

# Shenzhen SKY DRAGON Audio-video Technology Co.LTD

## TEST REPORT



**SCOPE OF WORK**

FCC TESTING—SR418C, SR418E, ITBSW421B,  
MTBSW421B, ITBSW423B, MTBSW423B

**REPORT NUMBER**

220705028SZN-003

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**Shenzhen SKY DRAGON Audio-video Technology Co.LTD**

Application  
For  
Certification

**FCC ID: ZJP-SR418C****45 inch HD Sound Bar with Satellite Speakers and Wireless Subwoofer****Model: SR418C, SR418E, ITBSW421B, MTBSW421B, ITBSW423B, MTBSW423B****Brand Name: CRY, SAMESAY**

Sub-GHz Transmitter

Report No.: 220705028SZN-003

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-21]

Prepared and Checked by:

Approved by:

*Robin Zhou*  
Senior Project Engineer

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*Peter Kang*  
Senior Technical Supervisor  
Date: October 21, 2022

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**Intertek Testing Services Shenzhen Ltd. Longhua Branch**

101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen, P.R. China  
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751



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## 1.0 Summary of Test Result

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Applicant Address: B16,Laneway 3,Liuxian 2RD,District71,Baoan,shenzhen, China

Manufacturer: Huizhou Clinav Industrial Development Co.,LTD

Manufacturer Address: Shangnan Village Committee,Yuanzhou Town BoLuo County, Huizhou City, Guangdong, China

MODEL: SR418C, SR418E, ITBSW421B, MTBSW421B, ITBSW423B, MTBSW423B

FCC ID: ZJP-SR418C

Test Specification	Reference	Results
Transmitter Radiated Emission Band edge	15.249 &15.209 &15.205	Pass
Conducted Emission	15.207	Pass
20dB Bandwidth	15.215(c)	Pass

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

The Model: SR418E, ITBSW421B, MTBSW421B, ITBSW423B, MTBSW423B are the same as the Model: SR418C in hardware aspect. The difference in model number and brand names serves as marketing strategy.

## 2.0 General Description

### 2.1 Product Description

The equipment under test (EUT) is a 45 inch HD Sound Bar with Satellite Speakers and Wireless Subwoofer with Sub-GHz function operating in 904-907MHz, 914-917MHz and 924-927MHz. The EUT is powered by DC 18V, 1A by External Switching Power Supply. For more detail information pls. refer to the user manual.

Antenna Type: Integral Antenna

Modulation Type: QPSK

Antenna Gain: 0dBi Max

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

### 2.2 Related Submittal(s) Grants

This is an application for certification of a transceiver for the 45 inch HD Sound Bar with Satellite Speakers and Wireless Subwoofer which has Bluetooth function and Sub-GHz function operating at 904-907MHz, 914-917MHz and 924-927MHz, and related report for FCC SDOC is subjected to report number: 220705028SZN-004. For Bluetooth EDR function is subjected to report number: 220705028SZN-001, and Bluetooth LE function is subjected to report number: 220705028SZN-002.

### 2.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in Semi-anechoic chamber. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst-case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

### 2.4 Test Facility

The Semi-Anechoic chamber used to collect the radiated data is **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen, P.R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

## 3.0 System Test Configuration

### 3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

The EUT is powered by DC 18V, 1A by External Switching Power Supply from AC 120V, 60Hz during the test. Only the worst data was reported in this report.

The Sub-GHz function contains three independent ICs (chip model BK9527) and working on three different frequency bands at the same time (904MHz to 907MHz, 914MHz to 917MHz and 924MHz to 927MHz).

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the bottom of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Section 4.

The EUT and transmitting antenna was centered on the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

### 3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

Test Software: N/A, the test program is integrated into the firmware.

### 3.3 Special Accessories

No special accessories used.

### 3.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen SKY DRAGON Audio-video Technology Co.LTD will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

### 3.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

### 3.6 Support Equipment List and Description

Description	Manufacturer	Remark
Laptop (Provided by Intertek)	DELL	Latitude 5420
Mobile Phone (Provided by Intertek)	SAMSUNG	S7
Test TV (Provided by Intertek)	SONY	KDL-24EX520
Aux in Cable (Provided by Intertek)	N/A	Unshielded without ferrite cores, Length 150cm
Optical Cable (Provided by Applicant)	SKY DRAGON	Unshielded without ferrite cores, Length 150cm
HDMI In Cable (Provided by Intertek)	N/A	Unshielded without ferrite cores, Length 150cm
Dummy Load (Provided by Intertek)	N/A	Audio: 1kΩ HDMI: 100Ω
Remote Controller (Provided by Applicant)	SKY DRAGON	infrared technology
Switching Power Supply (Provided by Applicant)	JIEDONG	JDA0301800100WUS Input: 100-240V~50/60Hz 0.8A Output: 18.0V=1.0A



## 4.0 Emission Results

Data is included worst-case configuration (the configuration which resulted in the highest emission levels).

### 4.1 Radiated Test Results

A sample calculation, configuration photographs and data tables of the emissions are included.

#### 4.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB/m
- AG = Amplifier Gain in dB
- PD = Pulse Desensitization in dB
- AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

Assume a receiver reading of 62.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB/m and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB/m} \\ CF &= 1.6 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ PD &= 0 \text{ dB} \\ AV &= -10 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

## 4.1.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

## 4.1.3 Radiated Emissions

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission  
at  
192.539667 MHz

Judgement: Passed by 3.6 dB

### **TEST PERSONNEL:**

*Sign on file*

Robin Zhou, Senior Project Engineer  
*Typed/Printed Name*

October 11, 2022  
*Date*

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

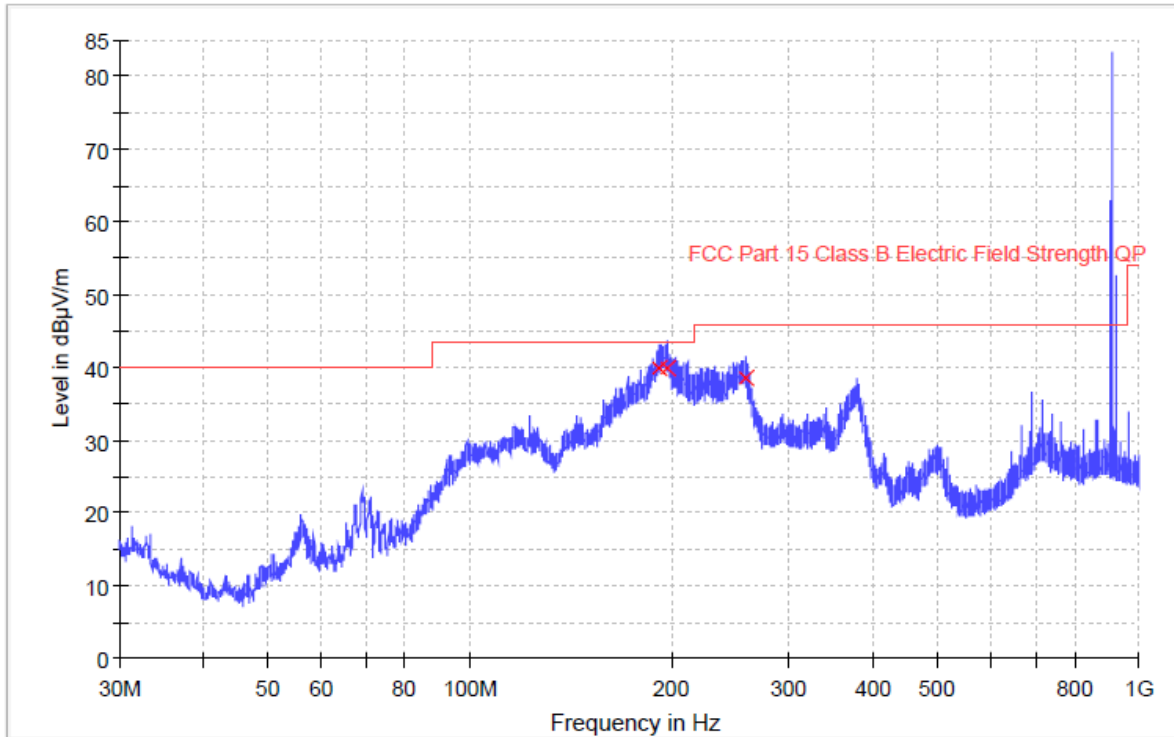
Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

BT Link and Sub-GHz simultaneous transmission

ANT Polarity: Horizontal



Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
192.539667	39.9	1000.0	120.000	100.0	H	12.4	3.6	43.5
197.228000	39.8	1000.0	120.000	100.0	H	13.2	3.7	43.5
258.000000	38.6	1000.0	120.000	100.0	H	14.2	7.4	46.0

Remark:

1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line (dBµV/m) – Level (dBµV/m)

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

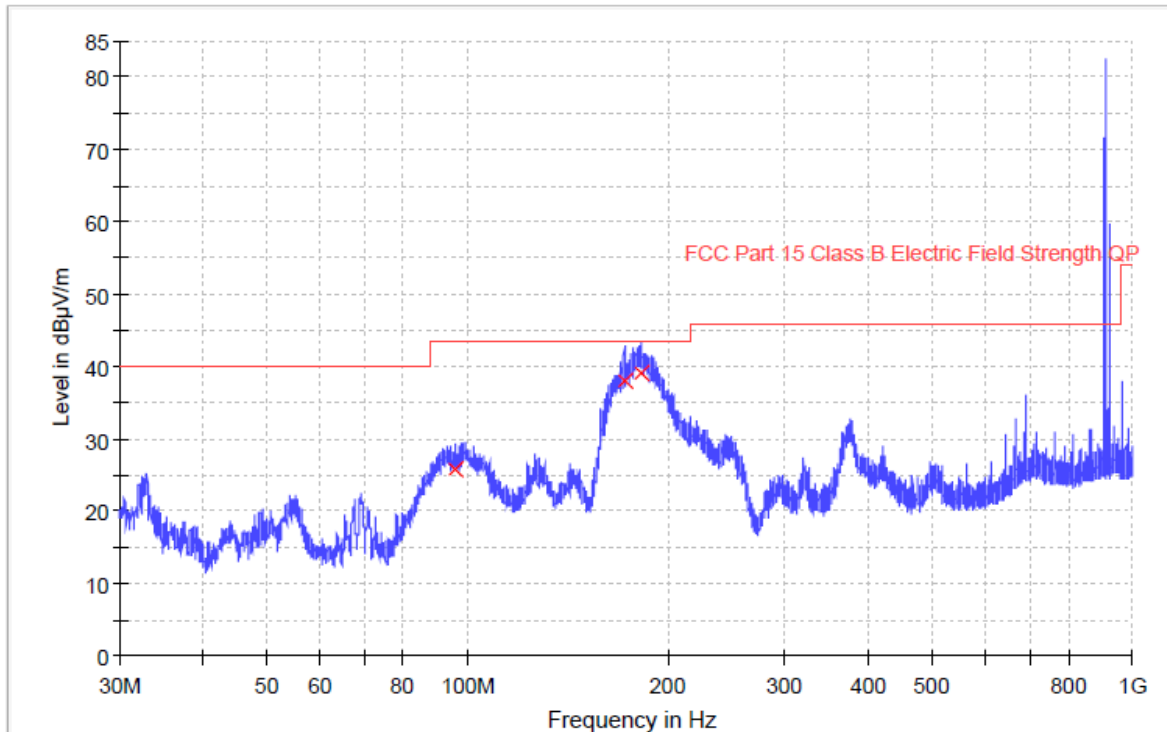
Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

BT Link and Sub-GHz simultaneous transmission

ANT Polarity: Vertical



Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
95.669000	25.9	1000.0	120.000	100.0	V	8.6	17.6	43.5
172.080000	37.9	1000.0	120.000	100.0	V	11.0	5.6	43.5
182.280000	39.1	1000.0	120.000	100.0	V	11.7	4.4	43.5

Remark:

1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line (dBµV/m) – Level (dBµV/m)

## 4.1.4 Transmitter Spurious Emissions (Radiated)

Worst Case Radiated Emission  
at  
1808.000 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 3.3 dB

**TEST PERSONNEL:**

*Sign on file*

Robin Zhou, Senior Project Engineer

*Typed/Printed Name*

October 11, 2022

*Date*

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 1

**Radiated Emissions**

(904MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	904.000	33.8	0.0	29.3	63.1	94.0	-30.9
Horizontal	1808.000	66.4	35.7	27.3	58.0	74.0	-16.0
Horizontal	2712.000	42.2	35.1	28.8	35.9	74.0	-38.1
Horizontal	3616.000	49.7	34.6	30.9	46.0	74.0	-28.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	904.000	33.8	0.0	29.3	63.1	94.0	-30.9
Horizontal	1808.000	59.1	35.7	27.3	50.7	54.0	-3.3
Horizontal	2712.000	34.7	35.1	28.8	28.4	54.0	-25.6
Horizontal	3616.000	40.8	34.6	30.9	37.1	54.0	-16.9

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 2

**Radiated Emissions**

(907MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	907.000	34.8	0.0	29.4	64.2	94.0	-29.8
Horizontal	1814.000	66.4	35.7	27.3	58.0	74.0	-16.0
Horizontal	2721.000	42.7	35.1	28.8	36.4	74.0	-37.6
Horizontal	3628.000	43.9	34.5	30.9	40.3	74.0	-33.7

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	907.000	34.8	0.0	29.4	64.2	94.0	-29.8
Horizontal	1814.000	57.5	35.7	27.3	49.1	54.0	-4.9
Horizontal	2721.000	34.9	35.1	28.8	28.6	54.0	-25.4
Horizontal	3628.000	36.7	34.5	30.9	33.1	54.0	-20.9

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 3

**Radiated Emissions**

(914MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Peak Limit at 3m (dBμV/m)	Margin (dB)
Vertical	914.000	39.9	0.0	29.7	69.6	94.0	-24.4
Vertical	1828.000	50.3	35.7	27.4	42.0	74.0	-32.0
Vertical	2742.000	40.0	35.1	28.8	33.7	74.0	-40.3
Vertical	3656.000	46.7	34.5	31.0	43.2	74.0	-30.8

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Average Limit at 3m (dBμV/m)	Margin (dB)
Vertical	914.000	39.9	0.0	29.7	69.6	94.0	-24.4
Vertical	1828.000	43.3	35.7	27.4	35.0	54.0	-19.0
Vertical	2742.000	32.6	35.1	28.8	26.3	54.0	-27.7
Vertical	3656.000	40.8	34.5	31.0	37.3	54.0	-16.7

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.



Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 4

**Radiated Emissions**

(917MHz)

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dB $\mu$ V/m)	QP/Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	917.000	40.6	0.0	29.8	70.4	94.0	-23.6
Horizontal	1834.000	48.3	35.7	27.4	40.0	74.0	-34.0
Horizontal	2751.000	41.4	35.0	28.9	35.3	74.0	-38.7
Horizontal	3668.000	45.2	34.5	31.0	41.7	74.0	-32.3

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dB $\mu$ V/m)	QP/Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	917.000	40.6	0.0	29.8	70.4	94.0	-23.6
Horizontal	1834.000	39.7	35.7	27.4	31.4	54.0	-22.6
Horizontal	2751.000	33.0	35.0	28.9	26.9	54.0	-27.1
Horizontal	3668.000	39.2	34.5	31.0	35.7	54.0	-18.3

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 5

**Radiated Emissions**

(924MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Peak Limit at 3m (dBμV/m)	Margin (dB)
Vertical	924.000	52.1	0.0	30.1	82.2	94.0	-11.8
Vertical	1848.000	57.4	35.7	27.5	49.2	74.0	-24.8
Vertical	2772.000	40.5	35.0	28.9	34.4	74.0	-39.6
Vertical	3696.000	42.8	34.5	31.0	39.3	74.0	-34.7

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	QP/Average Limit at 3m (dBμV/m)	Margin (dB)
Vertical	924.000	52.1	0.0	30.1	82.2	94.0	-11.8
Vertical	1848.000	48.4	35.7	27.5	40.2	54.0	-13.8
Vertical	2772.000	33.4	35.0	28.9	27.3	54.0	-26.7
Vertical	3696.000	34.9	34.5	31.0	31.4	54.0	-22.6

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: October 11, 2022

Model: SR418C

Worst Case Operating Mode:

Transmitting

Table 6

**Radiated Emissions**

(927MHz)

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dB $\mu$ V/m)	QP/Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Vertical	927.000	50.9	0.0	30.2	81.1	94.0	-12.9
Vertical	1854.000	56.4	35.6	27.6	48.4	74.0	-25.6
Vertical	2781.000	40.9	35.0	28.9	34.8	74.0	-39.2
Vertical	3708.000	43.1	34.5	31.0	39.6	74.0	-34.4

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dB $\mu$ V/m)	QP/Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Vertical	927.000	50.9	0.0	30.2	81.1	94.0	-12.9
Vertical	1854.000	47.1	35.6	27.6	39.1	54.0	-14.9
Vertical	2781.000	32.3	35.0	28.9	26.2	54.0	-27.8
Vertical	3708.000	34.8	34.5	31.0	31.3	54.0	-22.7

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
  2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

## 4.2 Conducted Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: conducted photos.pdf.

### 4.2.1 Conducted Emission

Worst Case Conducted Configuration  
at  
0.306000MHz

Judgement: Passed by 17.1dB margin

#### **TEST PERSONNEL:**

*Sign on file*

Robin Zhou, Senior Project Engineer  
*Typed/Printed Name*

August 17, 2022  
*Date*

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: August 17, 2022

Model: SR418C

Worst Case Operating Mode: BT Link and Sub-GHz simultaneous transmission

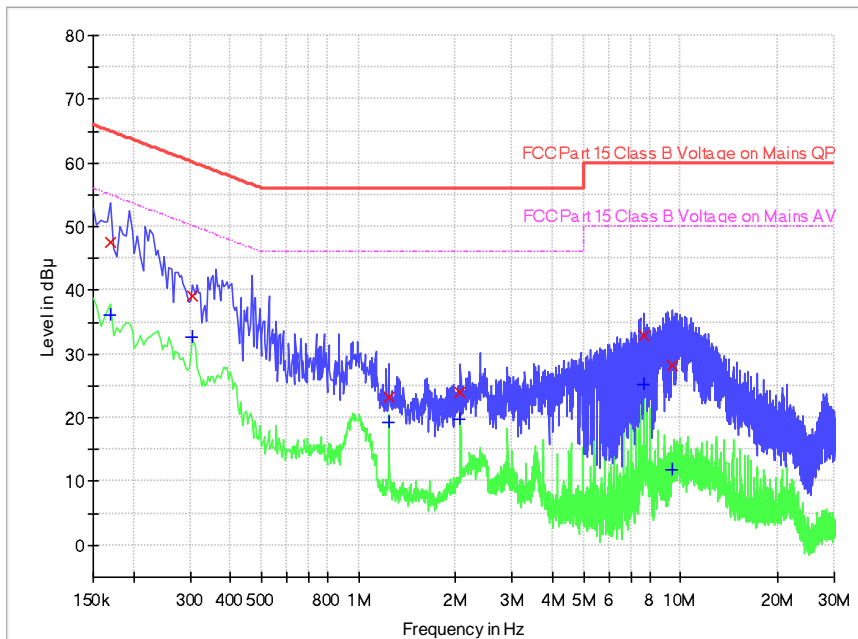
Phase: Live

## Graphic / Data Table

### Conducted Emissions

#### Pursuant to FCC 15.207: Emissions Requirement

Conducted Emission Test FCC Part 15



#### Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.170000	47.5	9.000	L1	9.6	17.5	65.0
0.306000	39.1	9.000	L1	9.6	21.0	60.1
1.242000	23.2	9.000	L1	9.7	32.8	56.0
2.074000	24.1	9.000	L1	9.7	31.9	56.0
7.674000	32.8	9.000	L1	9.9	27.2	60.0
9.442000	28.3	9.000	L1	9.9	31.7	60.0

#### Limit and Margin AV

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.170000	36.2	9.000	L1	9.6	18.8	55.0
0.306000	32.6	9.000	L1	9.6	17.5	50.1
1.242000	19.3	9.000	L1	9.7	26.7	46.0
2.074000	19.9	9.000	L1	9.7	26.1	46.0
7.674000	25.3	9.000	L1	9.9	24.7	50.0
9.442000	11.9	9.000	L1	9.9	38.1	50.0

Applicant: Shenzhen SKY DRAGON Audio-video Technology Co.LTD

Date of Test: August 17, 2022

Model: SR418C

Worst Case Operating Mode: BT Link and Sub-GHz simultaneous transmission

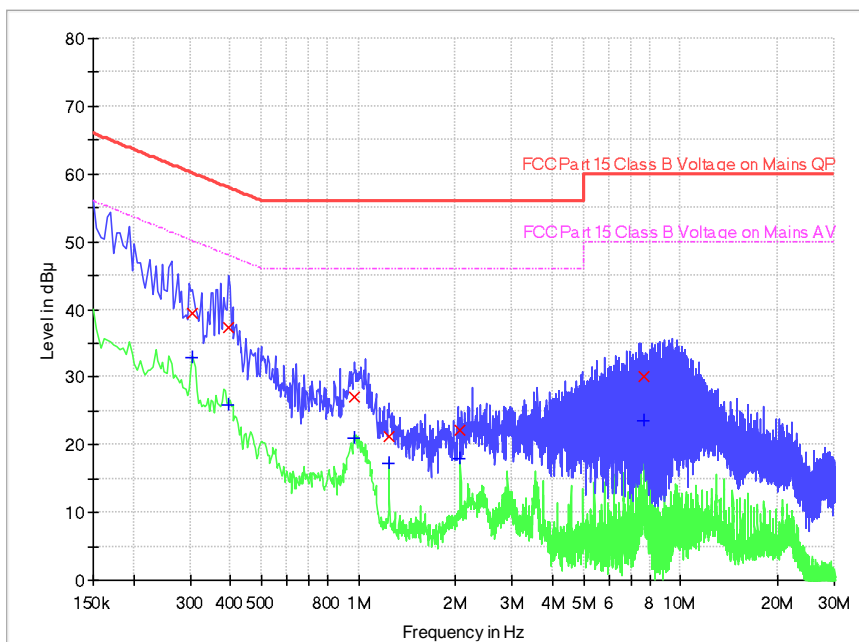
Phase: Neutral

## Graphic / Data Table

### Conducted Emissions

#### Pursuant to FCC 15.207: Emissions Requirement

Conducted Emission Test FCC Part 15



#### Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.306000	39.4	9.000	N	9.6	20.7	60.1
0.394000	37.3	9.000	N	9.6	20.7	58.0
0.966000	27.2	9.000	N	9.6	28.8	56.0
1.242000	21.2	9.000	N	9.6	34.8	56.0
2.074000	22.2	9.000	N	9.7	33.8	56.0
7.678000	30.2	9.000	N	9.8	29.8	60.0

#### Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.306000	33.0	9.000	N	9.6	17.1	50.1
0.394000	25.8	9.000	N	9.6	22.2	48.0
0.966000	21.1	9.000	N	9.6	24.9	46.0
1.242000	17.2	9.000	N	9.6	28.8	46.0
2.074000	17.9	9.000	N	9.7	28.1	46.0
7.678000	23.6	9.000	N	9.8	26.4	50.0

## 5.0 Equipment Photographs

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

## 6.0 Product Labelling

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

## 7.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

## 8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

## 9.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandedge, 20dB Bandwidth, the test procedure and calculation of factor such as pulse desensitization.

### 9.1 Bandedge Plot

The test plots are attached as below. From the below plots, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in section 15.209. It fulfils the requirement of 15.249(d).

#### Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e (Bandedge Plot).

#### **(i) Lowest frequency channel (904MHz):**

QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$\begin{aligned} &= 63.1 \text{ dB}\mu\text{v/m} - 30.28 \text{ dB} \\ &= 32.82 \text{ dB}\mu\text{v/m} \end{aligned}$$

#### **(ii) Highest frequency channel (907MHz):**

QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$\begin{aligned} &= 64.2 \text{ dB}\mu\text{v/m} - 30.57 \text{ dB} \\ &= 33.63 \text{ dB}\mu\text{v/m} \end{aligned}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 46dB $\mu$ v/m (QP Limit).



**(iii) Lowest frequency channel (914MHz):**

QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$= 69.6 \text{ dB}\mu\text{v/m} - 32.98 \text{ dB}$$

$$= 36.62 \text{ dB}\mu\text{v/m}$$

**(iiii) Highest frequency channel (917MHz):**

QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$= 70.4 \text{ dB}\mu\text{v/m} - 43.54 \text{ dB}$$

$$= 26.86 \text{ dB}\mu\text{v/m}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 46dB $\mu$ v/m (QP Limit).

**(v) Lowest frequency channel (924MHz):**

QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$= 82.2 \text{ dB}\mu\text{v/m} - 45.82 \text{ dB}$$

$$= 36.38 \text{ dB}\mu\text{v/m}$$

**(vi) Highest frequency channel (927MHz):**

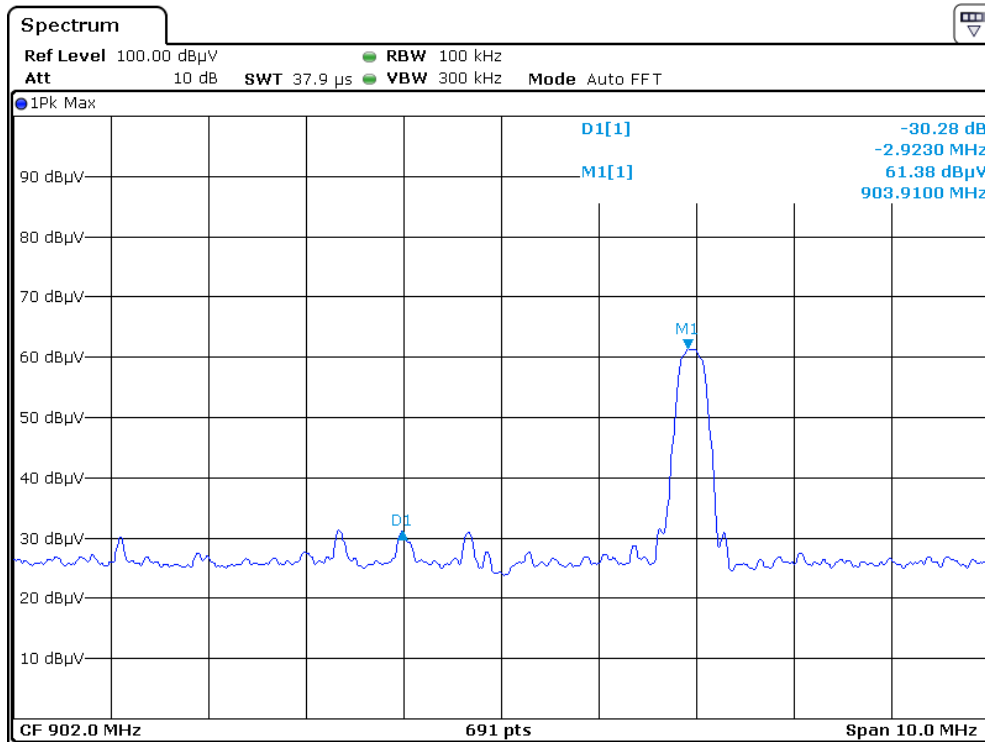
QP Resultant field strength = Fundamental emissions (QP value) – delta from the bandedge plot

$$= 81.1 \text{ dB}\mu\text{v/m} - 45.06 \text{ dB}$$

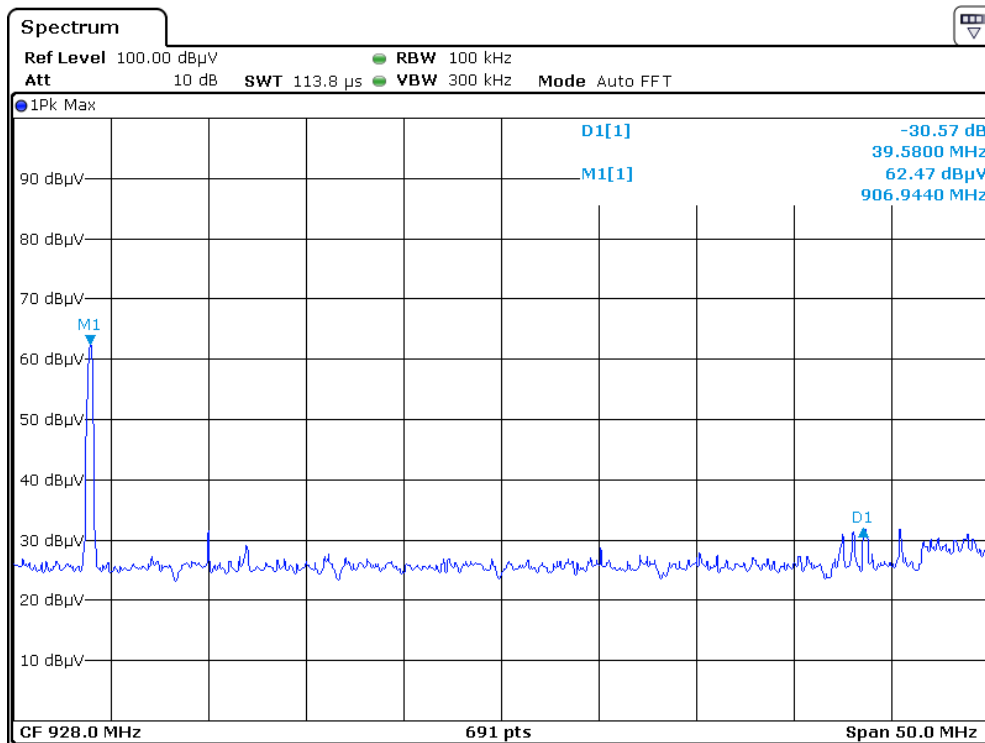
$$= 36.04 \text{ dB}\mu\text{v/m}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 46dB $\mu$ v/m (QP Limit).

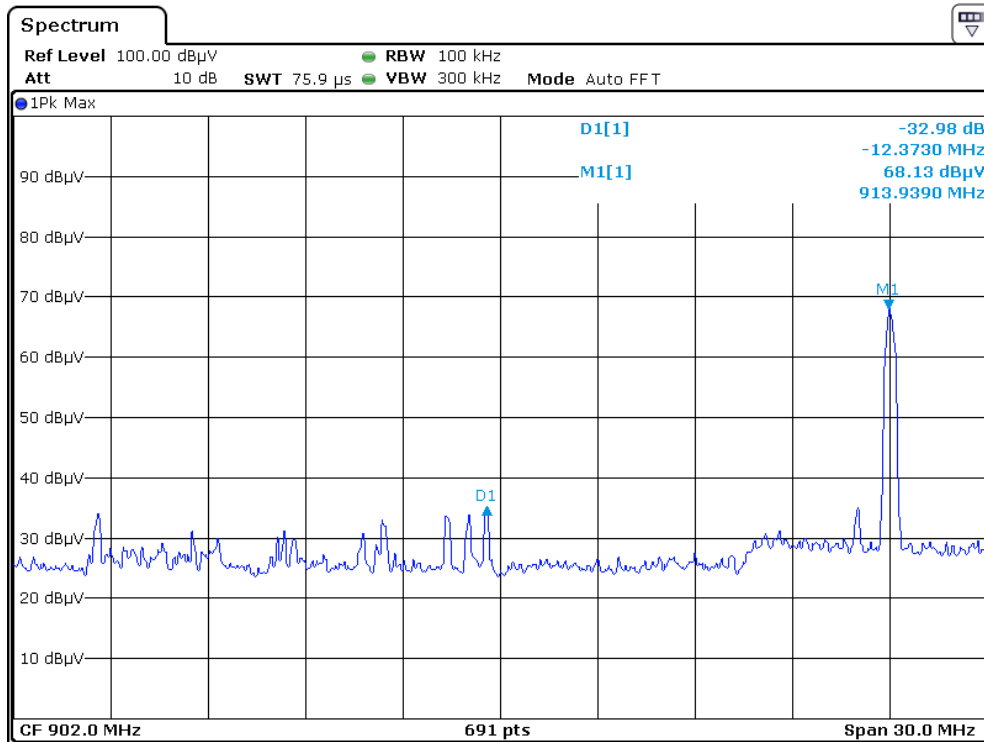
## Lowest frequency Channel (904MHz)



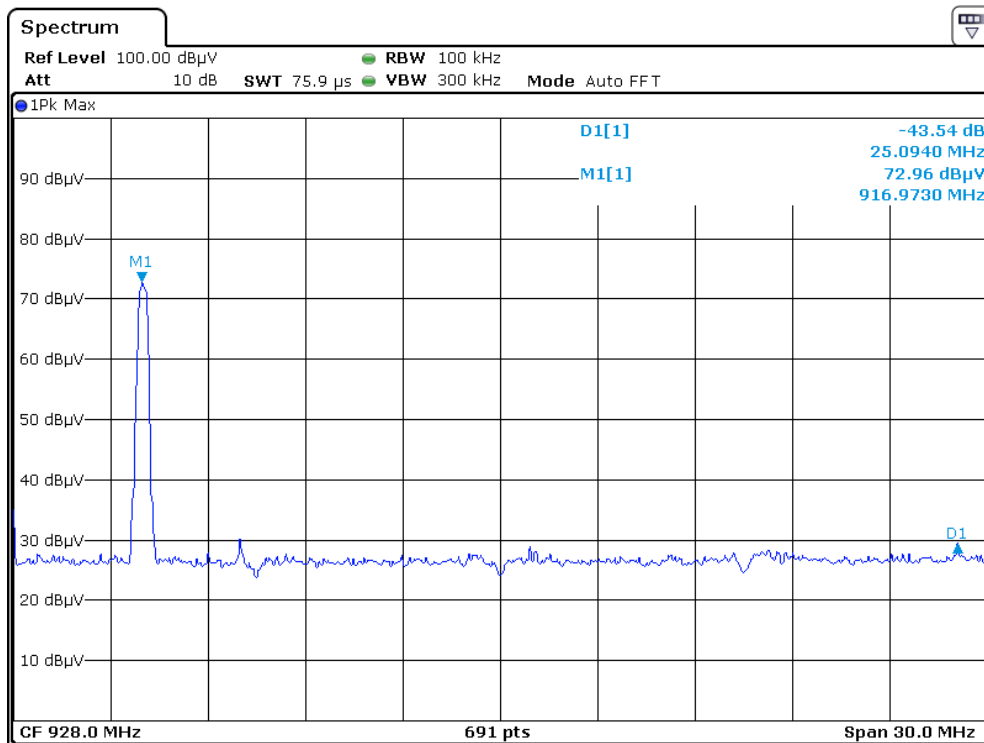
## Highest frequency Channel (907MHz)



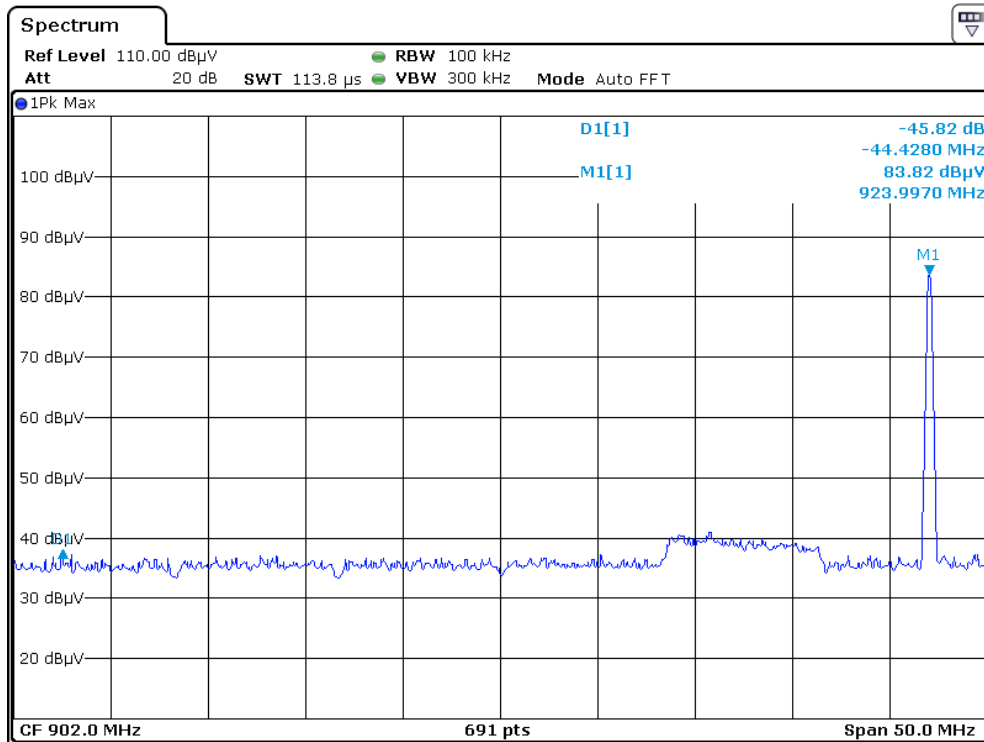
## Lowest frequency Channel (914MHz)



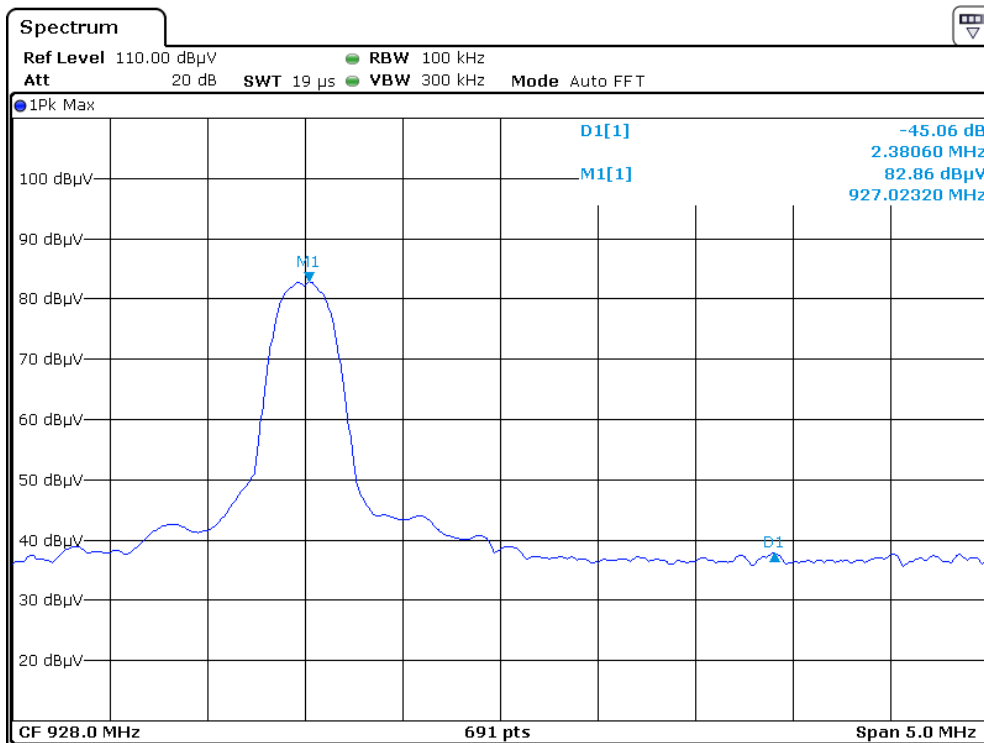
## Highest frequency Channel (917MHz)



## Lowest frequency Channel (924MHz)



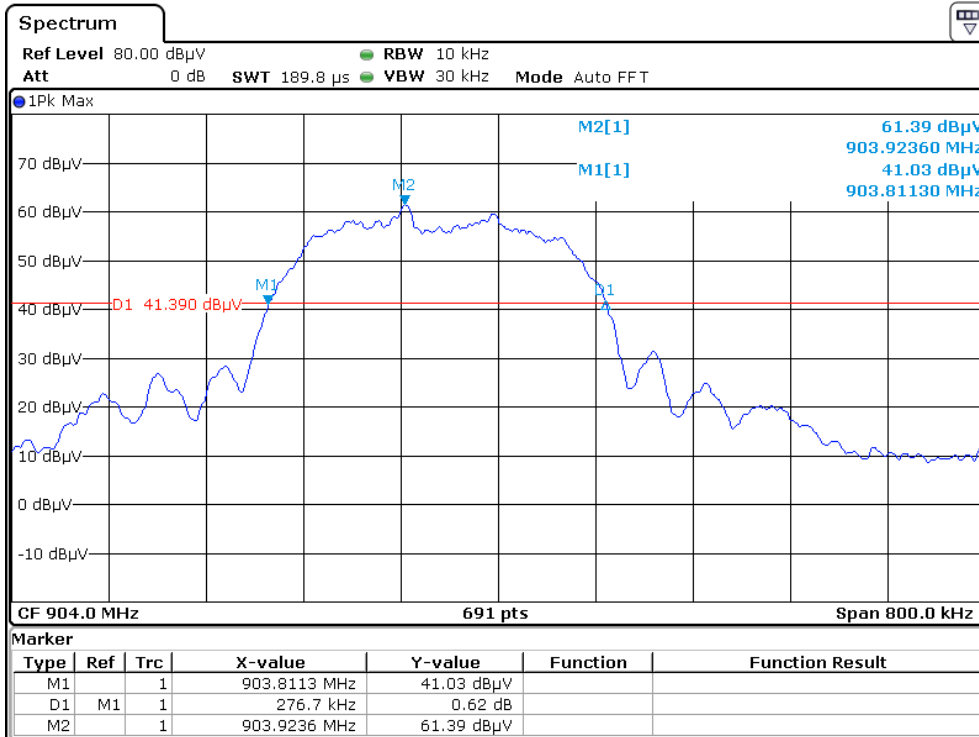
## Highest frequency Channel (927MHz)



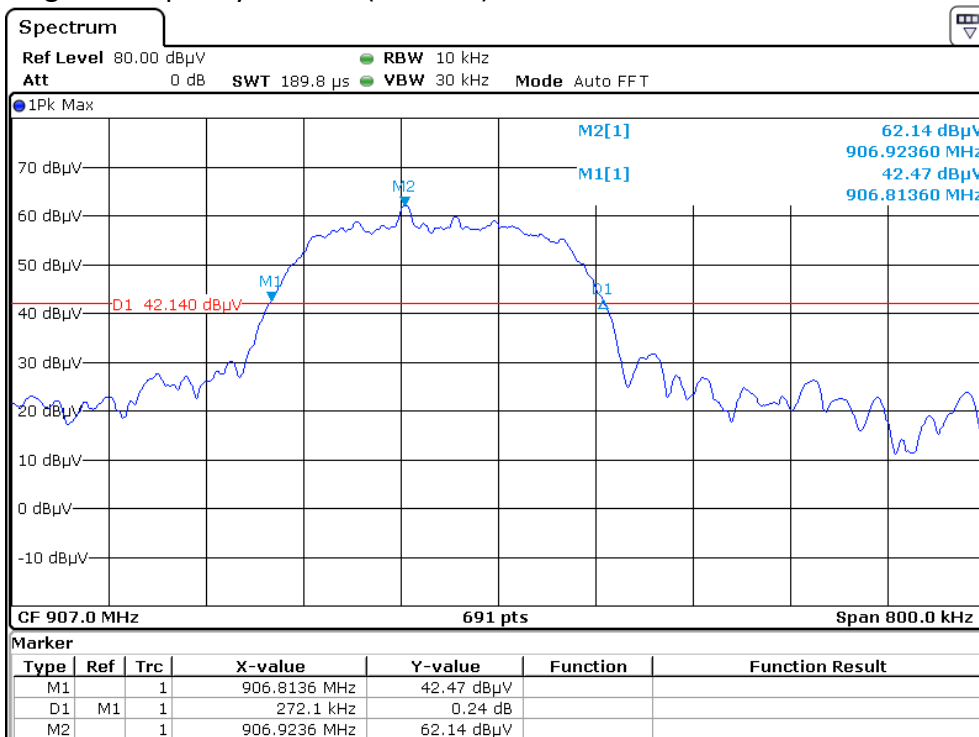
## 9.2 20dB bandwidth

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered. The test plots are reported as below.

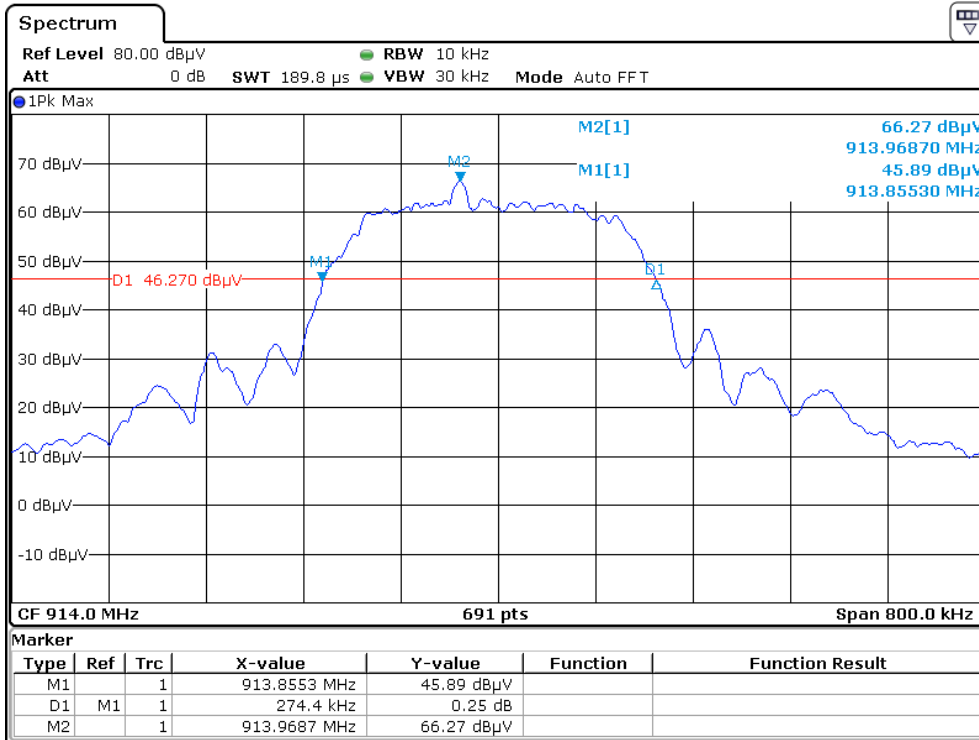
Lowest frequency Channel (904MHz)



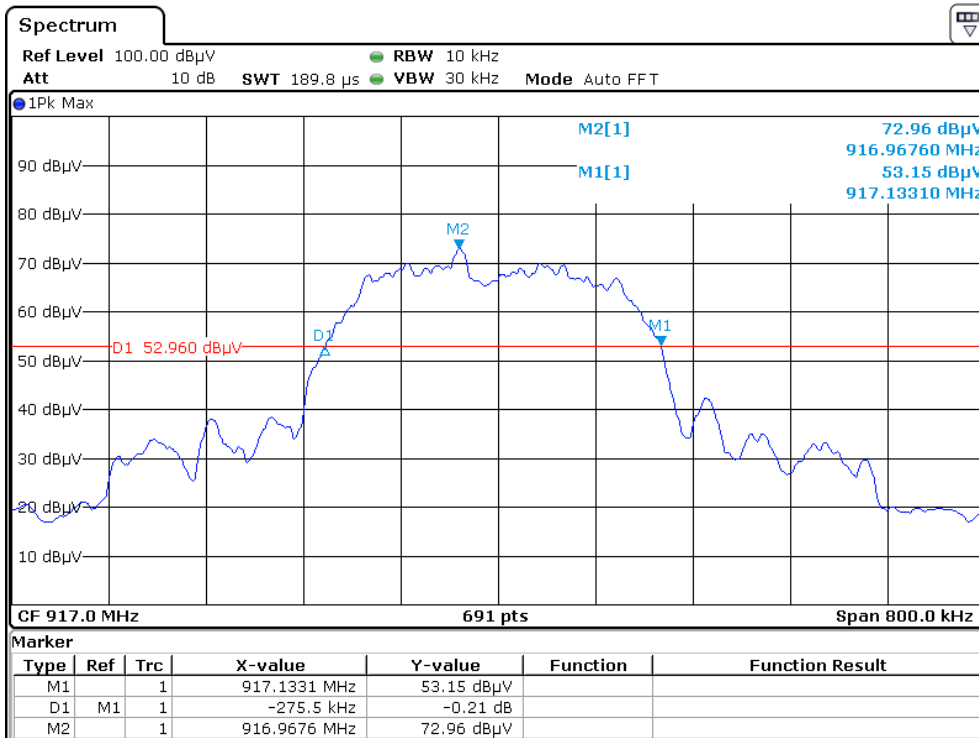
Highest frequency Channel (907MHz)



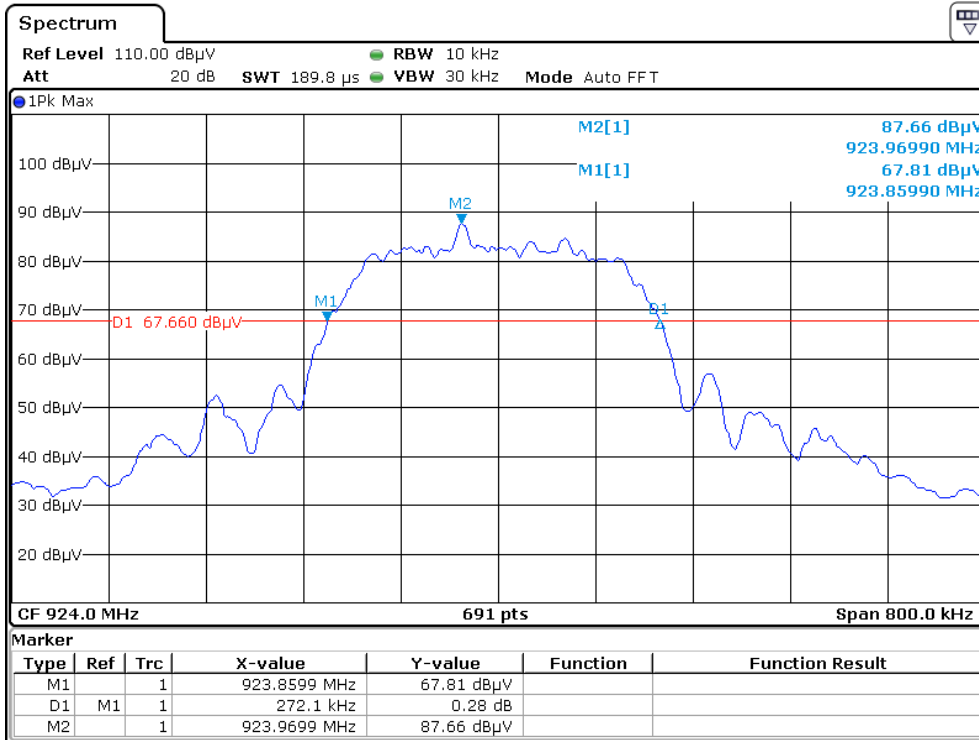
## Lowest frequency Channel (914MHz)



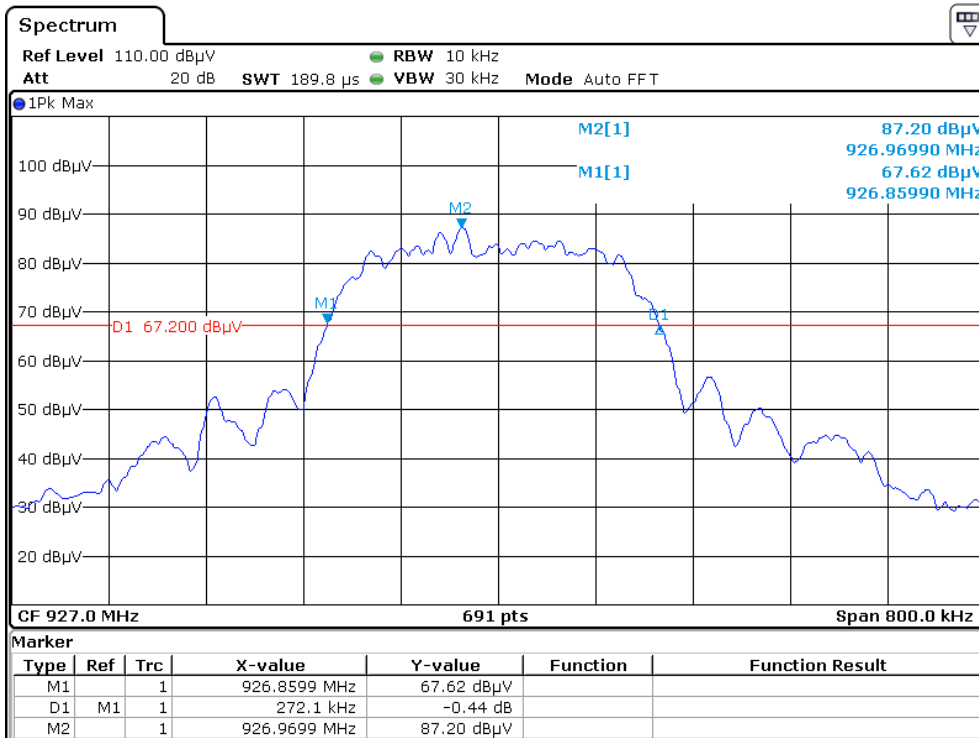
## Highest frequency Channel (917MHz)



## Lowest frequency Channel (924MHz)



## Highest frequency Channel (927MHz)



## 9.3 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

## 9.4 Transmitter Duty Cycle Calculation, FCC Rule 15.35(b, c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.



## 9.5 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.10 - 2013.

The transmitting equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter up to 1GHz and 1.5 meter above 1GHz in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 9.4.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

## 9.5 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used (RBW 3MHz used for fundamental emission).

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

**10.0 Test Equipment List**

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-12	Biconilog Antenna	ETS	3142E	00166158	Aug 04, 2021	Aug 04, 2024
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	May 18, 2021	May 18, 2023
SZ061-08	Horn Antenna	ETS	3115	00092346	Sep 05, 2021	Sep 05, 2024
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	Aug 31, 2022	Aug 31, 2025
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	May 16, 2022	May 16, 2023
SZ185-03	EMI Receiver	R & S	ESR7	101975	Dec 20, 2021	Dec 20, 2022
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	May 16, 2022	May 16, 2023
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	Dec 12, 2021	Dec 12, 2024
SZ062-23	RF Cable	RADIALL	SF104PE	--	Oct 26, 2021	Oct 26, 2022
SZ062-35	RF Cable	RADIALL	A50-3.5M3.5M-8M	--	Oct 26, 2021	Oct 26, 2022
SZ062-30	RF Cable	RADIALL	A50-3.5M3.5M-4.5M	--	Oct 26, 2021	Oct 26, 2022
SZ062-31	RF Cable	RADIALL	A50-3.5M3.5M-1M	--	Oct 26, 2021	Oct 26, 2022
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	Jul 08, 2022	Jul 08, 2023
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	May 09, 2022	May 09, 2023
SZ188-03	Shielding Room	ETS	RFD-100	4100	Jan 07, 2020	Jan 07, 2023
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	Jul 18, 2022	Jul 18, 2023

\*\*\*\*\* End of Report\*\*\*\*\*