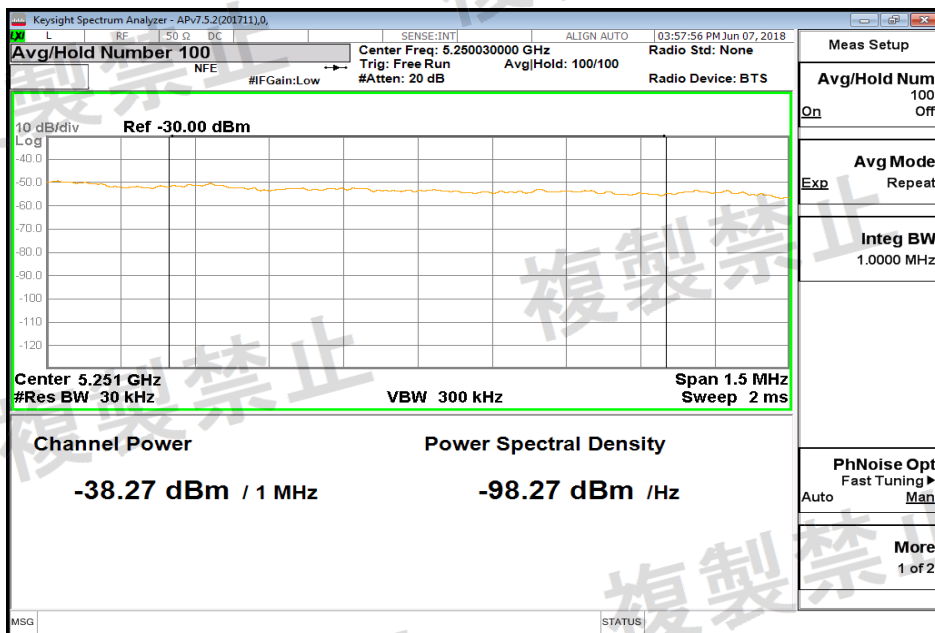
Tx3_Leak3_Nom



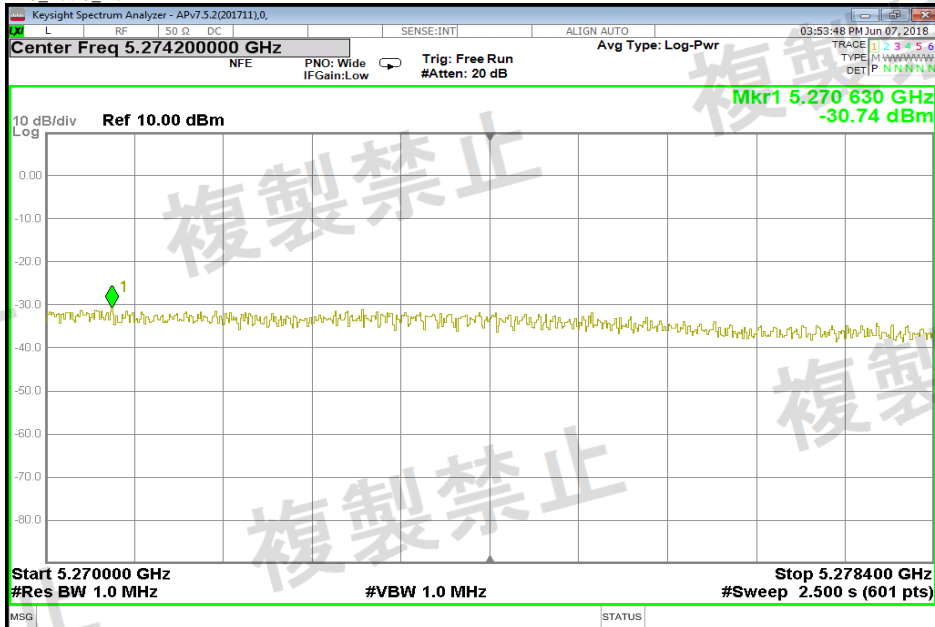
Tx3_Leak4_Nom



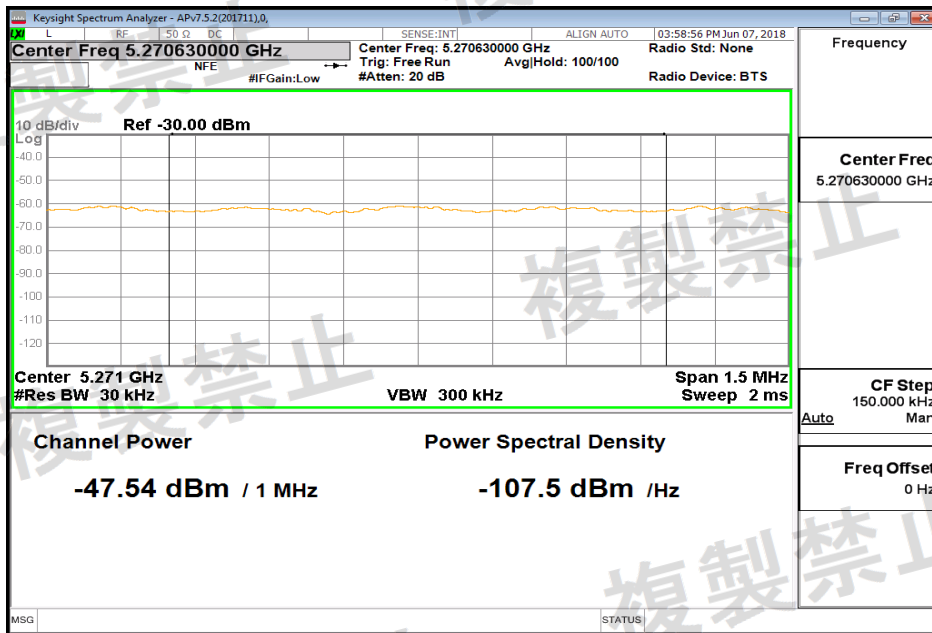
Tx3_Leak4Zoom_Nom



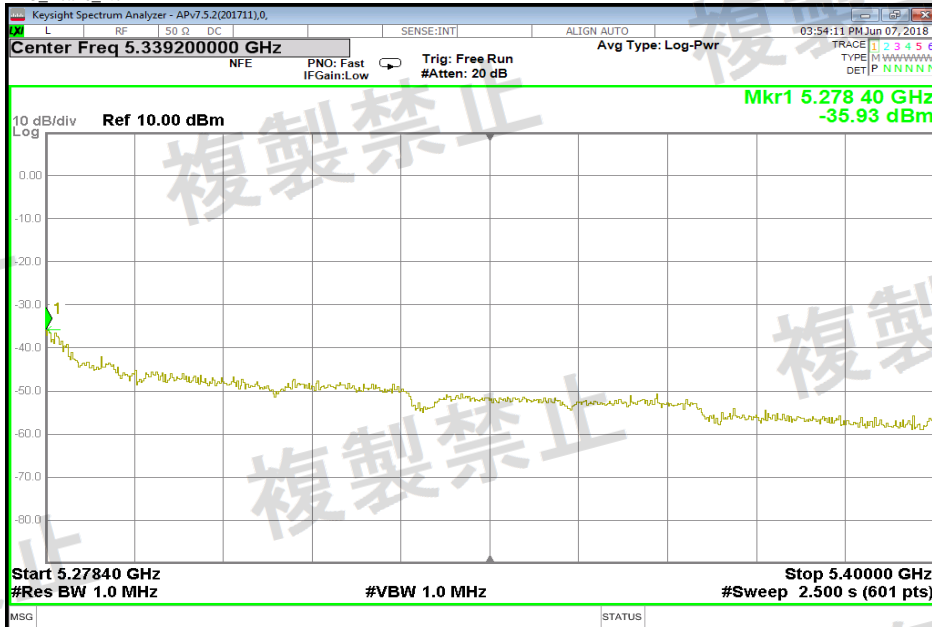
Tx3_Leak5_Nom



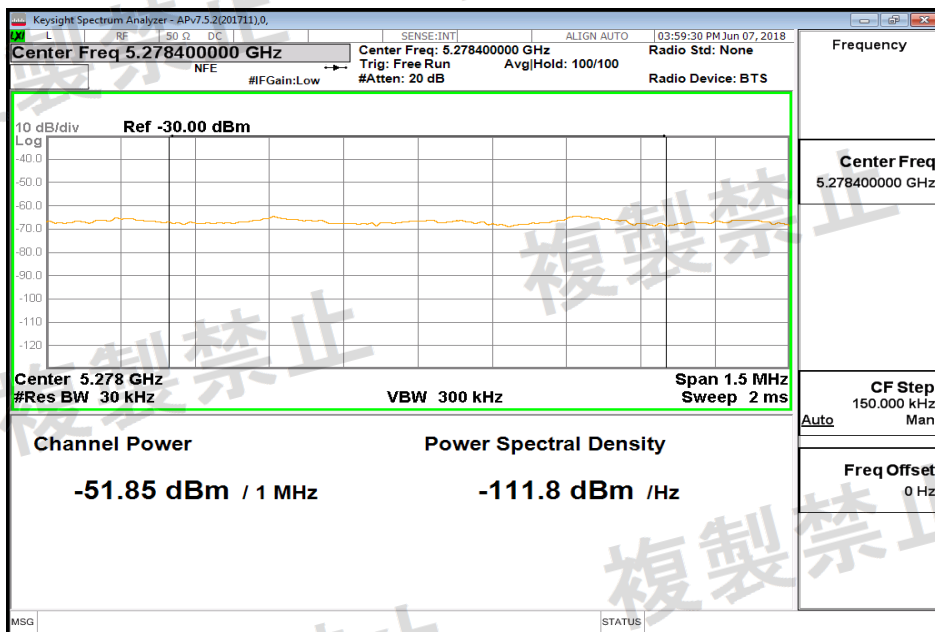
Tx3_Leak5Zoom_Nom



Tx3_Leak6_Nom



Tx3_Leak6Zoom_Nom



3. Measurement Equipment

Use	Int. No.	Kind of Equipment	Model No.	Manufacturer	Serial No.	Calibration Authority	Calibration Date
X	0	PXA signal analyzer	N9030A	Keysight	MY55410512	CEPREI	12-Dec-17
	0	Horn Antenna	HRN-0118	TDK	130939	CEPREI	09-Jan-18
	0	Horn Antenna	HRN-0118	TDK	130948	CEPREI	09-Jan-18
	0	Signal Generator	SMB100A	R&S	178553	CEPREI	12-Dec-17

Note : 1. The calibration of measurement equipment is valid for a one year period.
2. "X" used equipment.
3. All equipment is calibrated and traceable to ISO17025

4. Test Condition

Test Item	Date	Temp	Hum	Engineer	Test Room
Frequency Tolerance	7-Jun-18	24.2°C	62%	Kebo	Shielding Room A
Occupied Bandwidth	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Unwanted Emission Strength	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Output Power/ E.I.R.P	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Secondary Radiated Emission Strength	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Burst Length / Duty	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Adjacent Channel Power	7-Jun-18	24.2C	62%	Kebo	Shielding Room A
Outband Leakage Power Strength	7-Jun-18	24.2C	62%	Kebo	Shielding Room A

5. TEST CONFIGURATION

TEST PHOTO

