

Ittron, Inc.

REVISED EMC TEST REPORT TO 103557-13

Mobile Collection Device, MC3
Model: DCU5310C

Tested to The Following Standards:

FCC Part 101 Subpart C
Fixed Microwave Services

Report No.: 103557-13A

Date of issue: July 14, 2020



Test Certificate # 803.01

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Ittron, Inc.
2111 N. Molter Road
Liberty Lake, WA 99019

Representative: Jay Holcomb
Customer Reference Number: 201865

DATE OF EQUIPMENT RECEIPT:**DATE(S) OF TESTING:****REPORT PREPARED BY:**

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CKC Laboratories, Inc.
5046 Sierra Pines Drive
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Project Number: 103557

February 13, 2020

February 13-21, 2020

Revision History

Original: Testing of the Mobile Collection Device, MC3 Model: DCU5310C to FCC Part 101 Subpart C Fixed Microwave Services.

Revision A: Replaced 24Hz mid channel plot for 2.1049 / 101.109(c) Bandwidth.

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.12
EMITest Immunity	5.03.10

Site Registration & Accreditation Information

Location	*NIST CB #	FCC	Japan
Canyon Park, Bothell, WA	US0081	US1022	A-0136
Brea, CA	US0060	US1025	A-0136
Fremont, CA	US0082	US1023	A-0136
Mariposa, CA	US0103	US1024	A-0136

*CKC's list of NIST designated countries can be found at: <https://standards.gov/cabs/designations.html>

SUMMARY OF RESULTS

Standard / Specification: FCC Part 2 / 101

Test Procedure	Description	Modifications	Results
2.1055 / 101.107(a)	Frequency Tolerance	NA	Pass
2.1049 / 101.109(c)	Bandwidth	NA	Pass
2.1051 / 101.111(a)(5)	Emissions Limitations- Conducted	NA	Pass
2.1053 / 101.111(a)(5)	Emissions Limitations- Radiated	NA	Pass
2.1046 / 101.113(a)	Transmitter Power Limitations	NA	Pass
2.1047	Modulation Characteristics	NA	NA1

NA = Not Applicable

NA1 = Not applicable because the EUT does not employ any modulation types outlined in the rules.

ISO/IEC 17025 Decision Rule

The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions

No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions

None

EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
Automobile Adapter	Lind Electronics, Inc.	PA1555-2155 FB	NA
Tablet	Panasonic	FZ-G1	NA
Power Distribution Box	Itron, Inc.	Generic	NA
Mobile Collection Device, MC3	Itron, Inc.	DCU5310C	74007411

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Configuration 2

Equipment Tested:

Device	Manufacturer	Model #	S/N
5dBi Antenna	PCTEL	Generic	NA
Power Distribution Box	Itron, Inc.	Generic	NA
Mobile Collection Device, MC3	Itron, Inc.	DCU5310C	74007707
Automobile Adapter	Lind Electronics, Inc.	PA1555-2155 FB	NA
Tablet	Panasonic	FZ-M1	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Configuration 3

Equipment Tested:

Device	Manufacturer	Model #	S/N
5dBi Antenna	PCTEL	Generic	NA
Power Distribution Box	Itron, Inc.	Generic	NA
Mobile Collection Device, MC3	Itron, Inc.	DCU5310C	74007707
Automobile Adapter	Lind Electronics, Inc.	PA1555-2155 FB	NA
Tablet	Panasonic	FZ-G1	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Configuration 4

Equipment Tested:

Device	Manufacturer	Model #	S/N
5dBi Antenna	PCTEL	Generic	NA
Power Distribution Box	Itron, Inc.	Generic	NA
Automobile Adapter	Lind Electronics, Inc.	PA1555-2155 FB	NA
Tablet	Panasonic	FZ-M1	NA
Mobile Collection Device, MC3	Itron, Inc.	DCU5310C	74007411
Receiver Antenna	PCTEL	SUB-0275-001/H	S15180005

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Configuration 5

Equipment Tested:

Device	Manufacturer	Model #	S/N
5dBi Antenna	PCTEL	Generic	NA
Power Distribution Box	Itron, Inc.	Generic	NA
Automobile Adapter	Lind Electronics, Inc.	PA1555-2155 FB	NA
Mobile Collection Device, MC3	Itron, Inc.	DCU5310C	74007411
Receiver Antenna	PCTEL	SUB-0275-001/H	S15180005
Tablet	Panasonic	FZ-G1	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	Land-Mobile Transmitter and Receiver (27.41-960 MHz) (MAS transmitter)
Operating Frequency Range:	952.0-959.85MHz
Number of Hopping Channels:	NA
Modulation Type(s):	24.76-57.78Hz AM
Maximum Duty Cycle:	100%
Number of TX Chains:	1
Antenna Gain:	5dbi
Beamforming Type:	NA
Antenna Connection Type:	External Connector
Nominal Input Voltage:	13.8Vdc from car battery
Firmware / Software used for Test:	Arm Version: 7.66.00.01 DSP Version: 5.70.00.00 FPGA Version: 3.02 PSoC Version: 3.01 MC3 SuperRaptor Test ver.4.0.3.5
FCC ID:	7" tablet – Panasonic FZ-M1 FCC ID: ACJ9TGWL15B IC: 216A-CFWL15B contains: FCC ID: ACJ9TGWW13B3 IC: 216A-CFWW13B 10" tablet – Panasonic FZ-G1 FCC ID: ACJ9TGWL15A IC: 216A-CFWL15A contains: FCC ID: ACJ9TGWW13B1 IC: 216A-CFWW13B

EUT and Accessory Photo(s)



EUT's



Tablet 1



Tablet 2



Tablet Power Adapter



Power Distribution



Antennas

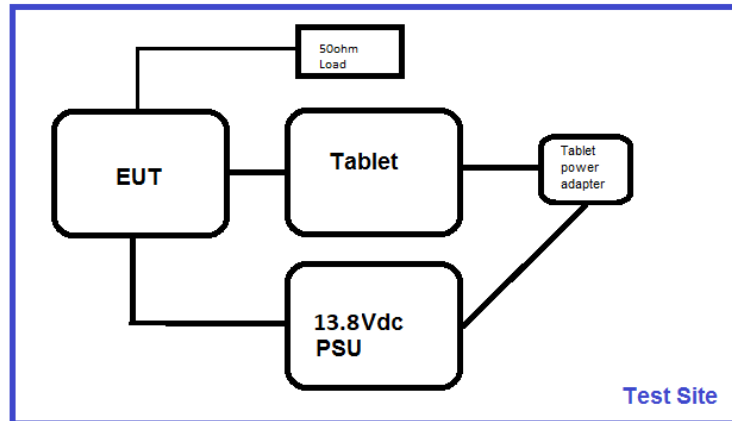
Support Equipment Photo(s)



12Vdc PSU

Block Diagram of Test Setup(s)

Test Setup Block Diagram



FCC Part(s) 101

Technical Requirements Specifications

2.1055 / 101.107(a) Frequency Tolerance

Test Setup/Conditions			
Test Location:	Brea Lab A	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.26 (2015), section 5.6	Test Date(s):	2/17/2020
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Input voltage is 13.8Vdc from external power supply. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5 The EUT is set to continuously transmit. Power setting: 4W Operating frequency: 952-959.85MHz Frequency range of measurement: 952-959.85MHz VBW=100Hz, VBW=300Hz Note: There are two EUTs with the same transmitter. The difference between them is the optional receivers in one of them. The EUT used for this test is the one with optional receivers as it is the worst-case configuration.		

Environmental Conditions			
Temperature (°C)	17.9	Relative Humidity (%):	48

Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
01878	Temperature Chamber	Thermotron Corp.	S 1.2 Mini-Max	3/26/2019	3/26/2021
02672	Spectrum Analyzer	Agilent	E4440A	7/25/2019	7/25/2020
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/22/2019	10/22/2021
P07338	Cable	Pomona	2249-Y-240	12/24/2019	12/24/2021

Test Data Summary					
Temperature (°C)	Voltage	Frequency (MHz)	Frequency Tolerance (%)	Limit (%)	Results
-30	V _{Nominal}	951.999047	0.0000497	0.00015	Pass
-20	V _{Nominal}	951.999058	0.0000485	0.00015	
-10	V _{Nominal}	951.999345	0.0000184	0.00015	
0	V _{Nominal}	951.999445	0.0000079	0.00015	
10	V _{Nominal}	951.999540	0.0000021	0.00015	
20	V _{Minimum}	951.999520	0.0000000	0.00015	
20	V _{Nominal}	951.999520	0.0000000	0.00015	
20	V _{Maximum}	951.999520	0.0000000	0.00015	
30	V _{Nominal}	951.999505	0.0000016	0.00015	
40	V _{Nominal}	951.999480	0.0000042	0.00015	
50	V _{Nominal}	951.999415	0.0000110	0.00015	
Nominal Frequency:		951.999520			

Temperature (°C)	Voltage	Frequency (MHz)	Frequency Tolerance (%)	Limit (%)	Results
-30	V _{Nominal}	955.999050	0.0000479	0.00015	Pass
-20	V _{Nominal}	955.999078	0.0000450	0.00015	
-10	V _{Nominal}	955.999300	0.0000218	0.00015	
0	V _{Nominal}	955.999485	0.0000024	0.00015	
10	V _{Nominal}	955.999560	0.0000054	0.00015	
20	V _{Minimum}	955.999508	0.0000000	0.00015	
20	V _{Nominal}	955.999508	0.0000000	0.00015	
20	V _{Maximum}	955.999508	0.0000000	0.00015	
30	V _{Nominal}	955.999545	0.0000039	0.00015	
40	V _{Nominal}	955.999500	0.0000008	0.00015	
50	V _{Nominal}	955.999490	0.0000019	0.00015	
Nominal Frequency:		955.999508			

Temperature (°C)	Voltage	Frequency (MHz)	Frequency Tolerance (%)	Limit (%)	Results
-30	V _{Nominal}	959.849015	0.0000604	0.00015	Pass
-20	V _{Nominal}	959.849090	0.0000526	0.00015	
-10	V _{Nominal}	959.849330	0.0000276	0.00015	
0	V _{Nominal}	959.849495	0.0000104	0.00015	
10	V _{Nominal}	959.849570	0.0000026	0.00015	
20	V _{Minimum}	959.849595	0.0000000	0.00015	
20	V _{Nominal}	959.849595	0.0000000	0.00015	
20	V _{Maximum}	959.849595	0.0000000	0.00015	
30	V _{Nominal}	959.849535	0.0000063	0.00015	
40	V _{Nominal}	959.849465	0.0000135	0.00015	
50	V _{Nominal}	959.849435	0.0000167	0.00015	
Nominal Frequency:		959.849595			

Parameter Definitions

Measurements performed at input voltage according to manufacturer specification.

Parameter	Value
V _{Nominal} :	13.8Vdc
V _{Minimum} :	11.8Vdc
V _{Maximum} :	13.8Vdc

Note: see 101.107(a), note 5 for limit reference.

Test Setup Photo(s)



2.1049 / 101.109(c) Bandwidth

Test Setup/Conditions			
Test Location:	Brea Lab A	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.26 (2015), section 5.4	Test Date(s):	2/13/2020
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Input voltage is 13.8Vdc from external power supply. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5 The EUT is set to continuously transmit. Power setting: 4W Operating frequency: 952-959.85MHz Frequency range of measurement: 952-959.85MHz RBW=8.2Hz, VBW=24Hz (24Hz AM modulation) RBW=30Hz, VBW=91Hz (60Hz AM modulation) Note: There are two EUTs with the same transmitter. The difference between them is the optional receivers in one of them. The EUT used for this test is the one with optional receivers as it is the worst-case configuration.		

Environmental Conditions			
Temperature (°C)	20	Relative Humidity (%):	53

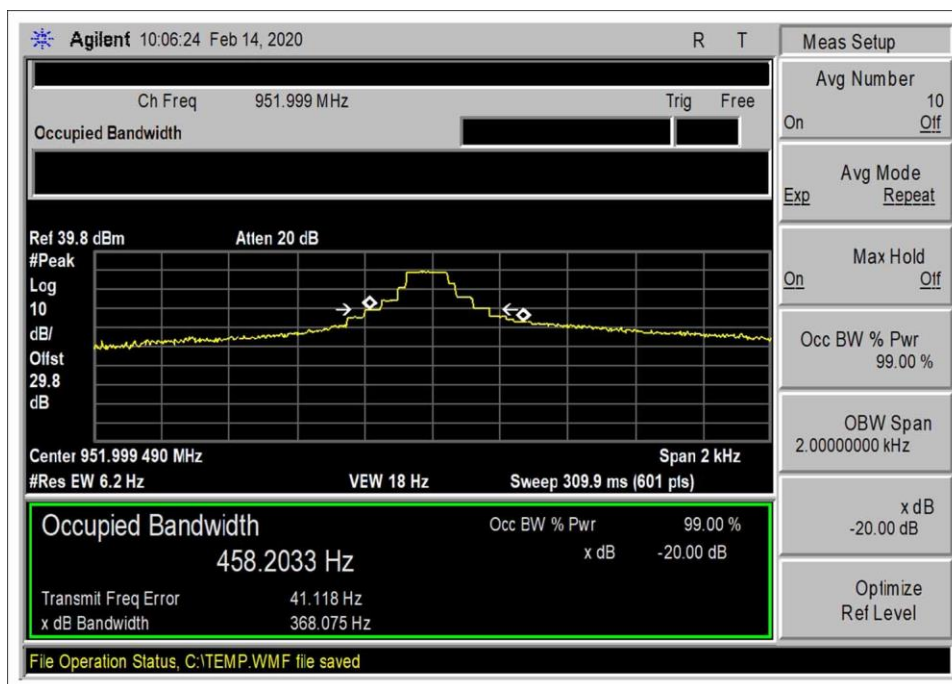
Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
02869	Spectrum Analyzer	Agilent	E4440A	7/25/2019	7/25/2020
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/22/2019	10/22/2021
P07244	Cable	H&S	32022-29094K-29094K-24TC	7/5/2018	7/5/2020

Test Data

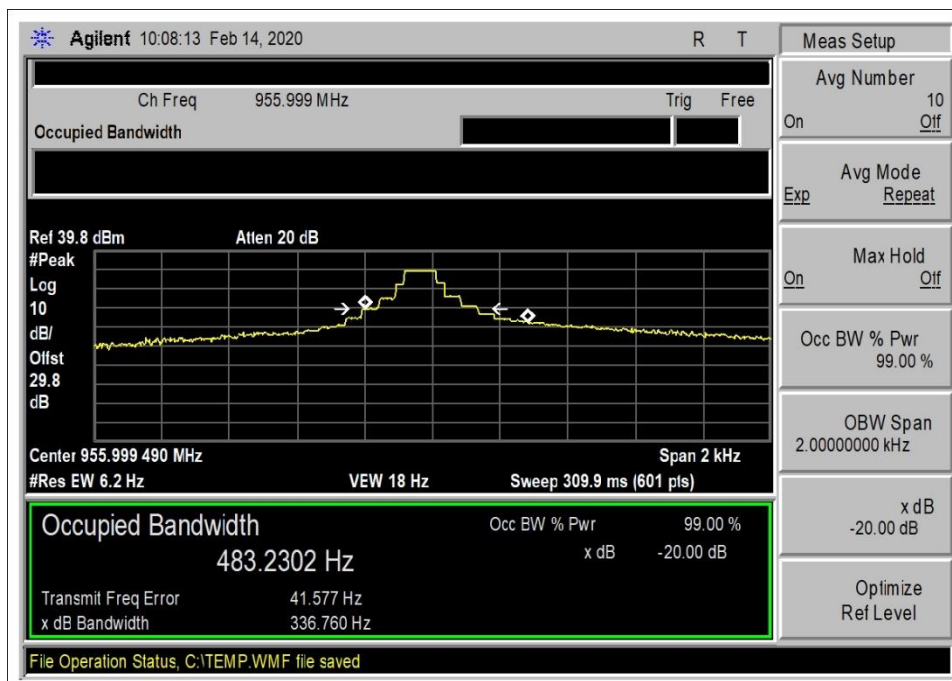
Test Data Summary				
Frequency (MHz)	Modulation	Measured (kHz)	Limit* (kHz)	Results
952.0	24.76 Hz AM	0.458	<12.5	Pass
956.0	24.76 Hz AM	0.483	<12.5	Pass
959.85	24.76 Hz AM	0.469	<12.5	Pass
952.0	57.78 Hz AM	1.061	<12.5	Pass
956.0	57.78 Hz AM	1.043	<12.5	Pass
959.85	57.78 Hz AM	0.992	<12.5	Pass

*See note 5 which references 101.147(b)(1) to (4)

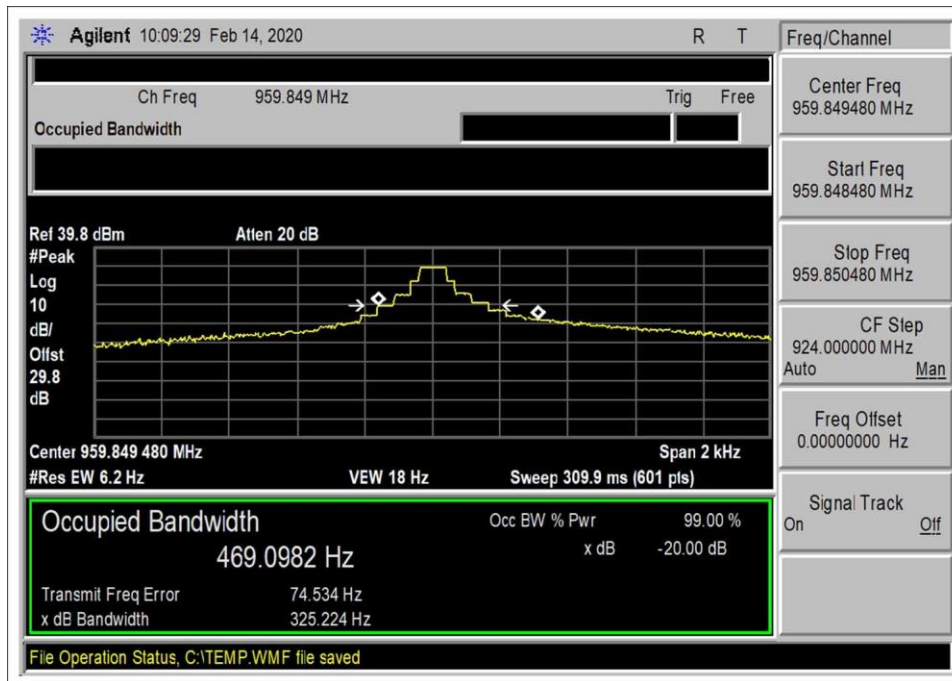
Plot(s)



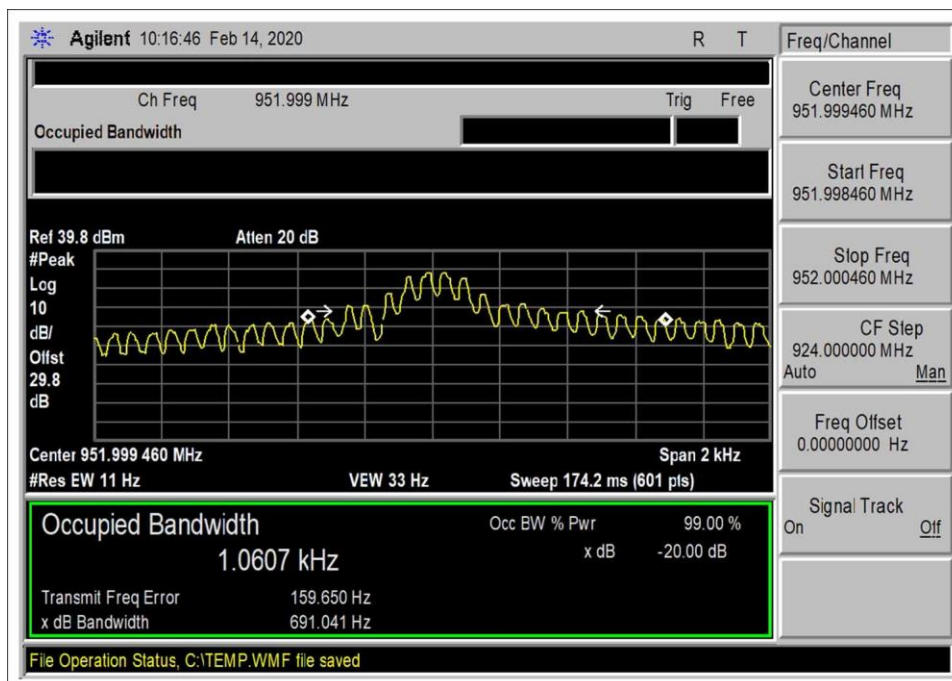
24Hz – Low Channel



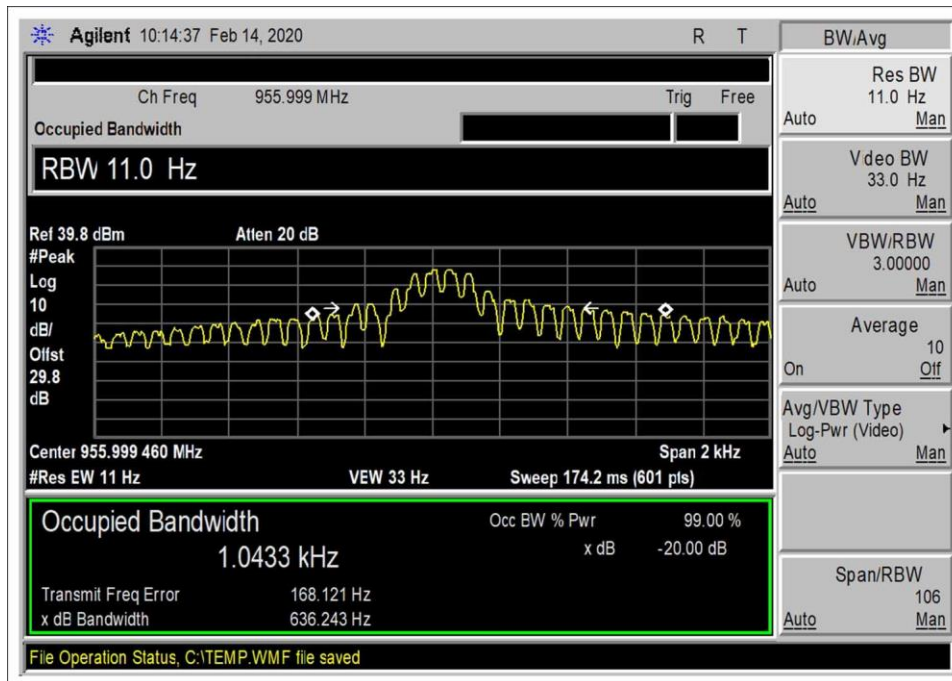
24Hz – Middle Channel



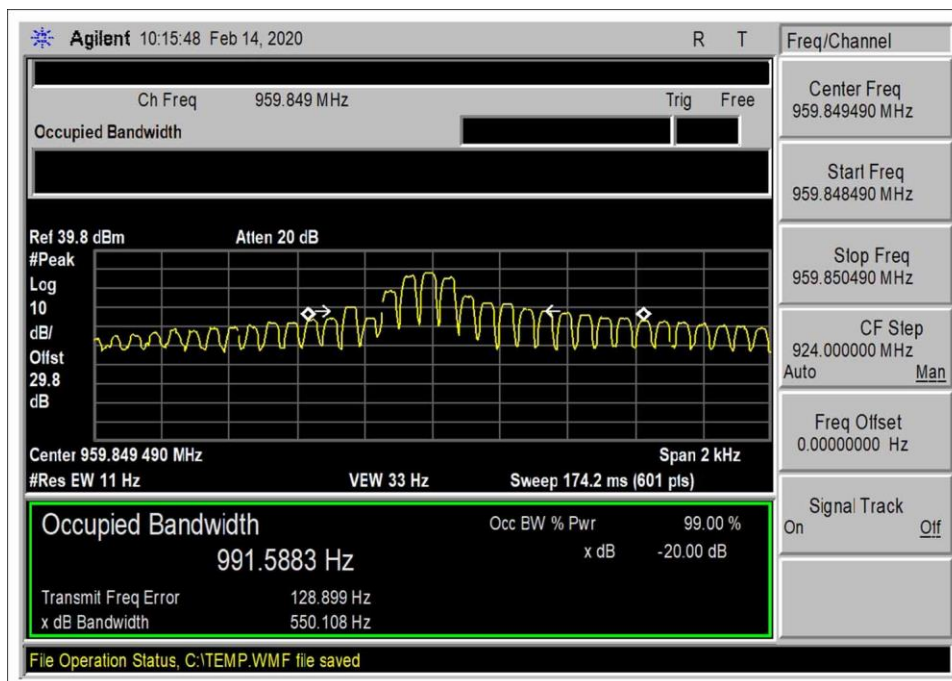
24Hz – High Channel



57Hz – Low Channel



57Hz – Middle Channel



57Hz – High Channel

Test Setup Photo(s)



2.1051 / 101.111(a)(5) Emission Limitations- Conducted Emission

Test Setup/Conditions			
Test Location:	Brea Lab A	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.26 (2015), section 5.7	Test Date(s):	2/14/2020
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Input voltage is 13.8Vdc from external power supply. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5 The EUT is set to continuously transmit. Power setting: 4W Operating frequency: 952-959.85MHz Frequency range of measurement = 9kHz-10GHz RBW=300Hz, VBW=20Hz (within +/- 15kHz of authorized bandwidth) RBW=100kHz, VBW=300kHz (outside of +/-15kHz of authorized bandwidth, 9kHz-1000MHz) RBW=1MHz, VBW=3MHz (1-10GHz) Note: There are two EUTs with the same transmitter. The difference between them is the optional receivers in one of them. The EUT used for this test is the one with optional receivers as it is the worst-case configuration.		

Environmental Conditions			
Temperature (°C)	22.5	Relative Humidity (%):	44

Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
02869	Spectrum Analyzer	Agilent	E4440A	7/25/2019	7/25/2020
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/22/2019	10/22/2021
P07244	Cable	H&S	32022-29094K-29094K-24TC	7/5/2018	7/5/2020

Test Data			
Spurious emissions outside of +/- 15kHz of authorized bandwidth			
Frequency (MHz)	Measure power (dBm)	Limit (dbm)	Result
1904	-32.8	-20	Pass
1912	-32.2	-20	Pass
1920	-33.3	-20	Pass
5712	-36.2	-20	Pass
5736	-36.0	-20	Pass
5760	-32.6	-20	Pass

Note: Data is recorded with the worst-case modulation.

Measurement Uncertainty: 0.67dB

Limit line for Spurious Conducted Emission

$$\text{REQUIRED ATTENUATION} = 50 + 10 \log P \text{ DB}$$

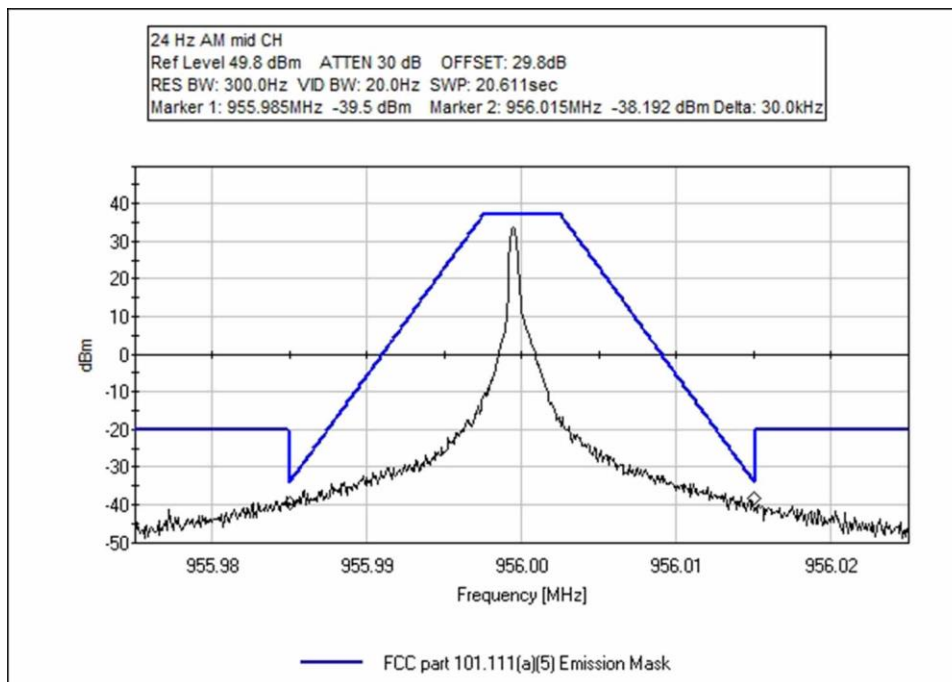
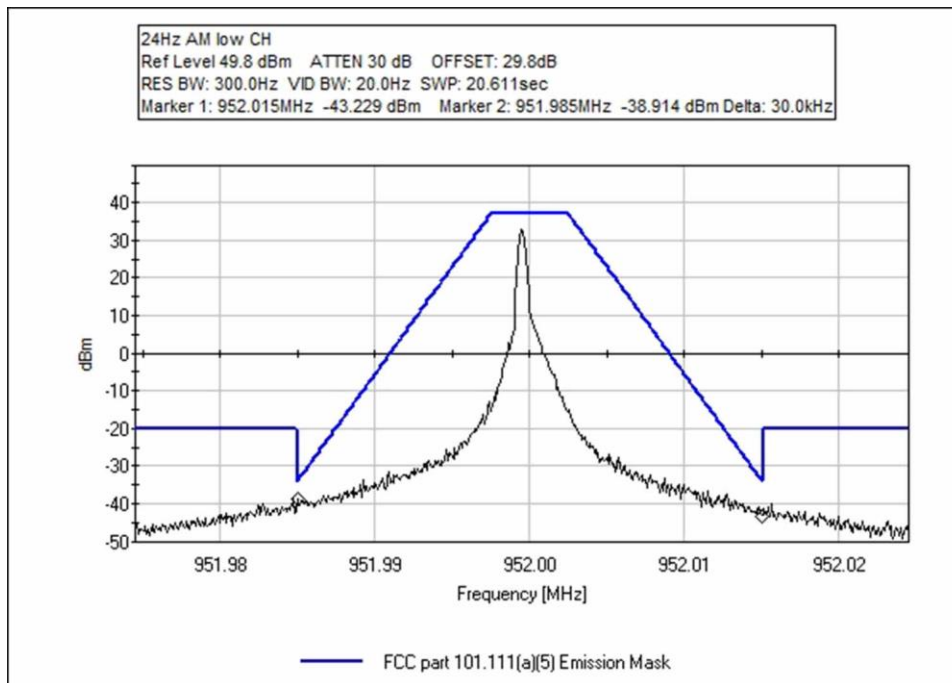
$$\text{Limit line (dBuV)} = V_{\text{dBuV}} - \text{Attenuation}$$

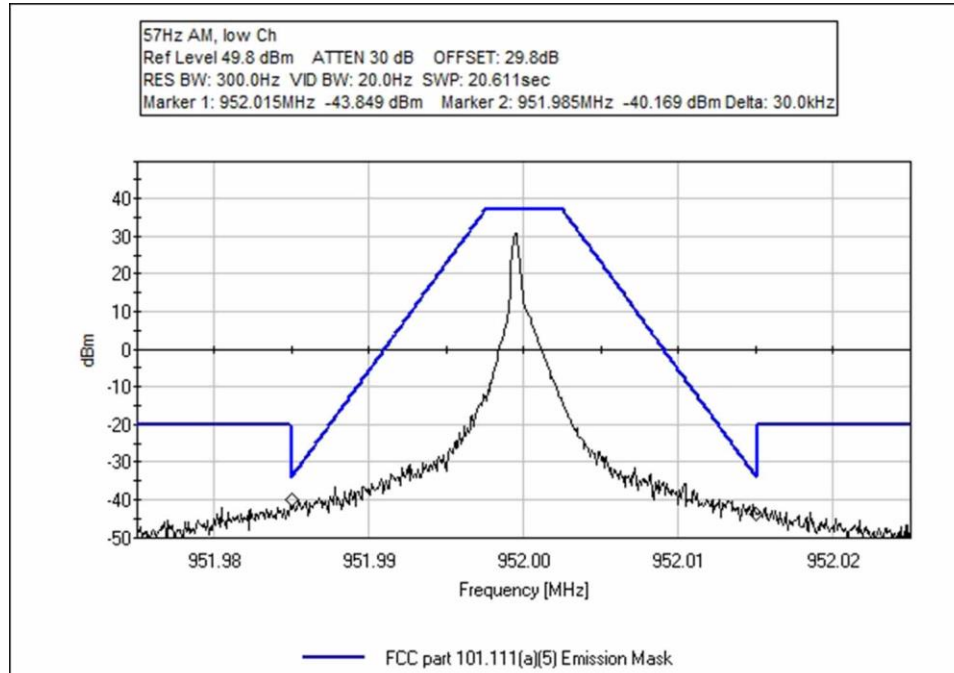
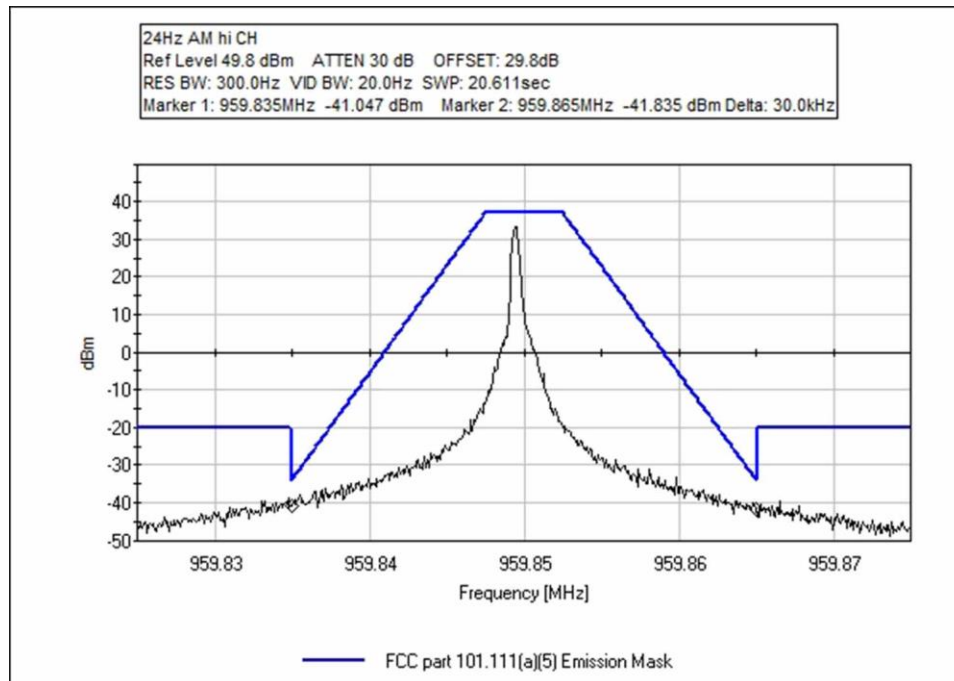
$$\begin{aligned} V_{\text{dBuV}} &= 20 \log \frac{V}{1 \times 10^{-6}} \\ &= 20 (\log V - \log 1 \times 10^{-6}) \\ &= 20 \log V - 20 \log 1 \times 10^{-6} \\ &= 20 \log V - 20 (-6) \\ &= 20 \log V + 120 \end{aligned}$$

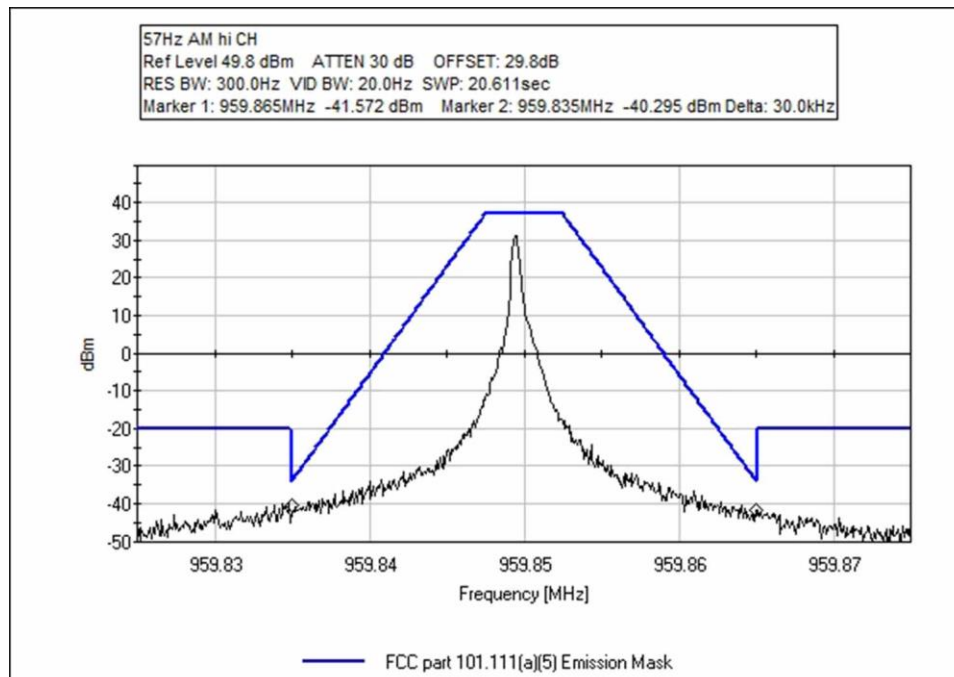
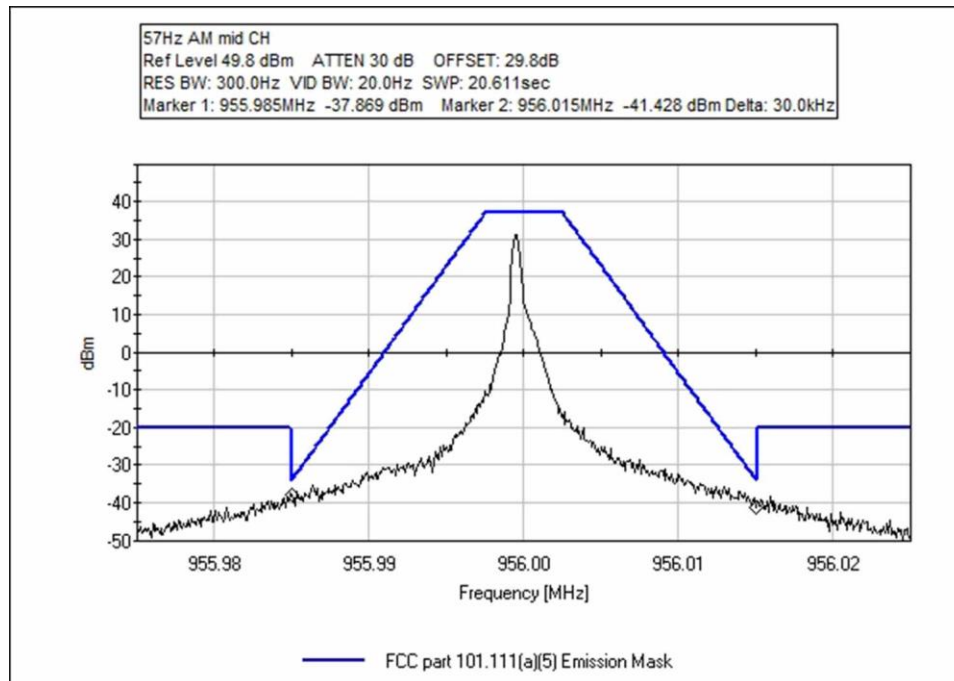
$$\begin{aligned} \text{Attenuation} &= 50 + 10 \log P \\ &= 50 + 10 \log \frac{V^2}{R} \\ &= 50 + 10 (\log V^2 - \log R) \\ &= 50 + 10 (2 \log V - \log R) \\ &= 50 + 20 \log V - 10 \log R \end{aligned}$$

$$\begin{aligned} \text{Limit line} &= V_{\text{dBuV}} - \text{Attenuation} \\ &= 20 \log V + 120 - (50 + 20 \log V - 10 \log R) \\ &= 20 \log V + 120 - 50 - 20 \log V + 10 \log R \\ &= 20 \log V + 120 - 50 - 20 \log V + 10 \log R \\ &= 120 - 50 + 10 \log 50 \quad \text{Note : } R = 50 \Omega \\ &= 120 - 50 + 16.897 \\ &= 87 \text{ dBuV } (-20\text{dBm}) \text{ at any power level} \end{aligned}$$

Emissions Mask







Test Setup Photo(s)



2.1053 / 101.111(a)(5) Emission Limitations- Radiated Emission

Test Setup/Conditions			
Test Location:	Brea Lab A	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.26 (2015), section 5.5	Test Date(s):	2/21/2020
Configuration:	2, 3, 4 and 5		
Test Setup:	The EUT is placed on turn table. Input voltage is 13.8Vdc from external power supply. GPS port is connected to an external antenna. Main antenna port is terminated with 50ohm load. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5 The EUT is set into continuous transmitting mode. The EUT is rotated in three orthogonal orientations. Data represents the worst case orientation. The antenna of the EUT is mounted to a 52" diameter aluminum plate to represent a vehicle roof. The aluminum plate is supported by foam blocks. The EUT is directly below the plate, on the test table. Power setting: 4W Operating frequency: 952-959.85MHz Frequency range of measurement = 9kHz-10GHz RBW=100kHz, VBW=300kHz (outside of +/-15kHz of authorized bandwidth, 9kHz-1000MHz) RBW=1MHz, VBW=3MHz (1-10GHz)		

Environmental Conditions			
Temperature (°C)	24.3	Relative Humidity (%):	36

Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
00314	Loop Antenna	EMCO	6502	5/13/2018	5/13/2020
P05050	Cable	Pasternack	RG223/U	12/24/2018	12/24/2020
00309	Preamp	HP	8447D	12/24/2019	12/24/2021
01995	Biconilog Antenna	Chase	CBL6111C	4/23/2018	4/23/2020
P05275	Attenuator	Weinschel	1W	4/5/2018	4/5/2020
P05198	Cable	Belden	8268	12/4/2018	12/4/2020
02869	Spectrum Analyzer	Agilent	E4440A	7/25/2019	7/25/2020
00786	Preamp	HP	83017A	5/12/2018	5/12/2020
00849	Horn Antenna	ETS	3115	3/14/2018	3/14/2020
P07139	Cable	Andrew	ANDL1-PNMNM-48	3/4/2019	3/4/2021
P07244	Cable	H&S	32022-29094K-29094K-24TC	7/5/2018	7/5/2020

Test Data				
Spurious emissions outside of +/-15kHz of authorized bandwidth				
Frequency (MHz)	Modulation	Measure power (dBuV/m)	Limit (dBuV/m)	Result
NA	24.76 Hz AM	NA	75.2	Pass
NA	57.78 Hz AM	NA	75.2	Pass

NA: No emission found within 30dB of limit line

Measurement Uncertainty: 3.73dB

Conversion to EIRP limit

$E(\text{dBuV/m}) = P(\text{dBm}) - 20\log(3) + 104.77$

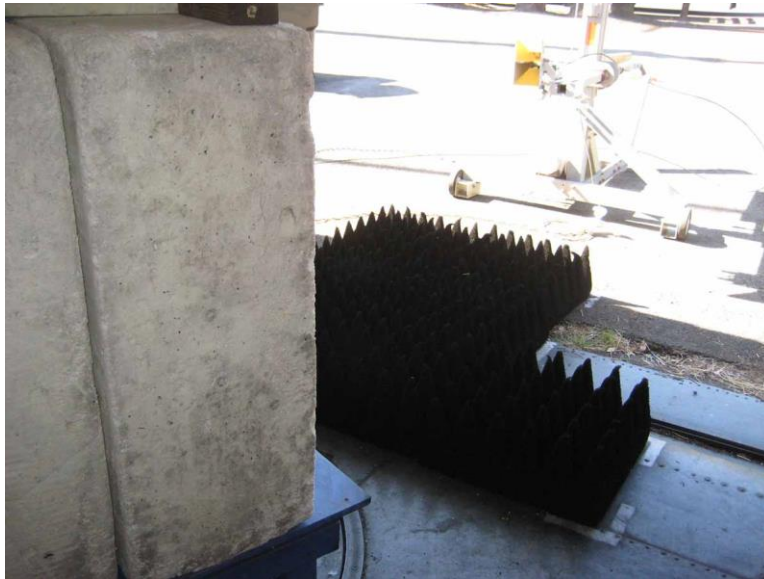
Test Setup Photo(s)



Configuration 2 - Below 1GHz



Configuration 2 - Below 1GHz



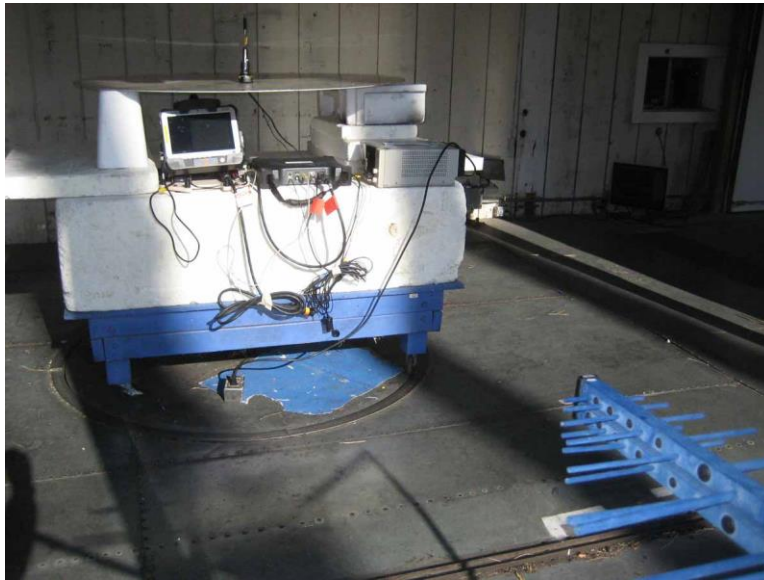
Configuration 2 - Above 1GHz



Configuration 2 - Above 1GHz



Configuration 3 - Below 1GHz



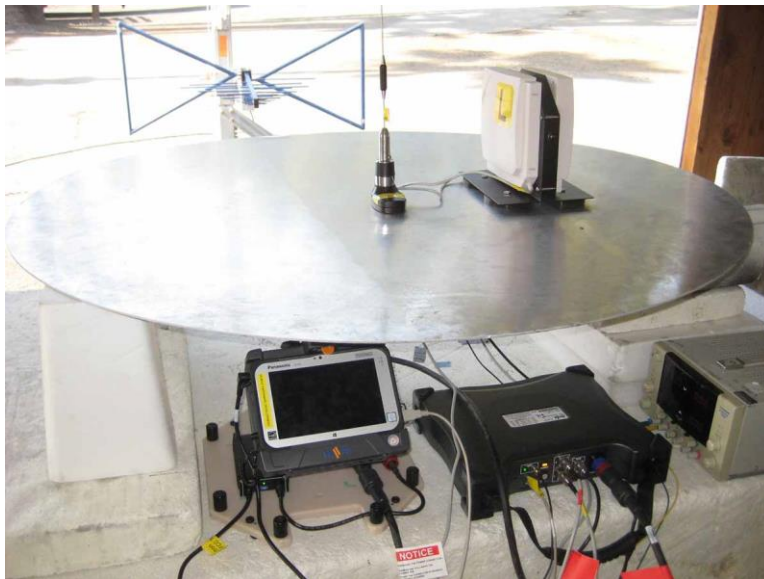
Configuration 3 - Below 1GHz



Configuration 3 - Above 1GHz



Configuration 3 - Above 1GHz



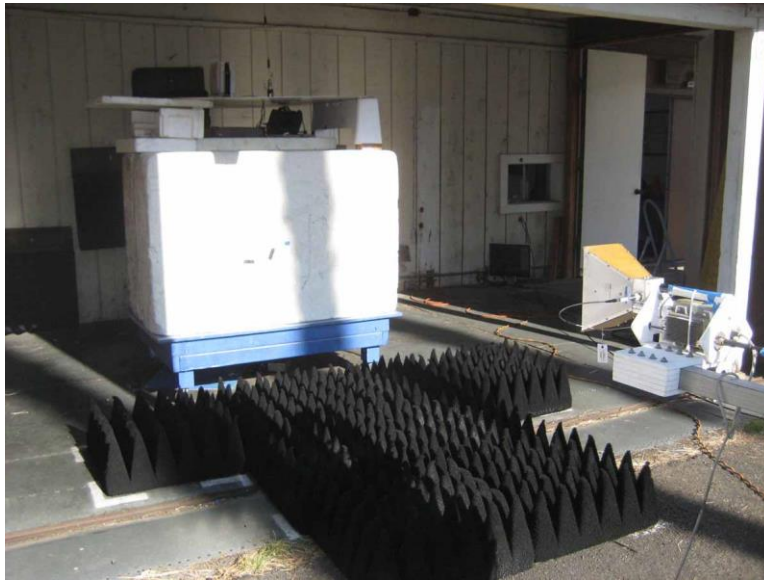
Configuration 4 - Below 1GHz



Configuration 4 - Below 1GHz



Configuration 4 - Above 1GHz



Configuration 4 - Above 1GHz



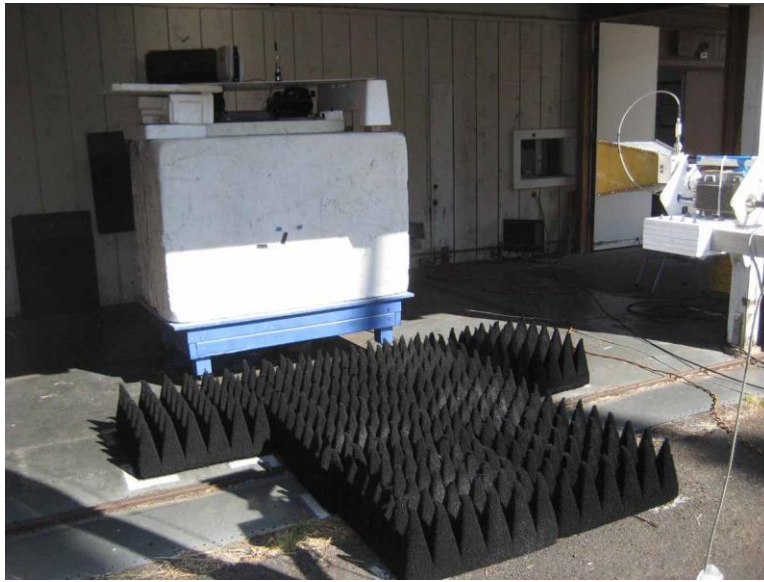
Configuration 5 - Below 1GHz



Configuration 5 - Below 1GHz



Configuration 5 - Above 1GHz



Configuration 5 - Above 1GHz



MC3 - X-Axis



MC3 - Y-Axis



MC3 - Z-Axis



MC3-w/o optional receivers - X-Axis



MC3-w/o optional receivers - Y-Axis



MC3-w/o optional receivers - Z-Axis

2.1046 / 101.113(a) Transmitter Power Limitations

Test Setup/Conditions			
Test Location:	Brea Lab D	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.26 (2015), section 5.2	Test Date(s):	2/14/2020
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Input voltage is 13.8Vdc from external power supply. USB port is connected to a touchscreen tablet. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5 The EUT is set to continuously transmit. Power setting: 4W Operating frequency: 952 to 959.85MHz Frequency of measurement: 952 to 959.85MHz RBW=300kHz VBW=910kHz Note: There are two EUTs with the same transmitter. The difference between them is the optional receivers in one of them. The EUT used for this test is the one with optional receivers as it is the worst-case configuration.		

Environmental Conditions			
Temperature (°C)	17.8	Relative Humidity (%):	43

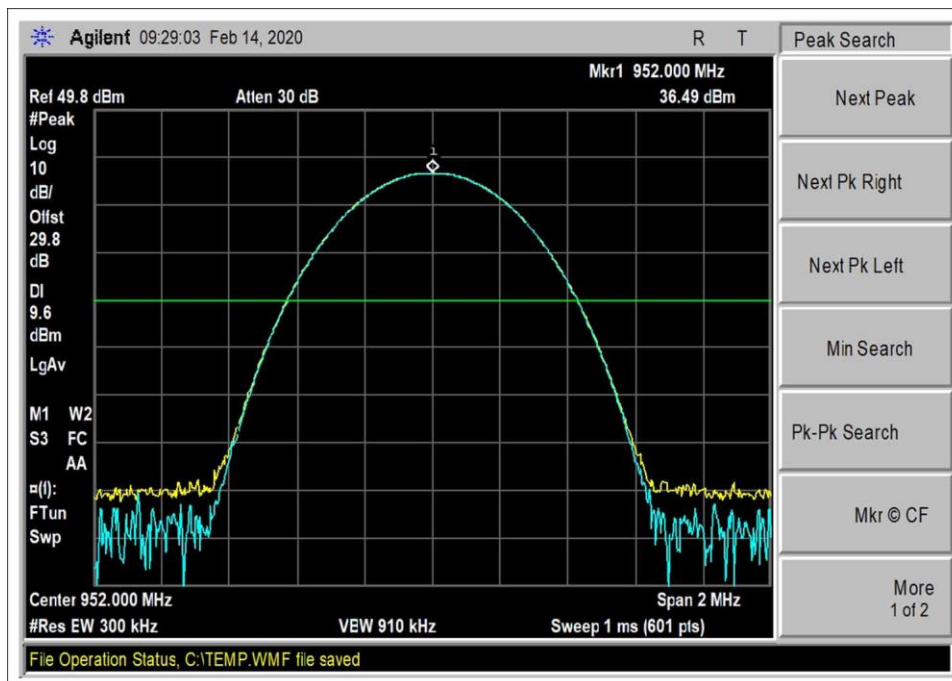
Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
02869	Spectrum Analyzer	Agilent	E4440A	7/25/2019	7/25/2020
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/22/2019	10/22/2021
P07244	Cable	H&S	32022-29094K-29094K-24TC	7/5/2018	7/5/2020

Test Data

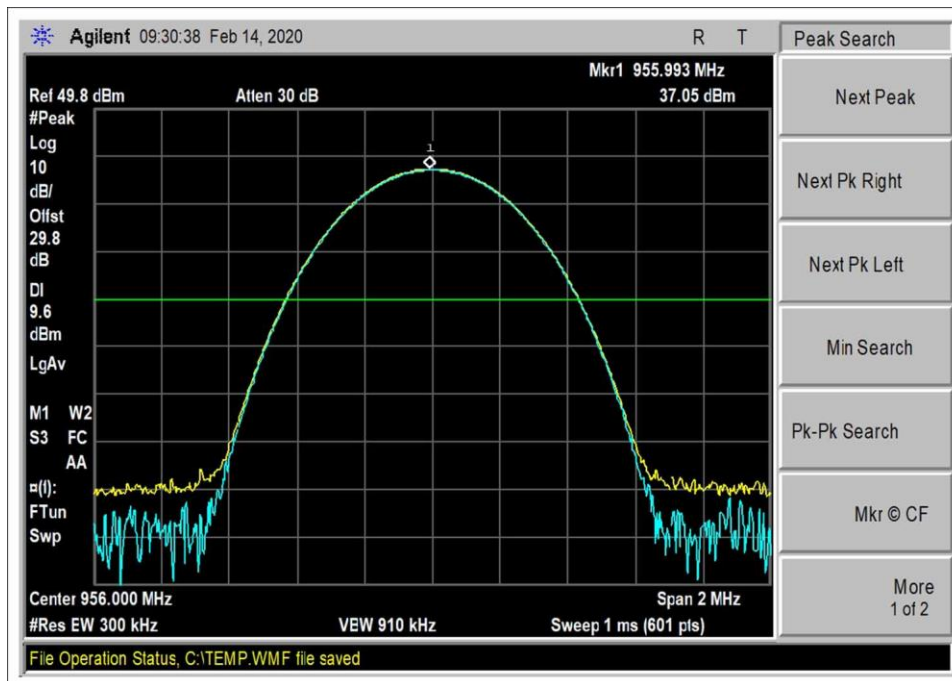
Test Data Summary - RF Conducted Measurement

Frequency (MHz)	Modulation	Ant. Gain (dBi)	Measured (dBm)	EIRP (dBm)	Limit (dBm)	Limit (dBW)	Results
952.0	24.76 Hz AM	5	36.49	41.49	≤44	≤14	Pass
956.0	24.76 Hz AM	5	37.05	42.05	≤44	≤14	Pass
959.85	24.76 Hz AM	5	36.74	41.74	≤44	≤14	Pass
952.0	57.78 Hz AM	5	36.38	41.38	≤44	≤14	Pass
956.0	57.78 Hz AM	5	36.99	41.99	≤44	≤14	Pass
959.85	57.78 Hz AM	5	36.74	41.74	≤44	≤14	Pass

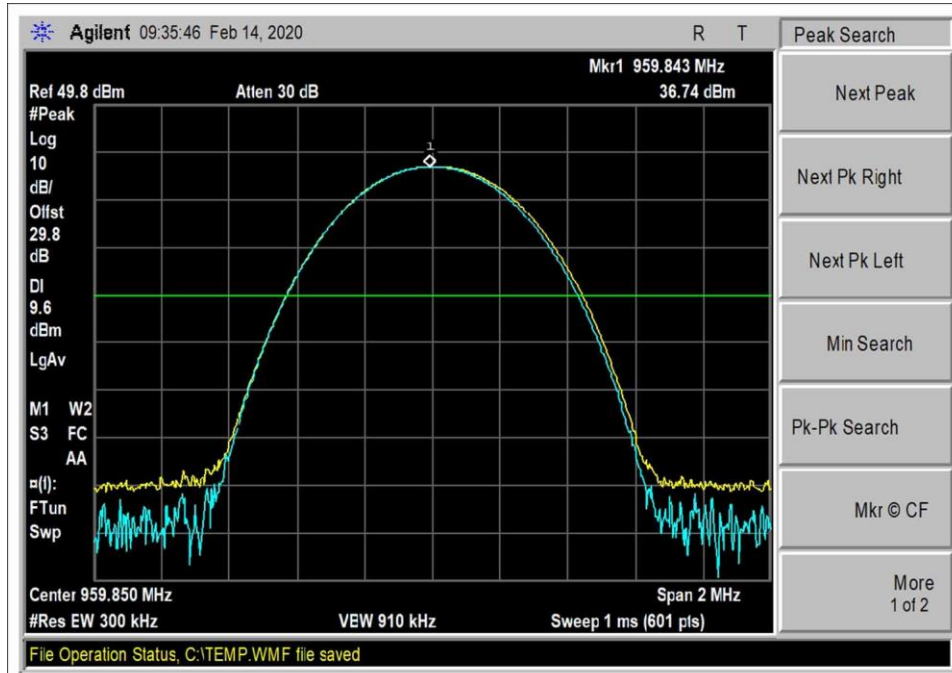
Plot(s)



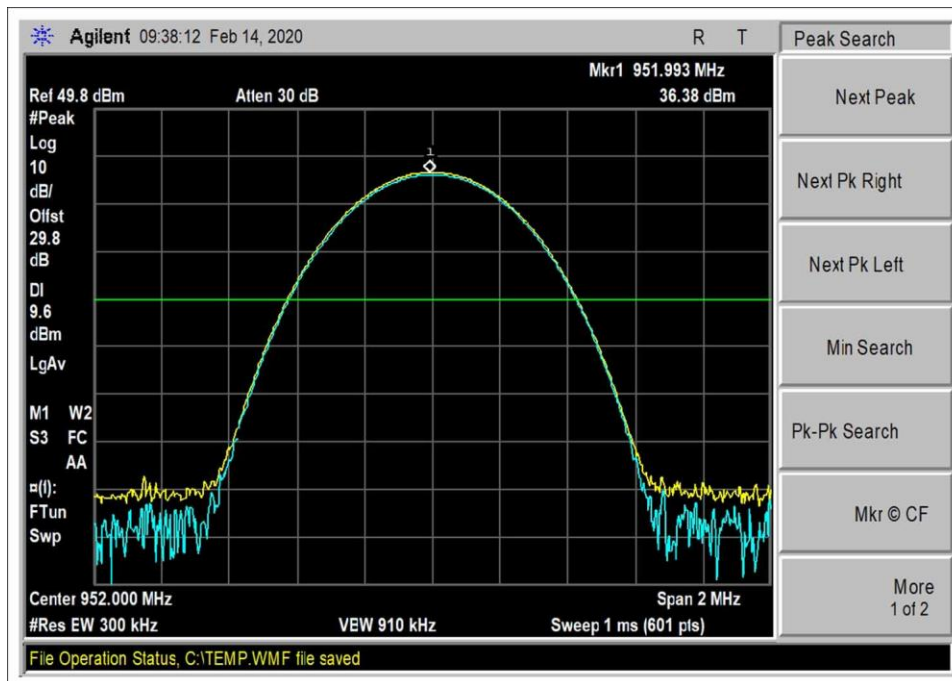
24Hz – Low Channel



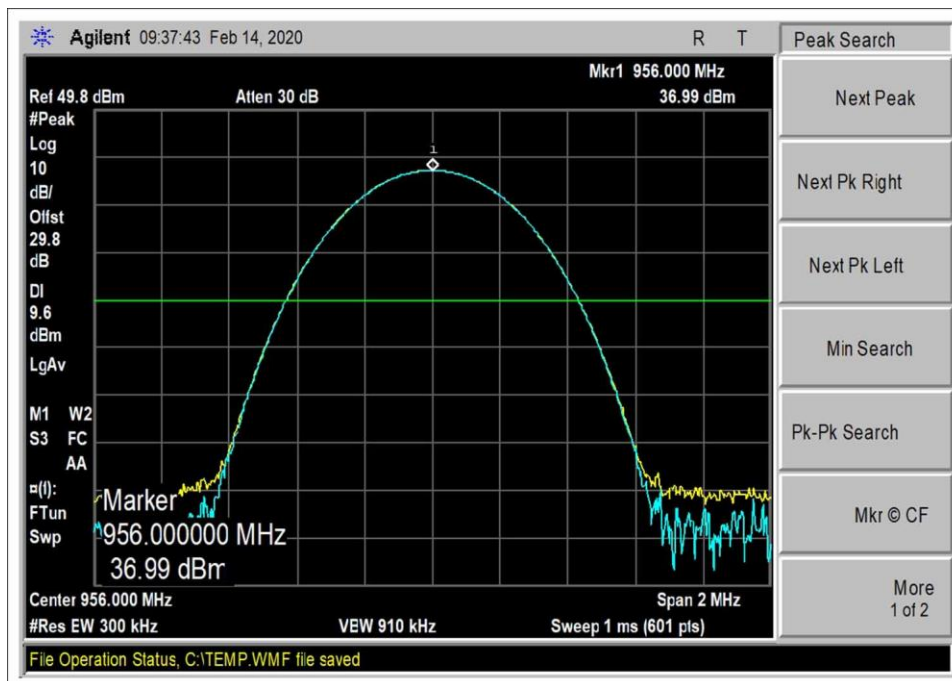
24Hz – Middle Channel



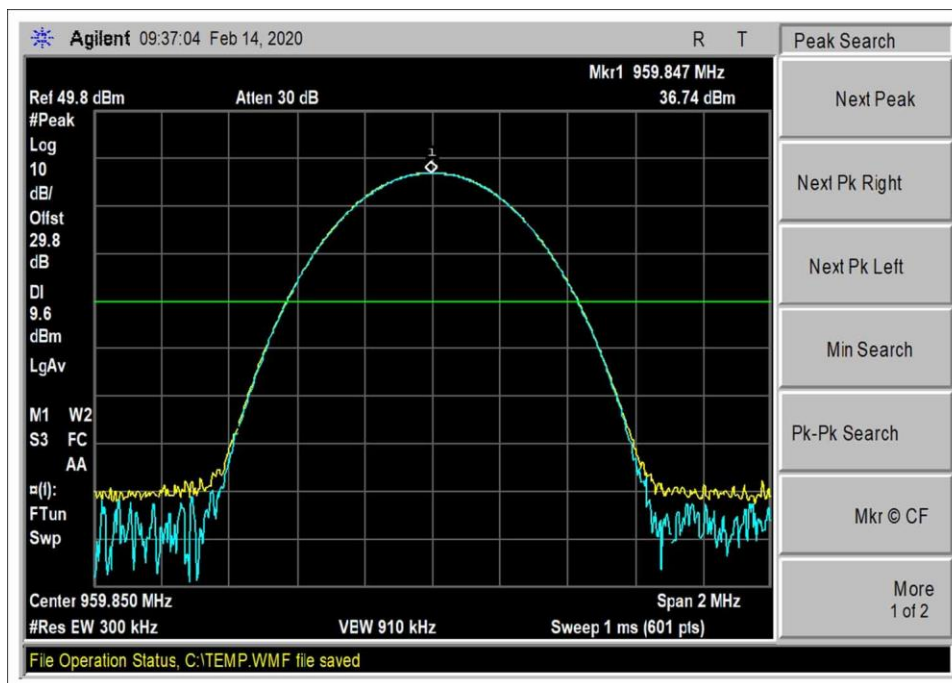
24Hz – High Channel



57Hz – Low Channel



57Hz – Middle Channel



57Hz – High Channel

Test Setup Photo(s)



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Parameter	Actual	Limit	Unit of Measure
Occupied Channel Bandwidth	1	5	%
RF output power, conducted	0.67	1.5	dB
Power Spectral Density, conducted	0.67	3	dB
Unwanted Emissions, conducted	0.67	3	dB
All emissions, radiated	3.73	6	dB
Temperature	1	3	°C
Humidity	3.4	5	%
DC and low frequency voltages	2	3	%
Time	1.1	5	%

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.