



# **RADIO TEST REPORT**

## **MIC Public Notice 88**

**Test report**  
**On Behalf of**  
**Dong Guan KaiMing Electronic Commerce Co., Ltd.**  
**For**  
**Car Audio player**

**Model No.: KAR7W, KAR7, KAR7W-1, KAR7D, KAR10A, KAR7S,  
KAR7M, KAR10S, KAR10W, KAR9W, KAR9A, KAB80, KAB81,  
KAB82**

**Prepared For :** Dong Guan KaiMing Electronic Commerce Co., Ltd.  
Room 416, Building NO.1, 4th Industrial Northern Road NO.5, Songshan Lake  
District, Dongguan City, Guangdong Province, 523808, China

**Prepared By :** Shenzhen HUAK Testing Technology Co., Ltd.  
1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping,  
Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

**Date of Test:** Dec. 02, 2022 ~ Dec. 09, 2022

**Date of Report:** Dec. 09, 2022

**Report Number:** HK2212025438-3E



### TEST RESULT CERTIFICATION

**Applicant's name** ..... : Dong Guan KaiMing Electronic Commerce Co., Ltd.  
**Address**..... : Room 416, Building NO.1, 4th Industrial Northern Road NO.5,  
 Songshan Lake District, Dongguan City, Guangdong Province,  
 523808, China

**Manufacture's Name** ..... : Dong Guan KaiMing Electronic Commerce Co., Ltd.  
**Address**..... : Room 416, Building NO.1, 4th Industrial Northern Road NO.5,  
 Songshan Lake District, Dongguan City, Guangdong Province,  
 523808, China

**Product description**

**Trade Mark:** KASUVAR  
**Product name** ..... : Car Audio player  
**Model and/or type reference** : KAR7W, KAR7, KAR7W-1, KAR7D, KAR10A, KAR7S, KAR7M,  
 KAR10S, KAR10W, KAR9W, KAR9A, KAB80, KAB81, KAB82

**Standards**..... : MIC Public Notice 88:2004, annex 1 and annex 43  
 ARIB STD-T66 V3.7, Article 2 Paragraph 1 of Item 19

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**Date of Test** .....  
 Date (s) of performance of tests.... **Dec. 02, 2022 ~ Dec. 09, 2022**  
 Date of Issue ..... **Dec. 09, 2022**  
 Test Result ..... **Pass**

Prepared by: *Kevin Pan*  
 \_\_\_\_\_  
 Project Engineer

Reviewed by: *Sliver Wan*  
 \_\_\_\_\_  
 Project Supervisor

Approved by: *Jason Zhou*  
 \_\_\_\_\_  
 Technical Director

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**\*\* Modified History \*\***

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Dec. 09, 2022	Jason Zhou

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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

Test procedures according to the technical standards:

Rule Section	Description of Test	Result
Transmitter Parameters		
3.2 (2)	Antenna Power (EIRP Antenna Power)	Complies
3.2 (3)	Tolerances for Antenna Power	Complies
3.2 (4)	Frequency Tolerance	Complies
3.2 (7)	Occupied Frequency Bandwidth	Complies
3.2 (8)	Spread Bandwidth	Complies
3.2 (9)	Process Gain	Complies
3.2 (10)	Number of Carriers	N/A
3.2 (11)	Dwell Time	Complies
3.2 (6)	Spurious Emissions	Complies
/	Interference prevention function	Complies
/	Carrier Sensing function	N/A
Receiver Parameters		
3.3 (1)	Secondary Radiated Emissions	Complies

NOTE:

- 1) "N/A" denotes test is not applicable in this Test Report.
- 2) MIC Public Notice 88:2004, annex 1 and annex 43.
- 3) MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20.
- 4) Referenced in the standard ARIB STD-T66.



1.2 INFORMATION OF THE TEST LABORATORY

Shenzhen HUAK Testing Technology Co., Ltd.

Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization :

A2LA Accreditation Code is 4781.01.

FCC Designation Number is CN1229.

Canada IC CAB identifier is CN0045.

CNAS Registration Number is L9589.

1.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.71\text{dB}$
2	Radiated Emission Test	$\pm 4.26\text{dB}$
3	RF power, conducted	$\pm 0.37\text{dB}$
4	Spurious emissions, conducted	$\pm 2.20\text{dB}$
5	All emissions, radiated(<1G)	$\pm 3.90\text{dB}$
6	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Car Audio player
Model Name	KAR7W
Series Model	KAR7, KAR7W-1, KAR7D, KAR10A, KAR7S, KAR7M, KAR10S, KAR10W, KAR9W, KAR9A, KAB80, KAB81, KAB82
Model Difference	All model's the function, software and electric circuit are the same, only model named different. Test sample model: KAR7W
Antenna Type	Internal Antenna
Antenna Gain	3.45dBi
BT Operation frequency	2402-2480MHz
Number of Channels	79CH
Modulation Type	GFSK, Pi / 4DQPSK, 8-DPSK
Data Rate	1Mbps, 2Mbps, 3Mbps
Power Source	DC 12V
Power Rating	DC 12V
Firmware Version	V5.1
Hardware Version	V5.1





2.1.1 Carrier Frequency of Channels

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

2.2 Operation of EUT during testing

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
Carrier Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
hopping on Tx Mode	CH0 to CH78	2402 to 2480
Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
Rx Mode	CH0	2402
	CH78	2480

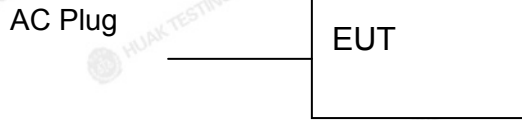
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### 2.3 DESCRIPTION OF TEST SETUP



### 2.4 TEST CONDITIONS

The BT module was tested while in a continuous transmitter/receiver mode.

The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels.

#### Power Supply Voltage Fluctuation Test

Voltage mode	Input Voltage	Radio Unit Voltage
DC Input	DC 13.20V	3.31V
	DC 12.00V	3.30V
	DC 10.80V	3.30V

Note: 1 The radio unit Voltage with the module regulator IC regulator.

2 The radio unit less than 1%, so the test only rated voltage (Normal voltage) with the DC power.

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%. Exempt extremely high and low supply voltage condition test, EUT only operated in normal voltage to test all regulations.



**2.5 MEASUREMENT INSTRUMENTS LIST**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2022	1 Year
2.	LISN	Schwarz Beck	NSLK 8126	8126377	Feb. 18, 2022	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2022	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
5.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2022	1 Year
6.	Trilog Broadband Antenna	Schwarz Beck	VULB9163	VULB 9163-289	Feb. 18, 2022	1 Year
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	Feb. 18, 2022	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2022	1 Year
10.	LISN	Schwarz Beck	NSLK 8126	8126377	Feb. 18, 2022	1 Year
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2022	1 Year
12.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
13.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2022	1 Year
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2022	1 Year
15.	LISN	Schwarz Beck	NSLK 8126	8126377	Feb. 18, 2022	1 Year
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2022	1 Year
17.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
18.	Power Meter	R&S	NRVD	SEL0069	Feb. 18, 2022	1 Year
19.	Power Sensor	R&S	URV5-Z2	SEL0071	Feb. 18, 2022	1 Year
20.	Power Sensor	R&S	URV5-Z2	SEL0072	Feb. 18, 2022	1 Year
21.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
22.	Log-periodic Antenna	Amplifier Reasearch	AIFS-IP780	SEL0073	N/A	N/A
23.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
24.	High Gain Horn Antenna(0.8-5GHz )	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A

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25.	Spectrum analyzer	Agilent	N9020A	MY499110 048	Feb. 18, 2022	1 Year
26.	Spectrum analyzer	Agilent	E4407B	MY461843 26	Feb. 18, 2022	1 Year
27.	DC power supply	Agilent	E3646A	N/A	Feb. 18, 2022	1 Year
28.	Frequency Meter	KEYSIGHT	53230A	53200	Feb. 18, 2022	1 Year

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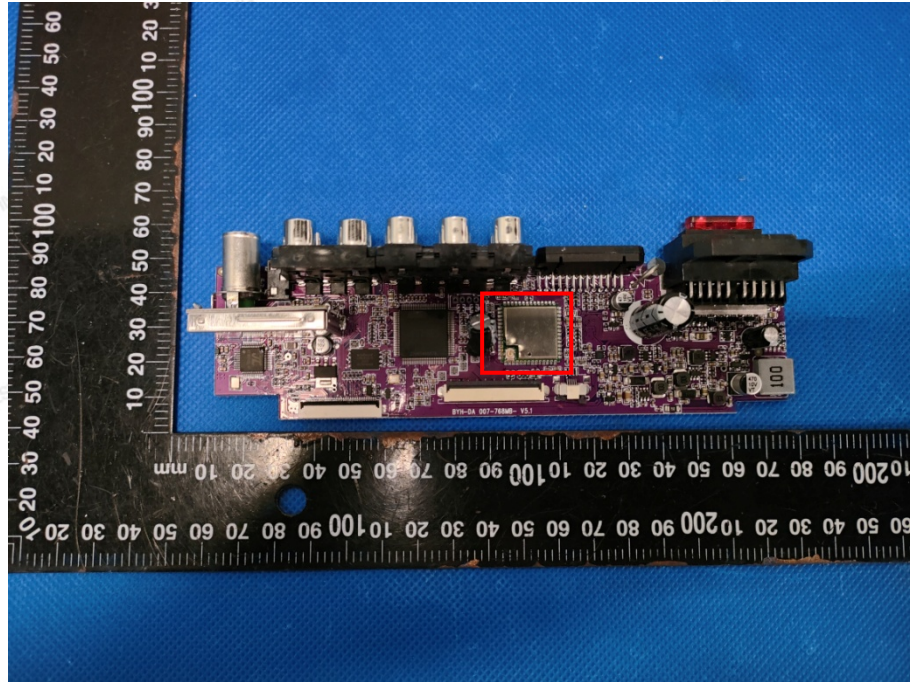
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### 3. RF SHIELDING METHOD

We apply the product for Japan RF certification. The RF part is protected by shielding cover, which is not easily removed. Please refer to following for photo for details.

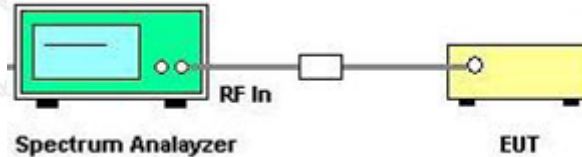


## 4 Antenna Power

### 4.1 Limit

Limit	3mW/MHz
Tolerance	+20%,-80%

### 4.2 Test Setup



### 4.3 Test Procedure

- (1) Configure EUT and assistant system according to clause 2.2 and 4.3
- (2) Set EUT work in test mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1MHz (above 6dB bandwidth of signal)

Video BW: 1MHz.

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

Trace Mode: Max Hold.

- (4) When the trace is complete, find the peak value of the power envelope and record.

Note: The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.



4.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage

Operation Mode:	Conducted RF output power (dbm)	Conducted RF output power (mW)	Spread Bandwidth	Conducted RF output power density (mW/MHz)	Limit	Rated power density (mW/MHz)	Antenna Power Error (%)
GFSK mode	3.296	2.136	70.996	0.0301	3mW/MHz	0.1	-69.91%
Pi / 4DQPSK mode	2.472	1.767	71.289	0.0248	3mW/MHz	0.1	-75.22%
8-DPSK mode	2.767	1.891	70.856	0.0267	3mW/MHz	0.1	-73.31%
Limit : +20%, -80% (Base on manufacturer declare antenna power density)							

Operation Mode:	Conducted RF output power density (mW/MHz)	Conducted RF output power density (dBm/MHz)	Antenna Gain (dBi)	EIRP(dBm/MHz)	Limit(dBm/MHz)
GFSK mode	0.0301	-15.214	3.45	-11.764	6.91
Pi / 4DQPSK mode	0.0248	-16.055	3.45	-12.605	6.91
8-DPSK mode	0.0267	-15.735	3.45	-12.285	6.91

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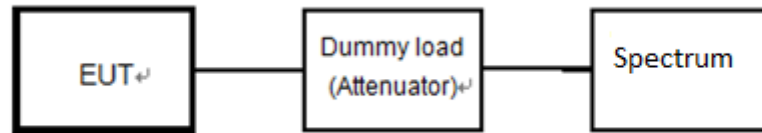


### 5 Frequency Tolerance

#### 5.1 Limit

+/- 50x 10<sup>-6</sup> or less (50ppm)

#### 5.2 Test Setup



#### 5.3 Test Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. The EUT was directly connected to the Spectrum.

#### 5.3 EUT OPERATION DURING TEST

The EUT was placed on the test table and programmed in un-modulation function.

#### 5.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25 <sup>0</sup> C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Carrier Tx mode		

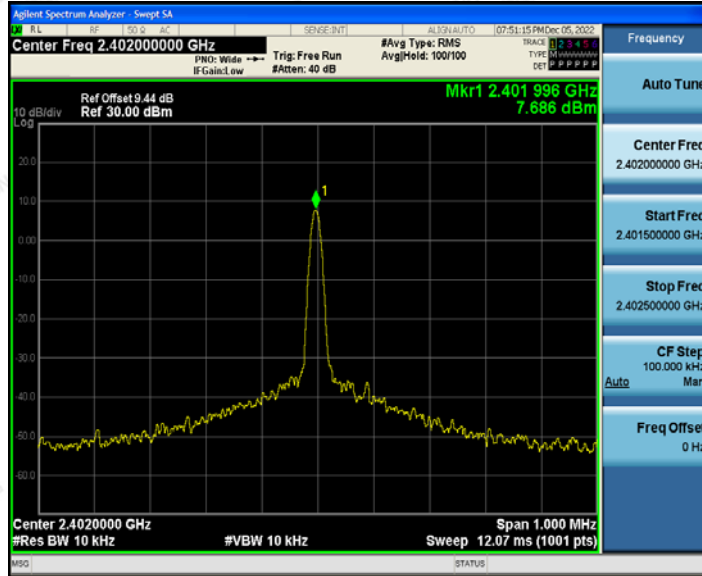
Test Frequency (MHz)	Measured (MHz)	Tolerance (MHz)	Result (ppm)	Limit (ppm)
2402	2401.996	-0.004	-1.6653	+/-50
2441	2440.996	-0.004	-1.6387	+/-50
2480	2479.996	-0.004	-1.6129	+/-50

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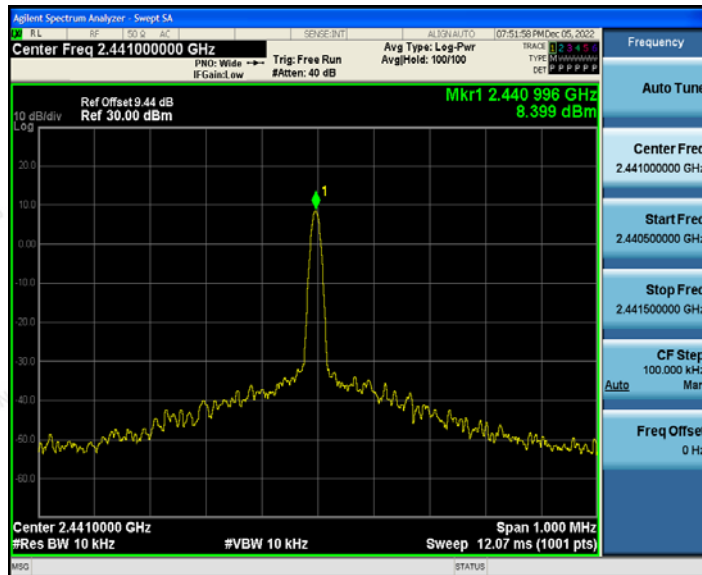




CH00: 2402MHz



CH39: 2441MHz



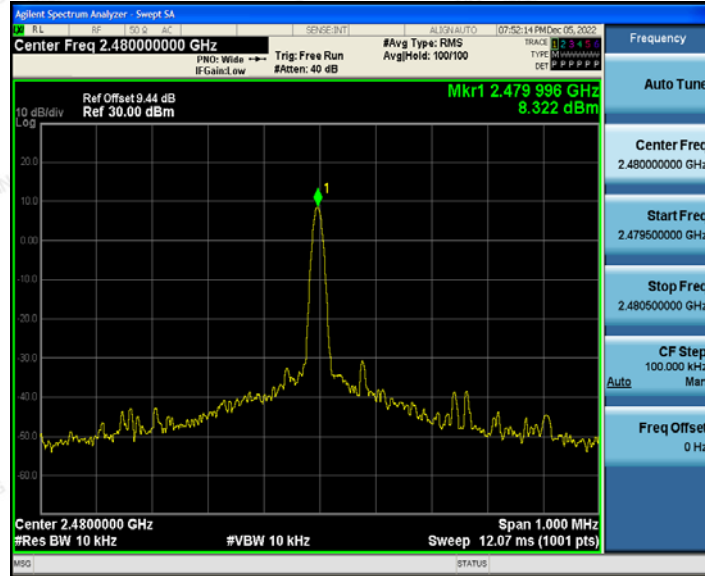
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CH78: 2480MHz



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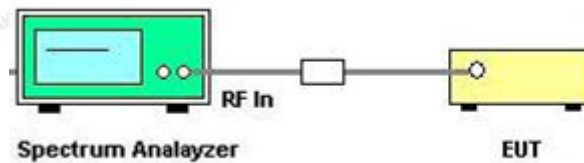


## 6 Occupied Frequency Bandwidth

### 6.1 Limit

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz.

### 6.2 Test Setup



### 6.3 Test Procedure

- (1) Configure EUT and assistant system according to clause 2.2 and 6.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1MHz

Video BW: 1MHz

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

Trace Mode: Max Hold.

- (4) When the trace is complete, measure the occupied bandwidth (99% bandwidth) with spectrum analyzer's bandwidth measure function.

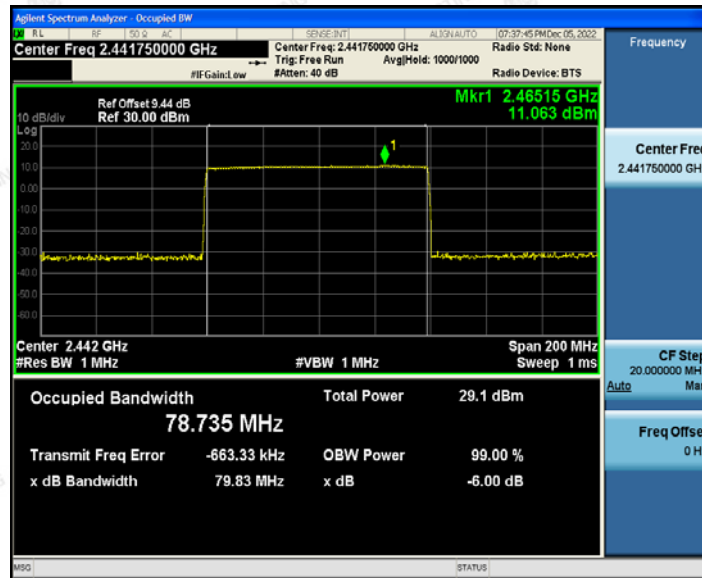


6.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage

Operation Mode (MHz)	Test Frequency (MHz)	Test Result[MHz]	Limit [MHz]	Verdict
Hopping GFSK TX Mode	/	78.735	<=83.5	PASS
Hopping Pi / 4DQPSK TX Mode	/	78.770	<=83.5	PASS
Hopping 8-DPSK TX Mode	/	78.490	<=83.5	PASS

GFSK TX Mode



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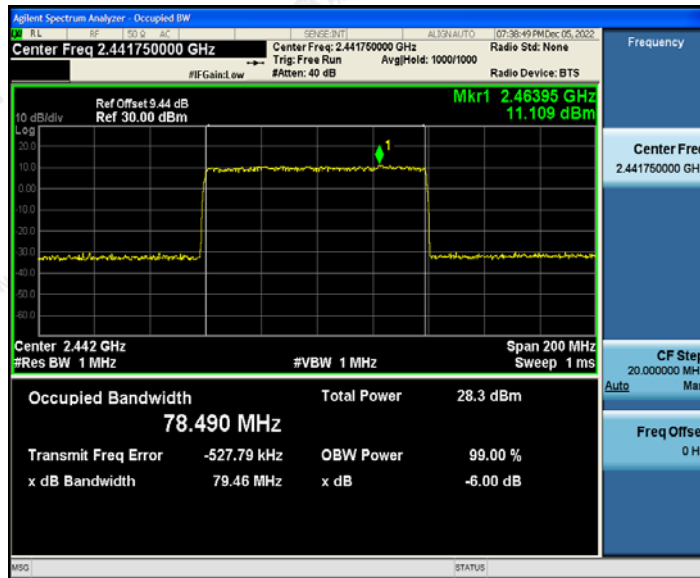




Pi / 4DQPSK TX Mode



8-DPSK TX Mode



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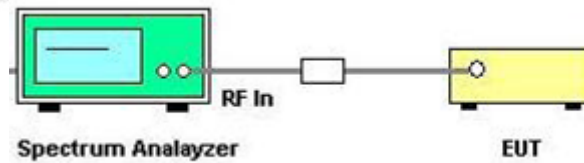


## 7 Spread Bandwidth

### 7.1 Limit

In spread spectrum systems, spread bandwidth (which refers to a frequency bandwidth with an upper limit and lower limit such that each of the mean powers radiated above the upper frequency limit and below the lower frequency limit is equal to 5 % of the total mean power radiated; this also applies hereafter) shall be 500 kHz or more.

### 7.2 Test Setup



### 7.3 Test Procedure

- (1) Configure EUT and assistant system according to clause 2.2 and 7.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:  
Centre Frequency: The centre frequency of the channel under test.  
Resolution BW: 1MHz.  
Video BW: 1MHz.  
Span: Wide enough to cover the complete power envelope of the signal of the EUT.  
Detector: Peak.  
Trace Mode: Max Hold.
- (4) When the trace is complete, measure the spread bandwidth (90% bandwidth) with spectrum analyzer's bandwidth measure function.

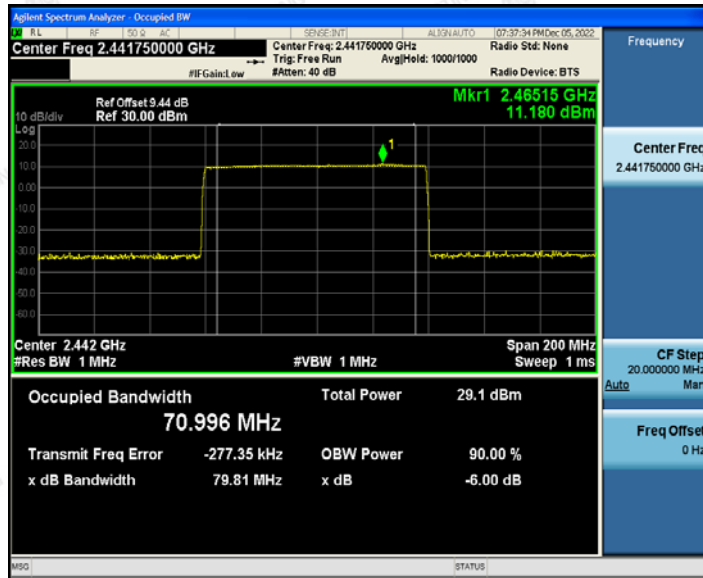


7.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage

Operation Mode (MHz)	Test Channel	Test Result[MHz]	Limit [MHz]	Spread Factor	Verdict
Hopping GFSK TX Mode	/	70.996	>=0.5	70.996	PASS
Hopping Pi / 4DQPSK TX Mode	/	71.289	>=0.5	35.645	PASS
Hopping 8-DPSK TX Mode	/	70.856	>=0.5	35.428	PASS

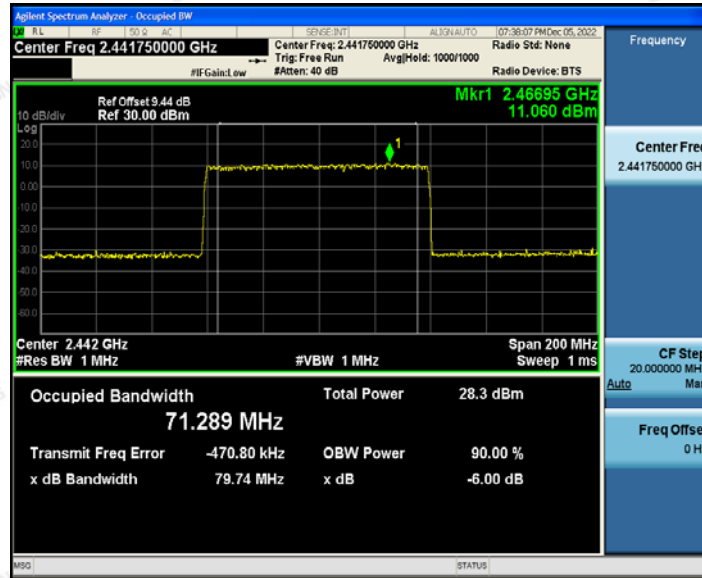
GFSK TX Mode



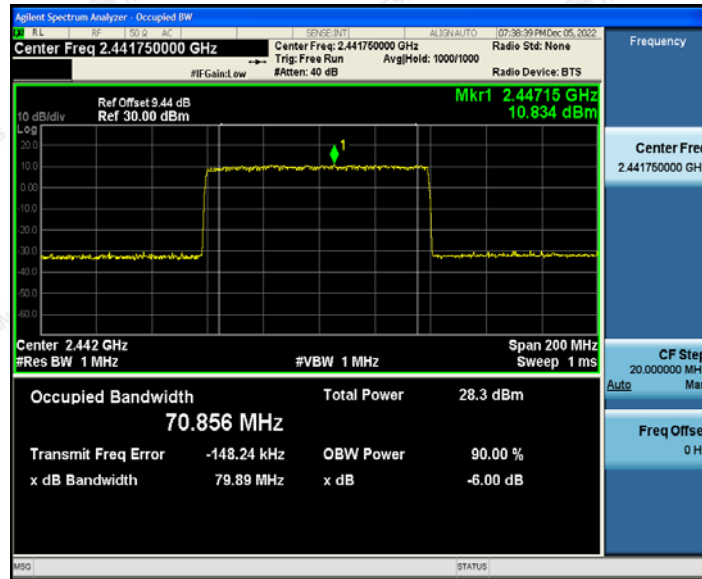
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Pi / 4DQPSK TX Mode



8-DPSK TX Mode



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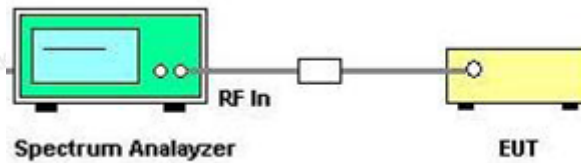


## 8 Dwell time

### 8.1 Limit

Frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) of a transmitting equipment using the FH system shall be 0.4 seconds or less.

### 8.2 Test Setup



### 8.3 Test Procedure

- (1) Configure EUT and assistant system according to clause 2.2 and 8.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:  
Centre Frequency: The centre frequency of the middle hopping channel.  
Resolution BW: 1MHz.  
Video BW: 1MHz.  
Span: Zero span.  
Detector: Peak.  
Trace Mode: Max Hold.  
Sweep: Video Trigger
- (4) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.
- (5) Calculate dwell time follow below formula:  
Dwell time =  $(0.4(s) \times \text{spreading rate} \times \text{sending time of 1 burst(s)}) / (\text{burst cycle(s)} \times \text{No. of hopping channel})$   
Spreading rate =  $\text{Spread bandwidth (actual measurement value)} / \text{Transmission rate}$ .

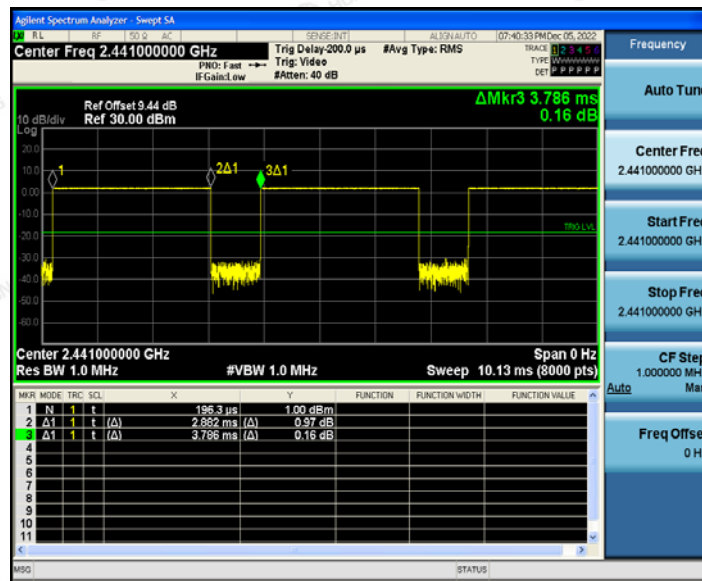


8.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Hopping mode		

Test Condition	Test Mode	Ant	transmission time of 1 burst (ms)	burst cycle (ms)	spreading rate	Dwell Time[s]	Limit[s]	Verdict
TNVN	DH5	Ant1	2.88	3.79	70.996	0.2732	<0.4	PASS
TNVN	2DH5	Ant1	2.89	3.79	35.645	0.1376	<0.4	PASS
TNVN	3DH5	Ant1	2.89	3.79	35.428	0.1368	<0.4	PASS

DH5



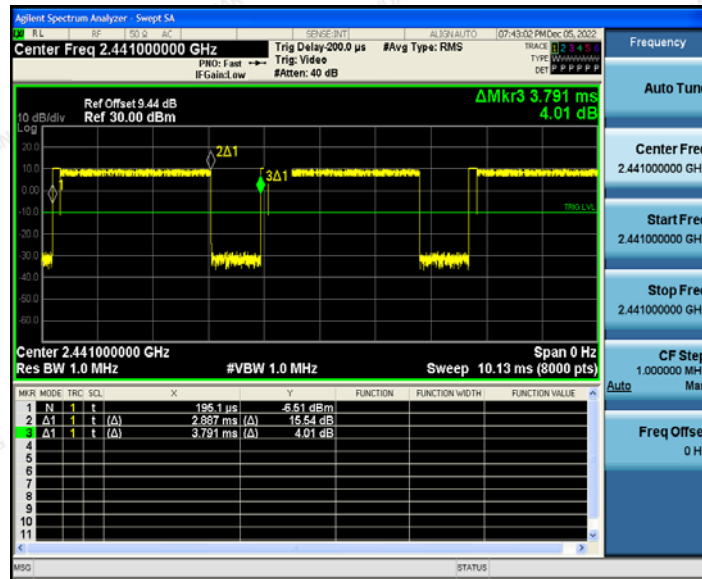
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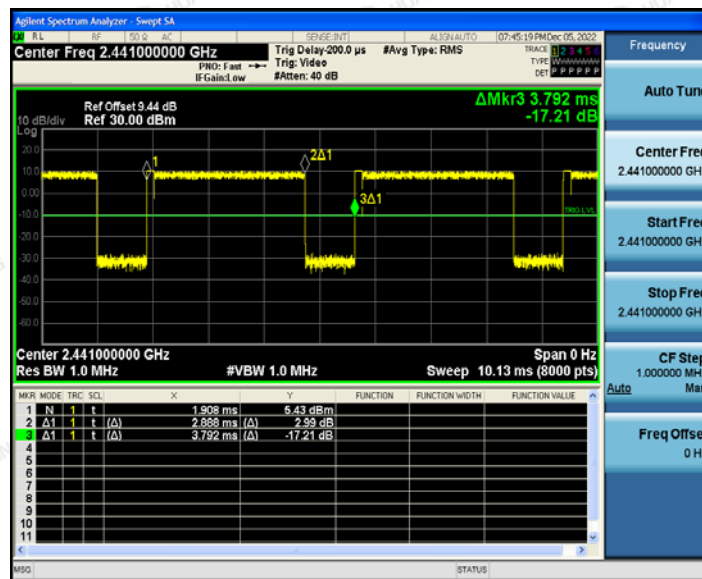
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2DH5



3DH5



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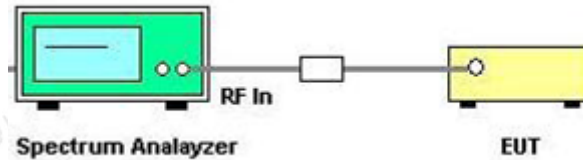


### 9 Process gain

#### 9.1 Limit

Process gain (value obtained by dividing the spread bandwidth by a frequency equal to the transmission rate of the modulation signal; this also applies hereafter) in the spread spectrum system shall be 5 or more.

#### 9.2 Test Setup



#### 9.3 Test Procedure

- (1) Configure EUT and assistant system according clause 2.2 and 9.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.2

#### 9.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25 <sup>0</sup> C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Test result:	CONFORM		





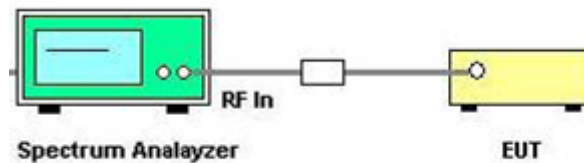
## 10 Transmitter Spurious Emissions (conducted)

### 10.1 Limit

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency  $f$  other than frequency band used shall be as follows:

- a.  $2,387\text{MHz} \leq f \leq 2,400\text{MHz}$  and  $2,483.5\text{MHz} < f \leq 2,496.5\text{MHz}$  25  $\mu\text{W}$  or less
- b.  $2,387\text{MHz} > f$  and  $2,496.5\text{MHz} < f$  2.5  $\mu\text{W}$  or less

### 10.2 Test Setup



### 10.3 Test Procedure

- (1) Configure EUT and assistant system according to clause 2.2 and 11.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
  - For below 1G:
    - Resolution BW: 100KHz.
    - Video BW: 100KHz.
    - Detector: Peak.
    - Trace Mode: Max Hold
  - For above 1G:
    - Resolution BW: 1MHz.
    - Video BW: 1MHz.
    - Detector: Peak.
    - Trace Mode: Max Hold
- (4) When the trace is complete, measure the Transmitter Spurious Emissions (conducted) with spectrum analyzer's bandwidth measure function.



10.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage

Operation Mode (MHz)	Test Frequency (MHz)	StartFre[MHz]	StopFre[MHz]	Max.Level[dBm]	Max.Level[μW]	Limit[μW]	Verdict
GFSK TX Mode	2402	30	2387	-62.06	0.0006	<2.5	PASS
	2402	2387	2400	-46.60	0.0219	<25	PASS
	2402	2483.5	2496.5	-59.66	0.0011	<25	PASS
	2402	2496.5	13000	-55.37	0.0029	<2.5	PASS
	2441	30	2387	-62.70	0.0005	<2.5	PASS
	2441	2387	2400	-62.98	0.0005	<25	PASS
	2441	2483.5	2496.5	-59.61	0.0011	<25	PASS
	2441	2496.5	13000	-54.46	0.0036	<2.5	PASS
	2480	30	2387	-62.59	0.0006	<2.5	PASS
	2480	2387	2400	-59.98	0.0010	<25	PASS
	2480	2483.5	2496.5	-54.78	0.0033	<25	PASS
	2480	2496.5	13000	-55.86	0.0026	<2.5	PASS
Pi / 4DQPSK TX Mode	2402	30	2387	-62.21	0.0006	<2.5	PASS
	2402	2387	2400	-36.28	0.2355	<25	PASS
	2402	2483.5	2496.5	-59.54	0.0011	<25	PASS
	2402	2496.5	13000	-55.68	0.0027	<2.5	PASS
	2441	30	2387	-62.79	0.0005	<2.5	PASS
	2441	2387	2400	-63.59	0.0004	<25	PASS
	2441	2483.5	2496.5	-59.75	0.0011	<25	PASS
	2441	2496.5	13000	-55.22	0.0030	<2.5	PASS

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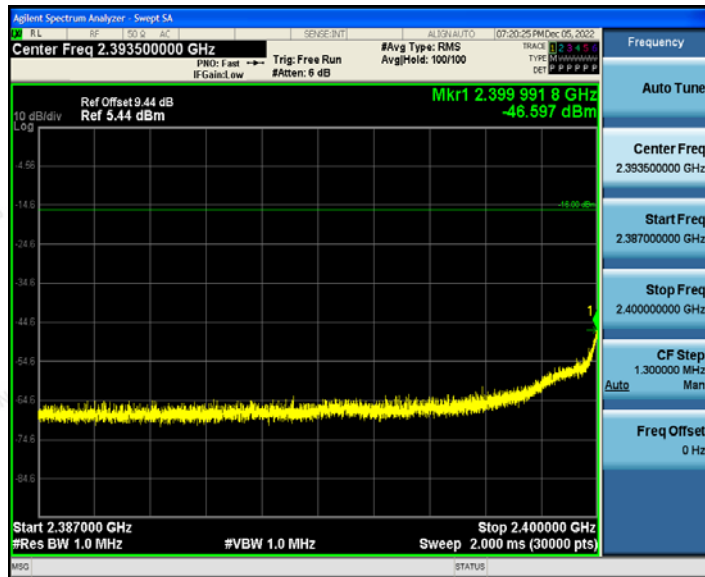
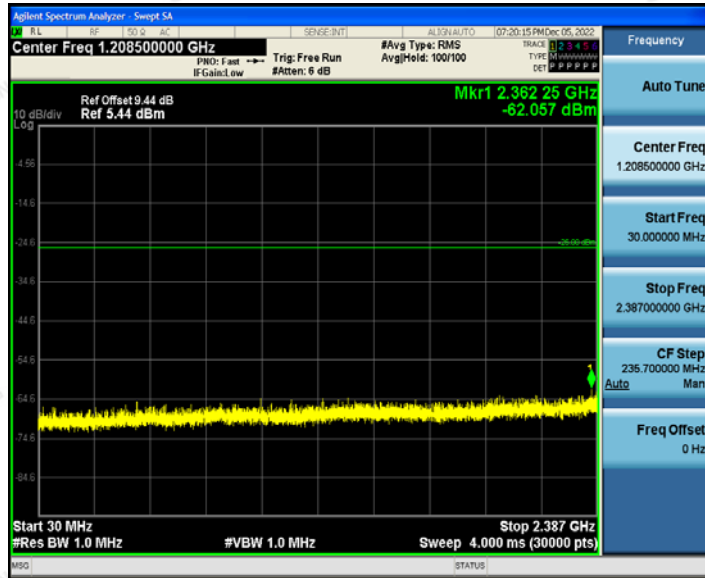


	2480	30	2387	-49.94	0.0101	<2.5	PASS
	2480	2387	2400	-60.58	0.0009	<25	PASS
	2480	2483.5	2496.5	-55.27	0.0030	<25	PASS
	2480	2496.5	13000	-55.58	0.0028	<2.5	PASS
8-DPSK TX Mode	2402	30	2387	-59.45	0.0011	<2.5	PASS
	2402	2387	2400	-35.81	0.2624	<25	PASS
	2402	2483.5	2496.5	-60.34	0.0009	<25	PASS
	2402	2496.5	13000	-54.93	0.0032	<2.5	PASS
	2441	30	2387	-39.51	0.1119	<2.5	PASS
	2441	2387	2400	-62.90	0.0005	<25	PASS
	2441	2483.5	2496.5	-60.23	0.0009	<25	PASS
	2441	2496.5	13000	-55.32	0.0029	<2.5	PASS
	2480	30	2387	-63.24	0.0005	<2.5	PASS
	2480	2387	2400	-61.44	0.0007	<25	PASS
	2480	2483.5	2496.5	-55.60	0.0028	<25	PASS
	2480	2496.5	13000	-55.45	0.0029	<2.5	PASS

Note: All mode has been test, Low and High channel is worst case.



GFSK Tx Mode 2402MHz

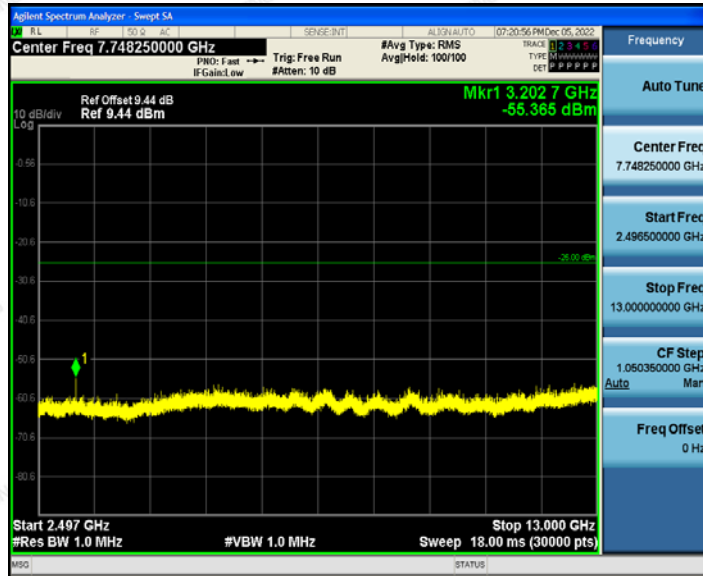
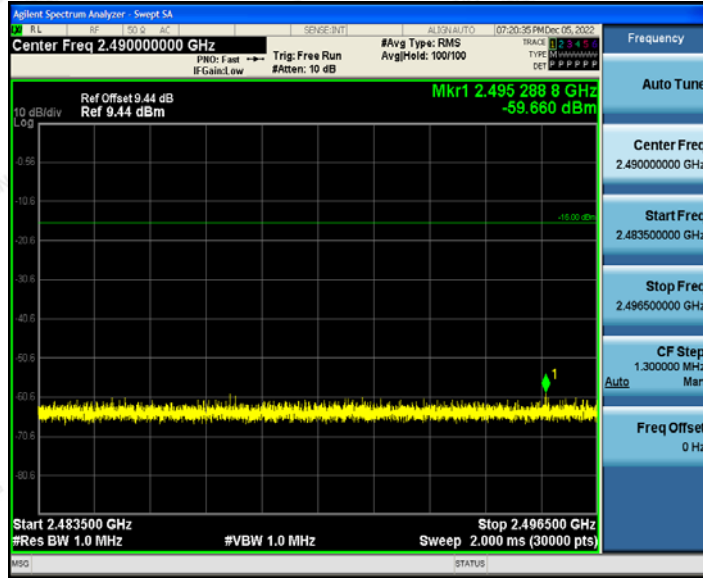


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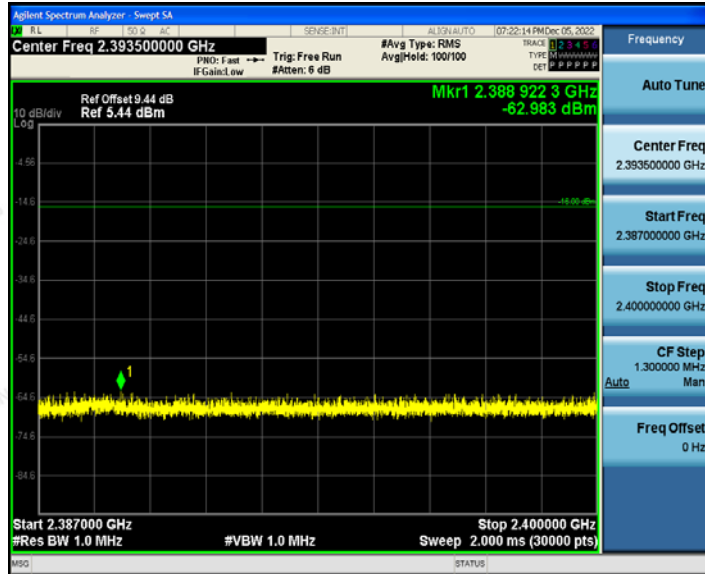
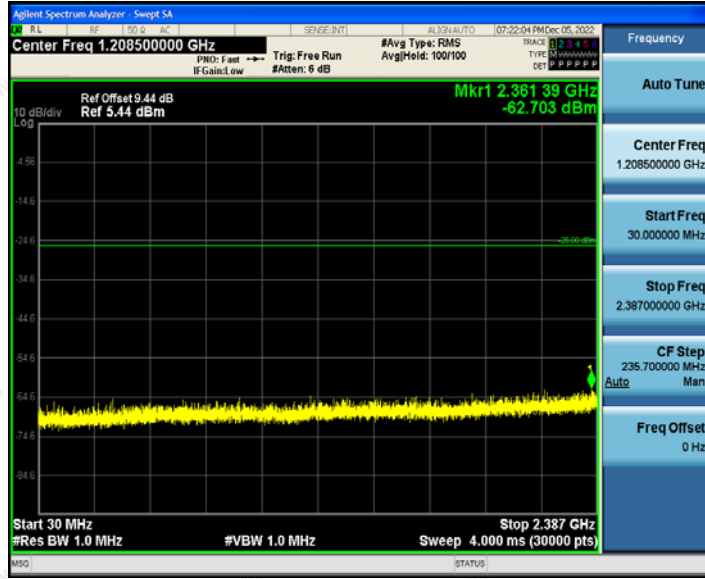
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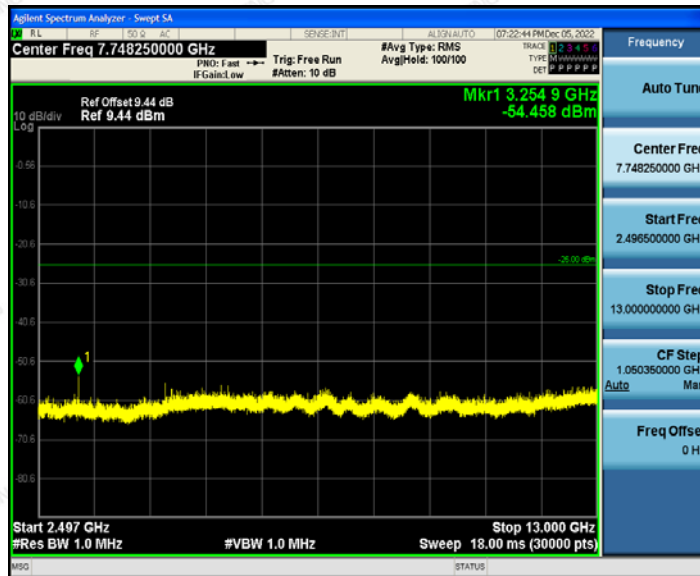
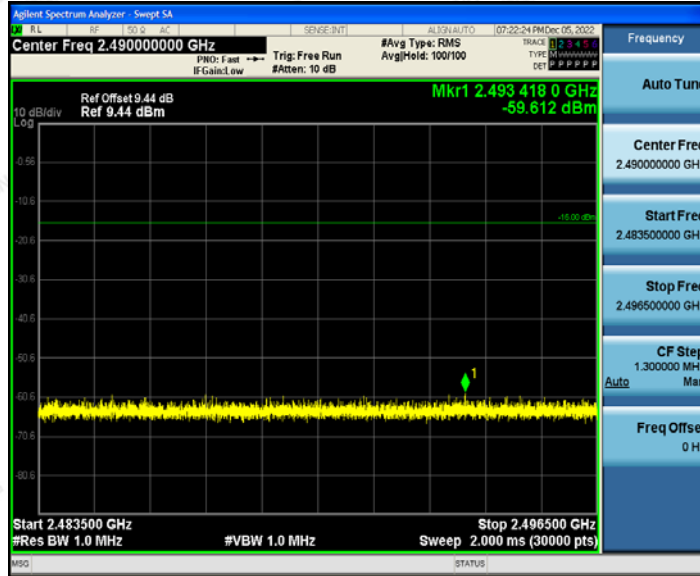
GFSK Tx Mode 2441MHz



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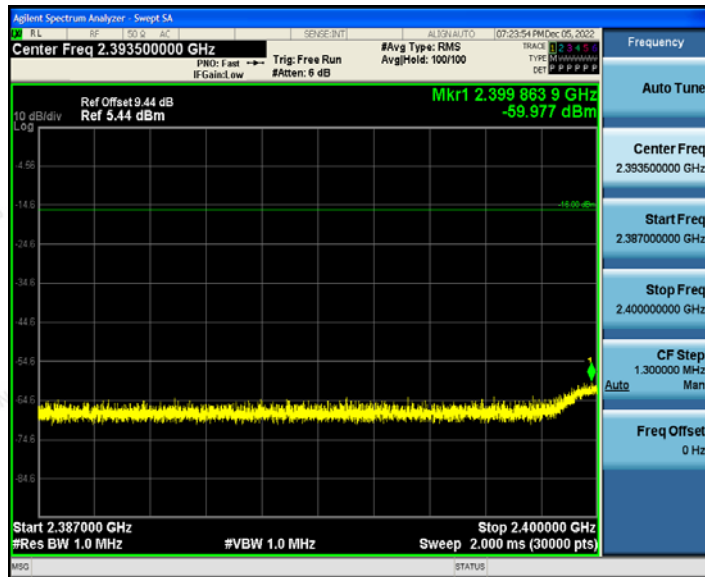
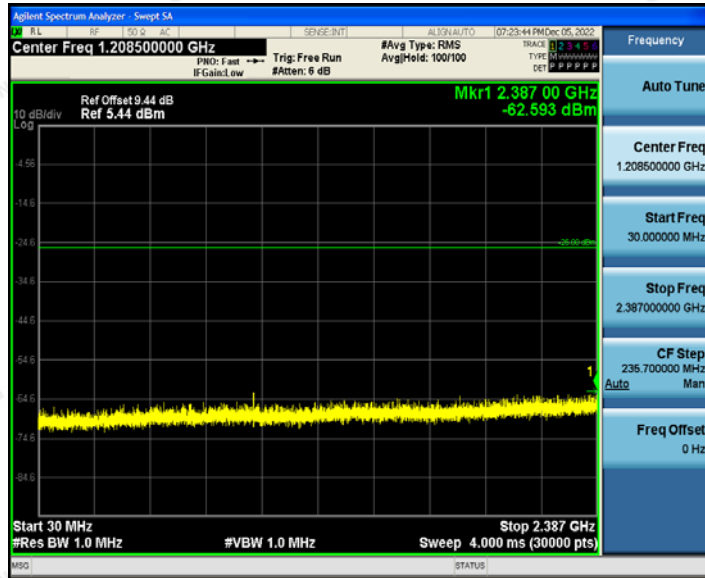
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GFSK Tx Mode 2480MHz

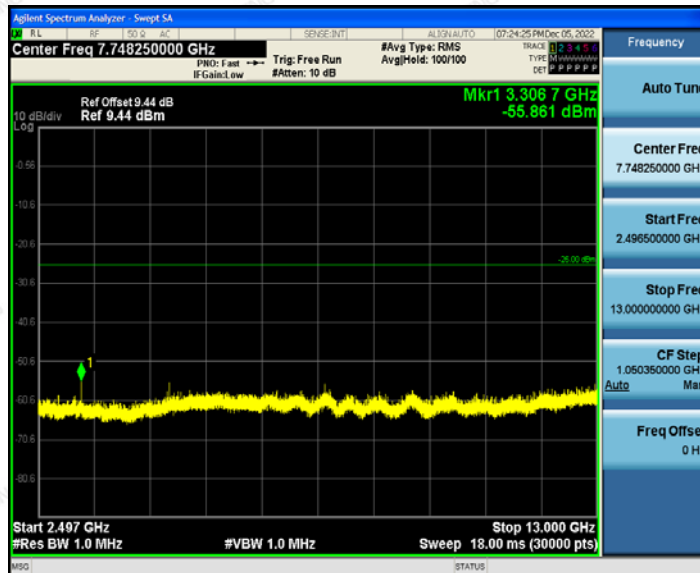
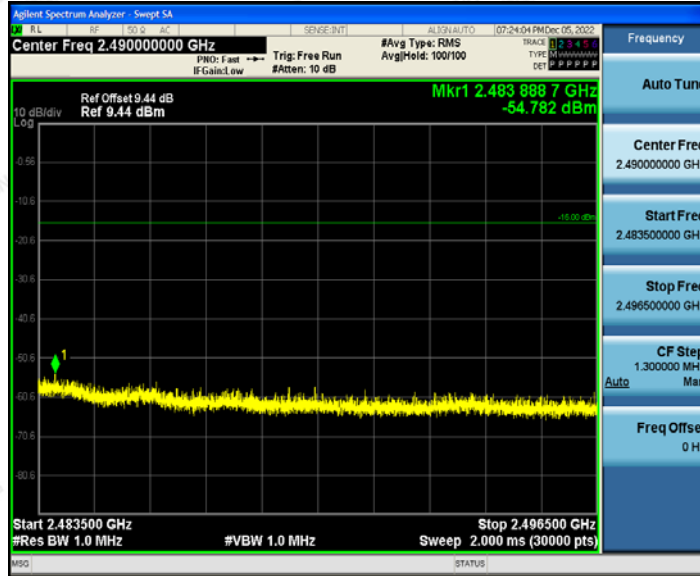


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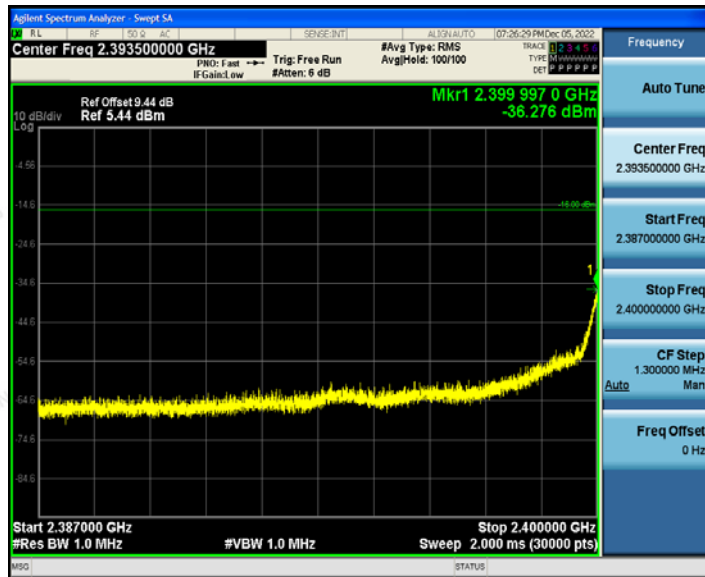
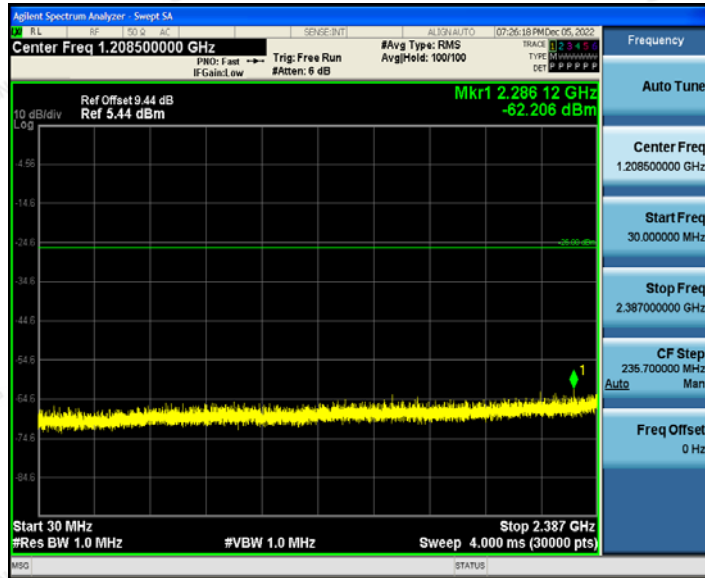
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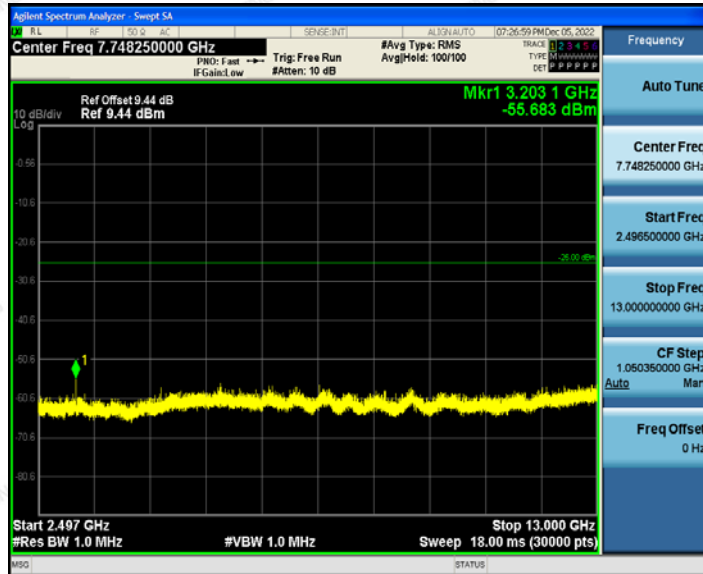
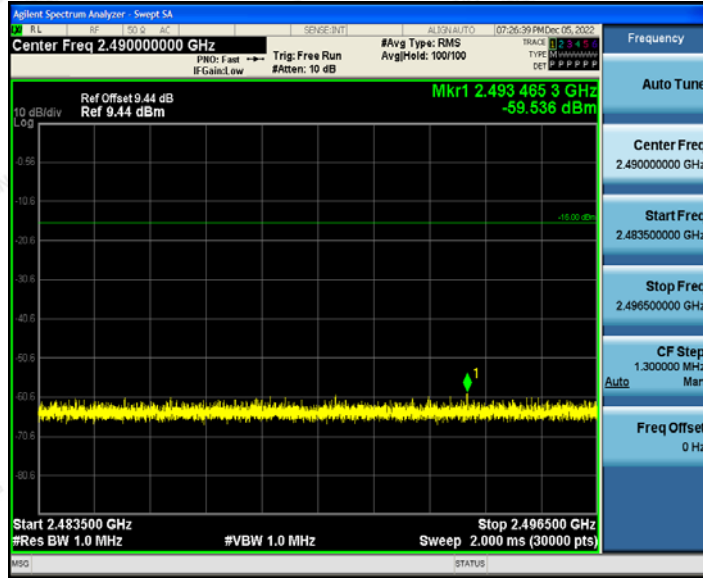
Pi / 4DQPSK TX Mode 2402MHz



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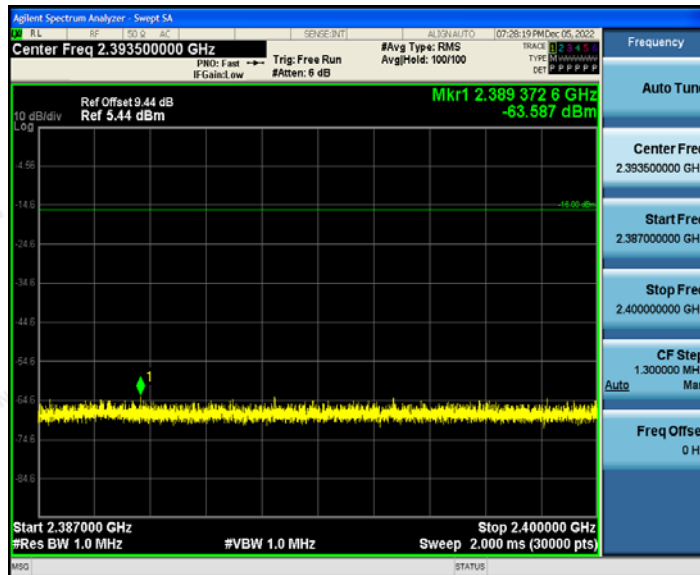
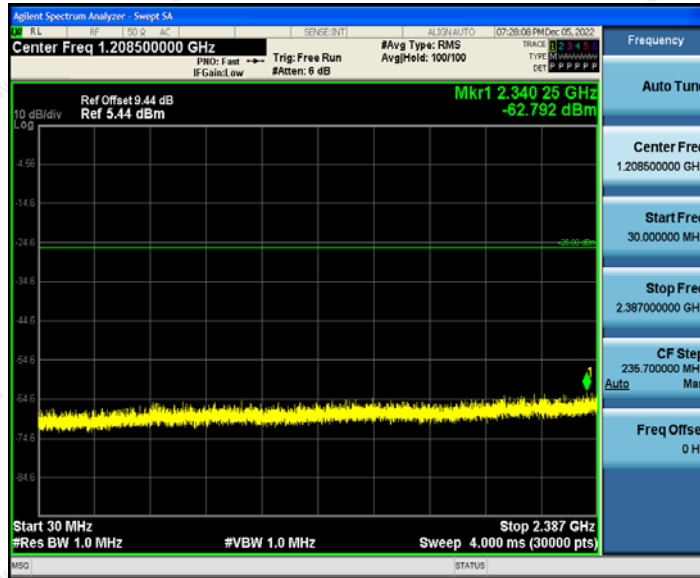
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Pi / 4DQPSK TX Mode 2441MHz

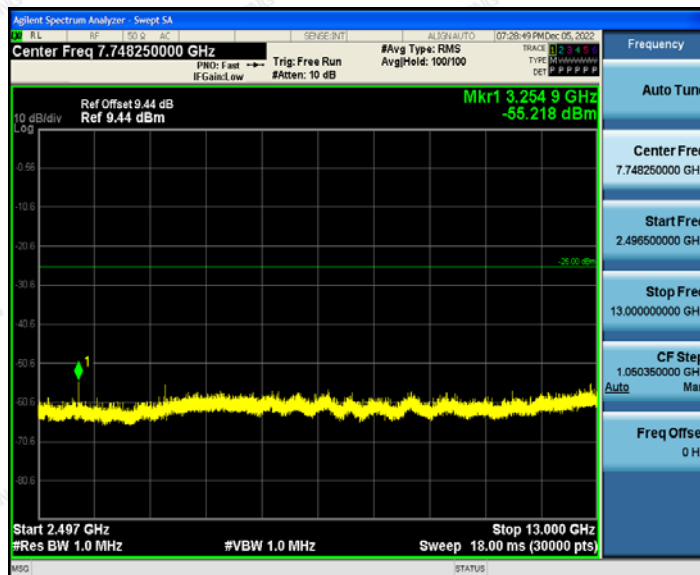
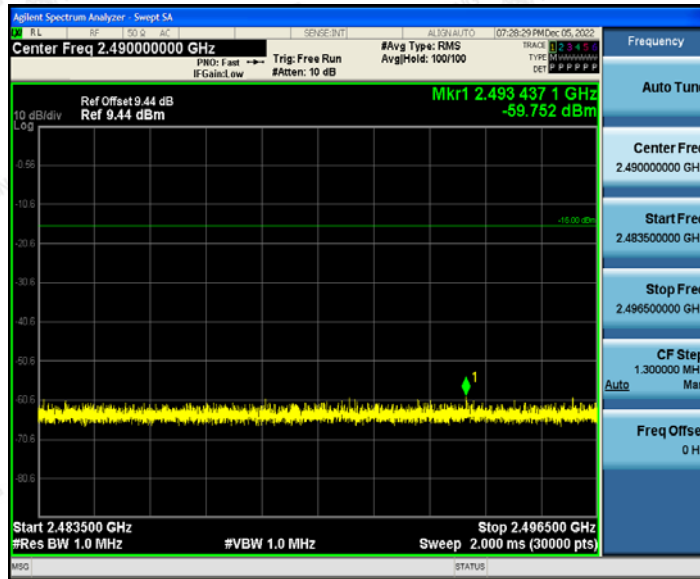


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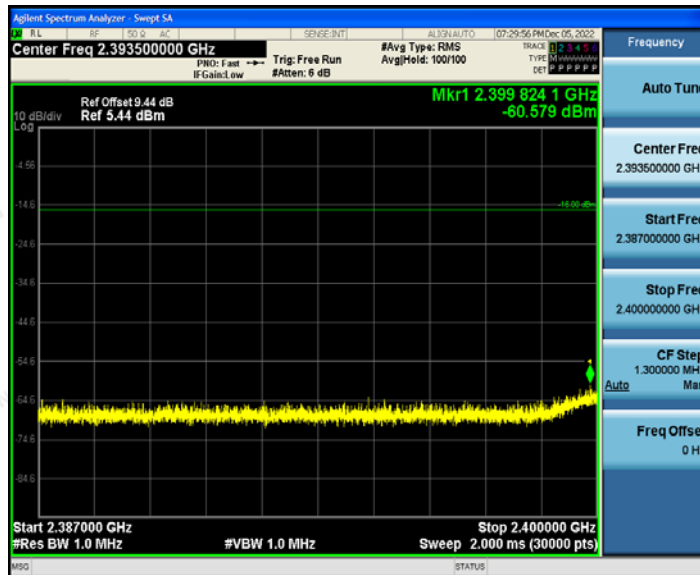
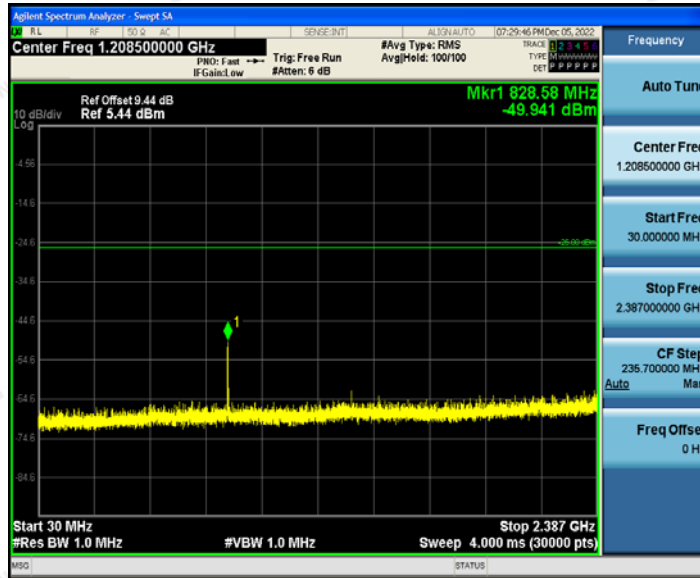
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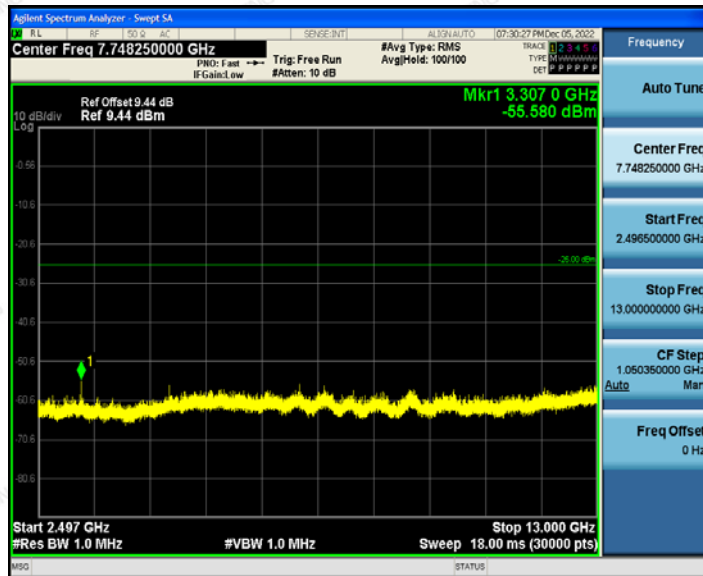
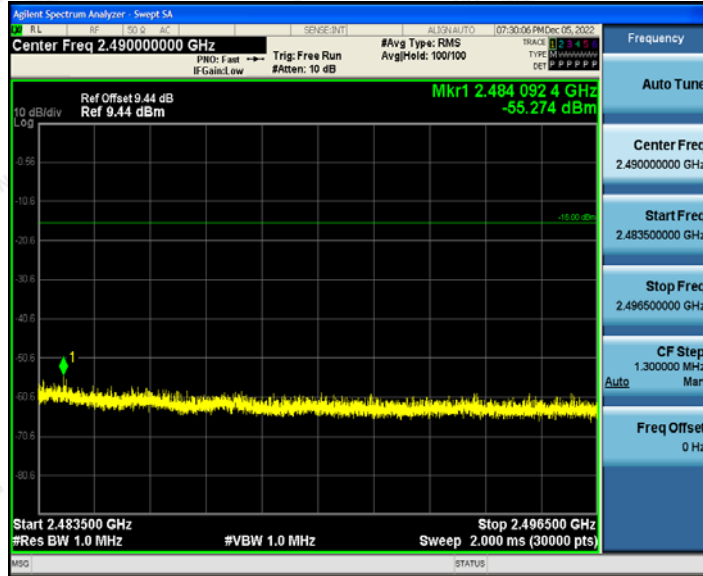
Pi / 4DQPSK TX Mode 2480MHz



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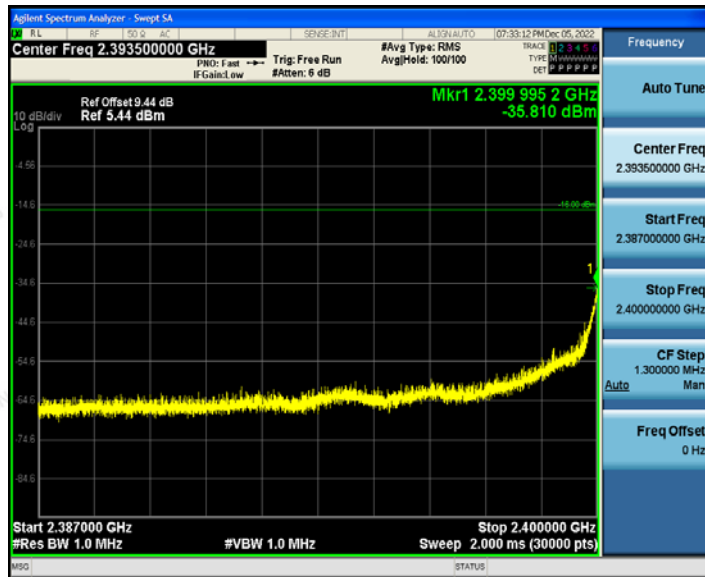
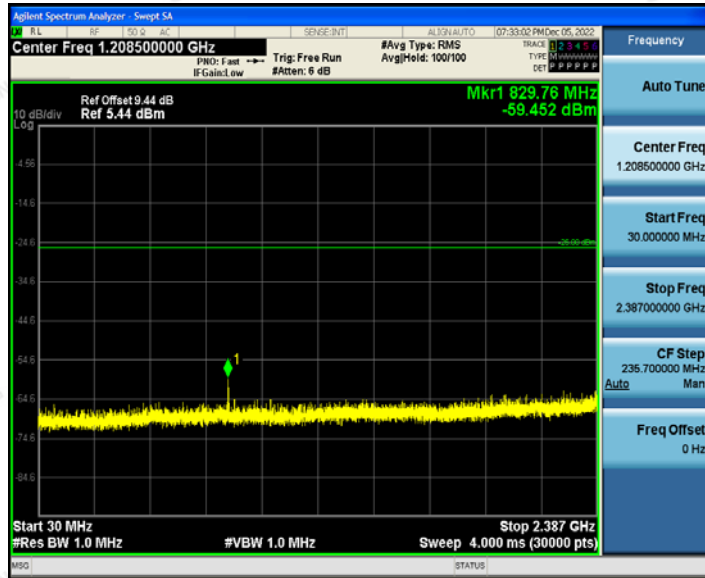
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8-DPSK TX Mode 2402MHz

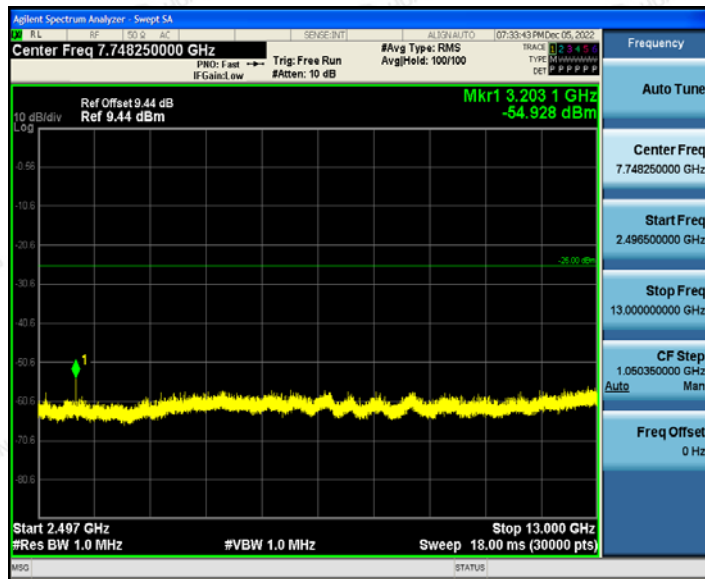
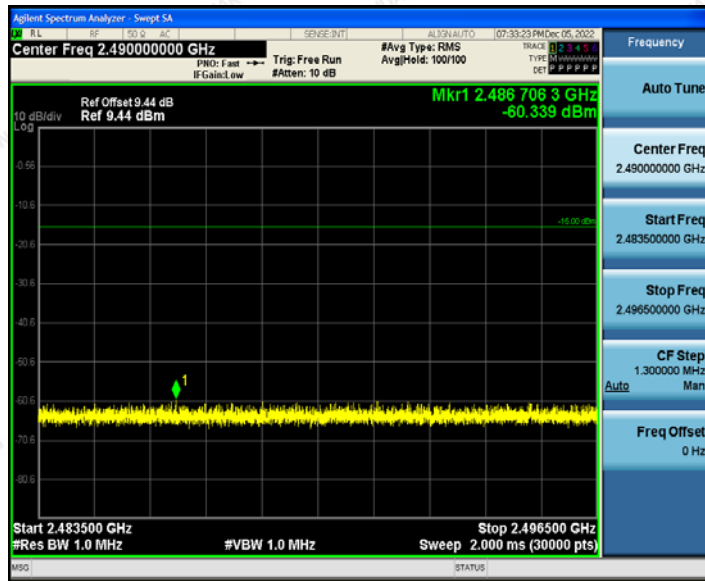


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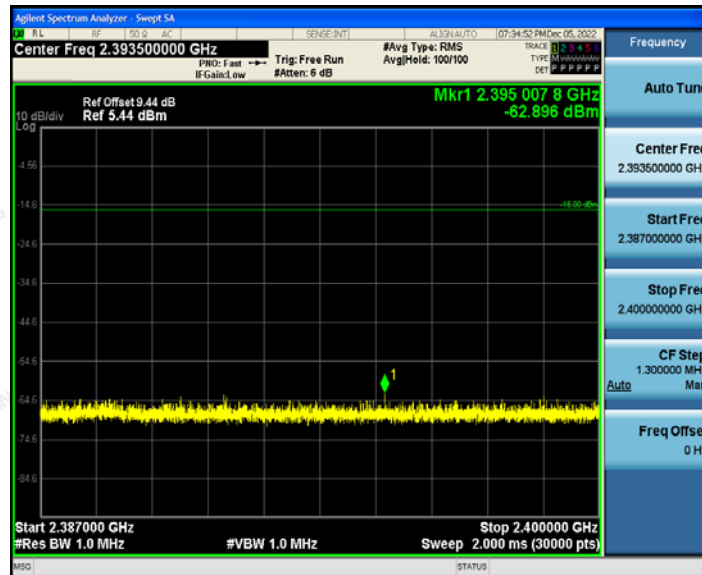
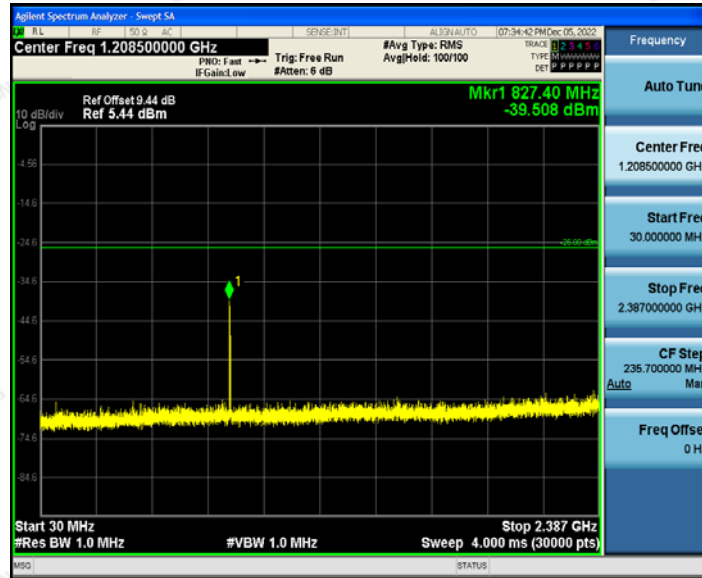
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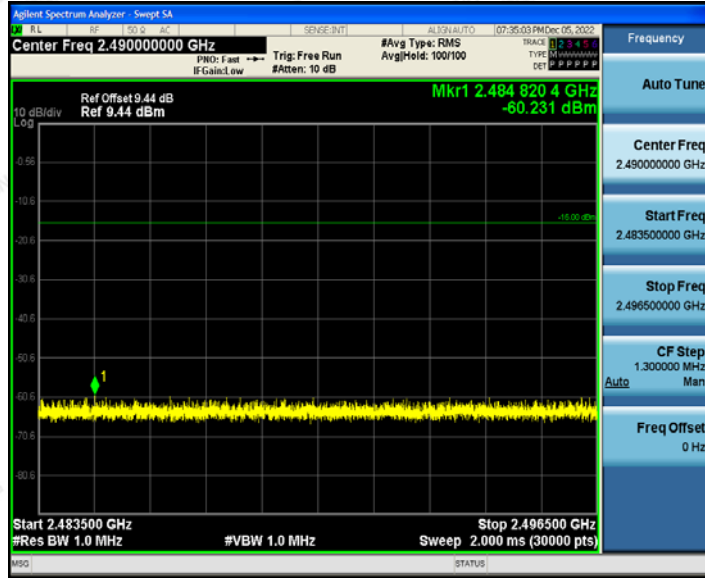
8-DPSK TX Mode 2441MHz



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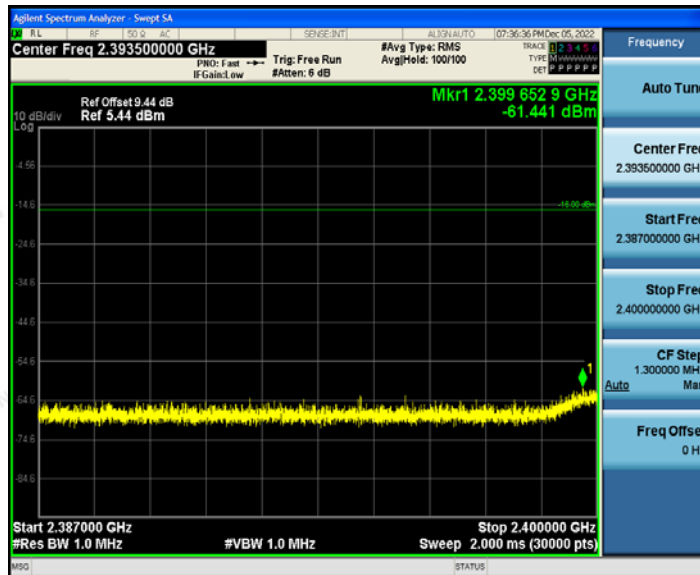
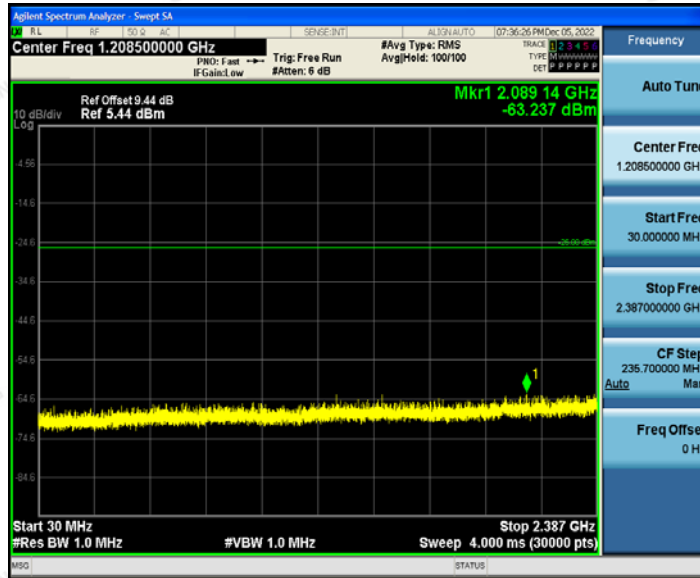
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8-DPSK TX Mode 2480MHz

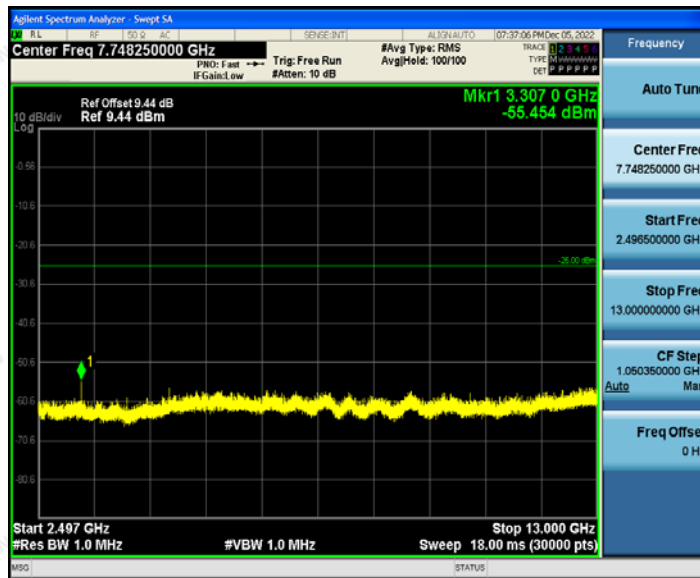
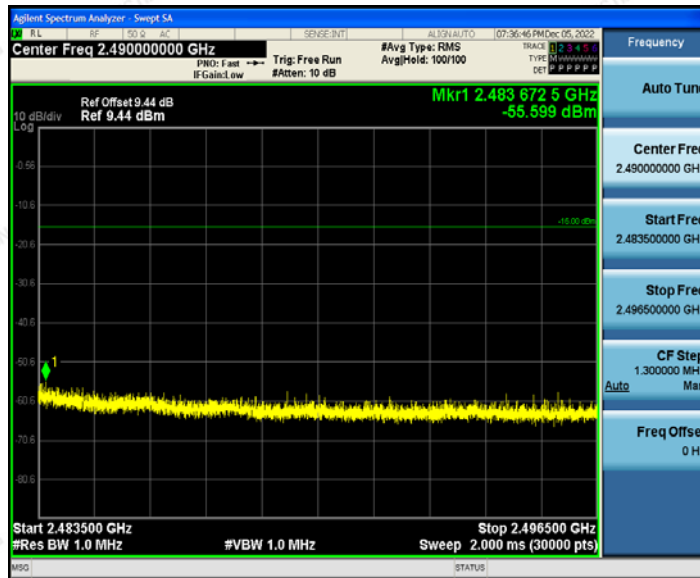


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## 11 Interference prevention function

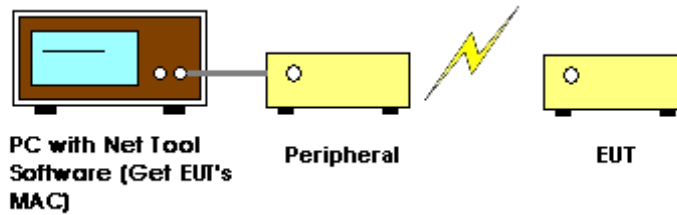
### 11.1 Limit

Item	Limits
Identification code	$\geq 48$ bits

### 11.2 Measuring ID Code Software

Item	Limits
MAC IP List	MAC Scan

### 11.3 Test Setup



### 11.4 Test Procedure

- (1) In the case that the EUT has the function of automatically transmitting the identification code:
  - a. Transmit the predetermined identification codes form EUT.
  - b. Check the transmitted identification codes with the demodulator.
- (2) In the case of receiving the identification code:
  - a. Transmit the predetermined identification codes form the counterpart.
  - b. Check if communication is normal.
  - c. Transmit the signals other than predetermined ID codes form the counterpart.
  - d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.



11.5 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Test result:	CONFORM(MAC: 51F14A00CB75)		

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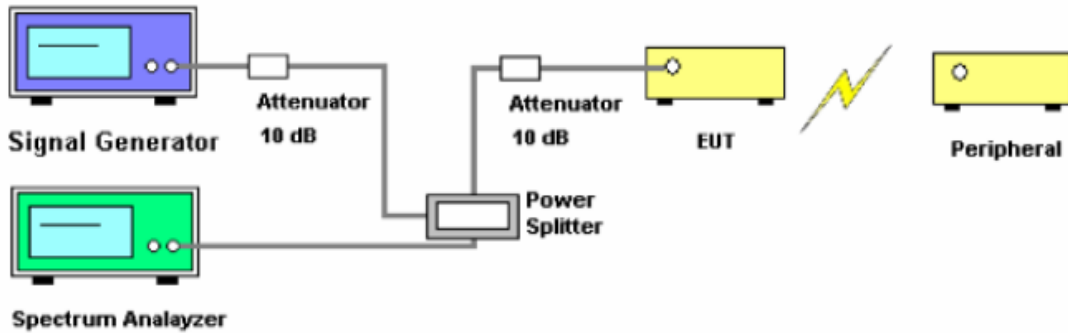
## 12 Carrier sensing function

### 12.1 Limit

The device shall not transmit radio wave when receiving 100Mw/m

### 12.2 Test Setup

#### ❖ Measurement System Diagram



#### ❖ Conditions of Application Equipment (EUT)

- The EUT state shall be “normal mode link with wireless router”.

### 12.3 Test Procedure

- (1) SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is  $(on\ 22.79+G-20*\log(f)dBm)$  (G is the antenna gain, f is the test frequency).
- (2) Turn off the RF signal of the SG.
- (3) EUT have transmitted the maximum modulation signal and fixed channelize.
- (4) Setting of SA :RBW/VBW=1MHz/1MHz, Span=50MHz, Sweep time=auto, Sweep mode=continuous, Detect mode=positive peak
- (5) SG RF signal on.
- (6) EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous

### 12.4 Test Result

EUT :	Car Audio player	Test Date:	/
Temperature:	25 <sup>0</sup> C	Tested by:	/
Humidity:	55 % RH	Test Voltage	/
Test result:	Not applicable other than OFDM modulation.		

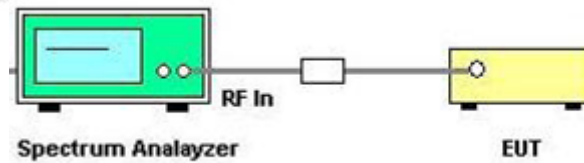


## 13 Secondary Radiated Emissions

### 13.1 Limit

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

### 13.2 Test Setup



### 13.3 Test Procedure

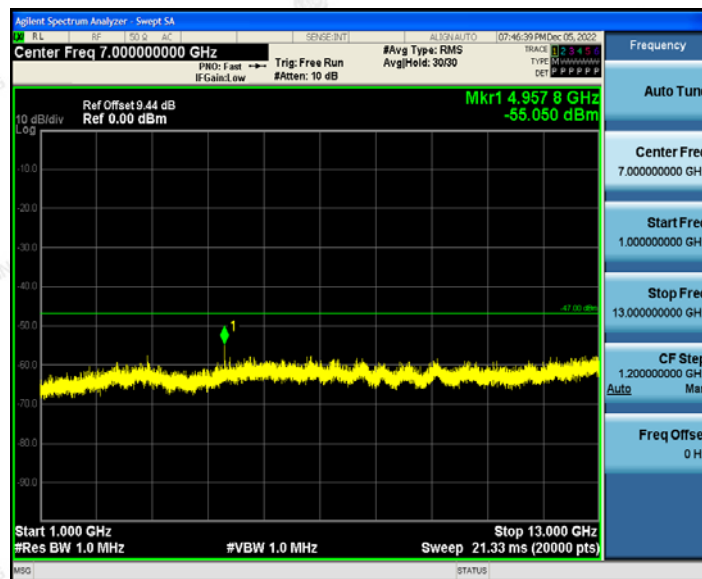
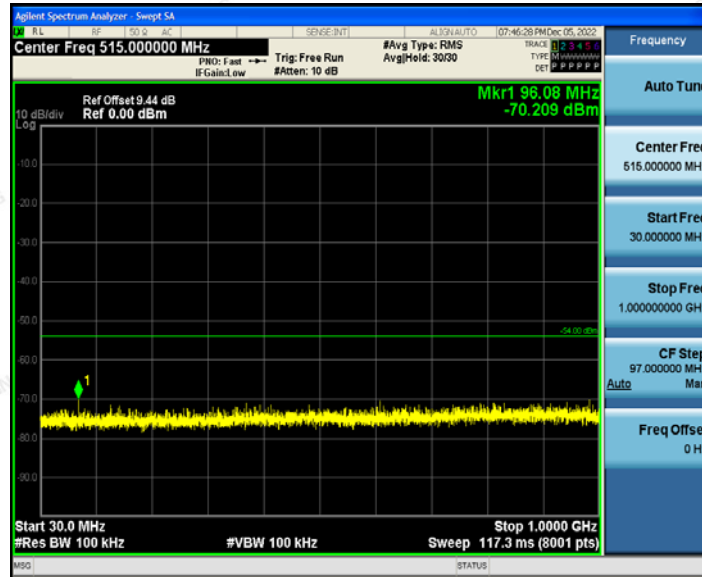
- (1) Configure EUT and assistant system according clause 2.2 and 14.2
- (2) Set EUT work in carrier Rx mode as described in clause 2.2
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:  
For below 1G:  
Resolution BW: 100KHz.  
Video BW: 100KHz.  
Detector: Peak.  
Trace Mode: Max Hold  
For above 1G:  
Resolution BW: 1MHz.  
Video BW: 1MHz.  
Detector: Peak.  
Trace Mode: Max Hold
- (4) When the trace is complete, measure the Secondary Radiated Emissions with spectrum analyzer's bandwidth measure function.



13.4 Test Result

EUT :	Car Audio player	Test Date:	Dec. 05, 2022
Temperature:	25°C	Tested by:	Kevin Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage

Note: The worst test channel of all channels was showed as the follow.



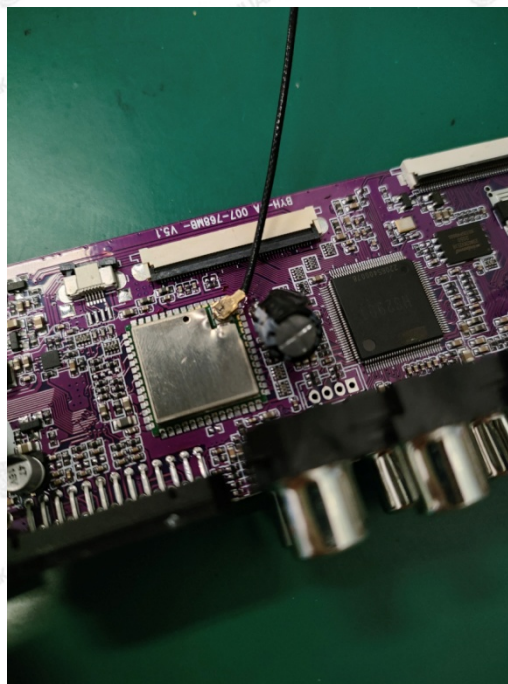
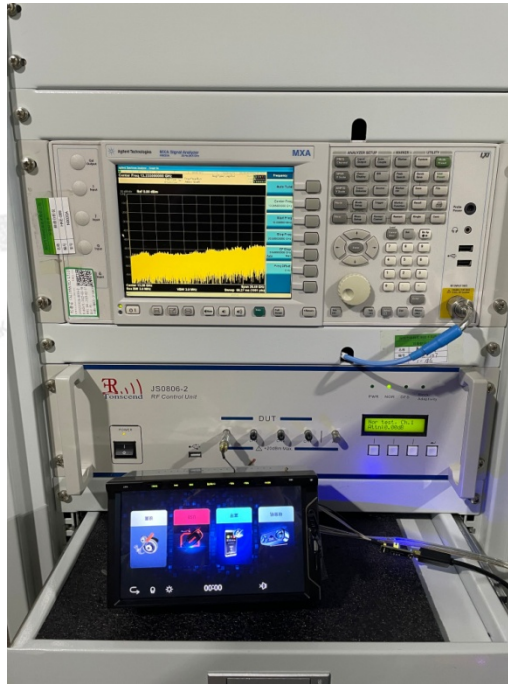
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14 PHOTOGRAPH OF TEST



-----End of report-----

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