RSS-210, RSS GEN, FCC PART 15, SUBPART B and C
TEST REPORT

for

TIVO CREEK ANDROID VOICE REMOTE 2018

MODEL: R37023BA00-00001

Prepared for

UNIVERSAL ELECTRONICS, INC.
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DATE: AUGUST 30, 2018

	REPORT BODY	APPENDICES						TOTAL
		A	*B*	*C*	*D*	*E*	*F*	
PAGES	17	2	2	2	12	39	7	**81**

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1.0	Radiated Emission Results

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

Device Tested:	TIVO Creek Android Voice Remote 2018 Model: R37023BA00-00001 S/N: N/A
Product Description:	The TIVO Creek Android Voice Remote 2018 (EUT) is a hand-held custom universal remote control with Bluetooth LE (BLE) and infrared (IR) support.
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	Universal Electronics, Inc. 201 East Sandpointe Avanue, 8th Floor Santa Ana California, 92707
Test Dates:	August 16, 17, 28, and 29, 2018

Test Specifications covered by accreditation:

CFR Title 47, Part 15, Subpart B; and Subpart C sections 15.205, 15.209, 15.249, RSS-210 Issue 9 (2017), and RSS-Gen Issue 5 (2018)

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Test Procedures: ANSI C63.4: 2014 and ANSI C63.10: 2013

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz –25000MHz	Complies with the limits of RSS-210, RSS-Gen, CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Section 15.205, 15.209, & 15.249 Highest reading in relation to spec limit 47.91 (Avg) dBuV/m @ 2400.00 MHz (*U = 3.67 dB)

*U = Expanded Uncertainty with a coverage factor of k=2

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the TIVO Creek Android Voice Remote 2018, Model: R37023BA00-00001. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the RSS-210, RSS-Gen, and the **Class B** specification limits defined by Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.107, 15.109, & Part 15 Subpart C sections 15.205, 15.207, 15.209 and 15.249.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Universal Electronics, Inc.

Jesse Mendez	Staff Engineer, Electrical

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
Thomas Szynal	Test Technician
Johnny Le	Test Technician

2.4 Date Test Sample was Received

The test sample was received prior to the date of this report.

2.5 Disposition of the Test Sample

The test sample has not been returned to Universal Electronics, Inc. as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ASK	Amplitude Shift Key
ITE	Information Technology Equipment
N/A	Not Applicable
Tx	Transmit
Rx	Receive
PIR	Pyroelectric (“Passive”) Infrared
Inc.	Incorporated
IR	Infrared

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this emissions Test Report.

SPEC	TITLE
RSS-210 Issue 9: 2017	License-exempt Radio Apparatus: Category I Equipment
RSS Gen Issue 5: 2018	General Requirements for Compliance of Radio Apparatus
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 25 GHz
ANSI C63.10 2013	American National Standard of procedure for compliance testing of unlicensed wireless devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The TIVO Creek Android Voice Remote 2018, Model: R37023BA00-00001 (EUT) was setup in a stand-alone configuration. The EUT was investigated in all three orthogonal axes. During the testing, the EUT was continuously transmitting at 2402 MHz, 2442 MHz, or 2480 MHz. The EUT was tested from 9 kHz to 25 GHz.

Fresh batteries were installed inside the EUT prior to the testing. The EUT was programmed via the Radio Control Console v4.6.2 firmware.

The firmware is stored in one of the network drives in the company's server.

The final radiated data for the EUT was taken in the mode described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

The EUT had no external cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
TIVO CREEK ANDROID VOICE REMOTE 2018 (EUT)	UNIVERSAL ELECTRONICS, INC.	R37023BA00-00001	N/A	MG3-R37023B
LAPTOP*	HEWLETT PACKARD	HSTNN-C82C	N/A	N/A
AC ADAPTER FOR LAPTOP*	HEWLETT PACKARD	HSTNN-DA40	N/A	N/A
PROGRAM BOARD*	UNIVERSAL ELECTRONICS, INC.	FTD1232	N/A	N/A
FIRMWARE*	UNIVERSAL ELECTRONICS, INC.	RADIO CONTROL CONSOLE	v4.6.2	N/A

*****Used to program the EUT only and was removed prior to the testing

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
RF RADIATED AND CONDUCTED EMISSIONS TEST, AND 99% BANDWIDTH TEST EQUIPMENT					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Keysight Technologies	N9038A	MY51210150	July 26, 2018	1 Year
CombiLog Antenna	Com-Power	AC-220	61060	July 27, 2017	2 Year
Loop Antenna	Com-Power	AL-130R	121090	February 9, 2017	2 Year
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
Horn Antenna	Com-Power	AH-118	071175	February 22, 2018	2 Year
Preamplifier	Com-Power	PAM-118A	551024	May 10, 2018	1 Year
Preamplifier	Com-Power	PA-840	711013	May 10, 2018	1 Year
Horn Antenna	Com-Power	AH-826	71957	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. Preamplifiers were used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured.

The frequencies below 1 GHz were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The frequencies for the fundamental, band edges, and harmonics above 1 GHz were averaged using a duty cycle correction factor.

The all other frequencies above 1 GHz were averaged using the RMS detector of the EMI Receiver.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.0.

Radiated Emissions Test (Continued)

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

Test Results:

The EUT complies with the limits of RSS-210, RSS-Gen, and the **Class B CFR** Title 47, Part 15, Subpart B; and Subpart C sections 15.205, 15.209 and 15.249 for radiated emissions.

7.1.2 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Frequency (MHz)	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) (dB)
2400.00 (H) (X-Axis)	47.91 (AVG)	53.97	-6.06
2338.14 (H) (X-Axis)	44.49 (AVG)	53.97	-9.48
2400.00 (V) (Y-Axis)	44.40 (AVG)	53.97	-9.57
33.20 (H) (X-Axis)	27.14 (QP)	40.00	-12.86
40.00 (H) (X-Axis)	27.01 (QP)	40.00	-12.99
38.60 (H) (X-Axis)	26.84 (QP)	40.00	-13.16

Notes:
* The complete emissions data is given in Appendix E of this report.
(V) Vertical
(H) Horizontal

7.1.3 Duty Cycle Calculation

The fundamental and harmonics were measured at a 3-meter test distance. The EMI Receiver was used to obtain the final test data. The final qualification data sheets are located in Appendix E.

Where

$$\delta(\mathrm{dB}) = 20\log\left[\sum\left(nt_1 + mt_2 + \ldots + \xi t_x\right)/T\right]$$

n is the number of pulses of duration *t*1
m is the number of pulses of duration *t*2
ξ is the number of pulses of duration *tx*
T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

The worst case was when the EUT was in advertising mode

Duty Cycle Correction Factor = -20.00 dB

Time of One Pulse = 200 us

Total On Time = 200 us

The time between pulses is 3.7 ms

Duty Cycle = 200 us / 3.7 ms = 0.05405 = 5.405%

The duty cycle is less than 10%, so the maximum Peak to Average ratio of -20 dB can be utilized.

8. CONCLUSIONS

The TIVO Creek Android Voice Remote 2018, Model: R37023BA00-00001 (EUT), as tested, meets all of the specification limits defined in RSS-210, RSS-Gen, and the **Class B** specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209 and 15.249.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.
For the most up-to-date version of our scopes and certificates please visit http://celectronics.com/quality/scope/

NVLAP TESTING
NVLAP LAB CODE 200528-0

Quote from ISO-ILAC-IAF Communiqué on 17025:
"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

Innovation, Science and Economic Development Canada
Lab Code 2154A

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass RSS-210, RSS-Gen, and the **Class B** limits of FCC Subpart B and FCC 15.249 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODEL COVERED UNDER THIS REPORT

ADDITIONAL MODEL COVERED UNDER THIS REPORT

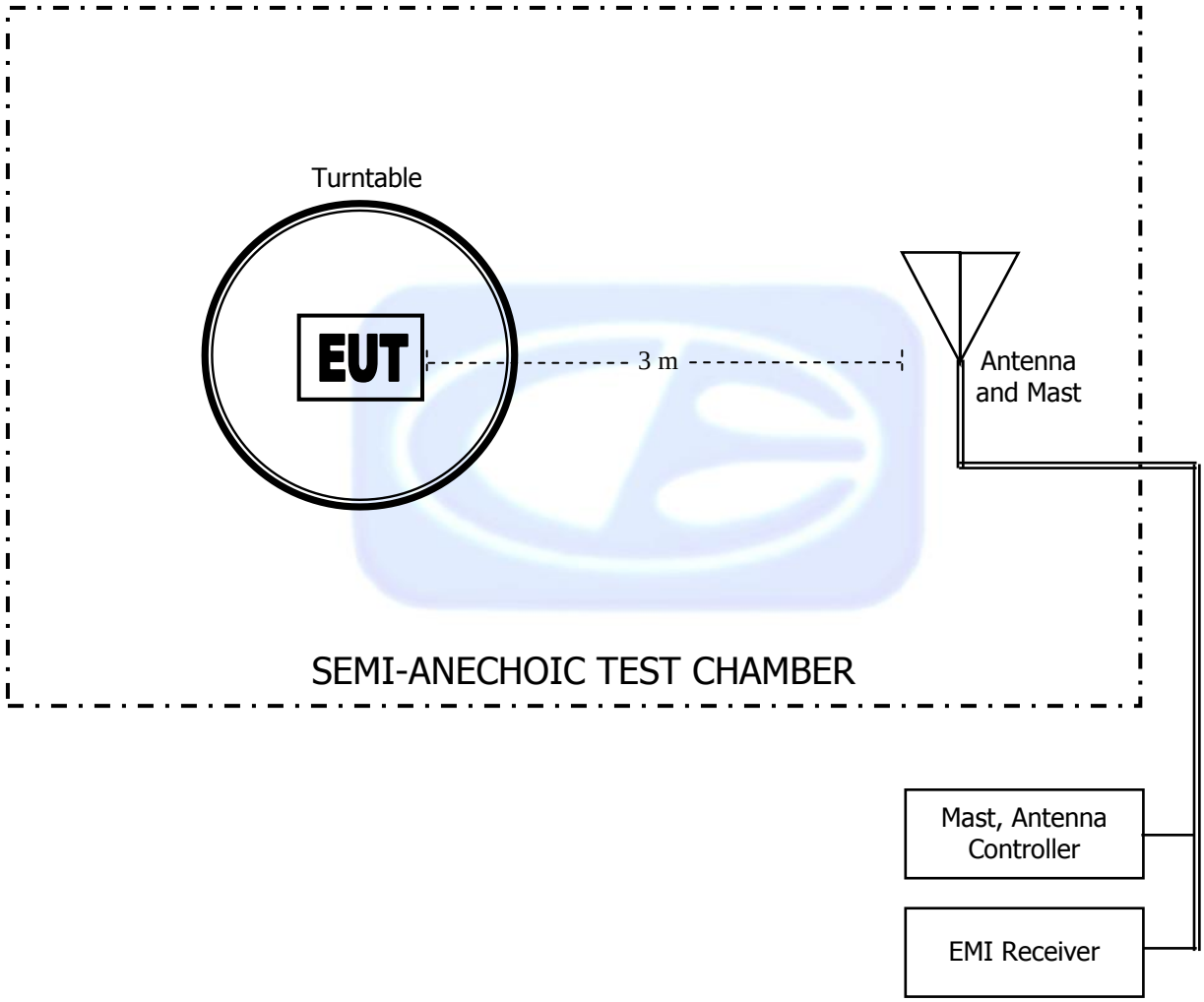
USED FOR THE PRIMARY TEST	TIVO Creek Android Voice Remote 2018 Model: R37023BA00-00001 S/N: N/A

There are no additional Models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER



COM-POWER AL-130R

LOOP ANTENNA

S/N: 121090

CALIBRATION DATE: FEBRUARY 9, 2017

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-36.17	15.33
0.01	-35.86	15.64
0.02	-37.30	14.20
0.03	-36.58	14.92
0.04	-36.99	14.51
0.05	-37.66	13.84
0.06	-37.53	13.97
0.07	-37.64	13.86
0.08	-37.52	13.98
0.09	-37.62	13.88
0.1	-37.59	13.91
0.2	-37.79	13.71
0.3	-37.80	13.70
0.4	-37.70	13.80
0.5	-37.79	13.71
0.6	-37.79	13.71
0.7	-37.69	13.81
0.8	-37.49	14.01
0.9	-37.39	14.11
1	-37.39	14.11
2	-37.09	14.41
3	-37.09	14.41
4	-37.19	14.31
5	-36.98	14.52
6	-37.17	14.33
7	-37.05	14.45
8	-36.85	14.65
9	-36.84	14.66
10	-36.75	14.75
15	-37.16	14.34
20	-36.44	15.06
25	-37.88	13.62
30	-39.14	12.36

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61060

CALIBRATION DATE: JULY 27, 2017

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	23.80	200	14.10
35	24.00	250	15.30
40	24.70	300	17.70
45	22.90	350	17.70
50	22.10	400	19.00
60	17.60	450	21.30
70	12.70	500	21.00
80	11.20	550	22.30
90	13.10	600	23.40
100	14.40	650	22.90
120	15.30	700	24.60
125	15.00	750	24.50
140	12.80	800	25.40
150	16.50	850	26.40
160	12.90	900	27.20
175	14.30	950	27.80
180	14.50	1000	26.80

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: FEBRUARY 22, 2018

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.71	10.0	40.08
1.5	25.46	10.5	40.75
2.0	29.26	11.0	41.78
2.5	27.95	11.5	41.02
3.0	29.03	12.0	40.32
3.5	29.70	12.5	40.96
4.0	30.71	13.0	40.29
4.5	31.62	13.5	39.48
5.0	33.23	14.0	39.89
5.5	35.07	14.5	42.75
6.0	34.43	15.0	40.98
6.5	34.98	15.5	38.54
7.0	36.75	16.0	39.40
7.5	37.10	16.5	39.40
8.0	37.66	17.0	41.74
8.5	39.29	17.5	42.58
9.0	37.75	18.0	44.68
9.5	38.23		

COM-POWER PAM-118A

PREAMPLIFIER

S/N: 551024

CALIBRATION DATE: MAY 10, 2018

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.99	6.0	39.01
1.1	39.77	6.5	39.00
1.2	39.02	7.0	39.69
1.3	39.44	7.5	38.96
1.4	39.64	8.0	38.57
1.5	40.23	8.5	39.17
1.6	40.17	9.0	38.82
1.7	40.23	9.5	39.30
1.8	39.48	10.0	38.90
1.9	39.85	11.0	38.86
2.0	39.99	12.0	39.87
2.5	40.38	13.0	39.55
3.0	40.64	14.0	38.92
3.5	40.68	15.0	39.33
4.0	40.87	16.0	39.60
4.5	40.04	17.0	40.28
5.0	39.54	18.0	39.58
5.5	39.58		

COM-POWER AH-826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

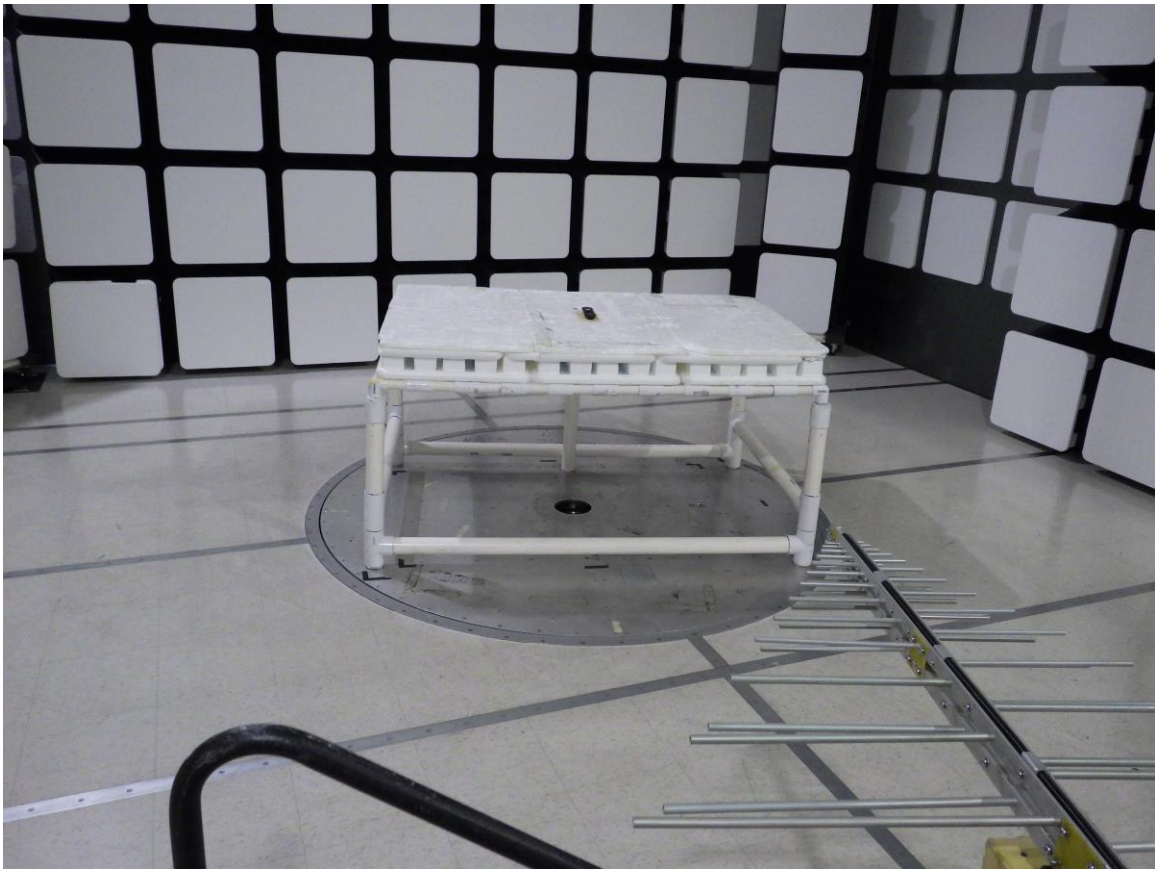
COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MAY 10, 2018

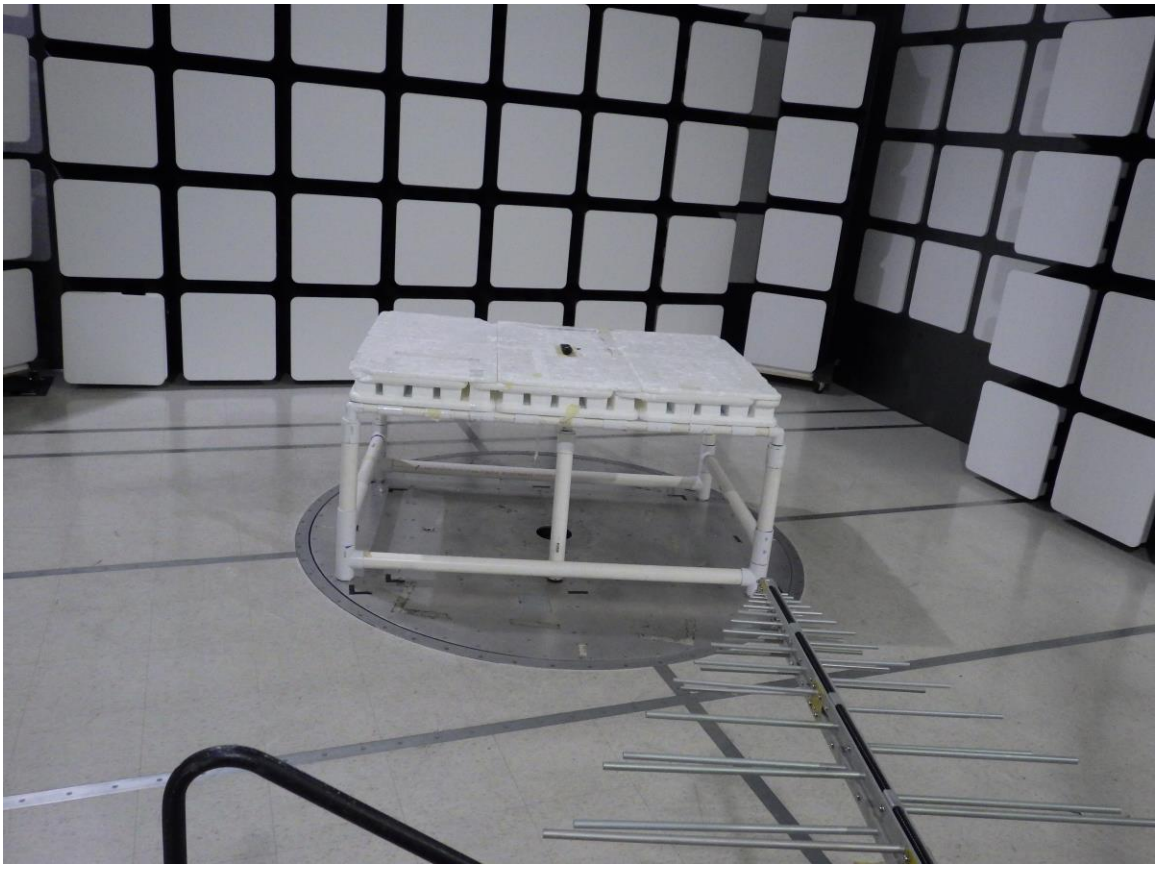
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.90	31.0	24.56
19.0	24.65	31.5	25.84
20.0	25.74	32.0	26.93
21.0	24.78	32.5	27.76
22.0	24.83	33.0	25.76
23.0	24.81	33.5	26.76
24.0	25.52	34.0	26.51
25.0	24.90	34.5	27.49
26.0	25.92	35.0	27.64
26.5	26.53	35.5	27.45
27.0	26.41	36.0	25.08
27.5	24.78	36.5	25.61
28.0	25.13	37.0	24.69
28.5	29.29	37.5	24.10
29.0	28.44	38.0	24.83
29.5	27.51	38.5	24.41
30.0	27.12	39.0	24.44
30.5	26.42	39.5	22.96
		40.0	22.29



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE REMOTE 2018
MODEL: R37023BA00-00001
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

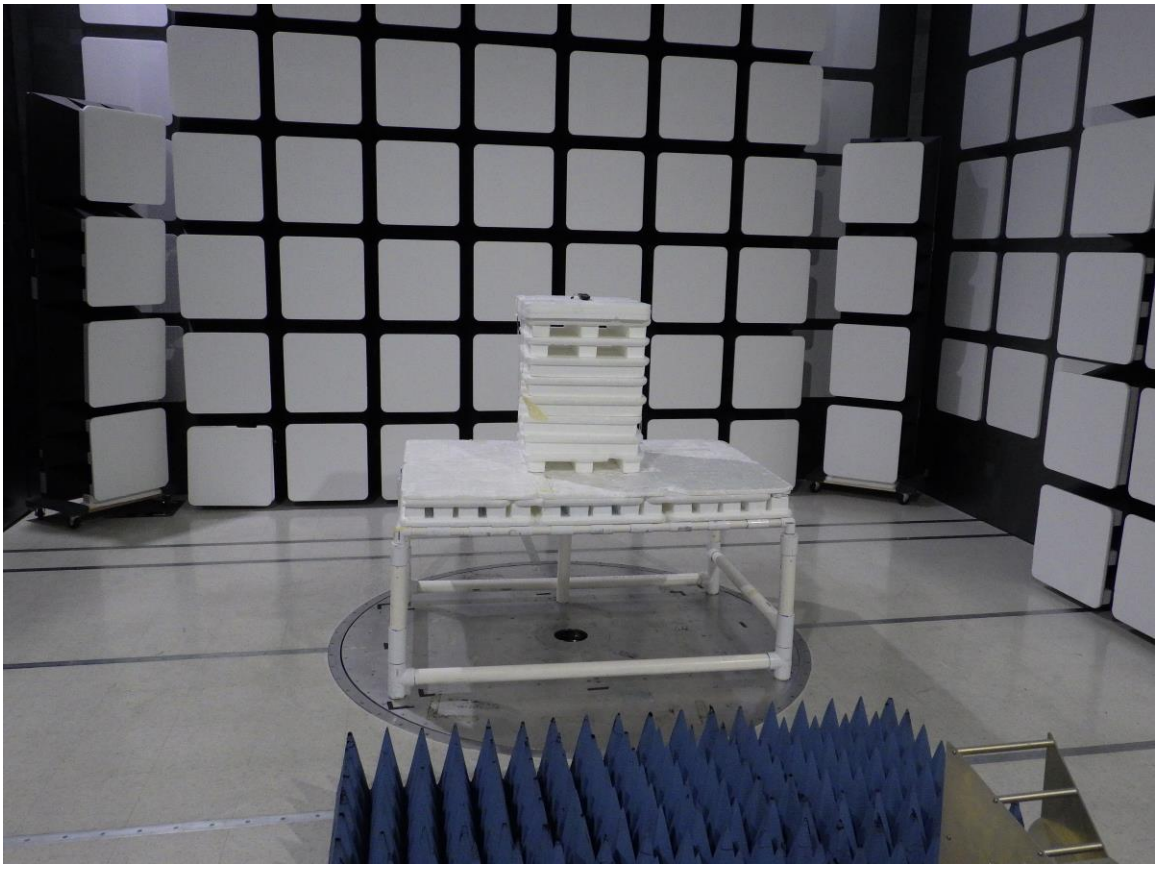
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO Creek Android Voice Remote 2018
MODEL: R37023BA00-00001
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

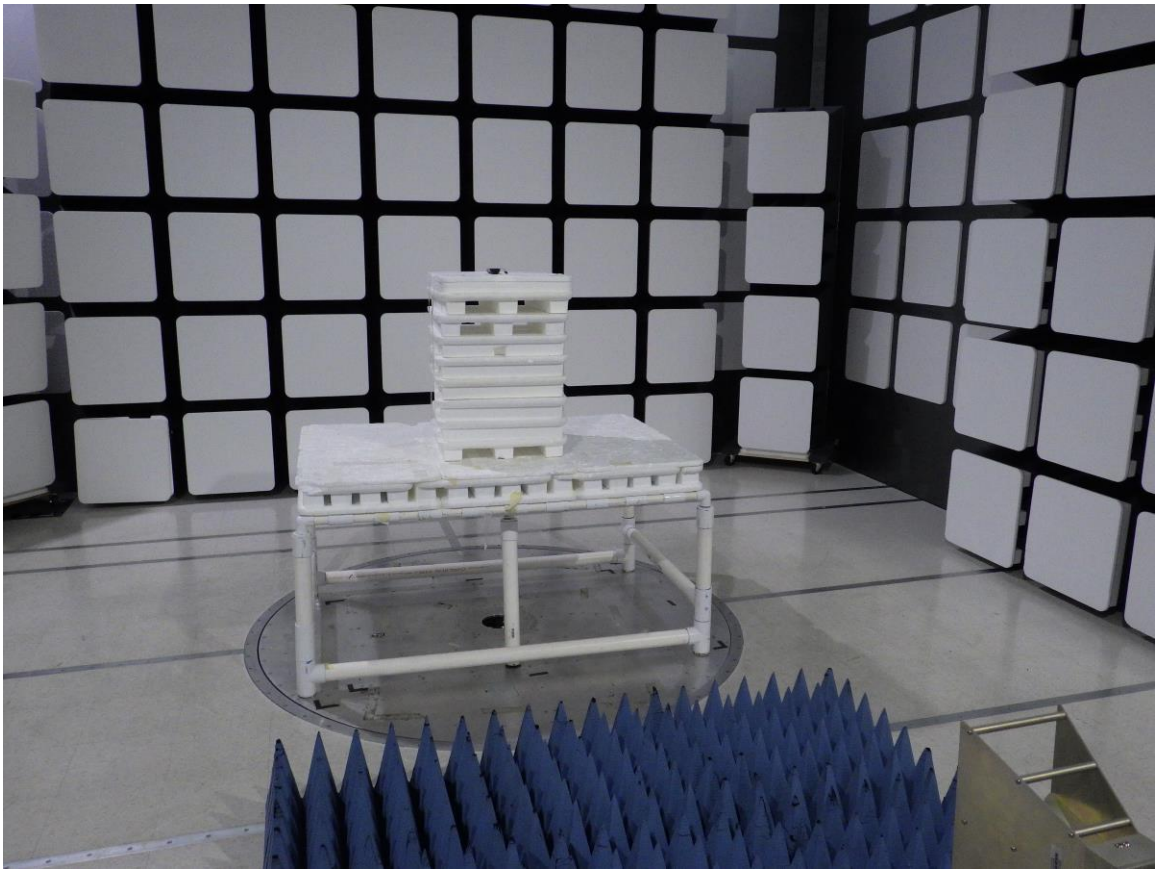
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE REMOTE 2018
MODEL: R37023BA00-00001
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE REMOTE 2018
MODEL: R37023BA00-00001
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONs

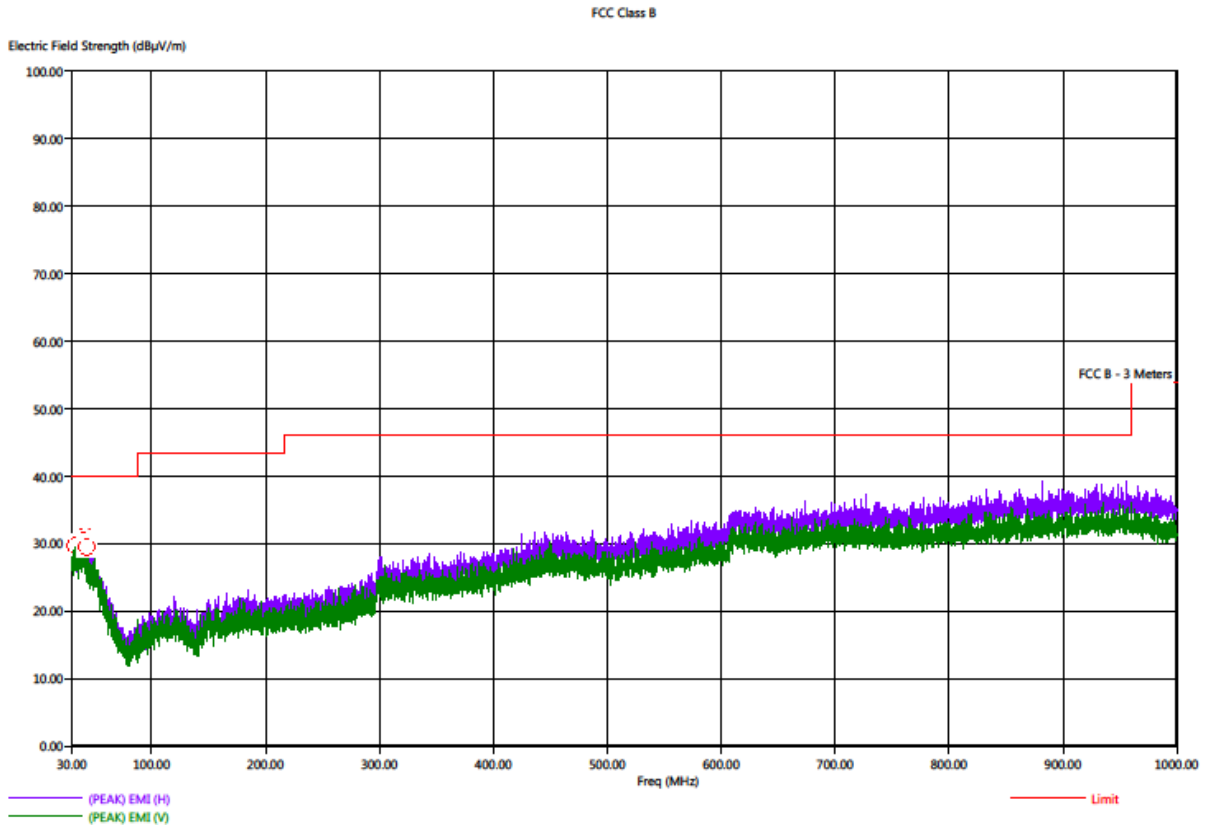
APPENDIX E

RADIATED DATA SHEETS

RADIATED EMISSIONS DATA SHEETS

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - FCC Class B - 30 MHz to 1000 MHz.set
Operator: Tom Szynal
EUT Type: TIVO Creek Android Voice Remote 2018
EUT Condition: EUT is continuously transmitting - X-Axis Worst Case
Comments: Company: Universal Electronics, Inc.
Model: R37023BA00-00001
S/N: N/A

8/28/2018 9:19:56 AM
Sequence: Preliminary Scan



TIVO Creek Android Voice Remote 2018

Title: Radiated Final - FCC Class B
File: Agilent - Final Scan - FCC Class B - 30 MHz to 1000 MHz.set
Operator: Tom Szynal
EUT Type: TIVO Creek Android Voice Remote 2018
EUT Condition: EUT is continuously transmitting -X-Axis Worst Case
Comments: Company: Universal Electronics, Inc.
Model: R37023BA00-00001
S/N: N/A

8/28/2018 9:40:36 AM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
33.20	H	31.78	27.14	-8.22	-12.86	40.00	23.93	0.84	135.50	286.73
37.90	H	32.01	26.75	-7.99	-13.25	40.00	24.44	0.88	180.25	222.79
38.60	H	31.87	26.84	-8.13	-13.16	40.00	24.54	0.89	0.00	222.97
40.00	H	31.71	27.01	-8.29	-12.99	40.00	24.69	0.90	56.25	286.73
41.70	H	31.25	26.24	-8.75	-13.76	40.00	24.06	0.90	223.25	350.85
42.80	V	30.89	25.72	-9.11	-14.28	40.00	23.68	0.90	183.75	381.53

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Fundamental
Low Channel

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402.00	88.52	V	113.97	-25.45	Peak	203.00	245.77	**X-Axis**
2402.00	68.52	V	93.97	-25.45	Avg	203.00	245.77	**Vertical Polarization**
2402.00	96.01	V	113.97	-17.96	Peak	289.25	103.02	**Y-Axis**
2402.00	76.01	V	93.97	-17.96	Avg	289.25	103.02	**Vertical Polarization**
2402.00	94.53	V	113.97	-19.44	Peak	294.75	133.77	**Z-Axis**
2402.00	74.53	V	93.97	-19.44	Avg	294.75	133.77	**Vertical Polarization**
2402.00	99.12	H	113.97	-14.85	Peak	39.75	152.34	**X-Axis**
2402.00	79.12	H	93.97	-14.85	Avg	39.75	152.34	**Horizontal Polarization**
2402.00	87.62	H	113.97	-26.35	Peak	42.00	105.47	**Y-Axis**
2402.00	67.62	H	93.97	-26.35	Avg	42.00	105.47	**Horizontal Polarization**
2402.00	96.59	H	113.97	-17.38	Peak	11.50	165.41	**Z-Axis**
2402.00	76.59	H	93.97	-17.38	Avg	11.50	165.41	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Fundamental
Middle Channel

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442.00	88.88	V	113.97	-25.09	Peak	8.75	181.71	**X-Axis**
2442.00	68.88	V	93.97	-25.09	Avg	8.75	181.71	**Vertical Polarization**
2442.00	95.81	V	113.97	-18.16	Peak	95.81	101.23	**Y-Axis**
2442.00	75.81	V	93.97	-18.16	Avg	95.81	101.23	**Vertical Polarization**
2442.00	95.45	V	113.97	-18.52	Peak	76.50	179.50	**Z-Axis**
2442.00	75.45	V	93.97	-18.52	Avg	76.50	179.50	**Vertical Polarization**
2442.00	96.95	H	113.97	-17.02	Peak	29.75	144.88	**X-Axis**
2442.00	76.95	H	93.97	-17.02	Avg	29.75	144.88	**Horizontal Polarization**
2442.00	89.97	H	113.97	-24.00	Peak	130.00	97.89	**Y-Axis**
2442.00	69.97	H	93.97	-24.00	Avg	130.00	97.89	**Horizontal Polarization**
2442.00	97.35	H	113.97	-16.62	Peak	199.50	149.89	**Z-Axis**
2442.00	77.35	H	93.97	-16.62	Avg	199.50	149.89	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Fundamental
High Channel

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480.00	91.68	V	113.97	-22.29	Peak	7.75	220.58	**X-Axis**
2480.00	71.68	V	93.97	-22.29	Avg	7.75	220.58	**Vertical Polarization**
2480.00	95.75	V	113.97	-18.23	Peak	311.00	100.00	**Y-Axis**
2480.00	75.75	V	93.97	-18.23	Avg	311.00	100.00	**Vertical Polarization**
2480.00	94.76	V	113.97	-19.21	Peak	54.00	174.43	**Z-Axis**
2480.00	74.76	V	93.97	-19.21	Avg	54.00	174.43	**Vertical Polarization**
2480.00	98.68	H	113.97	-15.29	Peak	52.25	100.94	**X-Axis**
2480.00	78.68	H	93.97	-15.29	Avg	52.25	100.94	**Horizontal Polarization**
2480.00	88.62	H	113.97	-25.35	Peak	355.75	170.61	**Y-Axis**
2480.00	68.62	H	93.97	-25.35	Avg	355.75	170.56	**Horizontal Polarization**
2480.00	96.21	H	113.97	-17.76	Peak	199.50	111.56	**Z-Axis**
2480.00	76.21	H	93.97	-17.76	Avg	199.50	111.56	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	50.06	V	73.97	-23.91	Peak	151.75	244.10	
4804.00	30.06	V	53.97	-23.91	Avg	151.75	244.10	
7206.00	49.22	V	73.97	-24.75	Peak	160.00	100.00	
7206.00	29.22	V	53.97	-24.75	Avg	160.00	100.00	
9608.00	56.27	V	73.97	-17.70	Peak	328.50	100.00	
9608.00	36.27	V	53.97	-17.70	Avg	328.50	100.00	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	57.47	V	73.97	-16.50	Peak	110.00	119.68	
4804.00	37.47	V	53.97	-16.50	Avg	110.00	119.68	
7206.00	54.33	V	73.97	-19.64	Peak	112.75	100.00	
7206.00	34.33	V	53.97	-19.64	Avg	112.75	100.00	
9608.00	56.82	V	73.97	-17.16	Peak	330.75	116.46	
9608.00	36.82	V	53.97	-17.16	Avg	330.75	116.46	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	51.78	V	73.97	-22.19	Peak	114.75	100.00	
4804.00	31.78	V	53.97	-22.19	Avg	114.75	100.00	
7206.00	55.74	V	73.97	-18.24	Peak	157.50	190.43	
7206.00	35.74	V	53.97	-18.24	Avg	157.50	190.43	
9608.00	54.80	V	73.97	-19.17	Peak	358.25	100.00	
9608.00	34.80	V	53.97	-19.17	Avg	358.25	100.00	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	58.90	H	73.97	-15.07	Peak	208.25	155.08	
4804.00	38.90	H	53.97	-15.07	Avg	208.25	155.08	
7206.00	56.50	H	73.97	-17.47	Peak	221.50	153.59	
7206.00	36.50	H	53.97	-17.47	Avg	221.50	153.59	
9608.00	57.31	H	73.97	-16.66	Peak	236.00	100.00	
9608.00	37.31	H	53.97	-16.66	Avg	236.00	100.00	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	51.88	H	73.97	-22.09	Peak	39.25	143.44	
4804.00	31.88	H	53.97	-22.09	Avg	39.25	143.44	
7206.00	49.07	H	73.97	-24.90	Peak	165.00	100.00	
7206.00	29.07	H	53.97	-24.90	Avg	165.00	100.00	
9608.00	54.27	H	73.97	-19.71	Peak	154.50	250.00	
9608.00	34.27	H	53.97	-19.71	Avg	154.50	250.00	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	55.95	H	73.97	-18.02	Peak	310.50	127.56	
4804.00	35.95	H	53.97	-18.02	Avg	310.50	127.56	
7206.00	55.78	H	73.97	-18.19	Peak	232.00	212.64	
7206.00	35.78	H	53.97	-18.19	Avg	232.00	212.64	
9608.00	55.70	H	73.97	-18.27	Peak	224.00	100.00	
9608.00	35.70	H	53.97	-18.27	Avg	224.00	100.00	
12010.00								**No Emission**
12010.00								**Detected**
14412.00								**No Emission**
14412.00								**Detected**
16814.00								**No Emission**
16814.00								**Detected**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	51.59	V	73.97	-22.38	Peak	185.00	217.05	
4884.00	31.59	V	53.97	-22.38	Avg	185.00	217.05	
7326.00	50.82	V	73.97	-23.15	Peak	181.50	100.00	
7326.00	30.82	V	53.97	-23.15	Avg	181.50	100.00	
9768.00	56.45	V	73.97	-17.52	Peak	329.25	100.00	
9768.00	36.45	V	53.97	-17.52	Avg	329.25	100.00	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	53.16	V	73.97	-20.81	Peak	172.00	100.00	
4884.00	33.16	V	53.97	-20.81	Avg	172.00	100.00	
7326.00	52.02	V	73.97	-21.95	Peak	179.50	114.61	
7326.00	32.02	V	53.97	-21.95	Avg	179.50	114.61	
9768.00	56.76	V	73.97	-17.21	Peak	120.00	154.91	
9768.00	36.76	V	53.97	-17.21	Avg	120.00	154.91	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	50.35	V	73.97	-23.62	Peak	161.00	182.07	
4884.00	30.35	V	53.97	-23.62	Avg	161.00	182.07	
7326.00	50.16	V	73.97	-23.81	Peak	201.75	106.31	
7326.00	30.16	V	53.97	-23.81	Avg	201.75	106.31	
9768.00	55.44	V	73.97	-18.53	Peak	172.75	147.92	
9768.00	35.44	V	53.97	-18.53	Avg	172.75	147.92	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	59.00	H	73.97	-14.97	Peak	50.25	145.23	
4884.00	39.00	H	53.97	-14.97	Avg	50.25	145.23	
7326.00	55.53	H	73.97	-18.44	Peak	33.00	145.35	
7326.00	35.53	H	53.97	-18.44	Avg	33.00	145.35	
9768.00	57.30	H	73.97	-16.67	Peak	119.75	100.00	
9768.00	37.30	H	53.97	-16.67	Avg	119.75	100.00	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	49.36	H	73.97	-24.61	Peak	151.00	218.31	
4884.00	29.36	H	53.97	-24.61	Avg	151.00	218.31	
7326.00	51.17	H	73.97	-22.81	Peak	360.00	175.38	
7326.00	31.17	H	53.97	-22.81	Avg	360.00	175.38	
9768.00	55.67	H	73.97	-18.30	Peak	127.00	124.94	
9768.00	35.67	H	53.97	-18.30	Avg	127.00	124.94	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - Middle Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4884.00	55.93	V	73.97	-18.04	Peak	349.00	127.80	
4884.00	35.93	V	53.97	-18.04	Avg	349.00	127.80	
7326.00	54.59	V	73.97	-19.38	Peak	135.50	230.31	
7326.00	34.59	V	53.97	-19.38	Avg	135.50	230.31	
9768.00	55.18	V	73.97	-18.80	Peak	324.75	145.00	
9768.00	35.18	V	53.97	-18.80	Avg	324.75	145.00	
12210.00								**No Emission**
12210.00								**Detected**
14652.00								**No Emission**
14652.00								**Detected**
17094.00								**No Emission**
17094.00								**Detected**
19536.00								**No Emission**
19536.00								**Detected**
21978.00								**No Emission**
21978.00								**Detected**
24420.00								**No Emission**
24420.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	48.96	V	73.97	-25.01	Peak	185.00	245.95	
4960.00	28.96	V	53.97	-25.01	Avg	185.00	245.95	
7440.00	50.18	V	73.97	-23.79	Peak	197.75	100.00	
7440.00	30.18	V	53.97	-23.79	Avg	197.75	100.00	
9920.00	48.06	V	73.97	-25.91	Peak	319.00	100.00	
9920.00	28.06	V	53.97	-25.91	Avg	319.00	100.00	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	57.01	V	73.97	-16.96	Peak	133.25	114.91	
4960.00	37.01	V	53.97	-16.96	Avg	133.25	114.91	
7440.00	53.81	V	73.97	-20.16	Peak	360.00	100.00	
7440.00	33.81	V	53.97	-20.16	Avg	360.00	100.00	
9920.00	54.51	V	73.97	-19.46	Peak	357.25	100.00	
9920.00	34.51	V	53.97	-19.46	Avg	357.25	100.00	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	52.52	V	73.97	-21.45	Peak	309.75	178.25	
4960.00	32.52	V	53.97	-21.45	Avg	309.75	178.25	
7440.00	51.17	V	73.97	-22.81	Peak	359.75	181.89	
7440.00	31.17	V	53.97	-22.81	Avg	356.75	181.89	
9920.00	55.68	V	73.97	-18.29	Peak	39.50	100.00	
9920.00	35.68	V	53.97	-18.29	Avg	39.50	100.00	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

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Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	58.50	H	73.97	-15.47	Peak	50.00	100.00	
4960.00	38.50	H	53.97	-15.47	Avg	50.00	100.00	
7440.00	56.45	H	73.97	-17.53	Peak	35.00	100.00	
7440.00	36.45	H	53.97	-17.53	Avg	35.00	100.00	
9920.00	57.49	H	73.97	-16.48	Peak	319.50	100.10	
9920.00	37.49	H	53.97	-16.48	Avg	319.50	100.10	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

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Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	51.49	H	73.97	-22.48	Peak	332.00	171.20	
4960.00	31.49	H	53.97	-22.48	Avg	332.00	171.20	
7440.00	51.69	H	73.97	-22.28	Peak	183.50	124.88	
7440.00	31.69	H	53.97	-22.28	Avg	183.50	124.88	
9920.00	54.09	H	73.97	-19.88	Peak	333.00	131.32	
9920.00	34.09	H	53.97	-19.88	Avg	333.00	131.32	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

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Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Harmonics - High Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	58.19	H	73.97	-15.78	Peak	31.00	100.00	
4960.00	38.19	H	53.97	-15.78	Avg	31.00	100.00	
7440.00	54.67	H	73.97	-19.30	Peak	250.25	100.00	
7440.00	34.67	H	53.97	-19.30	Avg	250.25	100.00	
9920.00	57.32	H	73.97	-16.65	Peak	329.00	100.00	
9920.00	37.32	H	53.97	-16.65	Avg	329.00	100.00	
12400.00								**No Emission**
12400.00								**Detected**
14880.00								**No Emission**
14880.00								**Detected**
17360.00								**No Emission**
17360.00								**Detected**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

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Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz
Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz to 25 GHz

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
								No Emissions Detected
								from 9 kHz to 30 MHz
								for the digital portion
								of the EUT
								No Emissions Detected
								from 9 kHz to 30 MHz
								for the Non-Harmonic Emissions
								of the Transmitter for the EUT
								No Emissions Detected
								from 1 GHz to 25 GHz
								for the digital portion
								of the EUT
								No Emissions Detected
								from 1 GHz to 25 GHz
								for the Non-Harmonic Emissions
								of the Transmitter for the EUT
								Investigated in the X-Axis,
								Y-Axis, and Z-Axis

BAND EDGES DATA SHEETS

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Band Edges

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402.00	99.12	H	113.97	-14.85	Peak	39.75	152.34	**Fundamental - Low Ch.**
2402.00	79.12	H	93.97	-14.85	Avg	39.75	152.34	**X-Axis - Worst Case**
2400.00	67.91	H	73.97	-6.06	Peak	39.75	152.34	**Band Edge**
2400.00	47.91	H	53.97	-6.06	Avg	39.75	152.34	**X-Axis - Worst Case**
2337.72	51.04	H	73.97	-22.93	Peak	39.75	152.34	**Band Edge**
2338.14	44.49	H	53.97	-9.48	Avg	39.75	152.34	**X-Axis - Worst Case**
2402.00	96.01	V	113.97	-17.96	Peak	289.25	103.02	**Fundamental - Low Ch.**
2402.00	76.01	V	93.97	-17.96	Avg	289.25	103.02	**Y-Axis - Worst Case**
2400.00	64.40	V	73.97	-9.57	Peak	289.25	103.02	**Band Edge**
2400.00	44.40	V	53.97	-9.57	Avg	289.25	103.02	**Y-Axis - Worst Case**

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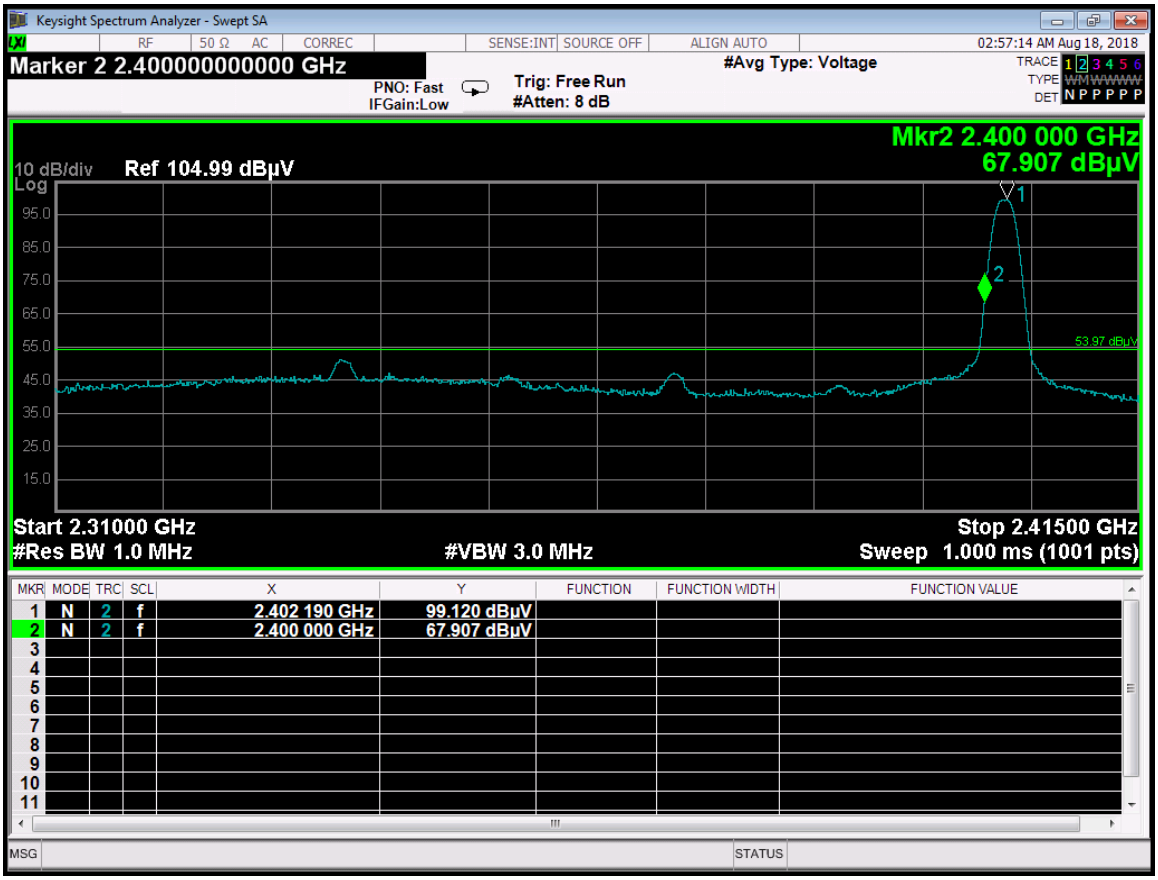
Universal Electronics, Inc.
TIVO Creek Android Voice Remote 2018
Model: R37023BA00-00001

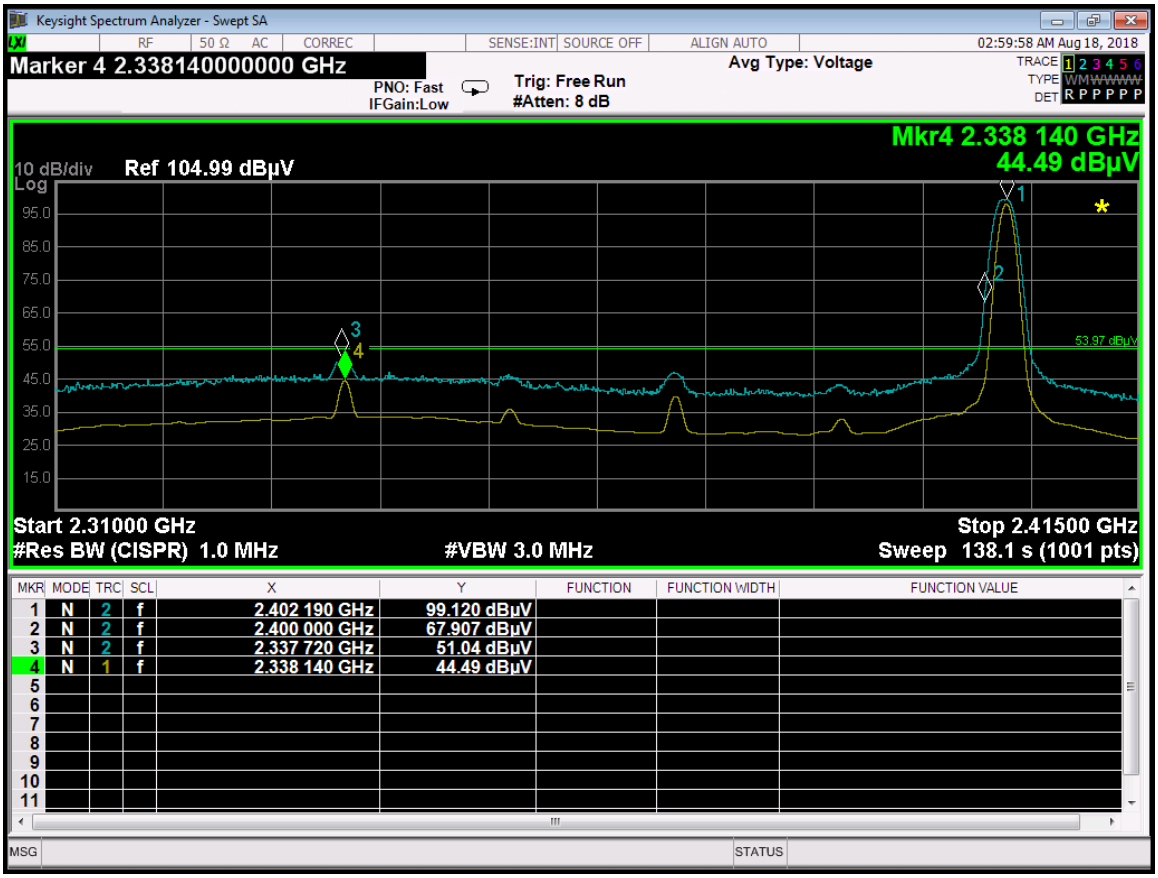
Date: 8/16/2018
Lab: D
Tested By: Johnny Le

Band Edges

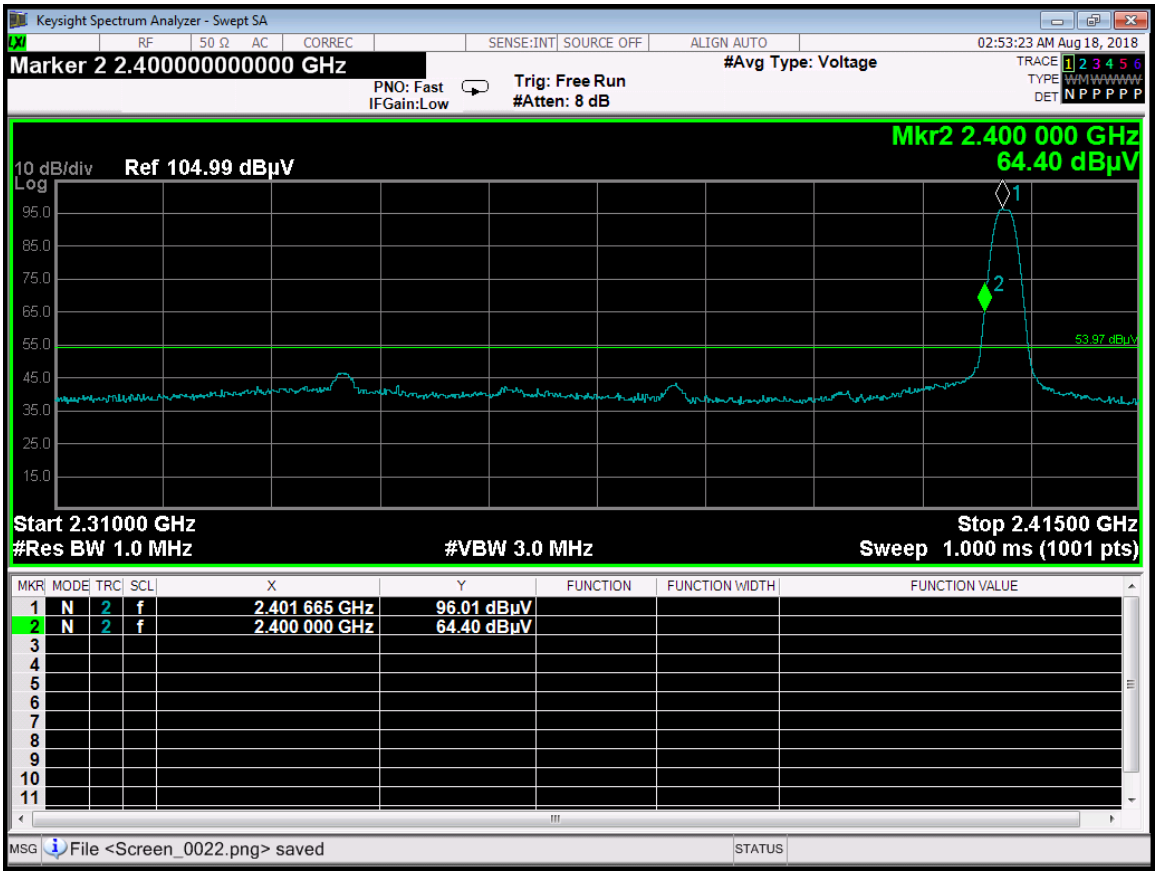
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480.00	98.68	H	113.97	-15.29	Peak	52.25	100.94	**Fundamental - High Ch.**
2480.00	78.68	H	93.97	-15.29	Avg	52.25	100.94	**X-Axis - Worst Case**
2483.50	44.87	H	73.97	-29.10	Peak	52.25	100.94	**Band Edge**
2483.50	24.87	H	53.97	-29.10	Avg	52.25	100.94	**X-Axis - Worst Case**
2480.00	95.75	V	113.97	-18.23	Peak	311.00	100.00	**Fundamental - High Ch.**
2480.00	75.75	V	93.97	-18.23	Avg	311.00	100.00	**Y-Axis - Worst Case**
2483.50	41.51	V	73.97	-32.46	Peak	311.00	100.00	**Band Edge**
2483.50	21.51	V	53.97	-32.46	Avg	311.00	100.00	**Y-Axis - Worst Case**



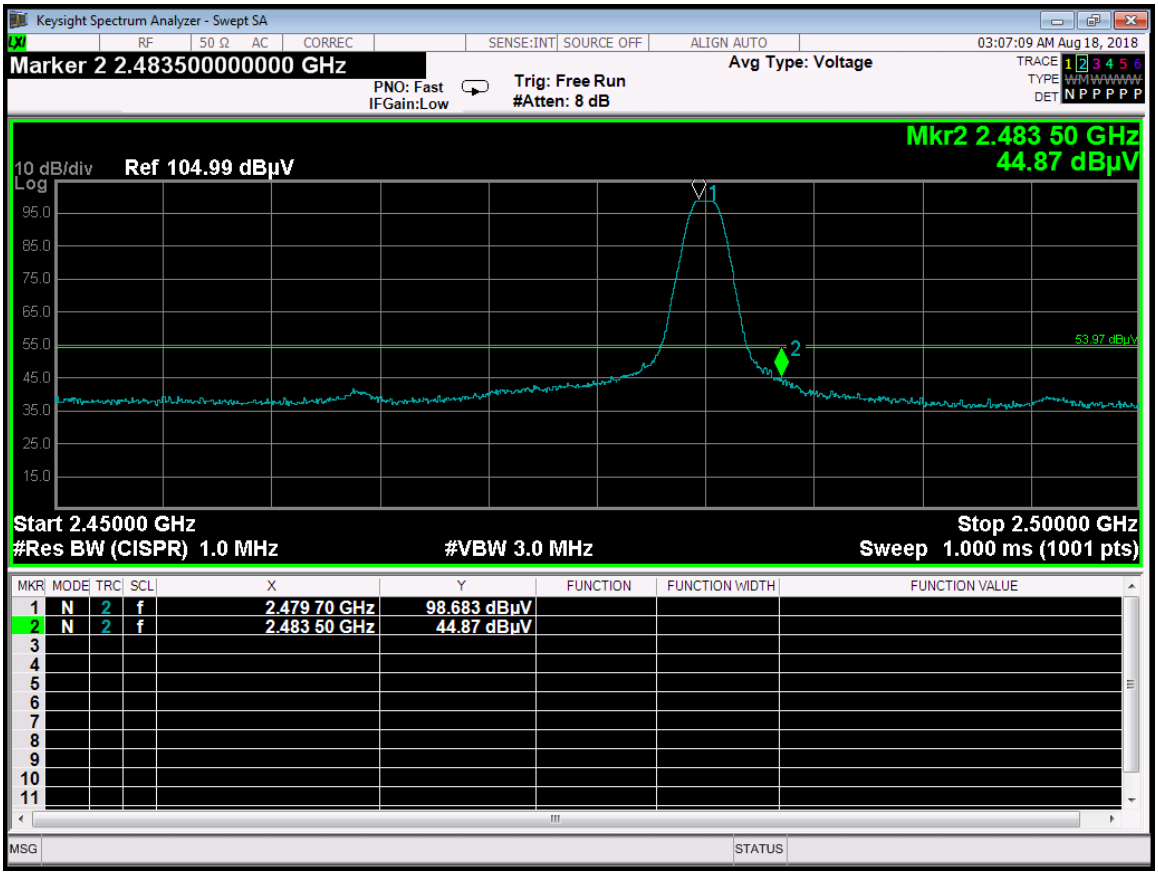
Band Edge - 2402 MHz - Horizontal - X-Axis - Worst Case



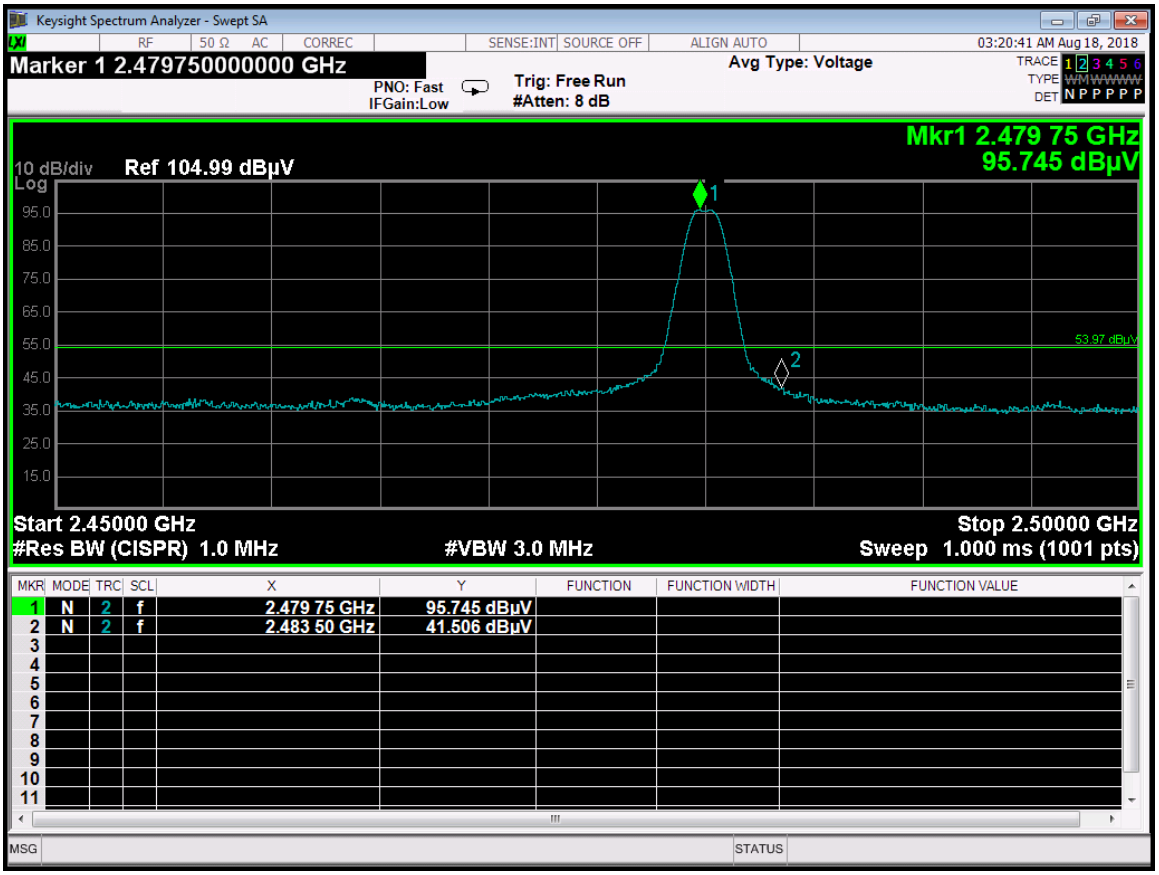
Band Edge – 2338.140 MHz - Horizontal - X-Axis - Worst Case



Band Edge - 2402 MHz - Vertical - Y-Axis - Worst Case

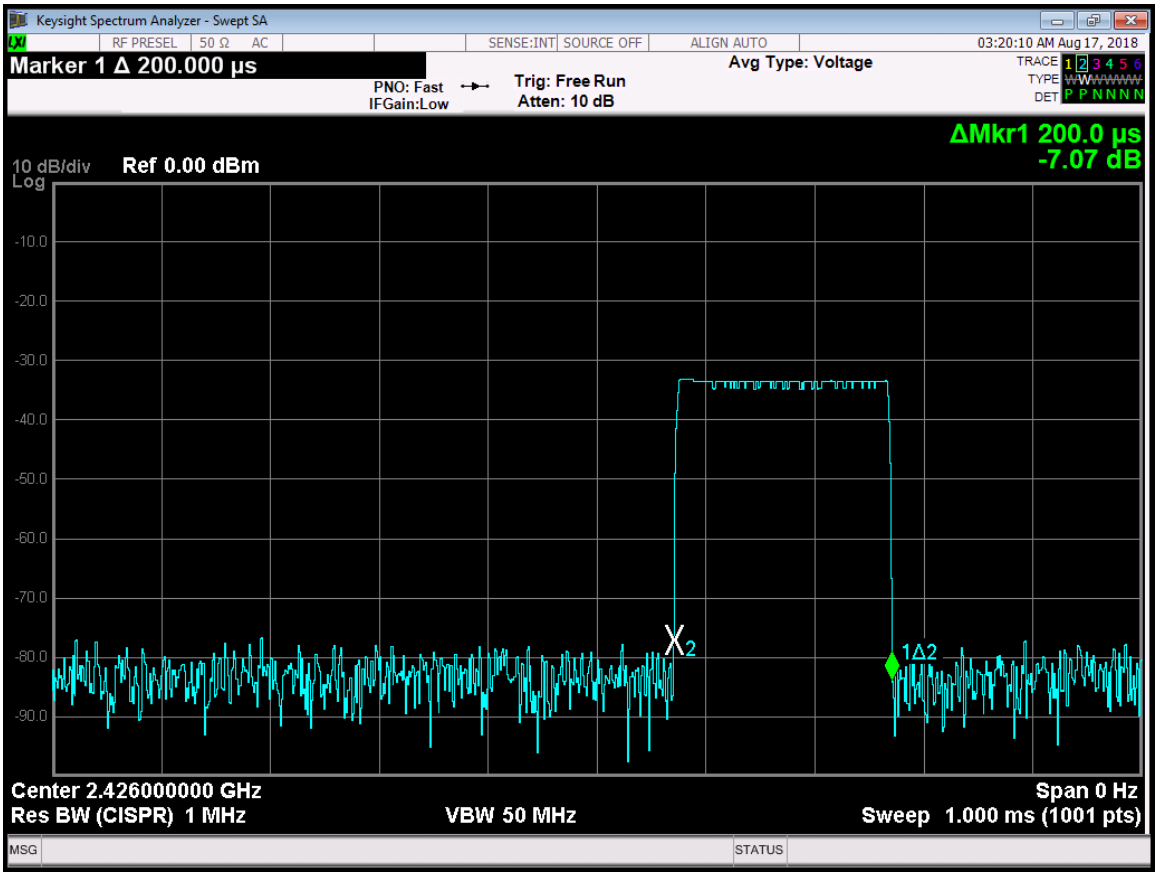


Band Edge - 2480 MHz - Horizontal - X-Axis - Worst Case

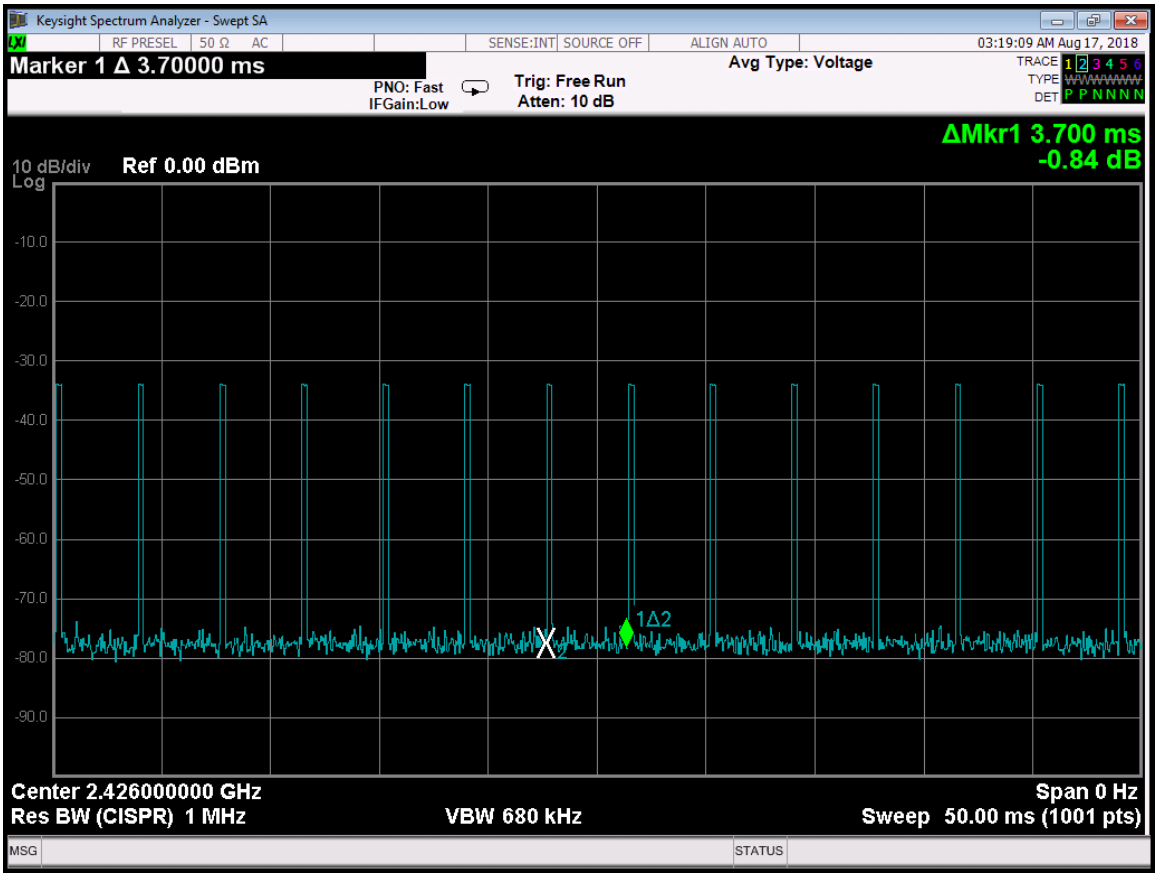


Band Edge – 2480 MHz - Vertical - Y-Axis - Worst Case

DUTY CYCLE DATA SHEETS



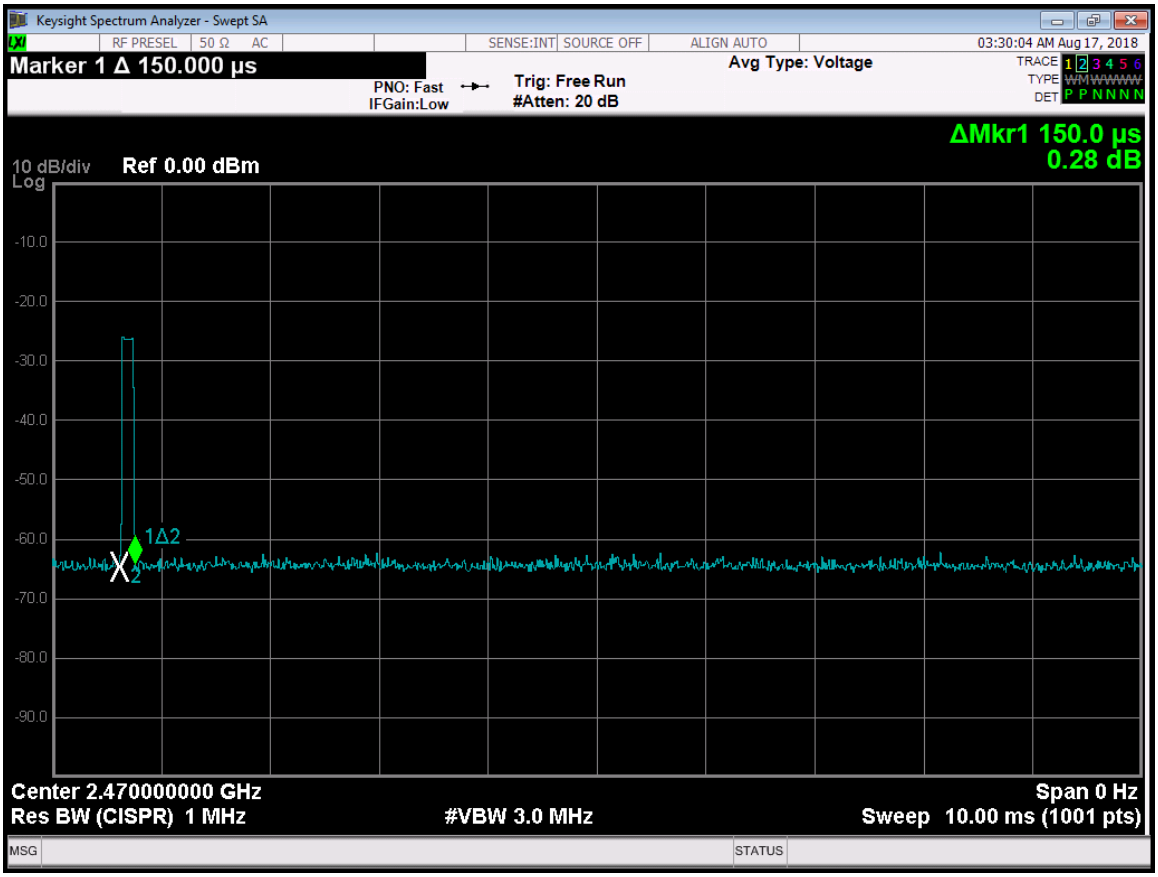
Time of Pulse = 200 us – Advertising Mode



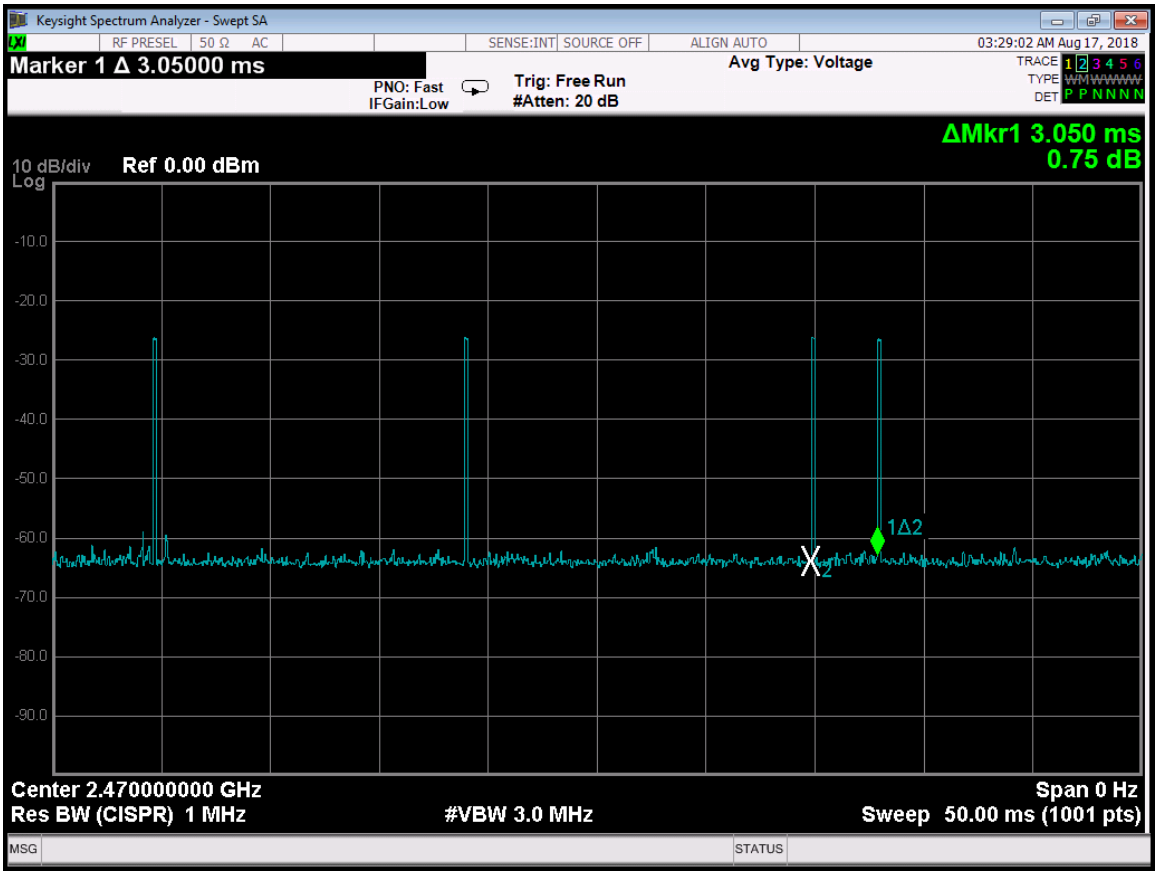
One pulse per 3.7 ms – Advertising Mode

Total Duty Cycle = 200 us / 3.7 ms = 5.405% Duty Cycle

The Maximum Peak to Average Ratio of -20 dB can be used



Time of One Pulse = 150 us – Data Mode

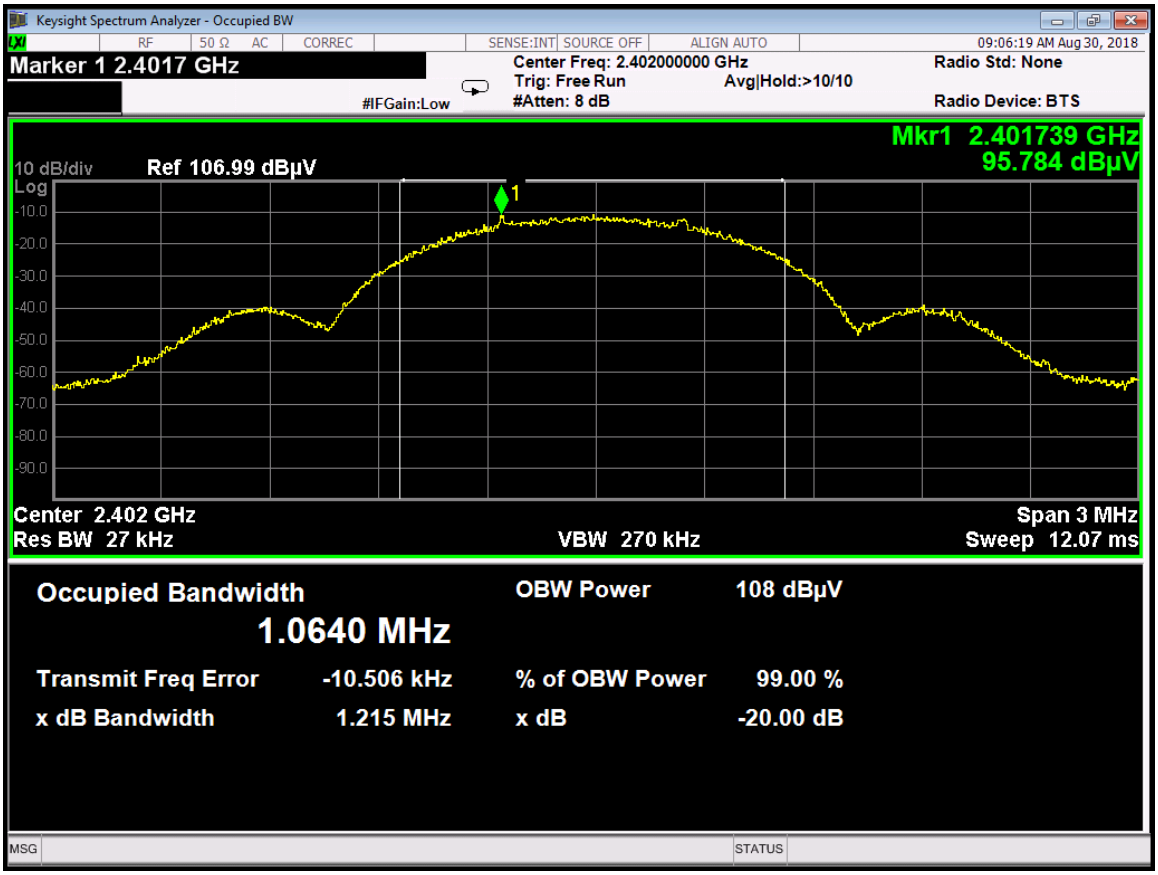


Time Between Pulses = 3.050 ms – Data Mode

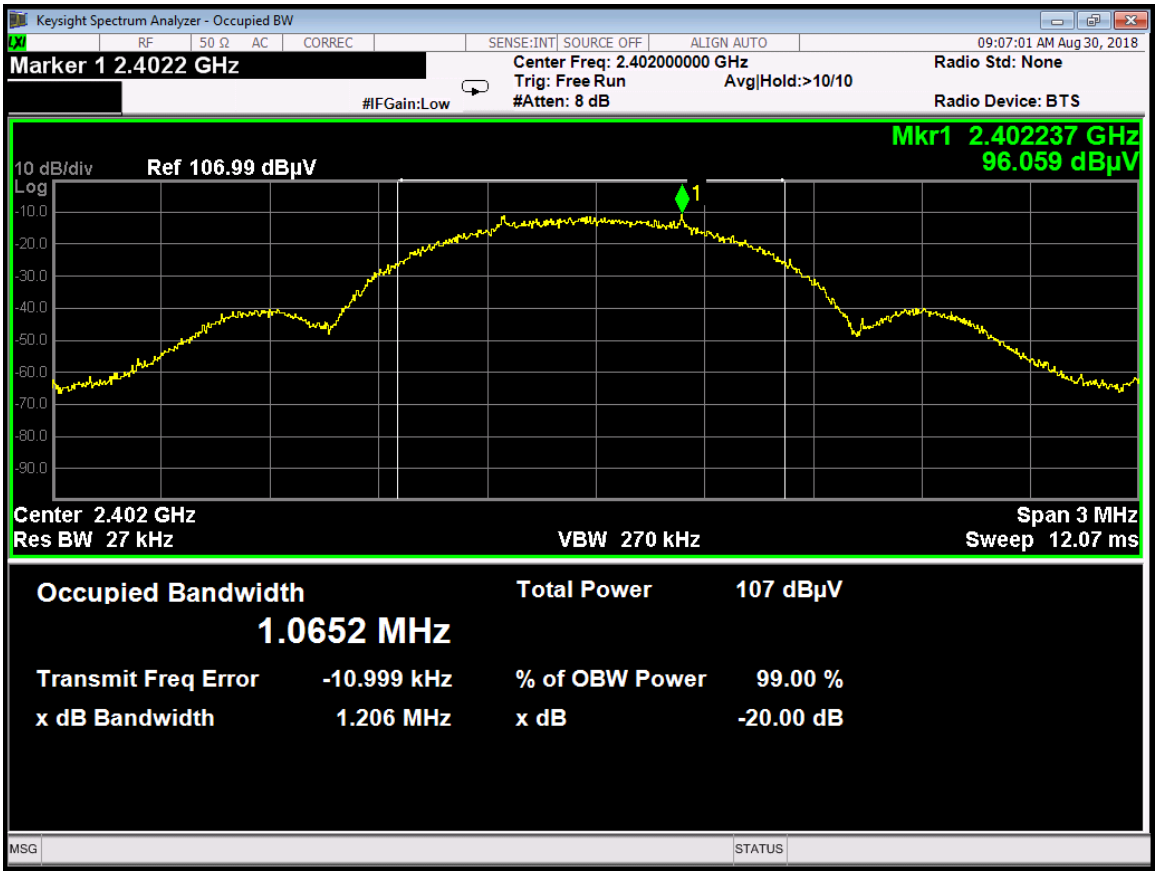
Total Duty Cycle = 150 us / 3.050 ms = 4.918%

The Maximum Peak to Average Ratio of -20 dB can be used

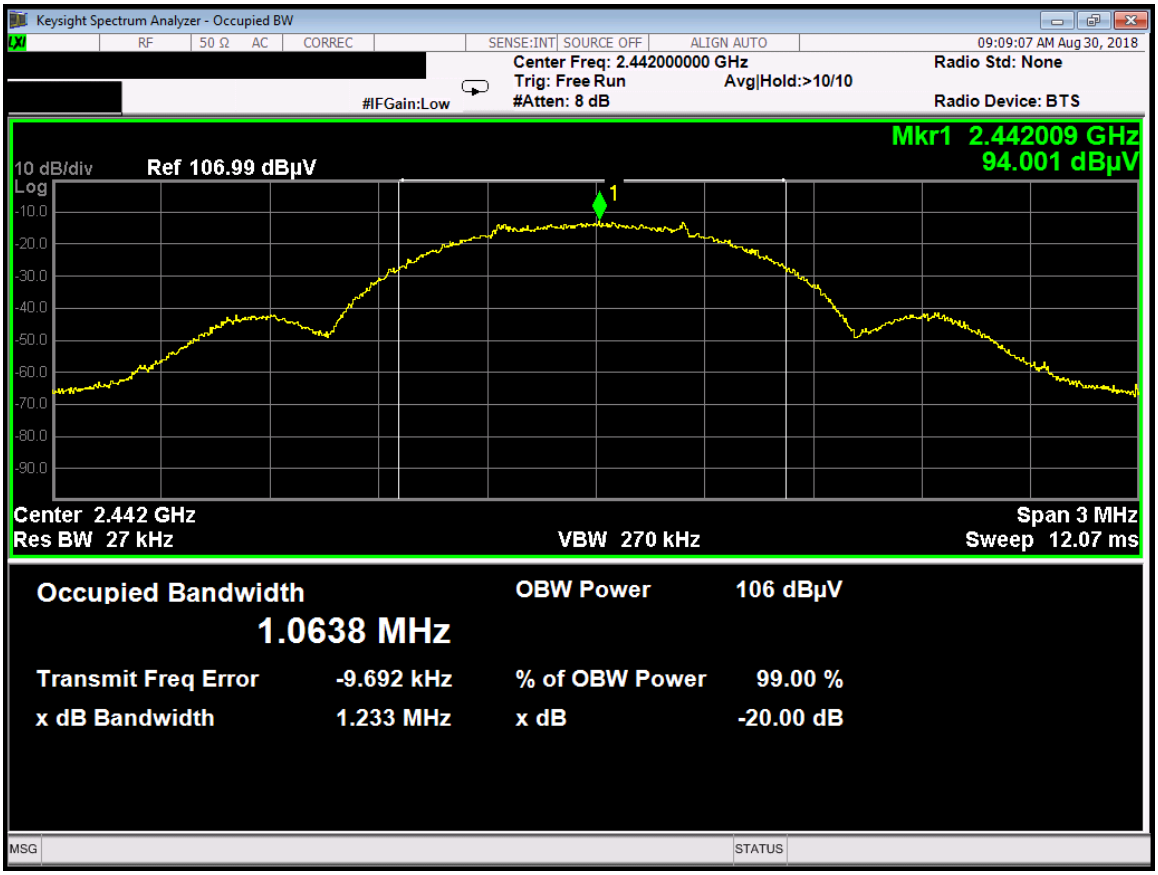
99 % BANDWIDTH DATA SHEETS



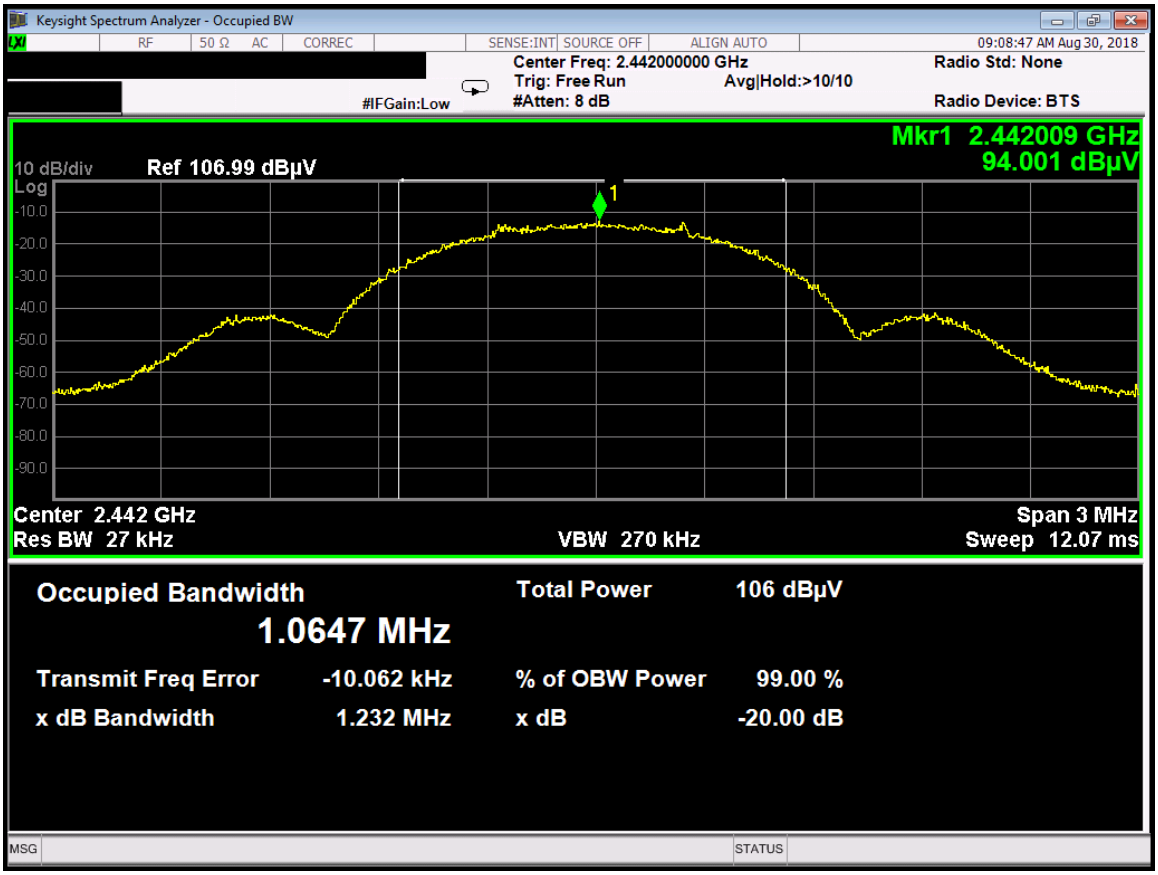
99 Percent Bandwidth - 2402 MHz -TIVO Creek Android Voice Remote 2018 - OBW Power



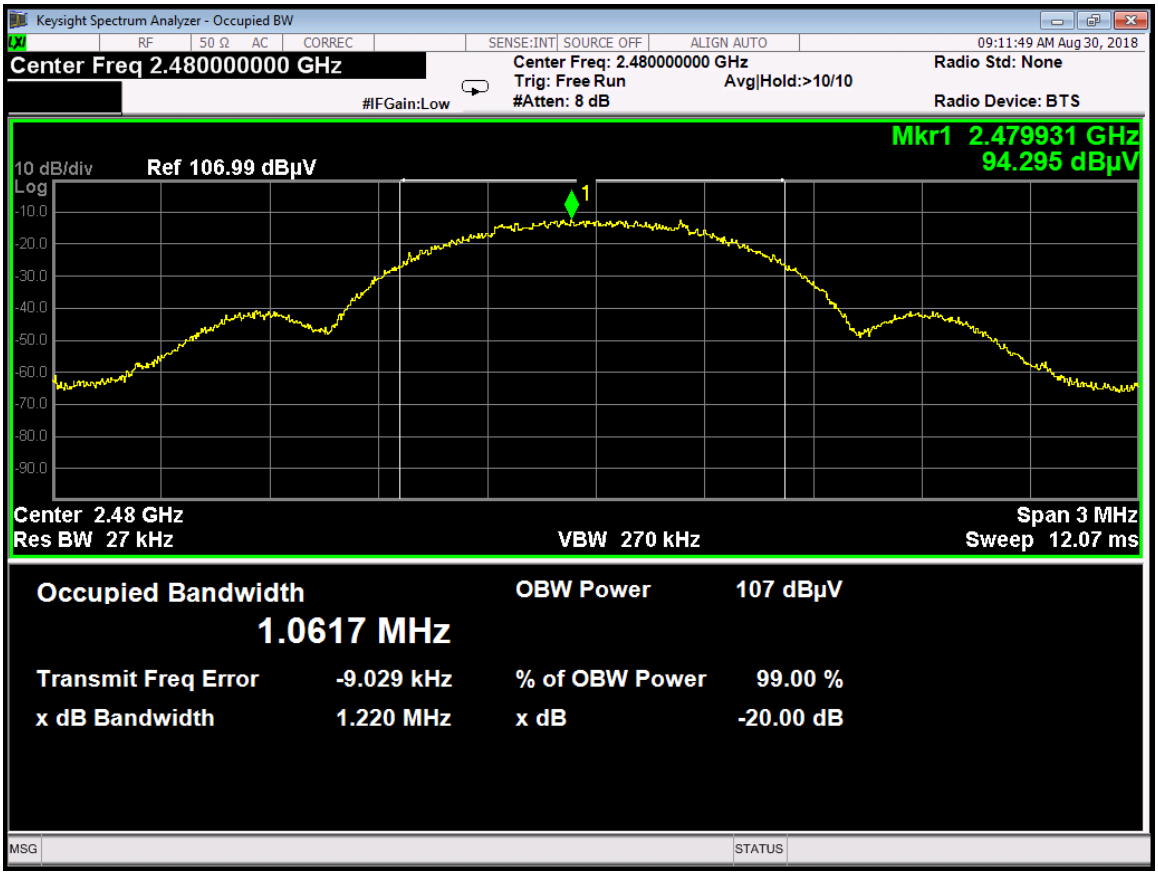
99 Percent Bandwidth - 2402 MHz - TIVO Creek Android Voice Remote 2018 - Total Power



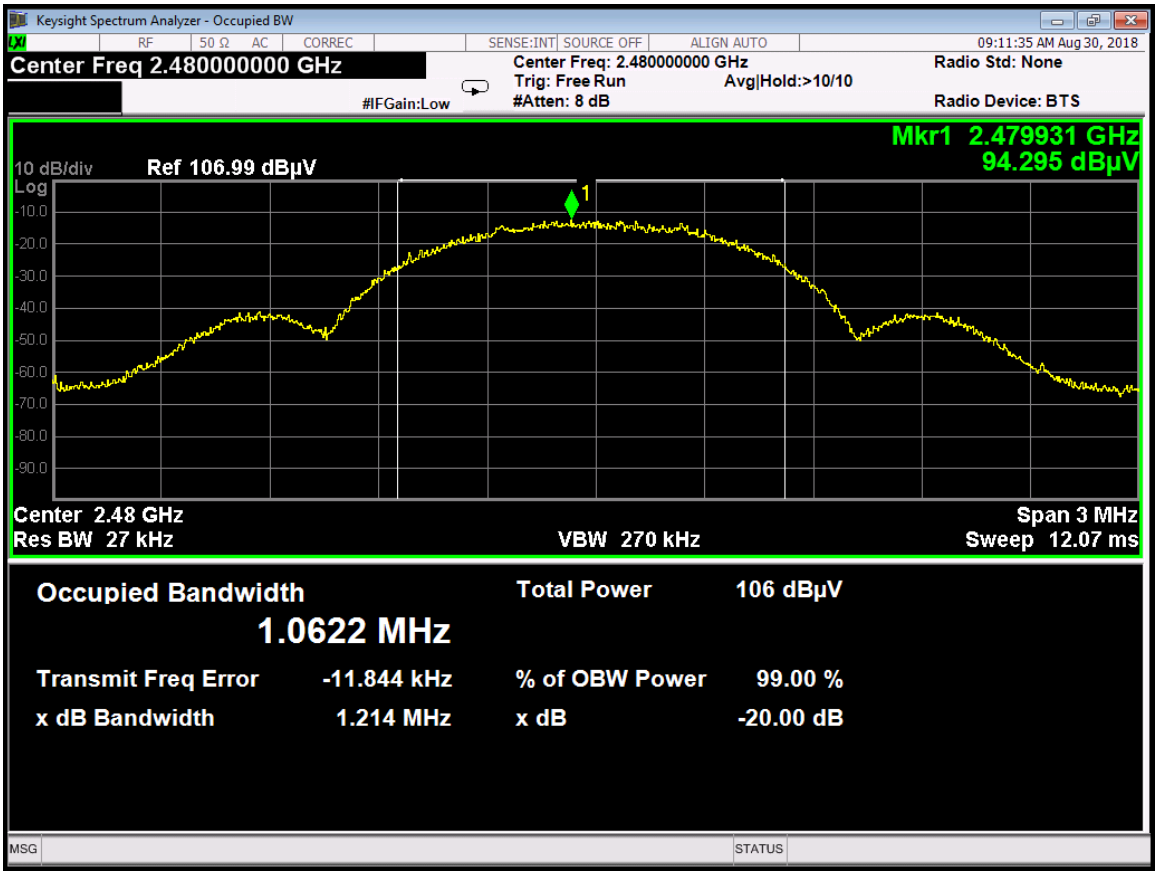
99 Percent Bandwidth - 2442 MHz - TIVO Creek Android Voice Remote 2018 - OBW Power



99 Percent Bandwidth - 2442 MHz - TIVO Creek Android Voice Remote 2018 - Total Power



99 Percent Bandwidth - 2480 MHz - TIVO Creek Android Voice Remote 2018 - OBW Power



99 Percent Bandwidth - 2480 MHz - TIVO Creek Android Voice Remote 2018 - Total Power