

**FCC PART 15 SUBPART B & SUBPART C SECTION 15.247
RSS GEN, RSS 247
TEST REPORT**

For

**SMART CAP
MODEL: INCAP-100BA
FCC ID: 2AGUHINCAP**

Prepared for

**COMPANION MEDICAL INC.
12230 WORLD TRADE DRIVE, SUITE 100
SAN DIEGO, CA 92128**

Prepared by: _____

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DATE: MAY 3, 2021

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
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GENERAL REPORT SUMMARY

This electromagnetic emission 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 in any form except in full, without the written permission of Compatible Electronics.

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

Device Tested: Smart Cap
Model: InCap-100BA
S/N: 4E7324
FCC ID: 2AGUHINCAP

Product Description: The InCap-100BA is a Smart Cap.
(Dimensions: 3" x 1" x 1.125")
Clock Frequency: 32.768 kHz, 32 MHz

Modifications: The EUT was not modified during the testing in order to comply with the specifications.

Manufacturer: Companion Medical Inc.
12230 World Trade Drive, Suite 100
San Diego, CA 92128

Test Date: September 24-25, 2020 & April 29, 2021

Test Specifications Covered by Accreditation:



Test Specifications: EMI requirements
FCC CFR Title 47, Part 15 Subpart B, Subpart C Section 15.247
RSS GEN, RSS 247

Test Procedure: ANSI C63.4 & C63.10.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	The EUT is battery powered, therefore this test was deemed unnecessary and thus was not performed.
2	Spurious RF Emissions, 9 kHz – 25 GHz.	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
3	Fundamental and Harmonics Emissions produced by the Intentional Radiator	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
4	DTS Bandwidth	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
5	Maximum Conducted Output Power	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
6	RF Conducted Antenna Test	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
7	Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.247, RSS-210, RSS-GEN
8	Variation of Input Power	The EUT is battery powered, therefore this test was deemed unnecessary and thus was not performed.

Reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Smart Cap Model: InCap-100-BA. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 and C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the specification limits defined by RSS 247 Issue 2, RSS Gen Issue 5 Amendment 1, and the Code of Federal Regulations Title 47, Part 15 Subpart B sections, 15.109, & Part 15 Subpart C sections 15.205, 15.209 and 15.247.

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 consideration 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, 20621 Pascal Way, Lake Forest, California 92630.

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

Companion Medical Inc.

Mark Dervaes Engineer

Compatible Electronics, Inc.

Howard Huang Test Engineer
Jeff Klinger Director of EMC Engineering

2.4 Date Test Sample was Received

The test sample was returned and received again on April 29, 2021. Received as described in product description.

2.5 Disposition of the Test Sample

The test sample remains at Compatible Electronics, Inc.

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
HP	Hewlett Packard
ITE	Information Technology Equipment
NVLAP	National Voluntary Laboratory Accreditation Program
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NCR	No Calibration Required
RX	Receive
TX	Transmit
PCB	Printed Circuit Board
PSU	Power Supply Unit

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC CFR Title 47, Part 15, Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
FCC CFR Title 47, Part 15, Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.10: 2013	American National Standard for Testing Unlicensed Wireless Devices
ANSI C63.4 2014	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.
RSS GEN, Issue 5 Amendment 1 (March 2019)	General Requirements for Compliance of Radio Apparatus
RSS 247, Issue 2 (February 2017)	Digital Transmission Systems, Frequency Hopping Systems and License-Exempt Local Area Network Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

The EUT was set up in a standalone table-top configuration. The EUT was tested in the following configuration seen in the image below. For Power Spectral Density and Conducted Peak Power measurement, the EUT was tested with a direct connection to the receiver as noted in section 8.

The EUT was checked in the x, y and z axis. The EUT was tested with a full battery. The EUT was connected to two external batteries via jumper wires or powered by a DC power supply because the production system would not last through the length of the testing. The worst case orientation was deemed to be the z-axis. The EUT was continuously transmitting a data stream during testing.

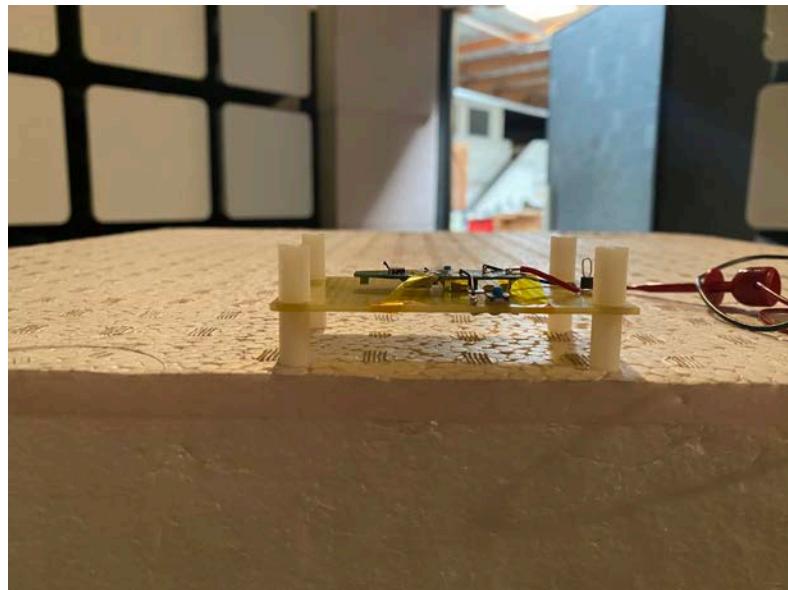
4.1.1. Photograph of Test Configuration



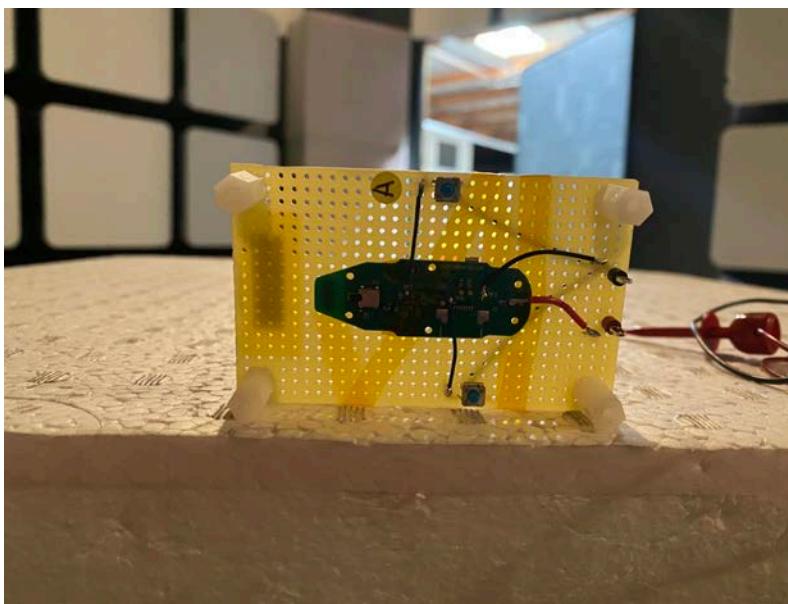
ANSI C63.4



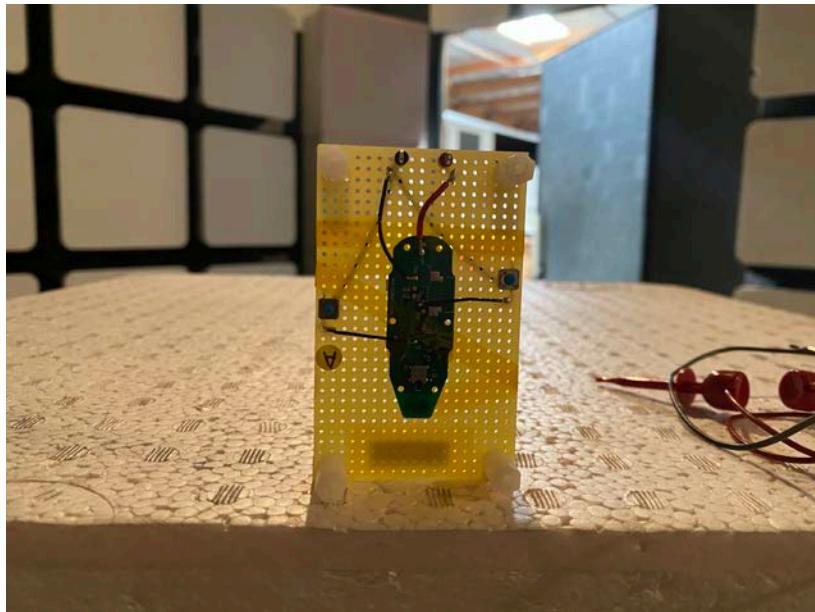
ANSI C63.10

4.1.1.1 Photograph of Test Configuration (Continued)

X axis



Y axis

4.1.1.2 Photograph of Test Configuration (Continued)

Z axis

4.1.2 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 TYPE	MANUFACTURER	MODEL	SERIAL NUMBER
1	SMART CAP (EUT)	COMPANION MEDICAL INC.	InCap-100-BA	4E7324
2	BATTERY X2	DURACELL	AA	NONE
3	DC POWER SUPPLY	MPJA	NONE	017686

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Barometer & Thermometer	Control Company	4088	97080656	01/17/2020	01/17/2023
Computer	Compatible Electronics	NONE	NONE	NCR	NCR
EMI Receiver	Keysight Technologies	N9038A	MY56400077	06/13/2020	09/01/2021
Antenna, CombiLog	Com-Power	AC-220	10030000	04/05/2019	09/01/2021
Antenna, Horn	Com-Power	AH-118	10050074	07/19/2019	07/19/2021
Antenna, Horn	Com-Power	AH-826	081078	07/23/2019	07/23/2021
Mast, Antenna Positioner	Sunol Science Corporation	SC104V	020808-1	NCR	NCR
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	NCR	NCR
Turntable	Sunol Science Corporation	FM2011VS	NONE	NCR	NCR

5.3 Test Software

LAB(S)	SOFTWARE TITLE	MANUFACTURER	VERSION
P, R	Measurement and Automation Software	TDK TestLab	11.24

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

All the radiated emissions measurements were performed in a semi-anechoic chamber.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 0.6 by 1.2-meter by 0.8 meters high non-conductive table for below 1 GHz which was placed on the ground plane. For above 1 GHz, the EUT was mounted 1.5 meters above the ground plane.

The EUT was not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature and barometric pressure.

6.4 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	U_{cispr}	$U_{lab} = 2 u_c(y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.6 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 18 GHz)	5.2 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(18 GHz - 26 GHz)	N/A

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

The Smart Cap, InCap-100-BA operates on three channels at 2402, 2440 and 2480 MHz.

7.2 Antenna

The Antenna is a loop Antenna soldered to the PCB.

7.3 Software

The EUT is operated using software SSC-00806.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

Test Results:

The EUT was battery powered, therefore this test was deemed unnecessary and thus was not performed. Had this test been deemed applicable, it would have been performed as described below.

The EMI Receiver was used as a measuring meter. A 10-dB attenuation pad was used for the protection of the EMI Receiver input stage. All factors associated with attenuator and cables were recorded into the EMI Software Program accordingly to display the actual corrected measured level. The LISN output was connected to the input of the EMI Receiver. The output of the second LISN was terminated with 50-ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

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

The initial test data was taken in manual mode while scanning the frequency ranges of 0.15 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the computer in several overlapping sweeps by running the EMI Receiver at a minimum scan rate of 10 seconds per octave.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI receiver was used as a measuring meter. The receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the receiver records the highest measured reading over all the sweeps.

For spurious emissions, the quasi-peak detector was used for frequencies below 1GHz and the average detector was used for frequencies above 1 GHz.

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

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 Hz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	100 kHz (120kHz for QP Measurements)
1000 to 25000	Horn Antenna	1 MHz

The TDK FAC-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4 & ANSI C63.10. 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 in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart C sections 15.205, 15.209 and 15.247; and RSS-247, RSS-GEN. The six highest emissions are listed in Table 1.

8.1.3 RF Emissions Test Results

Table 1 HIGHEST EMISSION RESULTS
SMART CAP MODEL: INCAP-100BA

Frequency MHz	Corrected Reading* dBuV/m	Specification Limit dBuV/m	Delta (Cor. Reading – Spec. Limit) dB
4880.00 H (X Axis)	37.60 A	53.97	-16.37
4960.00 H (X Axis)	37.25 A	53.97	-16.72
937.60 V (Z Axis)	28.74 #	46.00	-17.26
930.10 V (Z Axis)	28.70 #	46.00	-17.30
940.00 H (Z Axis)	28.69 #	46.00	-17.31
942.50 V (Z Axis)	28.68 #	46.00	-17.32

Notes:

- * The complete emissions data is given in Appendix E of this report.
- ** The factors for the antenna are attached in Appendix D of this report.
- # Quasi-Peak Reading
- A Average Reading
- V Vertical Reading
- H Horizontal Reading

8.1.4 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 (μ V/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.

8.2 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. The Bandwidth was measured using a direct connection from the EUT. The following steps were performed for measuring the DTS Bandwidth, as described in section 11.8.1 of ANSI C63.10

1. Set RBW = 100 kHz
2. Set the video bandwidth (VBW) to equal or greater than 3 times the RBW
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep = Auto Couple
6. Allow the trace to stabilize
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Results:

The EUT complies with the relevant requirements as specified in the Summary of Test Results starting on Page 6.

8.3 Maximum Peak Conducted Output Power

The Conducted Peak Output Power was measured using the EMI Receiver. The Peak Output Power was measured using the peak power measurement procedure describe in section 11.9.1.1 of ANSI C63.10. The Maximum Conducted Output Power was then taken.

1. Set RBW \geq DTS Bandwidth
2. Set the VBW \geq [3x RBW]
3. Set span \geq [3x RBW]
4. Detector = Peak
5. Sweep time = Auto Couple
6. Trace mode = Max Hold
7. Allow the trace to stabilize
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Results:

The EUT complies with the relevant requirements as specified in the Summary of Test Results starting on Page 6.

8.4 Emissions in Non-Restricted Bands

The emissions in the non-restricted frequency bands measurements were performed using the EMI receiver directly connected to the EUT. The reference level was established by setting the instrument center frequency to DTS channel center frequency. The span was set to ≥ 1.5 times the DTS bandwidth. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with sweep set to auto. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the level and 20 dB below that was the reference level. For emission level measurement, the center frequency and span were set to encompass the frequency range to be measured. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with a sweep time set to auto. The number of measurement points were greater than the span/RBW. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the maximum amplitude level. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the relevant requirements as specified in the Summary of Test Results starting on Page 6.

8.5 RF Band Edges and Out of Band Emissions

The RF band edges were measured using the EMI Receiver. The RF band edges were measured twice using a direct connection from the RF out on the EUT into the input of the EMI Receiver for non-restricted bands and using radiated field strength measurement for restricted bands.

The RF band edges were taken at 2390 MHz (restricted bands) when the EUT was on the low channel and 2483.5 MHz when the EUT was on the high channel using the EMI Receiver. The radiated emissions test procedure as describe in section 8.1.2 of this test report was used to maximize the emission.

The RF band edge was also taken at 2400 MHz (DTS bands) when the EUT was on the low channel.

The following steps were performed for measuring the band edge at 2400 MHz:

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span wide enough to cover the band edges.
3. Set the RBW to 100 kHz (1 MHz for non-restricted band)
4. Set the VBW $\geq 3 \times$ RBW
5. Detector = Peak
6. Sweep time = auto couple
7. Allow the trace to stabilize
8. Use the peak marker function to determine the maximum amplitude level

Test Results:

The EUT complies with the relevant requirements as specified in the Summary of Test Results starting on Page 6.

8.6 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver.

The following steps were performed for measuring the spectral density, per section 11.10.2 of ANSI C63.10.

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span to at least 1.5 times the OBW.
3. Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
4. Set the VBW $\geq [3 \times \text{RBW}]$
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize
9. Use the peak marker function to determine the maximum amplitude level within the RBW
10. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Test Results:

The EUT complies with the relevant requirements as specified in the Summary of Test Results starting on Page 6.

8.7 Variation of the Input Power

Test Results:

The EUT was battery powered, therefore this test was deemed unnecessary and thus was not performed. Had this test been deemed applicable, it would have been performed as described below.

The variation of the input power test was performed using the EMI Receiver. The EUT input power was varied between 85% and 115% of the nominal rated supply voltage. The carrier frequency was monitored for any change in amplitude.

9. TEST PROCEDURE DEVIATIONS

There were no deviations from the test procedures.

10. CONCLUSIONS

The Smart Cap Model: InCap-100BA as tested, meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart B section, 15.109, & Subpart C sections 15.205, 15.209 and 15.247, RSS 247 Issue 2, and RSS Gen, Issue 5 Amendment 1.

APPENDIX A***LABORATORY ACCREDITATIONS***

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/>

Quote from ISO-ILAC-IAF Communiqué on the Management Systems Requirements of ISO/IEC 17025, General Requirements for the competence of testing and calibration laboratories:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025 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 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001"

Innovation, Science and Economic Development Canada Lab Code 2154C

APPENDIX B***MODIFICATIONS TO THE EUT***

MODIFICATIONS TO THE EUT

There were no modifications made to the EUT.

APPENDIX C***ADDITIONAL MODELS***

Used for the Primary Tests

Smart Cap
Model: InCap-100BA
S/N: 4E7324
FCC ID: 2AGUHINCAP

No additional models.

APPENDIX D***DIAGRAMS, CHARTS AND PHOTOS***

**FIGURE 1: RADIATED EMISSIONS 3-METER
SEMI -ANECHOIC TEST CHAMBER**

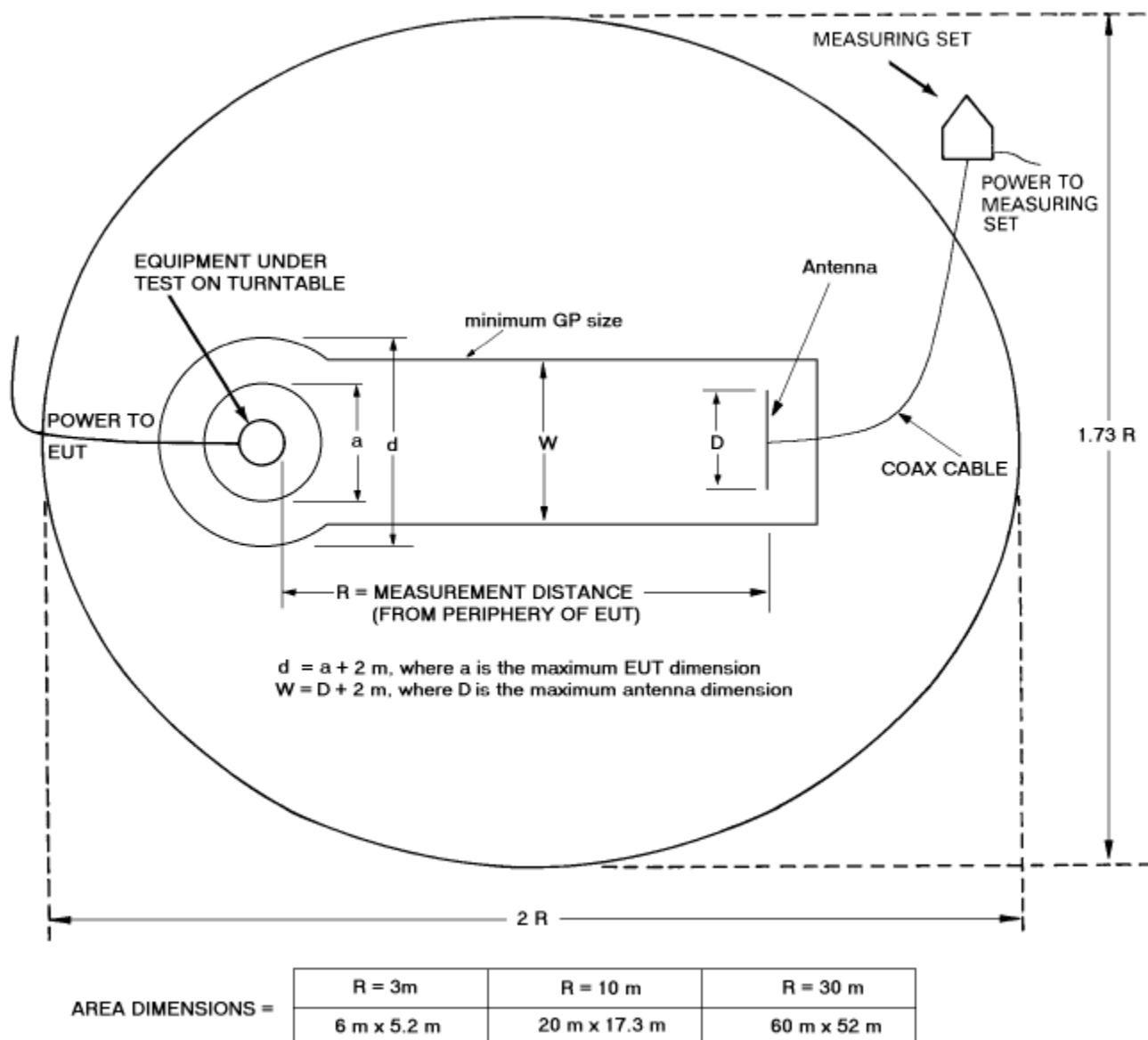
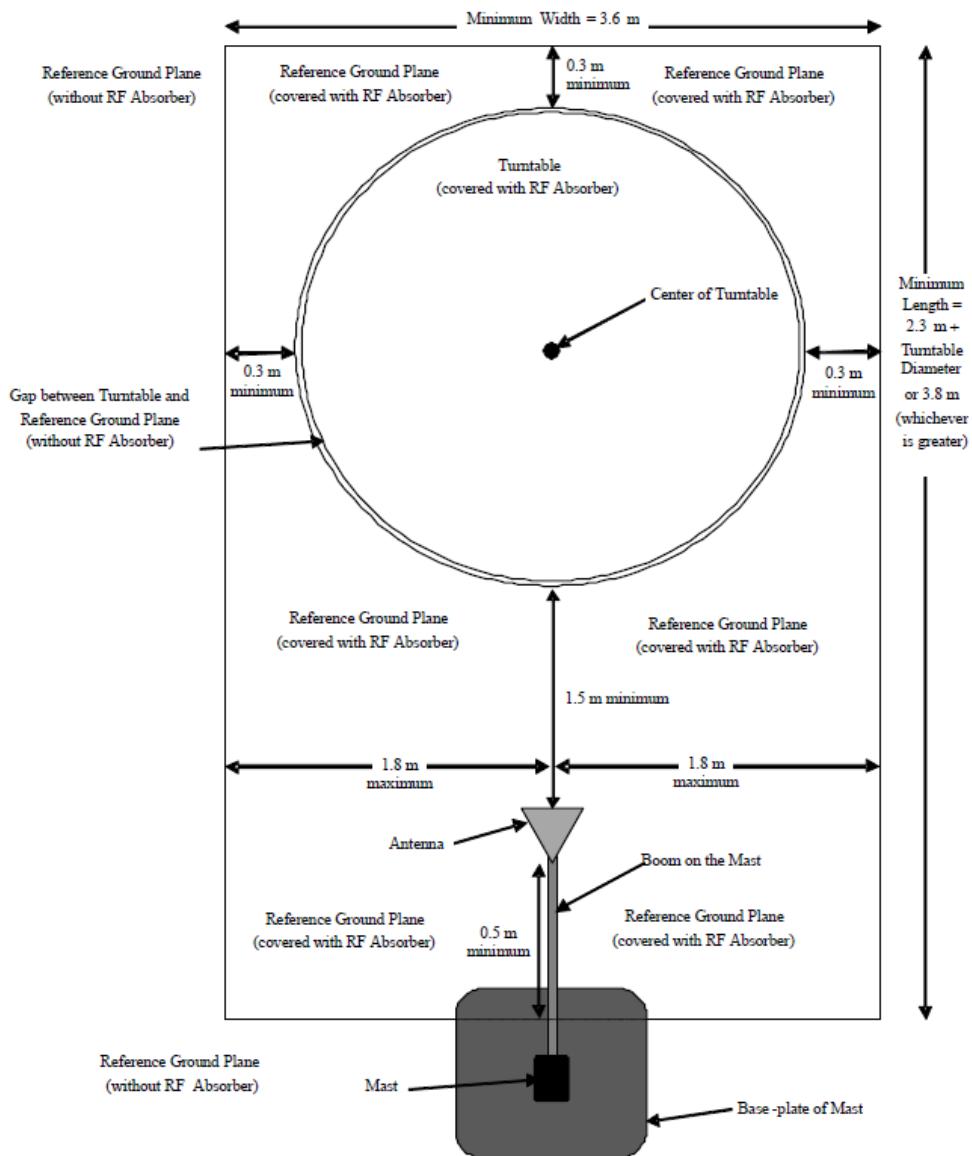


FIGURE 2: HIGH FREQUENCY TEST VOLUME


COM-POWER AC-220

LAB R - COMBILOG ANTENNA

S/N: 10030000

CALIBRATION DATE: APRIL 5, 2019

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	24.05	160	13.57
35	22.46	180	14.07
40	19.36	200	14.72
45	17.42	250	18.27
50	15.77	300	20.95
60	12.86	400	23.16
70	11.22	500	21.86
80	11.84	600	23.54
90	13.48	700	23.85
100	14.80	800	25.91
120	16.38	900	26.71
140	14.41	1000	27.60

COM-POWER AH-118**HORN ANTENNA****S/N: 10050074****CALIBRATION DATE: JULY 19, 2019**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
700	25.84	7500	37.73
750	25.46	8000	38.05
800	24.96	8500	38.29
850	24.51	9000	38.93
900	24.01	9500	39.64
950	23.73	10000	39.12
1000	23.83	10500	39.16
1250	24.81	11000	39.18
1500	25.32	11500	39.85
1750	26.30	12000	40.27
2000	27.94	12500	40.91
2250	28.16	13000	40.50
2500	29.07	13500	40.59
3000	30.07	14000	40.44
3500	30.81	14500	40.62
4000	31.68	15000	43.35
4500	32.64	15500	40.76
5000	33.79	16000	41.61
5500	34.20	16500	40.38
6000	35.24	17000	40.88
6500	35.74	17500	42.79
7000	37.17	18000	43.86

COM-POWER AH-826

HORN ANTENNA

S/N: 081078

CALIBRATION DATE: JULY 23, 2019

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
18.00	32.83	21.25	33.71
18.10	32.74	21.50	33.58
18.20	32.68	21.75	33.70
18.30	32.67	22.00	33.88
18.40	32.73	22.25	33.88
18.50	32.83	22.50	34.00
18.60	32.90	22.75	33.91
18.70	32.95	23.00	33.93
18.80	33.00	23.25	34.07
18.90	33.06	23.50	34.17
19.00	33.08	23.75	34.36
19.10	33.12	24.00	34.35
19.20	33.17	24.25	34.29
19.30	33.18	24.50	34.34
19.40	33.15	24.75	34.40
19.50	33.10	25.00	34.58
19.75	33.07	25.25	34.65
20.00	33.21	25.50	34.60
20.25	33.31	25.75	34.61
20.50	33.64	26.00	34.64
20.75	33.65	26.25	34.74
21.00	33.58	26.50	35.08



FRONT VIEW

COMPANION MEDICAL INC.
SMART CAP
MODEL: INCAP-100BA
FCC SUBPART C - RADIATED EMISSIONS UNDER 1 GHz
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

COMPANION MEDICAL INC.
SMART CAP
MODEL: INCAP-100BA
FCC SUBPART C - RADIATED EMISSIONS UNDER 1 GHz
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



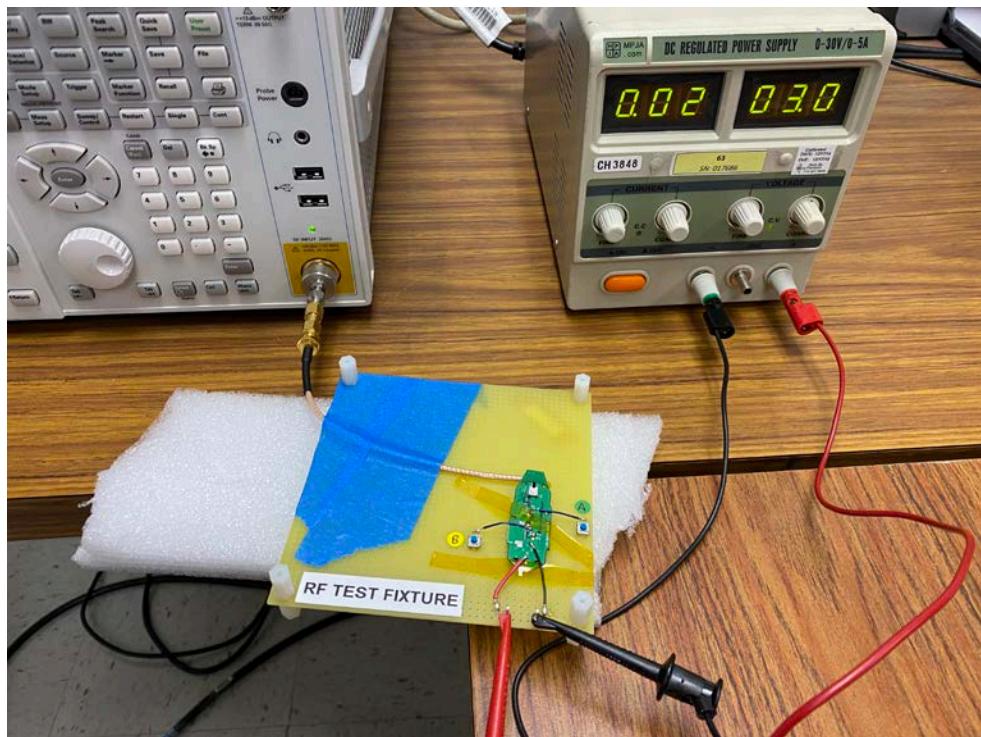
FRONT VIEW

COMPANION MEDICAL INC.
SMART CAP
MODEL: INCAP-100BA
FCC SUBPART C - RADIATED EMISSIONS ABOVE 1 GHz
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

COMPANION MEDICAL INC.
SMART CAP
MODEL: INCAP-100BA
FCC SUBPART C - RADIATED EMISSIONS ABOVE 1 GHz
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



COMPANION MEDICAL INC.
SMART CAP
MODEL: INCAP-100BA
FCC SUBPART C, SECTION 15.247 - CONDUCTED MEASUREMENT

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E***DATA SHEETS***

RADIATED EMISSIONS***DATA SHEETS***

Test title: FCC 15.209

9/25/2020 9:33:47 AM

File: Radiated Pre - Scan 30 - 1000MHz

Sequence: Preliminary Scan

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2402 MHz

Notes: Company: COMPANION MEDICAL INC.

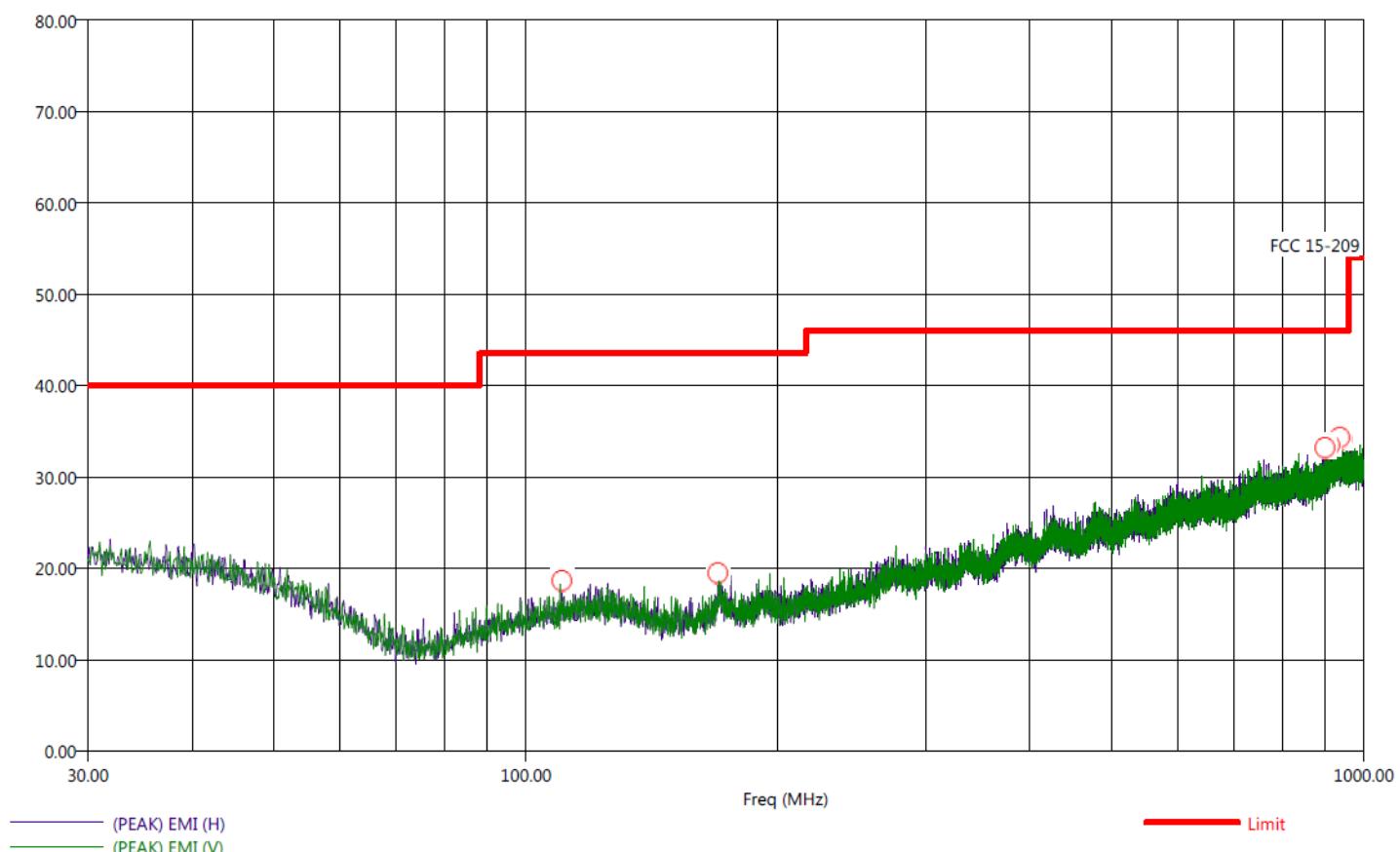
Temp: 75f

Hum: 38%

Low Channel, Z axis

Compatible Electronics, Inc. FAC-3 (LAB R)

Electric Field Strength (dBuV/m)



No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

Test title: FCC 15.209

9/25/2020 9:41:53 AM

File: Radiated Final - Scan 30 - 1000MHz

Sequence: Final Measurements

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2402 MHz

Notes: Company: COMPANION MEDICAL INC.

Temp:75f

Hum:38%

Low Channel, Z axis

Compatible Electronics, Inc. FAC-3 (LAB R)

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(QP) Margin (dB)	Limit (dB μ V/m)	Twr Ht (cm)	Ttbl Ang (deg)	Cable (dB)	Transducer (dB)
110.50	H	17.78	12.82	-30.70	43.52	300.73	354.50	0.85	15.03
169.60	H	19.36	14.03	-29.49	43.52	313.08	35.25	1.13	15.94
900.20	V	32.85	27.54	-18.46	46.00	244.91	77.50	2.46	27.00
912.10	V	33.52	28.04	-17.96	46.00	179.47	358.00	2.48	27.50
937.60	V	33.65	28.74	-17.26	46.00	131.05	263.00	2.51	28.10
942.50	V	33.49	28.68	-17.32	46.00	268.61	77.00	2.52	28.04

No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

Test title: FCC 15.209

File: 02-Radiated Pre - Scan 30 - 1000MHz

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2440 MHz

Notes: Company: COMPANION MEDICAL INC.

Temp: 75f

Hum: 38%

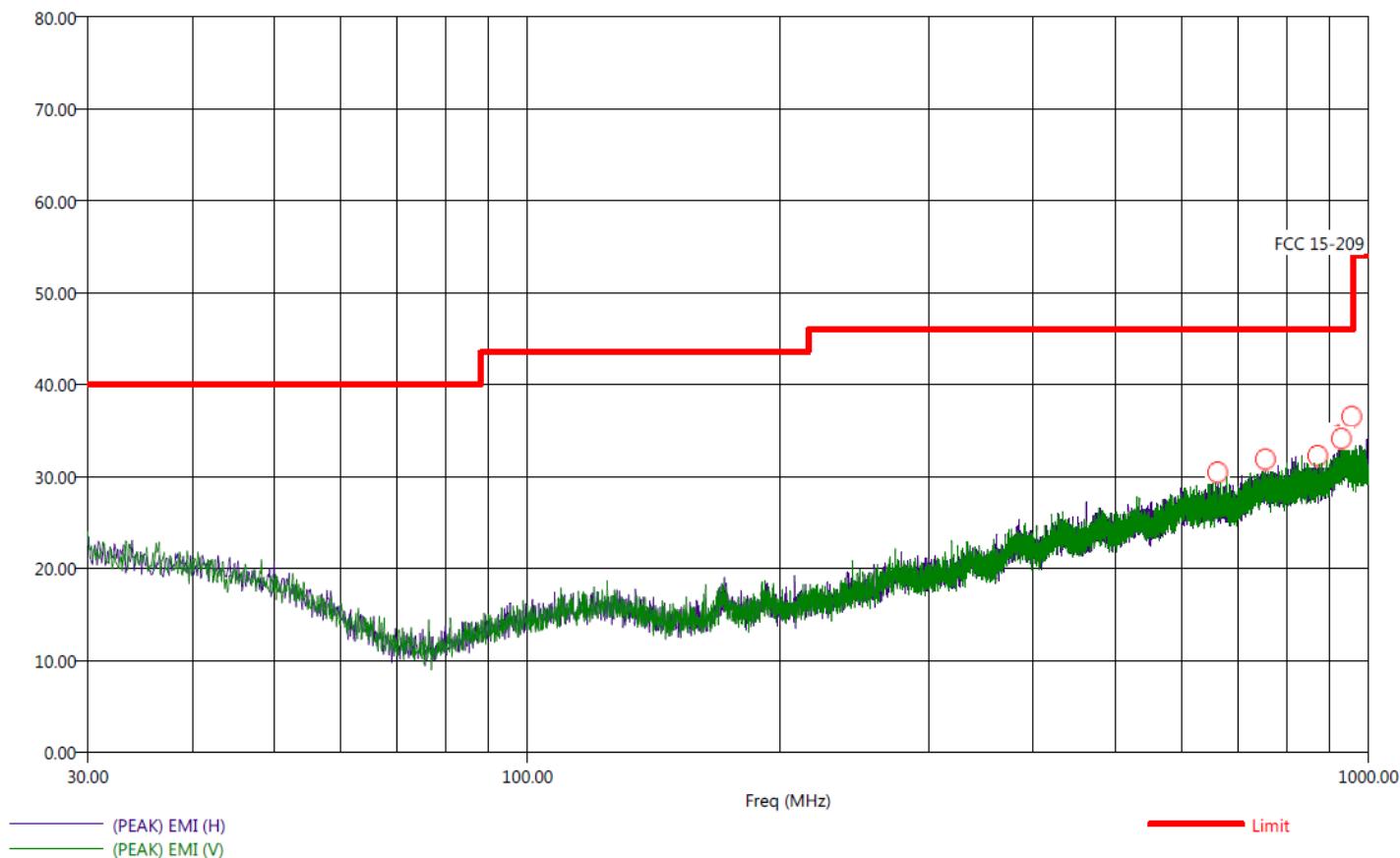
Mid Channel, Z axis

9/25/2020 9:55:39 AM

Sequence: Preliminary Scan

Compatible Electronics, Inc. FAC-3 (LAB R)

Electric Field Strength (dBuV/m)



No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

Test title: FCC 15.209

9/25/2020 10:05:19 AM

File: 02-Radiated Final - Scan 30 - 1000MHz

Sequence: Final Measurements

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2440 MHz

Notes: Company: COMPANION MEDICAL INC.

Temp:75f

Hum:38%

Mid Channel, Z axis

Compatible Electronics, Inc. FAC-3 (LAB R)

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(QP) Margin (dB)	Limit (dB μ V/m)	Twr Ht (cm)	Ttbl Ang (deg)	Cable (dB)	Transducer (dB)
662.80	H	29.35	24.37	-21.63	46.00	394.88	290.50	2.11	24.60
755.50	V	31.90	26.26	-19.74	46.00	137.08	359.75	2.26	26.20
871.40	H	31.57	26.74	-19.26	46.00	378.46	204.75	2.43	26.30
926.20	H	33.77	28.58	-17.42	46.00	202.34	216.50	2.50	28.00
930.10	V	33.55	28.70	-17.30	46.00	180.73	281.25	2.50	28.10
956.90	V	33.70	28.46	-17.54	46.00	335.47	353.25	2.54	27.72

No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

Test title: FCC 15.209

File: 03-Radiated Pre - Scan 30 - 1000MHz

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2480 MHz

Notes: Company: COMPANION MEDICAL INC.

Temp: 75f

Hum: 38%

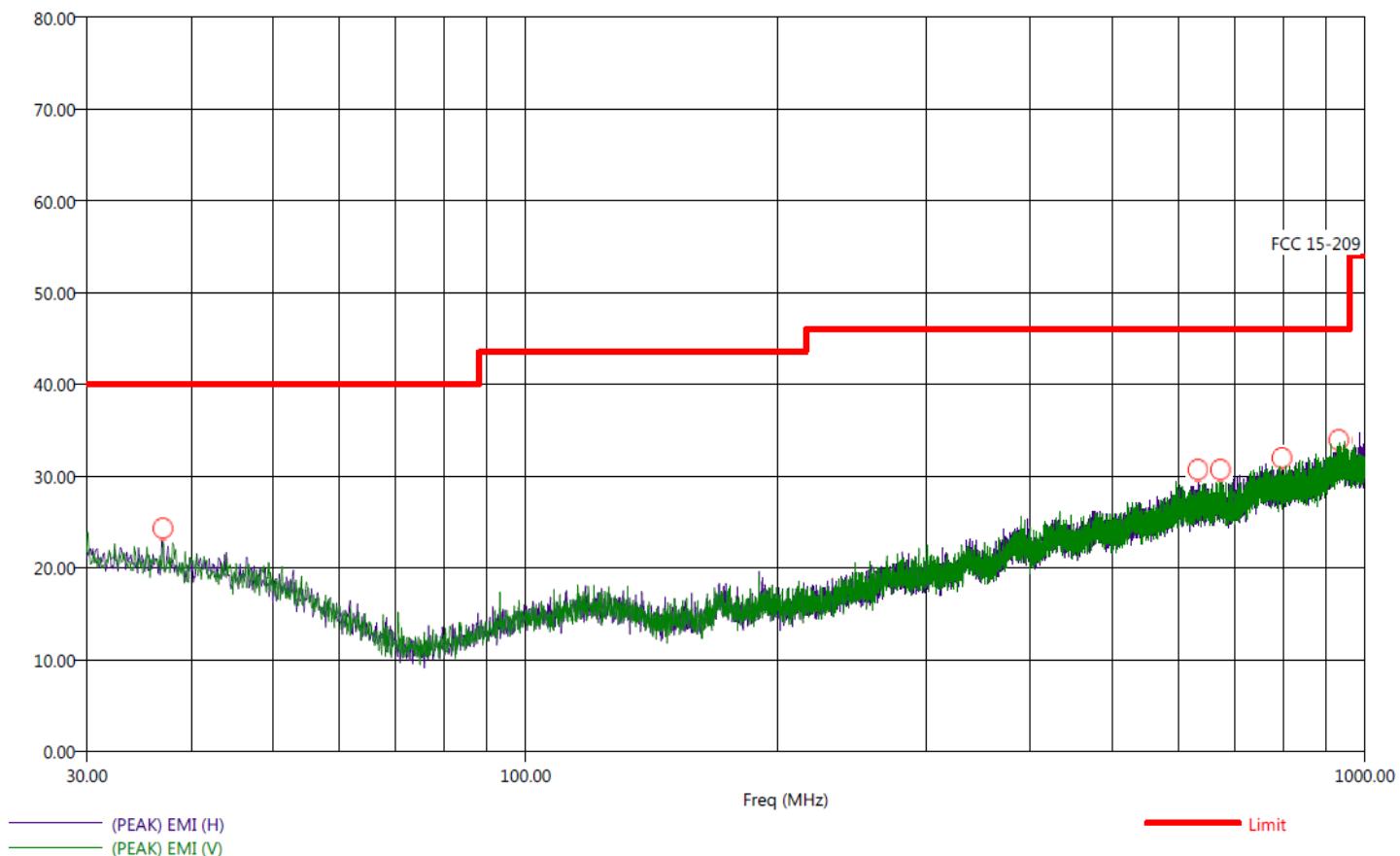
High Channel, Z axis

9/25/2020 10:25:57 AM

Sequence: Preliminary Scan

Compatible Electronics, Inc. FAC-3 (LAB R)

Electric Field Strength (dBuV/m)



No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

Test title: FCC 15.209

9/25/2020 10:33:17 AM

File: 03-Radiated Final - Scan 30 - 1000MHz

Sequence: Final Measurements

Operator name: Howard Huang

EUT type: Smart Cap/InCap-100BA

EUT condition: The EUT is constantly transmitting at 2480 MHz

Notes: Company: COMPANION MEDICAL INC.

Temp:75f

Hum:38%

High Channel, Z axis

Compatible Electronics, Inc. FAC-3 (LAB R)

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(QP) Margin (dB)	Limit (dB μ V/m)	Twr Ht (cm)	Ttbl Ang (deg)	Cable (dB)	Transducer (dB)
37.00	H	23.04	18.04	-21.96	40.00	394.94	306.75	0.44	20.79
633.60	H	28.95	23.97	-22.03	46.00	292.49	87.75	2.06	24.30
673.80	V	29.40	24.32	-21.68	46.00	258.34	180.50	2.12	24.70
797.90	H	31.00	26.07	-19.93	46.00	283.89	282.75	2.30	26.10
932.40	H	33.75	28.58	-17.42	46.00	309.20	279.25	2.51	28.13
940.00	H	33.87	28.69	-17.31	46.00	186.88	219.00	2.52	28.10

No spurious emissions found besides fundamental and harmonics from 9kHz to 30 MHz and from 1 to 25 GHz

HARMONICS HORIZONTAL – LOW CHANNEL

FCC 15.247

Company: Companion Medical Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 09/24/2020
 Lab: R
 Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4804.0							No Emission Found
4804.0							X-Axis
4804.0							No Emission Found
4804.0							Y-Axis
4804.0	54.75	73.98	-19.23	Peak	331.00	140	Z-Axis
4804.0	35.66	53.98	-18.32	Avg			Z-Axis
7206.0							Not in Restricted Bands
7206.0							Done via Conducted
9608.0							Not in Restricted Bands
9608.0							Done via Conducted
12010.0							No Emission Found
12010.0							No Emission Found
14412.0	No Emission Found						Not in Restricted Bands
14412.0							Done via Conducted
16814.0	No Emission Found						Not in Restricted Bands
16814.0							Done via Conducted
19216.0							No Emission Found
19216.0							No Emission Found
21618.0	No Emission Found						Not in Restricted Bands
21618.0							Done via Conducted
24020.0	No Emission Found						Not in Restricted Bands
24020.0							Done via Conducted

Test distance
3 meters

HARMONICS VERTICAL – LOW CHANNEL

FCC 15.247

Company: Companion Medical Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 09/24/2020
 Lab: R
 Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4804.0							No Emission Found
4804.0							X-Axis
4804.0							No Emission Found
4804.0							Y-Axis
4804.0	54.75	73.98	-19.23	Peak	331.00	140	Z-Axis
4804.0	35.66	53.98	-18.32	Avg			Z-Axis
7206.0							Not in Restricted Bands
7206.0							Done via Conducted
9608.0							Not in Restricted Bands
9608.0							Done via Conducted
12010.0							No Emission Found
12010.0							No Emission Found
14412.0	No Emission Found						Not in Restricted Bands
14412.0							Done via Conducted
16814.0	No Emission Found						Not in Restricted Bands
16814.0							Done via Conducted
19216.0							No Emission Found
19216.0							No Emission Found
21618.0	No Emission Found						Not in Restricted Bands
21618.0							Done via Conducted
24020.0	No Emission Found						Not in Restricted Bands
24020.0							Done via Conducted

Test distance
3 meters

HARMONICS HORIZONTAL – MID CHANNEL

FCC 15.247

Company: Companion Medical Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 09/24/2020
Lab: R
Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4880.0	54.65	73.98	-19.33	Peak	103.00	170	X-Axis
4880.0	37.60	53.98	-16.38	Avg			X-Axis
4880.0							No Emission Found
4880.0							Y-Axis
4880.0	54.62	73.98	-19.36	Peak	325.00	149	Z-Axis
4880.0	36.26	53.98	-17.72	Avg			Z-Axis
7320.0							No Emission Found
7320.0							No Emission Found
9760.0	No Emission Found						Not in Restricted Bands
9760.0							Done via Conducted
12200.0							No Emission Found
12200.0							No Emission Found
14640.0	No Emission Found						Not in Restricted Bands
14640.0							Done via Conducted
17080.0	No Emission Found						Not in Restricted Bands
17080.0							Done via Conducted
19520.0							No Emission Found
19520.0							No Emission Found
21960.0	No Emission Found						Not in Restricted Bands
21960.0							Done via Conducted
24400.0	No Emission Found						Not in Restricted Bands
24400.0							Done via Conducted

Test distance
3 meters

HARMONICS VERTICAL – MID CHANNEL

FCC 15.247

Company: Companion Medical Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 09/24/2020
Lab: R
Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4880.0	52.49	73.98	-21.49	Peak	107.00	148	X-Axis
4880.0	33.34	53.98	-20.64	Avg			X-Axis
4880.0							No Emission Found
4880.0							Y-Axis
4880.0	53.59	73.98	-20.39	Peak	340.00	155	Z-Axis
4880.0	34.54	53.98	-19.44	Avg			Z-Axis
7320.0							No Emission Found
7320.0							No Emission Found
9760.0	No Emission Found						Not in Restricted Bands
9760.0							Done via Conducted
12200.0							No Emission Found
12200.0							No Emission Found
14640.0	No Emission Found						Not in Restricted Bands
14640.0							Done via Conducted
17080.0	No Emission Found						Not in Restricted Bands
17080.0							Done via Conducted
19520.0							No Emission Found
19520.0							No Emission Found
21960.0	No Emission Found						Not in Restricted Bands
21960.0							Done via Conducted
24400.0	No Emission Found						Not in Restricted Bands
24400.0							Done via Conducted

Test distance
3 meters

HARMONICS HORIZONTAL – HIGH CHANNEL

FCC 15.247

Company: Companion Medical Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 09/25/2020
Lab: R
Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4960.0	54.43	73.98	-19.55	Peak	103.00	142	X-Axis
4960.0	37.25	53.98	-16.73	Avg			X-Axis
4960.0		73.98	-73.98	Peak			No Emission Found
4960.0		53.98	-53.98	Avg			Y-Axis
4960.0	52.52	73.98	-21.46	Peak	334.00	147	Z-Axis
4960.0	36.04	53.98	-17.94	Avg			Z-Axis
7440.0							No Emission Found
7440.0							No Emission Found
9920.0	No Emission Found						Not in Restricted Bands
9920.0							Done via Conducted
12400.0							No Emission Found
12400.0							No Emission Found
14880.0	No Emission Found						Not in Restricted Bands
14880.0							Done via Conducted
17360.0	No Emission Found						Not in Restricted Bands
17360.0							Done via Conducted
19840.0							No Emission Found
19840.0							No Emission Found
22320.0							No Emission Found
22320.0							No Emission Found
24800.0	No Emission Found						Not in Restricted Bands
24800.0							Done via Conducted

Test distance
3 meters

HARMONICS VERTICAL – HIGH CHANNEL

FCC 15.247

Company: Companion Medical Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 09/25/2020
Lab: R
Tested By: Howard Huang

Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak / QP / Avg	Table Angle (deg)	Ant. Height (m)	Comments
4960.0	54.33	73.98	-19.65	Peak	57.00	137	X-Axis
4960.0	34.88	53.98	-19.10	Avg			X-Axis
4960.0		73.98	-73.98	Peak			No Emission Found
4960.0		53.98	-53.98	Avg			Y-Axis
4960.0	53.70	73.98	-20.28	Peak	334.00	147	Z-Axis
4960.0	35.40	53.98	-18.58	Avg			Z-Axis
7440.0							No Emission Found
7440.0							No Emission Found
9920.0	No Emission Found						Not in Restricted Bands
9920.0							Done via Conducted
12400.0							No Emission Found
12400.0							No Emission Found
14880.0	No Emission Found						Not in Restricted Bands
14880.0							Done via Conducted
17360.0	No Emission Found						Not in Restricted Bands
17360.0							Done via Conducted
19840.0							No Emission Found
19840.0							No Emission Found
22320.0							No Emission Found
22320.0							No Emission Found
24800.0	No Emission Found						Not in Restricted Bands
24800.0							Done via Conducted

Test distance
3 meters

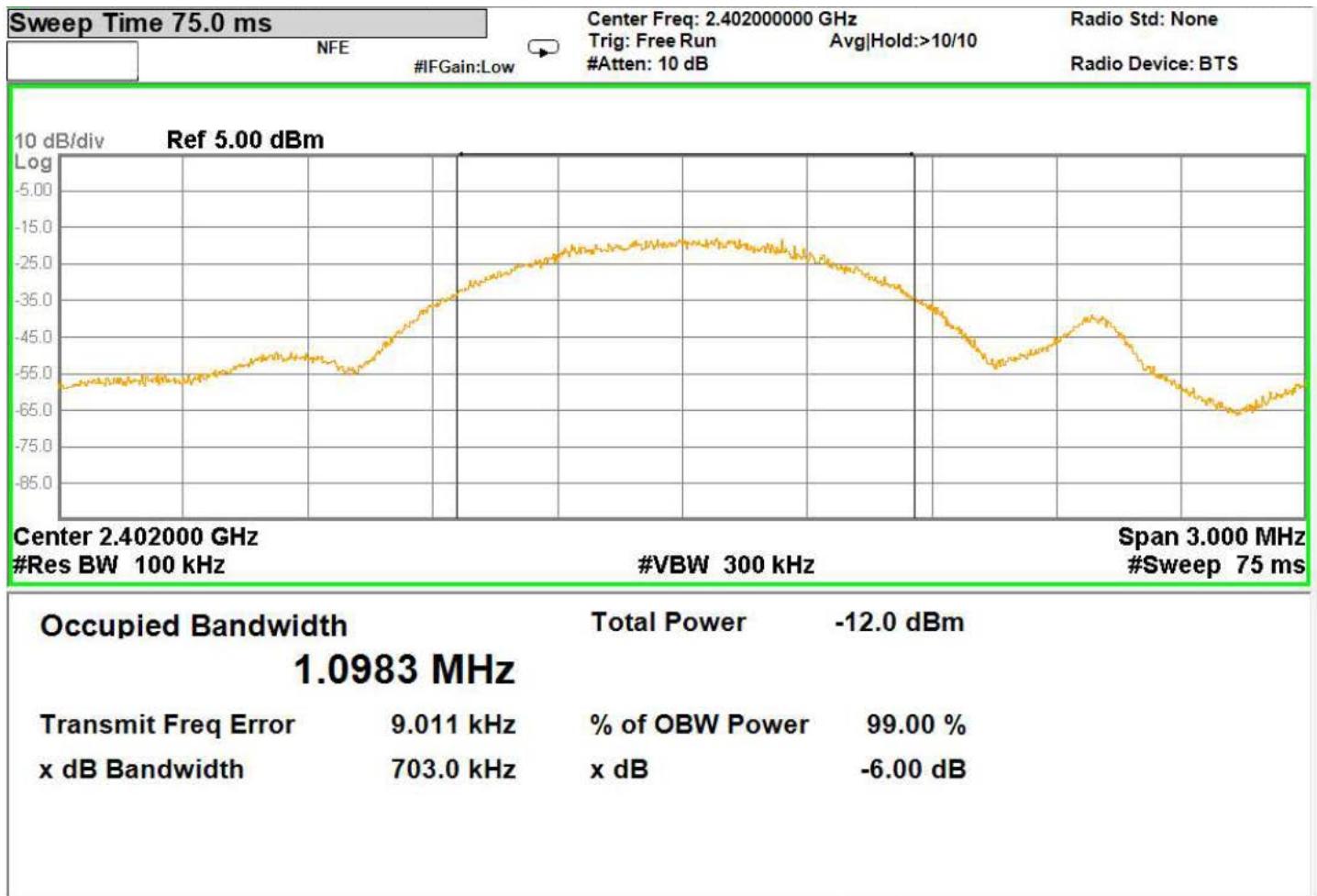
DTS BANDWIDTH***DATA SHEETS***

DTS BANDWIDTH – LOW CHANNEL

FCC 15.247

Company: Companion Medical Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 4/29/2021
Lab: R
Tested By: Howard Huang

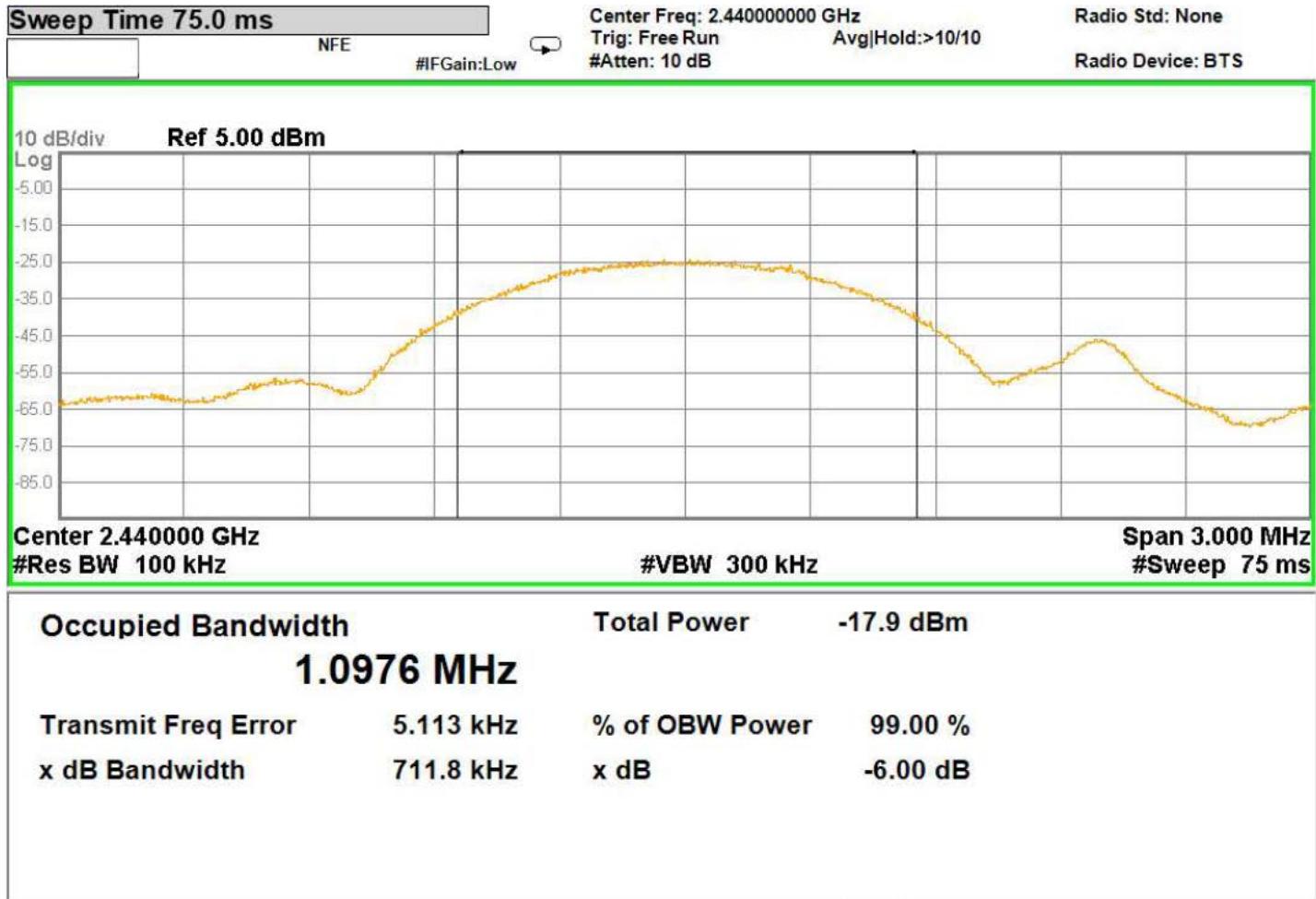


DTS BANDWIDTH – MID CHANNEL

FCC 15.247

Company: Companion Medical Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/201
 Lab: R
 Tested By: Howard Huang

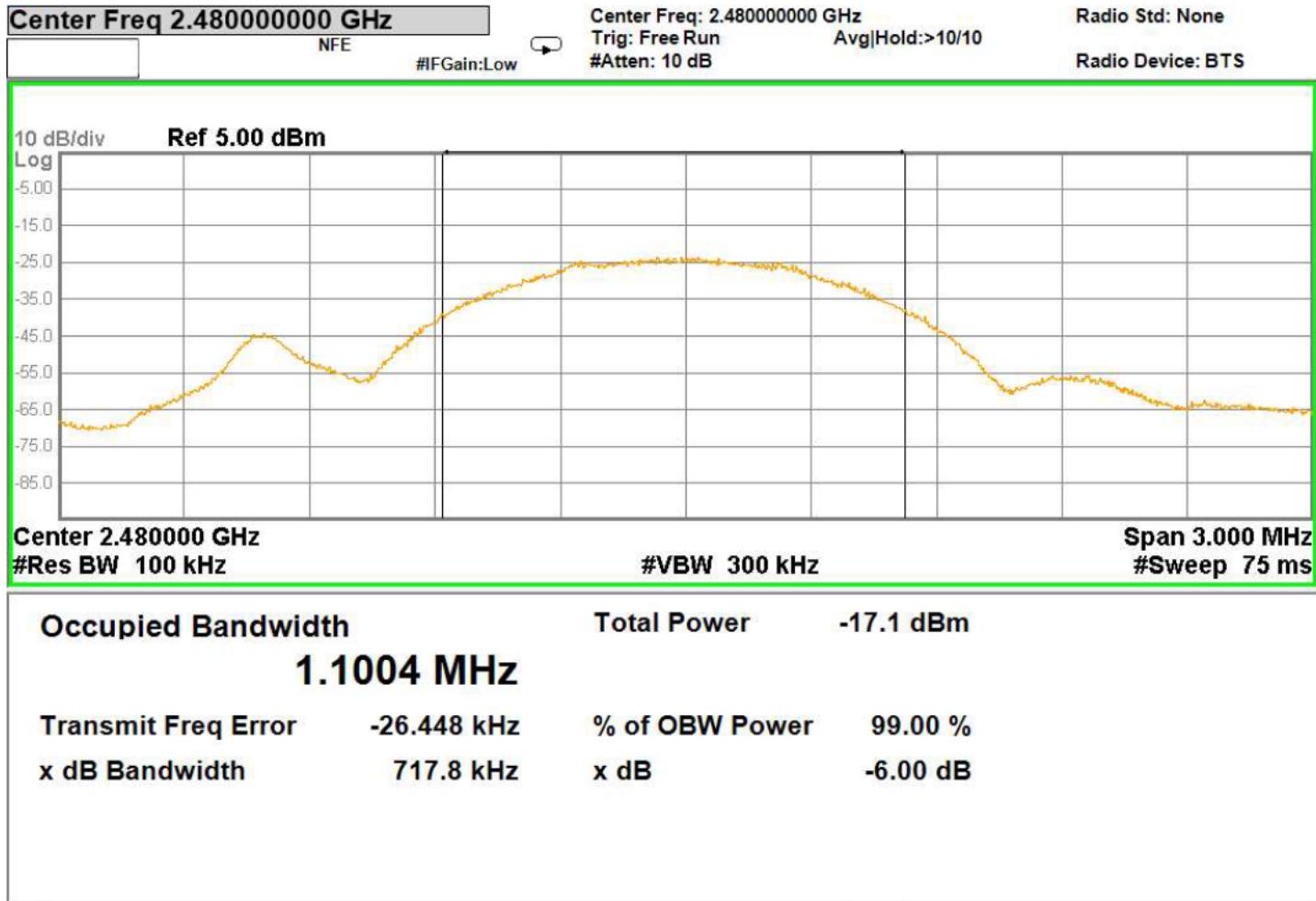


DTS BANDWIDTH – HIGH CHANNEL

FCC 15.247

Company: Companion Medical Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



BAND EDGES***DATA SHEETS***

LOWER BAND EDGE IN RESTRICTED BANDS - HORIZONTAL

FCC 15.247

Company: Companion Medical, Inc.
EUT: Smart Cap
Model: InCap-100BA

Date: 04/29/2021
Lab: R
Tested By: Howard Huang

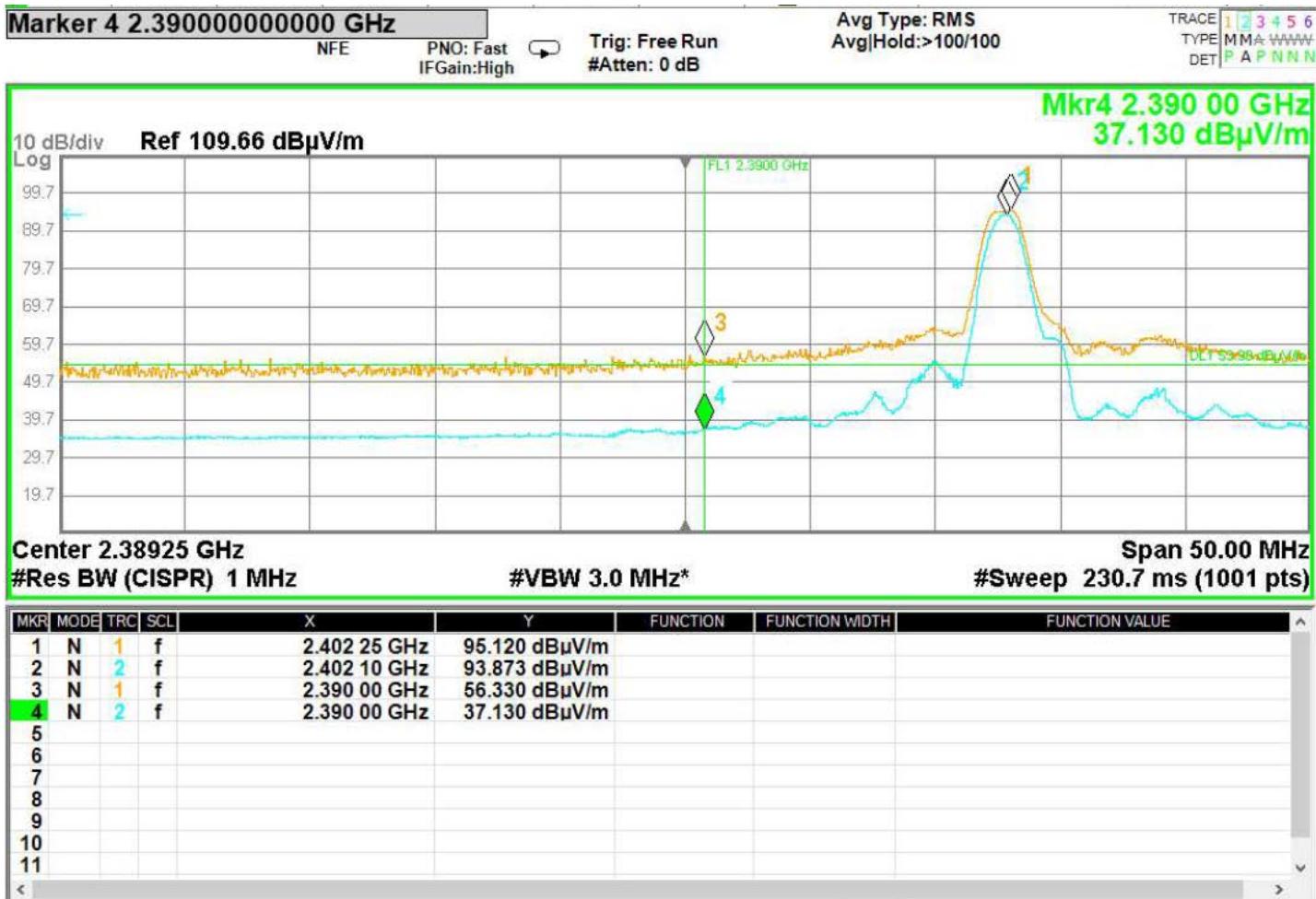


LOWER BAND EDGE IN RESTRICTED BANDS - VERTICAL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



UPPER BAND EDGE IN RESTRICTED BANDS - HORIZONTAL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



UPPER BAND EDGE IN RESTRICTED BANDS - VERTICAL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



LOWER BAND EDGE AND OUT OF BANDS EMISSIONS

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang

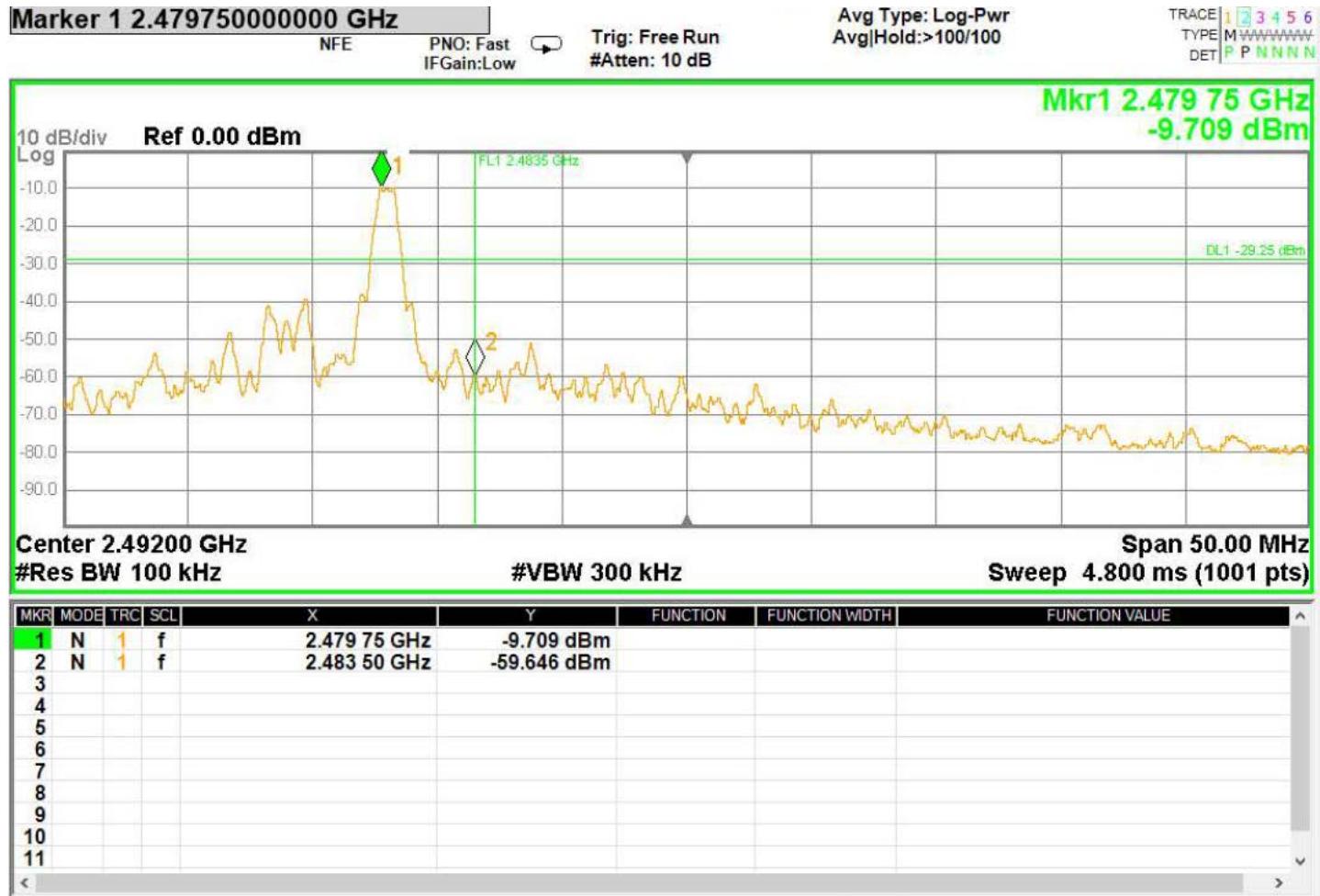


UPPER BAND EDGE AND OUT OF BANDS EMISSIONS

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



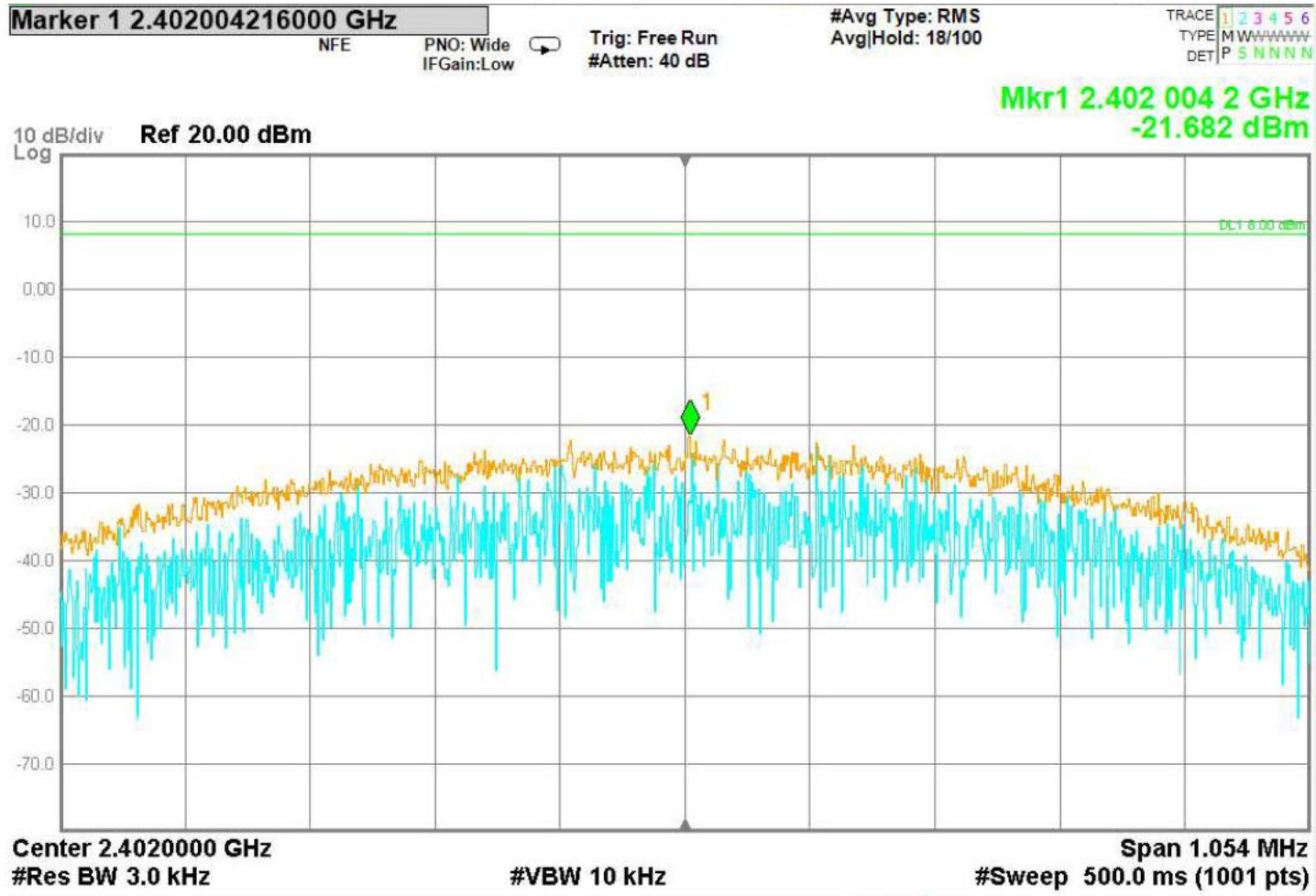
POWER SPECTRAL DENSITY***DATA SHEETS***

POWER SPECTRAL DENSITY – LOW CHANNEL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang

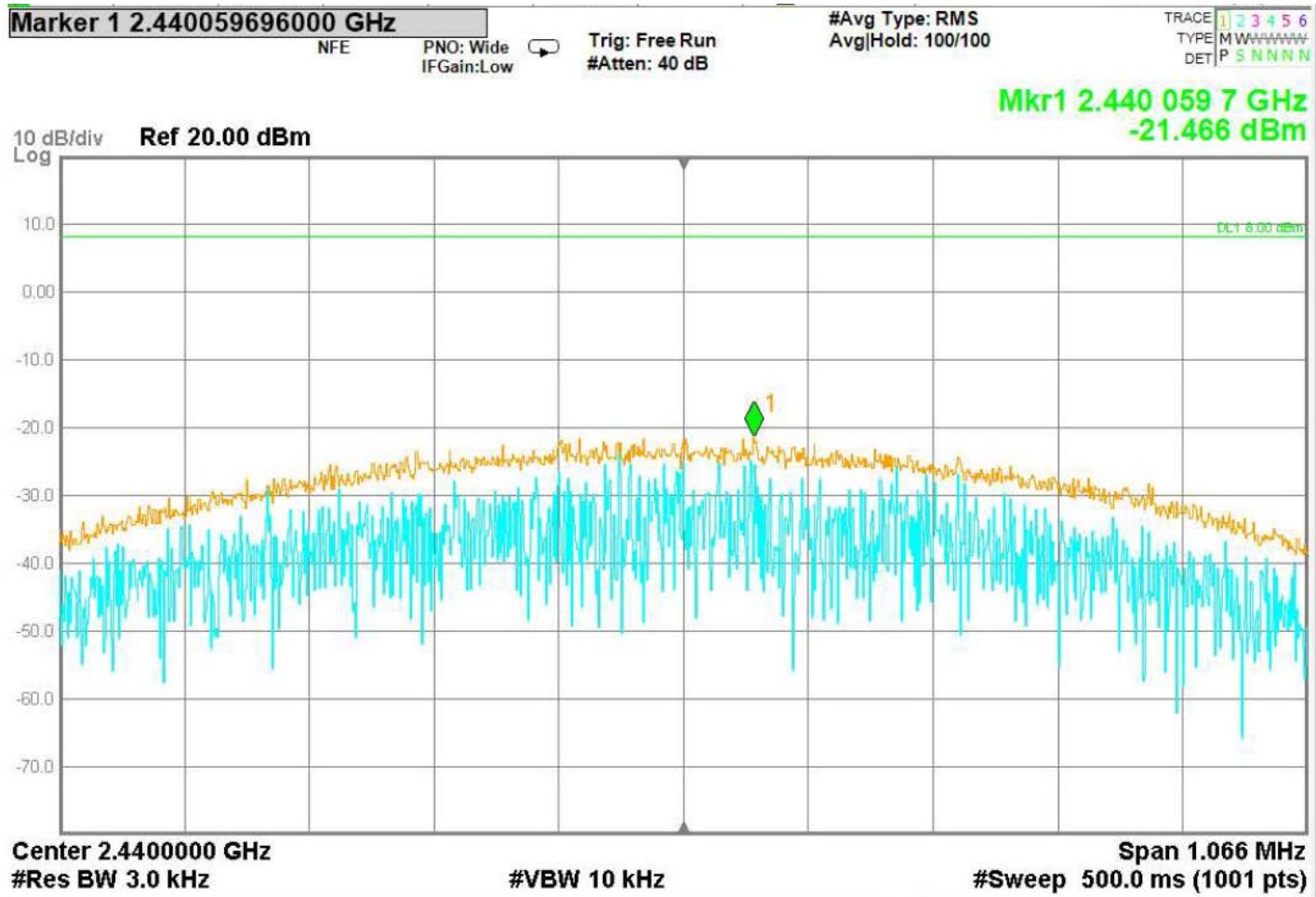


POWER SPECTRAL DENSITY – MID CHANNEL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang

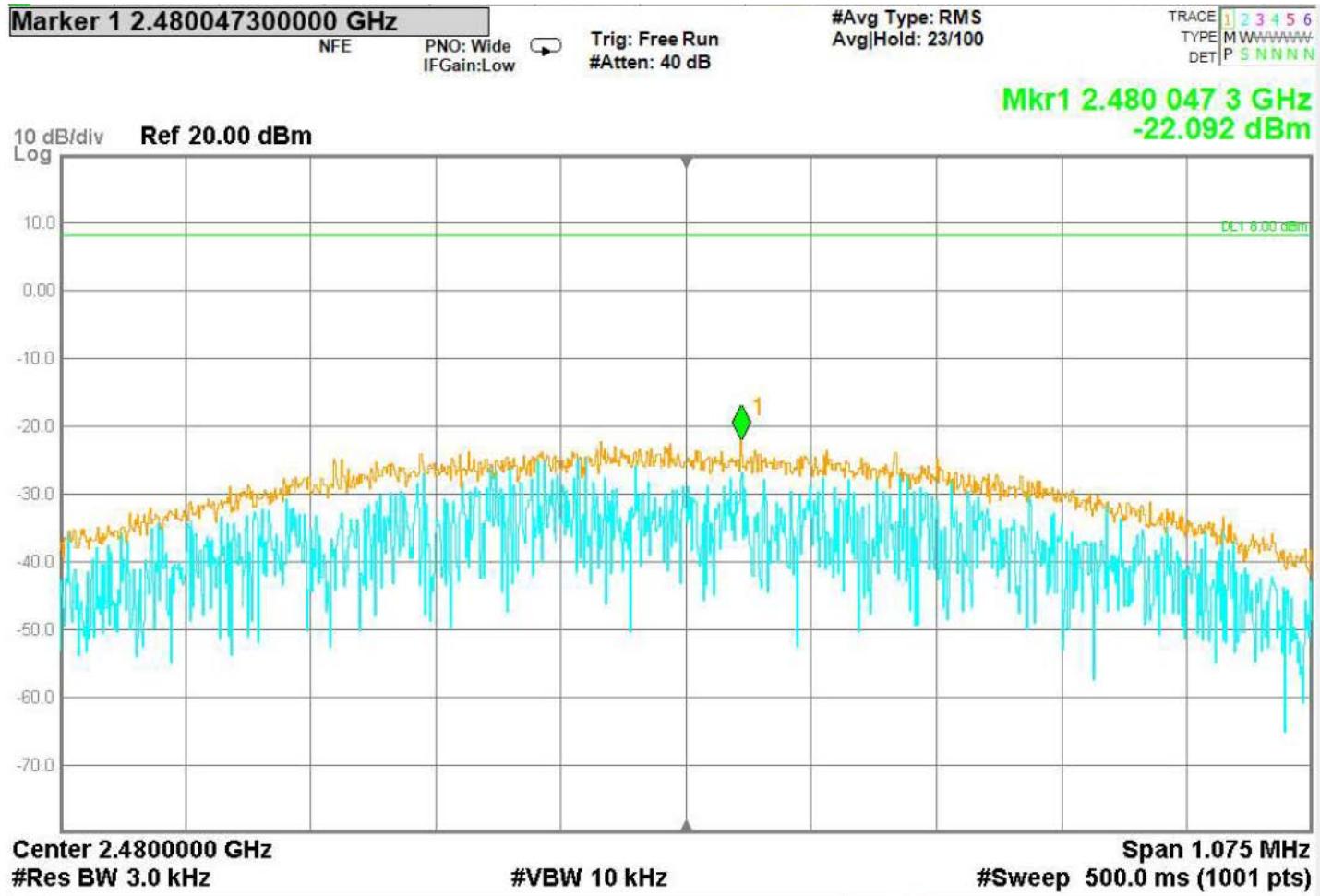


POWER SPECTRAL DENSITY – HIGH CHANNEL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang



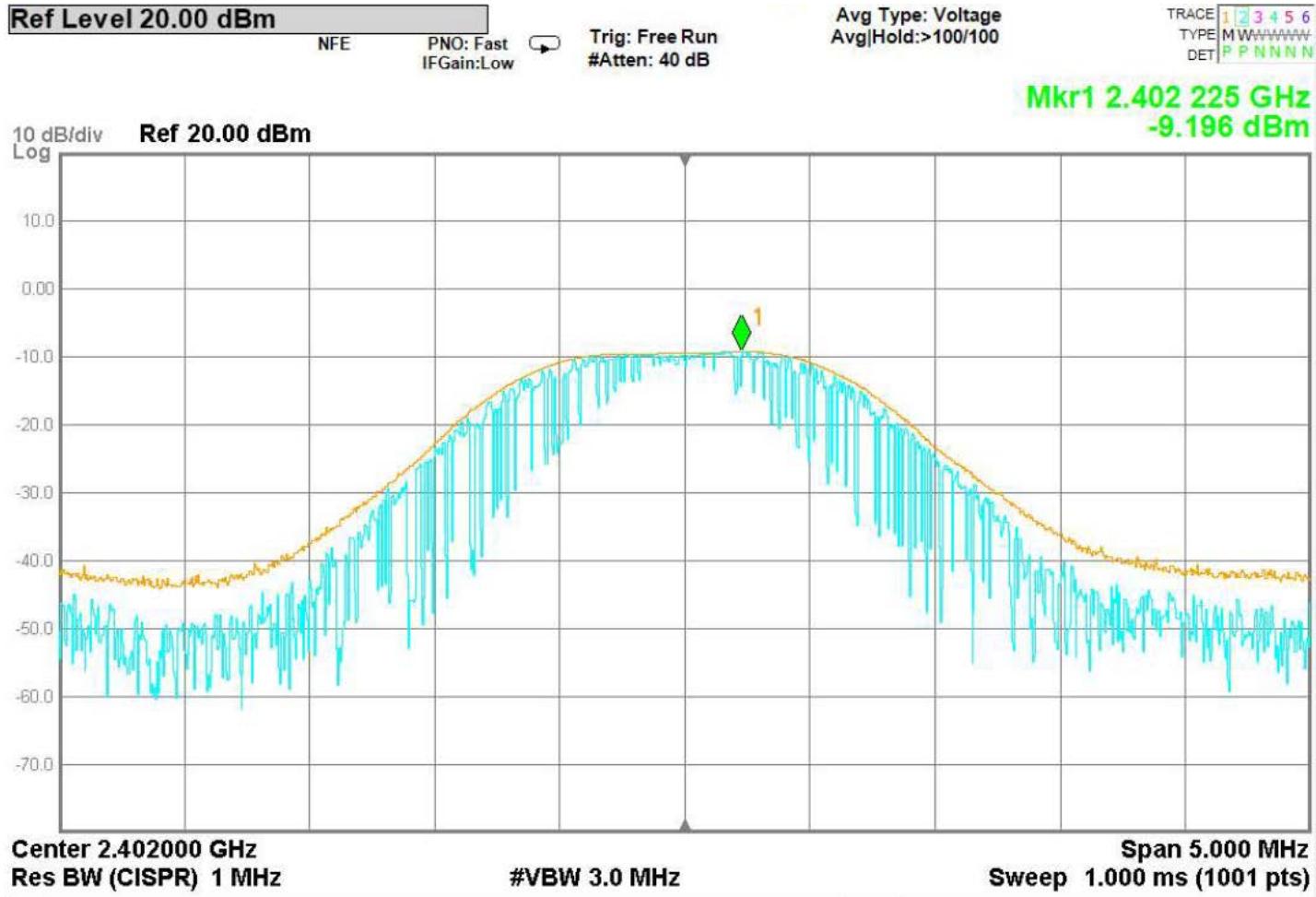
PEAK OUTPUT POWER***DATA SHEETS***

PEAK OUTPUT POWER – LOW CHANNEL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang

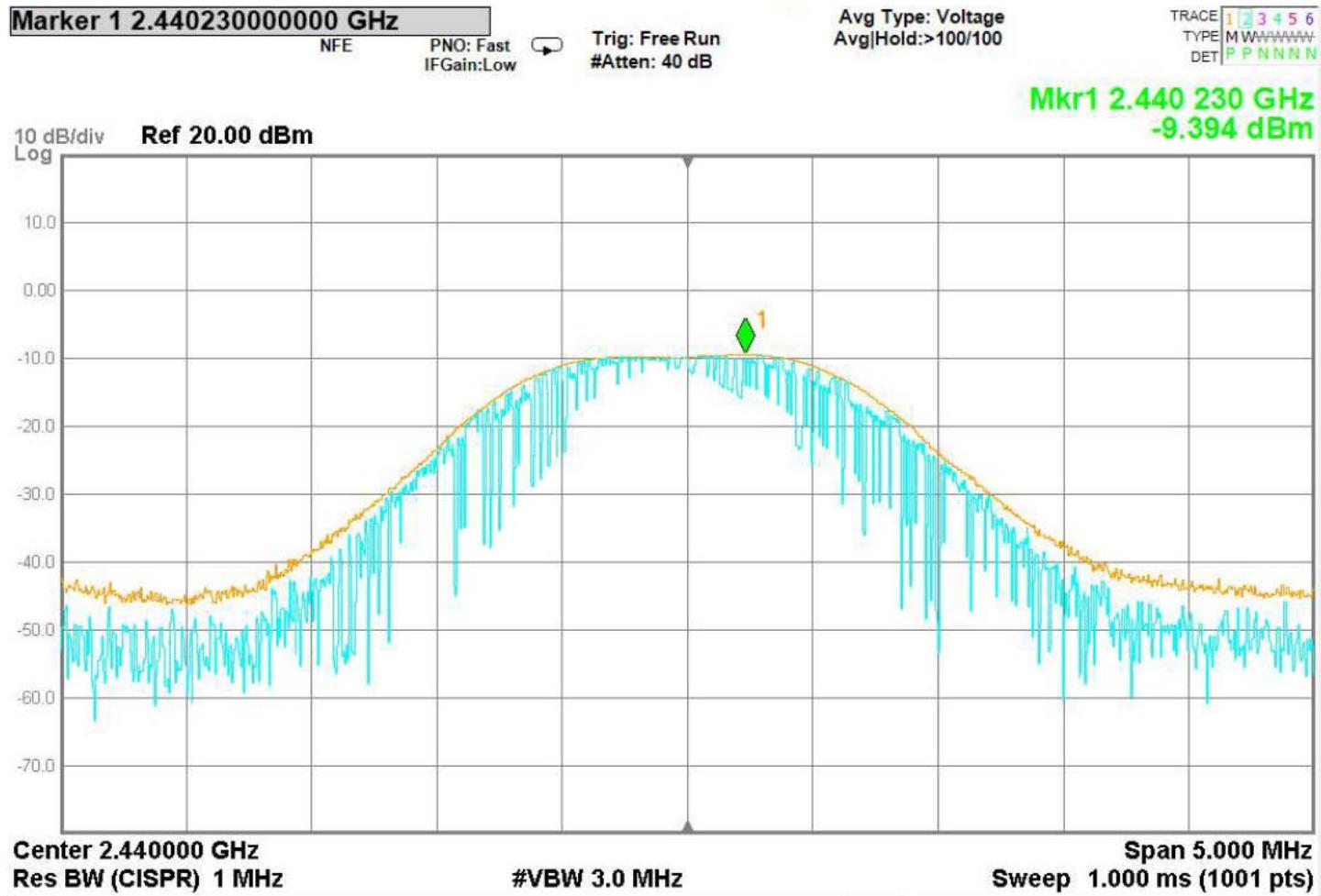


PEAK OUTPUT POWER – MID CHANNEL

FCC 15.247

Company: Companion Medical, Inc.
 EUT: Smart Cap
 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
 Tested By: Howard Huang

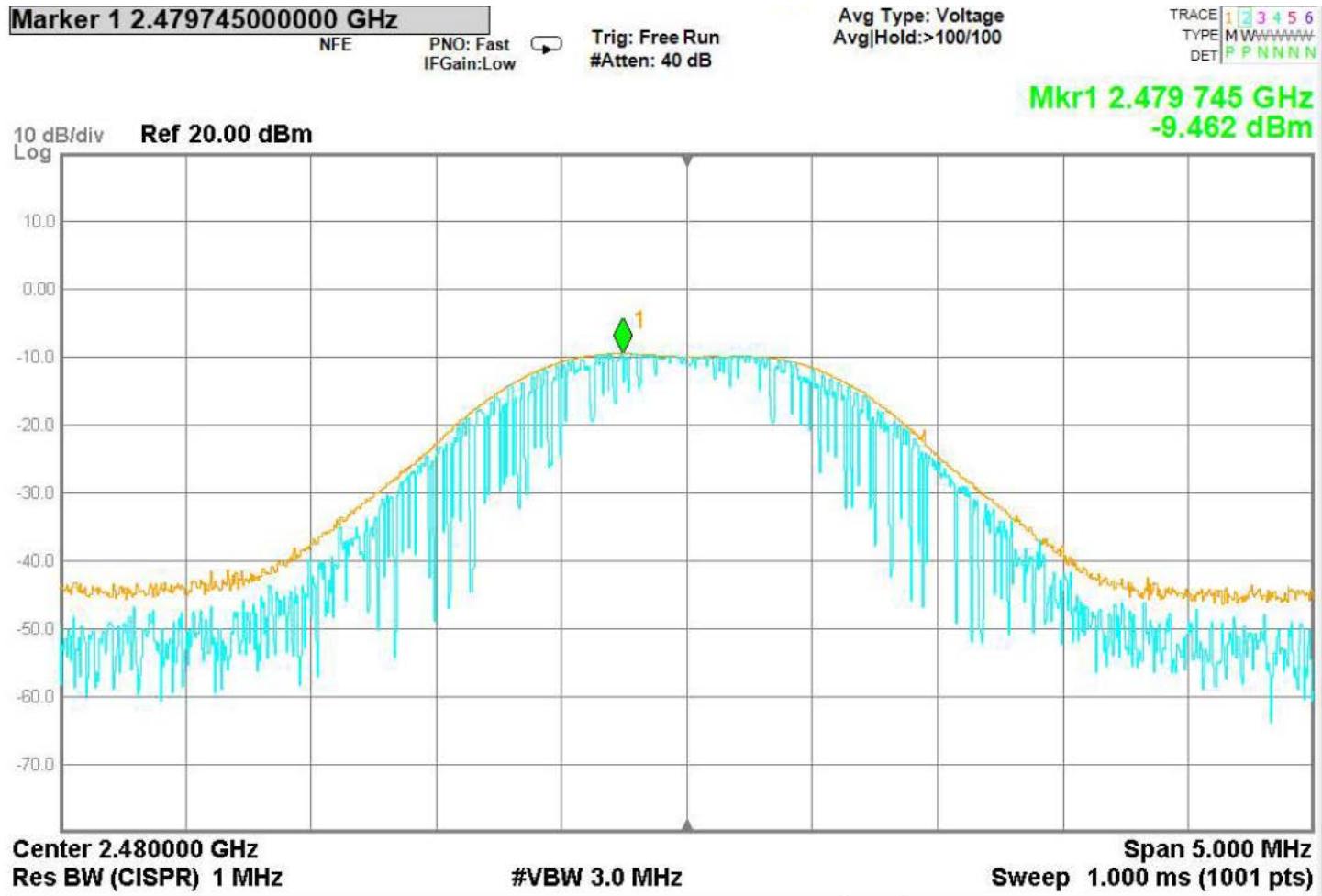


PEAK OUTPUT POWER – HIGH CHANNEL

FCC 15.247

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 Model: InCap-100BA

Date: 04/29/2021
 Lab: R
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EMISSIONS IN NON-RESTRICTED BANDS***DATA SHEETS***

HARMONICS IN NON-RESTRICTED BANDS

FCC 15.247

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Date: 04/29/2021

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Model: InCap-100BA

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Freq. (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
7206.0	-69.26	-29.196	-40.06
9608.0	-69.08	-29.196	-39.88

*The limit is based on 20 dB below the highest reference level obtained in peak conducted power

EMISSIONS IN NON-RESTRICTED BANDS

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EUT: Smart Cap

Lab: R

Model: InCap-100BA

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Freq. (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
1982.3	-54.57	-29.196	-25.37
2137.4	-59.35	-29.196	-30.15

*The limit is based on 20 dB below the highest reference level obtained in peak conducted power