



# **CERTIFICATION TEST REPORT**

**Report Number. :** 4789464423-FR1V3

**Applicant :** SEGI LIMITED  
Unit J2, 4/F, Block 1, Kinho Industrial Building,  
14-24 Au Pui Wan Street, Shatin, New Territories  
HONGKONG, China

**Model :** ANT-2WDSS

**FCC ID :** VA5ANB300-2WLR  
**IC :** 7087A-2WANB300LR

**EUT Description :** Keyless Entry System

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
INDUSTRY CANADA RSS-247 Issue 2

**Date Of Issue:**  
May 27, 2020

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**Testing Laboratory**  
**TL-637**

## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	05/21/20	Initial issue	Robby Lee
V2	05/26/20	Added the test description	Robby Lee
V3	05/27/20	Removed the average power section	Robby Lee

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SEGI LIMITED  
**EUT DESCRIPTION:** Keyless Entry System  
**MODEL:** ANT-2WDSS  
**SERIAL NUMBER:** Prototype (CONDUCTED)  
Prototype (RADIATED);  
**DATE TESTED:** APR 27, 2020 – MAY 12, 2020;

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
INDUSTRY CANADA RSS-247 Issue 2	Complies
INDUSTRY CANADA RSS-GEN Issue 5	Complies

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
UL Korea, Ltd. By:



CY Choi  
Suwon Lab Engineer  
UL Korea, Ltd.

Tested By:



Robby Lee  
Suwon Lab Engineer  
UL Korea, Ltd.

## 2. SUMMARY TABLE

FCC Part Section	IC Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass
15.247 (b)(3)	RSS-247 5.4(d)	TX conducted output power	<30dBm		Pass
15.247 (e)	RSS-247 5.2(b)	PSD	<8dBm		Pass
15.207 (a)	RSS-GEN Clause 8.8	AC Power Line conducted emissions	Section 10	Power Line conducted	N/A note1
15.205, 15.209	RSS-GEN Clause 7 & 8.9	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Pass

Note1 : This EUT does only supplied by DC power.

### 3. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. IC RSS-247 Issue 2
4. IC RSS-GEN Issue 5
5. KDB 558074 D01 15.247 Meas Guidance v05r02.
6. ANSI C63.10-2013.

### 4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro	
<input type="checkbox"/>	Chamber 1
<input type="checkbox"/>	Chamber 2
<input checked="" type="checkbox"/>	Chamber 3

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/wp-content/uploads/2017/05/TL-637.pdf>.

## 5. CALIBRATION AND UNCERTAINTY

### 5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 5.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 28.9 \text{ dBuV/m} &= 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} \end{aligned}$$

### 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.35 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.49 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.82 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.49 dB

Uncertainty figures are valid to a confidence level of 95%.

### 5.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 1, Clause 4.4.2 in IEC Guide 115:2007.



## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The EUT is Keyless Entry System.  
This test report addresses the DTS operational mode.

### 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

Frequency Range[MHz]	Modulation Type	Power Mode	Output Power [dBm]	Output Power [mW]
907 ~ 919	DSSS	Peak	20.454	111.02
		Average	15.676	36.95

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**The internal antenna was Permanently attached.  
Therefore this E.U.T Complies with the requirement of §15.203.**

The radio utilizes an internal antenna, with a maximum gain of -0.4 dBi

### 6.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

## 6.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
None	None	None	None	None

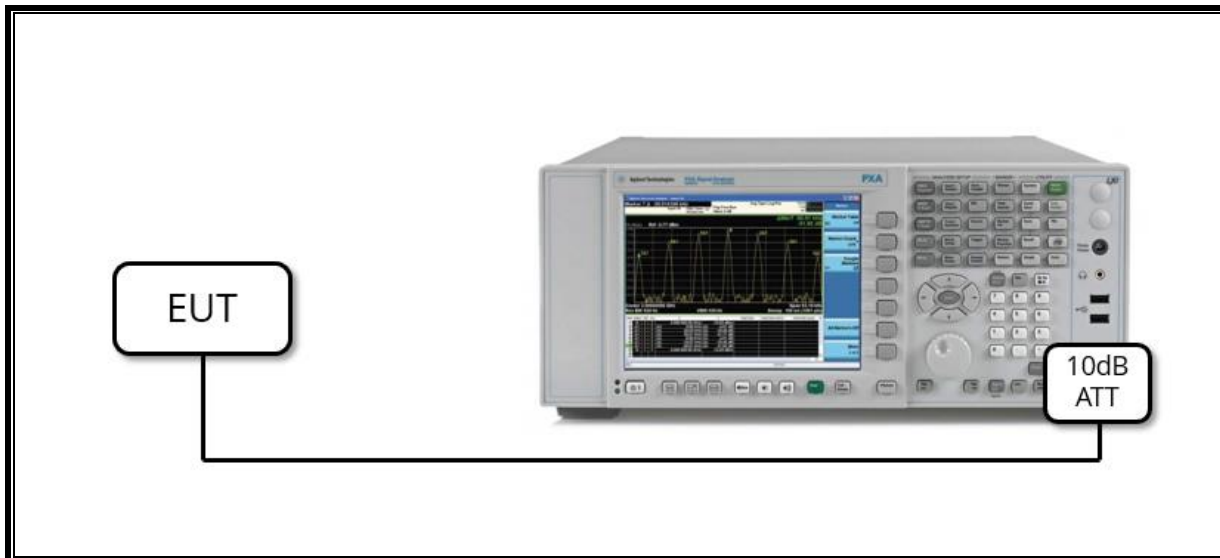
### I/O CABLE

Cable No	Port	# of identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC & DATA	1	Pin type	Un-shielded	1.5 m	N/A

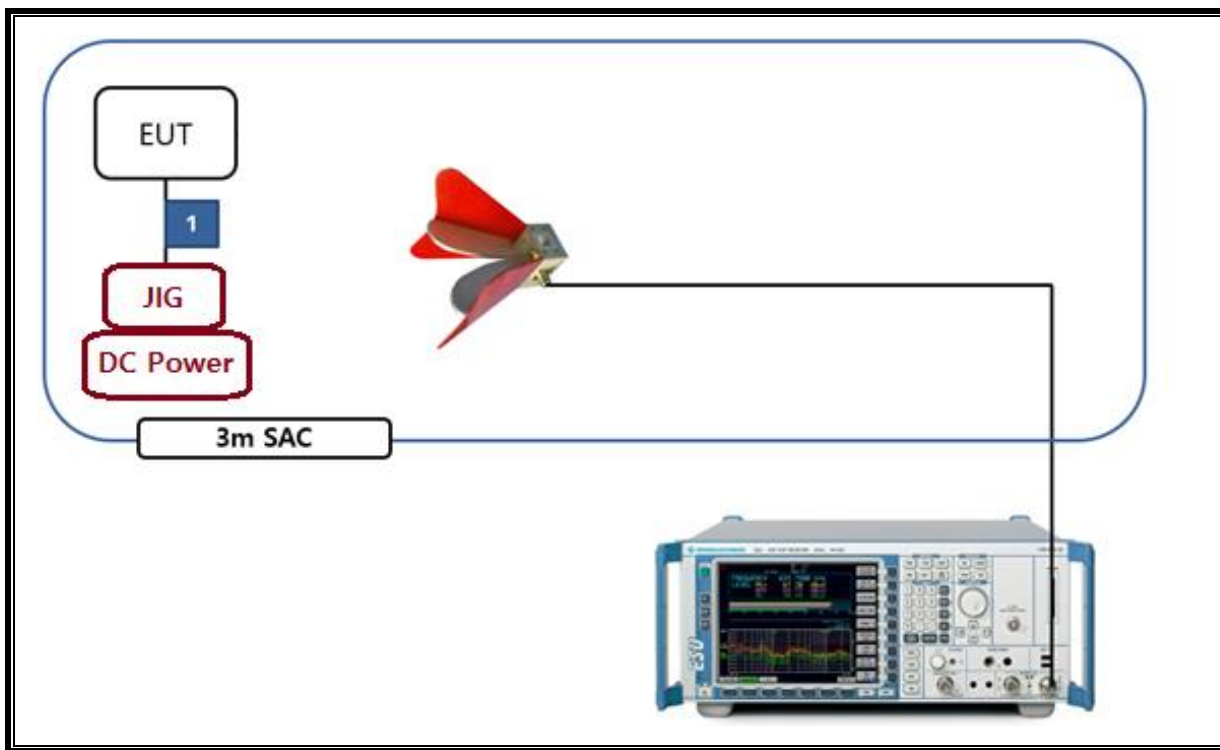
### TEST SETUP

The EUT is a unit with test jig during the tests.  
The EUT was tested in forced transmit mode by test jig.

**SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)**



**SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)**



## 7. MEASUREMENT METHOD

6 dB BW : KDB 558074 D01 v05r02, Section 8.2.

OUTPUT POWER : KDB 558074 D01 v05r02, Section 8.3.1.1

POWER SPECTRAL DENSITY : KDB 558074 D01 v05r02, Section 8.4.

Out-of-band Emissions (Conducted) : KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Non-restricted Bands: KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Restricted Bands : KDB 558074 D01 v05r02, Section 8.6.

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2

## 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	S/N	Next Cal. Date
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00167211	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168724	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00205959	08-04-20
Antenna, Horn, 40 GHz	ETS	3116C	00166155	08-14-20
Antenna, Horn, 40 GHz	ETS	3116C	00168645	10-02-21
Preamplifier	ETS	3116C-PA	00168841	08-08-20
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-05-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-06-20
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-06-20
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-06-20
Spectrum Analyzer, 43.5 GHz	R&S	FSW43	104089	08-06-20
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-09-20
Attenuator	PASTERNAK	PE7087-10	A001	08-08-20
Attenuator	PASTERNAK	PE7087-10	A008	08-08-20
Attenuator	PASTERNAK	PE7004-10	2	08-06-20
Attenuator	PASTERNAK	PE7087-10	A009	08-08-20
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-06-20
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-06-20
EMI Test Receive, 44 GHz	R&S	ESW44	101590	08-05-20
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-05-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-06-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-06-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-06-20
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	08-05-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-06-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-06-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-06-20
LISN	R&S	ENV-216	101837	08-09-20
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	10-02-21
Antenna, Loop, 9kHz-30MHz				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	

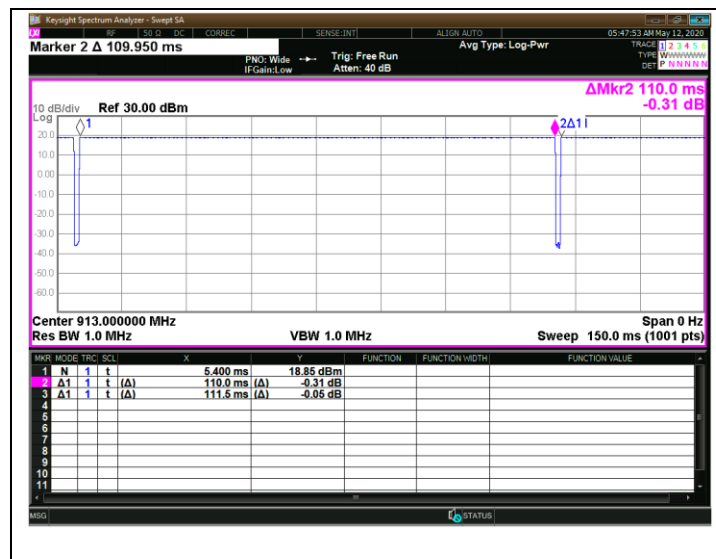
## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
DSSS	110.0	111.5	0.987	98.7%	0.00	0.010



## **9.2. 99% BANDWIDTH**

### **LIMITS**

None; for reporting purposes only.

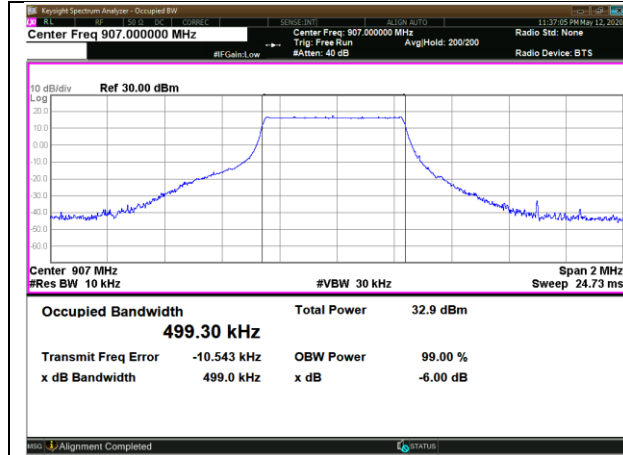
### **TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to  $\geq 3$  times the RBW. The spectrum analyzer internal 99% bandwidth function is utilized.

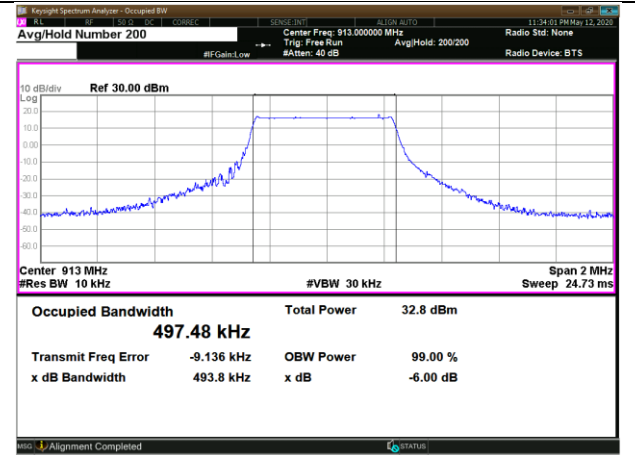
### **RESULTS**

**99% BANDWIDTH data**

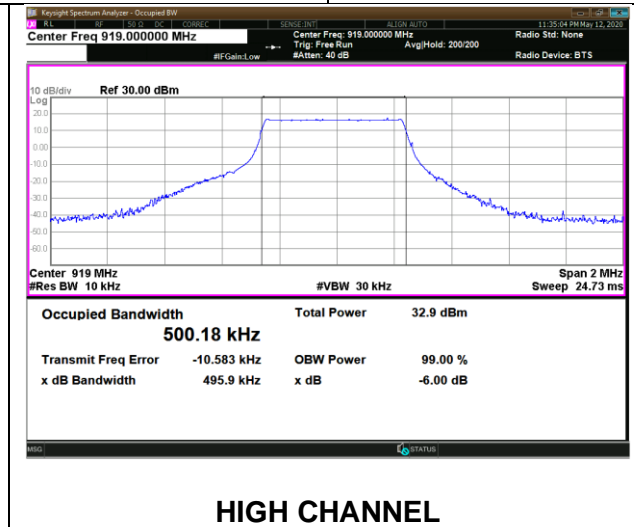
Channel	Frequency [MHz]	99% Bandwidth [kHz]
Low	907	499.30
Mid	913	497.48
High	919	500.18
Worst		500.18



**LOW CHANNEL**



**MID CHANNEL**



**HIGH CHANNEL**



### **9.3. 6 dB BANDWIDTH**

#### **LIMITS**

FCC §15.247 (a) (2)

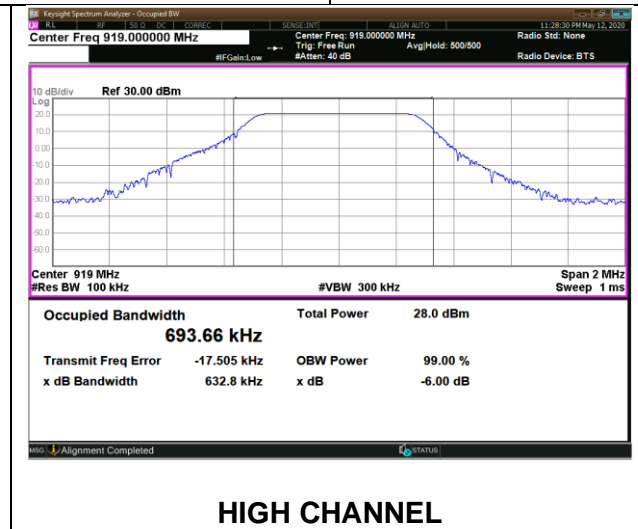
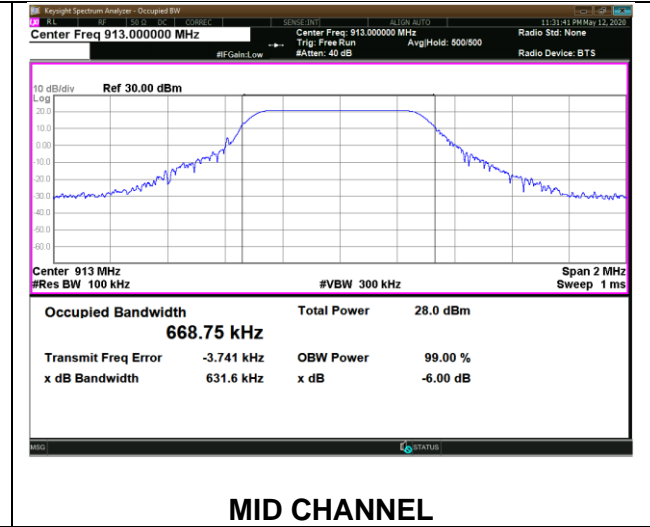
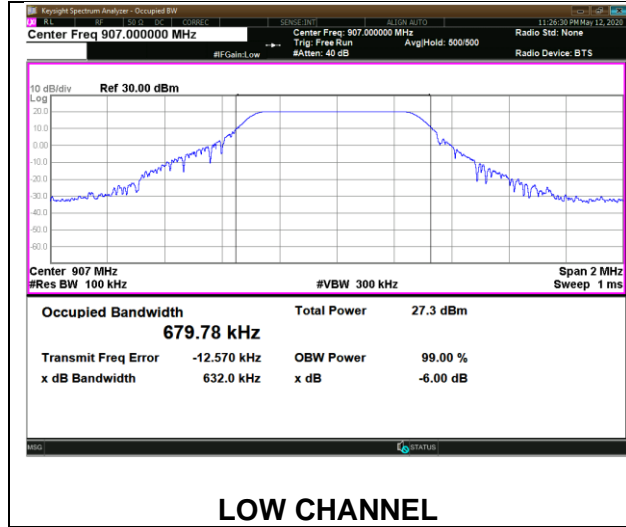
RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

#### **RESULTS**

**6dB Bandwidth data**

Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minumun Limit [kHz]
Low	907	632.0	500.0
Mid	913	<b>631.6</b>	500.0
High	919	632.8	500.0
Worst		631.6	500.0



## 9.4. OUTPUT POWER

### LIMITS

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

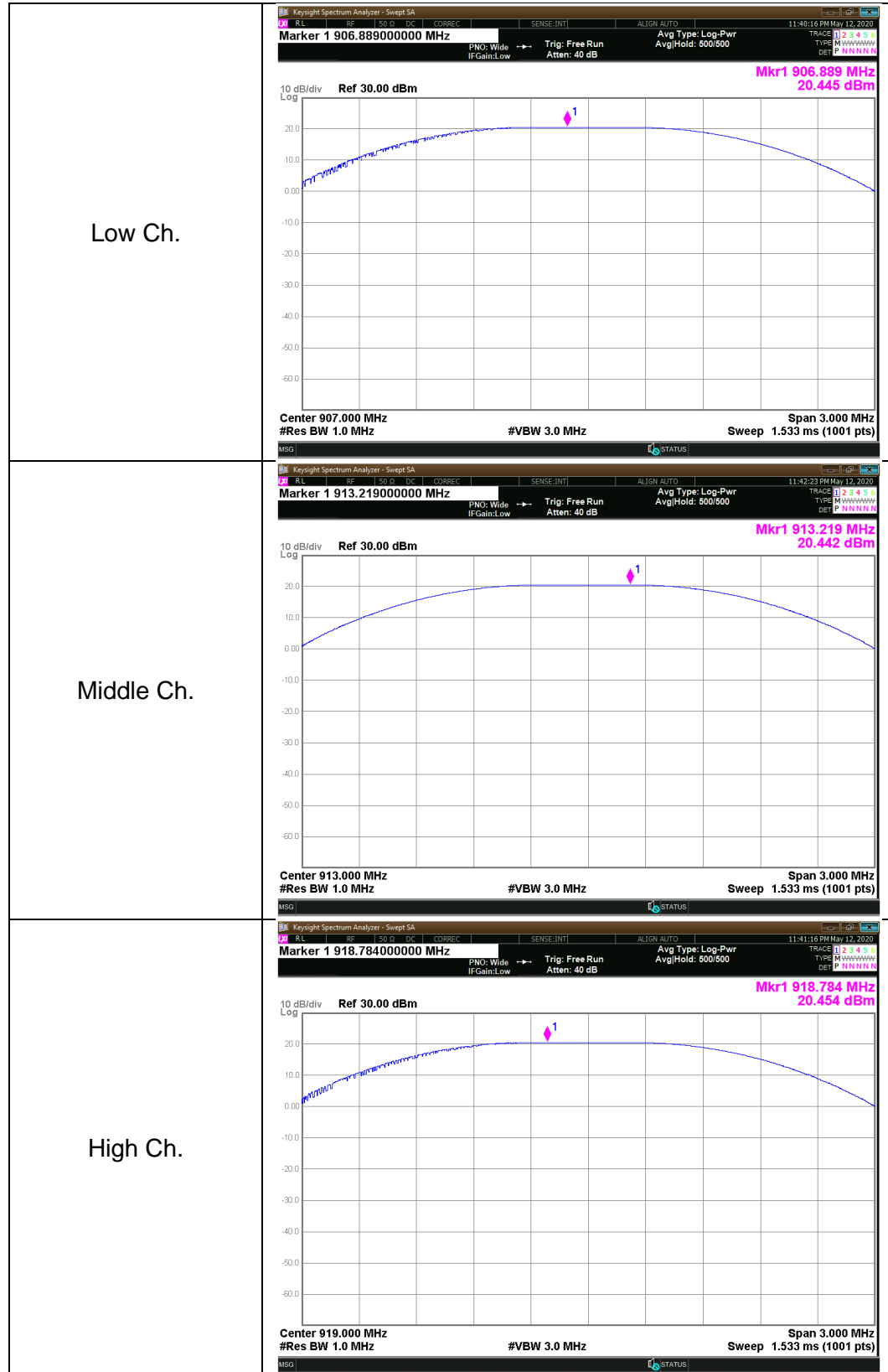
### TEST PROCEDURE

Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer.

### RESULTS

Channel	Frequency [MHz]	Peak Power [dBm]	Limit [dBm]	Margin [dB]
Low	907	20.445	30.000	-9.555
Mid	913	20.442	30.000	-9.558
High	919	<b>20.454</b>	30.000	-9.546
Worst		20.454	30.000	-9.546

**PEAK OUTPUT POWER PLOTS**



## **9.5. POWER SPECTRAL DENSITY**

### **LIMITS**

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

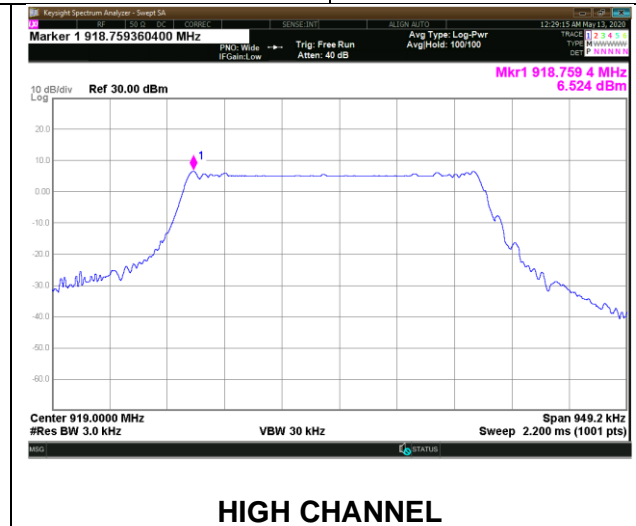
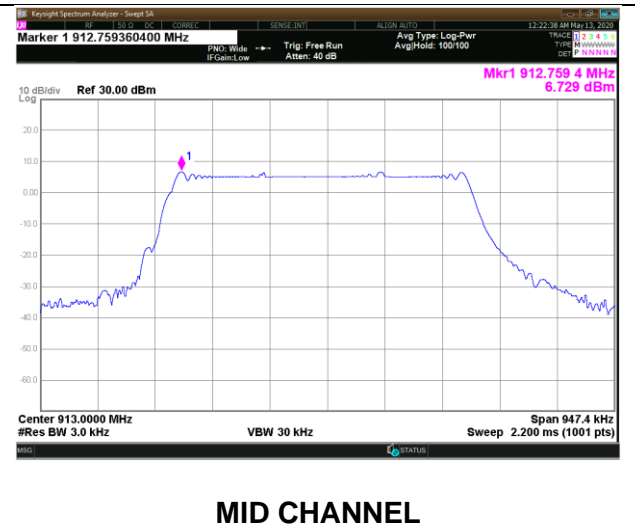
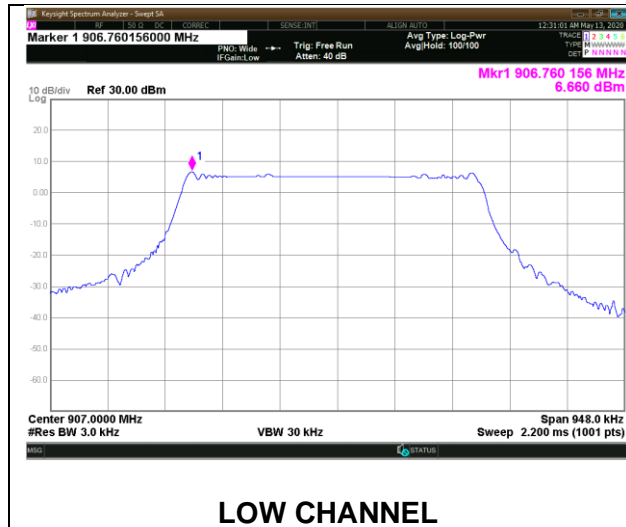
### **TEST PROCEDURE**

Power Spectral Density was measured using ANSI C63.10(2013) under section 11.10.2 utilizing spectrum analyzer.

### **RESULTS**

**PSD data**

Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
Low	907	6.660	8.000	-1.340
Mid	913	<b>6.729</b>	8.000	-1.271
High	919	6.524	8.000	-1.476



## **9.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

RSS-247 5.5

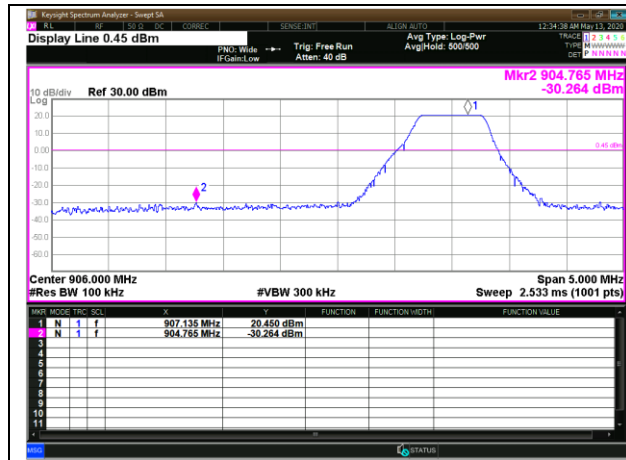
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

### **TEST PROCEDURE**

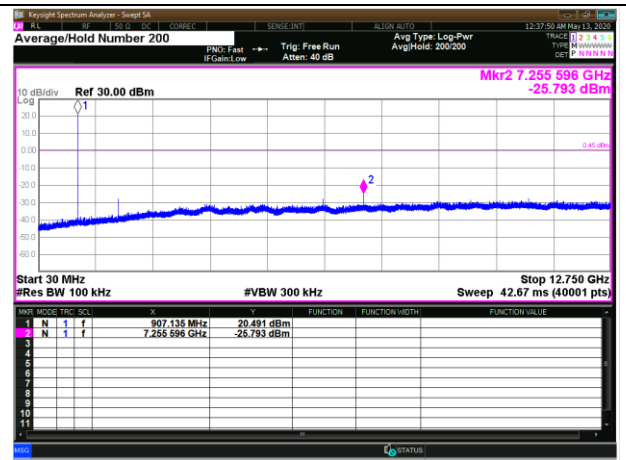
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

### **RESULTS**

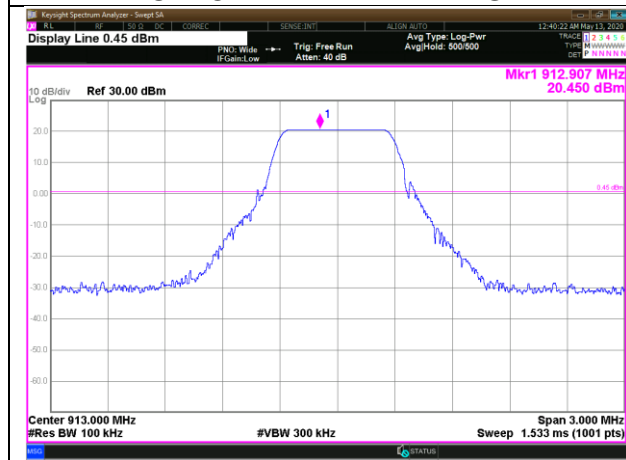
**PSD data**



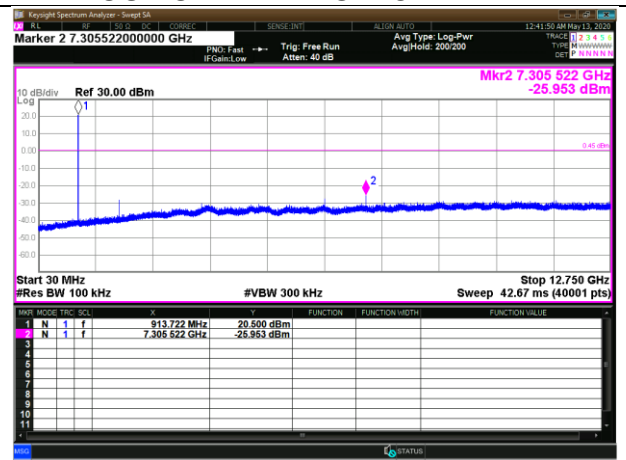
**LOW CHANNEL BANDEDGE**



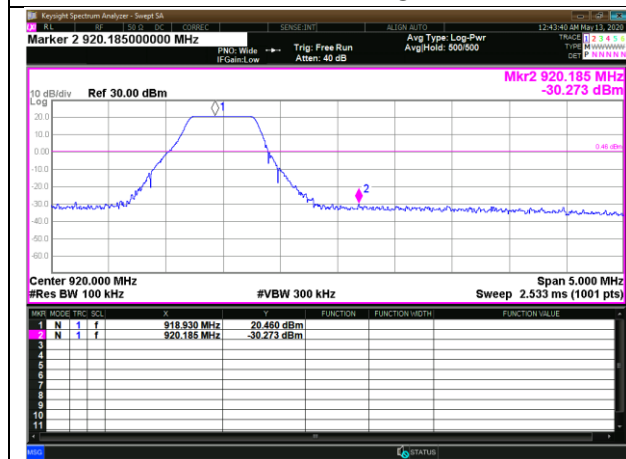
**OUT-OF-BAND LOW CHANNEL**



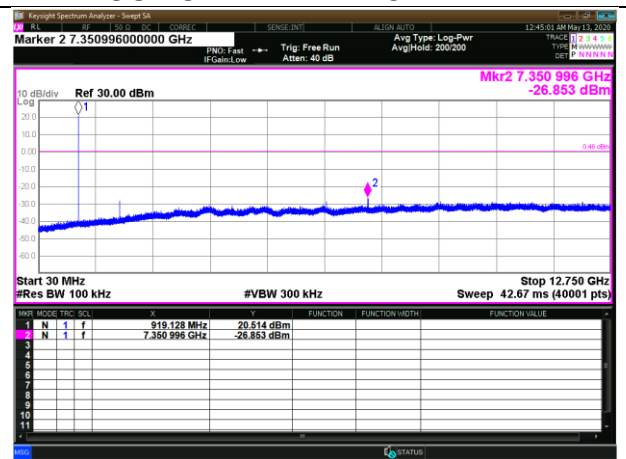
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**



**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL**



## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

## **TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restricted band-edge, Final detection of spurious harmonic emissions) Duty cycle factor =  $10 \log(1/x)$ . But this EUT operated on a duty cycle of over 98% during test. Therefore, duty cycle factor is not applied.

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the band (902MHz - 928 MHz). (From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

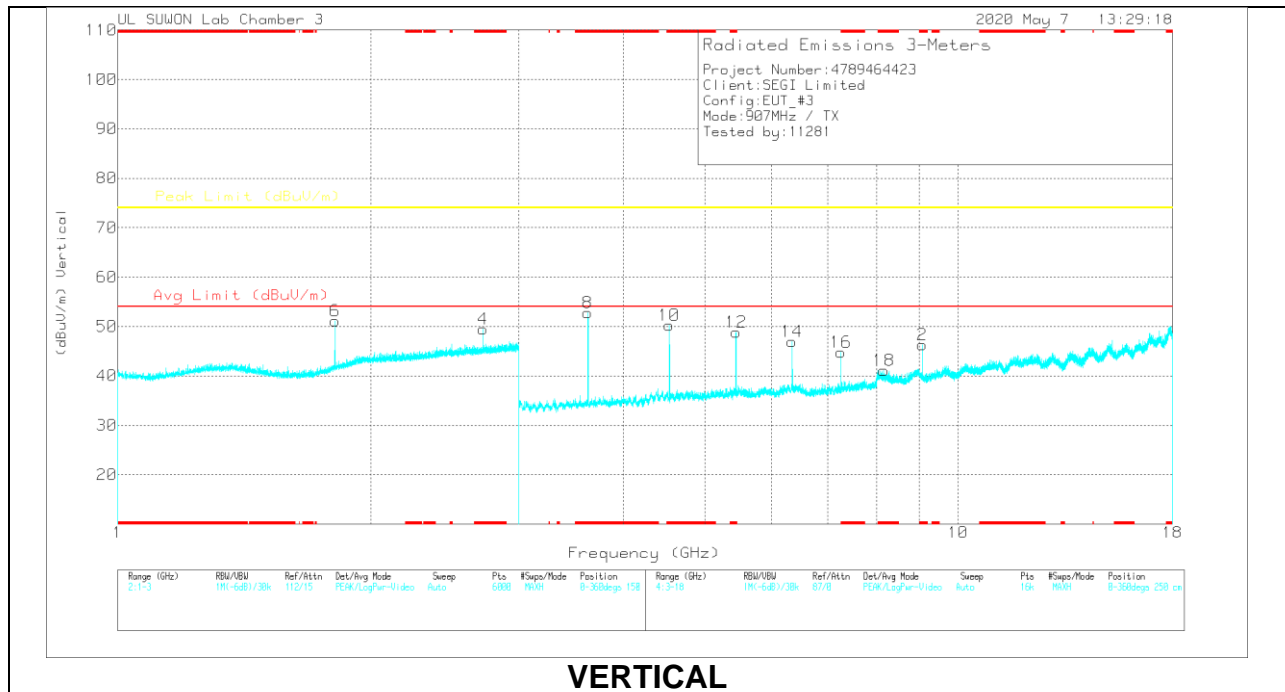
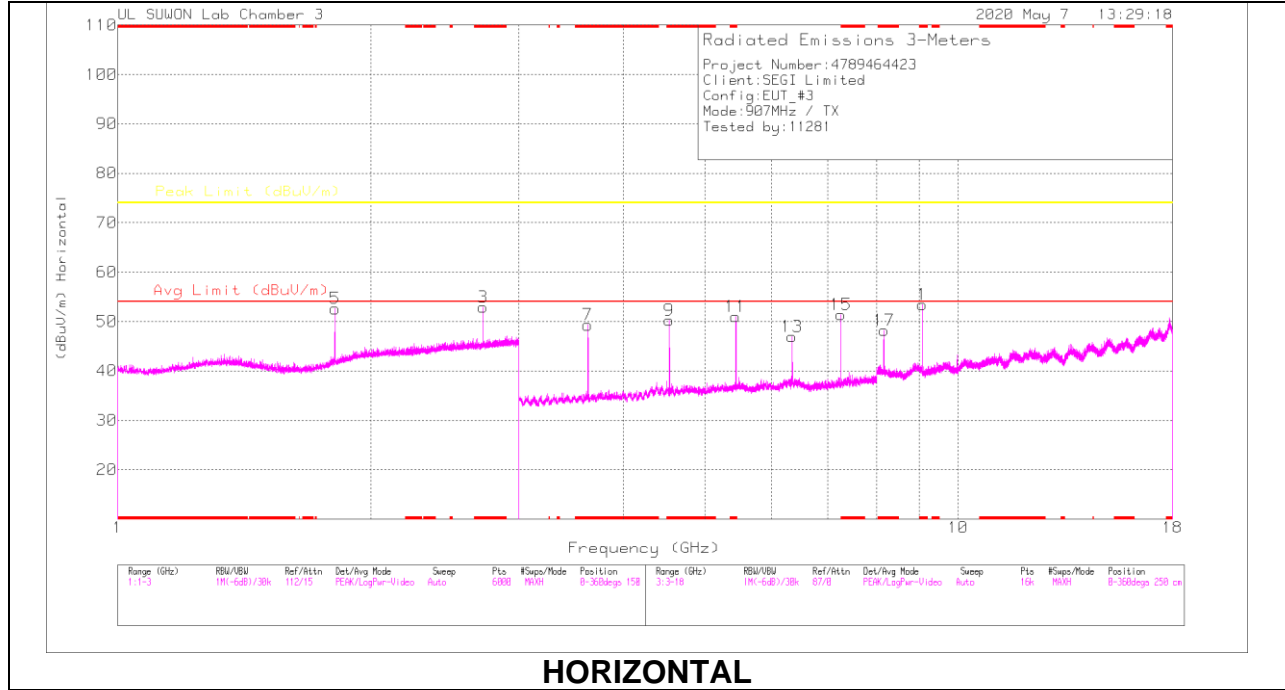
Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).  
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.  
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

## 10.2. TRANSMITTER ABOVE 1 GHz

### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL RESULTS



**RADIATED EMISSIONS**

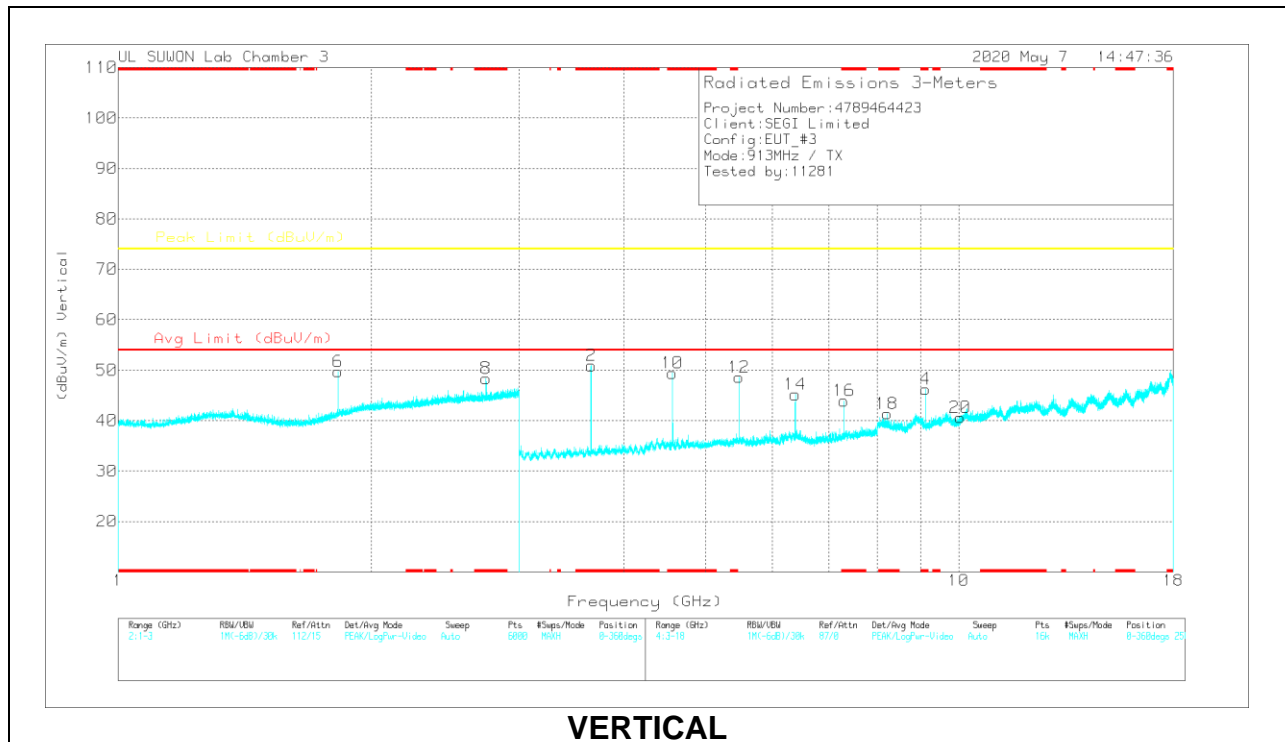
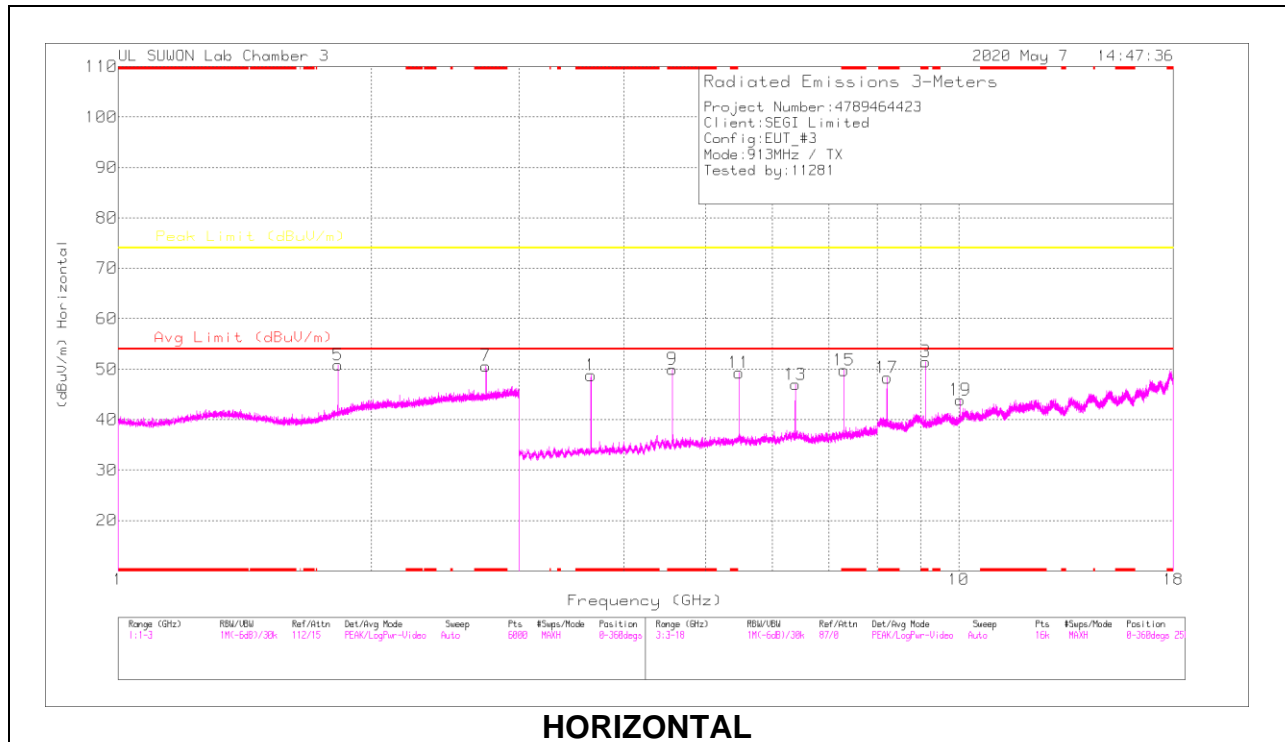
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	10dB_ATT + 1.2GHz_HP [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.72039	48.06	PK2	32.1	-21.6	57.56	-	-	74	-15.44	359	147	H
* 2.72117	38.79	MAv1	32.1	-21.6	48.29	54	-4.71	-	-	359	147	H
1.81402	50.73	PK2	29.8	-22.6	56.93	-	-	74	-16.07	28	101	H
1.81394	44.46	MAv1	29.8	-22.6	50.66	-	-	-	-	28	101	H
* 2.72116	46.6	PK2	32.1	-21.6	56.1	-	-	74	-16.9	320	102	V
* 2.72094	37.33	MAv1	32.1	-21.6	46.83	54	-6.17	-	-	320	102	V
1.81358	48.94	PK2	29.8	-22.6	55.14	-	-	74	-17.86	299	100	V
1.81414	42.18	MAv1	29.8	-22.6	48.38	-	-	-	-	299	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 9.07028	31.43	MAv1	36.6	-20.6	47.43	54	-6.57	-	-	174	121	H
* 3.62804	41.93	MAv1	33.1	-30.6	44.43	54	-9.57	-	-	56	101	H
* 4.53434	40.21	MAv1	34.2	-29.2	45.21	54	-8.79	-	-	12	156	H
* 5.44298	39.12	MAv1	34.7	-26.3	47.52	54	-6.48	-	-	84	109	H
6.34864	31.73	MAv1	35.3	-25.7	41.33	-	-	-	-	72	121	H
* 7.25433	26.09	MAv1	35.8	-23.6	38.29	54	-15.71	-	-	155	108	H
* 8.16487	23.91	MAv1	36.3	-21.5	38.71	54	-15.29	-	-	240	103	H
* 9.06856	25.89	MAv1	36.6	-20.6	41.89	54	-12.11	-	-	185	106	V
* 3.62767	47.75	MAv1	33.1	-30.6	50.25	54	-3.75	-	-	334	123	V
* 4.53562	41.01	MAv1	34.2	-29.2	46.01	54	-7.99	-	-	191	107	V
* 5.443	37.39	MAv1	34.7	-26.3	45.79	54	-8.21	-	-	23	101	V
6.34992	30.51	MAv1	35.3	-25.7	40.11	-	-	-	-	329	122	V
* 7.25706	26.34	MAv1	35.8	-23.5	38.64	54	-15.36	-	-	256	111	V
* 8.1593	22.92	MAv1	36.3	-21.5	37.72	54	-16.28	-	-	0	100	V
* 9.07156	41.17	PK2	36.6	-20.6	57.17	-	-	74	-16.83	174	121	H
* 3.62884	48.86	PK2	33.1	-30.5	51.46	-	-	74	-22.54	56	101	H
* 4.5361	50.33	PK2	34.2	-29.2	55.33	-	-	74	-18.67	12	156	H
* 5.44156	46.83	PK2	34.7	-26.3	55.23	-	-	74	-18.77	84	109	H
6.35042	42.56	PK2	35.3	-25.7	52.16	-	-	74	-21.84	72	121	H
* 7.25704	40.54	PK2	35.8	-23.5	52.84	-	-	74	-21.16	155	108	H
* 8.16295	42.59	PK2	36.3	-21.5	57.39	-	-	74	-16.61	240	103	H
* 9.0677	36.86	PK2	36.6	-20.7	52.76	-	-	74	-21.24	185	106	V
* 3.62721	52.7	PK2	33.1	-30.5	55.3	-	-	74	-18.7	334	123	V
* 4.53604	49.9	PK2	34.2	-29.2	54.9	-	-	74	-19.1	191	107	V
* 5.4417	45.72	PK2	34.7	-26.3	54.12	-	-	74	-19.88	23	101	V
6.35046	41.46	PK2	35.3	-25.7	51.06	-	-	74	-22.94	329	122	V
* 7.25413	38.24	PK2	35.8	-23.6	50.44	-	-	74	-23.56	256	111	V
* 8.17053	34.21	PK2	36.3	-21.6	48.91	-	-	74	-25.09	0	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

### MID CHANNEL RESULTS



**RADIATED EMISSIONS**

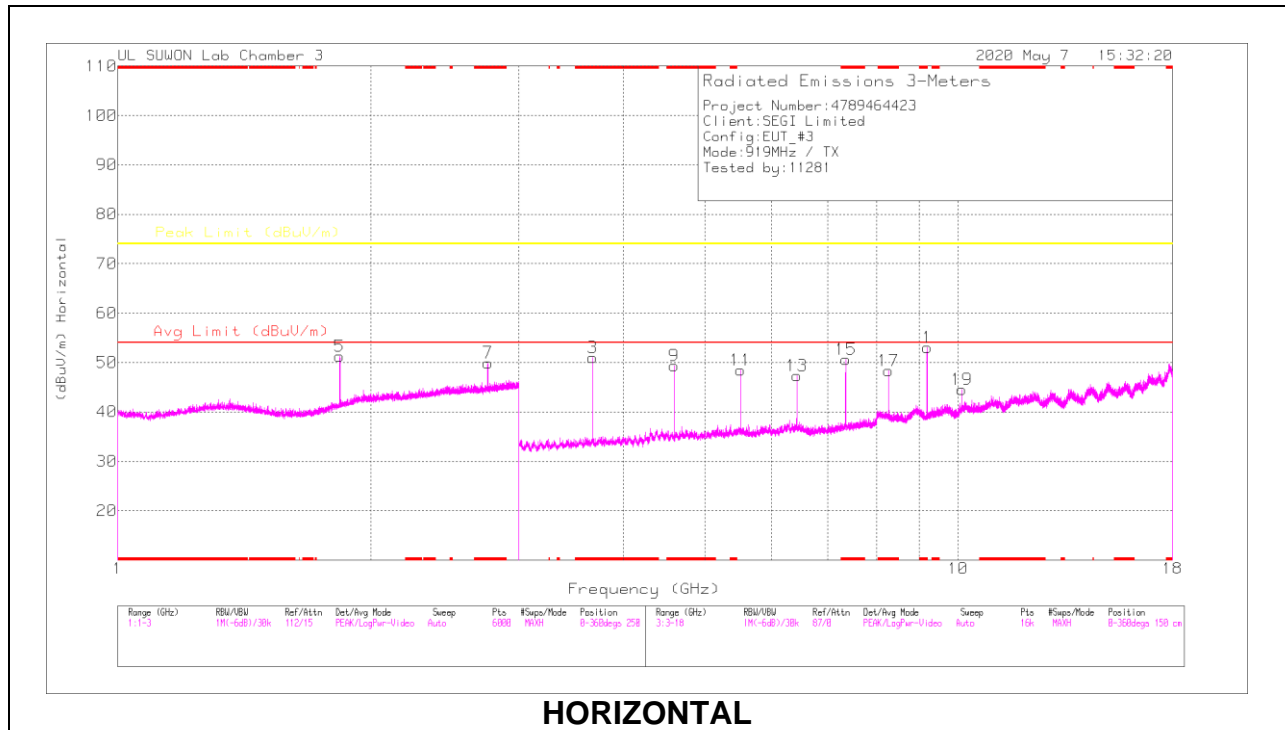
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	10dB_ATT + 1.2GHz_HP [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.8263	50.27	PK2	29.9	-22.5	57.67	-	-	74	-16.33	64	101	H
<b>1.826</b>	<b>44.31</b>	<b>MAv1</b>	<b>29.9</b>	<b>-22.5</b>	<b>51.71</b>	<b>54</b>	<b>-2.29</b>	-	-	<b>64</b>	<b>101</b>	<b>H</b>
* 2.73862	48.02	PK2	32.1	-21.5	58.62	-	-	74	-15.38	19	247	H
* 2.73926	38.94	MAv1	32.1	-21.6	49.44	-	-	-	-	19	247	H
1.82615	50.24	PK2	29.9	-22.5	57.64	-	-	74	-16.36	315	317	V
1.82599	43.95	MAv1	29.9	-22.5	51.35	54	-2.65	-	-	315	317	V
* 2.73964	46.88	PK2	32.1	-21.6	57.38	-	-	74	-16.62	344	144	V
* 2.73854	37.47	MAv1	32.1	-21.5	48.07	-	-	-	-	344	144	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

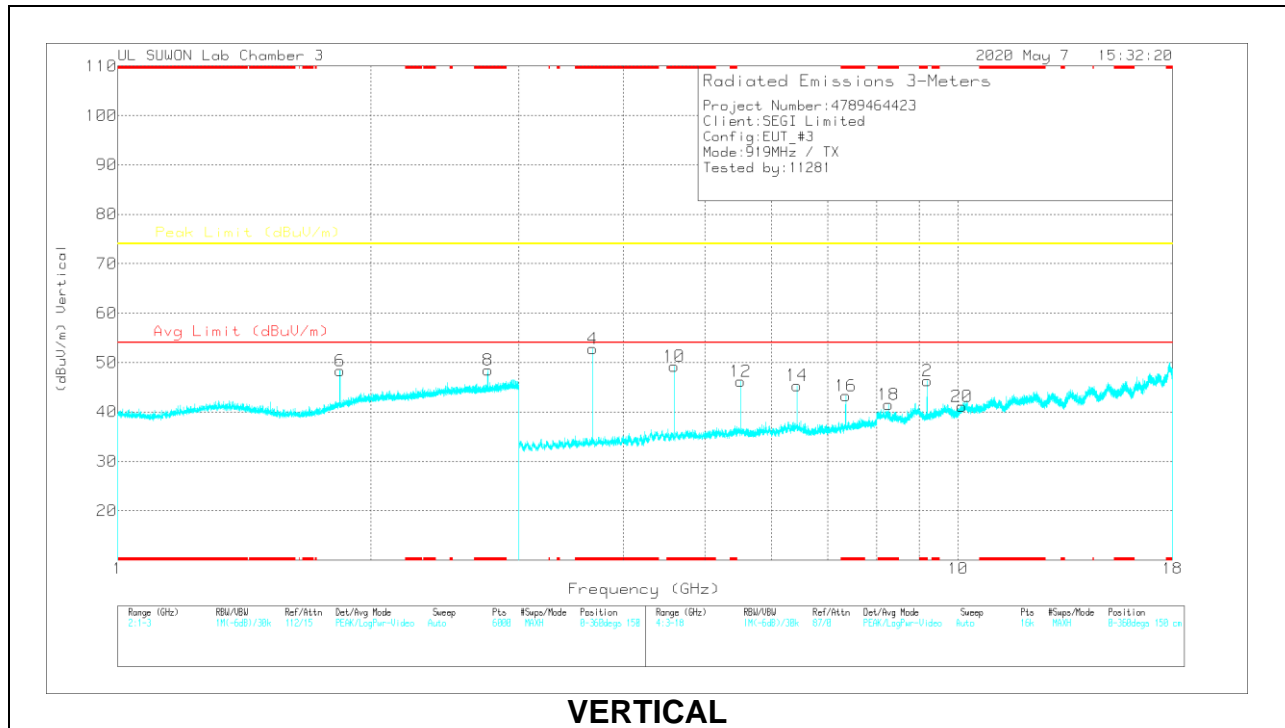
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.65148	44.14	MAv1	33.1	-30.3	46.94	54	-7.06	-	-	19	125	H
* 9.12832	30.8	MAv1	36.6	-20.4	47	54	-7	-	-	170	128	H
* 4.56545	41.41	MAv1	34.2	-29.3	46.31	54	-7.69	-	-	25	101	H
5.47775	38.5	MAv1	34.7	-26.1	47.1	-	-	-	-	85	104	H
6.39129	32.52	MAv1	35.3	-26	41.82	-	-	-	-	73	119	H
* 7.3025	34.25	MAv1	35.8	-23.4	46.65	54	-7.35	-	-	158	112	H
* 8.21736	25.92	MAv1	36.4	-21.6	40.72	54	-13.28	-	-	245	101	H
10.04786	20.13	MAv1	37.5	-19.2	38.43	-	-	-	-	0	100	H
* 3.65234	46.34	MAv1	33.1	-30.3	49.14	54	-4.86	-	-	315	168	V
* 9.13036	21.45	MAv1	36.6	-20.4	37.65	54	-16.35	-	-	195	100	V
* 4.56547	41.52	MAv1	34.2	-29.3	46.42	54	-7.58	-	-	173	104	V
5.47819	36.21	MAv1	34.7	-26.1	44.81	-	-	-	-	0	109	V
6.39137	30.71	MAv1	35.3	-26	40.01	-	-	-	-	326	103	V
* 7.30465	28.82	MAv1	35.8	-23.4	41.22	54	-12.78	-	-	351	110	V
* 8.21889	22.97	MAv1	36.4	-21.6	37.77	54	-16.23	-	-	0	100	V
10.04019	20.16	MAv1	37.5	-19.2	38.46	-	-	-	-	0	100	V
* 3.65148	50.26	PK2	33.1	-30.3	53.06	-	-	74	-20.94	19	125	H
* 9.12972	40.8	PK2	36.6	-20.4	57	-	-	74	-17	170	128	H
* 4.56499	51.47	PK2	34.2	-29.3	56.37	-	-	74	-17.63	25	101	H
5.47873	46.73	PK2	34.7	-26.1	55.33	-	-	74	-18.67	85	104	H
6.39033	42.45	PK2	35.3	-26	51.75	-	-	74	-22.25	73	119	H
* 7.30364	43.52	PK2	35.8	-23.4	55.92	-	-	74	-18.08	158	112	H
* 8.21905	40.05	PK2	36.4	-21.6	54.85	-	-	74	-19.15	245	101	H
10.0497	31.62	PK2	37.5	-19.2	49.92	-	-	74	-24.08	0	100	H
* 3.65266	52.2	PK2	33.1	-30.3	55	-	-	74	-19	315	168	V
* 9.13002	36.04	PK2	36.6	-20.4	52.24	-	-	74	-21.76	195	100	V
* 4.56601	51.24	PK2	34.2	-29.3	56.14	-	-	74	-17.86	173	104	V
5.47735	45.01	PK2	34.7	-26.1	53.61	-	-	74	-20.39	0	109	V
6.39059	41.53	PK2	35.3	-26	50.83	-	-	74	-23.17	326	103	V
* 7.30307	39.17	PK2	35.8	-23.4	51.57	-	-	74	-22.43	351	110	V
* 8.21522	33.99	PK2	36.4	-21.6	48.79	-	-	74	-25.21	0	100	V
10.04756	31.03	PK2	37.5	-19.2	49.33	-	-	74	-24.67	0	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	10dB_ATT + 1.2GHz_HP [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.83849	49.43	PK2	30.1	-22.6	56.93	-	-	74	-17.07	29	104	H
<b>1.83811</b>	<b>42.73</b>	<b>MAv1</b>	<b>30</b>	<b>-22.6</b>	<b>50.13</b>	<b>54</b>	<b>-3.87</b>	-	-	<b>29</b>	<b>104</b>	<b>H</b>
* 2.75743	47.39	PK2	32.1	-21.5	57.99	-	-	74	-16.01	0	133	H
* 2.75715	38.45	MAv1	32.1	-21.4	49.15	-	-	-	-	0	133	H
1.83755	48.62	PK2	30	-22.5	56.12	-	-	74	-17.88	10	254	V
1.83783	41.33	MAv1	30	-22.5	48.83	54	-5.17	-	-	10	254	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

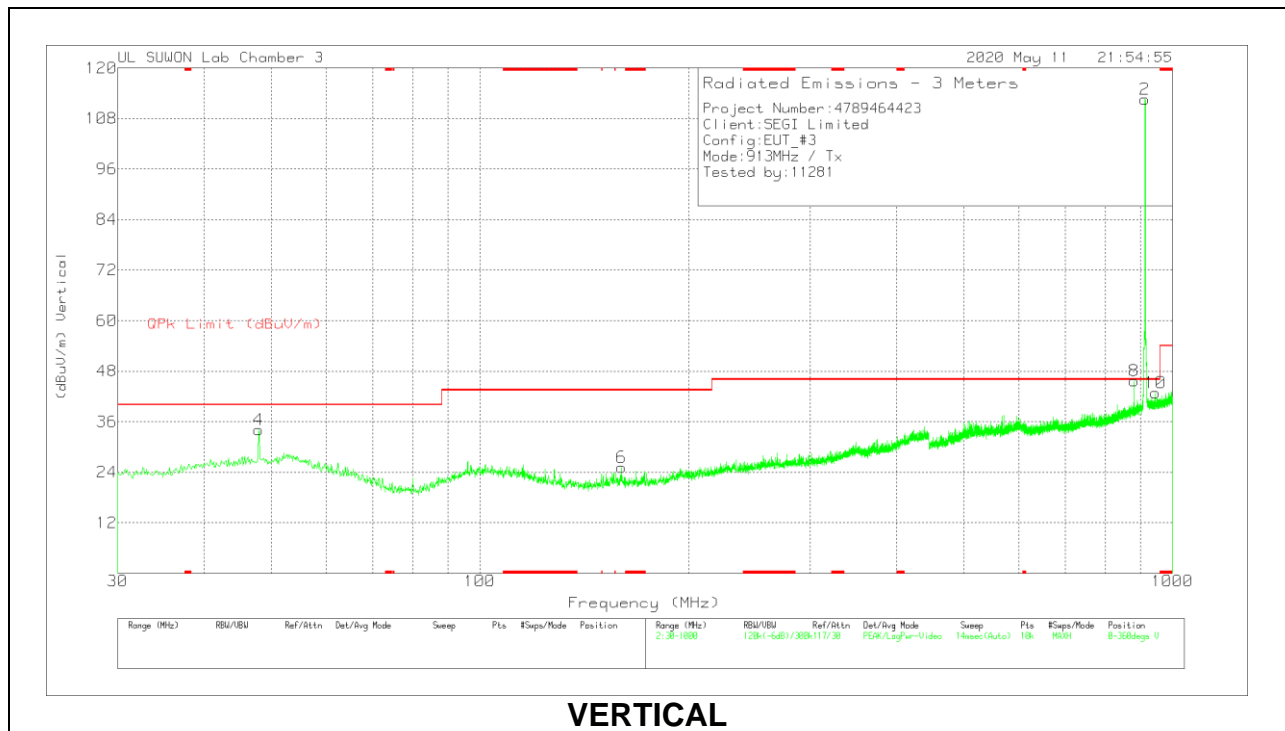
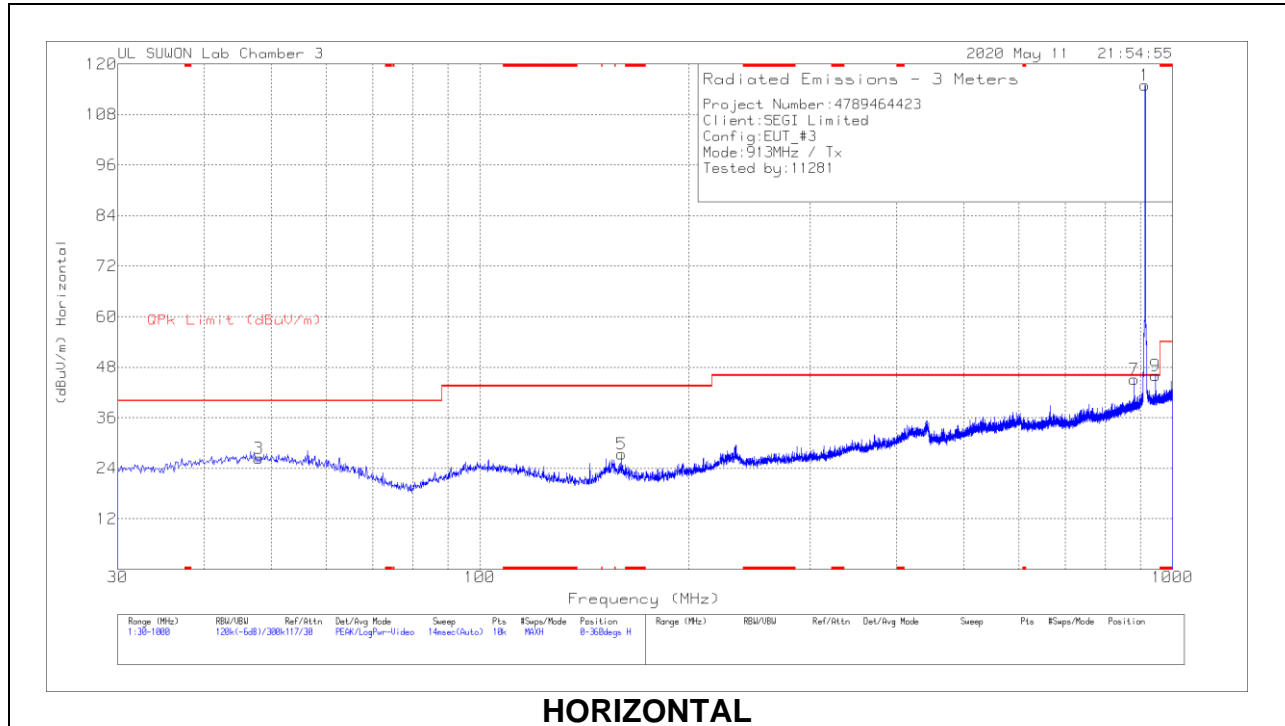
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 9.19083	30.25	MAv1	36.7	-19.9	47.05	54	-6.95	-	-	172	115	H
* 3.67656	43.15	MAv1	33.1	-29.9	46.35	54	-7.65	-	-	10	166	H
* 4.59507	40.21	MAv1	34.2	-29	45.41	54	-8.59	-	-	9	130	H
5.51452	34.07	MAv1	34.7	-26	42.77	-	-	-	-	86	104	H
6.43364	35.28	MAv1	35.4	-26	44.68	-	-	-	-	72	100	H
* 7.35171	31.47	MAv1	35.8	-23	44.27	54	-9.73	-	-	154	103	H
* 8.26916	27.21	MAv1	36.4	-21.9	41.71	54	-12.29	-	-	246	100	H
10.11107	23.15	MAv1	37.5	-19.2	41.45	-	-	-	-	190	106	H
* 9.18807	24.69	MAv1	36.7	-19.9	41.49	54	-12.51	-	-	162	100	V
* 3.67618	46.86	MAv1	33.1	-29.9	50.06	54	-3.94	-	-	326	102	V
* 4.59433	41.97	MAv1	34.2	-29	47.17	54	-6.83	-	-	299	100	V
5.51354	34.71	MAv1	34.7	-26	43.41	-	-	-	-	18	123	V
6.43348	32.72	MAv1	35.4	-26	42.12	-	-	-	-	331	106	V
* 7.35283	28.28	MAv1	35.8	-23	41.08	54	-12.92	-	-	349	102	V
* 8.26989	23.52	MAv1	36.4	-21.9	38.02	54	-15.98	-	-	183	145	V
10.12069	20.45	MAv1	37.5	-19.1	38.85	-	-	-	-	0	100	V
* 9.18949	40.09	PK2	36.7	-19.9	56.89	-	-	74	-17.11	172	115	H
* 3.67552	49.93	PK2	33.1	-30	53.03	-	-	74	-20.97	10	166	H
* 4.59601	49.6	PK2	34.2	-29	54.8	-	-	74	-19.2	9	130	H
5.51534	43.72	PK2	34.7	-26	52.42	-	-	74	-21.58	86	104	H
6.43206	44.24	PK2	35.4	-26.1	53.54	-	-	74	-20.46	72	100	H
* 7.35315	40.8	PK2	35.8	-23	53.6	-	-	74	-20.4	154	103	H
* 8.2709	40.23	PK2	36.4	-21.9	54.73	-	-	74	-19.27	246	100	H
10.10885	34	PK2	37.5	-19.2	52.3	-	-	74	-21.7	190	106	H
* 9.18841	36.85	PK2	36.7	-19.9	53.65	-	-	74	-20.35	162	100	V
* 3.67592	52.65	PK2	33.1	-29.9	55.85	-	-	74	-18.15	326	102	V
* 4.59491	50.76	PK2	34.2	-29	55.96	-	-	74	-18.04	299	100	V
5.5138	43.67	PK2	34.7	-26	52.37	-	-	74	-21.63	18	123	V
6.43398	42.88	PK2	35.4	-26	52.28	-	-	74	-21.72	331	106	V
* 7.35101	38.97	PK2	35.8	-23	51.77	-	-	74	-22.23	349	102	V
* 8.27239	35.01	PK2	36.4	-21.9	49.51	-	-	74	-24.49	183	145	V
10.12341	32	PK2	37.5	-19.1	50.4	-	-	74	-23.6	0	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average



### 10.3. WORST CASE BELOW 1 GHZ

#### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



**Below 1GHz Data**

**Radiated Emissions**

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-845	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
48.0437	34.87	Qp	20.1	-32.1	22.87	40	-17.13	92	101	H
160.1319	42.5	Qp	14.7	-31.5	25.7	43.52	-17.82	266	172	H
<b>880.984</b>	<b>44.99</b>	<b>Qp</b>	<b>27.8</b>	<b>-28.7</b>	<b>44.09</b>	<b>46.02</b>	<b>-1.93</b>	<b>300</b>	<b>178</b>	<b>H</b>
944.8751	42.93	Qp	28.2	-28.1	43.03	46.02	-2.99	111	100	H
48.0394	43.49	Qp	20.1	-32	31.59	40	-8.41	177	116	V
160.1363	40.92	Qp	14.7	-31.5	24.12	43.52	-19.4	227	101	V
881.1205	44.61	Qp	27.8	-28.7	43.71	46.02	-2.31	184	172	V
945.0671	42.93	Qp	28.2	-28.1	43.03	46.02	-2.99	181	159	V

Qp - Quasi-Peak detector

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5-5	56	46
5-30	60	50

<sup>\*</sup> Decreases with the logarithm of the frequency.

### RESULTS (Not applicable)

This EUT is only supplied by DC power.

## END OF TEST REPORT