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Talon Communications, Inc.

TEST REPORT

SCOPE OF WORK
FCC TESTING–TCI-24SKY

REPORT NUMBER
200303051SZN-001

ISSUE DATE	**[REVISED DATE]**
30 June 2022	[----------]

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TEST REPORT

Intertek Report No.: 200303051SZN-001

Talon Communications, Inc.

Application
For
Certification

FCC ID: A7D-TCI-24SKY

Radio Module

Model: TCI-24SKY

2.4GHz Transceiver

Report No.: 200303051SZN-001

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 [10-1-20]

Prepared and Checked by:

Jeff Liang
Engineer

Approved by:

Peter Kang
Senior Technical Supervisor
Date: 30 June 2022

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MEASUREMENT/TECHNICAL REPORT

This report concerns (check one) Original Grant ___X___ Class II Change _____

Equipment Type: DTS - Part 15 Digital Transmission Systems (2.4GHz transmitter portion)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No ___X___

If yes, defer until : _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No ___X___

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-20] Edition] provision.

Report prepared by:

Jeff Liang
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1.0 Summary of Test results

Applicant: Talon Communications, Inc.
Applicant Address: 3750 Convoy St. Ste 320 San Diego California United States
Manufacturer: Talon Communications, Inc.
Manufacturer Address: 3750 Convoy St. Ste 320 San Diego California United States

Model: TCI-24SKY
FCC ID: A7D-TCI-24SKY

TEST ITEM	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d), 15.209, FCC 15.205	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Note)

Note: The EUT's use of an antenna with unique coupling to an intentional radiator shall be considered sufficient for compliance with § 15.203.

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a Radio Module operating at 2402-2480MHz. The EUT is powered by DC 3.3V. For more detailed features description, please refer to the user's manual.

Type of Modulation: GFSK
Antenna Type: removable antenna
Antenna Gain: 2dBi

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: DTS- Part 15 Digital Transmission Systems.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013) and KDB 558074 D01 v05r02. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. 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.

2.4 Test Facility

The Semi-anechoic chamber and shielded room used to collect the radiated data and conducted data are **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 File Number: CN1188.

3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by DC 3.3V during the test.

On 250Kbps / 1Mbps / 2Mbps data rate, one antenna are used, and all data rate were tested and only the worst case data is shown in the report.

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.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

The EUT and transmitting antenna was centered on the turntable.

Radiated emission measurement were performed 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 to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted 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.

The parameters of test software setting:
During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

Test software: YAT, Version: 2.1.0

3.3 Special Accessories

N/A.

3.4 Measurement Uncertainty

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

3.5 Equipment Modification

Any modifications installed previous to testing by Talon Communications, Inc. 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.

3.6 Support Equipment List and Description

Description	Manufacturer	Model No.
Portable computer (Provided by Intertek)	DELL	Latitude 3410
Adapter (Provided by Intertek)	DELL	Model: LA65NS2-01 Input: 100-240VAC 1.6A 50-60Hz Output: DC 19 V⎓3.34A/65.0W
Mini USB cable (Provided by Applicant)	N/A	Unshielded 1m
Serial interface board (Provided by Applicant)	N/A	N/A
Battery pack (Provided by Applicant)	N/A	AA size battery * 4

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

Worst Case Operating Data Rate: 250Kbps

Frequency (MHz)	Output in dBm (Peak Reading)	Output in mWatt
Low Channel: 2402	19.70	93.33
Middle Channel: 2440	19.96	99.08
High Channel: 2480	19.83	96.16

Cable loss: 0.6 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 19.96dBm
EUT max. E.I.R.P = 19.96dBm + 2dBi = 21.96dBm = 157.04mW

For RF Exposure, the information is saved with filename: RF exposure.pdf.

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a) (2):

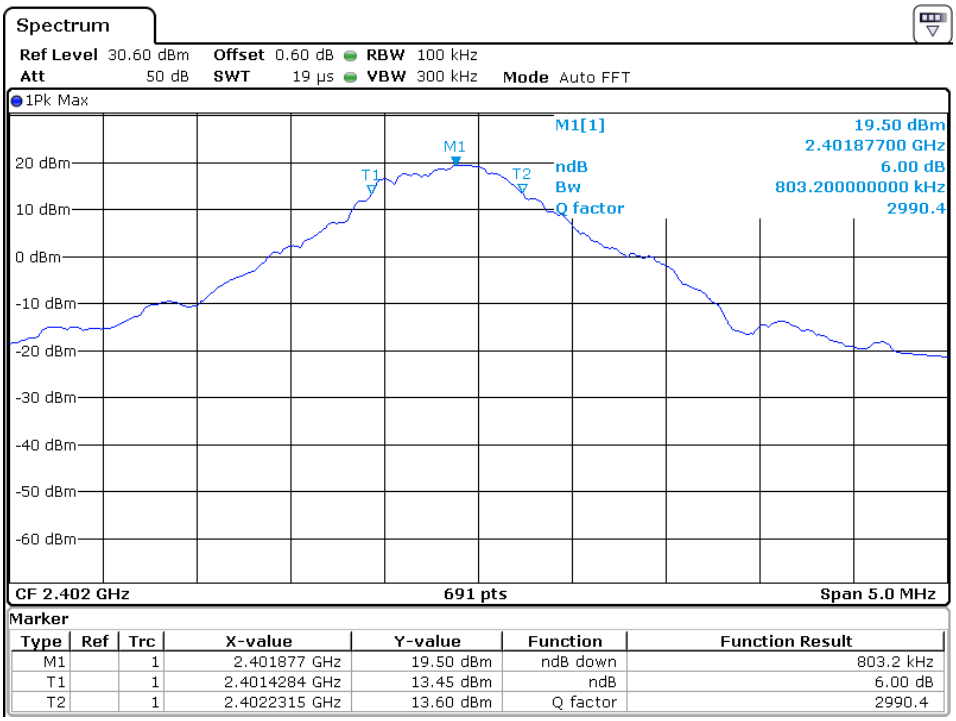
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074 D01 v05r02. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

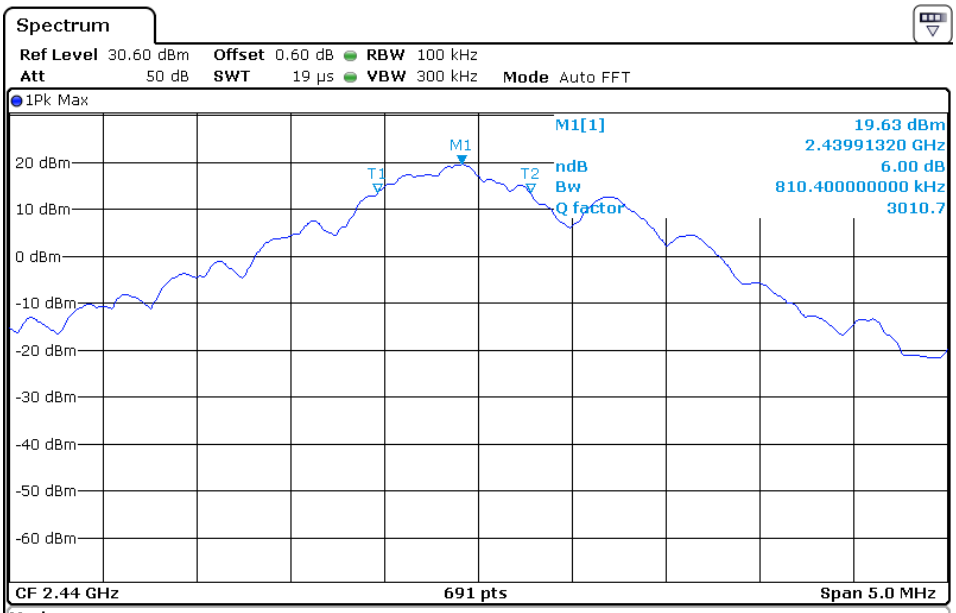
Limit: The 6 dB Bandwidth is at least 500 kHz.

Worst Case Operating Data Rate: 250Kbps

Frequency (MHz)	6 dB Bandwidth (KHz)
2402	803.2
2440	810.4
2480	1042.0

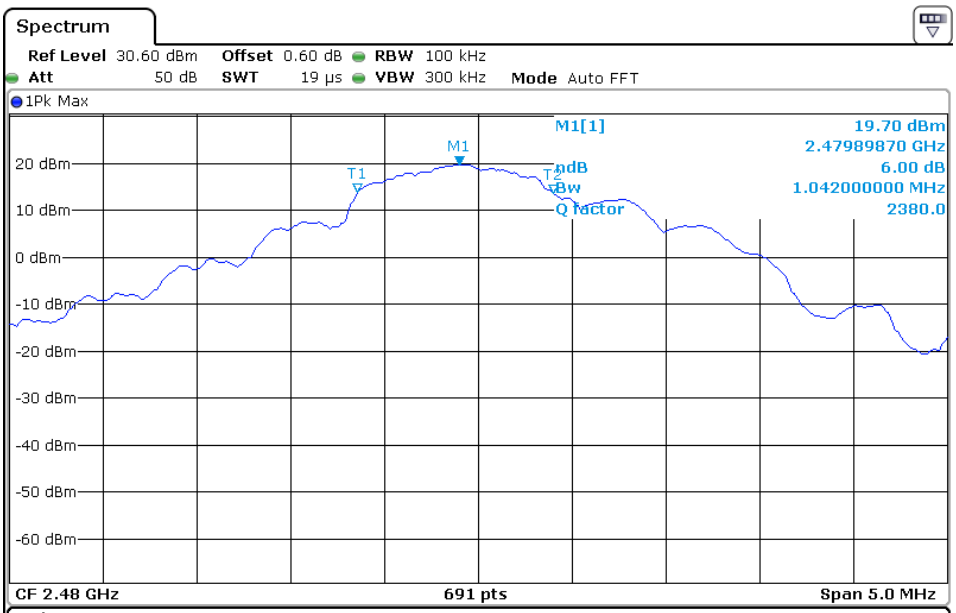
The test plots are attached as below.





Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4399132 GHz	19.63 dBm	ndB down	810.4 kHz
T1		1	2.4394645 GHz	13.52 dBm	ndB	6.00 dB
T2		1	2.440275 GHz	13.60 dBm	Q factor	3010.7



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4798987 GHz	19.70 dBm	ndB down	1.042 MHz
T1		1	2.479356 GHz	13.83 dBm	ndB	6.00 dB
T2		1	2.480398 GHz	13.76 dBm	Q factor	2380.0

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v05r02.

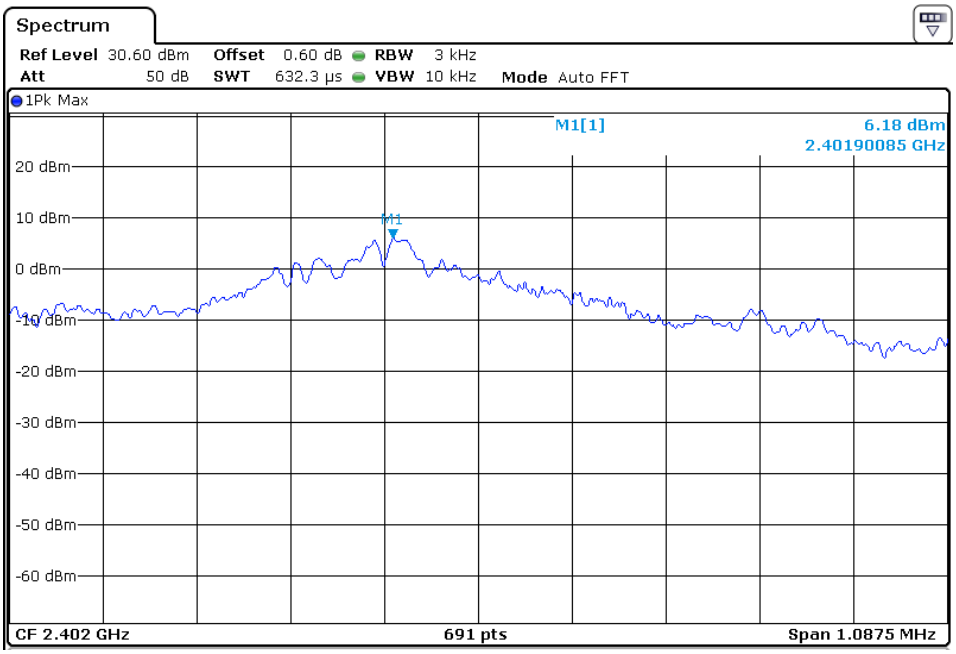
Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

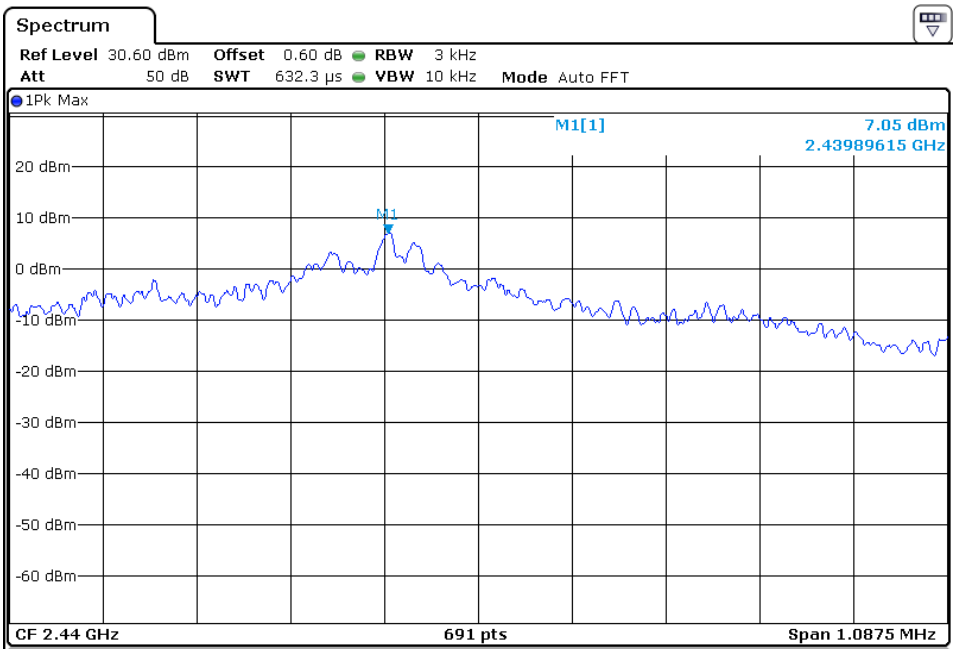
Limit: The Power Density does not exceed 8dBm/3 kHz.

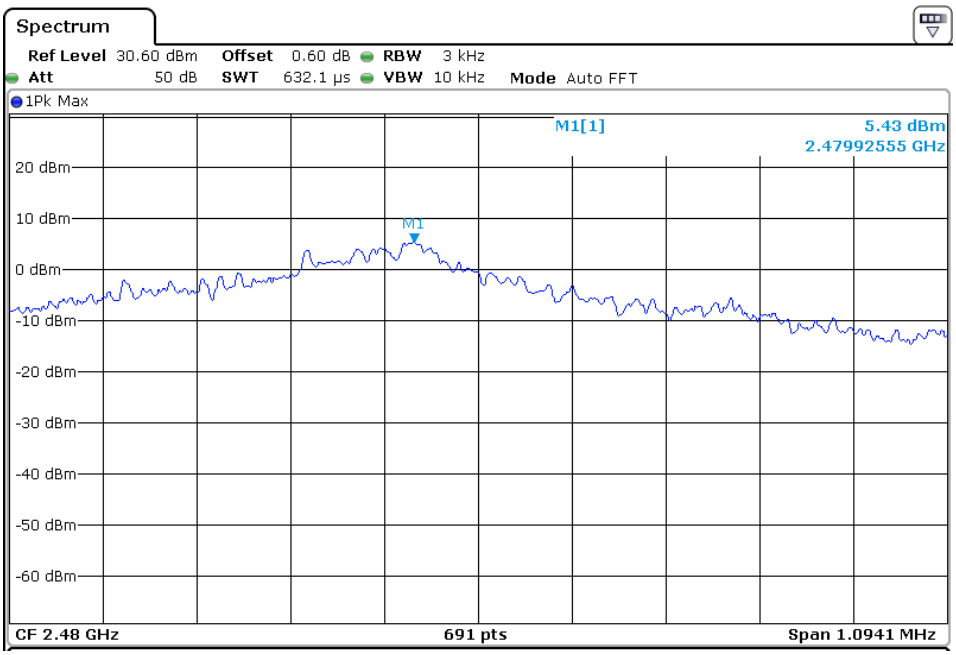
Worst Case Operating Data Rate: 250Kbps

Frequency (MHz)	Power Density with RBW 3KHz
2402	6.18
2440	7.05
2480	5.43

The test plots are attached as below.




Spectrum
Ref Level 30.60 dBm Offset 0.60 dB RBW 3 kHz
Att 50 dB SWT 632.3 µs VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] 7.05 dBm
2.43989615 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.44 GHz
691 pts
Span 1.0875 MHz


Spectrum
Ref Level 30.60 dBm Offset 0.60 dB RBW 3 kHz
Att 50 dB SWT 632.1 µs VBW 10 kHz Mode Auto FFT
1Pk Max
M1[1] 5.43 dBm
2.47992555 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.48 GHz
691 pts
Span 1.0941 MHz

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. The Measurement Procedure was set according to the FCC KDB 558074 D01 v05r02.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

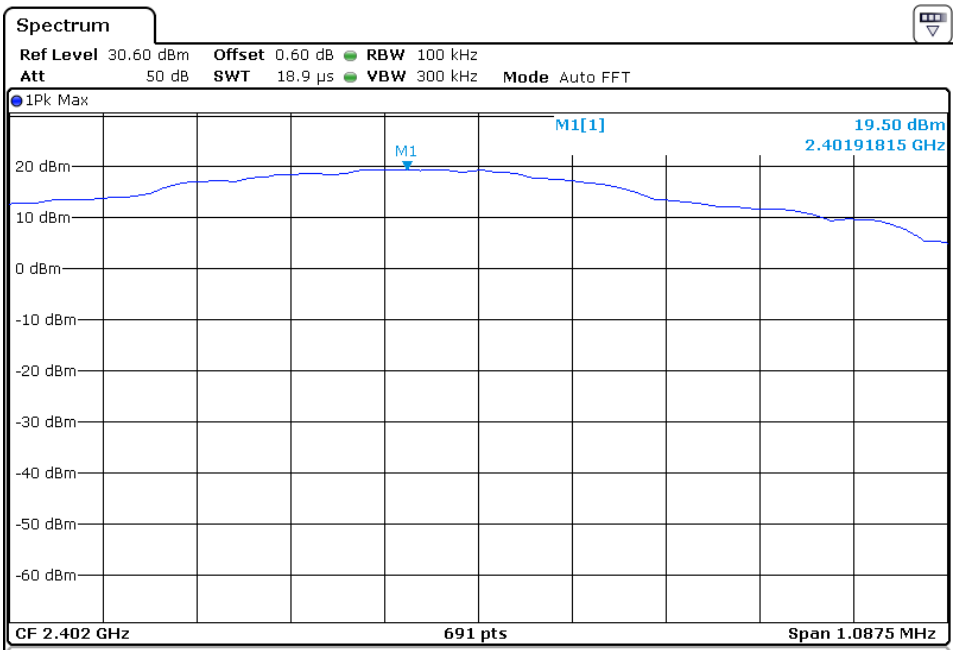
Refer to the attached test plots for out of band conducted emissions data.

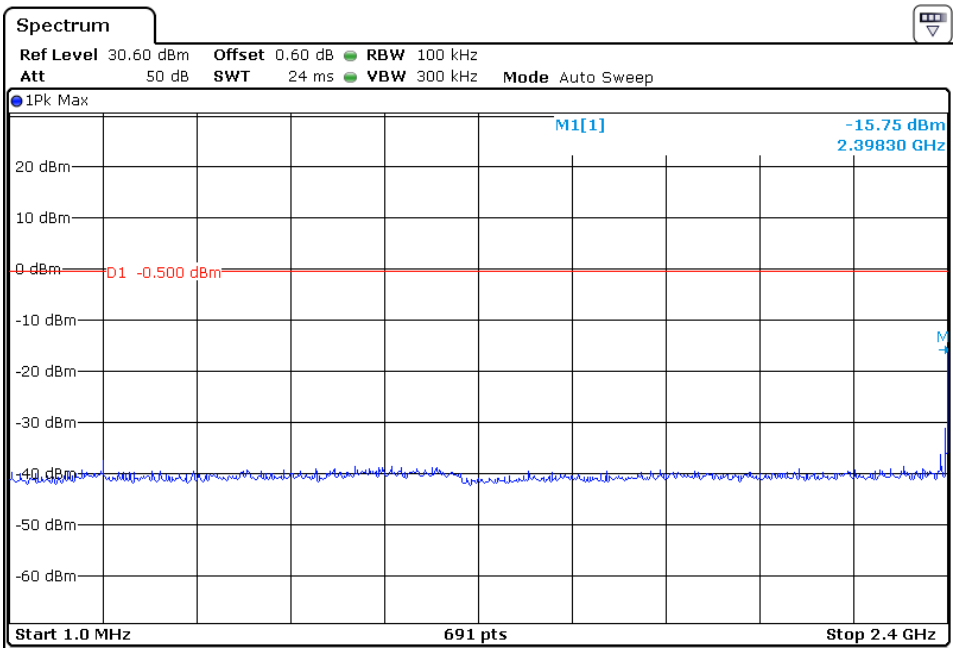
The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

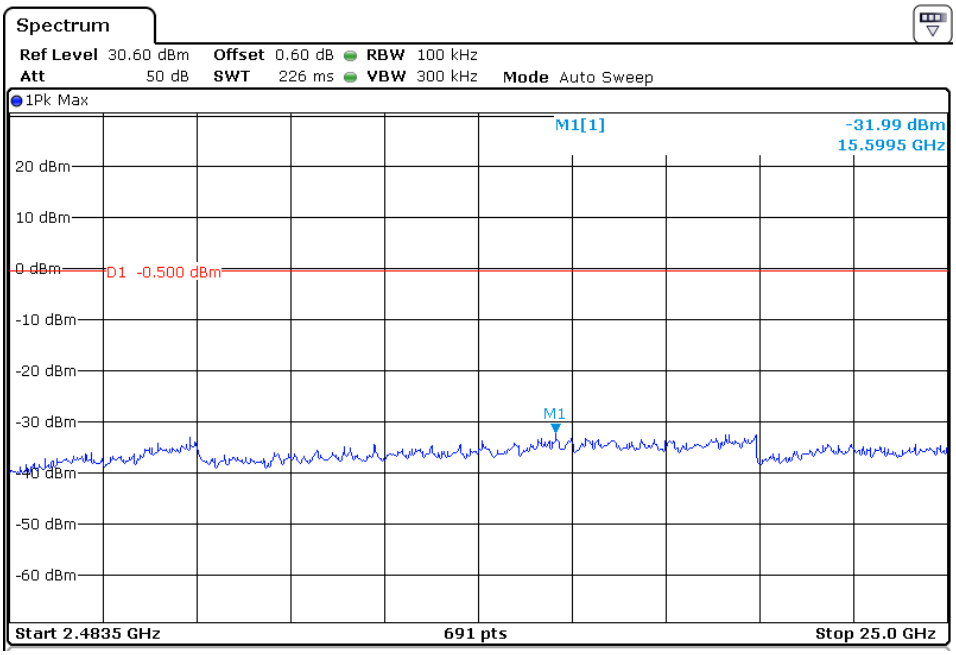
The test plots are attached as below.

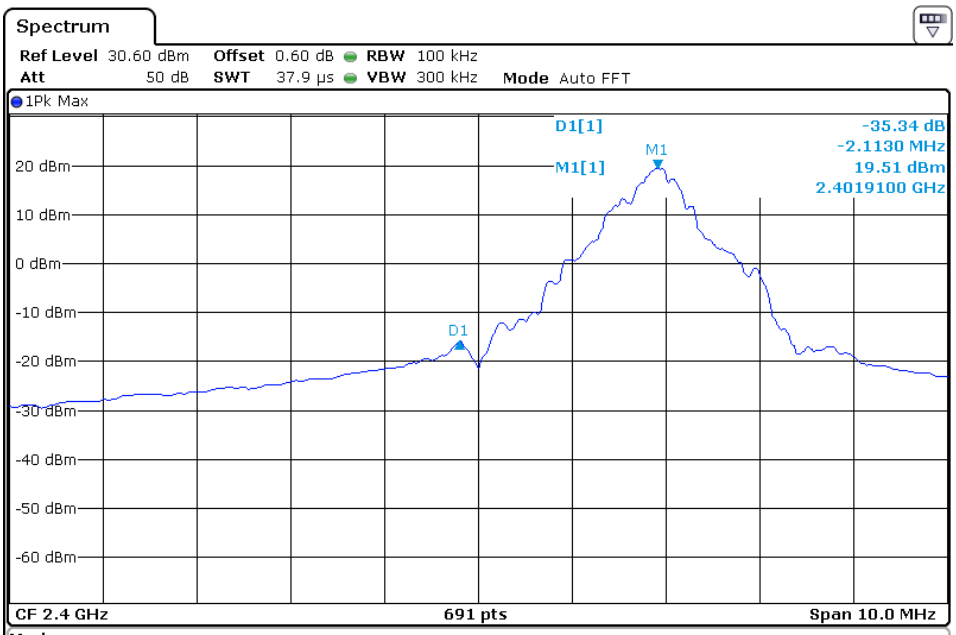
Worst Case Operating Data Rate: 250Kbps

Channel 00 (2402MHz) Reference Level: 19.5dBm





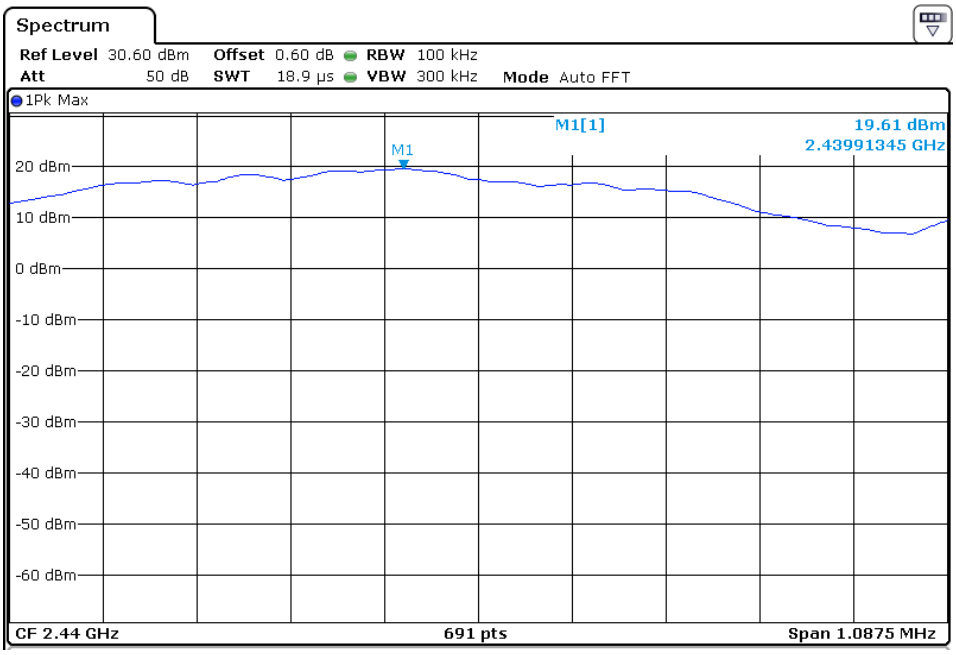


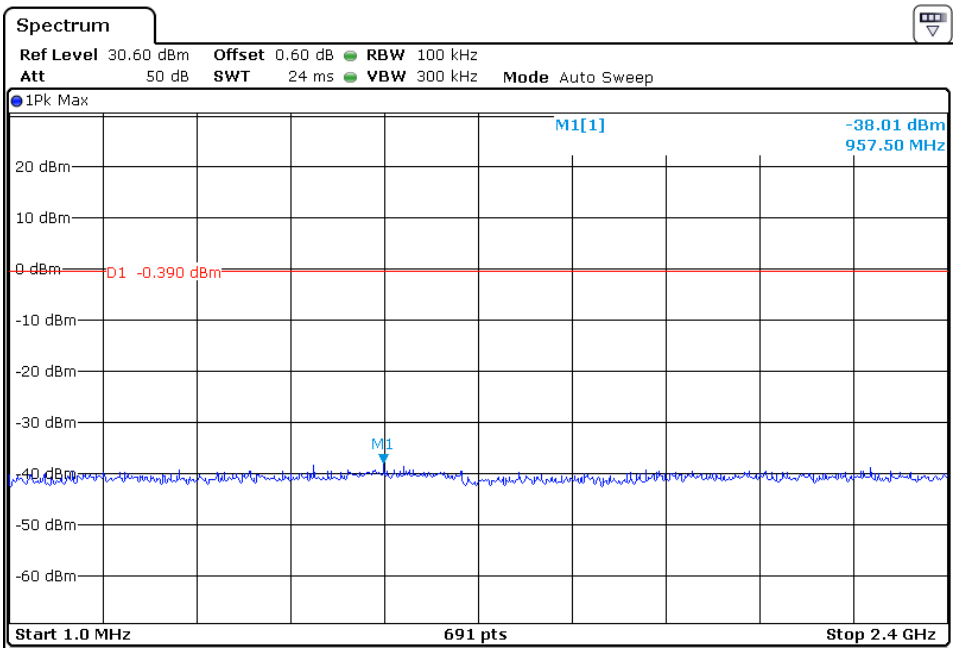


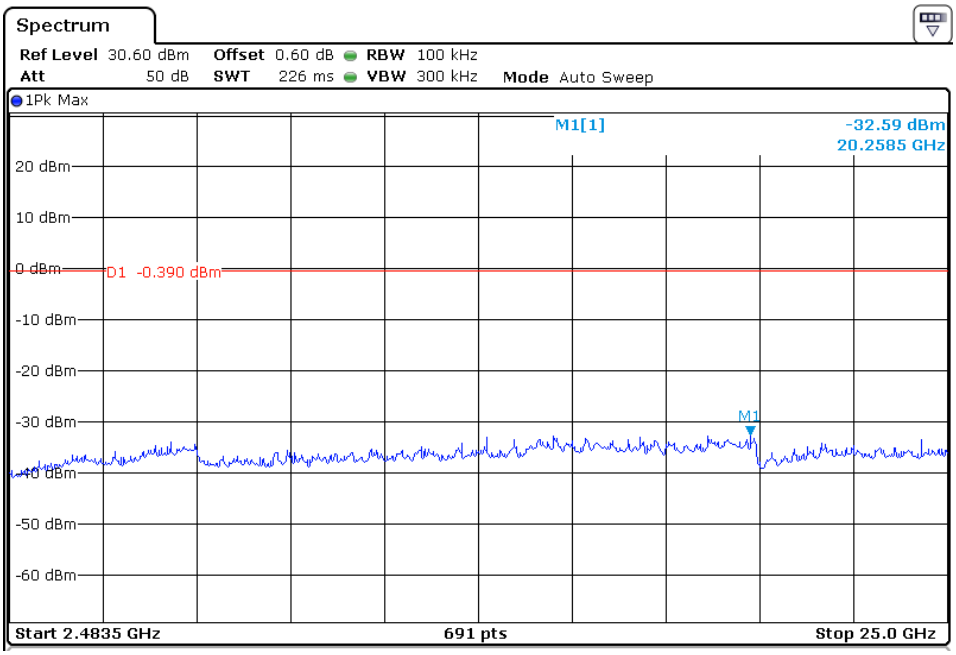
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40191 GHz	19.51 dBm		
D1	M1	1	-2.113 MHz	-35.34 dB		

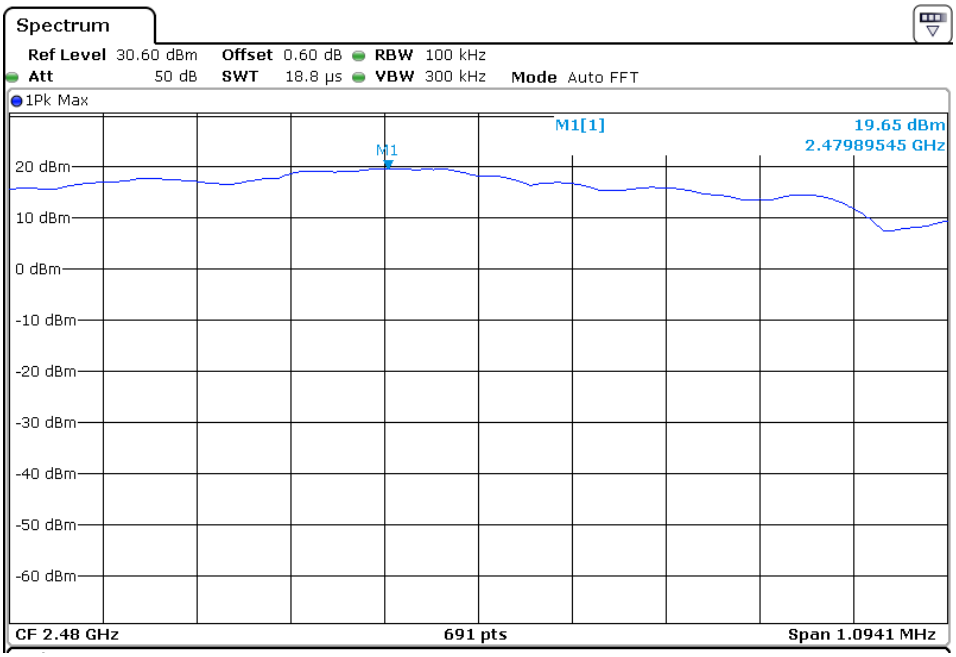
Channel 39 (2440MHz) Reference Level: 19.61dBm

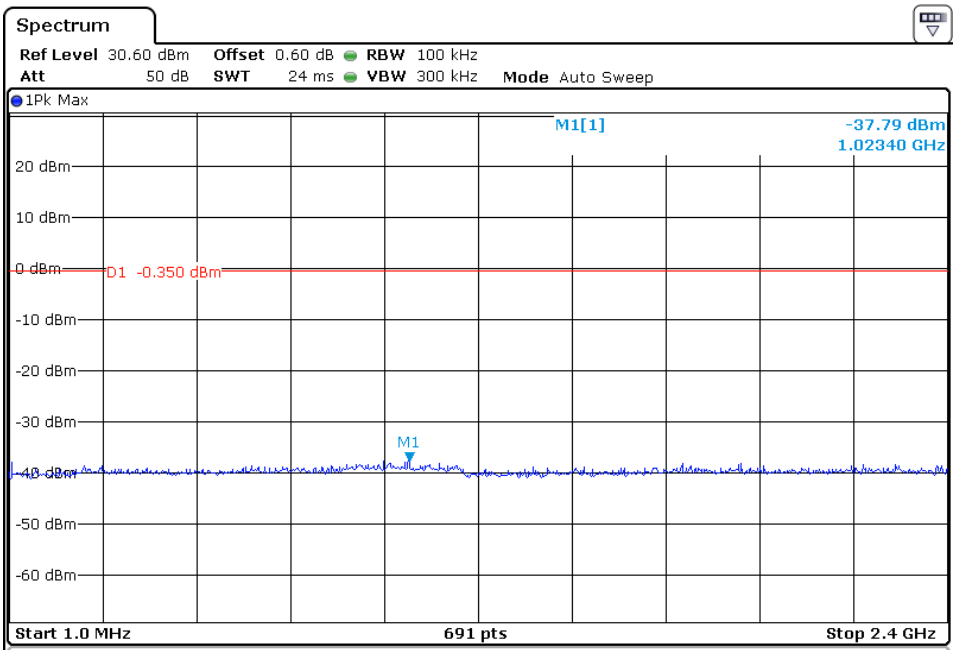


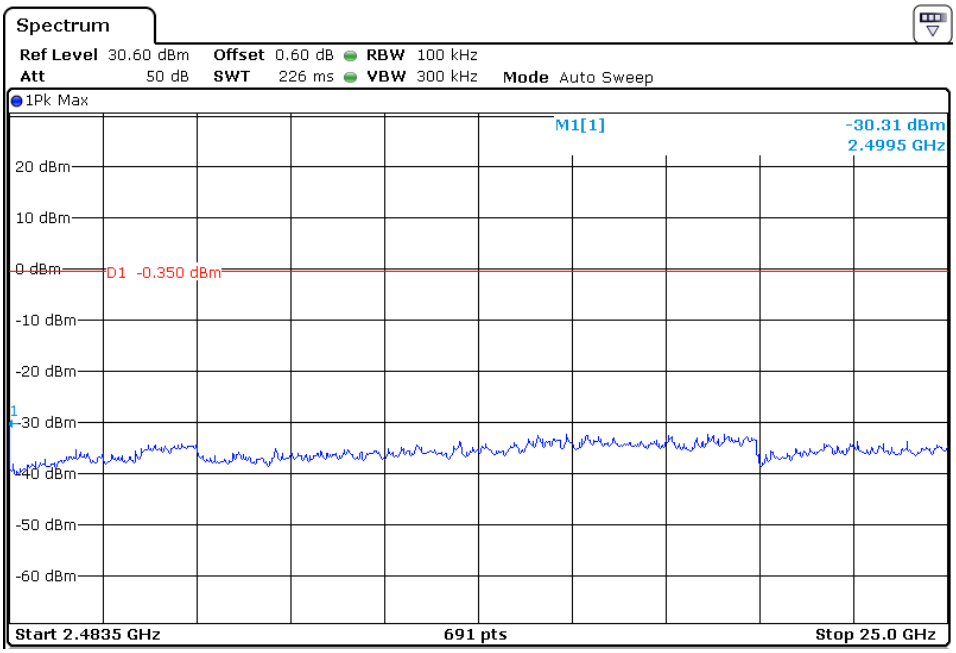


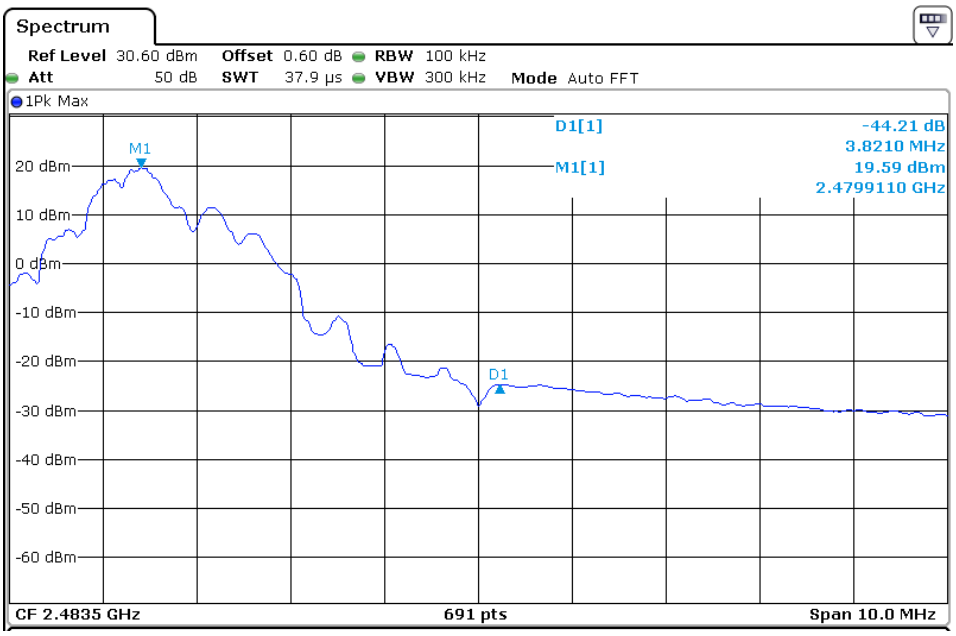

Spectrum
Ref Level 30.60 dBm Offset 0.60 dB RBW 100 kHz
Att 50 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1]
-32.59 dBm
20.2585 GHz
20 dBm
10 dBm
0 dBm
D1 -0.390 dBm
-10 dBm
-20 dBm
-30 dBm
M1
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz

Channel 11 (2480MHz) Reference Level: 19.65dBm






Spectrum
Ref Level 30.60 dBm Offset 0.60 dB RBW 100 kHz
Att 50 dB SWT 226 ms VBW 300 kHz Mode Auto Sweep
1Pk Max
M1[1] -30.31 dBm
2.4995 GHz
D1 -0.350 dBm
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
Start 2.4835 GHz
691 pts
Stop 25.0 GHz


Spectrum
Ref Level 30.60 dBm Offset 0.60 dB RBW 100 kHz
Att 50 dB SWT 37.9 µs VBW 300 kHz Mode Auto FFT
1Pk Max
D1[1] -44.21 dB
3.8210 MHz
M1[1] 19.59 dBm
2.4799110 GHz
M1
D1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.4835 GHz
691 pts
Span 10.0 MHz

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required, since all emissions are more than 20dB below fundamental
[ ] See attached data sheet

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b) (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

4.7 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

Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization 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

<u>Example</u>
Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB 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. The net field strength for comparison to the appropriate emission limit is 42 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dBμV/m

Level in mV/m = Common Antilogarithm [(42 dBμV/m)/20] = 125.9 μV/m

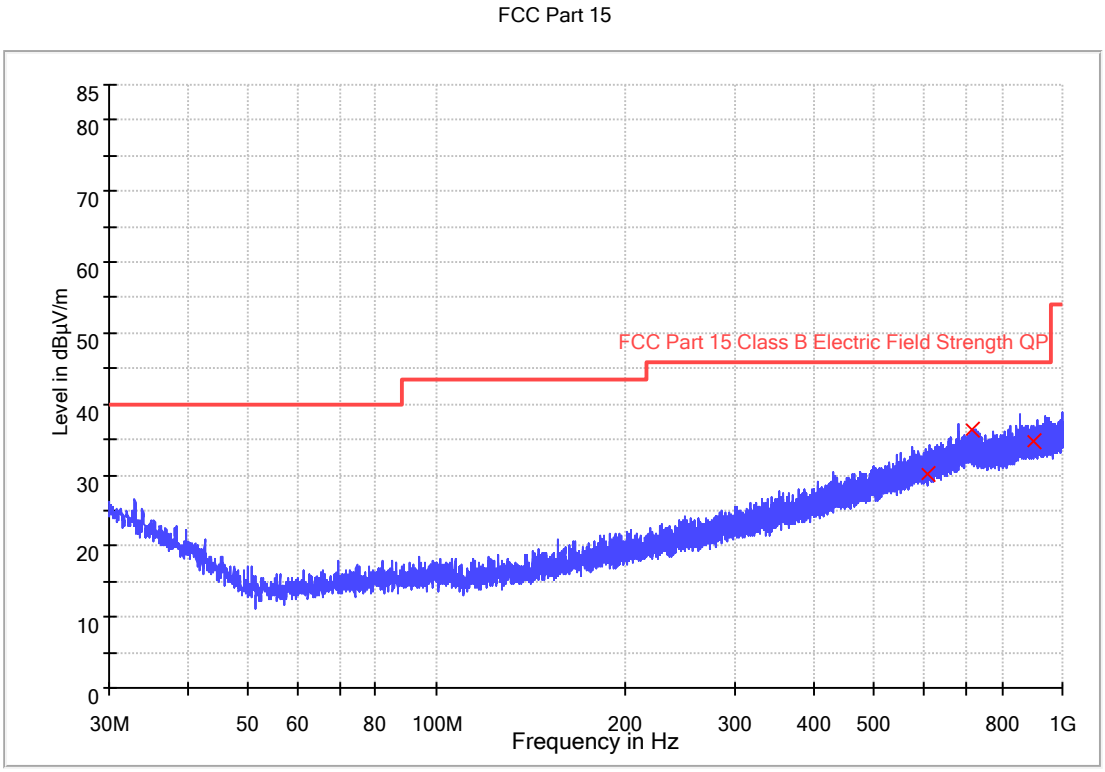
4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission
at 4960.000MHz
is passed by 3.9dB margin.

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

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps

ANT Polarity: Horizontal

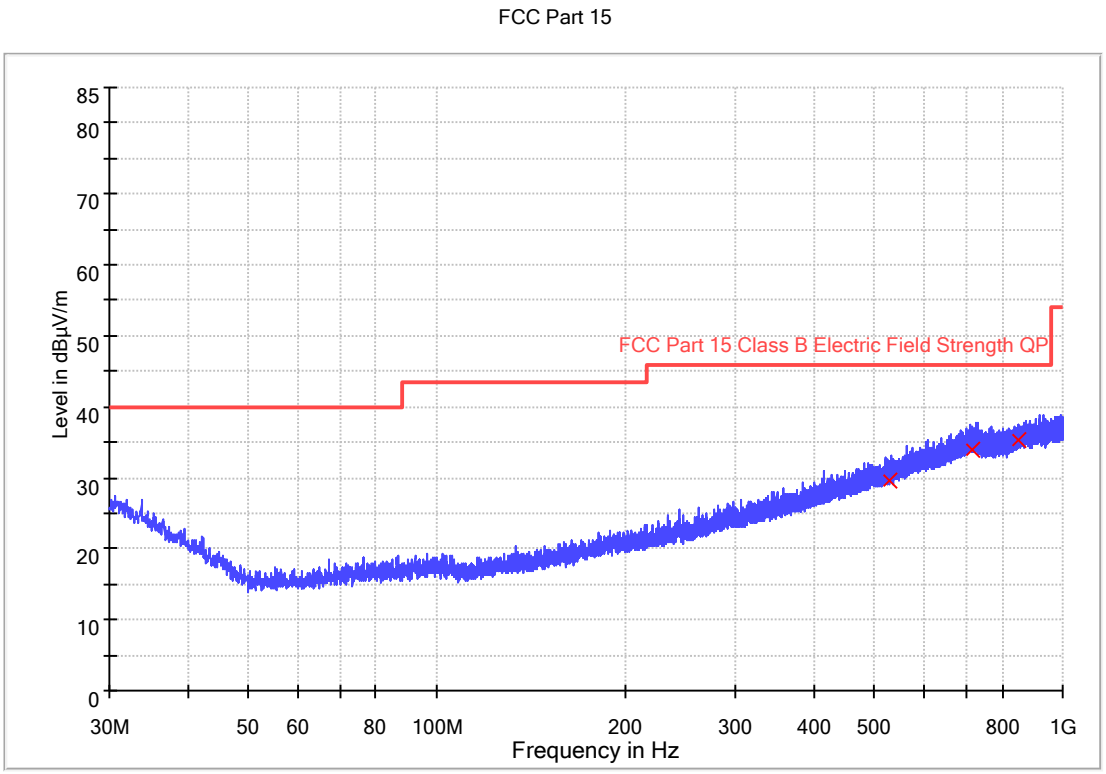


Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
607.732000	30.1	1000.0	120.000	H	23.6	15.9	46.0
717.665333	36.3	1000.0	120.000	H	25.7	9.7	46.0
897.018333	34.6	1000.0	120.000	H	27.2	11.4	46.0

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

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps

ANT Polarity: Vertical



Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
529.744000	29.6	1000.0	120.000	V	22.1	16.4	46.0
716.857000	34.0	1000.0	120.000	V	25.7	12.0	46.0
852.042667	35.2	1000.0	120.000	V	26.6	10.8	46.0

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

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps (Channel 00)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Vertical	*4804.000	71.5	36.8	33.5	68.2	74.0	-5.8
Vertical	*2390.000	66.4	36.4	29.1	59.1	74.0	-14.9

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Vertical	*4804.000	36.6	36.8	33.5	33.3	54.0	-20.7
Vertical	*2390.000	39.3	36.4	29.1	32.0	54.0	-22.0

NOTES:

1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz/VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated 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 radiated 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 used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps (Channel 39)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4880.000	71.4	36.7	33.4	68.1	74.0	-5.9
Horizontal	*7320.000	42.7	36.6	35.8	41.9	74.0	-32.1

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4880.000	38.8	36.7	33.4	35.5	54.0	-18.5
Horizontal	*7320.000	35.6	36.6	35.8	34.8	54.0	-19.2

NOTES:

1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated 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 radiated 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 used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Talon Communications, Inc.
Date of Test: March 29, 2022 Model: TCI-24SKY
Worst Case Operating Mode: (Channel 78)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4960.000	73.6	36.8	33.3	70.1	74.0	-3.9
Horizontal	*7440.000	53.2	36.5	29.3	46.0	74.0	-28.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4960.000	37.4	36.8	33.3	33.9	54.0	-20.1
Horizontal	*7440.000	43.9	36.5	29.3	36.7	54.0	-17.3

NOTES:

1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

2. All measurements were made at 3 meters. Radiated 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 radiated 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 used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Talon Communications, Inc.
Date of Test: 29 March 2022
Model: TCI-24SKY

4.9 Conducted Emission

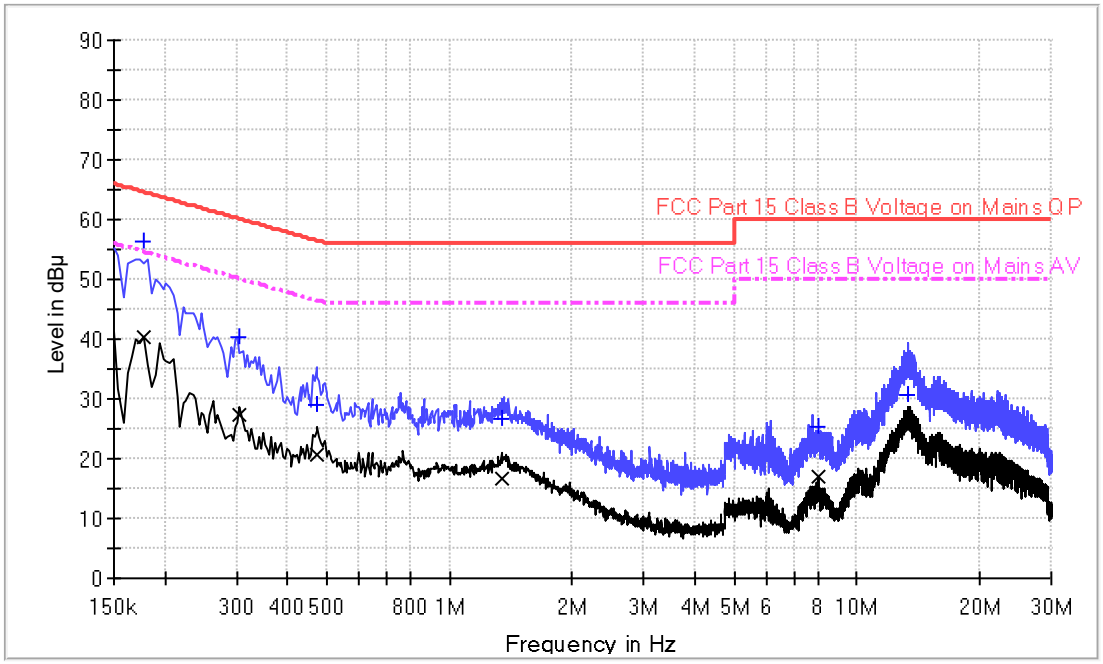
Worst Case Conducted Emission
at 0.177000MHz
is passed by 8.3dB margin.

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

Applicant: Talon Communications, Inc.
Date of Test: 29 March 2022
Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps
Phase: Live

Graphic / Data Table

Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	56.3	9.000	L1	9.7	8.3	64.6
0.306000	40.5	9.000	L1	9.7	19.6	60.1
0.474000	29.1	9.000	L1	9.7	27.3	56.4
1.338000	26.8	9.000	L1	9.7	29.2	56.0
8.058000	25.2	9.000	L1	9.8	34.8	60.0
13.290000	30.8	9.000	L1	10.0	29.2	60.0

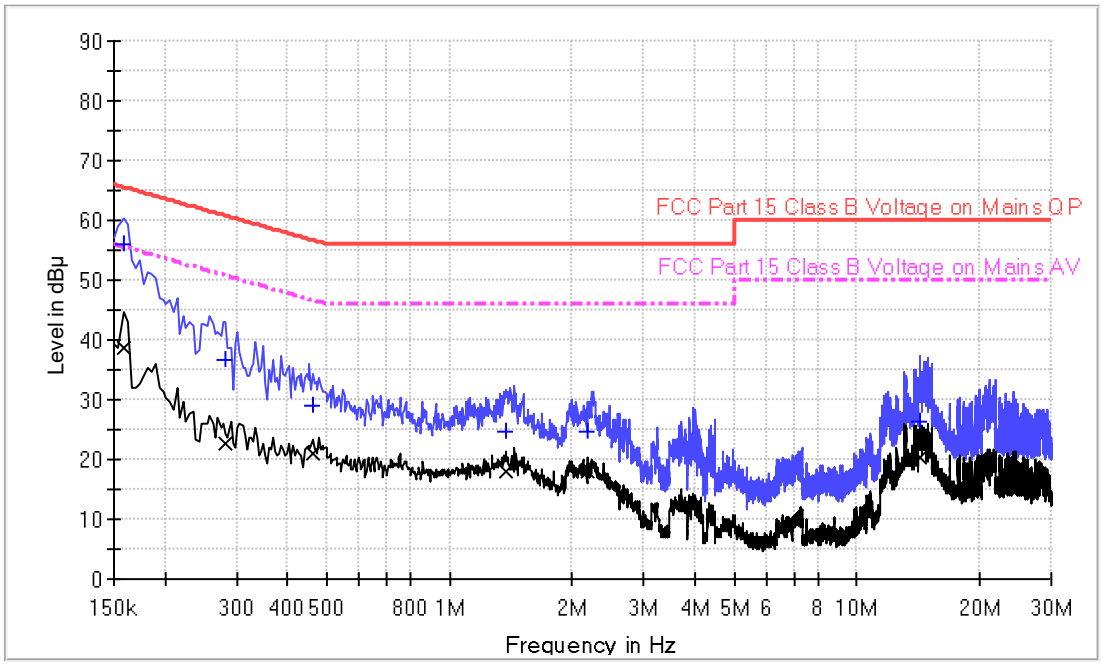
Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	40.2	9.000	L1	9.7	14.4	54.6
0.306000	27.5	9.000	L1	9.7	22.6	50.1
0.474000	20.6	9.000	L1	9.7	25.8	46.4
1.338000	16.7	9.000	L1	9.7	29.3	46.0
8.058000	17.1	9.000	L1	9.8	32.9	50.0
13.290000	25.0	9.000	L1	10.0	25.0	50.0

Applicant: Talon Communications, Inc.
Date of Test: 29 March 2022
Model: TCI-24SKY
Worst Case Operating Data Rate: 250Kbps
Phase: Neutral

Graphic / Data Table

Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	55.9	9.000	N	9.6	9.6	65.5
0.282000	36.5	9.000	N	9.5	24.3	60.8
0.462000	28.9	9.000	N	9.5	27.8	56.7
1.378000	24.8	9.000	N	9.5	31.2	56.0
2.182000	24.6	9.000	N	9.5	31.4	56.0
14.206000	26.4	9.000	N	10.0	33.6	60.0

Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	38.5	9.000	N	9.6	17.0	55.5
0.282000	22.8	9.000	N	9.5	28.0	50.8
0.462000	20.8	9.000	N	9.5	25.9	46.7
1.378000	18.1	9.000	N	9.5	27.9	46.0
2.182000	17.9	9.000	N	9.5	28.1	46.0
14.206000	20.4	9.000	N	10.0	29.6	50.0

4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

[ ] Not required - No digital part

[ ] Test results are attached

[x] Included in the separated report.

4.11 Transmitter Duty Cycle Calculation and Measurements, 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.

5.0 Equipment Photographs

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

6.0 Product Labeling

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

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram 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 Confidentiality Request

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

10.0 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

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

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	2021-05-10	2022-05-10
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	2021-05-10	2022-05-10
SZ056-06	Signal Analyzer	R&S	FSV 40	101101	2021-12-20	2022-12-20
SZ062-10	RF Cable	Bedea	RG 58	--	2021-11-01	2022-05-01
SZ056-08	Signal Analyzer	R&S	FSV 40	101430	2021-12-20	2022-12-20
SZ185-03	EMI Receiver	R&S	ESR7	101975	2021-12-20	2022-12-20
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	2021-05-18	2023-05-18
SZ061-12	BiConiLog Antenna	ETS	3142E	00166158	2021-08-04	2024-08-04
SZ061-09	Double-Ridged Waveguide Horn Antenna	ETS	3115	00092347	2020-10-17	2022-10-17
SZ061-15	Double-Ridged Waveguide Horn Antenna	ETS	3116C-PA	00224718	2021-07-06	2024-07-06
SZ181-08	Microwave System Amplifier	Agilent	83017A	MY57280108	2021-08-04	2022-08-04
SZ188-05	Anechoic Chamber	ETS	FACT 3-2.0	CT001880-Q1391	2021-05-25	2024-05-25
SZ062-23	RF Cable	RADIALL	SF104PE	MY4262/4PE	2021-09-26	2022-09-26
SZ062-35	RF Cable	Rebes	A50-3.5M 3.5M-8M	19100879	2021-09-26	2022-09-26
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	015	2021-05-11	2022-05-11

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