Test Report # 3584 D (BLE DTS)

Equipment Under Test:	A700x Series Devices (A710x, A720x, A730x)
Requirement(s):	FCC 15.247, RSS-247
Test Date(s):	June 15th-21st, 2022
Prepared for:	Honeywell International Inc. Attn: Gretchen Bullen 9680 Old Bailes Road Fort Mill, SC 29707

Report Issued by: Adam Alger, Laboratory Manager

Signature: Adam O Alger Date: 9/15/2022

Report Reviewed by: Adam Alger, Laboratory Manager

Signature: Adam O Alger Date: 7/6/2022

Report Constructed by: Zach Wilson, EMC Engineer

Signature: Zach Wilson Date: 7/5/2022

CONTENTS

Laird Connectivity Test Services in Review

The Laird Connectivity, Inc. laboratory located at W66 N220 Commerce Court Cedarburg, Wisconsin, 53012 USA is recognized through the following organizations:

Certificate #1255.01

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025:2017 with Electrical (EMC) Scope

A2LA Certificate Number: 1255.01

Scope of accreditation includes all test methods listed herein unless otherwise noted

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Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers

Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

1 TEST REPORT SUMMARY

During **June 15th-21st, 2022** the Equipment Under Test (EUT), **A700x Series Devices (A710x, 720x, 730x)**, as provided by **Honeywell International Inc.** was tested to the following requirements **Federal Communications Commission and Innovation, Science and Economic Development Canada**:

FCC 15.247, RSS-247, DTS

Requirement	Description	Specification	Method	Result
FCC: 15.247 (a)(2) IC: RSS-247 5.2 (1)	Digital Modulation System 6 dB bandwidth	500 kHz	ANSI C63.10	Pass
FCC: 2.1049 IC: RSS-GEN 6.6	Occupied Bandwidth	Reported	ANSI C63.10	Pass
FCC: 15.247 (b)(3) IC: RSS-247 5.4 (4)	Maximum Conducted Output Power	30 dBm	ANSI C63.10	Pass
FCC: 15.247 (e) IC: RSS-247 5.2 (2)	Digital Modulation System Power Spectral Density	8 dBm / 3 kHz	ANSI C63.10	Pass
FCC: 15.247 (d) IC: RSS-247 5.5	RF Spurious Emissions at the Transmitter Antenna Terminal	20 dBc	ANSI C63.10	Pass
FCC: 15.247 (d) IC: RSS-GEN 8.10	Spurious Radiated Emissions in Restricted Bands	FCC 15.209 RSS-GEN 8.9	ANSI C63.10	Pass
FCC: 2.1055 (d) IC: RSS-GEN 6.11	Frequency Stability	Reported	ANSI C63.10	Pass

Notice:

The results relate only to the item tested as configured and described in this report. Any additional configurations, modes of operation, or modifications made to the equipment under test after the specified test date(s) are at the decision of the client and may not apply to the data seen in this test report.

The decision rule for Pass / Fail assessment to the specification or standard listed in this test report has been agreed upon by the client and laboratory to be as follows:

Measurement Type	Rule
Emissions – Amplitude	1 dB below specified limit
Emissions – Frequency	1% less than the specification
Immunity	Tested at specified level

2 CLIENT INFORMATION

Company Name	Honeywell International Inc.
Contact Person	Gretchen Bullen
Address	9680 Old Bailes Road Fort Mill, SC 29707

2.1 Equipment Under Test (EUT) Information

The following information has been supplied by the client

Product Name	A700x Series Devices (A710x, 720x, 730x)
Model Number	TAP1010-02, TAP1020-02, TAP1030-02
Serial Number	Engineering Sample
FCC ID	HD5-TAP1000-02
IC ID	1693B-TAP100002

2.2 Product Description

The EUT is a handheld communication device consisting of the Laird SU60-SIPT WLAN 2.4/5 GHz and BLE/BT module. The EUT also contains the NXP PN7150BOHN/C110xx NFC radio. The EUT was powered by a 3.7 VDC battery. The WLAN operates in SISO mode only.

The EUT has three different models:

- A710x - Contains the basic wireless functionality
- A720x - Contains an end cap with two external proprietary connectors that add on the ability to connect a wired headset and a peripheral device such as a printer or scanner.
- A730x - Contains an imager end cap that adds scanning functionality.

All models use identical radios and circuit boards in the “base unit” and the different A700x versions add additional (non-radio) capabilities through different, factory configurable “end caps”.

All conducted testing was completed on the A710x model. Radiated measurements completed for all three models.

2.3 Modifications Incorporated for Compliance

None noted at time of test

2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

2.5 Channels and Data Rates

BLE Basic Rate – 1Mbps

Channel	Freq. MHz
0	2402
19	2440
38	2480

2.6 Radio Programming

The WLAN radios were programmed using the Laird Regulatory Tool v 9.32.0.6. BLE and BT radios were programmed using default HCI commands via the windows command prompt. The NFC radio was programmed using Honeywell's CBOB program V1.0.

2.7 Antenna

The device contains three antennas:

- Custom dual band PCB inverted F type antenna with a peak gain of
  - +4.7 dBi in 2400-2484 MHz
  - +6.4 dBi in 5150-5350 MHz
  - +6.9 dBi in 5470-5725 MHz
  - +7.3 dBi in 5725-5850 MHz
- Custom PCB inverted F type antenna with a peak gain of +0.2 dBi for the BT/BLE radios.
- Flex circuit magnetic loop antenna, P/N 1002403 for the NFC radio.

2.8 Simultaneous Transmission

The EUT radio combinations that are capable of simultaneous transmission are shown below:

- WLAN 5 GHz + BT/BLE + NFC
- WLAN 2.4 GHz + NFC

3 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
FCC eCFR	-	2021	-	-
RSS-247	2	2017	-	-
RSS-Gen	5	2018	2019	2021
ANSI C63.10	-	2013	-	-

4 UNCERTAINTY SUMMARY

Using the guidance of the following publications the calculated measurement uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k = 2.

References	Version / Date
CISPR 16-4-1	Ed. 2 (2009-02)
CISPR 16-4-2	Ed. 2 (2011-06)
CISPR 32	Ed. 1 (2012-01)
ANSI C63.23	2012
A2LA P103	February 4, 2016
A2LA P103c	August 10, 2015
ETSI TR 100-028	V1.3.1 (2001-03)

Measurement Type	Configuration	Uncertainty ±
Radiated Emissions	Biconical Antenna	5.0 dB
Radiated Emissions	Log Periodic Antenna	5.3 dB
Radiated Emissions	Horn Antenna	4.7 dB
AC Line Conducted Emissions	Artificial Mains Network	3.4 dB
Telecom Conducted Emissions	Asymmetric Artificial Network	4.9 dB
Disturbance Power Emissions	Absorbing Clamp	4.1 dB
Radiated Immunity	3 Volts/meter	2.2 dB
Conducted Immunity	CDN/EM/BCI	2.4/3.5/3.4 dB
EFT Burst/Surge	Peak pulse voltage	164 volts
ESD Immunity	15 kV level	1377 Volts

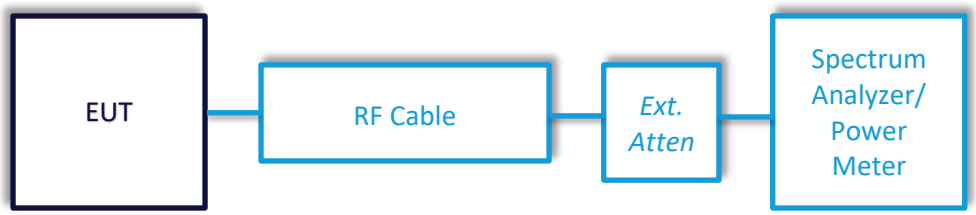
Parameter	ETSI U.C. ±	U.C. ±
Radio Frequency, from F0	$1x10^{-7}$	$0.55x10^{-7}$
Occupied Channel Bandwidth	5 %	2 %
RF conducted Power (Power Meter)	1.5 dB	1.2 dB
RF conducted emissions (Spectrum Analyzer)	3.0 dB	1.7 dB
All emissions, radiated	6.0 dB	5.3 dB
Temperature	1° C	0.65° C
Humidity	5 %	2.9 %
Supply voltages	3 %	1 %

5 TEST DATA

5.1 Antenna Port Conducted Emissions

Description of Measurement	The direct measurement of emissions at the antenna port of the EUT is achieved by use of a RF connection to a spectrum analyzer or power meter. The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the need for further corrections.
Example Calculations	Measurement (dBm) + Cable factor (dB) + External Attenuator (dB) = Corrected Reading (dBm) Margin (dB) = Limit (dBm) – Corrected Reading (dBm)

Block Diagram



Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	388	3/22/2022	3/22/2023	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/12/2022	4/12/2023	Active Calibration

5.1.1 DTS Bandwidth

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 15.247, RSS-247	**Method**	ANSI C63.10 §11.8.2

Limits: BW Greater than 500 kHz

Test Parameters

Frequency	2402, 2440, 2480 MHz	**Setup**	Conducted
RBW	100 kHz	**VBW**	300 kHz
Detector(s)	Max peak hold	**Sweep Time**	Auto

EUT Parameters

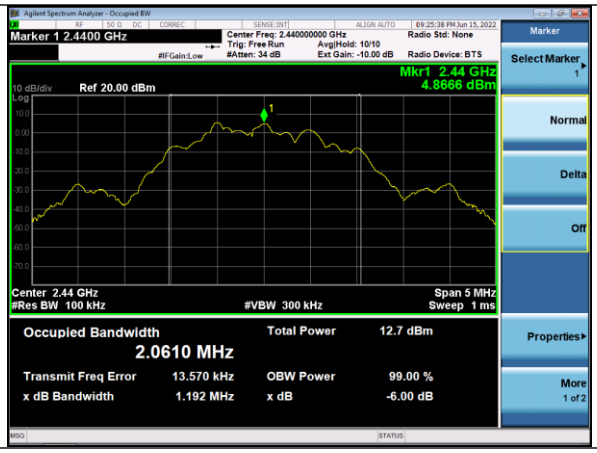
Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2402, 2440, 2480 MHz	**Channel**	0, 19, 38
Data Rate/Modulation	BLE 1 Mbps		

Data Table

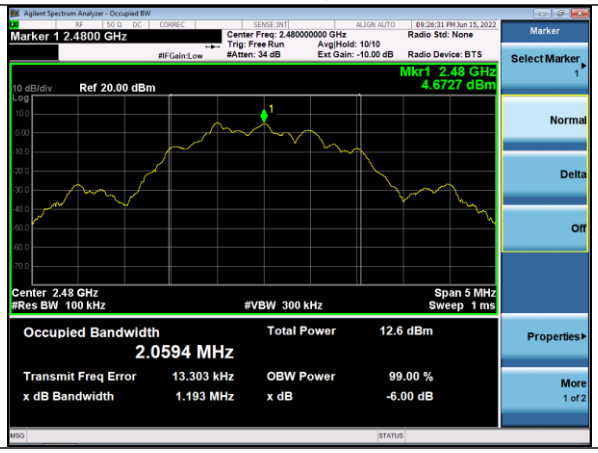
Channel	Data Rate	DTS BW (kHz)	Limit (MHz)	Margin (MHz)
0	BLE	1196.0	500.0	696.0
19	BLE	1192.0	500.0	692.0
38	BLE	1193.0	500.0	693.0

Plots

DTS Bandwidth, Channel 0



DTS Bandwidth, Channel 19



DTS Bandwidth, Channel 38

5.1.2 99% Occupied Bandwidth

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 2.1049	**Method**	ANSI C63.10 §11.8.2

Limits: Reported

Test Parameters

Frequency	2402, 2440, 2480 MHz	**Setup**	Conducted
RBW	20 kHz	**VBW**	62 kHz
Detector(s)	Max peak hold	**Sweep Time**	Auto

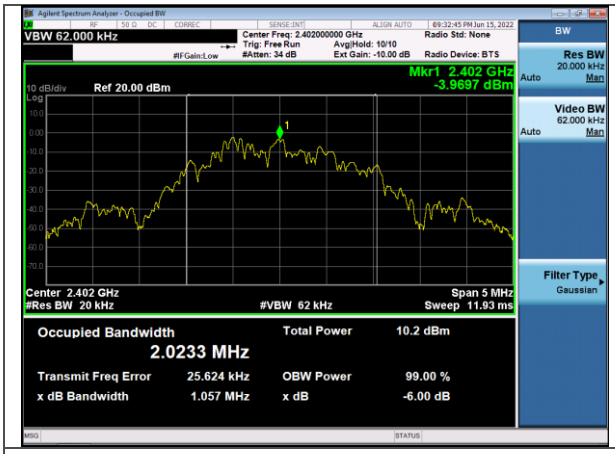
EUT Parameters

Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2402, 2440, 2480 MHz	**Channel**	0, 19, 38
Data Rate/Modulation	BLE 1 Mbps		

Data Table

Channel	Data Rate	99% OBW (kHz)
0	BLE	2023.3
19	BLE	2022.6
38	BLE	2022.3

Plots



99% Occupied Bandwidth, Channel 0

99% Occupied Bandwidth, Channel 19

99% Occupied Bandwidth, Channel 39

5.1.3 Peak Output Power

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 15.247, RSS-247	**Method**	ANSI C63.10 §11.9.1.1

Limits: 30 dBm

Test Parameters

Frequency	2402, 2440, 2480 MHz	**Setup**	Conducted
RBW	3 MHz	**VBW**	50 MHz
Detector(s)	Max peak hold	**Sweep Time**	Auto

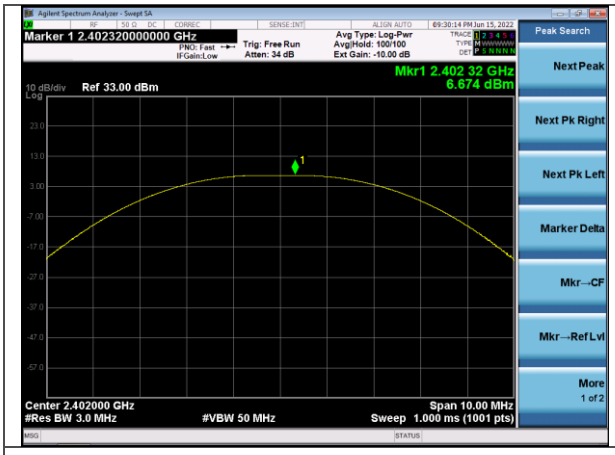
EUT Parameters

Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2402, 2440, 2480 MHz	**Channel**	0, 19, 38
Data Rate/Modulation	BLE 1 Mbps		

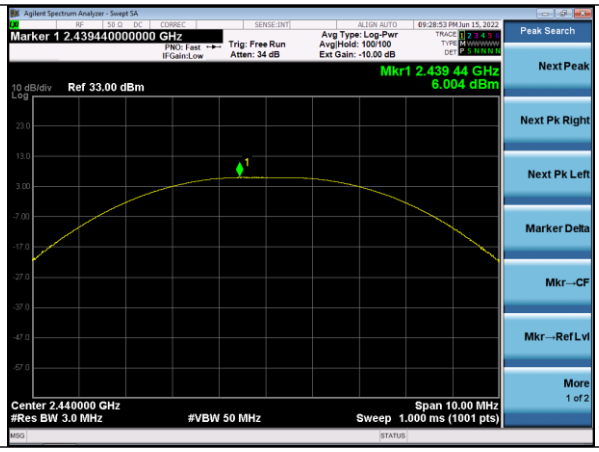
Data Table

Channel	Data Rate	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
0	BLE	6.7	30.0	23.3
19	BLE	6.0	30.0	24.0
38	BLE	5.8	30.0	24.2

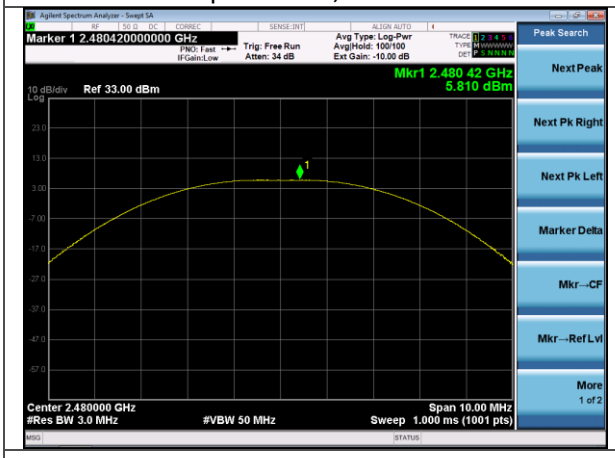
Plots



Output Power, Channel 0



Output Power, Channel 19



Output Power, Channel 39

5.1.4 Peak Power Spectral Density

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 15.247, RSS-247	**Method**	ANSI C63.10 §11.10.2

Limits: 8dBm/3kHz

Test Parameters

Frequency	2402, 2440, 2480 MHz	**Setup**	Conducted
RBW	30 kHz	**VBW**	100 kHz
Detector(s)	Max peak hold	**Sweep Time**	Auto

EUT Parameters

Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2402, 2440, 2480 MHz	**Channel**	0, 19, 38
Data Rate/Modulation	BLE 1 Mbps		

Data Table

Channel	Data Rate	PSD Reading (dBm/100kHz)	Limit (dBm/3kHz)	Margin (dB)
0	BLE	0.0	8.0	8.0
19	BLE	-0.6	8.0	8.6
38	BLE	-0.8	8.0	8.8

Plots

Peak PSD, Channel 0

Peak PSD, Channel 19

Peak PSD, Channel 38

5.1.5 Duty Cycle

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 15.247, RSS-247	**Method**	ANSI C63.10

Limits: Reported

Test Parameters

Frequency	2440 MHz	**Setup**	Conducted
RBW	10 MHz	**VBW**	50 MHz
Detector(s)	Max peak hold	**Sweep Time**	Auto

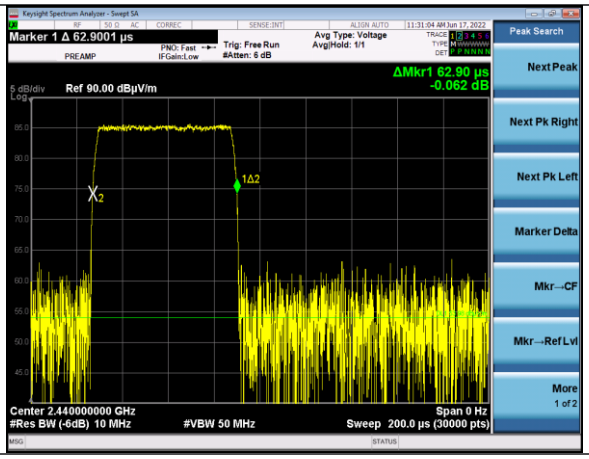
EUT Parameters

Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2440MHz	**Channel**	19
Data Rate/Modulation	BLE 1 Mbps		

Data Table

Observation Period (µs)	On Time (µs)	Duty Cycle (%)
200.0	62.9	31.5

Plots



On Time

5.1.6 Conducted Spurious Emissions

Operator	Anthony Smith	**QA**	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	**R.H. %**	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	**Location**	Conducted Radio Bench
Requirement	FCC 15.247, RSS-247	**Method**	ANSI C63.10 §11.11, §11.12

Limits: 20 dBc

Reference Level = 5.6 dBm

Limit = -14.4 dBm

Test Parameters

Frequency	30 MHz – 25 GHz	**Setup**	Conducted
RBW	100 kHz	**VBW**	300 kHz
Detector(s)	Max peak hold	**Sweep Time**	Auto
Limit Calculation	Reference Level (dBm) – 20 dB = Limit (dBm)		

EUT Parameters

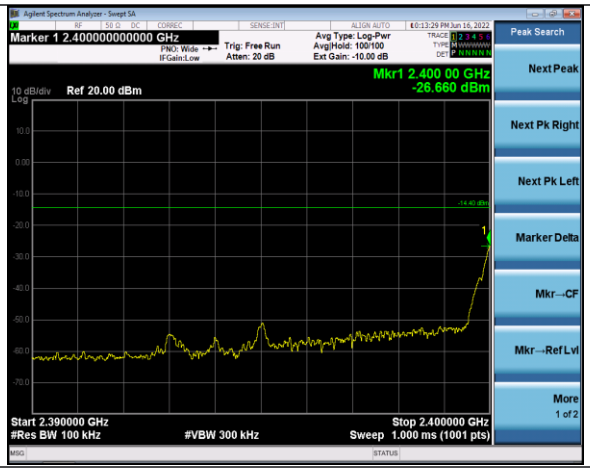
Input Power	3.7VDC Battery	**Mode**	BLE Transmit
Frequency	2402, 2440, 2480 MHz	**Channel**	0, 19, 38
Data Rate/Modulation	BLE 1 Mbps		

Reference Level Plot

Data Tables

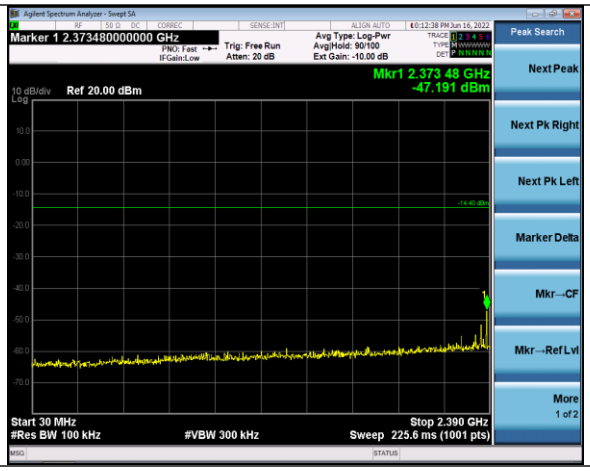
Frequency (MHz)	Emission Measurement (dBm)	Limit (dBm)	Margin (dB)	Channel
2373.5	-47.2	-14.4	32.8	0
2400.0	-26.6	-14.4	12.2	0
2376.2	-50.1	-14.4	35.7	0
2487.0	-52.9	-14.4	38.5	38
2522.5	-42.6	-14.4	28.2	38
2400.0	-51.7	-14.4	37.3	38
2369.2	-49.5	-14.4	35.1	19
2484.0	-45.6	-14.4	31.2	19

Plots

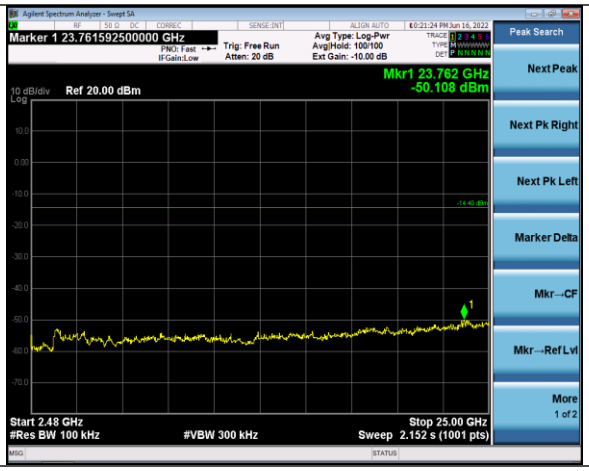


Authorized Band Edge (Lower)
Channel 0

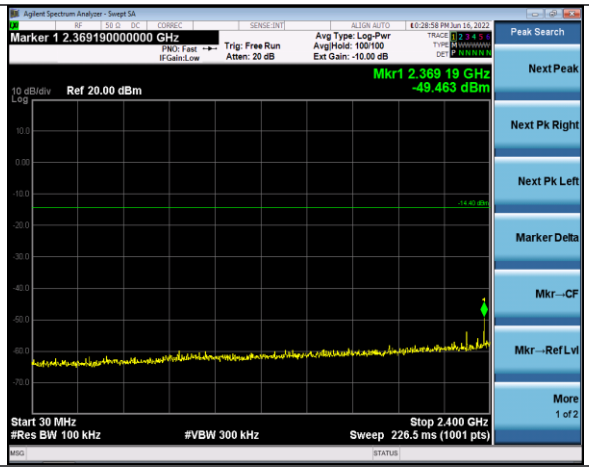
Authorized Band Edge (Higher)
Channel 39



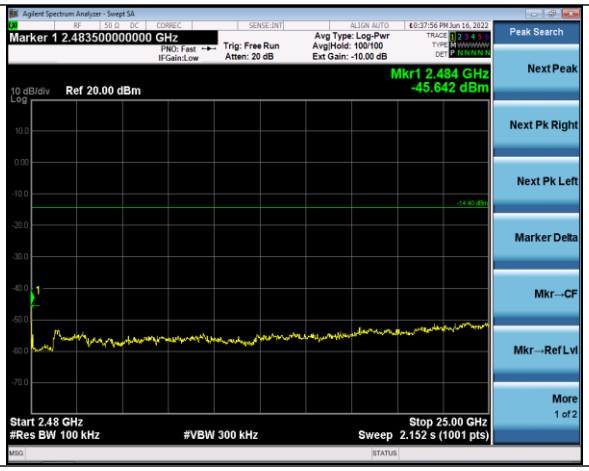
30-2390 MHz, Channel 0



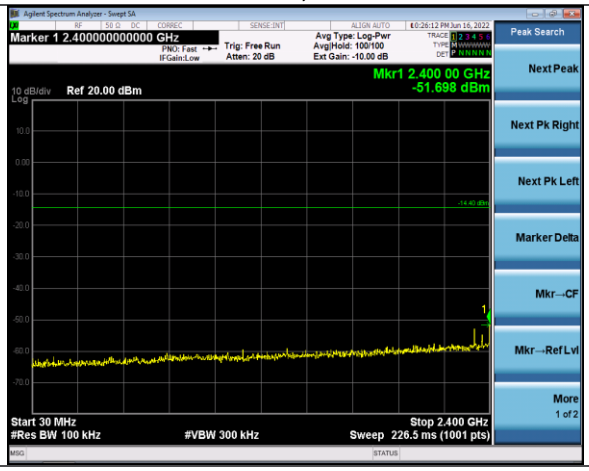
2483.5-25000 MHz, Channel 0



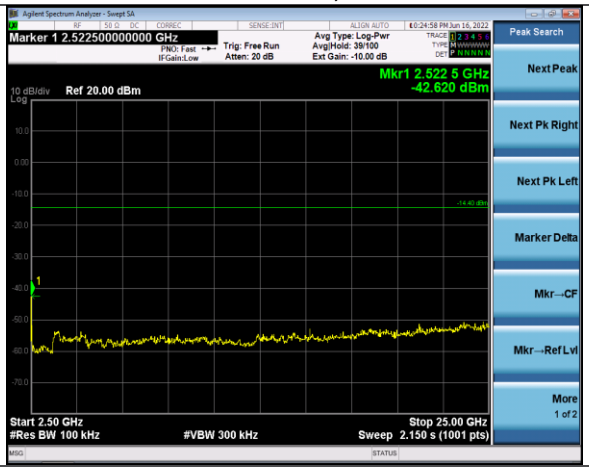
30-2400 MHz, Channel 19



2483.5-25000 MHz, Channel 19



30-2400 MHz, Channel 38



2500-25000 MHz, Channel 38

5.1.7 Frequency Stability

Operator	Anthony Smith	QA	Zach Wilson
Temperature	21.4°C, 22°C, 21.8C	R.H. %	55.6%, 49.9%, 49.3%
Test Date	6/15/2022, 6/16/2022, 6/21/2022	Location	Conducted Radio Bench
Requirement	FCC 2.1055	Method	ANSI C63.10

Limits: Reported

Test Parameters

Frequency	2402, 2440, 2480 MHz	Setup	Conducted
RBW	1 kHz	VBW	3 kHz

EUT Parameters

Input Power	3.3, 3.6, 4.1 VDC via DC Lab Supply	Mode	BLE CW
Frequency	2402, 2440, 2480 MHz	Channel	0, 19, 38

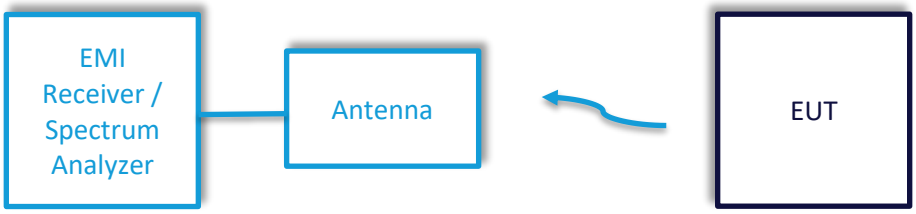
Data Table

Channel	Frequency (Hz) 3.3VDC	Frequency (Hz) 3.6VDC	Frequency (Hz) 4.1VDC	Deviation (Hz)
0	2402420601	2402419417	2402425531	6114
19	2439529453	2439533704	2439532184	4251
38	2480427280	2480433317	2480433249	6037

5.2 Radiated Emissions

Description of Measurement	The frequency spectrum is investigated for intentional and / or unintentional signals emanating from the EUT by use of a standardized test site and measurement antenna. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed allowing the data to be gathered and reported as corrected values. The maximum emissions from the EUT are determined by turn-table azimuth rotation (360°) and scanning of the measurement antenna. Maximized levels are noted at degree values of azimuth, measurement antenna height, and measurement antenna polarity.
Example Calculations	Measurement (dBµV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBµV/m) Margin (dB) = Limit (dBµV/m) - Corrected Reading (dBµV/m) Example at 4000 MHz: Reading = 40 dBµV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBµV/m Average Limit = 20 log (500) = 54 dBµV/m Margin = 54 dBµV/m - 50.8 dBµV/m = 3.2 dB

Block Diagram



Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960007	Antenna - Double Ridge Horn	EMCO	3115	9311-4138	8/23/2021	8/23/2022	Active Calibration
AA 960174	Antenna - Small Horn	ETS Lindgren	3116C-PA	00206880	9/1/2021	9/1/2022	Active Calibration
AA 960194	Antenna - Biconical	A.H. Systems, Inc.	SAS-540	780	9/2/2021	9/2/2022	Active Calibration
AA 960195	Antenna - Log Periodic	A.H. Systems, Inc.	SAS-512-2	557	8/17/2021	8/17/2022	Active Calibration
EE 960085	Analyzer - EMI Receiver	Agilent	N9038A	MY51210148	4/11/2022	4/11/2023	Active Calibration
EE 960171	Chamber 5 - UFA	Panashield	none	none	2/22/2022	2/22/2023	Active Validation
EE 960171	Chamber 5 - Svswr	Panashield	none	none	3/14/2022	3/14/2023	Active Validation
EE 960171	Chamber 5 - NSA	Panashield	none	none	3/17/2022	3/17/2023	Active Validation
EE 960203	Analyzer - EMI Receiver	Keysight	N9038A	MY56400072	4/13/2022	4/13/2023	Active Calibration
LSC-300	Cable	Chamber 3 Emissions	-	-	4/26/2022	4/26/2023	Active Verification
LSC-500	Cable	Chamber 5 Emissions	-	-	4/25/2022	4/25/2023	Active Verification

5.2.1 Radiated Emissions

Operator	Jon Dilley | Ivan Alvarez	**QA**	Alec Krabbe | Braden Smith
Temperature	21.6°C to 25.3°C	**R.H. %**	45.9% to 56.0%
Test Date	6/15/2022, 6/16/2022	**Location**	Chamber 5, Chamber 3
Requirement	FCC 15.209	**Method**	ANSI C63.10

Limits:

Frequency (MHz)	Quasi-Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Peak Limit (dBµV/m)
30-88	40.0	-	-
88-216	43.5	-	-
216-960	46.0	-	-
960-1000	54.0	-	-
1000-25000	-	54.0	74.0

Test Parameters

Frequency	30 MHz to 25 GHz	**Distance**	3m
Detector(s)	Quasi peak detector for measurements under 1 GHz. Average measurements made with a reduced VBW of 16 kHz. Max peak hold for plots.	**Table height**	80cm (below 1 GHz) 150cm (above 1 GHz)
RBW	120 kHz (below 1 GHz) 1 MHz (above 1 GHz)	**VBW**	1.2 MHz (below 1 GHz) 3 MHz (above 1 GHz peak) 16 kHz (above 1 GHz average) 30 kHz for emission identification
Plots	Worst case plots shown.	**EUT Orientations**	Flat, Vertical, Horizontal

EUT Parameters

Input Power	3.7VDC via battery	**Mode**	BLE Transmit
Channel	0, 19, 38	**Data Rate/Modulation**	BLE 1Mbps

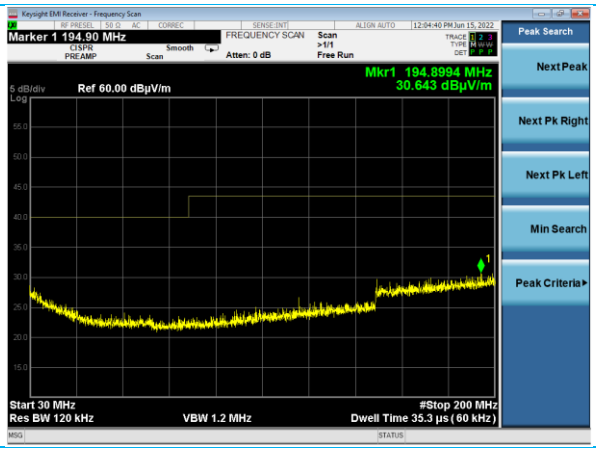
Data Tables

Frequency (MHz)	Antenna Polarity	Height (cm)	Azimuth (degree)	Quasi-Peak Reading (dBµV/m)	Quasi-Peak Limit (dBµV/m)	Quasi-Peak Margin (dB)
195.2	Horizontal	100	0	24.4	43.5	19.1
196.2	Vertical	100	0	24.4	43.5	19.1
894.1	Vertical	100	0	30.5	46.0	15.5
992.7	Horizontal	100	0	30.8	54.0	23.2

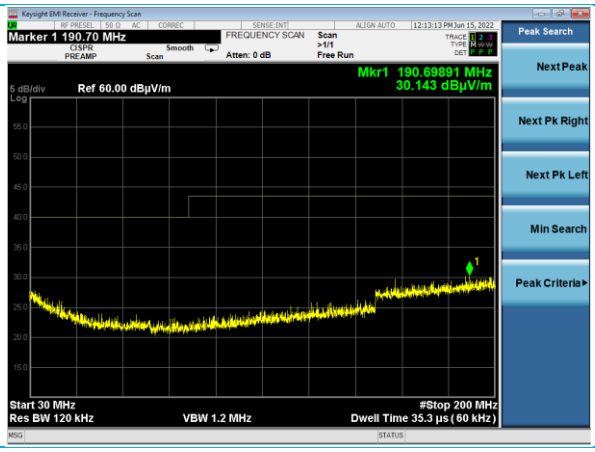
Frequency (MHz)	Channel	Antenna Polarity	Height (cm)	Azimuth (degree)	Average Reading (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
1199.8	19	Vertical	200	163	41.8	54.0	12.2
1349.9	19	Vertical	200	187	32.7	54.0	21.3
2373.1	0	Vertical	150	296	50.0	54.0	4.0
2486.9	38	Vertical	150	296	43.1	54.0	10.9
3563.7	19	Horizontal	150	0	41.8	54.0	12.2
22815.9	19	Vertical	150	0	41.2	54.0	12.8
22817.3	19	Horizontal	150	0	41.0	54.0	13.0

Frequency (MHz)	Channel	Antenna Polarity	Height (cm)	Azimuth (degree)	Peak Reading (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
1199.8	19	Vertical	200	163	46.1	74.0	27.9
1349.9	19	Vertical	200	187	46.4	74.0	27.6
2372.6	0	Vertical	150	296	54.2	74.0	19.8
2483.6	38	Vertical	150	296	52.8	74.0	21.2
3563.7	19	Horizontal	150	0	53.6	74.0	20.4
22815.9	19	Vertical	150	0	53.3	74.0	20.7
22817.3	19	Horizontal	150	0	52.6	74.0	21.4

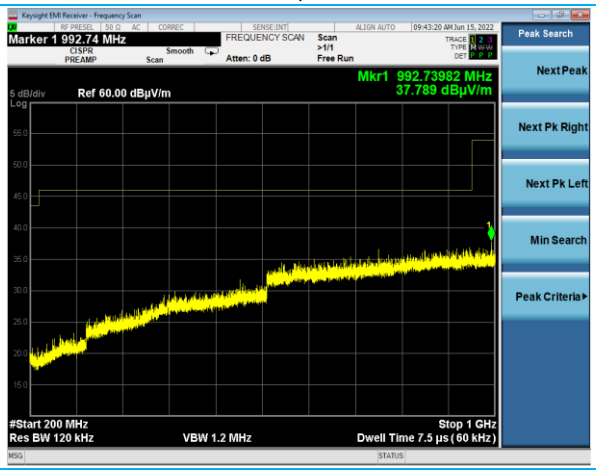
Plots



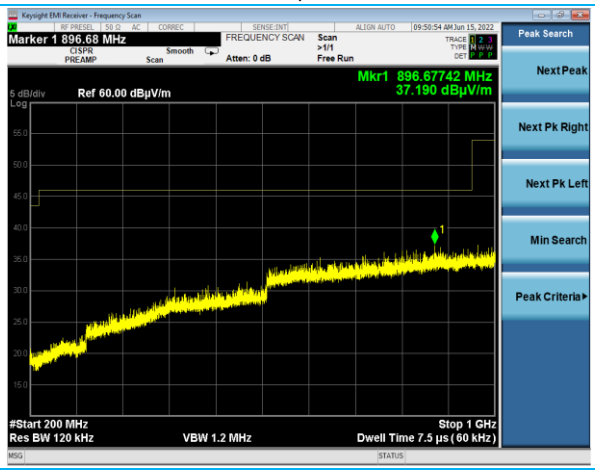
30-200 MHz, Horizontal Antenna
Vertical EUT, Channel 19



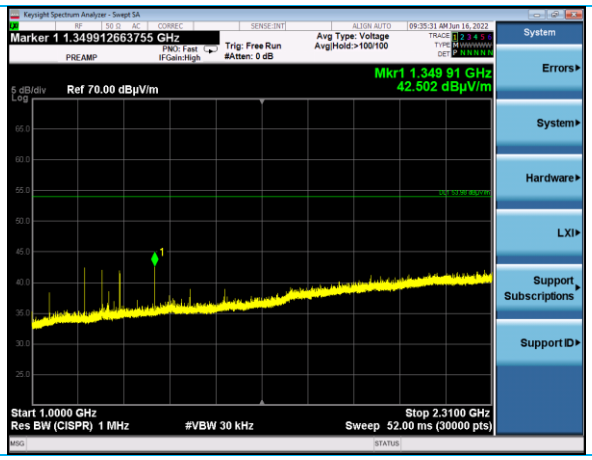
30-200 MHz, Vertical Antenna
Vertical EUT, Channel 19



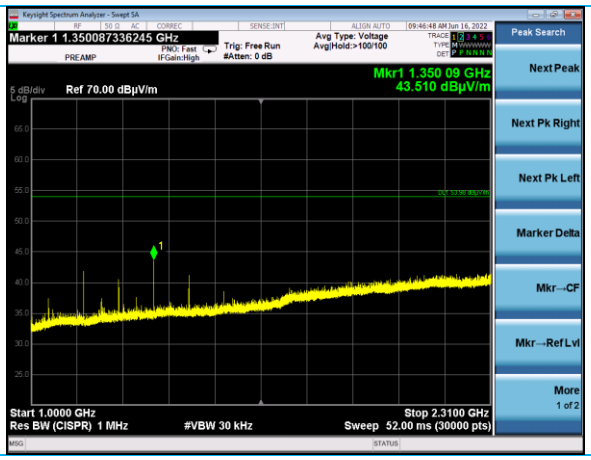
200-1000 MHz, Horizontal Antenna
Vertical EUT, Channel 19



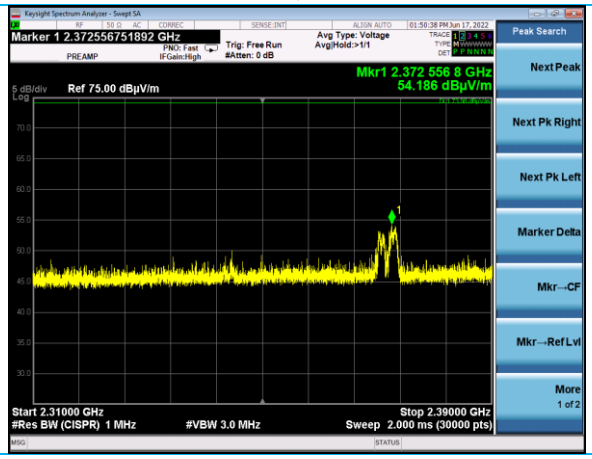
200-1000 MHz, Vertical Antenna
Vertical EUT, Channel 19



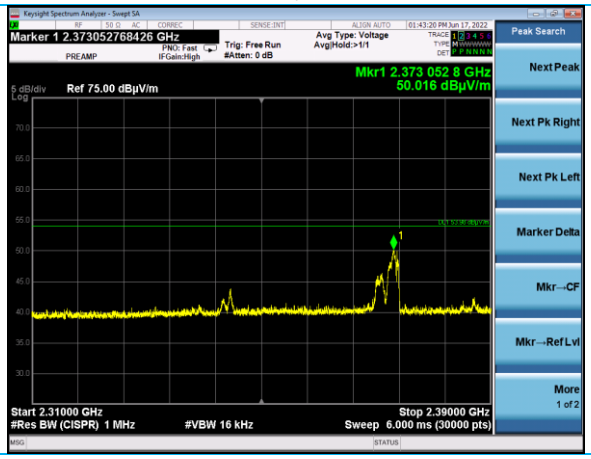
1-2.31 GHz, Horizontal Antenna
Vertical EUT, Channel 19



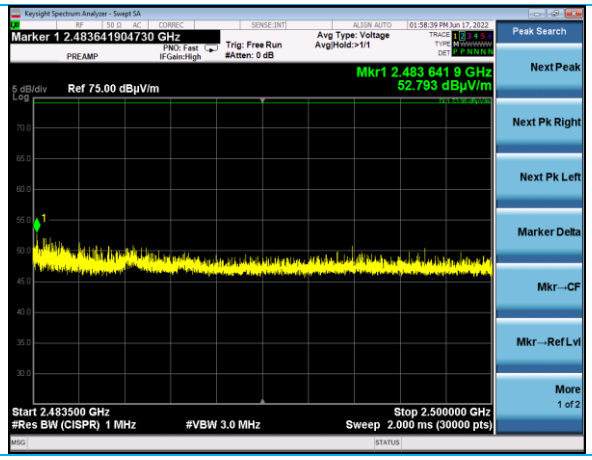
1-2.31 GHz, Vertical Antenna
Vertical EUT, Channel 19



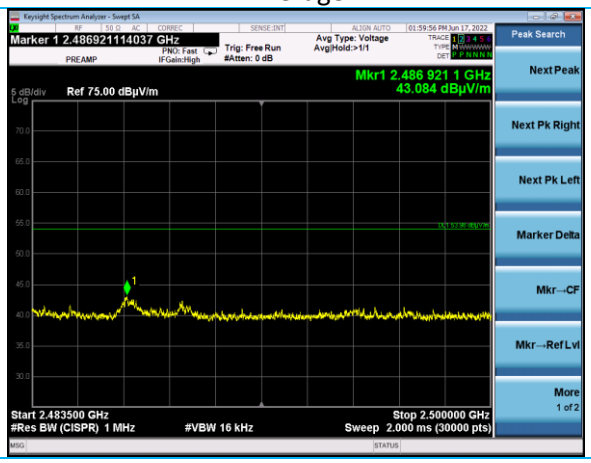
2.31-2.39 GHz, Vertical Antenna
Horizontal EUT, Channel 0
Peak



2.31-2.39 GHz, Vertical Antenna
Horizontal EUT, Channel 0
Average



2.4835-2.5 GHz, Vertical Antenna
Horizontal EUT, Channel 38
Peak



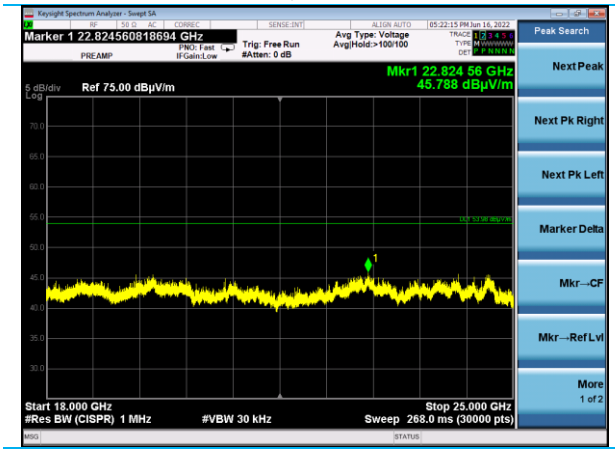
2.4835-2.5 GHz, Vertical Antenna
Horizontal EUT, Channel 38
Average

2.5-4 GHz, Horizontal Antenna
Vertical EUT, Channel 19

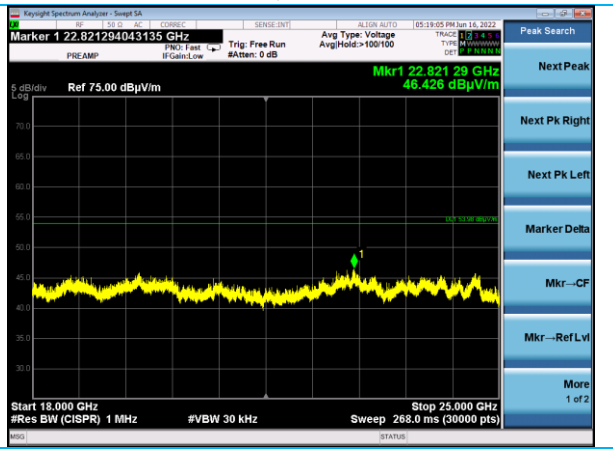
2.5-4 GHz, Vertical Antenna
Vertical EUT, Channel 19

4-18 GHz, Horizontal Antenna
Flat EUT, Channel 19

4-18 GHz, Vertical Antenna
Flat EUT, Channel 19



18-25 GHz, Horizontal Antenna
Flat EUT, Channel 39



18-25 GHz, Vertical Antenna
Flat EUT, Channel 39

6 REVISION HISTORY

Version	Date	Notes	Person
0	7/6/2022	Initial Draft	Zach Wilson
1	7/6/2022	Final	Zach Wilson
2	8/11/2022	Corrections for TCB Comments	Adam Alger
3	9/15/2022	Updated antenna gain	Adam Alger

END OF REPORT