

GuangZhou Walkera Technology Co., Ltd

Application
For
Certification

FCC ID: S29VOYAGER-3

R/C Helicopter

Model: VOYAGER-3

2.4 Transceiver

Report No.: 150422024SZN-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 [10-1-14]

Prepared and Checked by:

Approved by:

Sign on file

Leo Lai
Senior Project Engineer

Andy Yan
Technical Supervisor
Date: May 3, 2016

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF no.: FCC 15C_Tx_b

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MEASUREMENT/TECHNICAL REPORT

GuangZhou Walkera Technology Co., Ltd
Taishi Industrial Park, Dongchong Town, Panyu District, Guangzhou,
China

MODEL: VOYAGER-3
FCC ID: S29VOYAGER-3

This report concerns (check one) Original Grant ☒ Class II Change ☐

Equipment Type: DTS - Part 15 Digital Transmission Systems

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

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 ☒

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-14 Edition] provision.

Report prepared by:

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List of attached file

Exhibit Type	File Description	Filename
Cover Letter	Letter of Agency	agency.pdf
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
Cover Letter	Confidentiality Letter	request.pdf
RF Exposure report	RF exposure	RF exposure.pdf
User Manual	User Manual	manual.pdf

EXHIBIT 1

SUMMARY OF TEST RESULTS

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1.0 Summary of Test

GuangZhou Walkera Technology Co., Ltd

- MODEL: VOYAGER-3

FCC ID: S29VOYAGER-3

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	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)	Pass
Antenna Requirement	15.203	Pass (See Notes)

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

EXHIBIT 2

GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a R/C Helicopter, Model: VOYAGER-3 with internal 2.4G transceiver function operating at 2405-2479MHz. For more detailed features description, please refer to the user's manual.

Type of Modulation: FSK.

Antenna Type: Integral Antenna.

The EUT have two 2.4GHz wireless modules which are FCS-RX701 and BT-2403A, but the two modules can't operate simultaneously. Each module has two antennas but operates on SISO mode only, if the receiver sensitivity has meet the internal limit valve, the antenna of the EUT will auto transfer to each other.

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

The related submittals with report no.: 150422024SZN-002/150422024SZN-003.

2.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2009) and KDB 558074v03r03. 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. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

EXHIBIT 3

SYSTEM TEST CONFIGURATION

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. It was powered fully charged DC 29.6V battery during the test. The EUT have two 2.4GHz wireless modules that can't operate simultaneously. Each module has two antennas and operates on SISO mode only, all transmission paths were tested for both modules and only the worst case data was reported.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

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.

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. The EUT was put in the center of the turn table.

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.

3.3 Special Accessories

N/A

3.4 Measurement Uncertainty

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

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

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3.5 Equipment Modification

Any modifications installed previous to testing by GuangZhou Walkera 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. Kejiyuan Branch.

3.6 Support Equipment List and Description

N/A.

EXHIBIT 4

MEASUREMENT RESULTS

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Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3

4.0 **Measurement Results**

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

- [x] 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).

FCS-RX701

Transmitting in Max. Power (Antenna Gain <=3dBi)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2405	20.47	111.43
Middle Channel: 2441	20.27	106.41
High Channel: 2479	20.05	101.16

BT-2403A

Transmitting in Max. Power (Antenna Gain <=3dBi)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2405	18.67	73.62
Middle Channel: 2441	18.27	67.14
High Channel: 2479	18.43	69.66

Cable loss: 0.5 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function
EUT dBm max. output level = 111.43mW (Limit: 1000mW) (FCS-RX701 Channel 1)

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

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Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3

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 1-5 % of the emission bandwidth and not to exceed 100 KHz according to FCC KDB 558074. 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.

FCS-RX701

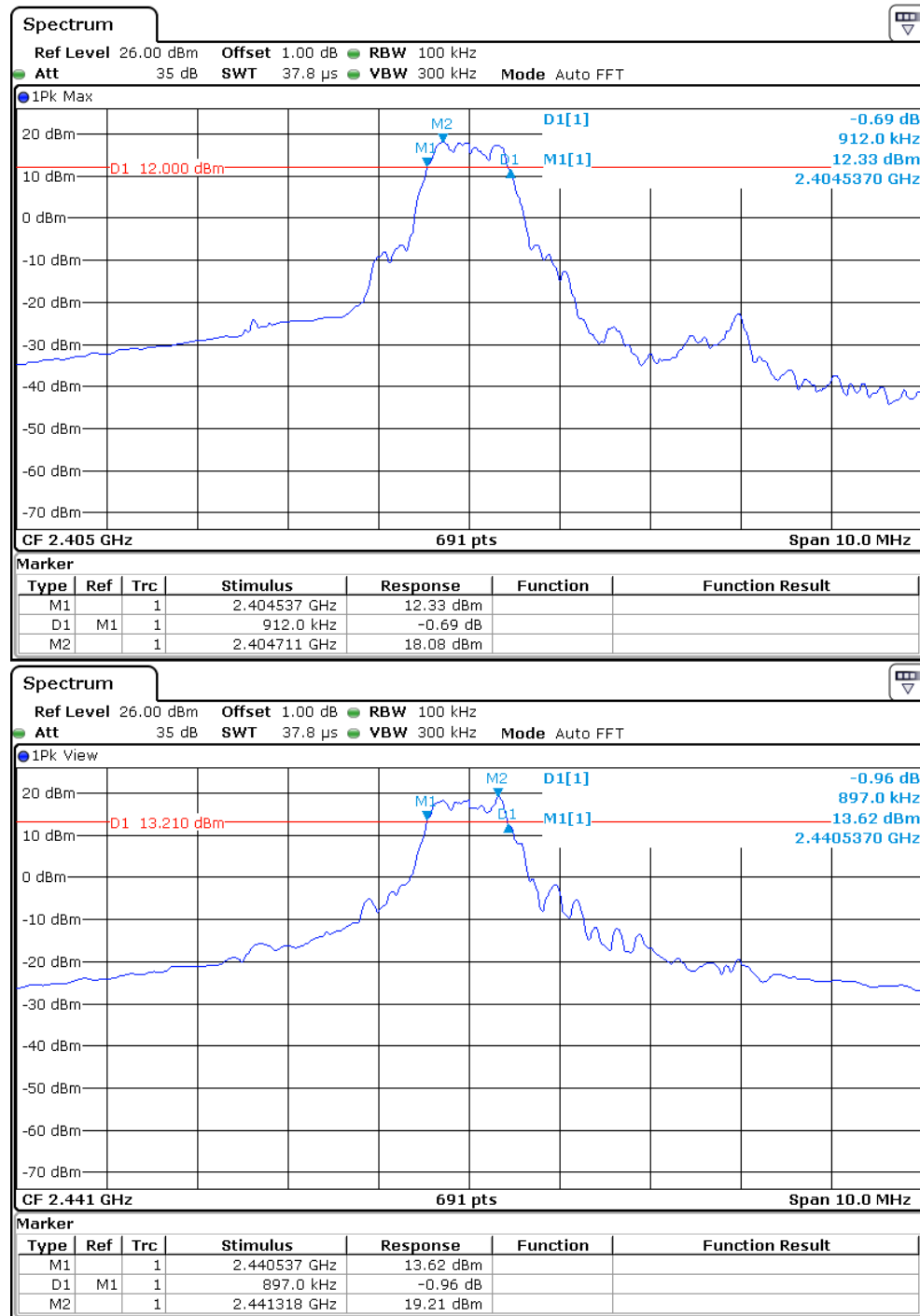
Transmitting in Max. Power	
Frequency (MHz)	6 dB Bandwidth (MHz)
2405	0.912
2441	0.897
2479	0.912

BT-2403A

Transmitting in Max. Power	
Frequency (MHz)	6 dB Bandwidth (MHz)
2405	0.868
2441	0.897
2479	0.868

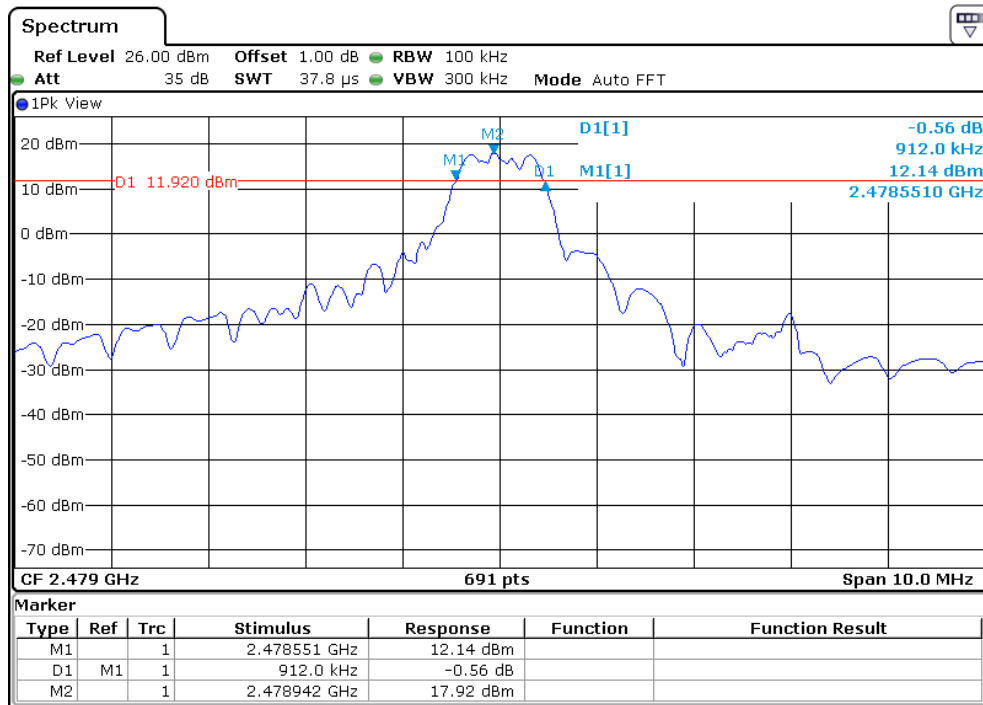
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The test plots are attached as below.
FCS-RX701

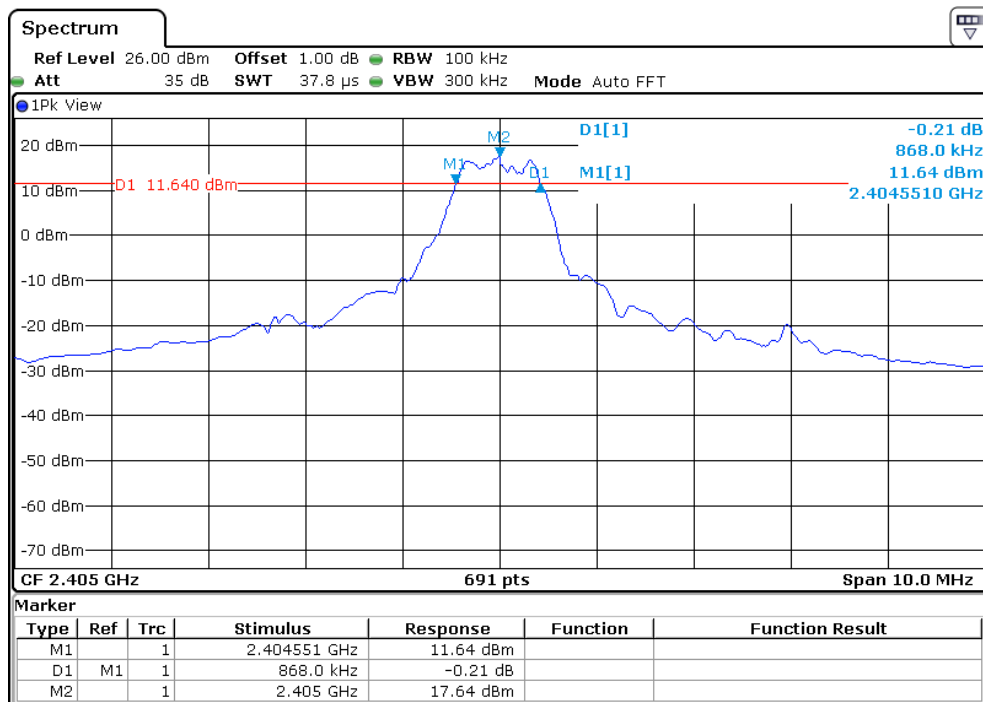


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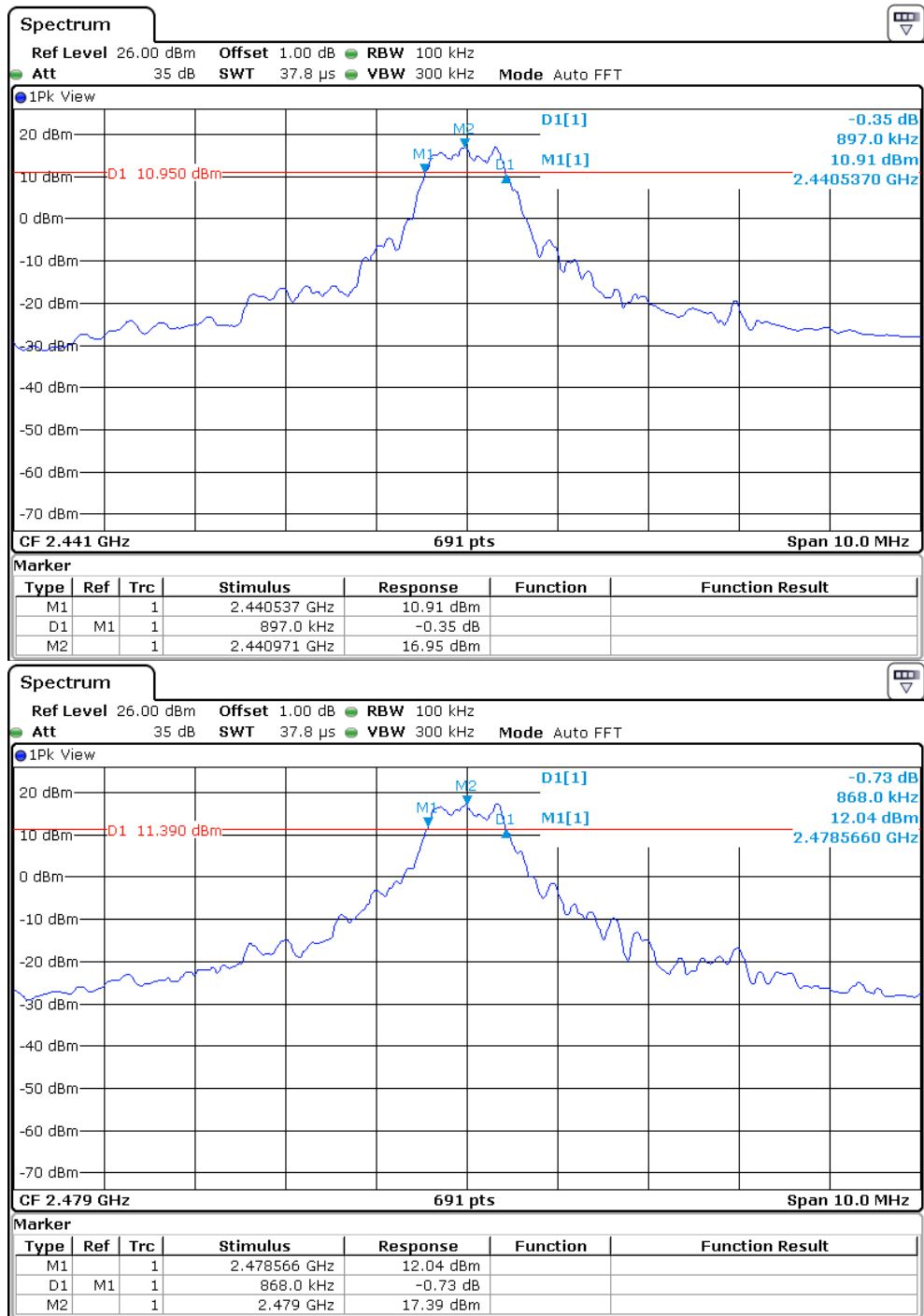
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BT-2403A



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Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3

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

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

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.

Unit: dBm

FCS-RX701

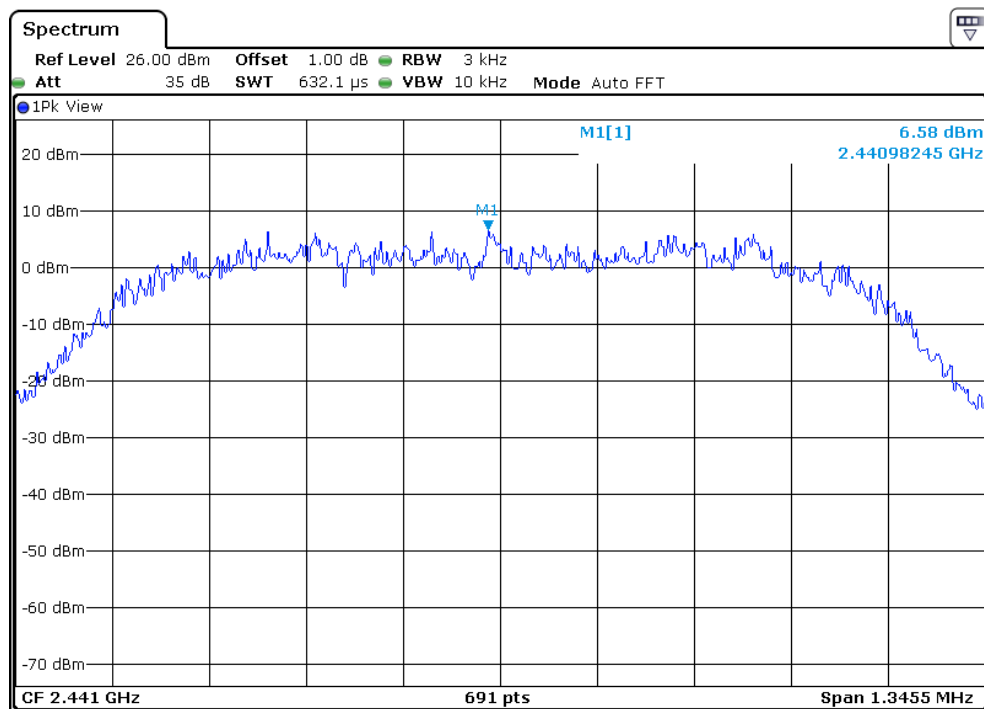
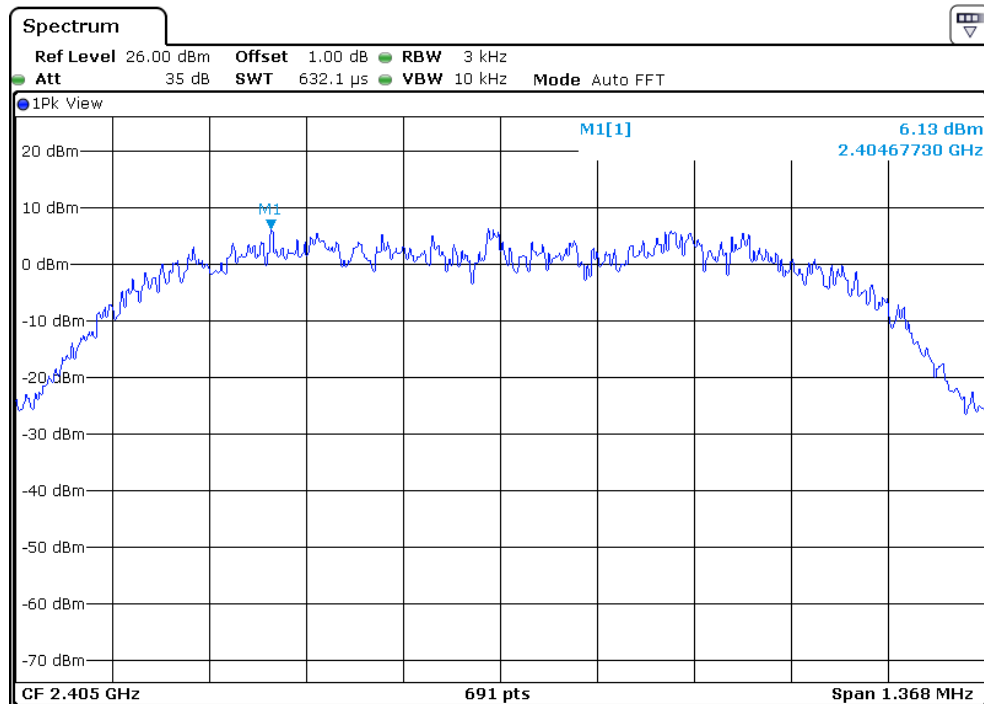
Transmitting in Max. Power	
Frequency (MHz)	Power Density with RBW 3KHz
Low Channel: 2405	6.13
Middle Channel: 2441	6.58
High Channel: 2479	5.43

BT-2403A

Transmitting in Max. Power	
Frequency (MHz)	Power Density with RBW 3KHz
Low Channel: 2405	7.93
Middle Channel: 2441	7.63
High Channel: 2479	7.42

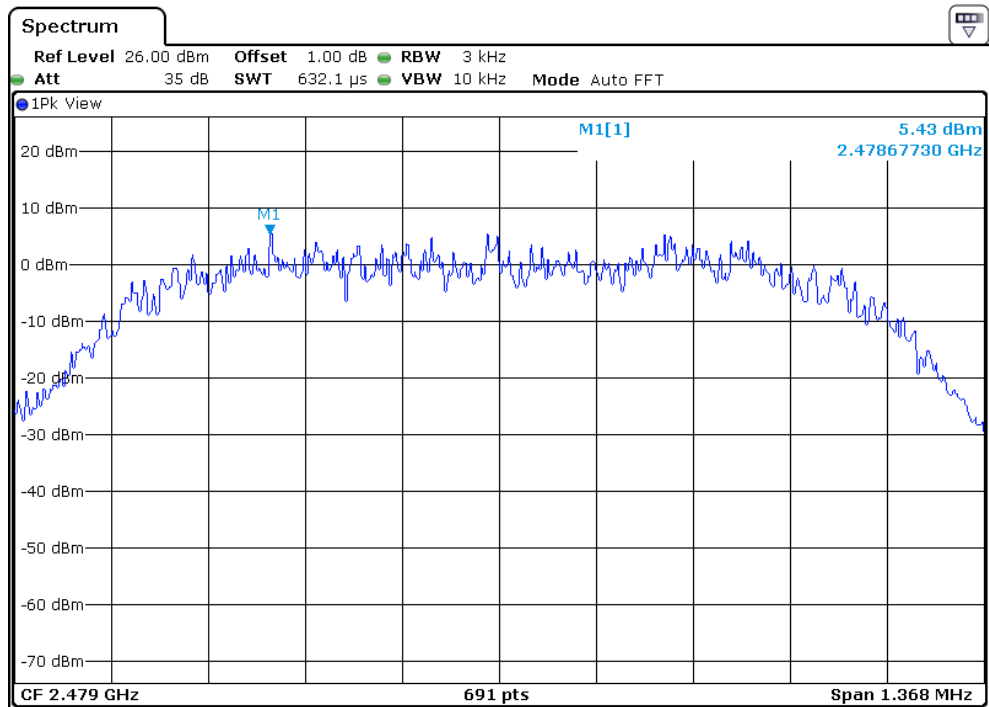
INTERTEK TESTING SERVICES

The test plots are attached as below.
FCS-RX701

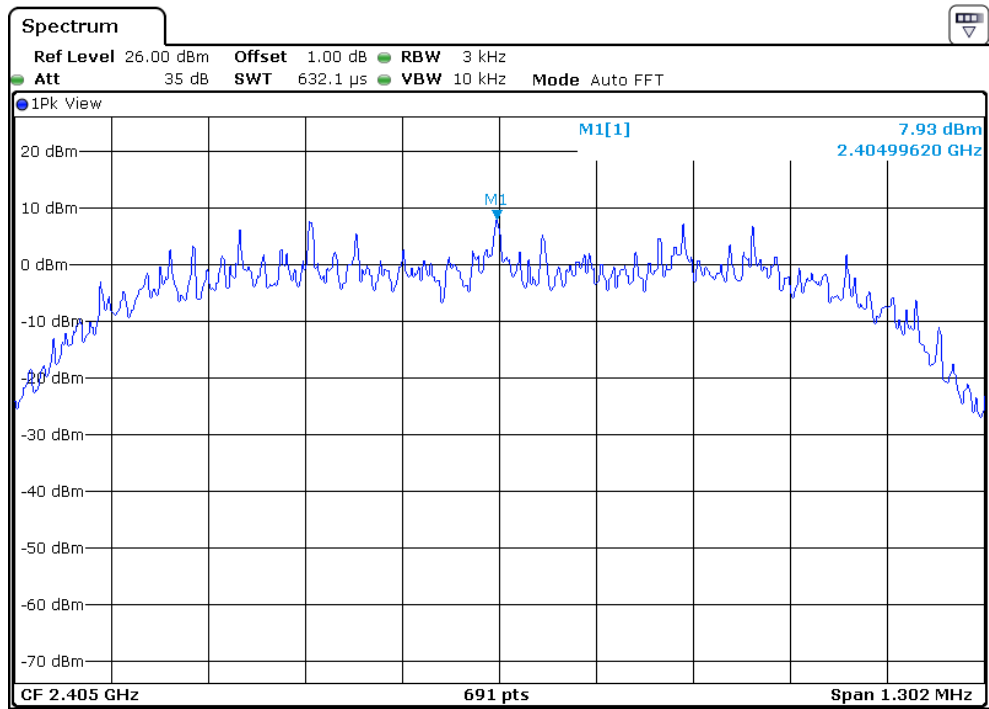


TRF no.: FCC 15C_TX_b
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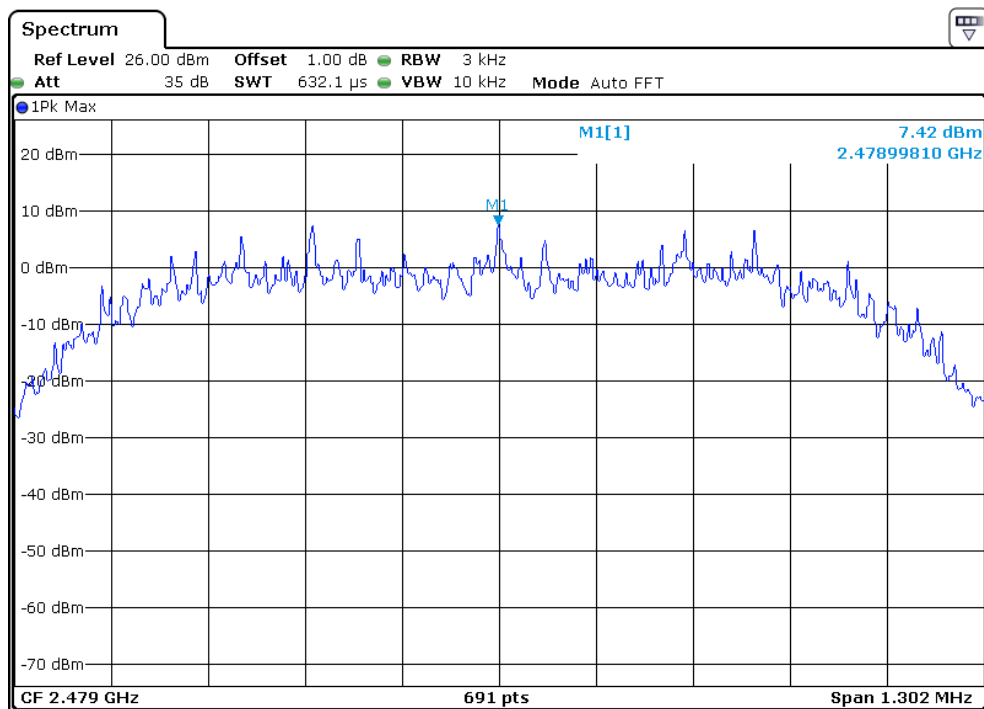
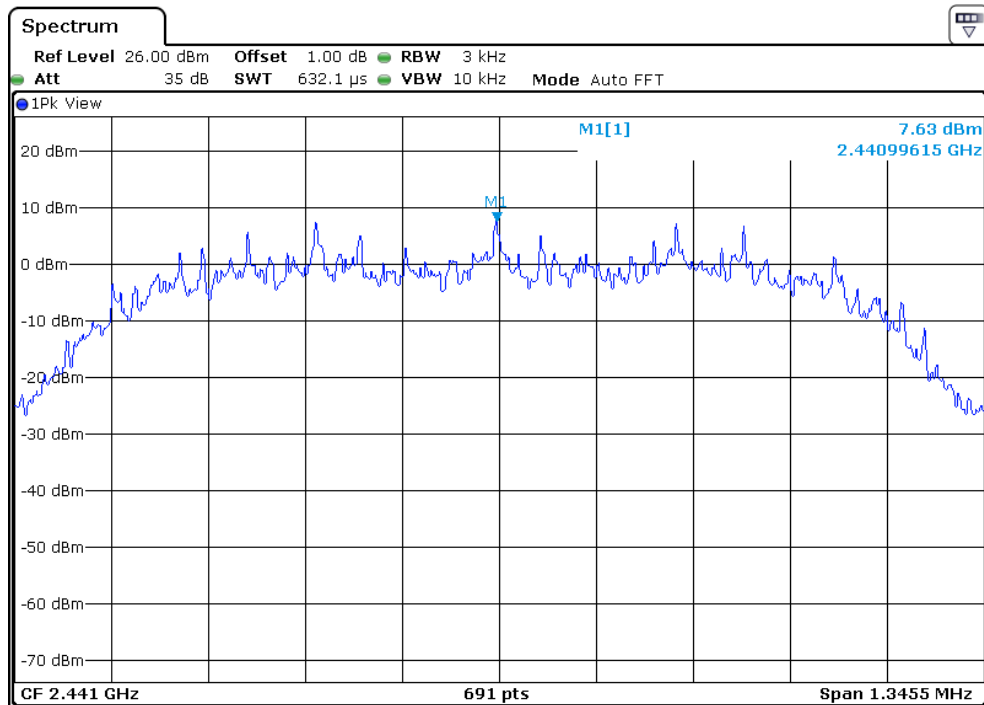
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BT-2403A



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Model: VOYAGER-3

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

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation. The Measurement Procedure was set according to the FCC KDB 558074.

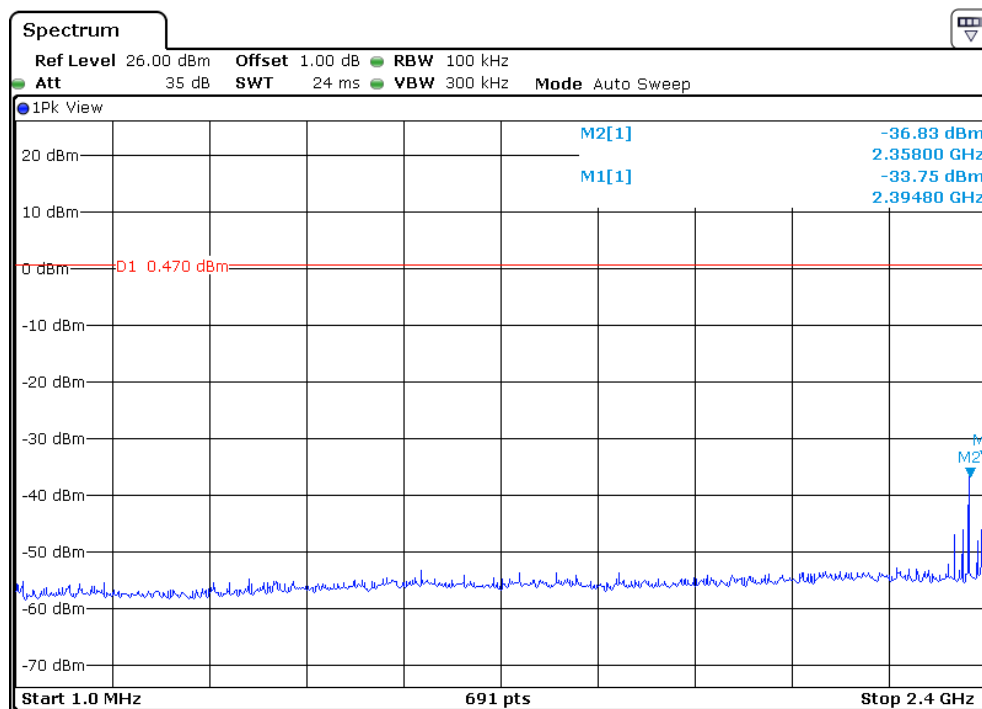
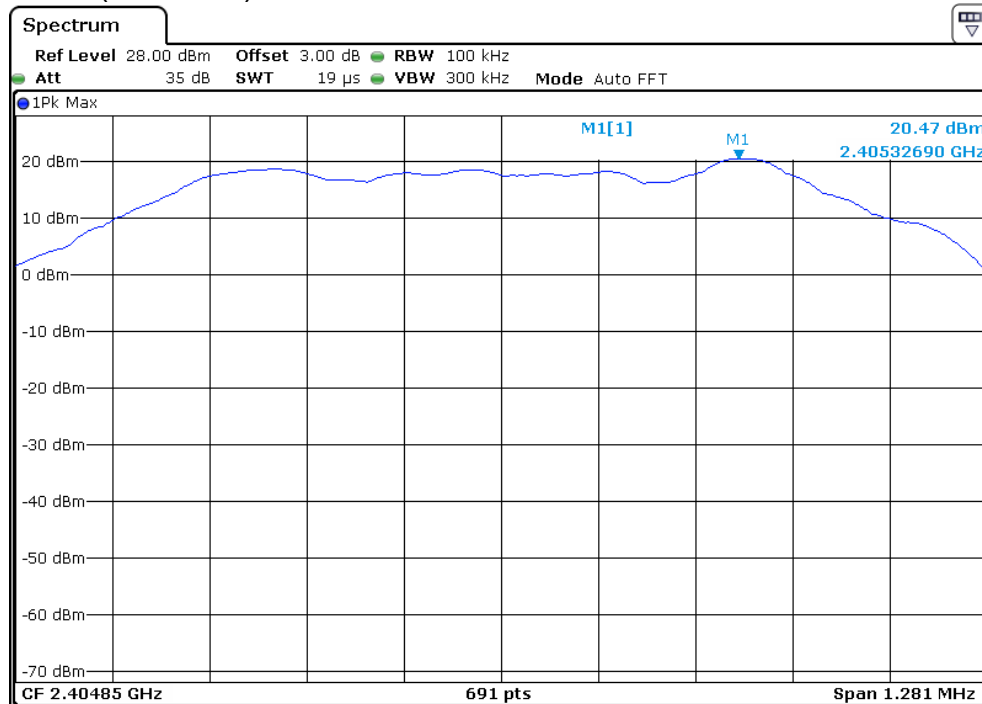
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

The test plots showed all spurious emission and 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.

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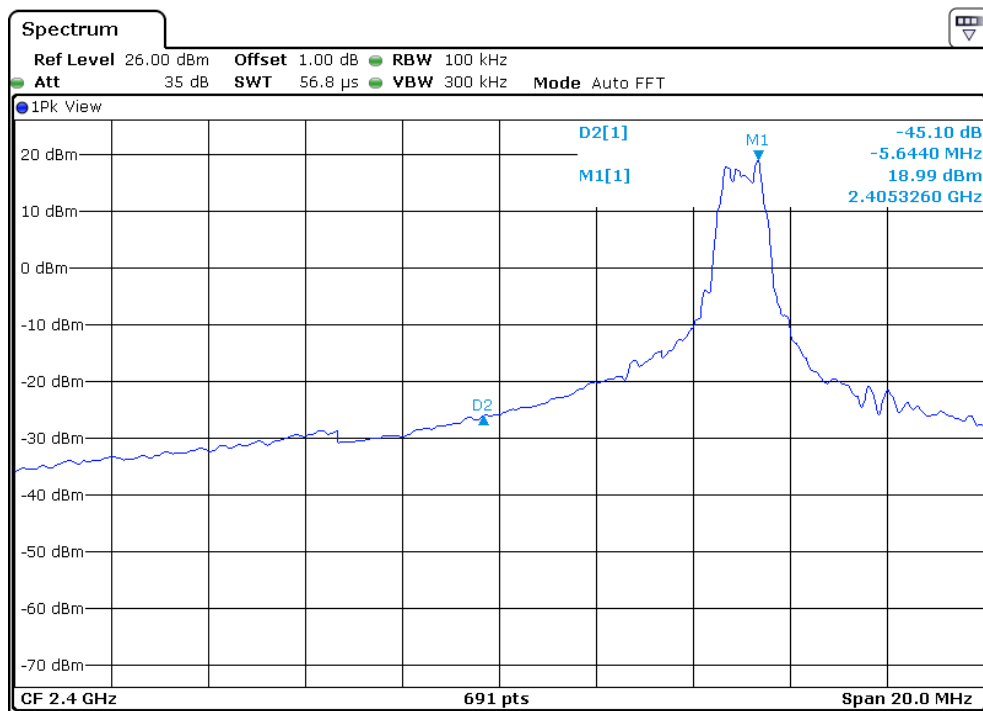
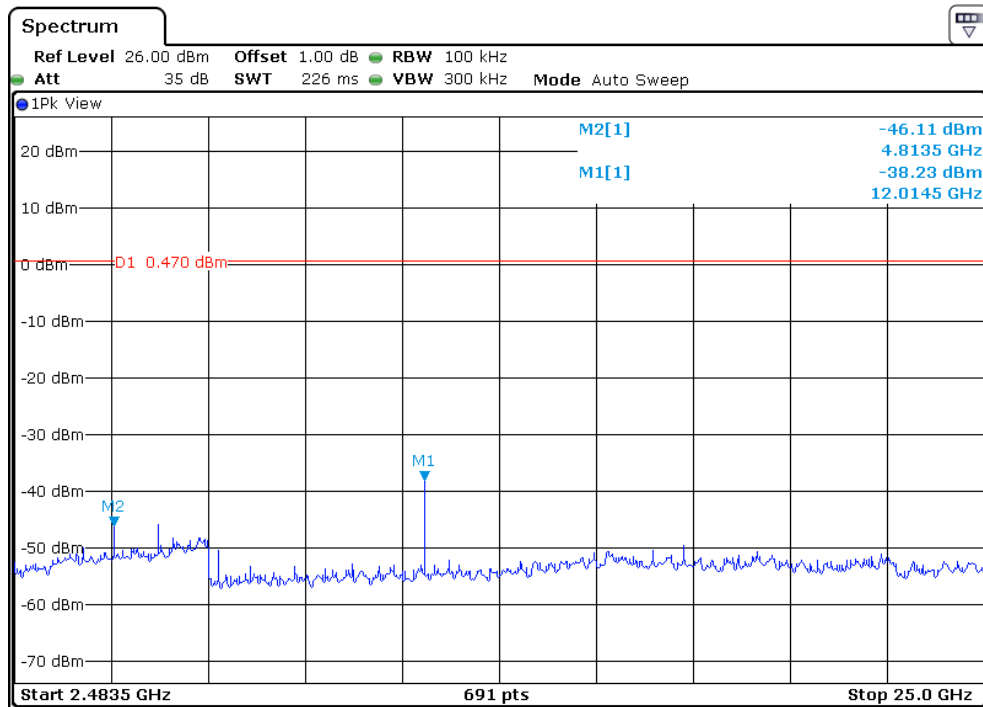
The test plots are attached as below.
FCS-RX701

CH01 (2405MHz)



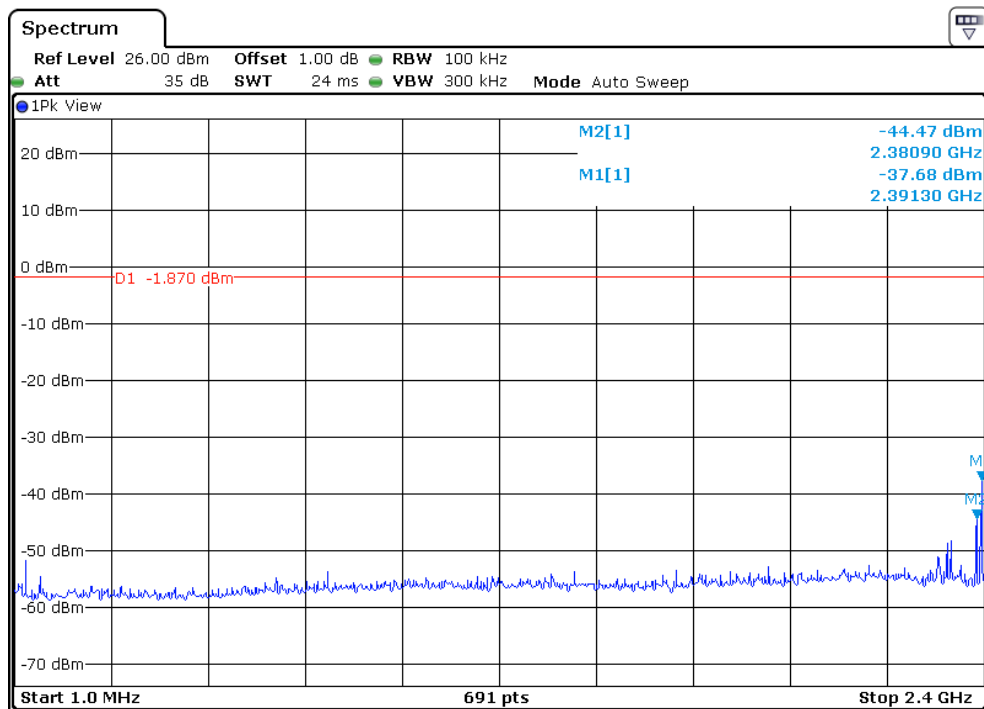
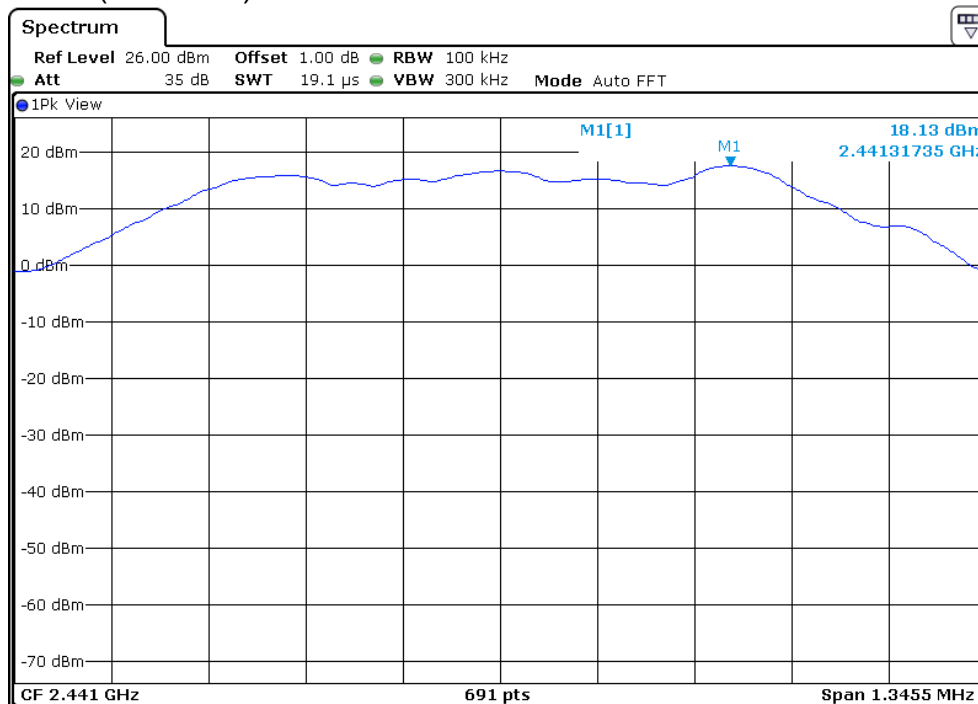
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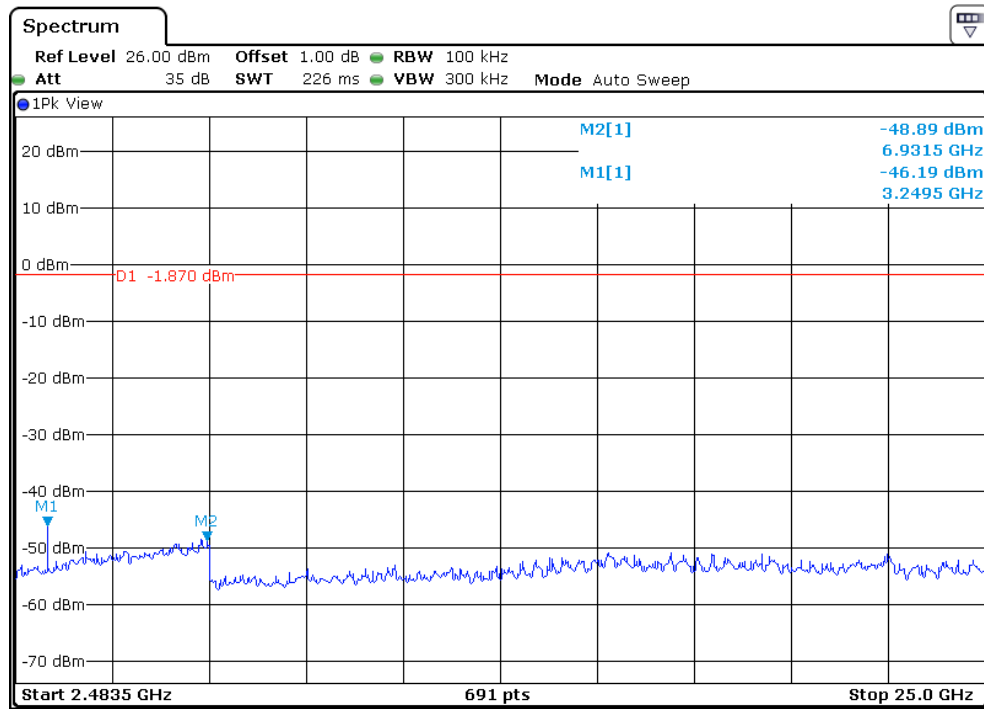
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CH36 (2441MHz)

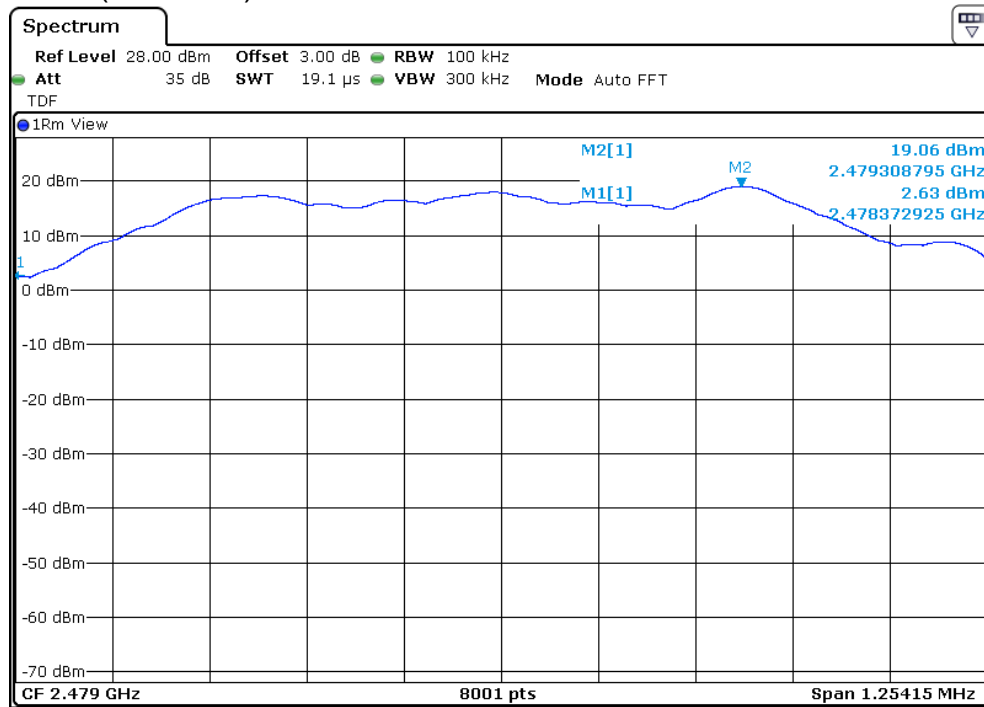


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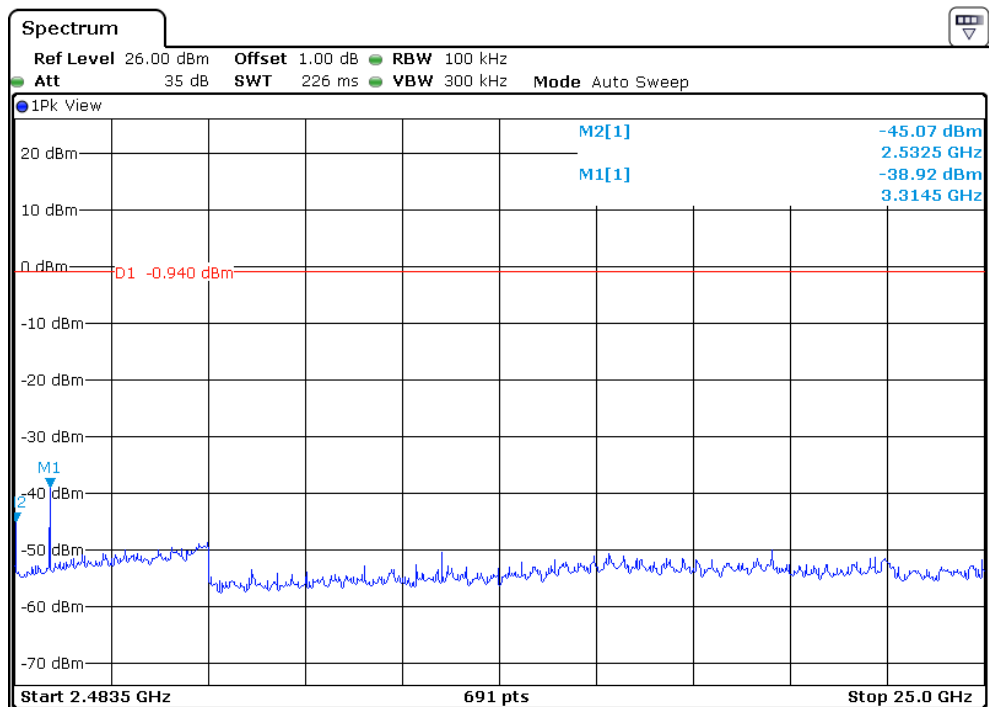
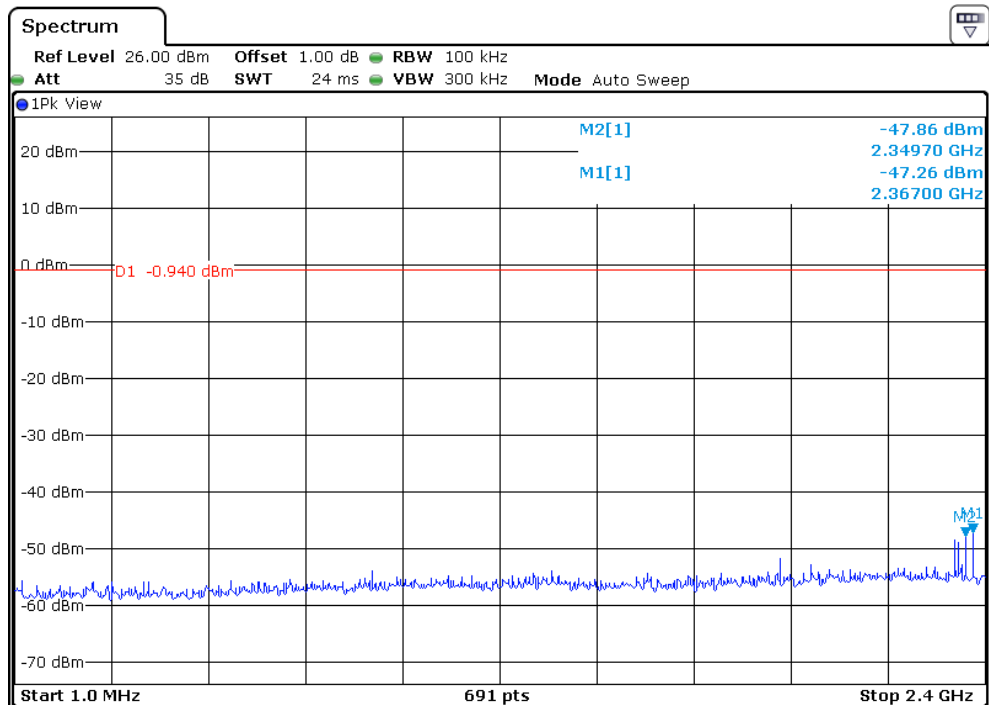
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CH75 (2479MHz)



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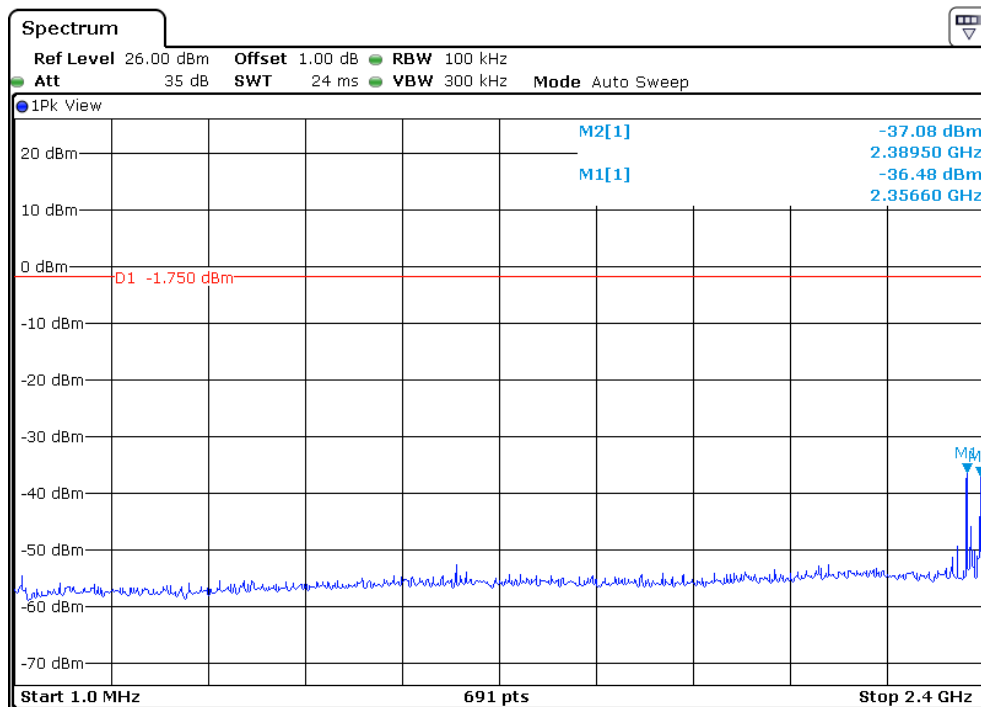
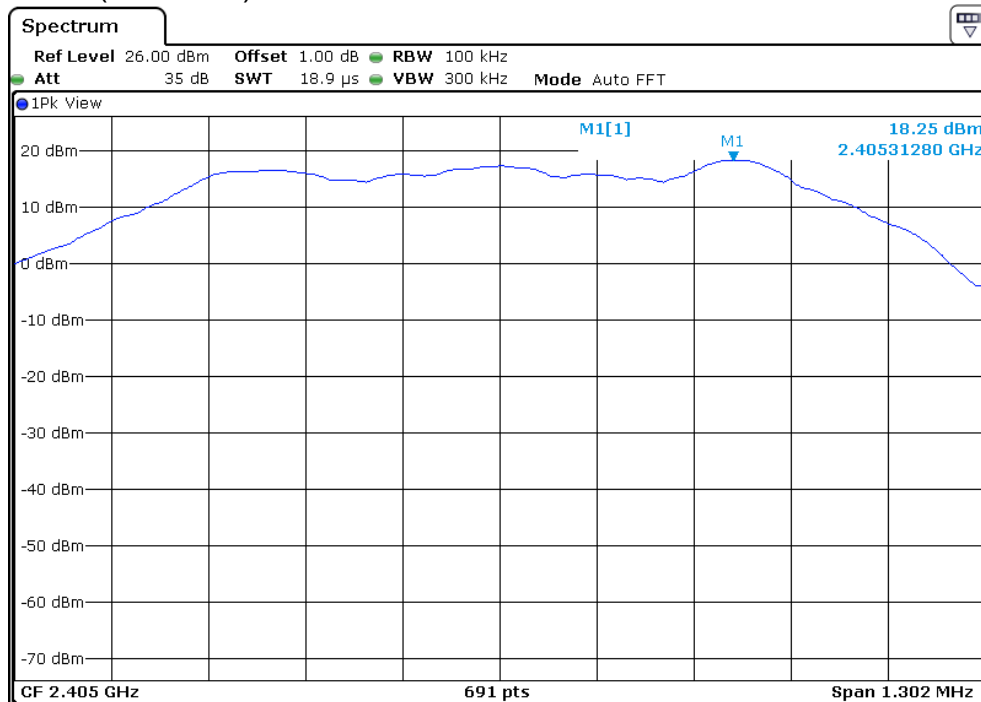


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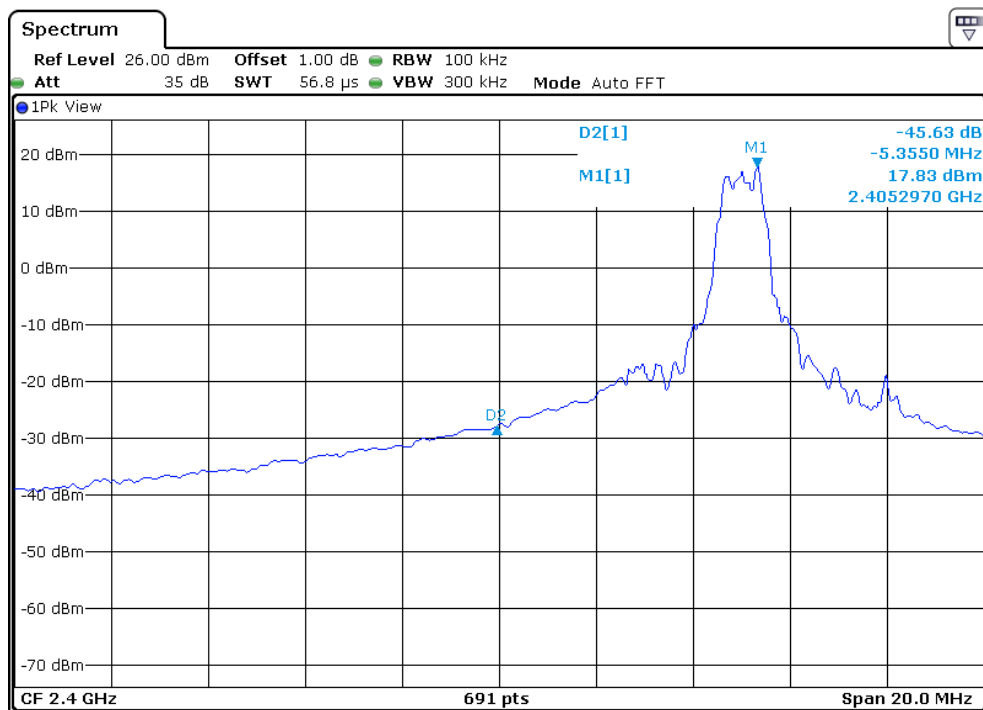
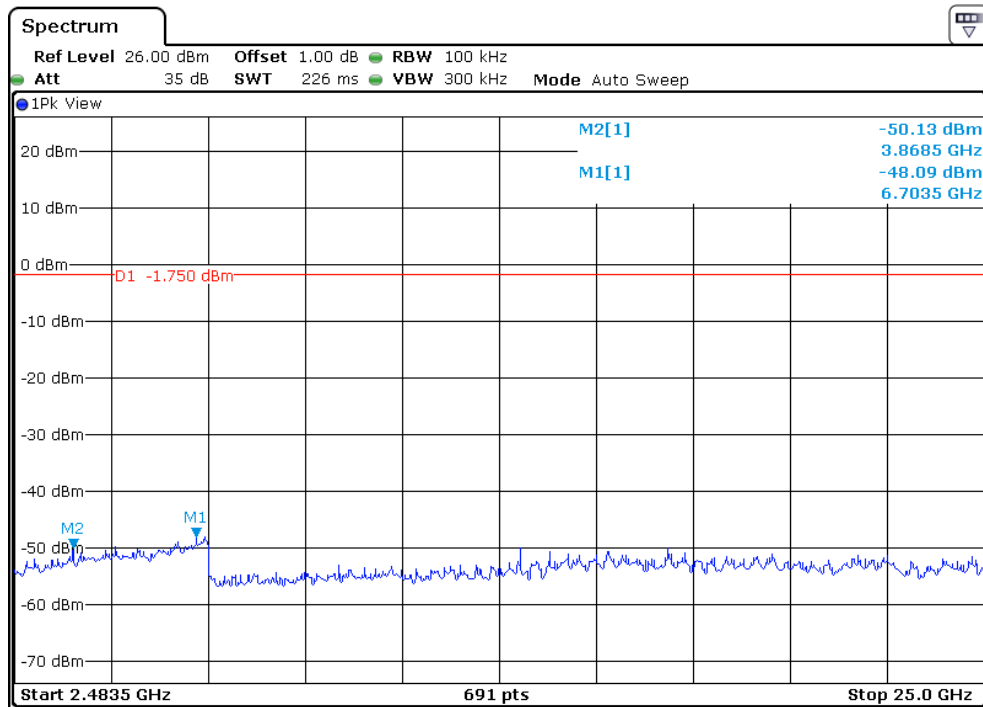
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BT-2403A
CH01 (2405MHz)



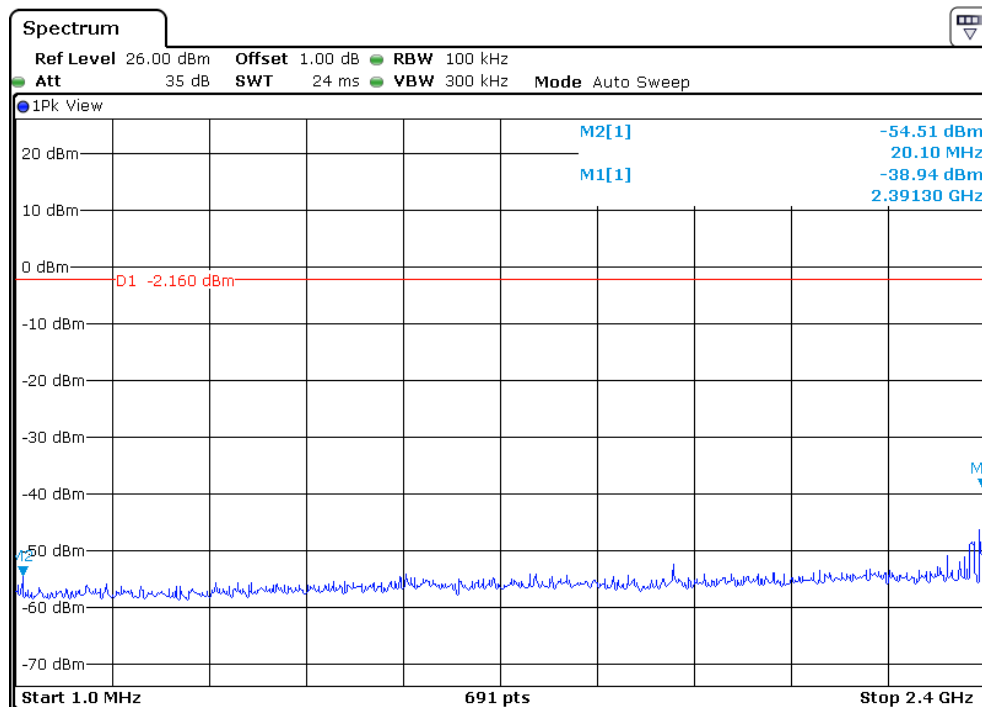
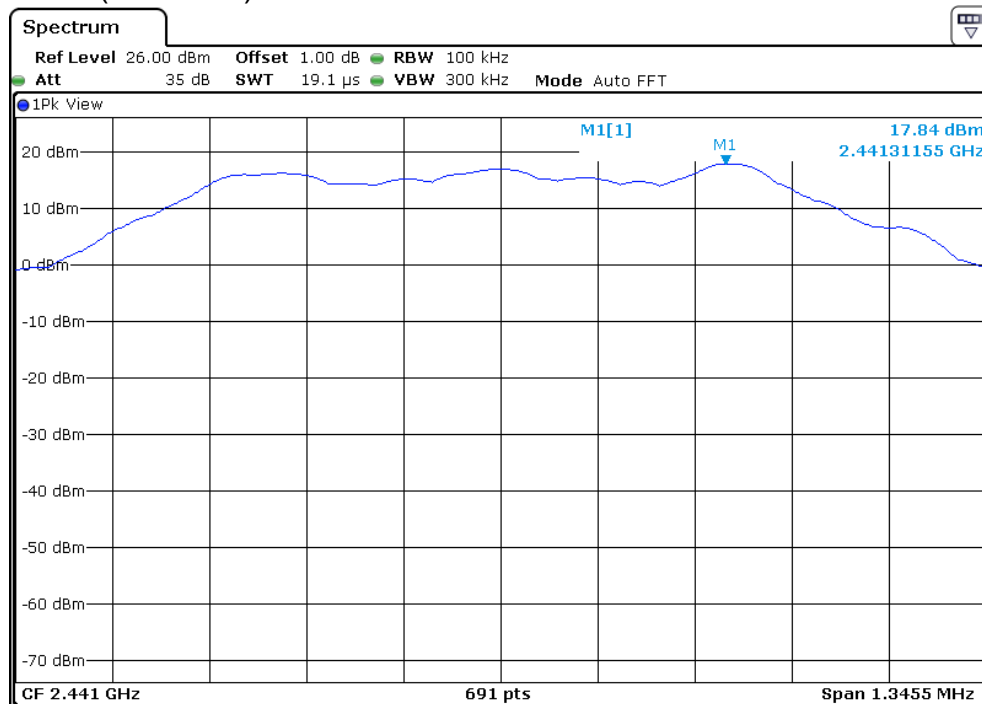
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INTERTEK TESTING SERVICES



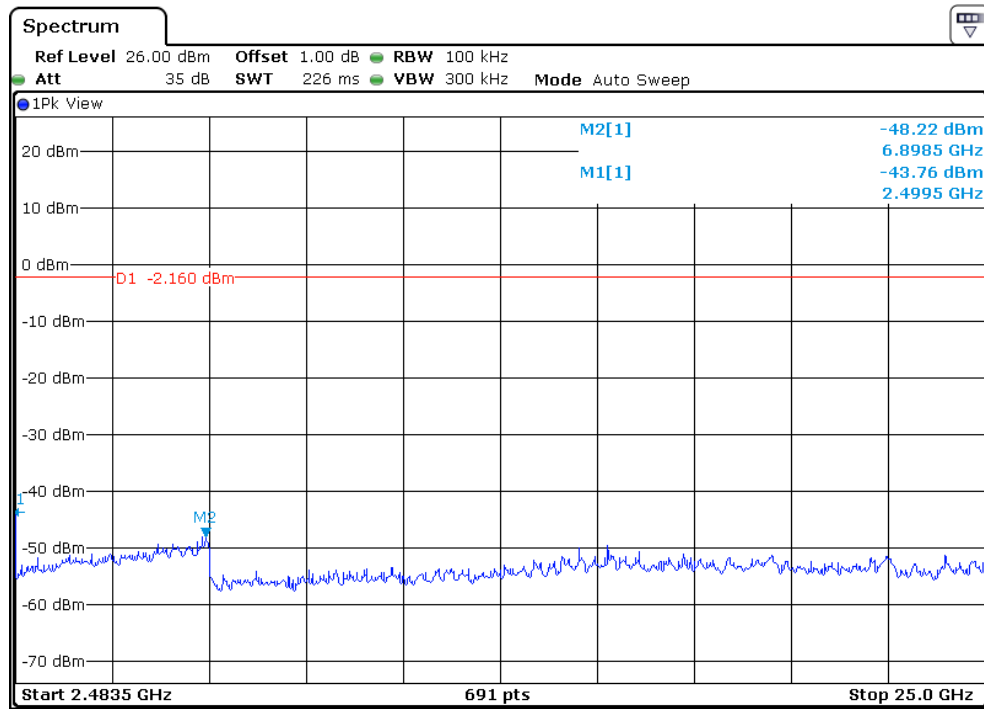
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CH36 (2441MHz)

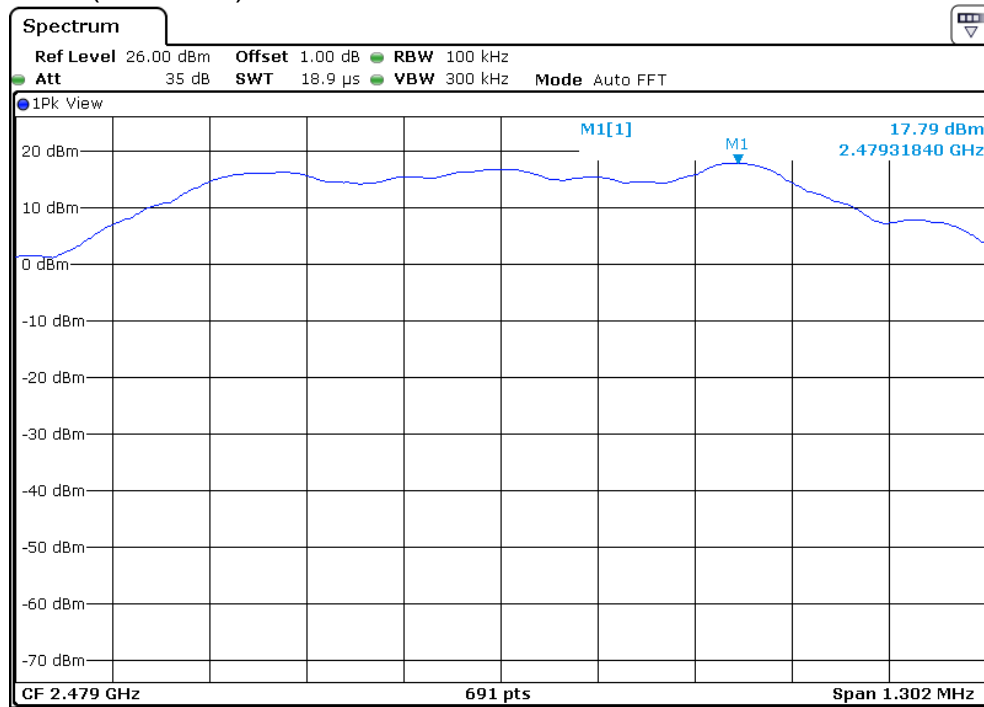


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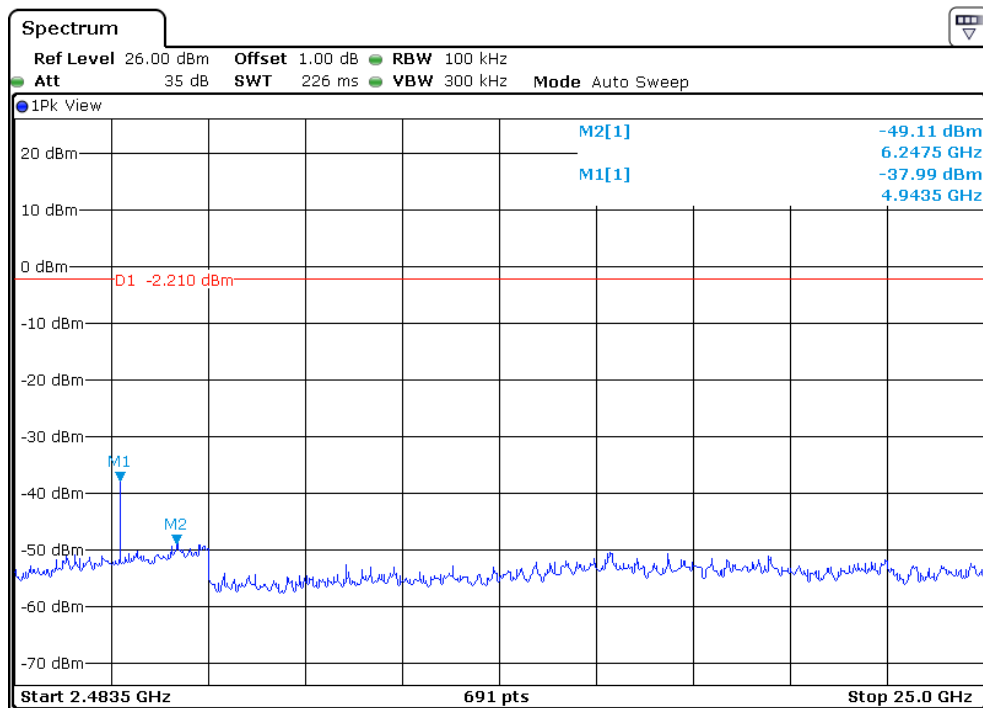
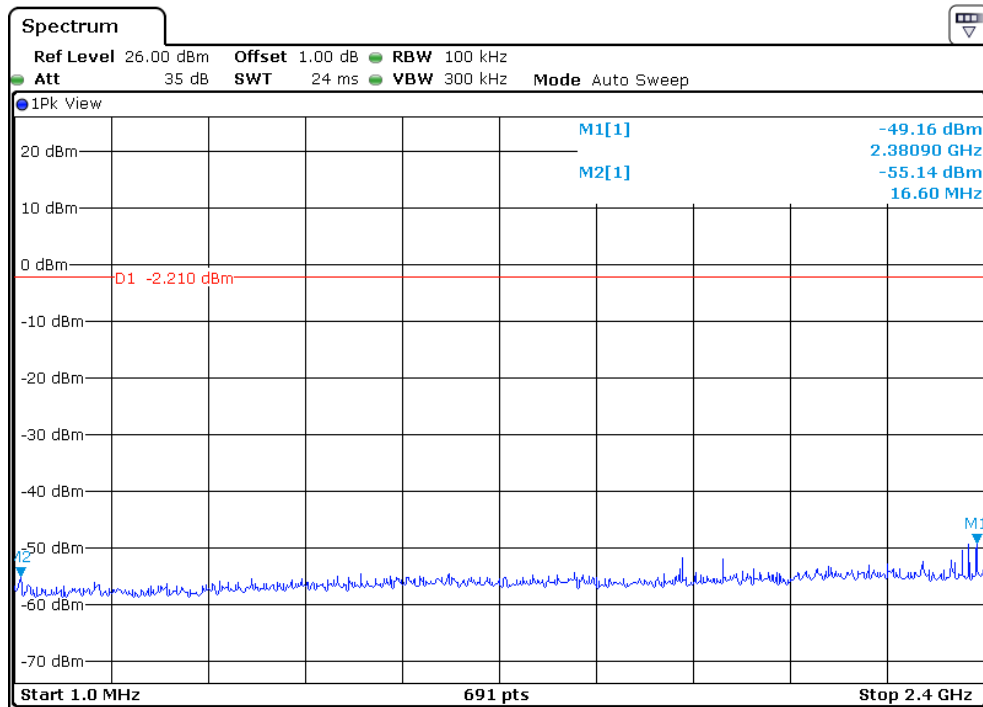
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CH75(2479MHz)



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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

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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.

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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 dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 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:

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

Example

Assume a receiver reading of 62.0 dB μ V 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 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

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

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

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Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
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4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission FCS-RX701 at 127.980MHz is passed by 6.4dB margin. Simultaneous transmitting with 5.8GHz band was considered.

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

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Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3
Worst Case Operating Mode: Transmitting in Max. Power (FCS-RX701)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	138.960	36.1	20.0	18.4	34.5	43.5	-9.0
Horizontal	216.790	39.4	20.0	20.1	39.5	46.0	-6.5
Horizontal	220.095	35.8	20.0	22.1	37.9	46.0	-8.1
Vertical	127.980	39.6	20.0	17.5	37.1	43.5	-6.4
Vertical	159.980	29.7	20.0	25.7	35.4	43.5	-8.1
Vertical	241.945	29.8	20.0	27.8	37.6	46.0	-8.4

- NOTES:
1. Quasi-Peak detector is used except for others stated.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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. All emissions are below the QP limit.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3
Mode: Transmitting in Max. Power (FCS-RX701, 2405MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4810.000	49.8	36.1	35.5	49.2	74.0	-24.8
Horizontal	*2389.093	56.2	36.7	28.1	47.6	74.0	-26.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4810.000	39.1	36.1	35.5	38.5	54.0	-15.5
Horizontal	*2389.093	51.8	36.7	28.1	43.2	54.0	-10.8

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd

Date of Test: July 10, 2015

Model: VOYAGER-3

Mode: Transmitting in Max. Power (FCS-RX701, 2441MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4882.000	53.1	36.1	35.5	52.5	74.0	-21.5
Horizontal	*7323.000	56.6	36.2	36.5	56.9	74.0	-17.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4882.000	38.9	36.1	35.5	38.3	54.0	-15.7
Horizontal	*7323.000	43.8	36.2	36.5	44.1	54.0	-9.9

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3
Mode: Transmitting in Max. Power (FCS-RX701, 2479MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4958.000	49.6	36.1	35.5	49.0	74.0	-25.0
Horizontal	*2484.382	62.4	36.7	28.1	53.8	74.0	-20.2

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4958.000	40.9	36.1	35.5	40.3	54.0	-13.7
Horizontal	*2484.382	52.8	36.7	28.1	44.2	54.0	-9.8

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd

Date of Test: July 10, 2015

Model: VOYAGER-3

Mode: Transmitting in Max. Power (BT-2403A, 2405MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4810.000	46.5	36.1	35.5	45.9	74.0	-28.1
Horizontal	*2389.093	60.2	36.7	28.1	51.6	74.0	-22.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4810.000	39.2	36.1	35.5	38.6	54.0	-15.4
Horizontal	*2389.093	52.2	36.7	28.1	43.6	54.0	-10.4

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd

Date of Test: July 10, 2015

Model: VOYAGER-3

Mode: Transmitting in Max. Power (BT-2403A, 2441MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4882.000	47.4	36.1	35.5	46.8	74.0	-27.2
Horizontal	*7323.000	52.5	36.2	36.5	52.8	74.0	-21.2

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4882.000	39.6	36.1	35.5	39.0	54.0	-15.0
Horizontal	*7323.000	43.7	36.2	36.5	44.0	54.0	-10.0

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd Date of Test: July 10, 2015
Model: VOYAGER-3
Mode: Transmitting in Max. Power (BT-2403A, 2479MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4958.000	47.2	36.1	35.5	46.6	74.0	-27.4
Horizontal	*2484.382	61.6	36.7	28.1	53.0	74.0	-21.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4958.000	39.7	36.1	35.5	39.1	54.0	-14.9
Horizontal	*2484.382	52.2	36.7	28.1	43.6	54.0	-10.4

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
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.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd
Model: VOYAGER-3

Date of Test: July 10, 2015

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

☐ Not required - No digital part

☐ Test results are attached

☒ Included in the separated report.

INTERTEK TESTING SERVICES

Applicant: GuangZhou Walkera Technology Co., Ltd
Model: VOYAGER-3

Date of Test: July 10, 2015

4.10 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.

INTERTEK TESTING SERVICES

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

5.0 Equipment Photographs

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

EXHIBIT 6

PRODUCT LABELLING

6.0 **Product Labelling**

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

EXHIBIT 7

TECHNICAL SPECIFICATIONS

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block&partlist.pdf and circuit.pdf respectively.

EXHIBIT 8
INSTRUCTION MANUAL

8.0 **Instruction Manual**

For electronic filing, preliminary copies of the Instruction Manual and Safety Information are saved with filename: manual.pdf.

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

EXHIBIT 9
CONFIDENTIALITY REQUEST

9.0 **Confidentiality Request**

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

EXHIBIT 10

MISCELLANEOUS INFORMATION

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.

EXHIBIT 11
TEST EQUIPMENT LIST

INTERTEK TESTING SERVICES

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	21-May-15	21-May-16
SZ182-02-01	Pulse Power Sensor	Anritsu	MA2411B	21-May-15	21-May-16
SZ061-12	BiConiLog Antenna	ETS	3142E	2-Sep-14	2-Sep-15
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	29-Apr-15	29-Apr-16
SZ061-09	Horn Antenna	ETS	3115	1-Nov-14	1-Nov-15
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	3-Sep-14	3-Sep-15
SZ185-01	EMI Receiver	R&S	ESCI	7-Feb-15	7-Feb-16
SZ056-03	Spectrum Analyzer	R&S	FSP30	08-Jun-15	08-Jun-16
SZ181-04	Preamplifier	Agilent	8449B	7-Feb-15	7-Feb-16
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	19-Apr-14	19-Apr-16
SZ062-22	RF Cable	HUBER+SUHNER	SF104PE	7-Apr-15	7-Oct-15
SZ062-23	RF Cable	HUBER+SUHNER	SF104PE	1-Nov-14	1-Nov-15
SZ062-25	RF Cable	HUBER+SUHNER	SF104PE	8-Jan-15	8-Jan-16
SZ067-21	Notch Filter	Micro-Tronics	High-pass filter	7-Feb-15	7-Feb-16
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	21-May-15	21-May-16