



TEST REPORT

Report Number: R13340164-E1

Applicant : Resideo
2 Corporate Center Drive
Melville, NY 11749-3265, USA

Model : DT8050V/DT8035V

FCC ID : CFS8DLDT80XXV

IC : 573F-DT80XXV

EUT Description : Motion Sensor

Test Standard(s) : FCC 47 CFR Part 15 Subpart C
ISED RSS-210 Issue 10
ISED RSS-GEN Issue 5

Date Of Issue:
2020-08-13

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919) 549-1400

REPORT REVISION HISTORY

Ver.	Issue Date	Revisions	Revised By
1	2020-07-27	Initial Issue	Brian T. Kiewra
2	2020-08-13	Added chamber for >40GHz testing on p. 5. Revised frequency of operation in Section 6.1. Added test method for 20dB BW in Section 7. Added note for limit calculation for >40GHz testing. Separated test setup photos.	Brian T. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Resideo
2 Corporate Center Drive
Melville, NY 11749-3265, USA

EUT DESCRIPTION: Motion Sensor

MODEL: DT8050V/DT8035V

SERIAL NUMBER: MEL-949

DATE TESTED: 2020-06-22 to 2020-07-09

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
ISED RSS-210 Issue 10	Complies
ISED RSS-GEN Issue 5	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

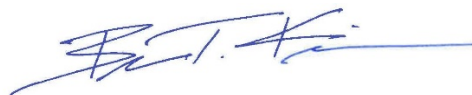
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Approved & Released
For UL LLC By:



Dan Corona
Operations Leader
Consumer Technology Division
UL LLC

Prepared By:



Brian T. Kiewra
Project Engineer
Consumer Technology Division
UL LLC

2. TEST RESULTS SUMMARY

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.215 (c)	-	20dB BW	Reporting purposes only	ANSI C63.10 Section 6.9.2.
15.245 (b)	RSS-210 Annex F.1	Fundamental	Compliant	None
15.245 (b)	RSS-210 Annex F.1	Radiated Emissions	Compliant	None
15.207	RSS-GEN 8.8	AC Mains Emissions	Compliant	None

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, RSS-GEN Issue 5, and RSS-210 Issue 10.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Drive, Research Triangle Park, NC 27709, USA, 2800 Perimeter Park Dr., Suite B, Morrisville, NC 27560, USA, 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, CA 94538, USA. 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.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
Site Code: 2324A		
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D	<input type="checkbox"/> Chamber I
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E	<input type="checkbox"/> Chamber J
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F	<input type="checkbox"/> Chamber K
<input type="checkbox"/> Chamber 1	<input type="checkbox"/> Chamber G	<input type="checkbox"/> Chamber L
<input type="checkbox"/> Chamber 2	<input type="checkbox"/> Chamber H	<input type="checkbox"/> Chamber M
<input checked="" type="checkbox"/> Chamber 3		

12 Laboratory Dr.	2800 Perimeter Park Dr.
Site Code: 2180C	
<input type="checkbox"/> Chamber A RTP	<input checked="" type="checkbox"/> North Chamber
<input type="checkbox"/> Chamber C RTP	<input checked="" type="checkbox"/> South Chamber

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0

UL Verification Services (FRE) is accredited by NVLAP, Laboratory Code 200065-0

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U _{Lab}
Worst Case Radiated Disturbance	±5.17 dB

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned}\text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \\ &\text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV}\end{aligned}$$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a motion detector with a 10.525GHz transmitter.

6.2. MAXIMUM FUNDAMENTAL FIELD STRENGTH

The transmitter has a maximum peak fundamental field strength of 112.26dBuV/m.

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a singled integral antenna, with a maximum gain of 7 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was P/N: 500-03078-01, V1.0.1

6.5. WORST-CASE CONFIGURATION AND MODE

Model DT8050V tested as worst-case sample to also cover Model DT8035V. Manufacturer has declared both models to be electrically equivalent, the difference is in the lens – the DT8050V has a lens that allow 50' of coverage and the DT8035V's lens allows 35'.

EUT transmits on a single frequency, 10.525GHz. All testing performed with the EUT set to this frequency.

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

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
DC Power Supply	Circuit Specialists			

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Mains	1	Terminal	Single conductor	<3m	DC Mains

SETUP DIAGRAMS

Please refer to R13340164-EP1 for setup diagrams

7. MEASUREMENT METHOD

Occupied BW (-20dB): ANSI C63.10-2013 Section 6.9.2

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Radiated Spurious Emissions: ANSI C63.10-2013 Section 6.3 – 6.6

AC Mains Emissions: 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 Used - Radiated Disturbance Emissions Test Equipment (Morrisville - South Chamber)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
0.009-30MHz (Loop Ant.)					
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2019-08-08	2020-08-08
30-1000 MHz					
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2019-07-16	2020-07-16
1-18 GHz					
AT0078	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2019-10-28	2020-10-28
Gain-Loss Chains					
S-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2020-04-23	2021-04-23
S-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2020-04-23	2021-04-23
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2020-05-15	2021-05-15
Receiver & Software					
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2020-03-27	2021-03-27
SOFTEMI	EMI Software	UL	Version 9.5 (2019-06-12)		
Additional Equipment used					
s/n 181474409	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27
76021	DC Regulated Power Supply	Circuit Specialists	CSI3005X5	N/A	N/A

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - North Chamber)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
18-40 GHz					
AT0076	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2019-11-07	2020-11-07
AT0077	Horn Antenna, 26-40GHz	ARA	MWH-2640/B	2019-11-07	2020-11-07
Gain-Loss Chains					
N-SAC04	Gain-loss string: 18-40GHz	Various	Various	2020-03-22	2021-03-22
Receiver & Software					
SA0025	Spectrum Analyzer	Agilent	N9030A	2020-03-17	2021-03-17
SOFTEMI	EMI Software	UL	Version 9.5 (2019-06-12)		
Additional Equipment used					
s/n 181474341	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27
76021	DC Regulated Power Supply	Circuit Specialists	CSI3005X5	N/A	N/A

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Fremont)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
40-50 GHz					
14J05	LNA, 40-50 GHz	Spacek Labs	SL4510-33-4W	2019-09-24	2020-09-24
--	33-50 GHz Horn	CMI	HO22R	2019-09-13	2020-09-13
14L20	Filter, Low Pass 50GHz	Spacek Labs	LPF5-50-8-22	2019-09-24	2020-09-24
Receiver & Software					
T313	Spectrum Analyzer	Agilent	N9030A	2020-01-23	2021-01-23
SOFTEMI	EMI Software	UL	Version 9.5 (2019-06-12)		
Additional Equipment used					
H15-1	50-75 GHz Horn	C M i	HO15R	2019-09-13	2020-09-13
MY51390830	Waveguide Harmonic Mixer, 50 to 80 GHz	Keysight	M1970V	2019-12-20	2020-12-20

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2020-03-26	2021-03-26
s/n 181562858	Environmental Meter	Fisher Scientific	14-650-118	2018-09-04	2020-09-04
LISN001	LISN, 50-ohm/250-uH, 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2019-08-19	2020-08-19
75141 (PRE0101521)	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2019-08-20	2020-08-20
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2020-03-26	2021-03-26
76021	DC Regulated Power Supply	Circuit Specialists	CSI3005X5	N/A	N/A
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (2015-08-20)		

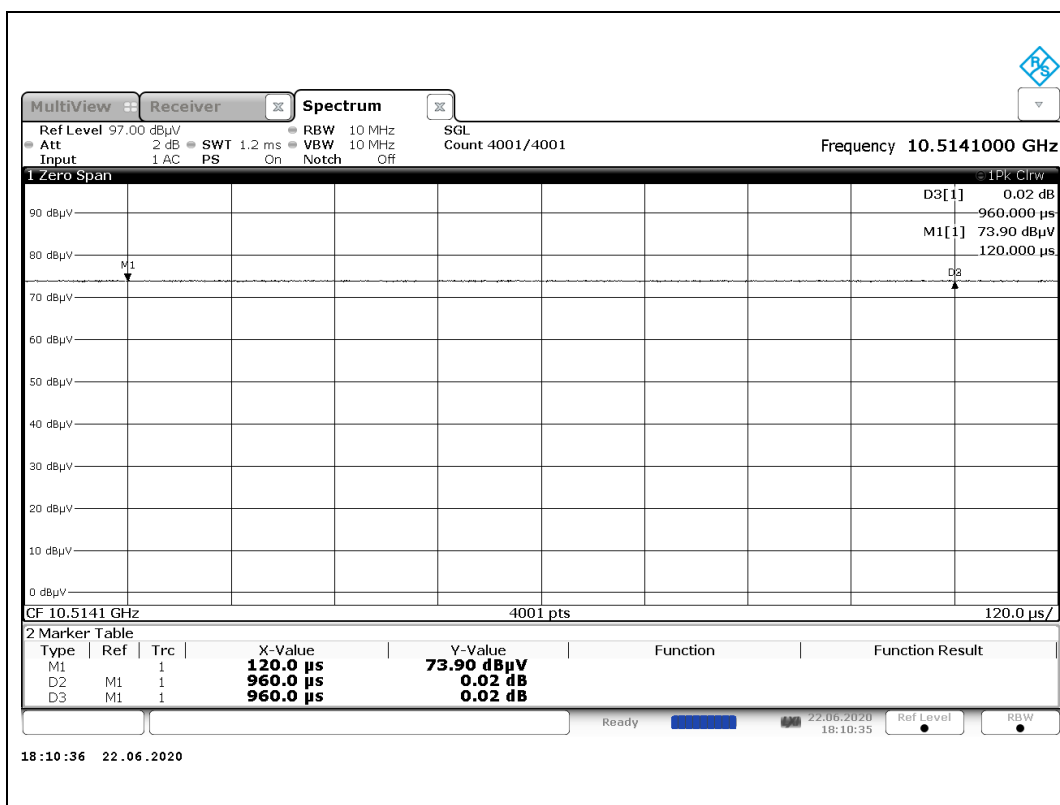
9. DUTY CYCLE AND ON TIME

LIMITS

None; for reporting purposes only.

ANSI C63.10 Zero Span Method

Frequency (GHz)	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty cycle Correction - Voltage (dB)
10.5	1.20	1.20	100.00	0.00



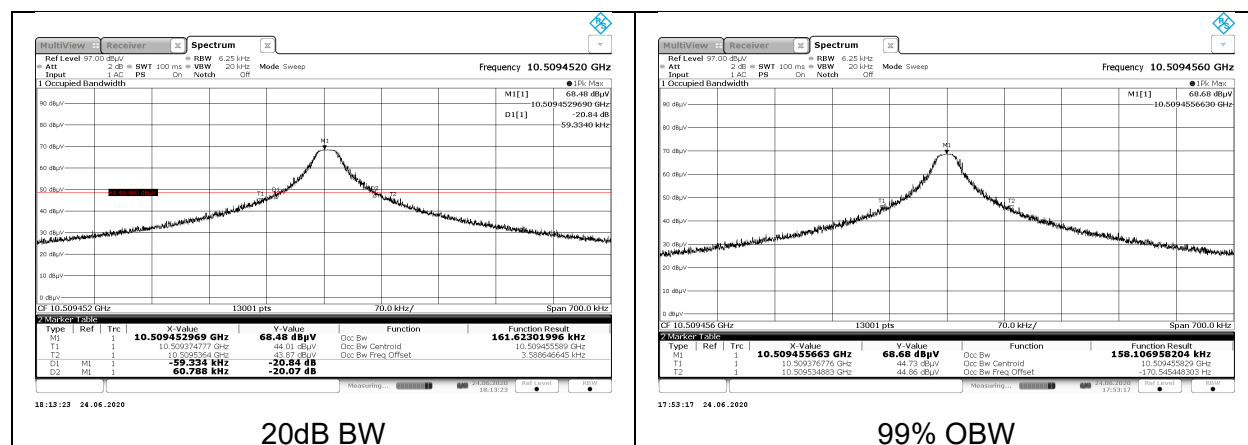
10. OCCUPIED BANDWIDTH

LIMITS

None; for reporting purposes only.

FCC §15.215 (c) RSS-GEN, ANSI C63.10 Sections 6.9.2 and 6.9.3 were used for the measurement procedure.

Frequency (GHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
10.5	161.623	158.107



11. RADIATED TEST RESULTS

6.7. LIMITS AND PROCEDURE

LIMITS

FCC §15.245
FCC §15.209

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency Range (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (mV/m)
902 - 928	500	1.6
2435 – 2465	500	1.6
5785 – 5815	500	1.6
10500 – 10550	2500	25.0
24075 - 24175	2500	25.0

(1) Regardless of the limits shown in the above table, harmonic emissions in the restricted bands below 17.7 GHz, as specified in §15.205, shall not exceed the field strength limits shown in §15.209. Harmonic emissions in the restricted bands at and above 17.7 GHz shall not exceed the following field strength limits:

(i) For the second and third harmonics of field disturbance sensors operating in the 24075-24175 MHz band and for other field disturbance sensors designed for use only within a building or to open building doors, 25.0 mV/m.

RSS-210 Annex F.1
RSS-GEN Section 8.9

Devices shall comply with the following requirements:

- a. The average field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits shown in table F1.

Frequency Range (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (mV/m)
902 - 928	500	1.6
2435 – 2465	500	1.6
5785 – 5815	500	1.6
10500 – 10550	2500	25.0
24075 - 24175	2500	25.0

- b. Additionally, harmonic emissions falling into restricted frequency bands listed in RSS-Gen and that are below 17.7 GHz shall meet the general field strength limits specified in RSS-Gen, regardless of the limits given in table F1.
- c. Harmonic emissions falling into restricted frequency bands listed in RSS-Gen and that are at or above 17.7 GHz shall not exceed the following field strength limits measured at a distance of 3 m:
 - i. 25 mV/m for the second and third harmonic emissions of field disturbance sensors operating in the band 24075-24175 MHz and for devices designed for use only within buildings or for intermittent use, such as to open building doors

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

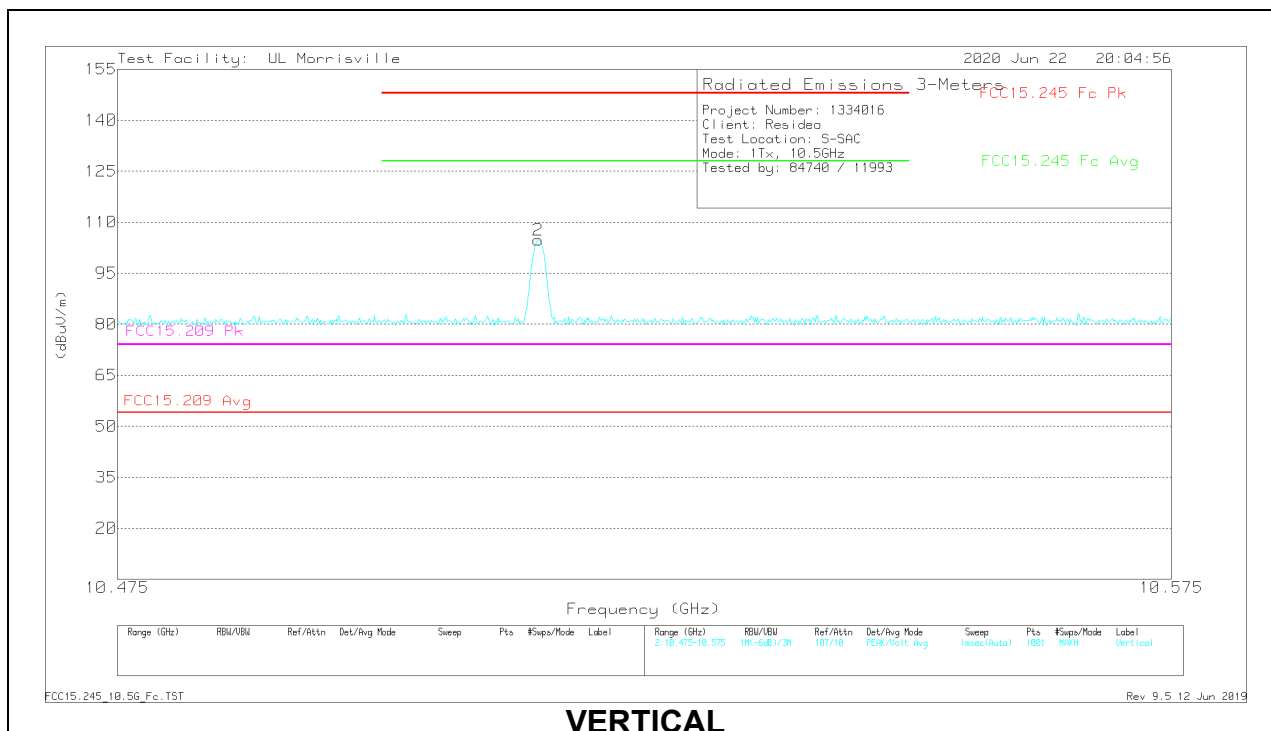
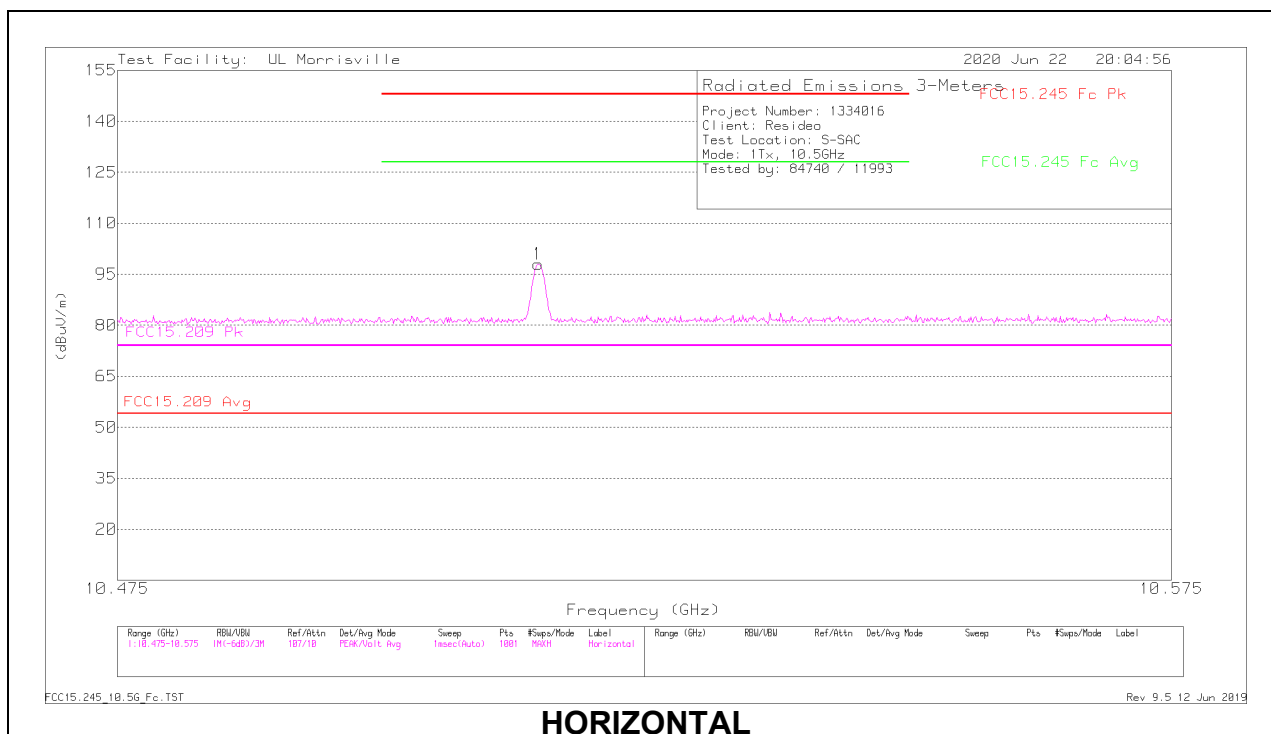
3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

6.8. FUNDAMENTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0078 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	FCC 15.245 Fc Avg	Margin (dB)	FCC 15.245 Fc Pk	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	10.51483	49.31	ADV	37.5	10.5	97.31	127.96	-30.65	-	-	60	217	H
	10.51484	50.7	PK2	37.5	10.5	98.7	-	-	147.96	-49.26	60	217	H
2	10.51482	64	ADV	37.5	10.5	112	127.96	-15.96	-	-	33	102	V
	10.51484	64.26	PK2	37.5	10.5	112.26	-	-	147.96	-35.7	33	102	V

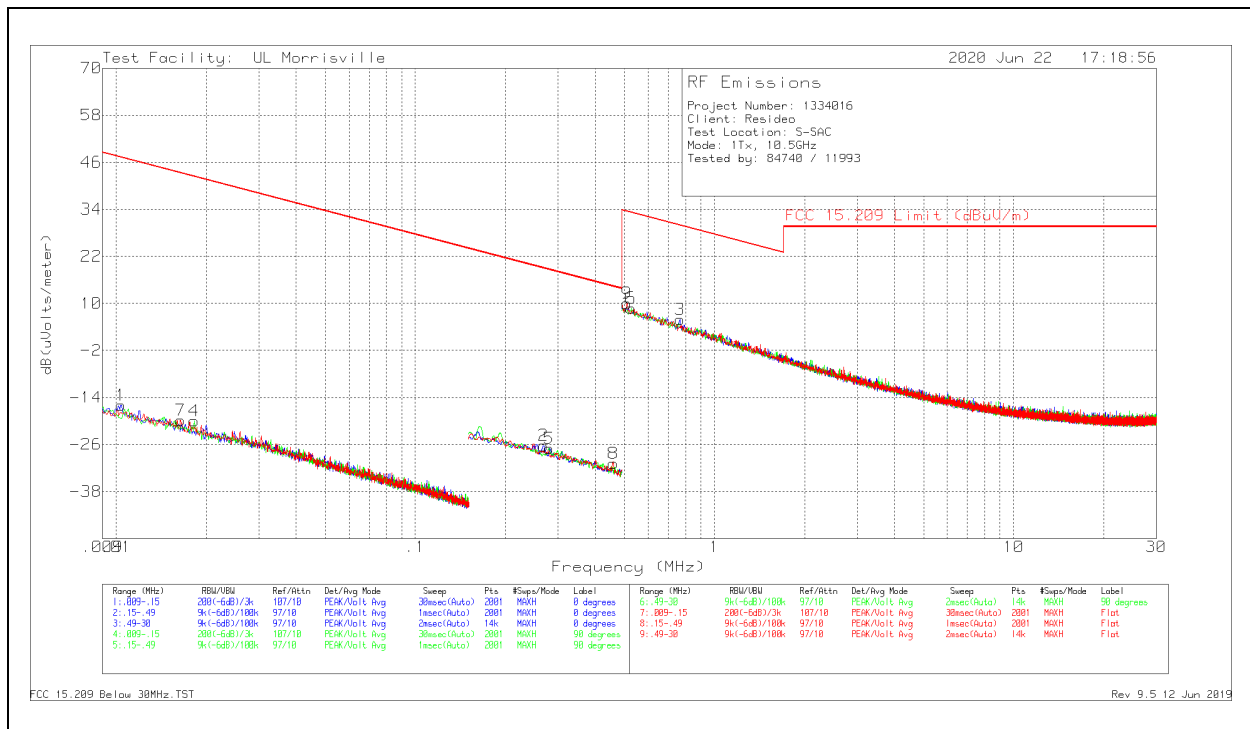
PK2 - Maximum Peak

ADV - Linear Voltage Average

6.3. HARMONICS AND SPURIOUS EMISSIONS (9kHz – 30MHz)

Note for below 30 MHz scans: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were $40 \cdot \log(\text{test distance} / \text{specification distance})$.

The below 30 MHz limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω . For example, the measurement frequency 10.38 KHz resulted in a level of -16.04 dBuV/m, which is equivalent to $-16.04 - 51.5 = -67.54$ dBuA/m, which has the same margin, -63.32 dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

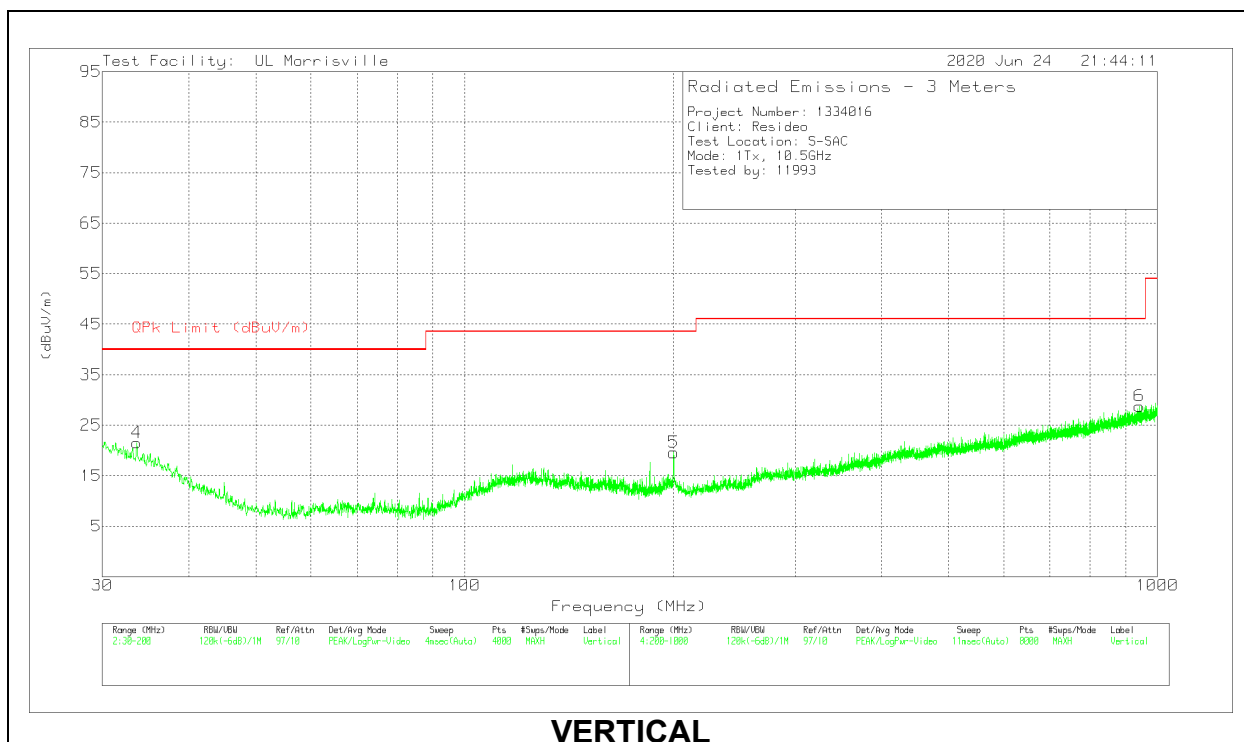
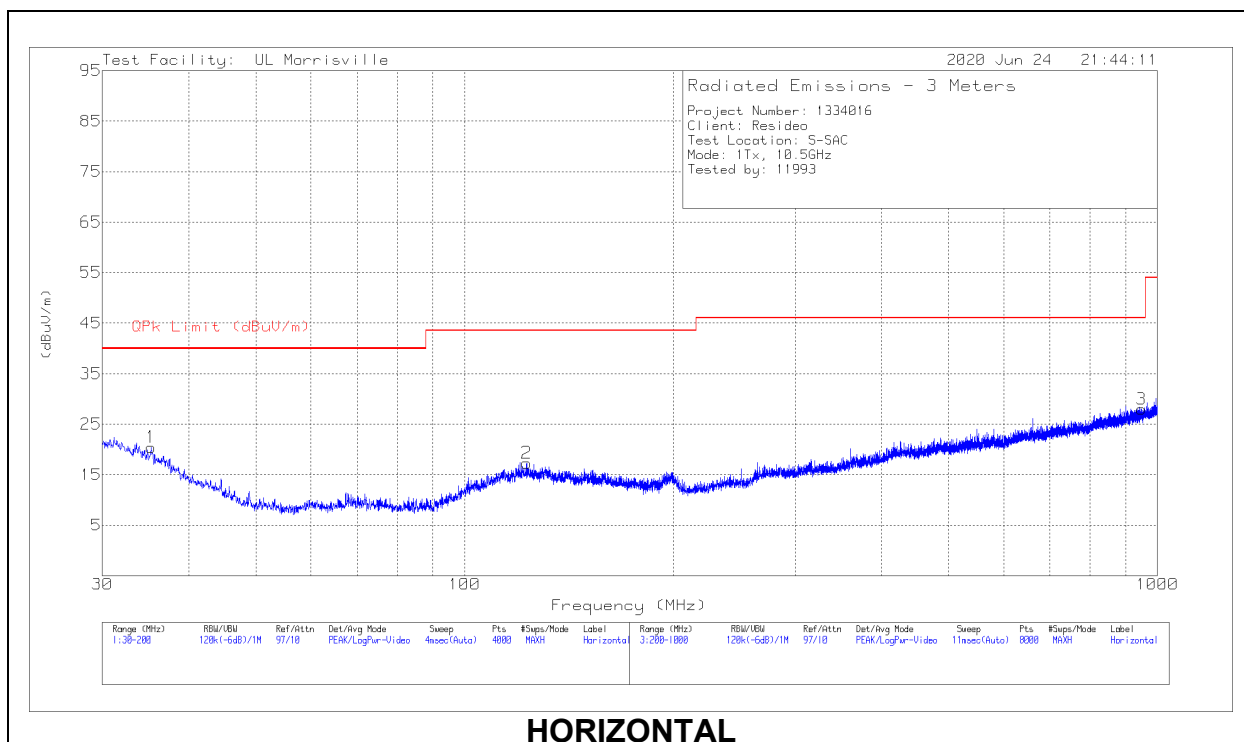


RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 AF (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uV/m)	FCC 15.209 QP/AV Limit (dBuV/m)	FCC 15.209 PK Limit (dBuV/m)	Worst-Case Margin (dB)	Azimuth (Degs)	Antenna Face
1	.01038	45.86	Pk	18	.1	-80	-16.04	47.28	67.28	-63.32	0-360	On
7	.01646	44.61	Pk	15.5	.1	-80	-19.79	43.28	63.28	-63.07	0-360	On
4	.01823	45.21	Pk	14.7	.1	-80	-19.99	42.39	62.39	-62.38	0-360	On
2	.2679	42.61	Pk	11	.1	-80	-26.29	19.04	39.04	-45.33	0-360	Off
5	.27988	41.91	Pk	11	.1	-80	-26.99	18.66	38.66	-45.65	0-360	Off
8	.45923	38.04	Pk	11	.1	-80	-30.86	14.36	34.36	-45.22	0-360	Off
9	.50897	38.87	Pk	11	.1	-40	9.97	33.47	-	-23.5	0-360	Flat
6	.52584	37.72	Pk	11	.1	-40	8.82	33.19	-	-24.37	0-360	Flat
3	.76615	34.78	Pk	11	.1	-40	5.88	29.92	-	-24.04	0-360	Flat

Pk - Peak detector

6.4. HARMONICS AND SPURIOUS EMISSIONS (30 – 1000MHz)

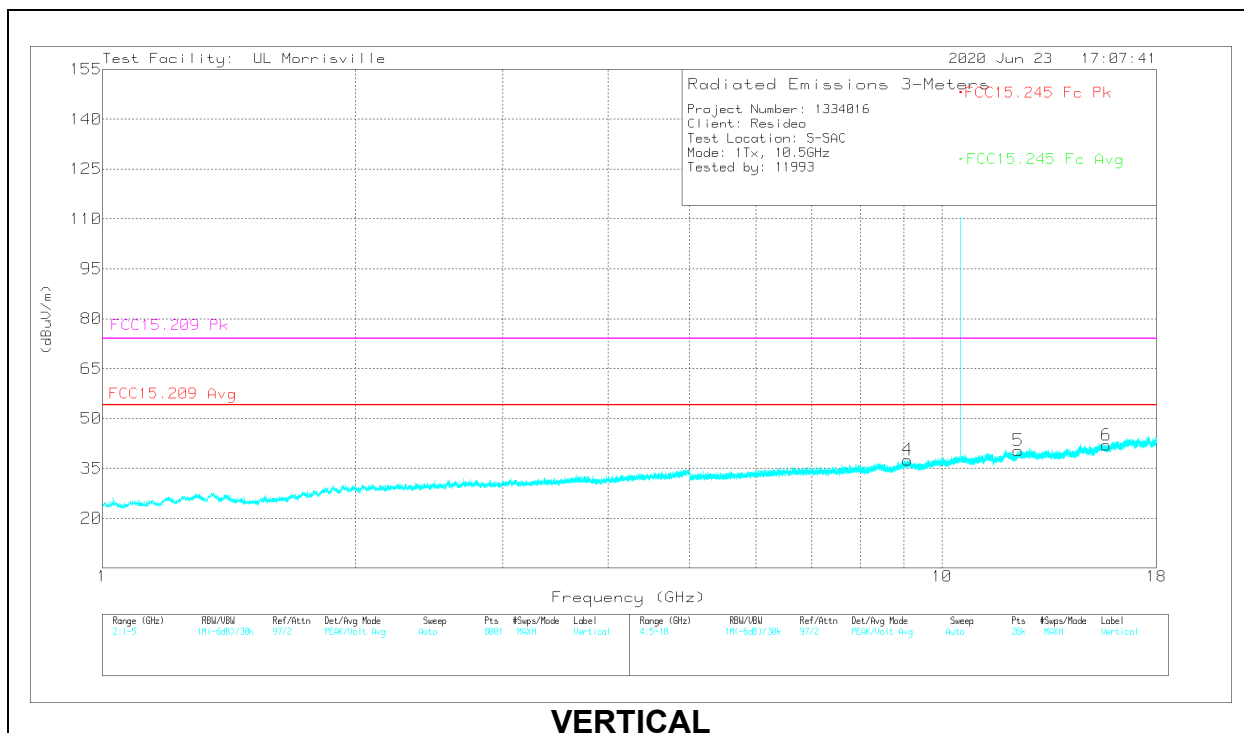
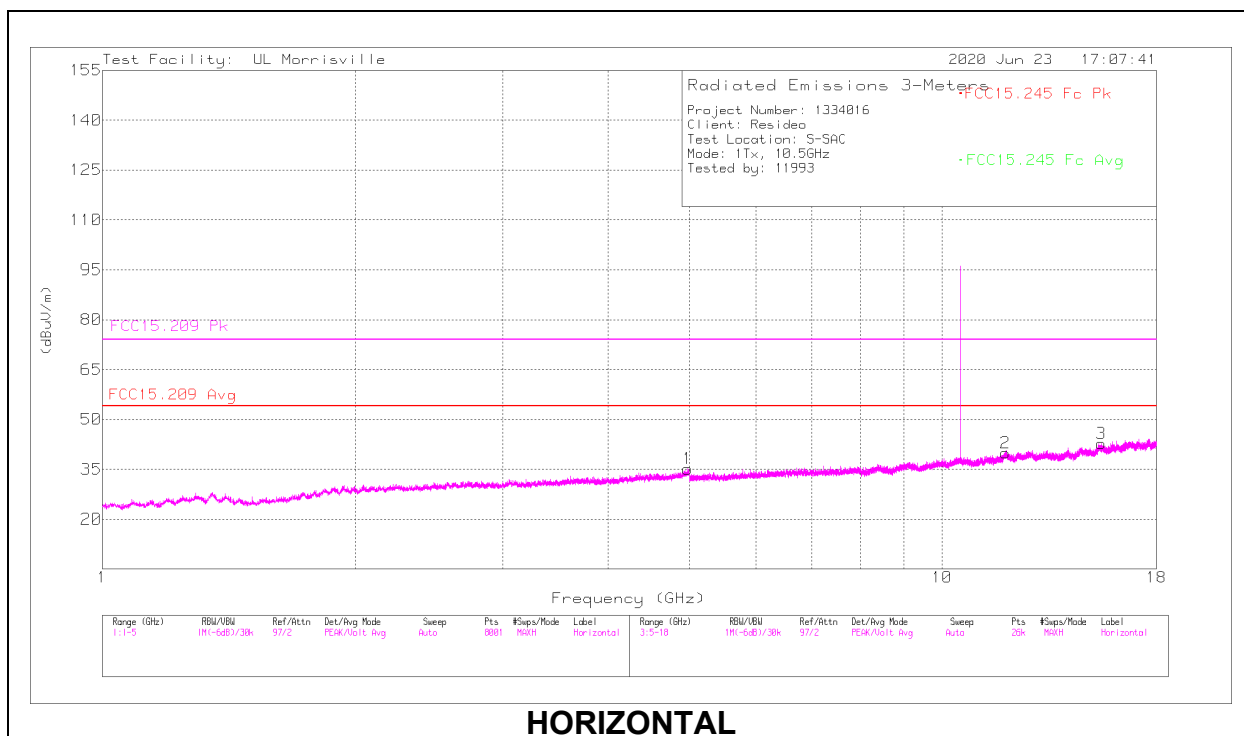


RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	33.6347	28.84	Pk	24.4	-31.7	21.54	40	-18.46	0-360	101	V
1	35.3139	28.92	Pk	23.2	-31.7	20.42	40	-19.58	0-360	199	H
2	122.929	28.19	Pk	19.9	-30.8	17.29	43.52	-26.23	0-360	102	H
5	200.4001	30.9	Pk	18.9	-30.2	19.6	43.52	-23.92	0-360	199	V
6	942.1965	26.49	Pk	28.8	-26.5	28.79	46.02	-17.23	0-360	199	V
3	949.4974	25.47	Pk	28.9	-26.4	27.97	46.02	-18.05	0-360	299	H

Pk - Peak detector

6.5. HARMONICS AND SPURIOUS EMISSIONS (1 – 18GHz)



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0078 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	FCC 15.209 Avg	AV Margin (dB)	FCC 15.209 Pk	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.97465	39.37	PK2	34.1	-29.5	43.97	-	-	74	-30.03	85	202	H
	* ** 4.97618	27.52	ADV	34.1	-29.6	32.02	54	-21.98	-	-	85	202	H
2	* ** 11.9053	34.15	PK2	38.5	-24.5	48.15	-	-	74	-25.85	32	181	H
	* ** 11.90323	22.18	ADV	38.5	-24.6	36.08	54	-17.92	-	-	32	181	H
3	* ** 15.47215	34.08	PK2	39.9	-23	50.98	-	-	74	-23.02	265	400	H
	* ** 15.47578	21.54	ADV	39.9	-23	38.44	54	-15.56	-	-	265	400	H
4	* ** 9.09884	36.24	PK2	36.2	-26.5	45.94	-	-	74	-28.06	52	200	V
	* ** 9.10145	23.98	ADV	36.2	-26.6	33.58	54	-20.42	-	-	52	200	V
5	* ** 12.32478	33.64	PK2	38.8	-24.5	47.94	-	-	74	-26.06	283	109	V
	* ** 12.32336	21.36	ADV	38.8	-24.5	35.66	54	-18.34	-	-	283	109	V
6	* ** 15.68749	34.25	PK2	40.1	-24.1	50.25	-	-	74	-23.75	268	253	V
	* ** 15.68772	21.66	ADV	40.1	-24.1	37.66	54	-16.34	-	-	268	253	V

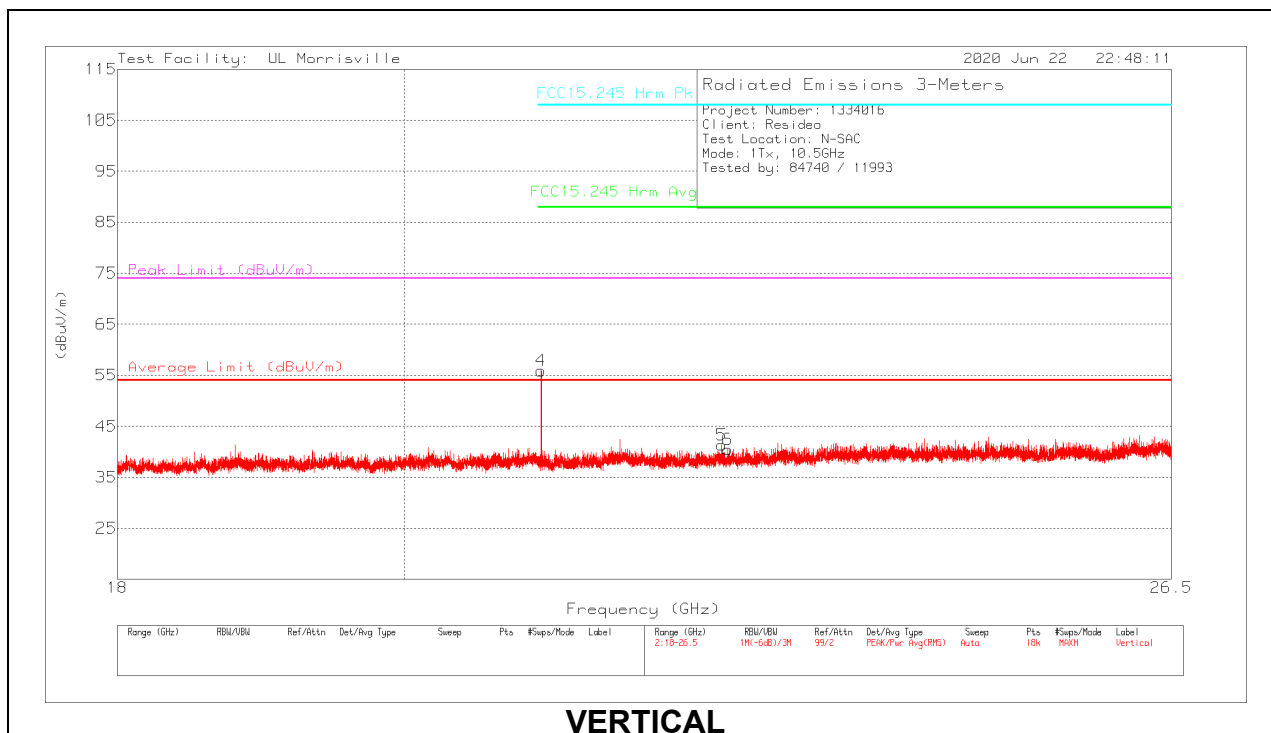
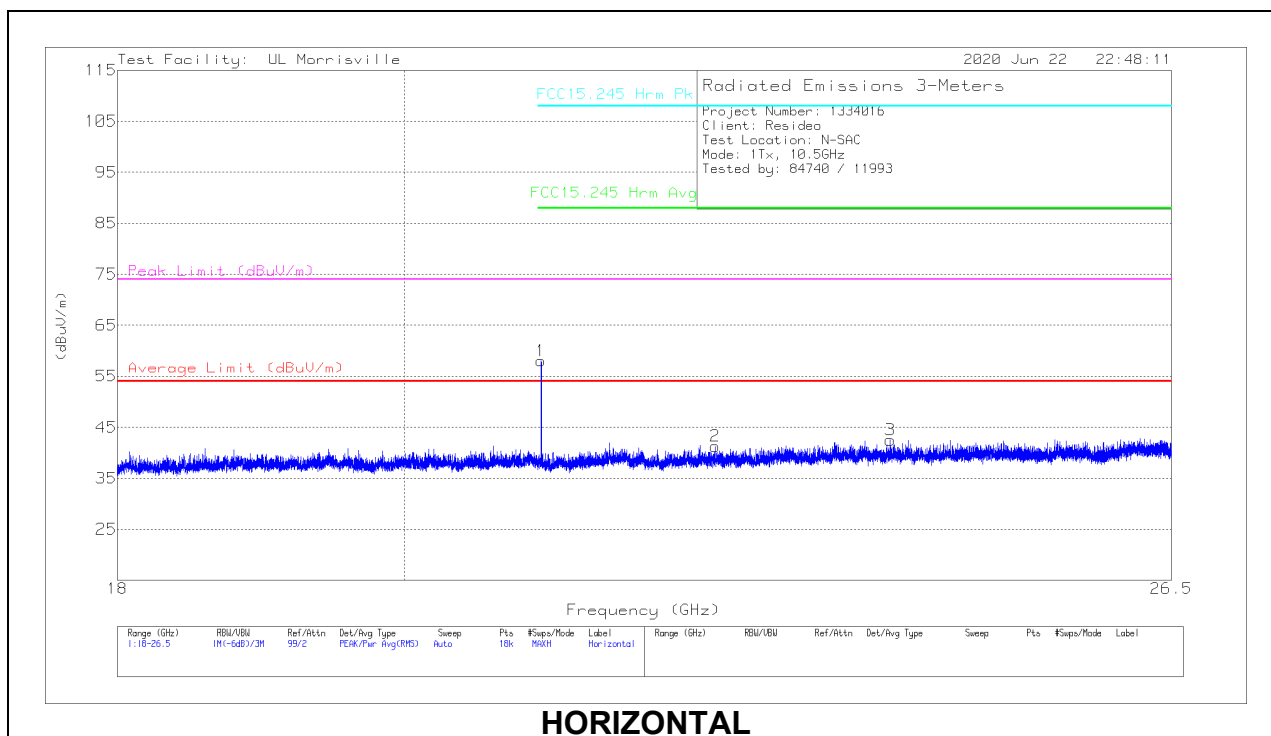
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

ADV - Linear Voltage Average

6.6. HARMONICS AND SPURIOUS EMISSIONS (18 – 26GHz)



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0076 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	FCC 15.209 Avg Limit (dBuV/m)	Margin (dB)	FCC 15.209 Pk Limit (dBuV/m)	Margin (dB)	FCC 15.245 Avg Limit (dBuV/m)	Margin (dB)	FCC 15.245 Pk Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 21.02915	65.31	PK2	33.2	-39.5	59.01	-	-	-	-	-	-	107.96	-48.95	252	106	H
	* ** 21.02917	64.31	ADV	33.2	-39.5	58.01	-	-	-	-	87.96	-29.95	-	-	252	106	H
2	* ** 22.41599	46.97	Pk	33.5	-39.2	41.27	-	-	-	-	87.96	-46.69	107.96	-66.69	0-360	248	H
3	* ** 23.90263	47.01	Pk	34	-38.5	42.51	-	-	-	-	87.96	-45.45	107.96	-65.45	0-360	248	H
4	* ** 21.02924	62.08	PK2	33.2	-39.5	55.78	-	-	-	-	-	-	107.96	-52.18	140	103	V
	* ** 21.02917	60.72	ADV	33.2	-39.5	54.42	-	-	-	-	87.96	-33.54	-	-	140	103	V
5	* ** 22.46888	47.09	Pk	33.5	-39.3	41.29	-	-	-	-	87.96	-46.67	107.96	-66.67	0-360	202	V
6	* ** 22.51894	45.84	Pk	33.5	-38.9	40.44	-	-	-	-	87.96	-47.52	107.96	-67.52	0-360	202	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

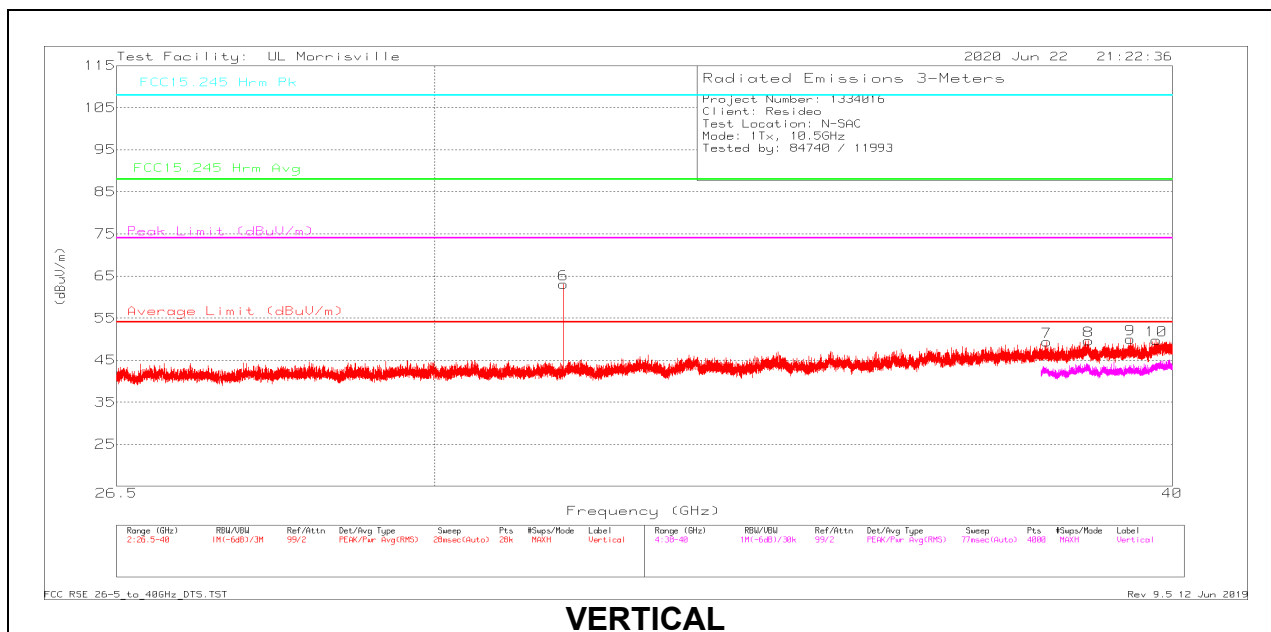
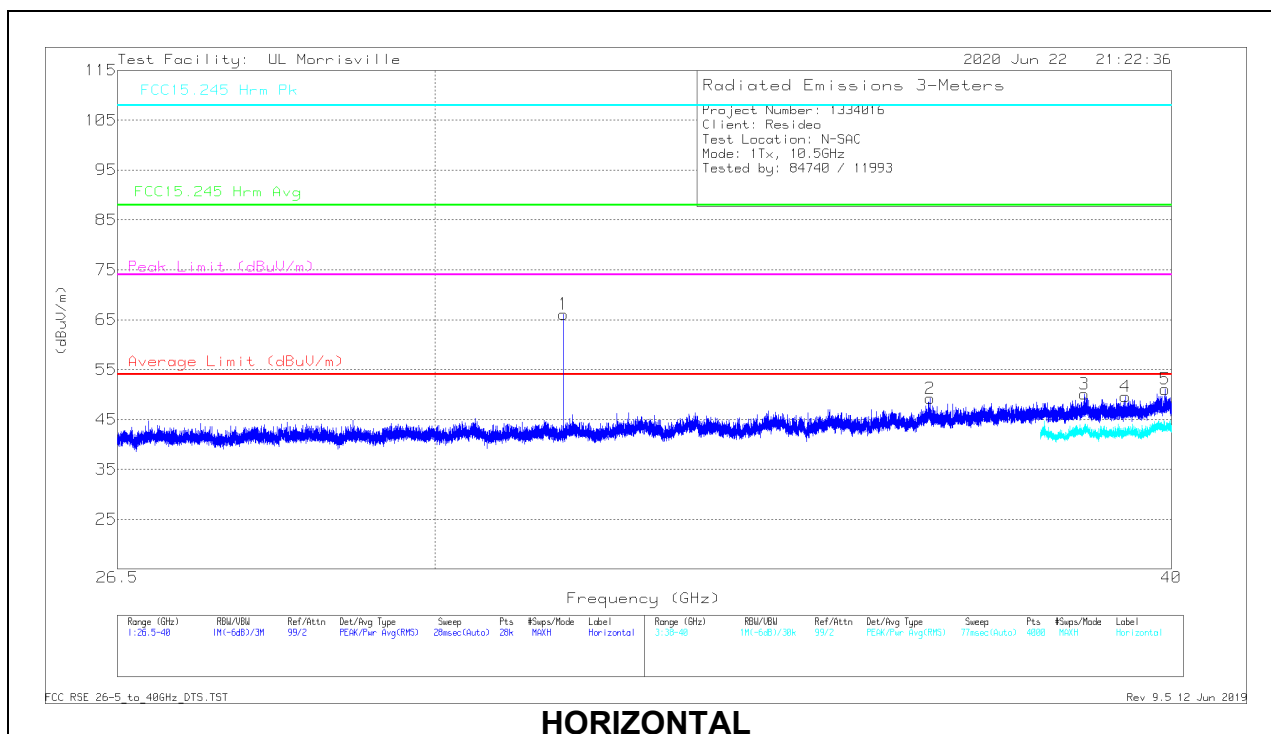
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

ADV - Linear Voltage Average

Pk - Peak detector

6.7. HARMONICS AND SPURIOUS EMISSIONS (26 - 40GHz)



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0077 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	FCC 15.209 Avg Limit (dBuV/m)	Av Margin (dB)	FCC 15.209 Pk Limit (dBuV/m)	Pk Margin (dB)	FCC 15.245 Avg Limit (dBuV/m)	AV Margin (dB)	FCC 15.245 Pk Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 31.54361	62.43	PK2	36.8	-34.6	64.63	-	-	-	-	-	-	107.96	-43.33	27	188	H
	* ** 31.54368	61.63	ADV	36.8	-34.6	63.83	-	-	-	-	87.96	-24.13	-	-	27	188	H
3	* ** 38.66239	44.06	PK2	38.4	-32.8	49.66	-	-	-	-	-	-	107.96	-63.9	42	137	H
	* ** 38.66223	31.67	ADV	38.4	-32.8	37.27	-	-	-	-	87.96	-50.69	-	-	42	137	H
4	* ** 39.28624	42.49	PK2	38.5	-32.1	48.89	-	-	-	-	-	-	107.96	-59.07	13	163	H
	* ** 39.28528	30.13	ADV	38.5	-32.1	36.53	-	-	-	-	87.96	-51.43	-	-	13	163	H
5	* ** 39.90252	43.59	PK2	38.6	-31.2	50.99	-	-	-	-	-	-	107.96	-56.97	345	315	H
	* ** 39.90248	30.46	ADV	38.6	-31.2	37.86	-	-	-	-	87.96	-50.01	-	-	345	315	H
6	* ** 31.54355	58.92	PK2	36.8	-34.6	61.12	-	-	-	-	-	-	107.96	-46.84	327	120	V
	* ** 31.54372	57.67	ADV	36.8	-34.6	59.87	-	-	-	-	87.96	-28.09	-	-	327	120	V
8	* ** 38.71079	44.59	PK2	38.6	-32.4	50.79	-	-	-	-	-	-	107.96	-57.17	199	260	V
	* ** 38.71211	31.02	ADV	38.6	-32.4	37.22	-	-	-	-	87.96	-50.74	-	-	199	260	V
9	* ** 39.34735	43.34	PK2	38.5	-31.9	49.94	-	-	-	-	-	-	107.96	-58.02	335	154	V
	* ** 39.34725	30.42	ADV	38.5	-31.9	37.02	-	-	-	-	87.96	-50.94	-	-	335	154	V
10	* ** 39.75144	44.83	PK2	38.6	-31.5	51.93	-	-	-	-	-	-	107.96	-56.03	264	346	V
	* ** 39.75136	30.73	ADV	38.6	-31.5	37.83	-	-	-	-	87.96	-50.13	-	-	264	346	V
2	36.40308	45.92	Pk	37.5	-34.2	49.22	-	-	-	-	87.96	-38.74	107.96	-58.74	0-360	298	H
7	38.08582	43.87	Pk	38.1	-32.6	49.37	-	-	-	-	87.96	-38.59	107.96	-58.59	0-360	298	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

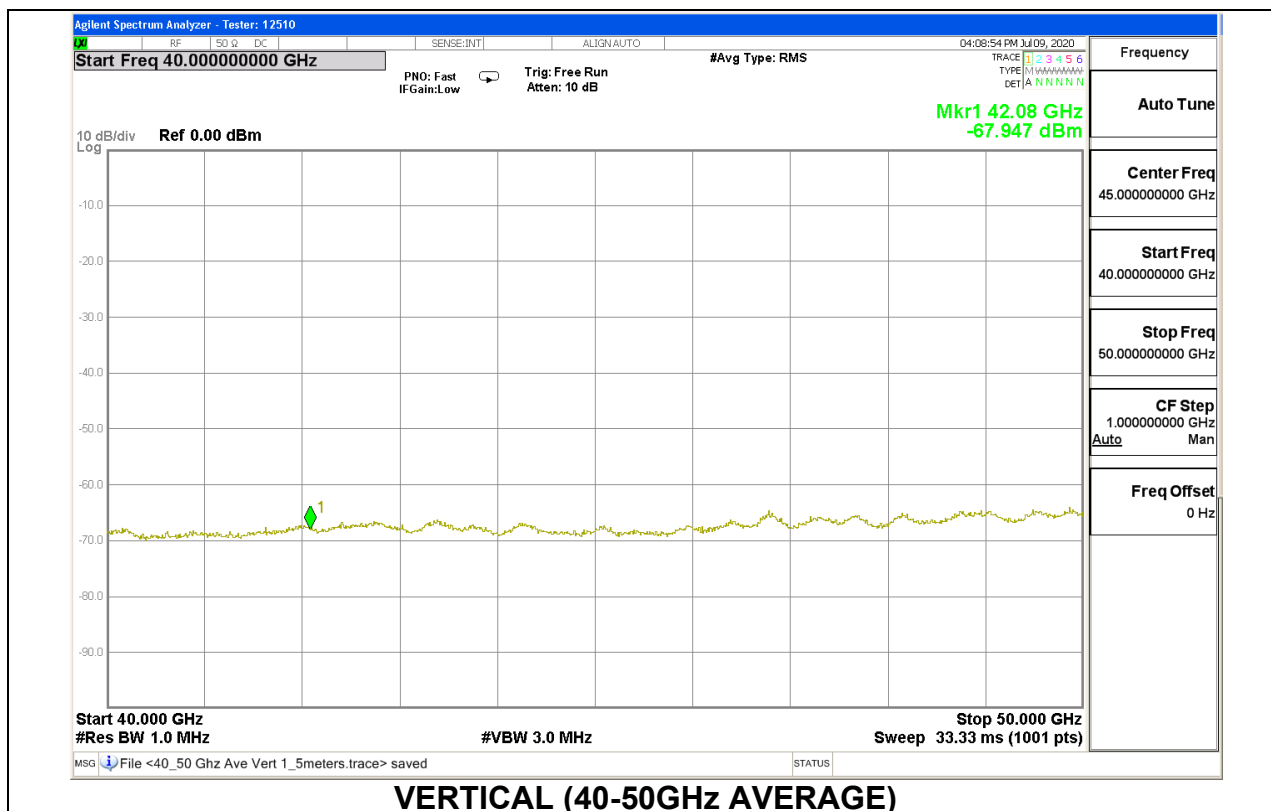
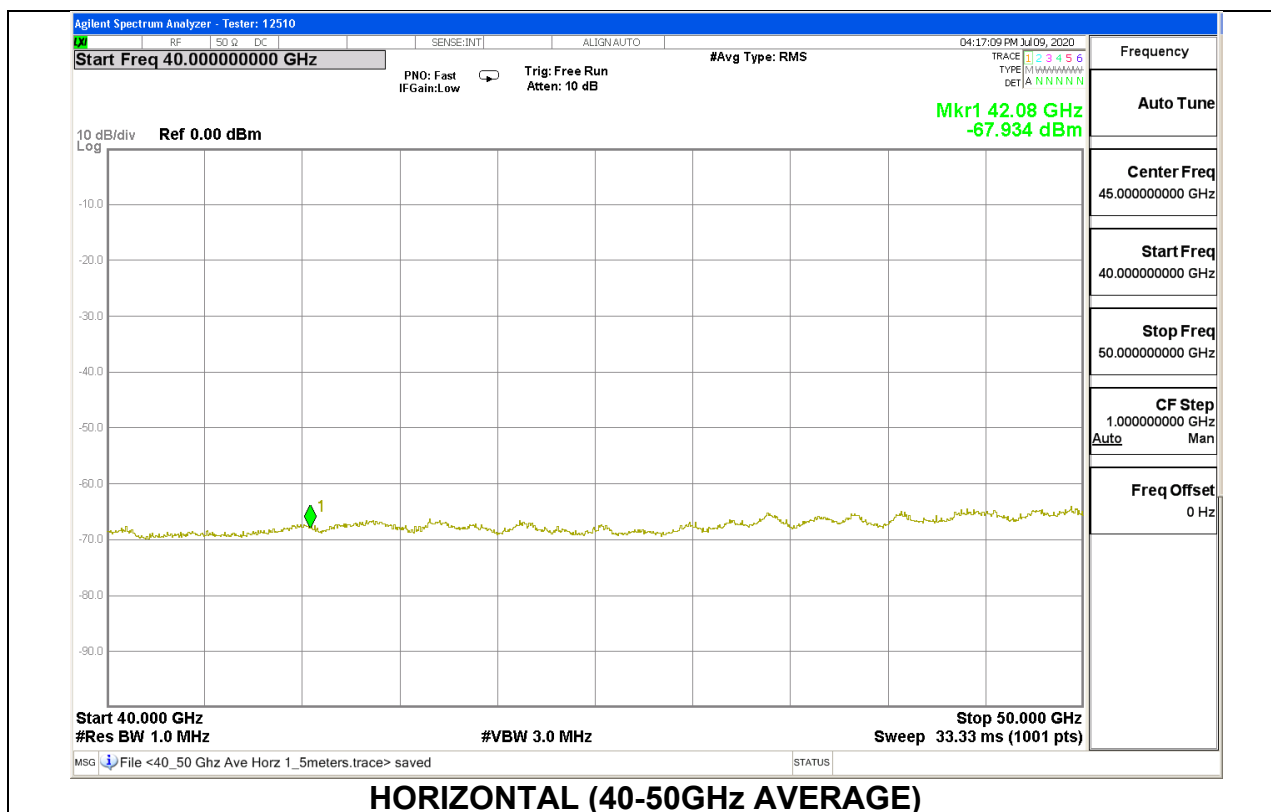
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

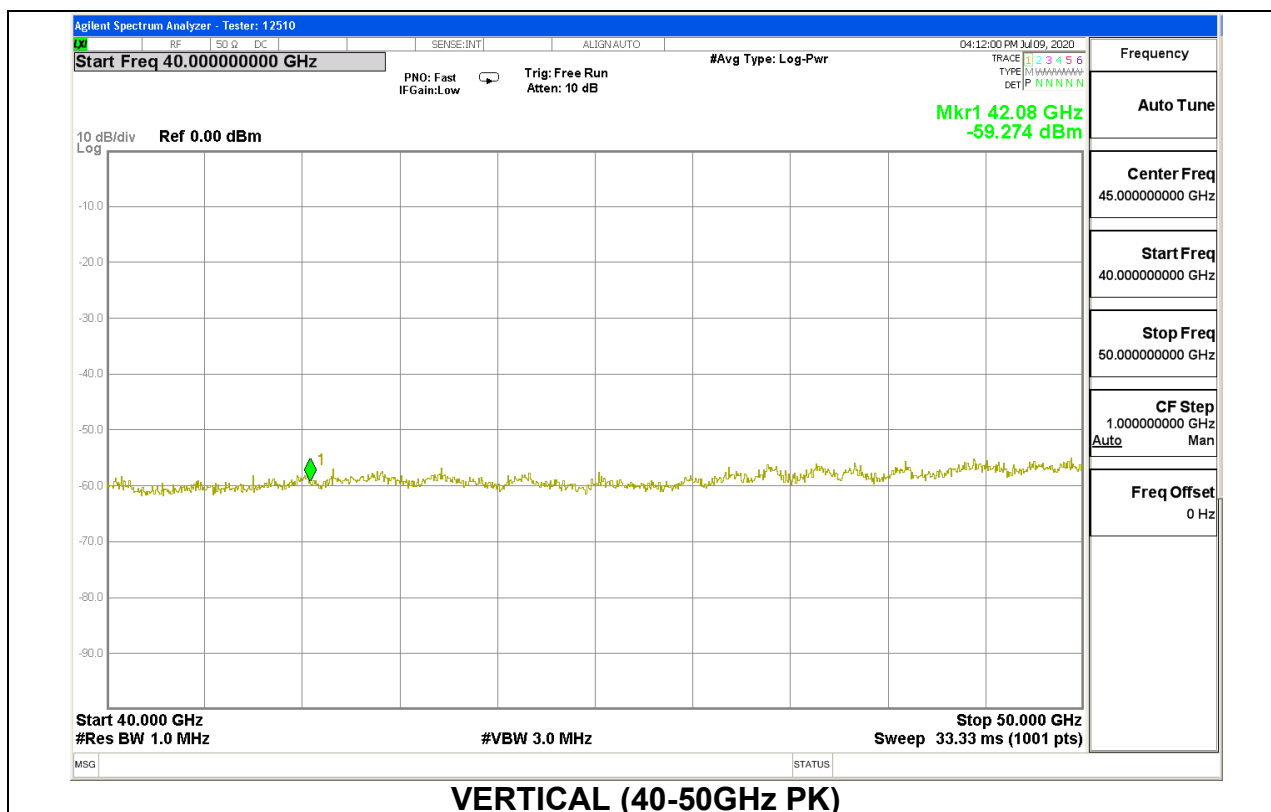
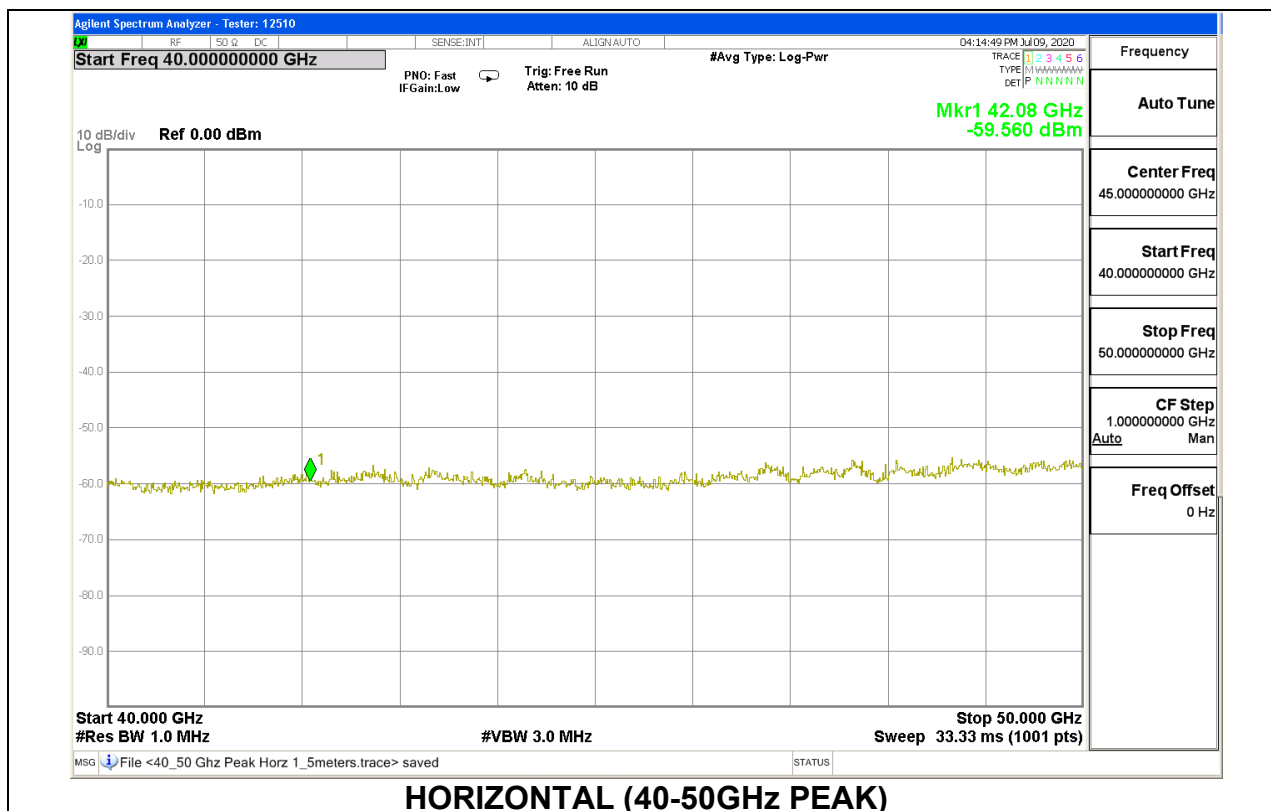
PK2 - Maximum Peak

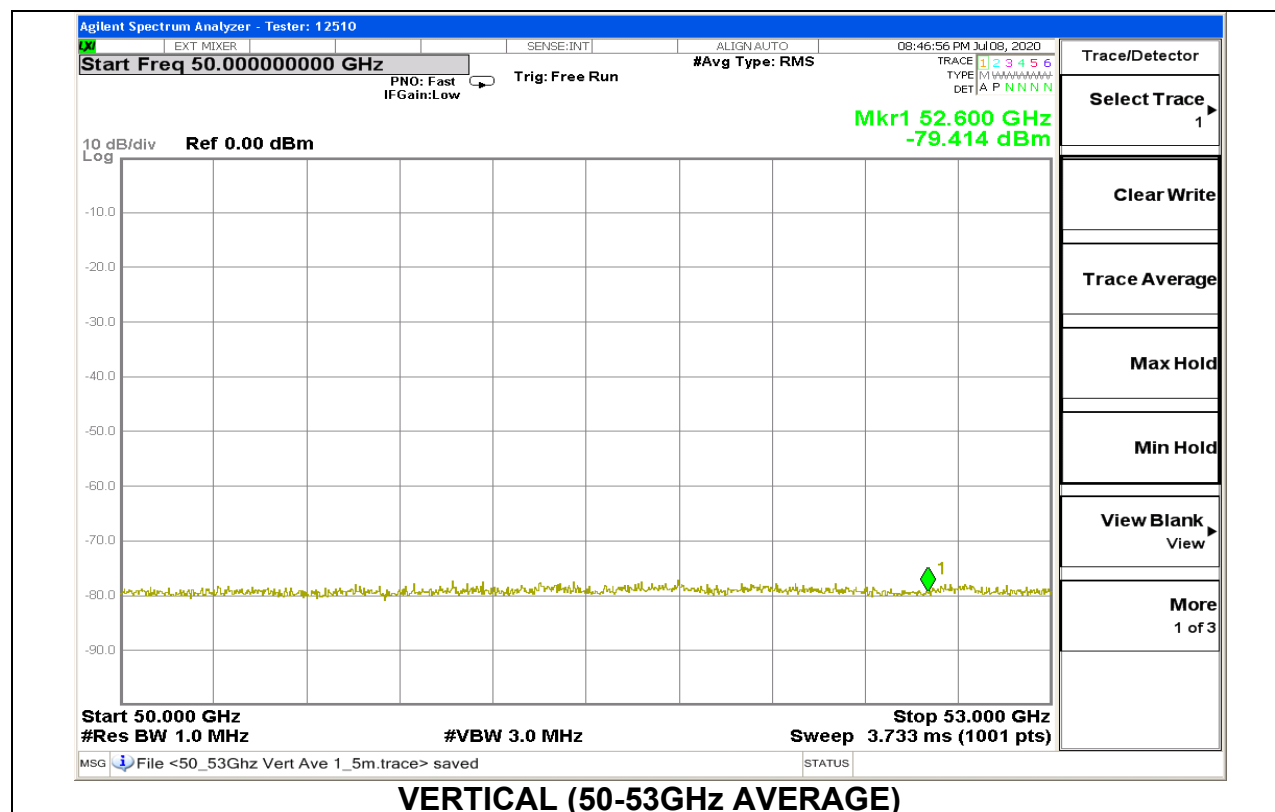
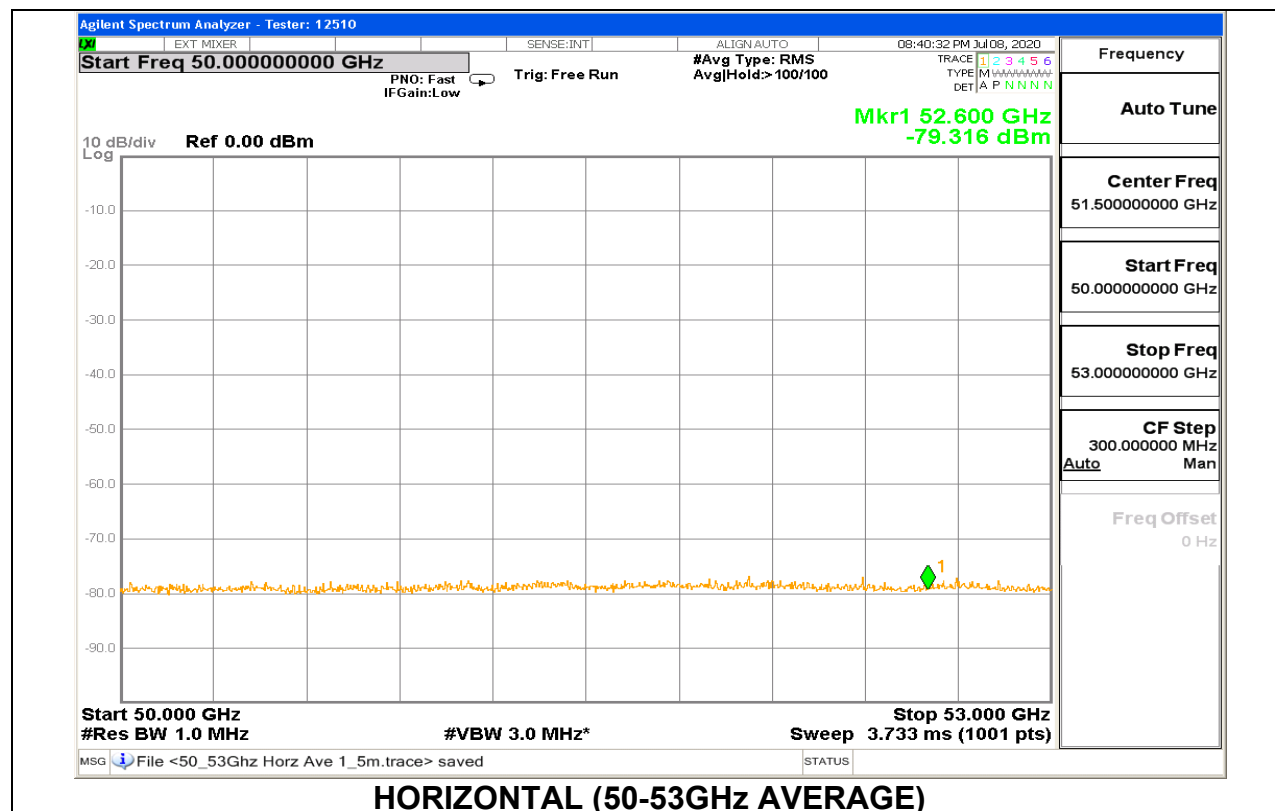
ADV - Linear Voltage Average

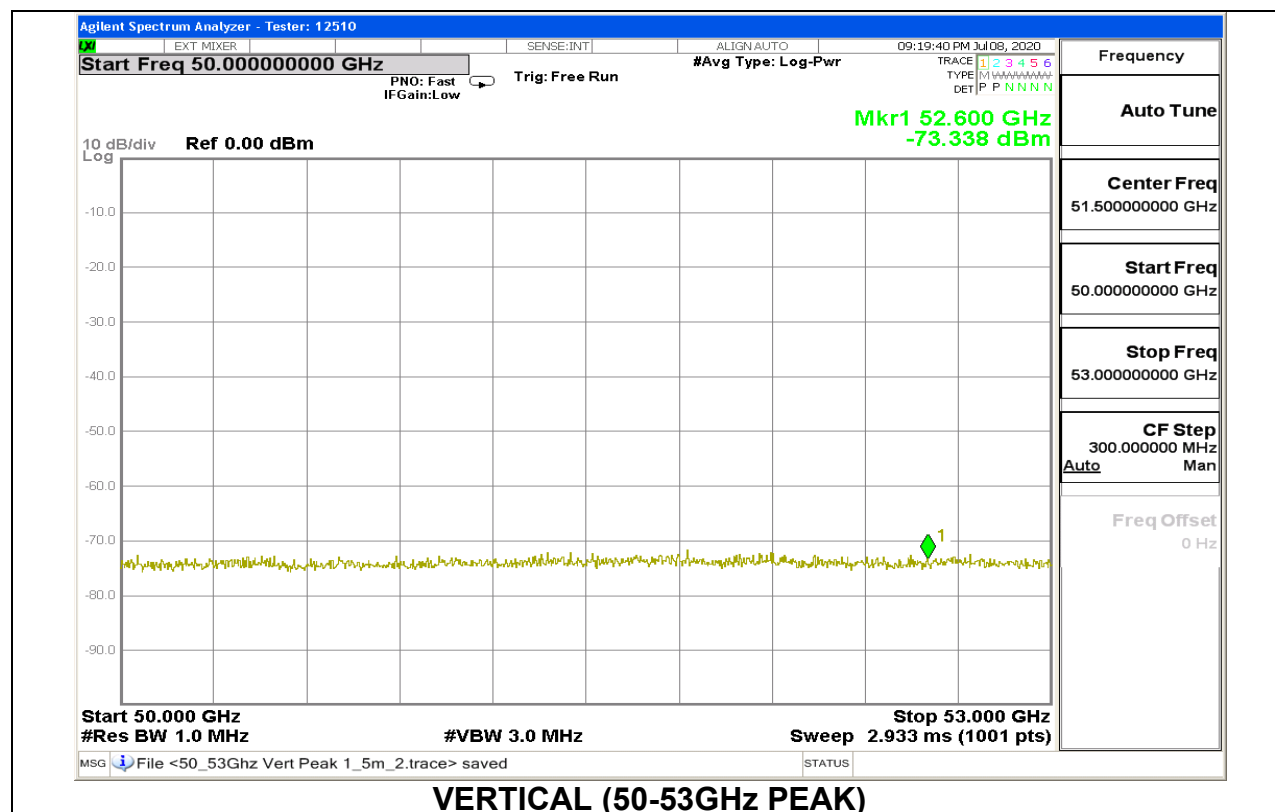
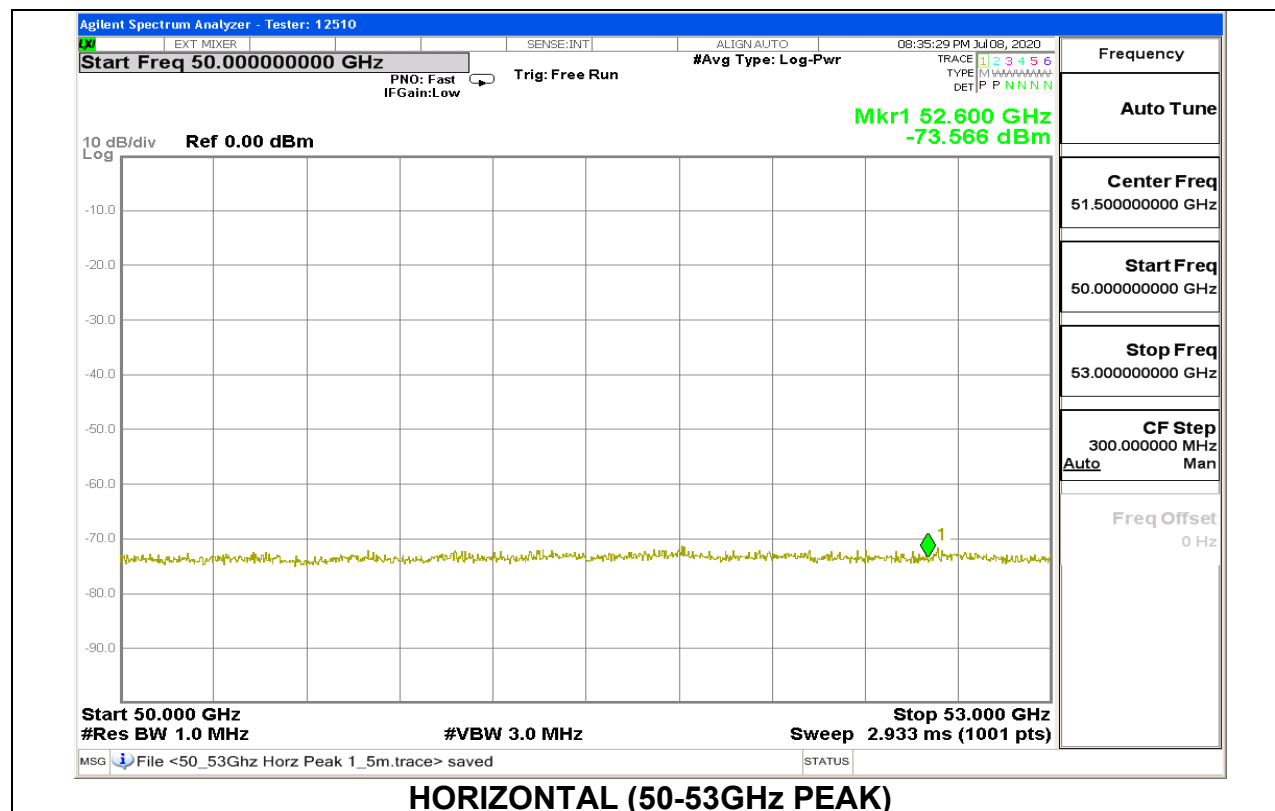
Pk - Peak detector

6.8. HARMONICS AND SPURIOUS EMISSIONS (40 - 53GHz)









Mode	Detector	Freq. (GHz)	Meas. Distance (m)	Rx Ant. Polarity	Measured Power (dBm)	Total Receiving Gain (dBi)	Corrected EIRP at 3m (dBm)	Limit (dBm)	Margin (dBm)	Comments
40-50 GHz	Peak	42.08	1.5	H	-59.56	53.80	-44.92	12.76	-57.68	Noise Floor, No emissions
40-50 GHz	Average	42.08	1.5	H	-67.93	53.80	-53.29	-7.24	-46.05	Noise Floor, No emissions
40-50 GHz	Peak	42.08	1.5	V	-59.27	53.80	-44.63	12.76	-57.39	Noise Floor, No emissions
40-50 GHz	Average	42.08	1.5	V	-67.95	53.80	-53.31	-7.24	-46.07	Noise Floor, No emissions
50-53 GHz	Peak	52.6	1.5	H	-73.57	22.60	-25.79	12.76	-38.55	Noise Floor, No emissions
50-53 GHz	Average	52.6	1.5	H	-79.32	22.60	-31.54	-7.24	-24.30	Noise Floor, No emissions
50-53 GHz	Peak	52.6	1.5	V	-73.34	22.60	-25.56	12.76	-38.32	Noise Floor, No emissions
50-53 GHz	Average	52.6	1.5	V	-79.41	22.60	-31.63	-7.24	-24.39	Noise Floor, No emissions

Note: 25mV/m AV limit in dBm calculated as $(20\log(.025V/m) + 120) - 95.2 = 87.95\text{dBuV/m} - 95.2 = -7.24\text{dBm}$. PK limit is AV limit + 20dBm.

12. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207

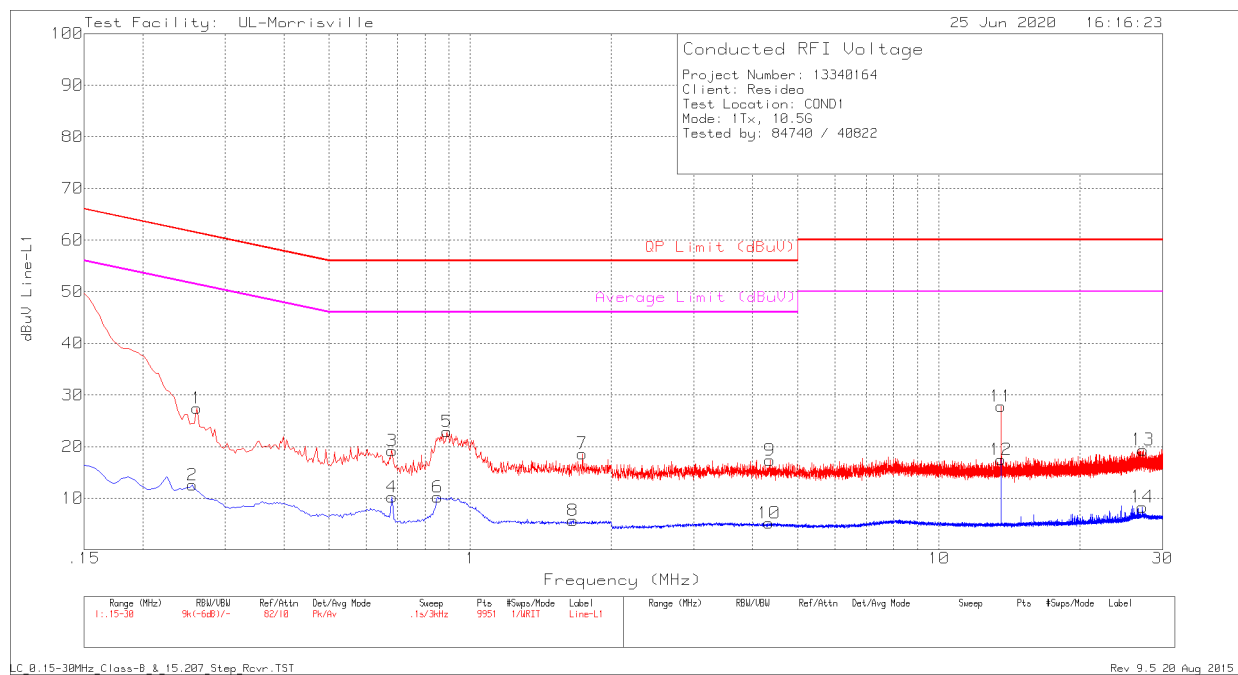
IC RSS-GEN, Section 8.8

Frequency range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

ANSI C63.10

LINE 1 RESULTS

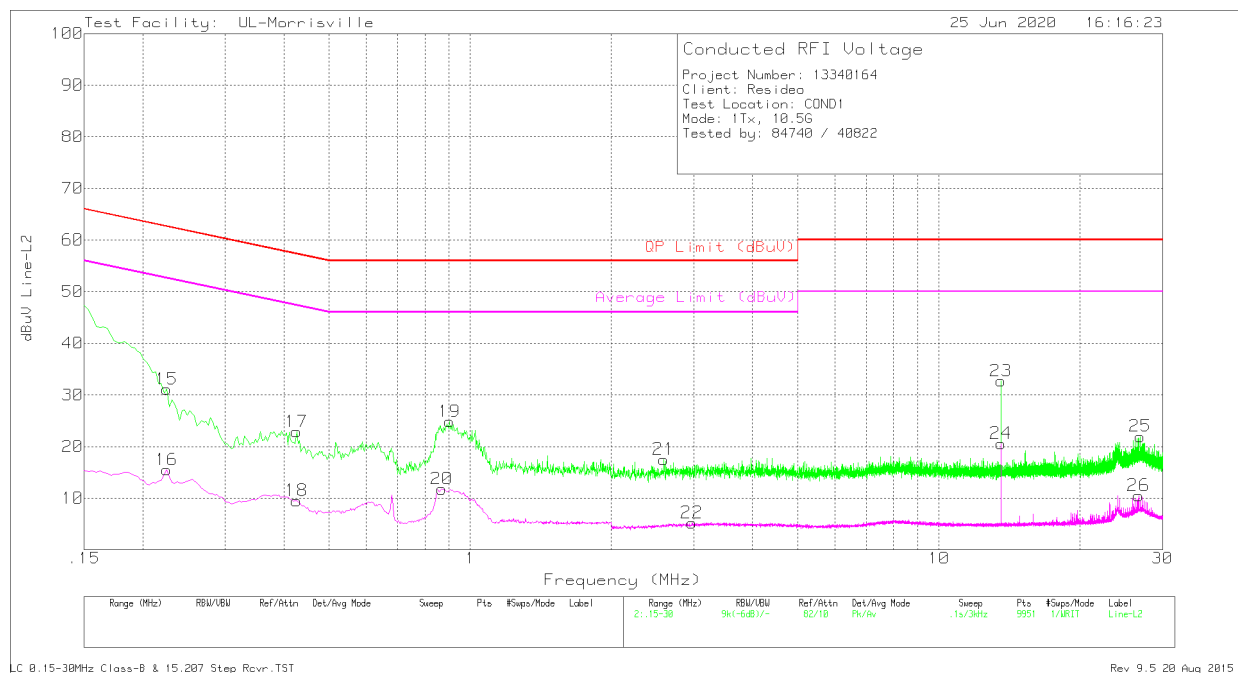


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.261	17.64	Pk	.1	9.7	27.44	61.4	-33.96	-	-
2	.255	2.76	Av	.1	9.7	12.56	-	-	51.59	-39.03
3	.681	9.29	Pk	.1	9.8	19.19	56	-36.81	-	-
4	.681	.34	Av	.1	9.8	10.24	-	-	46	-35.76
5	.891	13.05	Pk	0	9.8	22.85	56	-33.15	-	-
6	.852	.4	Av	0	9.8	10.2	-	-	46	-35.8
7	1.734	8.84	Pk	0	9.8	18.64	56	-37.36	-	-
8	1.656	-4.16	Av	0	9.8	5.64	-	-	46	-40.36
9	4.356	7.38	Pk	.1	9.9	17.38	56	-38.62	-	-
10	4.341	-4.81	Av	.1	9.9	5.19	-	-	46	-40.81
11	13.56	17.72	Pk	.1	10	27.82	60	-32.18	-	-
12	13.56	7.37	Av	.1	10	17.47	-	-	50	-32.53
13	27.255	8.87	Pk	.3	10.2	19.37	60	-40.63	-	-
14	27.162	-2.2	Av	.3	10.2	8.3	-	-	50	-41.7

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS



Pk - Peak detector
Av - Average detection

13. SETUP PHOTOS

Please refer to R13340164-EP1 for setup photos

END OF TEST REPORT