FCC PART 15, SUBPART B and C; FCC 15.249; RSS-210, RSS GEN
TEST REPORT

for

TIVO CREEK ANDROID VOICE RCU RETAIL 2019

Model: R37023BA00-00003

Prepared for

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DATE: FEBRUARY 11, 2020

	REPORT BODY		APPENDICES				TOTAL
		A	***B***	***C***	***D***	***E***	
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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.

The client must not use this report to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the U.S. government.

Device Tested:	TIVO Creek Android Voice RCU Retail 2019 Model: R37023BA00-00003 S/N: N/A
Product Description:	The TIVO Creek Android Voice RCU Retail 2019 (EUT) is a hand-held custom universal remote control with Bluetooth LE (BLE) and infrared (IR) support.
Modifications:	The EUT was not modified to meet the specifications.
Customer:	Universal Electronics, Inc. 201 East Sandpointe Avenue, 8th Floor Santa Ana, California 92707
Test Date:	April 22, 2020

Test Specifications covered by accreditation:

Test Specifications:	Emissions requirements CFR Title 47, Part 15, Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.249; RSS-210 Issue 10 (2019), and RSS-Gen Issue 5 (2018)

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Test Procedures:	ANSI C63.4: 2014 and ANSI C63.10: 2013
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz – 25000 MHz (Transmitter, Receiver, and Digital portion)	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15 Subpart C, section 15.205, 15.209 and 15.249; RSS-210 and RSS-Gen Highest reading in relation to spec limit 47.70 dBuV/m (AVG) @ 2400 MHz (*U = 3.95 dB)
2	Conducted RF Emissions 150 kHz – 30 MHz to **Class B** Limits	This test was not performed because the EUT operates on battery power only and cannot be connected to the AC public mains.

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the TIVO Creek Android Voice RCU Retail 2019, Model: R37023BA00-00003. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.107, 15.109; and Part 15 Subpart C sections 15.205, 15.209 and 15.249; RSS-210 and RSS-Gen.

Note: The duty cycle and the 99% Bandwidth did not change from the referenced original Compatible Electronics report number B80828D1.

1.1 Decision Rule & Risk

If a measured value exceeds a specification limit it implies non-compliance. If the value is below a specification limit it implies compliance. Measurement uncertainty of the laboratory is reported with all measurement results but generally not taken into consideration unless a standard, rule or law requires it to be considered.

Qualification test reports are only produced for products that are in compliance with the test requirements, therefore results are always in conformity. Otherwise, an engineering report or just the data is provided to the customer.

When performing a measurement and making a statement of conformity, in or out-of-specification to manufacturer's specifications or Pass/Fail against a requirement, there are two possible outcomes:

- The result is reported as conforming with the specification
- The result is reported as not conforming with the specification

The decision rule is defined below.

When the test result is found to be below the limit but within our measurement uncertainty of the limit, it is our policy that the final acceptance decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be exactly on the specification, it is our policy, in the case of unwanted emissions measurements to consider the result non-compliant, however, the final decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be over the specification limit under any condition, it is our policy to consider the result non-compliant.

In terms of uncertainty of measurement, the laboratory is a calibrated and tightly controlled environment and generally exceptionally stable, the measurement uncertainties are evaluated without the considering of the test sample. When it comes to the test sample however, as most testing is performed on a single sample rather than a sample population, and that sample is often a pre-production representation of the final product, that test sample represents a significantly higher source of measurement uncertainty. We advise our customers of this and that when in doubt (small test to limit margins), they may wish to perform statistical sampling on a population to gain a higher confidence in the results. All lab reported results are that of a single sample in any event.

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.

James Ross	Test Engineer
Kyle Fujimoto	Test Engineer

2.4 Date Test Sample was Received

The test sample was received on April 17, 2020. Received as described in product description.

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.

EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Model
S/N	Serial Number
ITE	Information Technology Equipment
DoC	Declaration of Conformity
N/A	Not Applicable
Tx	Transmit
Rx	Receive
Inc.	Incorporated
RF	Radio Frequency

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
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
RSS-210 Issue 10: 2019	License-exempt Radio Apparatus: Category I Equipment
RSS Gen Issue 5: 2019	General Requirements for Compliance of Radio Apparatus
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 40 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 RCU Retail 2019, Model: R37023BA00-00003 (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 RCU RETAIL 2019 (EUT)	UNIVERSAL ELECTRONICS, INC.	R37023BA00-00003	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

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
RF RADIATED AND CONDUCED EMISSIONS 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	August 23, 2019	1 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
Loop Antenna	Com-Power	AL-130R	121090	February 5, 2019	2 Year
CombiLog Antenna	Com-Power	AC-220	61093	June 5, 2019	2 Year
Horn Antenna	Com-Power	AH-118	10050113	February 4, 2020	2 Year
Preamplifier	Com-Power	PA-118	181653	February 5, 2020	1 Year
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
Preamplifier	Com-Power	PA-840	711013	May 10, 2018	2 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.

6.3 Measurement Uncertainty

Compatible Electronics' U_{lab} value is less than U_{cispr}, thus based on this − compliance is deemed to occur if no measured disturbance exceeds the disturbance limit

$$u_c(y) = \sqrt{\sum_i c_i^2 \; u^2(x_i)}$$

Measurement		$\mathbf{U_{cispr}}$	$U_{lab} = 2\ uc\ (y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.4 dB	2.73 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	6.3 dB	3.27 dB (Vertical) 3.19 dB (Horizontal)
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 6 GHz)	5.2 dB	3.95 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(6 GHz – 18 GHz)	5.5 dB	3.95 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(18 GHz – 26.5 GHz)	N/A	4.69 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(26.5 GHz – 40 GHz)	N/A	4.55 dB

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 Conducted Emissions Test

The EMI Receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. A 10 dB attenuator was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI Receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63:4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by computer software. The final qualification data is located in Appendix E.

The six highest emissions are listed in Table 1.

Test Results:

This test was not performed because the EUT is battery powered only and cannot be connected to the AC public mains.

7.1.2 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.

All other frequencies above 1 GHz, were averaged using the duty cycle referenced in the Compatible Electronics, Inc. report number: B80828D1.

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 EUT was tested at a 3-meter test distance. The six highest emissions are listed in Tables 2 and 3.

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 **Class B** limits of **CFR** Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C sections 15.205, 15.209 and 15.249 for radiated emissions.

7.1.3 RF Emissions Test Results

Table 1 RADIATED EMISSION RESULTS
TIVO Creek Android Voice RCU Retail 2019, Model: R37023BA00-00003

Frequency MHz	Corrected Reading* dBuV/m	Specification Limit dBuV/m	Delta (Cor. Reading – Spec. Limit) dB
2400 (H) (X-Axis)	47.70 (AVG)	53.97	-6.27
2337.70 (V) (Y-Axis)	45.75 (AVG)	53.97	-8.22
2337.90 (H) (X-Axis)	44.44 (AVG)	53.97	-9.53
2442 (H) (X-Axis)	81.11 (AVG)	93.97	-12.86
2480 (H) (X-Axis)	80.74 (AVG)	93.97	-13.26
4844 (H) (X-Axis)	40.53 (AVG)	53.97	-13.44

Notes:
- * The complete emissions data is given in Appendix E of this report.
- (V) Vertical
- (H) Horizontal
- (AVG) Average
- (QP) Quasi-Peak

7.1.4 Sample Calculations

A correction factor for the antenna, cable and a distance factor (if any) must be applied to the meter reading before a true field strength reading can be obtained. This Corrected Meter Reading is then compared to the specification limit in order to determine compliance with the limits.

Conversion to logarithmic terms: Specification limit (µV/m) log x 20 = Specification Limit in dBuV/m

To correct for distance when measuring at a distance other than the specification

For measurements below 30 MHz: (Specification distance / test distance) log x 40 = distance factor

For measurements above 30 MHz: (Specification distance / test distance) log x 20 = distance factor

Note: When using an Active Antenna, the Antenna factor shall be subtracted due to the combination of the internal amplification and antenna loss.

Corrected Meter Reading = meter reading + F – A + C

where: F = antenna factor

A= amplifier gain

C = cable loss

The correction factors for the antenna and the amplifier gain are attached in Appendix D of this report. The data sheets are attached in Appendix E.

The distance factor D is 0 when the test is performed at the required specification distance.

8. CONCLUSIONS

The TIVO Creek Android Voice RCU Retail 2019, Model: R37023BA00-00003 (EUT), as tested, meets all of the specification limits defined in the RSS-210, RSS-Gen, **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

NVLAP TESTING
NVLAP LAB CODE 200528-0

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/

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."

ISED Test Site Registration Number: 2154A

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B, FCC 15.249, RSS-210, and RSS-GEN 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 MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	TIVO Creek Android Voice RCU Retail 2019 Model: R37023BA00-00003 S/N: N/A

There are no additional models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

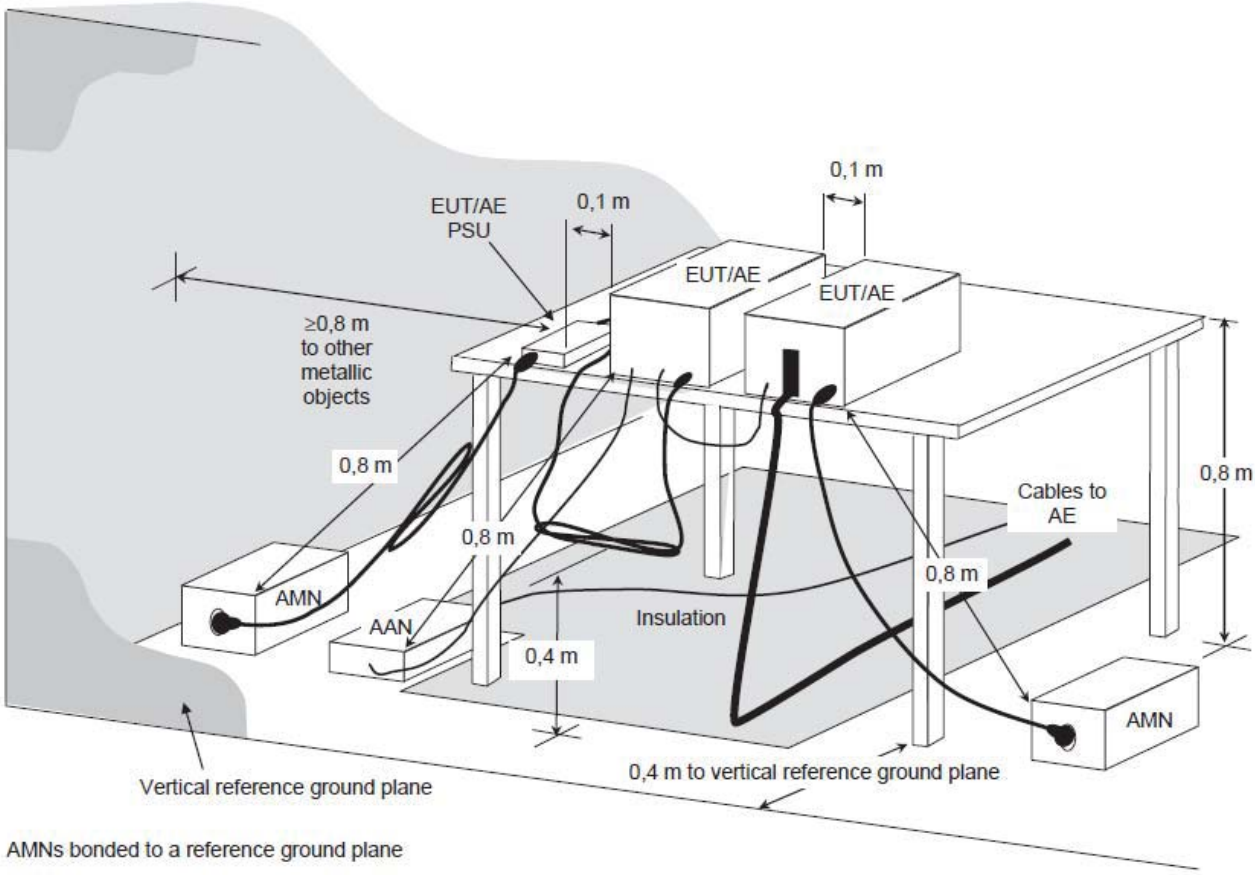
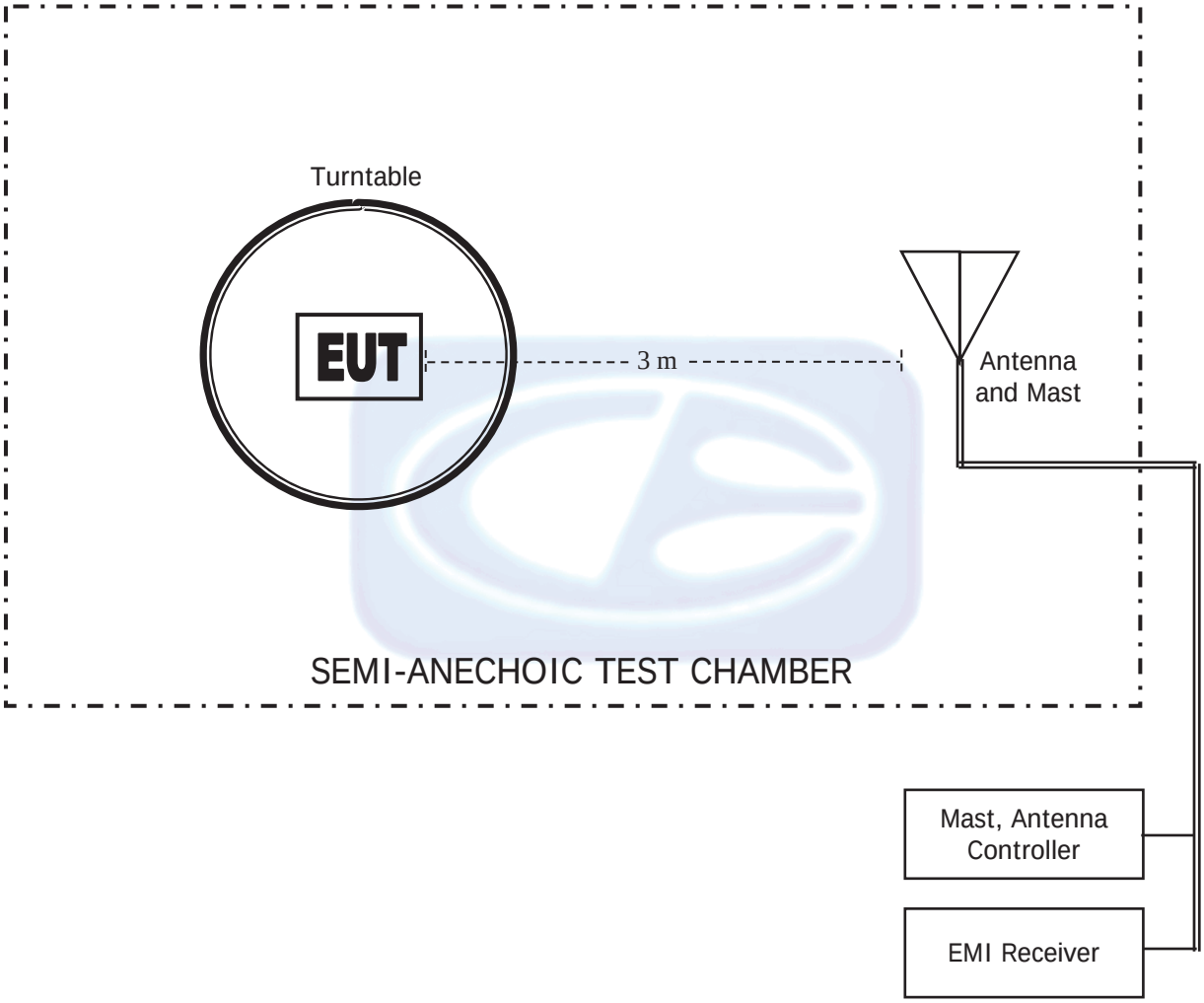


FIGURE 2: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER



COM-POWER AL-130R

LOOP ANTENNA

S/N: 121090

CALIBRATION DATE: FEBRUARY 5, 2019

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.01	15.6	-35.9
0.02	14.8	-36.7
0.03	15.6	-35.9
0.04	15.1	-36.4
0.05	14.4	-37.0
0.06	14.6	-36.9
0.07	14.4	-37.1
0.08	14.3	-37.1
0.09	14.5	-36.9
0.10	14.1	-37.3
0.20	14.1	-37.3
0.30	14.0	-37.4
0.40	14.0	-37.4
0.50	14.2	-37.2
0.60	14.2	-37.2
0.70	14.2	-37.2
0.80	14.2	-37.3
0.90	14.3	-37.2
1.00	14.5	-37.0
2.00	14.5	-36.9
3.00	14.5	-36.9
4.00	14.7	-36.8
5.00	14.6	-36.9
6.00	14.6	-36.9
7.00	14.6	-36.9
8.00	14.6	-36.9
9.00	14.6	-36.9
10.00	14.8	-36.6
11.00	14.9	-36.6
12.00	14.8	-36.6
13.00	14.8	-36.7
14.00	14.6	-36.8
15.00	14.5	-36.9
16.00	14.5	-37.0
17.00	14.6	-36.9
18.00	14.7	-36.7
19.00	14.8	-36.6
20.00	14.9	-36.6
21.00	14.6	-36.8
22.00	14.2	-37.2
23.00	13.7	-37.7
24.00	13.3	-38.2
25.00	13.0	-38.5
26.00	12.9	-38.6
27.00	13.0	-38.5
28.00	13.1	-38.4
29.00	13.1	-38.4
30.00	12.9	-38.5

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61093

CALIBRATION DATE: JUNE 5, 2019

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.10	200	15.30
35	20.90	250	16.80
40	20.10	300	19.00
45	19.40	350	19.60
50	18.40	400	21.70
60	15.10	450	21.60
70	12.00	500	22.20
80	11.60	550	22.70
90	13.50	600	24.20
100	14.70	650	24.40
120	15.90	700	24.50
125	15.90	750	25.40
140	14.80	800	26.30
150	15.50	850	26.70
160	19.80	900	27.50
175	15.20	950	27.80
180	14.90	1000	27.90

COM POWER AH-118

HORN ANTENNA

S/N: 10050113

CALIBRATION DATE: FEBRUARY 4, 2020

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.343	10.0	38.826
1.5	25.419	10.5	39.102
2.0	28.838	11.0	39.259
2.5	28.971	11.5	39.920
3.0	29.919	12.0	40.149
3.5	30.674	12.5	40.576
4.0	31.670	13.0	40.264
4.5	32.437	13.5	40.364
5.0	33.414	14.0	40.424
5.5	34.003	14.5	41.677
6.0	34.799	15.0	43.010
6.5	35.381	15.5	39.799
7.0	37.024	16.0	40.187
7.5	34.403	16.5	40.155
8.0	37.445	17.0	40.507
8.5	37.390	17.5	41.963
9.0	38.076	18.0	43.196
9.5	38.809		

COM-POWER PA-118

PREAMPLIFIER

S/N: 181653

CALIBRATION DATE: FEBRUARY 5, 2020

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.10	6.0	40.60
1.1	40.10	6.5	39.50
1.2	40.00	7.0	39.40
1.3	39.70	7.5	39.30
1.4	39.60	8.0	39.20
1.5	39.90	8.5	40.50
1.6	40.00	9.0	39.60
1.7	39.70	9.5	39.50
1.8	39.50	10.0	38.80
1.9	39.60	11.0	38.70
2.0	39.90	12.0	42.20
2.5	40.10	13.0	40.00
3.0	40.80	14.0	40.30
3.5	40.60	15.0	40.20
4.0	40.50	16.0	41.00
4.5	41.60	17.0	39.70
5.0	39.20	18.0	40.90
5.5	40.00		

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MAY 10, 2018

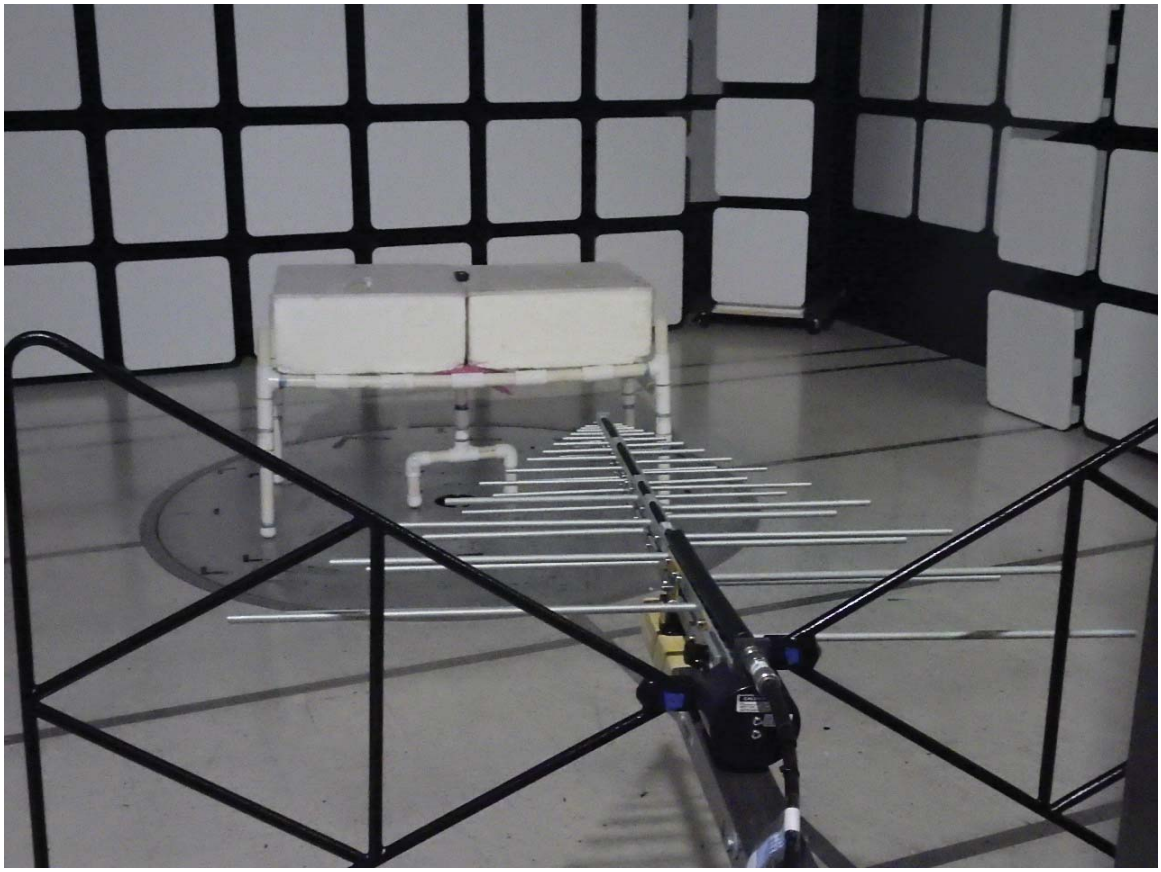
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.90	31.0	24.56
19.0	24.65	31.5	25.84
20.0	25.74	32.0	26.93
21.0	24.78	32.5	27.76
22.0	24.83	33.0	25.76
23.0	24.81	33.5	26.76
24.0	25.52	34.0	26.51
25.0	24.90	34.5	27.49
26.0	25.92	35.0	27.64
26.5	26.53	35.5	27.45
27.0	26.41	36.0	25.08
27.5	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

COM-POWER AH-826

HORN ANTENNA

S/N: 71957

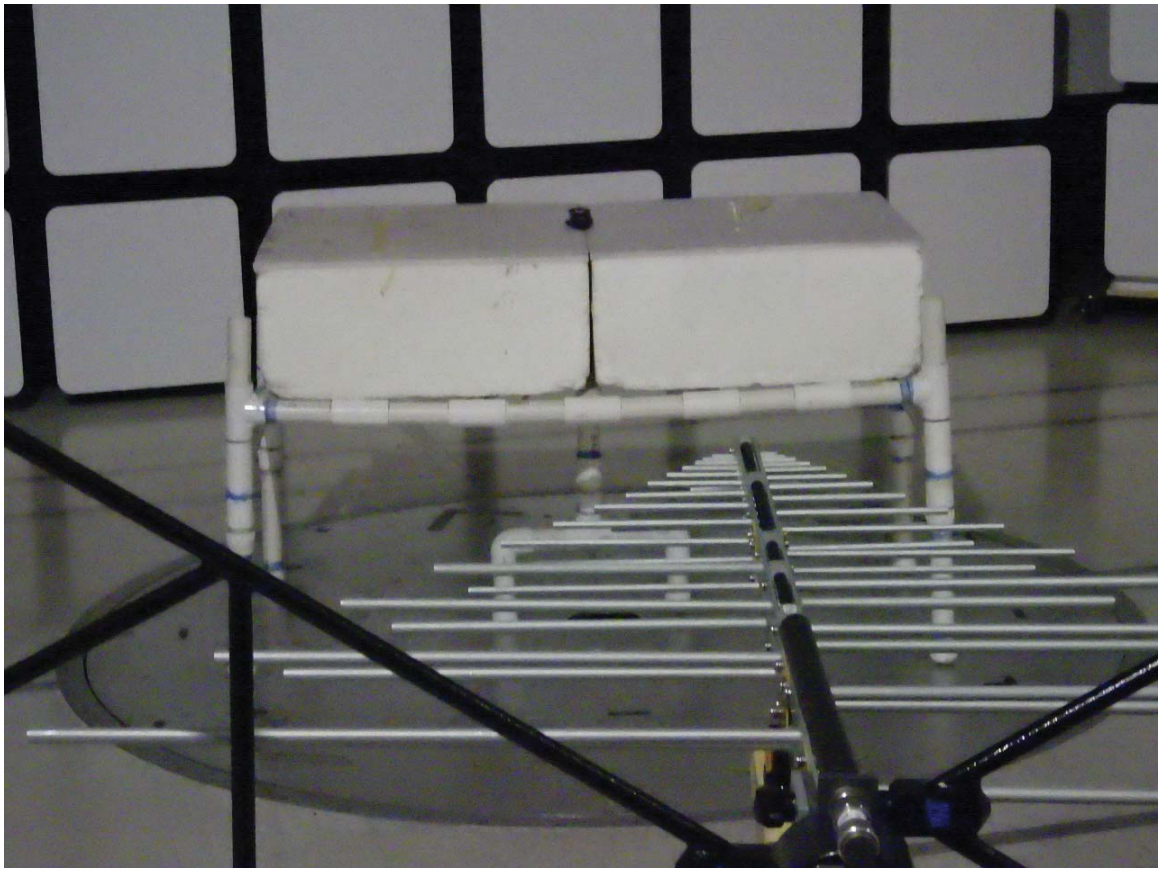
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE RCU RETAIL 2019
MODEL: R37023BA00-00003
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

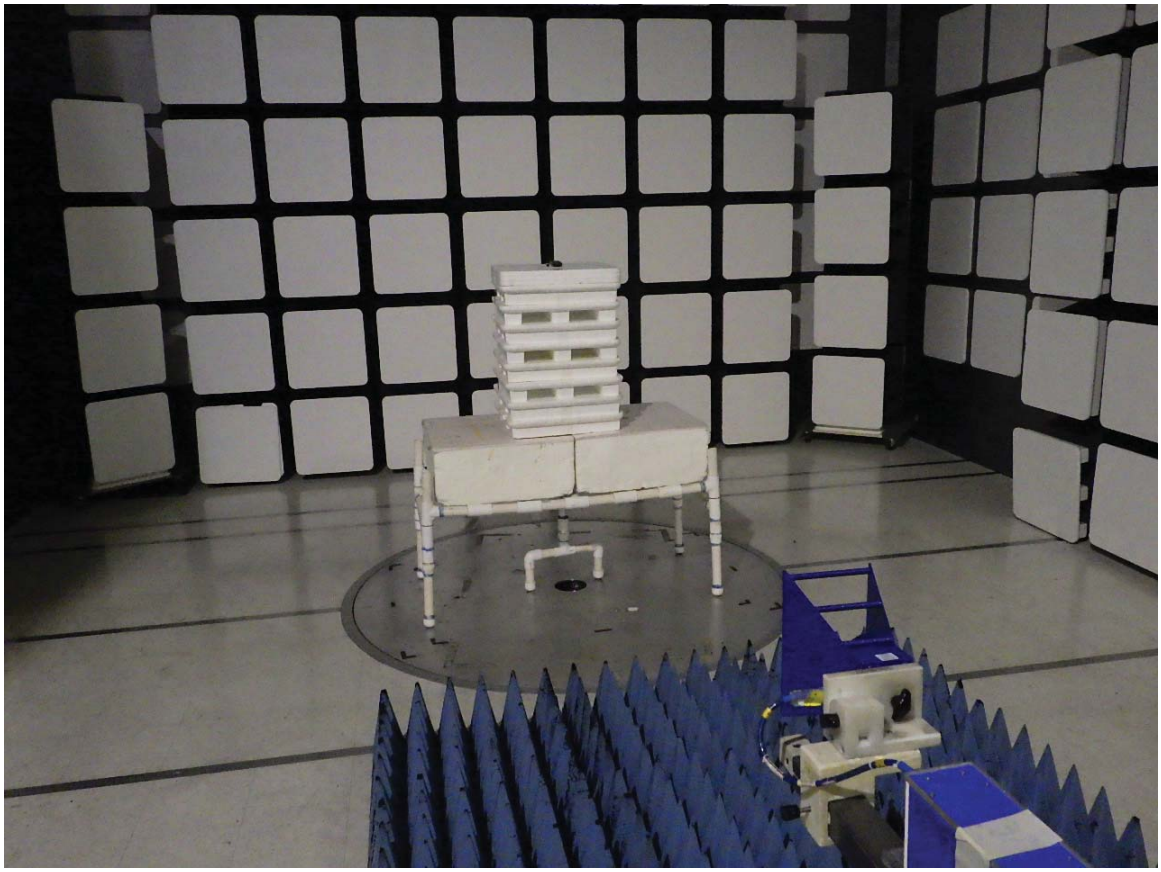
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE RCU RETAIL 2019
MODEL: R37023BA00-00003
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

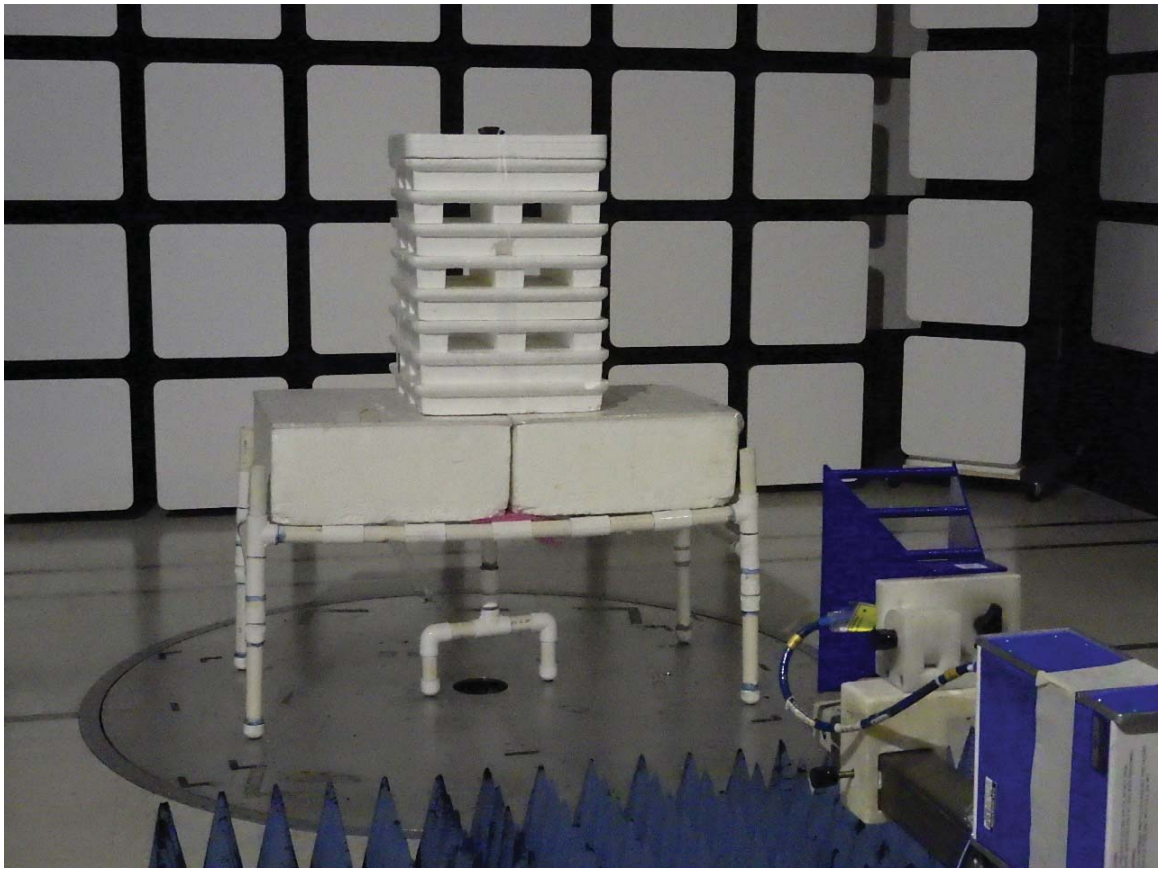
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
TIVO CREEK ANDROID VOICE RCU RETAIL 2019
MODEL: R37023BA00-00003
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 RCU RETAIL 2019
MODEL: R37023BA00-00003
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

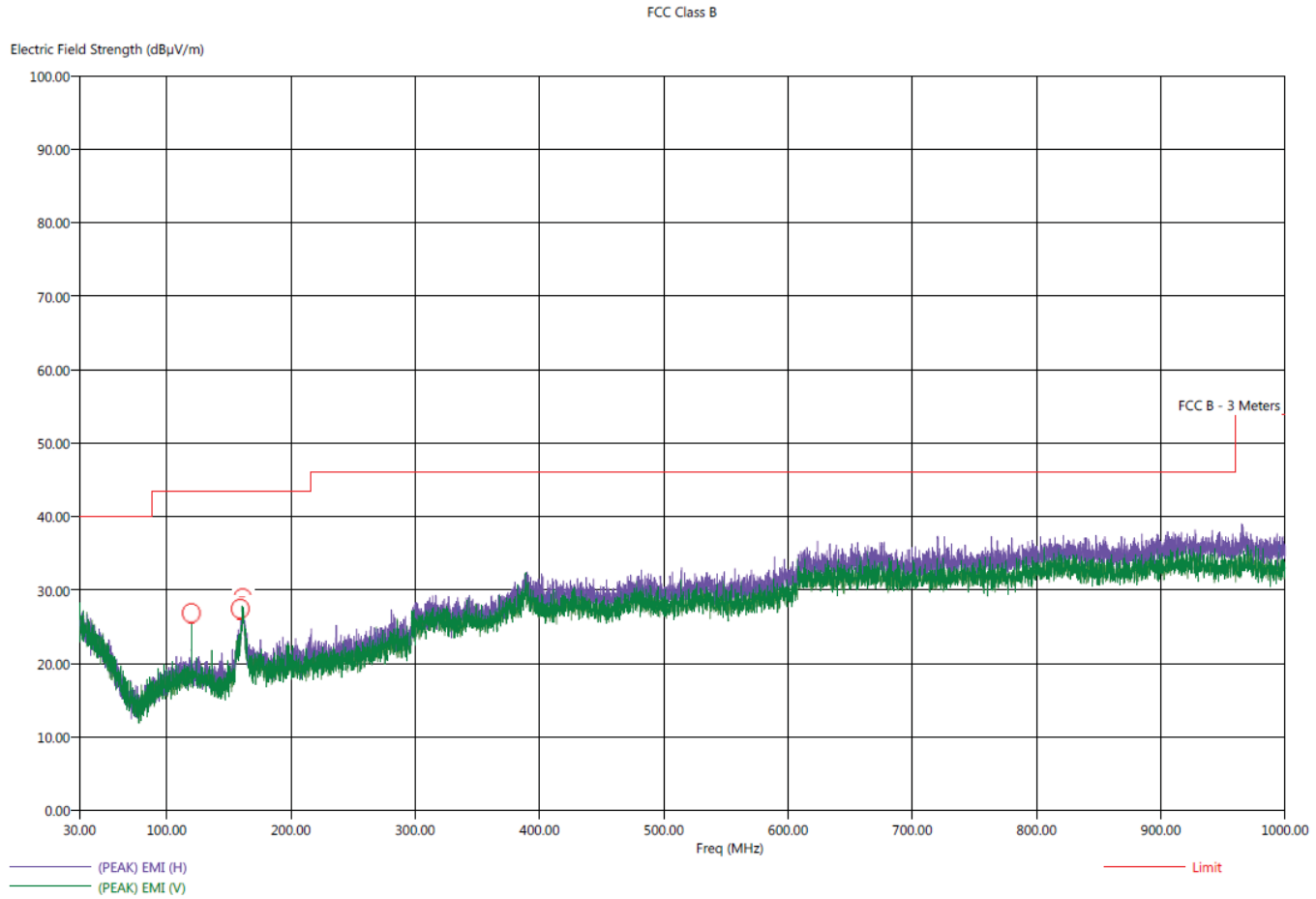
DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - FCC Class B - 30 MHz to 1000 MHz.set
Operator: Kyle Fujimoto
EUT Type: TIVO Creek Android Voice RCU Retail 2019
EUT Condition: EUT is continuously transmitting
Company: Universal Electronics, Inc.
Model: R37023BA00-00003
S/N: N/A

4/20/2020 3:14:50 PM
Sequence: Preliminary Scan



Note: No emissions found below 30 MHz

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 RCU Retail 2019
EUT Condition: EUT is continuously transmitting
Company: Universal Electronics, Inc.
Model: R37023BA00-00003
S/N: N/A

4/20/2020 3:34:44 PM
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)
120.00	V	27.24	23.81	-16.26	-19.69	43.50	15.90	0.75	223.75	158.98
159.40	H	26.60	21.87	-16.90	-21.63	43.50	18.54	0.87	173.75	190.80
160.70	H	30.28	24.32	-13.22	-19.18	43.50	21.03	0.88	265.00	222.86
161.30	H	30.31	25.36	-13.19	-18.14	43.50	22.05	0.88	68.75	111.40
161.90	H	30.12	25.40	-13.38	-18.10	43.50	22.08	0.88	329.75	302.80
162.10	H	30.42	25.11	-13.08	-18.39	43.50	21.75	0.88	141.25	318.32

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	91.00	V	113.97	-22.97	Peak	359.50	249.95	**X-Axis**
2402.00	71.00	V	93.97	-22.97	Avg	359.50	249.95	**Vertical Polarization**
2402.00	98.18	V	113.97	-15.79	Peak	233.00	113.01	**Y-Axis**
2402.00	78.18	V	93.97	-15.79	Avg	233.00	113.01	**Vertical Polarization**
2402.00	96.45	V	113.97	-17.52	Peak	281.50	180.41	**Z-Axis**
2402.00	76.45	V	93.97	-17.52	Avg	281.50	180.41	**Vertical Polarization**
2402.00	99.70	H	113.97	-14.27	Peak	10.75	126.26	**X-Axis**
2402.00	79.70	H	93.97	-14.27	Avg	10.75	126.26	**Horizontal Polarization**
2402.00	93.09	H	113.97	-20.88	Peak	175.25	192.05	**Y-Axis**
2402.00	73.09	H	93.97	-20.88	Avg	175.25	192.05	**Horizontal Polarization**
2402.00	98.94	H	113.97	-15.03	Peak	136.75	189.97	**Z-Axis**
2402.00	78.94	H	93.97	-15.03	Avg	136.75	189.97	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	90.35	V	113.97	-23.62	Peak	355.00	204.59	**X-Axis**
2442.00	70.35	V	93.97	-23.62	Avg	355.00	204.59	**Vertical Polarization**
2442.00	99.77	V	113.97	-14.20	Peak	147.75	121.13	**Y-Axis**
2442.00	79.77	V	93.97	-14.20	Avg	147.75	121.13	**Vertical Polarization**
2442.00	94.34	V	113.97	-19.64	Peak	112.50	213.37	**Z-Axis**
2442.00	74.34	V	93.97	-19.64	Avg	112.50	213.37	**Vertical Polarization**
2442.00	101.11	H	113.97	-12.86	Peak	208.25	191.10	**X-Axis**
2442.00	81.11	H	93.97	-12.86	Avg	208.25	191.10	**Horizontal Polarization**
2442.00	93.11	H	113.97	-20.86	Peak	345.00	148.89	**Y-Axis**
2442.00	73.11	H	93.97	-20.86	Avg	345.00	148.89	**Horizontal Polarization**
2442.00	100.19	H	113.97	-13.78	Peak	183.50	144.11	**Z-Axis**
2442.00	80.19	H	93.97	-13.78	Avg	183.50	144.11	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	87.99	V	113.97	-25.98	Peak	343.75	164.11	**X-Axis**
2480.00	79.49	V	93.97	-14.48	Avg	343.75	164.11	**Vertical Polarization**
2480.00	99.49	V	113.97	-14.48	Peak	94.00	114.44	**Y-Axis**
2480.00	79.49	V	93.97	-14.48	Avg	94.00	114.44	**Vertical Polarization**
2480.00	97.33	V	113.97	-16.64	Peak	271.50	154.32	**Z-Axis**
2480.00	77.33	V	93.97	-16.64	Avg	271.50	154.32	**Vertical Polarization**
2480.00	100.74	H	113.97	-13.26	Peak	217.75	178.56	**X-Axis**
2480.00	80.74	H	93.97	-13.26	Avg	217.75	178.56	**Horizontal Polarization**
2480.00	95.16	H	113.97	-18.81	Peak	10.00	223.40	**Y-Axis**
2480.00	75.16	H	93.97	-18.81	Avg	10.00	223.40	**Horizontal Polarization**
2480.00	99.86	H	113.97	-14.12	Peak	10.00	139.94	**Z-Axis**
2480.00	79.86	H	93.97	-14.12	Avg	10.00	139.94	**Horizontal Polarization**

FCC 15.249

Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	51.57	V	73.97	-22.40	Peak	170.25	238.92	
4804.00	31.57	V	53.97	-22.40	Avg	170.25	238.92	
7206.00	49.03	V	73.97	-24.94	Peak	174.75	111.40	
7206.00	29.03	V	53.97	-24.94	Avg	174.75	111.40	
9608.00	52.87	V	73.97	-21.10	Peak	328.00	175.10	
9608.00	32.87	V	53.97	-21.10	Avg	328.00	175.10	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	55.78	V	73.97	-18.19	Peak	15.25	143.76	
4804.00	35.78	V	53.97	-18.19	Avg	15.25	143.76	
7206.00	54.90	V	73.97	-19.07	Peak	109.00	159.34	
7206.00	34.90	V	53.97	-19.07	Avg	109.00	159.34	
9608.00	52.80	V	73.97	-21.17	Peak	219.00	111.46	
9608.00	32.80	V	53.97	-21.17	Avg	219.00	111.46	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	56.55	V	73.97	-17.42	Peak	271.50	100.00	
4804.00	36.55	V	53.97	-17.42	Avg	271.50	100.00	
7206.00	51.51	V	73.97	-22.46	Peak	186.25	111.52	
7206.00	31.51	V	53.97	-22.46	Avg	186.25	111.52	
9608.00	52.99	V	73.97	-20.98	Peak	204.50	127.34	
9608.00	32.99	V	53.97	-20.98	Avg	204.50	127.34	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	57.50	H	73.97	-16.47	Peak	119.00	127.28	
4804.00	37.50	H	53.97	-16.47	Avg	119.00	127.28	
7206.00	52.48	H	73.97	-21.49	Peak	346.00	111.40	
7206.00	32.48	H	53.97	-21.49	Avg	346.00	111.40	
9608.00	54.44	H	73.97	-19.53	Peak	0.75	111.52	
9608.00	34.44	H	53.97	-19.53	Avg	0.75	111.52	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	51.15	H	73.97	-22.82	Peak	125.50	110.08	
4804.00	31.15	H	53.97	-22.82	Avg	125.50	110.08	
7206.00	50.65	H	73.97	-23.32	Peak	353.50	191.88	
7206.00	30.65	H	53.97	-23.32	Avg	353.50	191.88	
9608.00	56.93	H	73.97	-17.04	Peak	272.50	127.40	
9608.00	36.93	H	53.97	-17.04	Avg	272.50	127.40	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	57.92	H	73.97	-16.05	Peak	300.00	143.28	
4804.00	37.92	H	53.97	-16.05	Avg	300.00	143.28	
7206.00	49.44	H	73.97	-24.53	Peak	178.50	159.10	
7206.00	29.44	H	53.97	-24.53	Avg	178.50	159.10	
9608.00	53.62	H	73.97	-20.35	Peak	186.75	175.04	
9608.00	33.62	H	53.97	-20.35	Avg	186.75	175.04	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	54.03	V	73.97	-19.94	Peak	333.50	249.92	
4884.00	34.03	V	53.97	-19.94	Avg	333.50	249.92	
7326.00	49.65	V	73.97	-24.32	Peak	3.25	111.28	
7326.00	29.65	V	53.97	-24.32	Avg	3.25	111.28	
9768.00	55.32	V	73.97	-18.65	Peak	143.75	125.31	
9768.00	35.32	V	53.97	-18.65	Avg	143.75	125.31	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	55.26	V	73.97	-18.71	Peak	127.00	127.28	
4884.00	35.26	V	53.97	-18.71	Avg	127.00	127.28	
7326.00	55.66	V	73.97	-18.31	Peak	108.50	159.88	
7326.00	35.66	V	53.97	-18.31	Avg	108.50	159.88	
9768.00	54.04	V	73.97	-19.93	Peak	214.75	127.48	
9768.00	34.04	V	53.97	-19.93	Avg	214.75	127.48	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	57.92	V	73.97	-16.05	Peak	103.25	175.16	
4884.00	37.92	V	53.97	-16.05	Avg	103.25	175.16	
7326.00	51.13	V	73.97	-22.84	Peak	137.50	110.86	
7326.00	31.13	V	53.97	-22.84	Avg	137.50	110.86	
9768.00	55.54	V	73.97	-18.43	Peak	90.00	127.28	
9768.00	35.54	V	53.97	-18.43	Avg	90.00	127.28	
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**

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	60.53	H	73.97	-13.44	Peak	134.75	128.77	
4884.00	40.53	H	53.97	-13.44	Avg	134.75	128.77	
7326.00	52.60	H	73.97	-21.37	Peak	63.00	109.85	
7326.00	32.60	H	53.97	-21.37	Avg	63.00	109.85	
9768.00	57.91	H	73.97	-16.06	Peak	61.25	127.04	
9768.00	37.91	H	53.97	-16.06	Avg	61.25	127.04	
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**

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	50.73	H	73.97	-23.24	Peak	184.50	159.16	
4884.00	30.73	H	53.97	-23.24	Avg	184.50	159.16	
7326.00	51.17	H	73.97	-22.80	Peak	152.00	128.29	
7326.00	31.17	H	53.97	-22.80	Avg	152.00	128.29	
9768.00	59.32	H	73.97	-14.65	Peak	97.75	110.92	
9768.00	39.32	H	53.97	-14.65	Avg	97.75	110.92	
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**

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	57.81	H	73.97	-16.16	Peak	94.00	111.40	
4884.00	37.81	H	53.97	-16.16	Avg	94.00	111.40	
7326.00	50.57	H	73.97	-23.40	Peak	130.75	111.46	
7326.00	30.57	H	53.97	-23.40	Avg	130.75	111.46	
9768.00	53.85	H	73.97	-20.12	Peak	247.25	127.34	
9768.00	33.85	H	53.97	-20.12	Avg	247.25	127.34	
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**

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	50.17	V	73.97	-23.80	Peak	359.75	205.97	
4960.00	30.17	V	53.97	-23.80	Avg	359.75	205.97	
7440.00	50.59	V	73.97	-23.38	Peak	170.25	111.46	
7440.00	30.59	V	53.97	-23.38	Avg	170.25	111.46	
9920.00	56.51	V	73.97	-17.46	Peak	133.00	111.88	
9920.00	36.51	V	53.97	-17.46	Avg	133.00	111.88	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	55.93	V	73.97	-18.04	Peak	192.50	127.16	
4960.00	35.93	V	53.97	-18.04	Avg	192.50	127.16	
7440.00	57.76	V	73.97	-16.21	Peak	286.75	175.70	
7440.00	37.76	V	53.97	-16.21	Avg	286.75	175.70	
9920.00	54.38	V	73.97	-19.59	Peak	21.50	160.29	
9920.00	34.38	V	53.97	-19.59	Avg	21.50	160.29	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	54.96	V	73.97	-19.01	Peak	30.25	206.98	
4960.00	34.96	V	53.97	-19.01	Avg	30.25	206.98	
7440.00	53.57	V	73.97	-20.40	Peak	330.50	111.28	
7440.00	33.57	V	53.97	-20.40	Avg	330.50	111.28	
9920.00	55.74	V	73.97	-18.23	Peak	269.50	111.46	
9920.00	35.74	V	53.97	-18.23	Avg	269.50	111.46	
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 RCU Retail 2019
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Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	58.73	H	73.97	-15.24	Peak	135.25	143.28	
4960.00	38.73	H	53.97	-15.24	Avg	135.25	143.28	
7440.00	55.01	H	73.97	-18.96	Peak	69.75	160.77	
7440.00	35.01	H	53.97	-18.96	Avg	69.75	160.77	
9920.00	58.21	H	73.97	-15.76	Peak	63.00	143.22	
9920.00	38.21	H	53.97	-15.76	Avg	63.00	143.22	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	50.57	H	73.97	-23.40	Peak	148.75	143.28	
4960.00	30.57	H	53.97	-23.40	Avg	148.75	143.28	
7440.00	53.84	H	73.97	-20.13	Peak	339.75	143.04	
7440.00	33.84	H	53.97	-20.13	Avg	339.75	143.04	
9920.00	56.41	H	73.97	-17.56	Peak	300.00	111.40	
9920.00	36.41	H	53.97	-17.56	Avg	300.00	111.40	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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	57.73	H	73.97	-16.24	Peak	211.25	111.40	
4960.00	37.73	H	53.97	-16.24	Avg	211.25	111.40	
7440.00	52.25	H	73.97	-21.72	Peak	305.50	127.10	
7440.00	32.25	H	53.97	-21.72	Avg	305.50	127.10	
9920.00	55.28	H	73.97	-18.69	Peak	69.00	110.82	
9920.00	35.28	H	53.97	-18.69	Avg	69.00	110.82	
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 RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

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

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
Tested By: Kyle Fujimoto

Band Edges

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402.00	99.70	H	113.97	-14.27	Peak	10.75	126.26	**Fundamental - Low Ch.**
2402.00	79.70	H	93.97	-14.27	Avg	10.75	126.26	**X-Axis - Worst Case**
2400.00	67.70	H	73.97	-6.27	Peak	10.75	126.26	**Band Edge**
2400.00	47.70	H	53.97	-6.27	Avg	10.75	126.26	**X-Axis - Worst Case**
2337.90	52.41	H	73.97	-21.56	Peak	10.75	126.26	**Band Edge**
2337.90	44.44	H	53.97	-9.53	Avg	10.75	126.26	**X-Axis - Worst Case**
2402.00	98.18	V	113.97	-15.79	Peak	233.00	113.01	**Fundamental - Low Ch.**
2402.00	78.18	V	93.97	-15.79	Avg	233.00	113.01	**Y-Axis - Worst Case**
2337.70	52.67	V	73.97	-21.30	Peak	233.00	113.01	**Band Edge**
2337.70	45.75	V	53.97	-8.22	Avg	233.00	113.01	**Y-Axis - Worst Case**
2400.00	53.85	V	73.97	-20.12	Peak	233.00	113.01	**Band Edge**
2400.00	33.85	V	53.97	-20.12	Avg	233.00	113.01	**Y-Axis - Worst Case**

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Universal Electronics, Inc.
TIVO Creek Android Voice RCU Retail 2019
Model: R37023BA00-00003

Date: 04/20/2020
Lab: D
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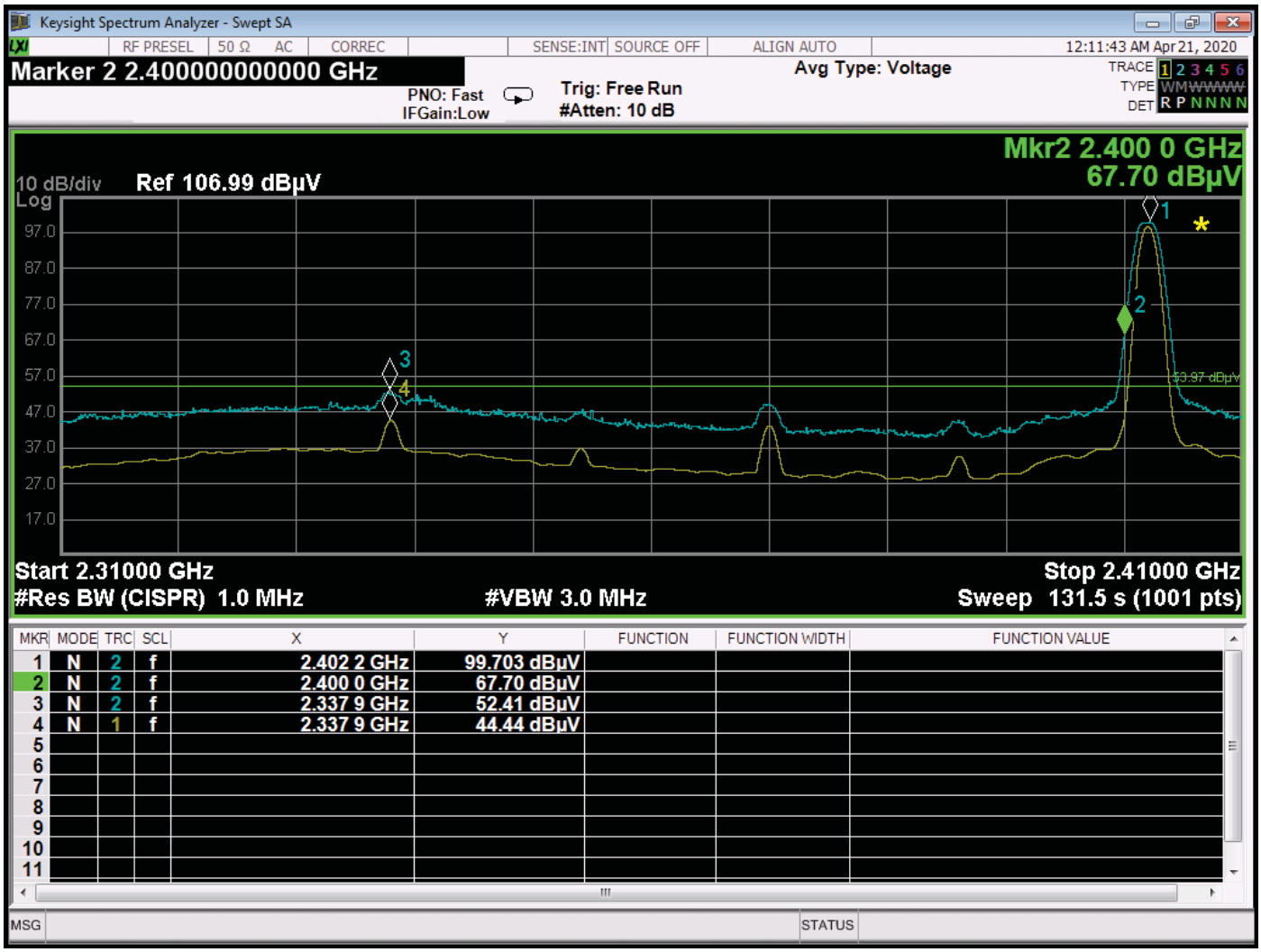
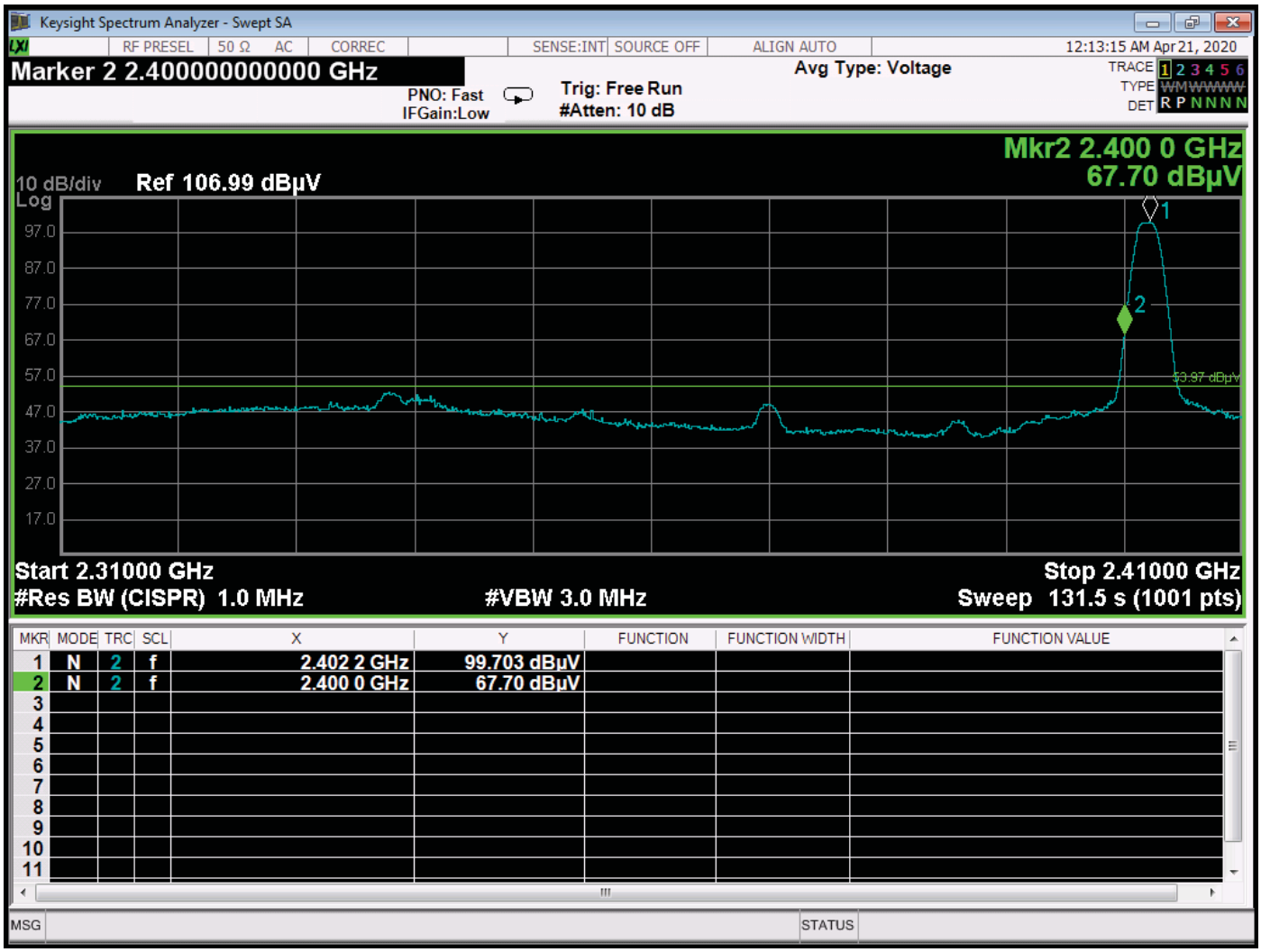
Band Edges

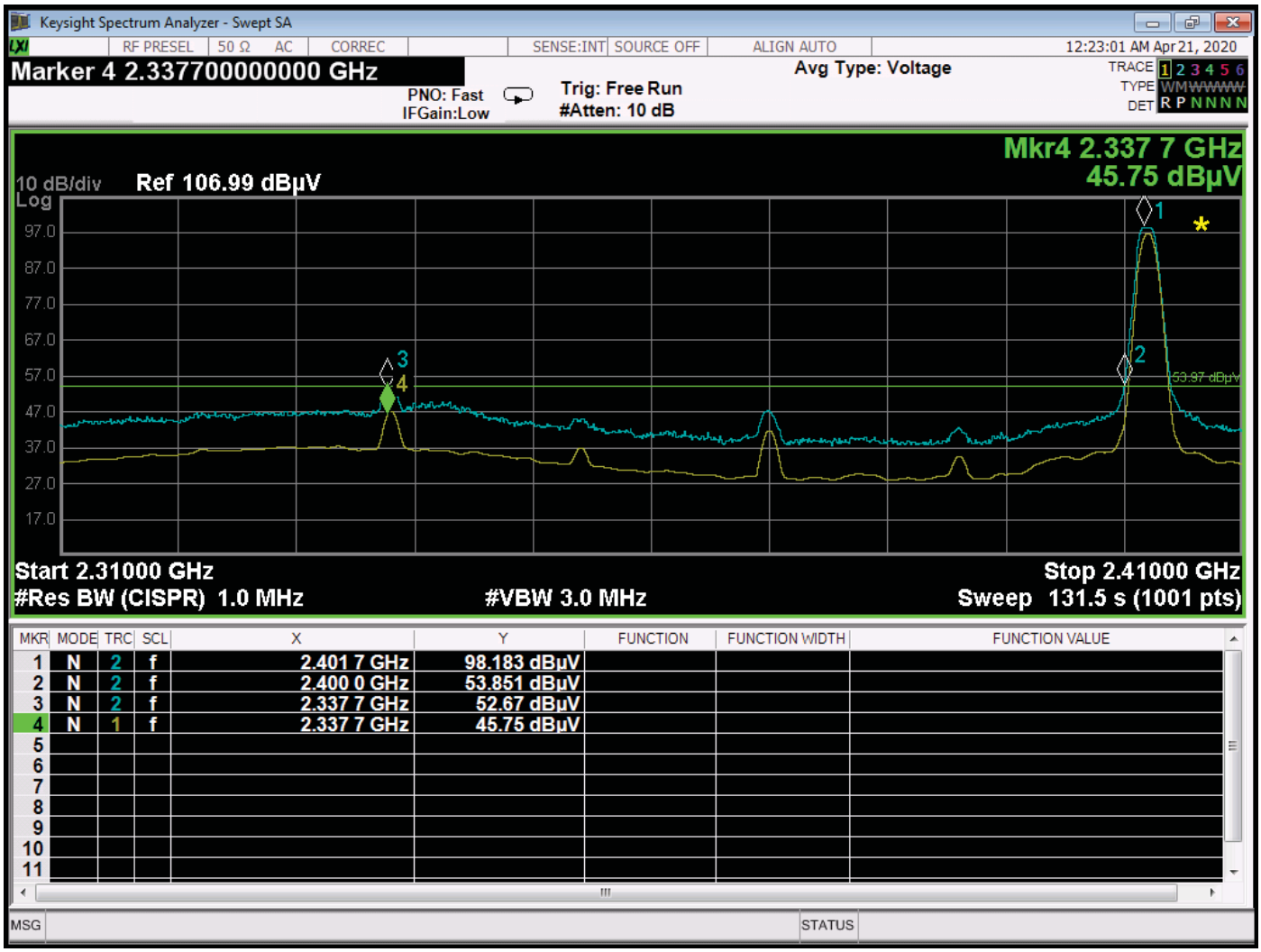
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480.00	100.74	H	113.97	-13.26	Peak	217.75	178.56	**Fundamental - High Ch.**
2480.00	80.74	H	93.97	-13.26	Avg	217.75	178.56	**X-Axis - Worst Case**
2483.50	47.42	H	73.97	-26.55	Peak	217.75	178.56	**Band Edge**
2483.50	27.42	H	53.97	-26.55	Avg	217.75	178.56	**X-Axis - Worst Case**
2480.00	99.49	V	113.97	-14.48	Peak	94.00	114.44	**Fundamental - High Ch.**
2480.00	79.49	V	93.97	-14.48	Avg	94.00	114.44	**Y-Axis - Worst Case**
2483.50	46.78	V	73.97	-27.19	Peak	94.00	114.44	**Band Edge**
2483.50	26.78	V	53.97	-27.19	Avg	94.00	114.44	**Y-Axis - Worst Case**



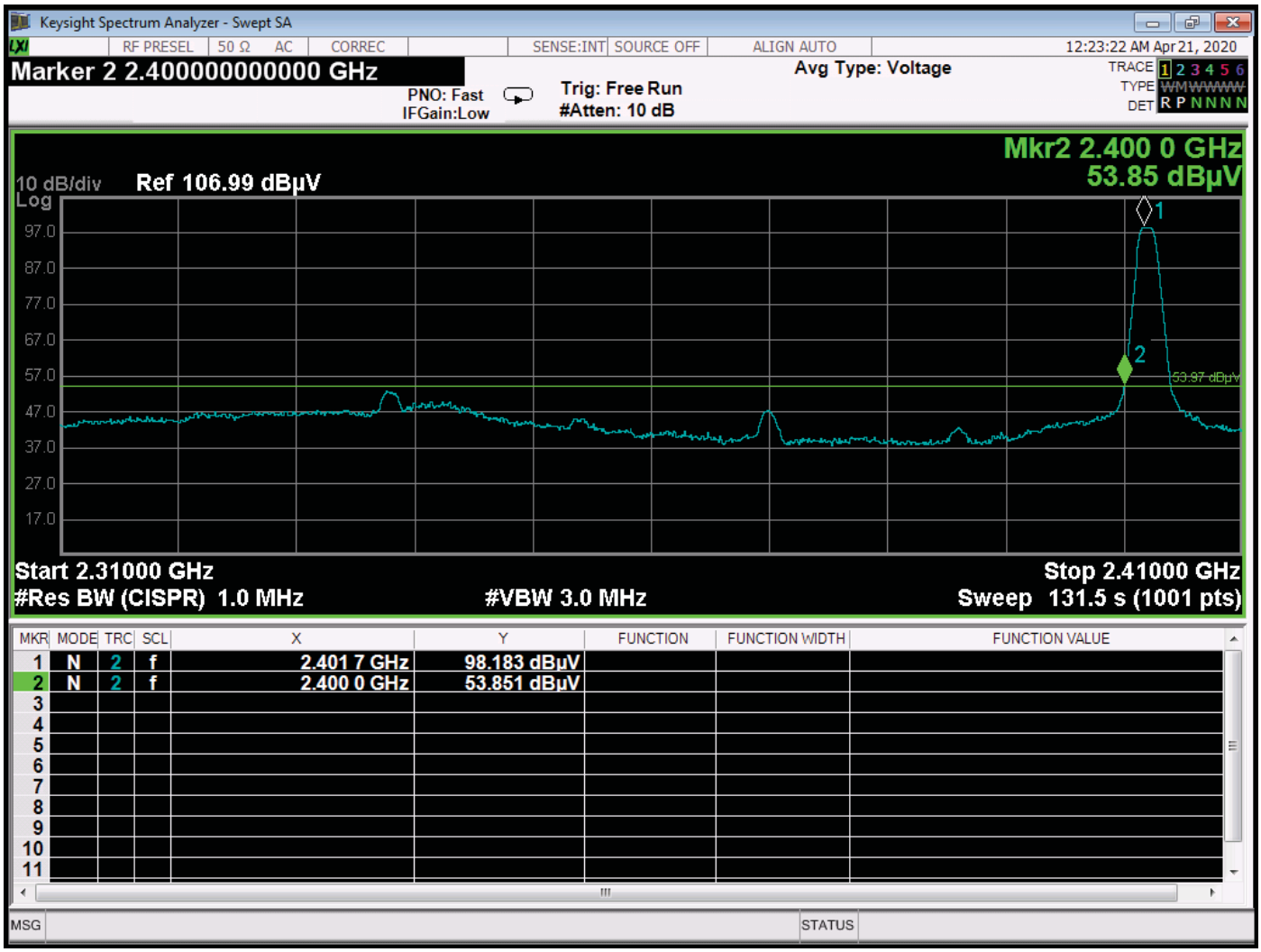
Band Edge – Low Channel – Horizontal Polarization – X-Axis – RMS Average



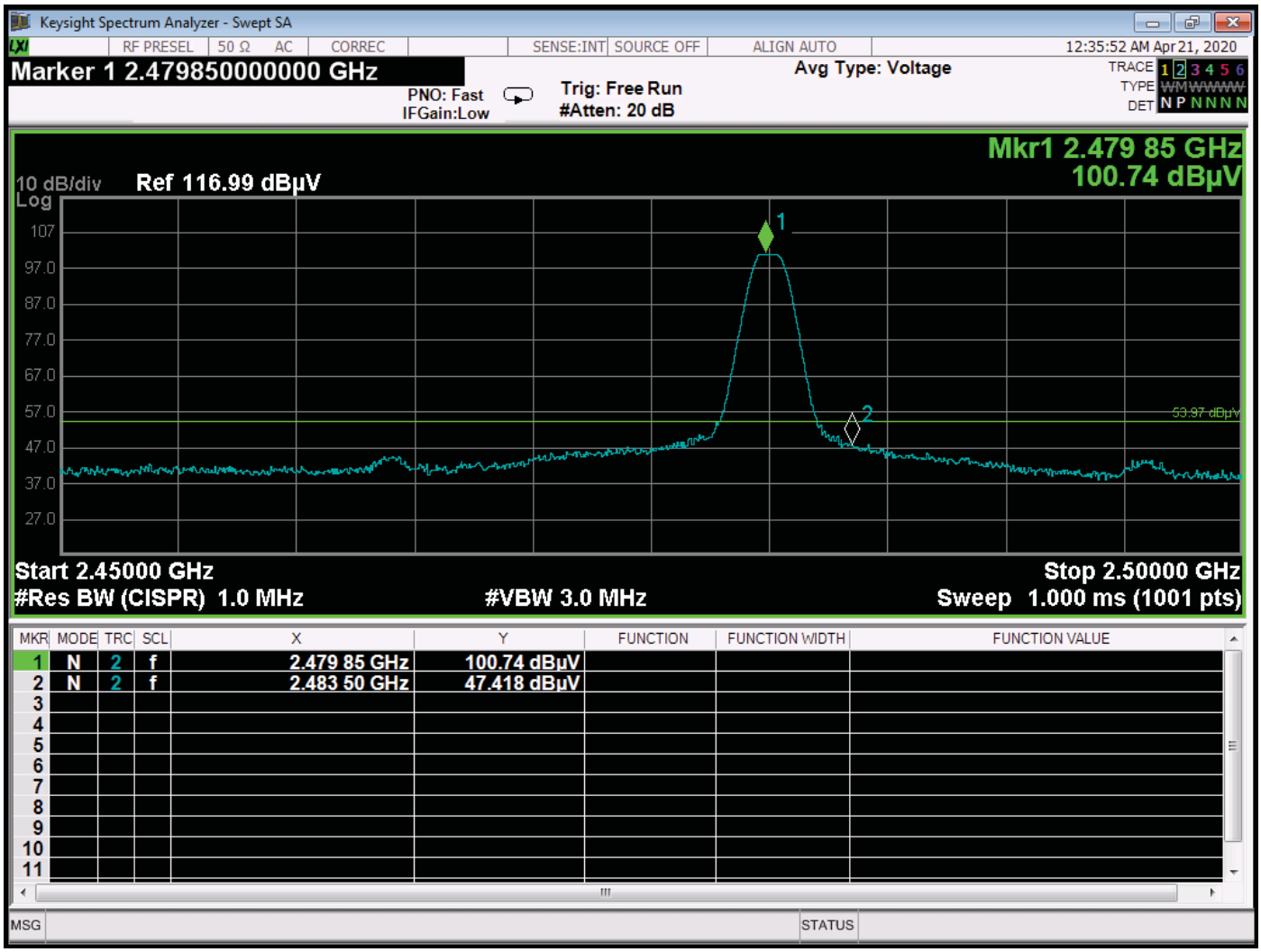
Band Edge – Low Channel – Horizontal Polarization – X-Axis – Duty Cycle Average



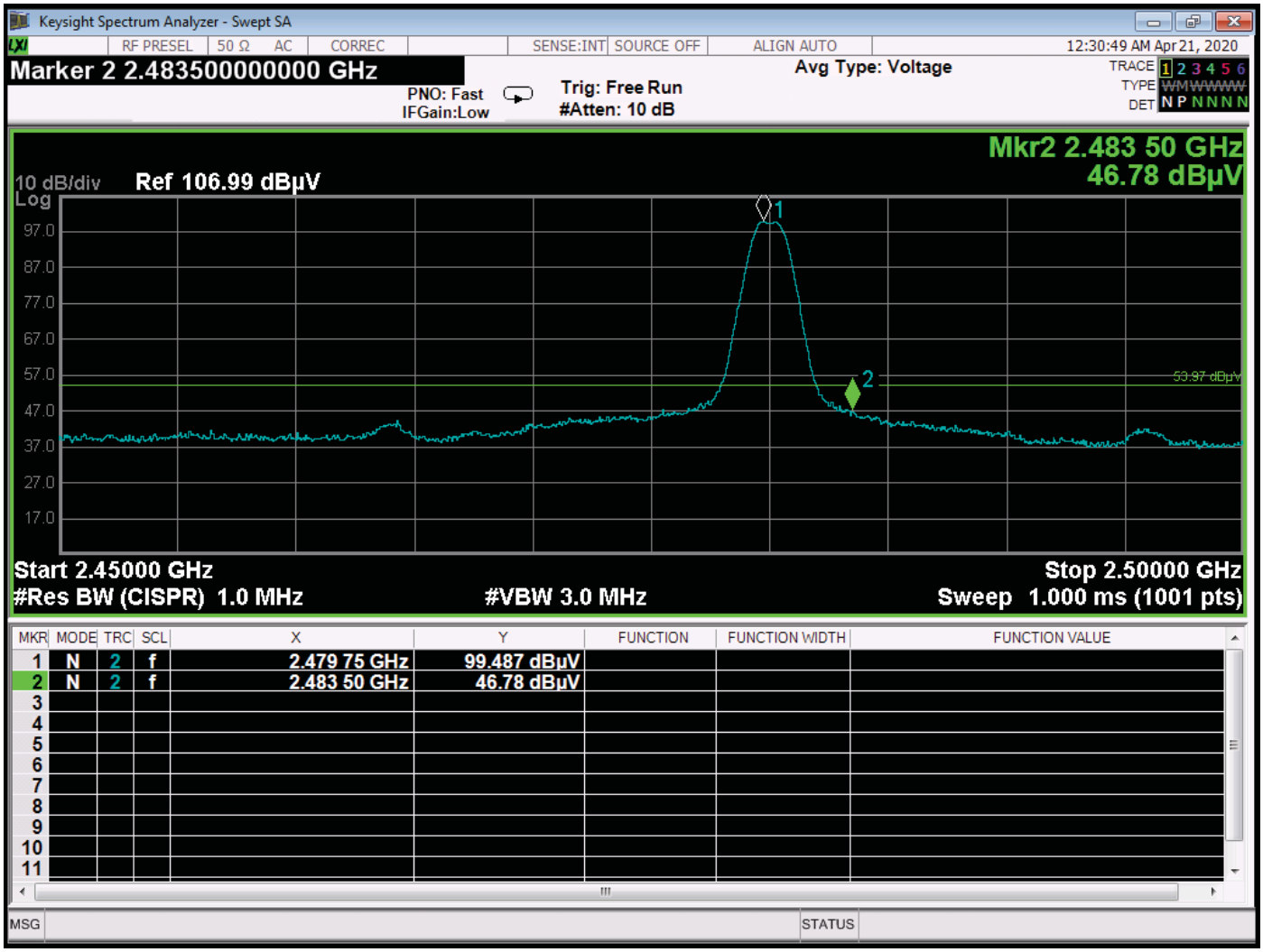
Band Edge – Low Channel – Vertical Polarization – Y-Axis – RMS Average



Band Edge – Low Channel – Vertical Polarization – Y-Axis – Duty Cycle Average



Band Edge – High Channel – Horizontal Polarization – X-Axis



Band Edge – High Channel – Vertical Polarization – Y-Axis