HERMON LABORATORIES

ELECTRICAL TESTING
0839.01

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TEST REPORT

ACCORDING TO: FCC 47 CFR part 15 section 15.255

FOR:

Vayyar Imaging LTD.

Short-range mm-wave sensor

Model : vTrig_CTPA0

FCC ID: 2AHIS-V60G

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1 Applicant information

Client name:	Vayyar Imaging LTD.
Address:	11 Altalef street, Yehud, 5621608, Israel
Telephone:	+972 54 432 1050
Fax:	04-6405911
E-mail:	mark.popov@imagintechnology.com
Contact name:	Mr. Mark Popov

2 Equipment under test attributes

Product name:	Short-range mm-wave sensor
Product type:	Transmitter
Model(s):	vTrig_CTPA0
Serial number:	VTRGGB3913U0421
Hardware version:	rev. B
Software release:	1.8.7
Receipt date	12-Feb-19

3 Manufacturer information

Manufacturer name:	Vayyar Imaging LTD.
Address:	11 Altalef street, Yehud, 5621608, Israel
Telephone:	+972 54 432 1050
Fax:	04-6405911
E-Mail:	mark.popov@imagintechnology.com
Contact name:	Mr. Mark Popov

4 Test details

Project ID:	32363
Location:	Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel
Test started:	17-Feb-19
Test completed:	05-Jun-19
Test specification(s):	FCC 47 CFR part 15 section 15.255

5 Tests summary

Test	Status
Transmitter characteristics	
FCC section 15.255(c)(3), Transmiter power test	Pass
FCC section 15.215(c), Occupied bandwidth	Pass
FCC section 15.255(c)(2), Out of band radiated emissions below 40 GHz	Pass
FCC section 15.255(d)(3), Out of band radiated emissions above 40 GHz up to 200 GHz	Pass
FCC Section 15.255(f), Frequency stability test	Tested without limit
FCC Section 15.207(a) Conducted emissions	Pass
FCC Section 15.202, Antenna requirement	Pass
Unintentional emissions	
FCC Section 15.107, Conducted emission at AC power port	Pass
FCC Section 15.109, Radiated emission	Pass

This test report supersedes the previously issued test report identified by Doc ID: VAYRAD_FCC.32363_Rev1.

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.
The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
Tested by:	Mr. A. Morozov test engineer EMC & Radio	17 Feb 19 – 05 Jun 19	
Reviewed by:	Mrs. S Peysahov Sheynin test engineer EMC & Radio	22 Avg 19 – 05 Sep 19	
Approved by:	Mr. S. Samokha, technical manager, EMC and Radio	05 Sep 19	

6 EUT description

Note: The following data in this clause is provided by the customer and represents his sole responsibility

6.1 General information

The vTrig_CTPA0 is a short-range mm-wave sensors, operating in the 60 GHz frequency band, covering frequencies in the range 57-64GHz. The vTrig_CTPA0 sensor is designed to be used as a fixed field-disturbance sensor or short-range device for interactive motion-sensing. The sensors are based on Vayyar's VYYR7201 RF SoC.

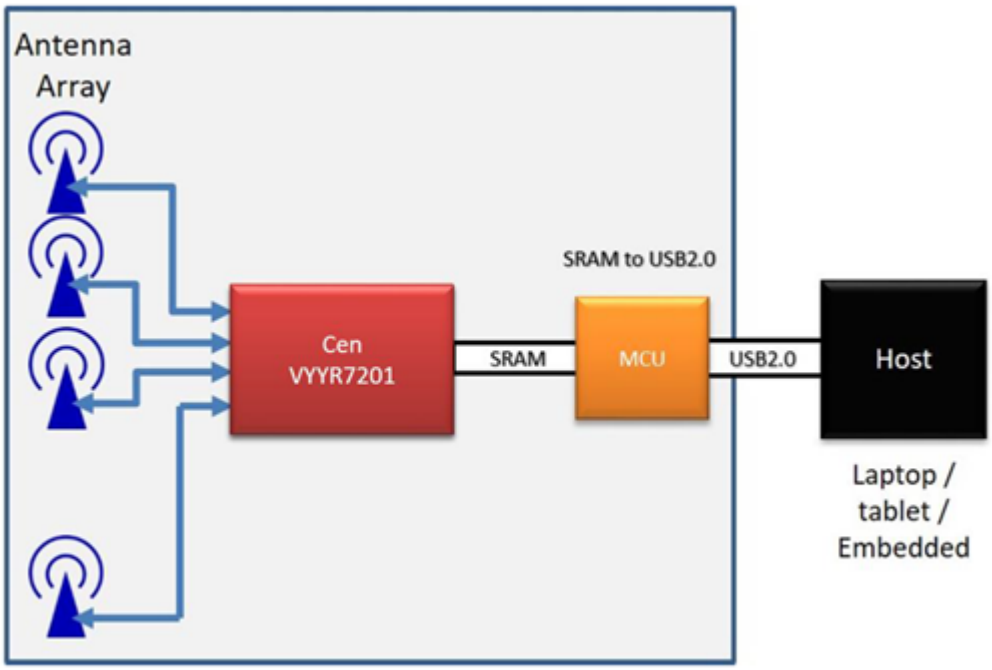
6.2 Ports and lines

Port type	Port description	Conn. from	Conn. to	Qty.	Cable type	Cable length, m	Indoor / outdoor
Power/Telecom	USB	PC	EUT	1	Shielded	2m	

6.3 Changes made in EUT

No changes were implemented in the EUT during testing.

6.4 Test configuration



6.5 Transmitter characteristics

Type of equipment		
X	Stand-alone (Equipment with or without its own control provisions)	
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)	
	Plug-in card (Equipment intended for a variety of host systems)	

Intended use		**Condition of use**
	fixed	Always at a distance more than 2 m from all people
X	mobile	Always at a distance more than 20 cm from all people
	portable	May operate at a distance closer than 20 cm to human body

Assigned frequency ranges	57000 – 64000 MHz			
Operating frequencies	57050 – 63950 MHz			
Maximum rated output power	At transmitter 50 Ω RF output connector			-15.5 dBm
	EIRP with maximum declared antenna gain			1.5 dBm
Is transmitter output power variable?	V	No		
		Yes		continuous variable
				stepped variable with stepsize dB
			minimum RF power	dBm
			maximum RF power	dBm

Antenna connection			
unique coupling	standard connector*	V integral	with temporary RF connector
			without temporary RF connector

Antenna/s technical characteristics			
Type	Manufacturer	Model number	Gain
Integrated	Vayyar	NA	5 dBi

Transmitter aggregate data rate/s	NA
Type of modulation	CW
Modulating test signal (baseband)	57-64GHz

Transmitter power source					
	Battery	**Nominal rated voltage**		Battery type	
X	DC	**Nominal rated voltage**	5 VDC		
X	AC mains	**Nominal rated voltage**	120 VAC	Frequency	60 Hz

Common power source for transmitter and receiver	X	yes	no

Test specification:	Section 15.255(c)(3), Transmitter power and power spectral density		
Test procedure:	ANSI C63.10, Section 9.11		
Test mode:	Compliance	Verdict:	PASS
Date(s):	29-Apr-19		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1001 hPa	Power: 5 VDC
Remarks:			

7 Transmitter tests according to 47CFR part 15 subpart C

7.1 Transmitter power test

7.1.1 General

This test was performed to measure the peak output power. Specification test limits are given in Table 7.1.1.

Table 7.1.1 Output power limits

Assigned frequency range, MHz	Maximum output power	
	Peak conducted output power dBm	EIRP, dBm
57000 – 66000	-10	10

7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2 The EUT was adjusted to produce maximum available for end user RF output power.

7.1.2.3 The average and peak voltage was measured at the low and high frequency channels with oscilloscope connected to RF detector and provided in the associated plots.

7.1.2.4 The unmodulated signal was applied to Zero-Biased Detector via variable attenuator as shown in Figure 7.1.2.

7.1.2.5 The variable attenuator was adjusted such that the oscilloscope indicated a voltage equal to the peak voltage recorded in the step 7.1.2.3.

7.1.2.6 The variable attenuator was disconnected from the Zero-Biased Detector.

7.1.2.7 Without changing any settings, the variable attenuator was connected to a power meter as shown in Figure 7.1.3.

7.1.2.8 The power was measured and result was recorded in Table 7.1.2 and Table 7.1.3.

7.1.2.9 The steps 7.1.2.4 through 7.1.2.8 were repeated for the average voltage recorded in the step 7.1.2.3 and 7.1.2.4.

Test specification:	Section 15.255(c)(3), Transmitter power and power spectral density		
Test procedure:	ANSI C63.10, Section 9.11		
Test mode:	Compliance	Verdict:	PASS
Date(s):	29-Apr-19		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1001 hPa	Power: 5 VDC
Remarks:			

Figure 7.1.1 Peak output power test setup

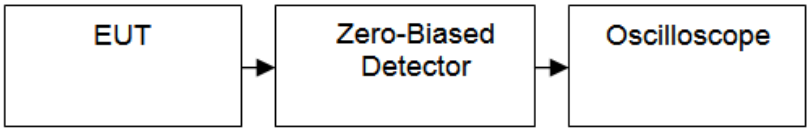


Figure 7.1.2 Peak output power test setup

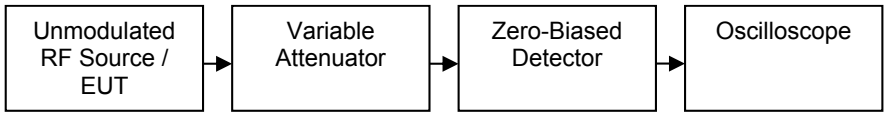
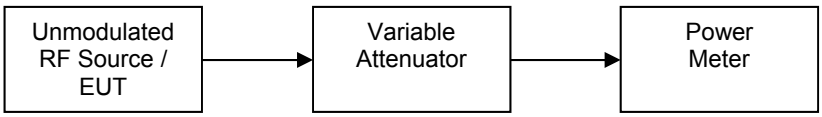


Figure 7.1.3 Peak output power test setup



Test specification:	**Section 15.255(c)(3), Transmitter power and power spectral density**		
Test procedure:	ANSI C63.10, Section 9.11		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	29-Apr-19		
Temperature: 24 ºC	**Relative Humidity:** 55 %	**Air Pressure:** 1001 hPa	**Power:** 5 VDC
Remarks:			

Table 7.1.2 Peak output power test results

OPERATING FREQUENCY RANGE: 57.0 – 64.0 GHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: >10 MHz
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Frequency GHz	DSO mV	Power measured dBm	Directional Antenna Gain*, dBi	Conducted Limit, dBm	Conducted Margin ** dB	EIRP*** dBm	Limit dBm	Margin**** dB	Verdict
57.05	6.1	-15.5	17.0412	-10	-5.5	1.5	10	-8.4588	Pass
60.50	6.1	-16.2	17.0412	-10	-6.2	0.8	10	-9.1588	Pass
63.95	6.1	-16.6	17.0412	-10	-6.6	0.4	10	-9.5588	Pass

* - Directional Antenna gain (dBi) = Single Antenna gain(dBi) +10*log(Quantity of antennas) ;
Single Antenna gain = 5(dBi) ; Quantity=16
** - Conducted Margin, dBm = Power measured, dBm - Conducted Limit, dBm
*** - EIRP, dBm = Power measured , dBm + Antenna Gain(dBi),
**** - Margin, dBm = EIRP, dBm - Limit, dBm

Reference numbers of test equipment used

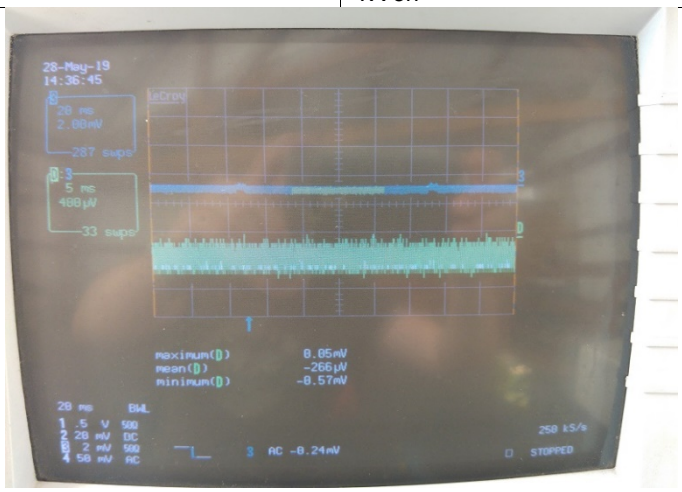
HL 1299	HL 1300	HL 1301	HL 3290	HL 3291	HL 3295	HL 3727	HL 4273

Full description is given in Appendix A.

Test specification:	**Section 15.255(c)(3), Transmitter power and power spectral density**		
Test procedure:	ANSI C63.10, Section 9.11		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	29-Apr-19		
Temperature: 24 ºC	**Relative Humidity:** 55 %	**Air Pressure:** 1001 hPa	**Power:** 5 VDC
Remarks:			

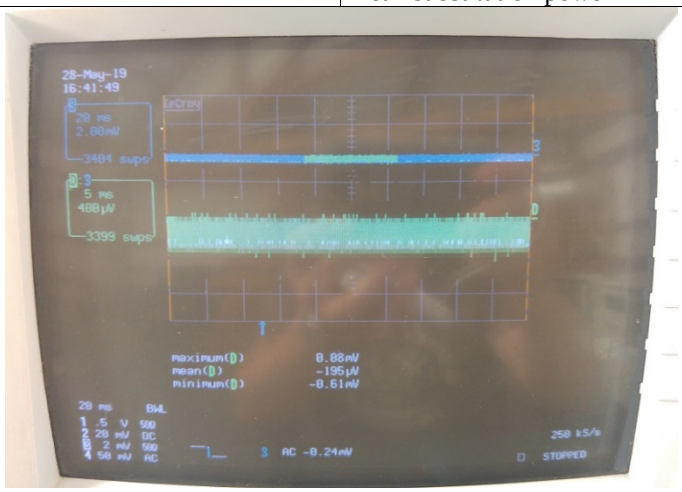
Plot 7.1.1 Output power test result

MODULATION:	CW
DETECTOR:	Peak/Average
FREQUENCY	60.5 GHz
NOTE	TX on



Plot 7.1.2 Output power test result

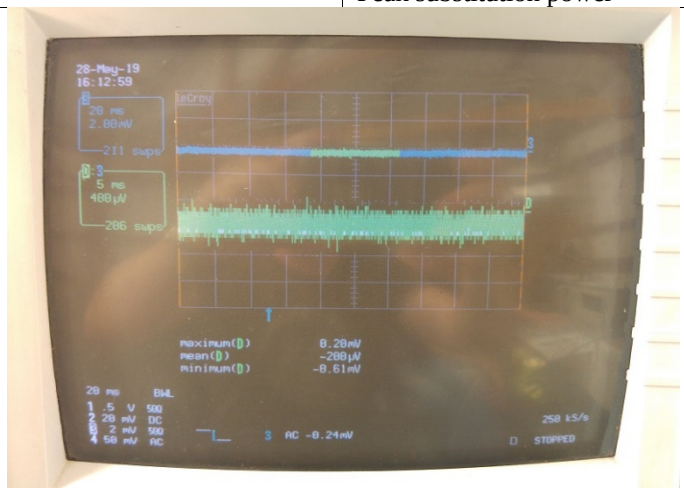
MODULATION:	CW
DETECTOR:	Peak
FREQUENCY	57.05 GHz
NOTE	Peak substitution power



Test specification:	**Section 15.255(c)(3), Transmitter power and power spectral density**		
Test procedure:	ANSI C63.10, Section 9.11		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	29-Apr-19		
Temperature: 24 ºC	**Relative Humidity:** 55 %	**Air Pressure:** 1001 hPa	**Power:** 5 VDC
Remarks:			

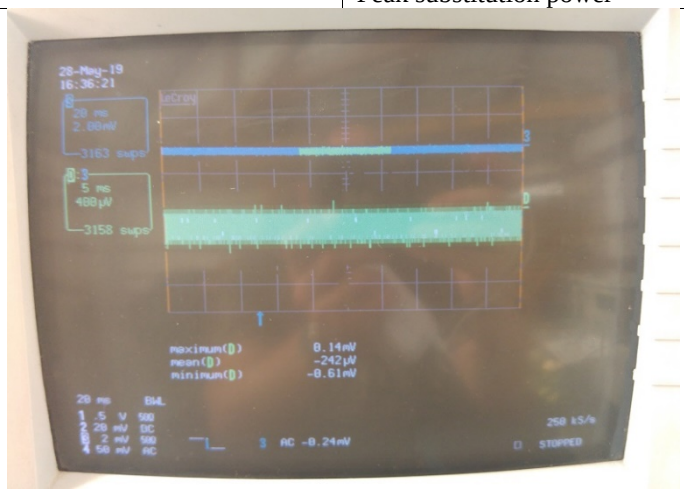
Plot 7.1.3 Output power test result

MODULATION:	CW
DETECTOR:	Peak
FREQUENCY	60.5 GHz
NOTE	Peak substitution power



Plot 7.1.4 Output power test result

MODULATION:	CW
DETECTOR:	Peak
FREQUENCY	63.95 GHz
NOTE	Peak substitution power



Test specification:	Section 15.215(c), Occupied bandwidth		
Test procedure:	ANSI C63.10, Section 9.3		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

7.2 Occupied bandwidth test

7.2.1 General

This test was performed to verify that the 20 dB bandwidth of the emissions was contained within the standard specified frequency band according to FCC §15.215 requirements. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Occupied bandwidth limits

Assigned frequency range, MHz	Modulation envelope reference points
57000 - 64000	20 dBc

NOTE: Modulation envelope reference points provided in terms of attenuation below unmodulated carrier.

7.2.2 Test procedure

7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

7.2.2.2 The spectrum analyzer sweep time and bandwidth were set to capture all major modulation sidebands of emission and sweep time was set sufficiently slow to ensure peak measurements. Spectrum analyzer was set in peak hold mode and time sufficient for trace stabilization was allowed.

7.2.2.3 The peak of emission was measured. The transmitter occupied bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.2.2 and associated plot.

Figure 7.2.1 Occupied bandwidth test setup

Table 7.2.2 Occupied bandwidth test results

OPERATING FREQUENCY RANGE: 57000 –65000 MHz
DETECTOR USED: Peak

Frequency, GHz	Frequency Center , GHz	Modulation	Occupied bandwidth 20 dBc MHz	Verdict
57.05 – 63.95	60.5	CW	6480	Pass

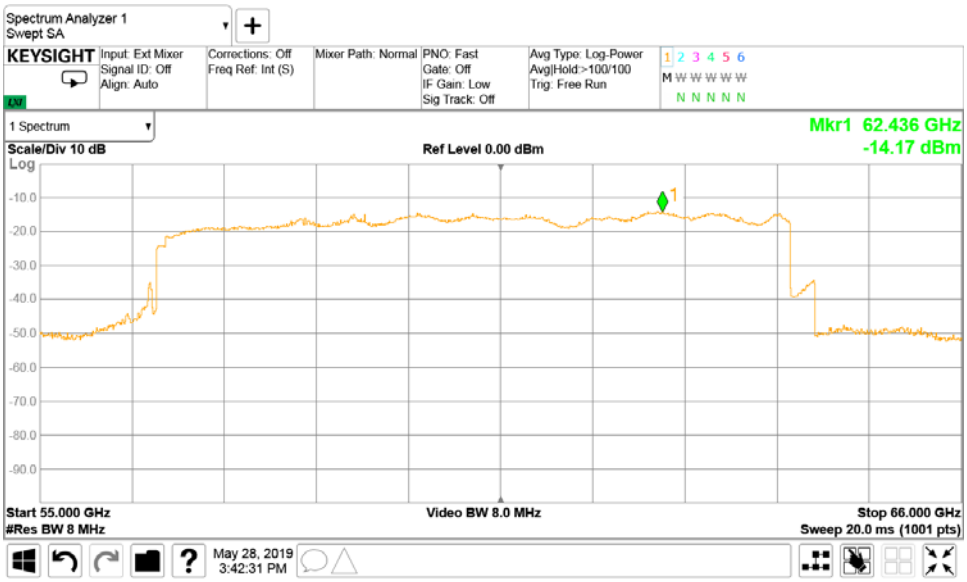
Reference numbers of test equipment used

HL 5376	HL 5380							

Full description is given in Appendix A.

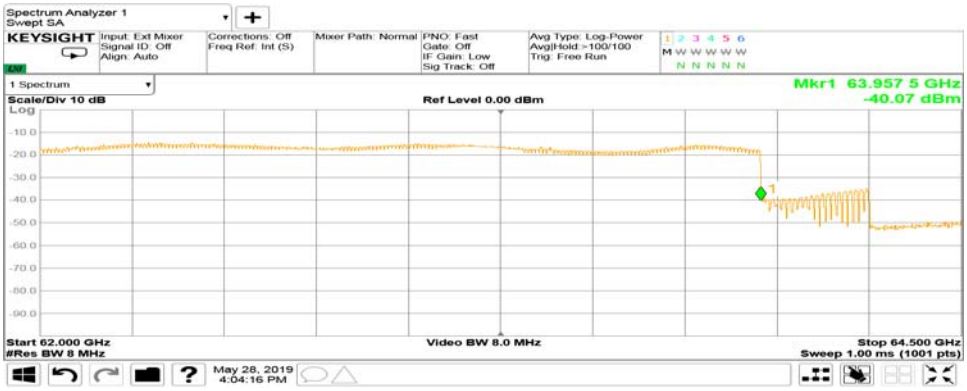
Test specification:	Section 15.215(c), Occupied bandwidth		
Test procedure:	ANSI C63.10, Section 9.3		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Plot 7.2.1 Occupied bandwidth test result

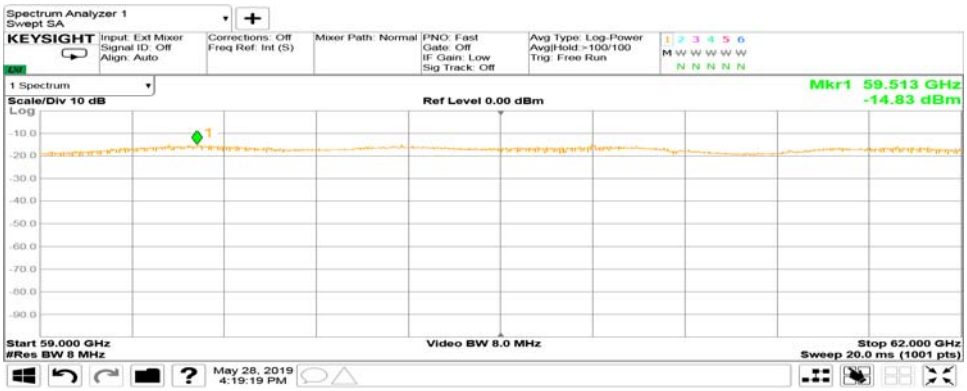


Test specification:	Section 15.215(c), Occupied bandwidth		
Test procedure:	ANSI C63.10, Section 9.3		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

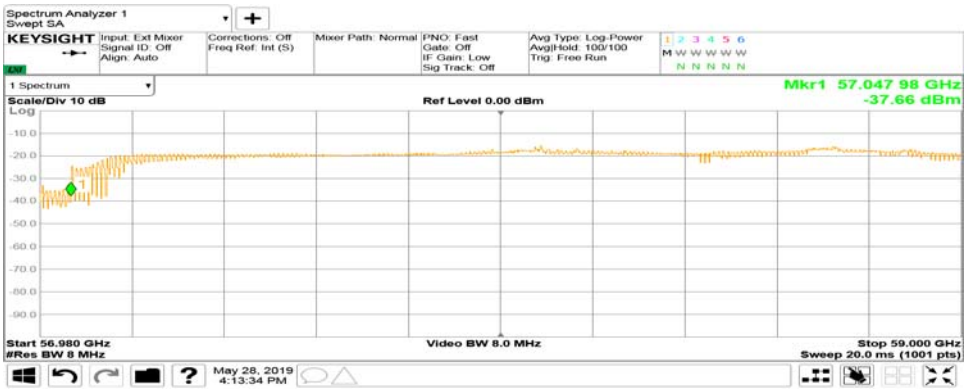
Plot 7.2.2 Occupied bandwidth test result – right side



Plot 7.2.3 Occupied bandwidth test result – central side



Plot 7.2.4 Occupied bandwidth test result – left side



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

7.3 Out of band radiated emmisions below 40GHz

7.3.1 Genera

This test was performed to measure field strength of fundamental and spurious emissions from the EUT. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Radiated spurious emissions limits

Frequency, MHz	Field strength at 3 m within restricted bands, dB(μV/m)***		
	Peak	Quasi Peak	Average
0.009 – 0.090	148.5 – 128.5	NA	128.5 – 108.5**
0.090 – 0.110	NA	108.5 – 106.8**	NA
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**
0.490 – 1.705	NA	73.8 – 63.0**	NA
1.705 – 30.0*		69.5**	
30 – 88		40.0	
88 – 216		43.5	
216 – 960		46.0	
960 - 1000		54.0	
1000-4000	74.0	NA	54.0

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$Lim_{S2} = Lim_{S1} + 40 \log (S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.
**- The limit decreases linearly with the logarithm of frequency.

7.3.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and the performance check was conducted.

7.3.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna was rotated around its vertical axis.

7.3.2.3 The worst test results (the lowest margins) were recorded in Table 7.3.2 and shown in the associated plots.

7.3.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.3.3.1 The EUT was set up as shown in Figure 7.3.2, Figure 7.3.3 energized and the performance check was conducted.

7.3.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.3.3.3 The worst test results (the lowest margins) were recorded in Table 7.3.2, Table 7.3.4 and shown in the associated plots.

Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Figure 7.3.3Figure 7.3.1 Setup for spurious emission field strength measurements below 30 MHz

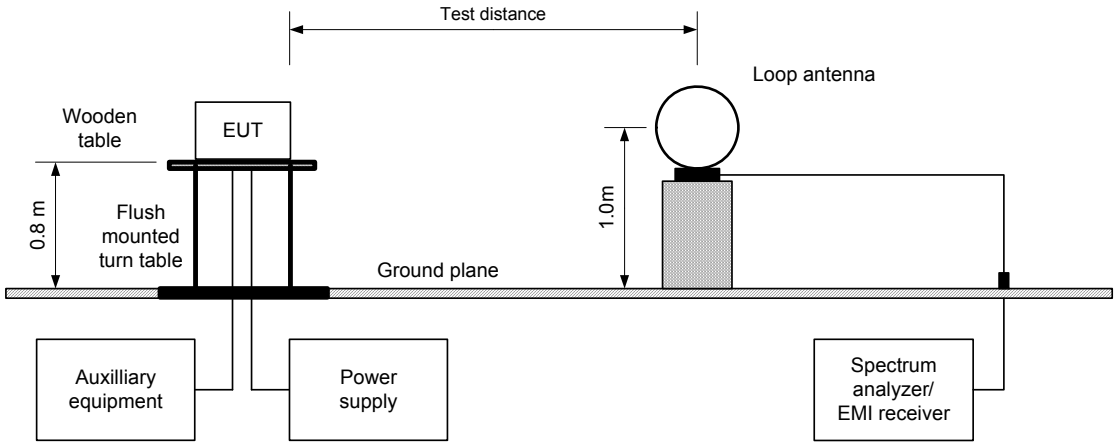
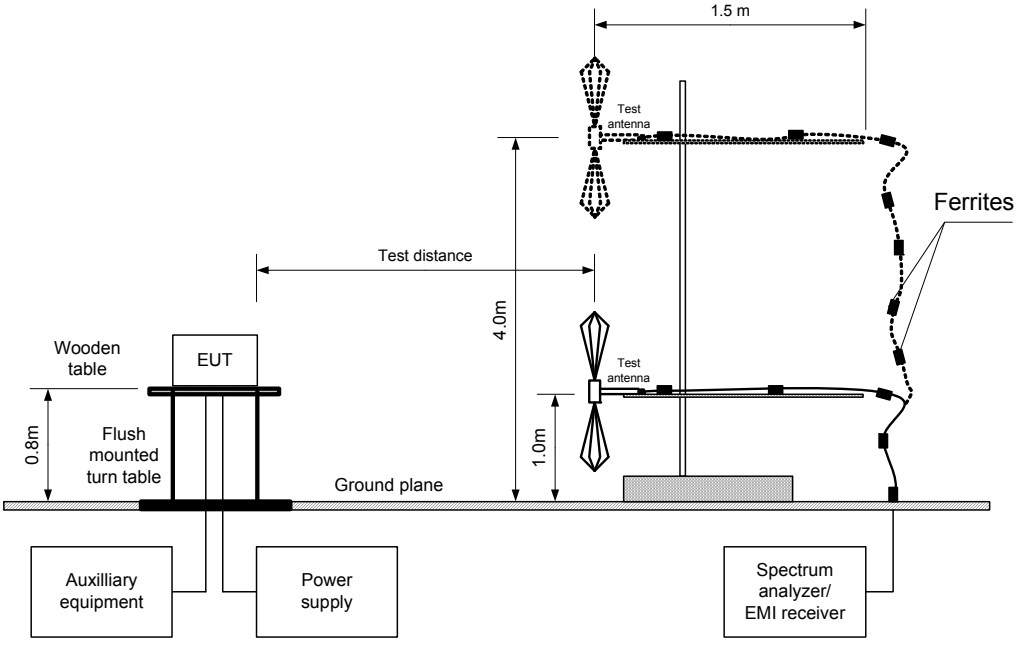
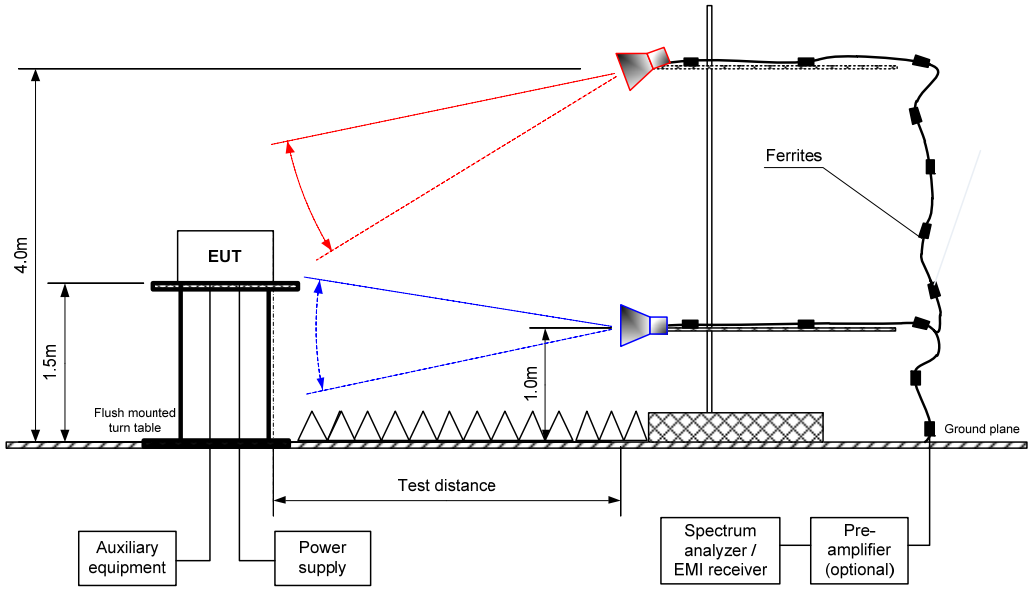


Figure 7.3.2 Setup for spurious emission field strength measurements in 30 – 1000 MHz



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Figure 7.3.3 Setup for spurious emission field strength measurements above1000 MHz



Test specification:	**Section 15.255(c)(2), Out of band radiated emissions below 40 GHz**		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	**Relative Humidity:** 48 %	**Air Pressure:** 1013 hPa	**Power:** 5 VDC
Remarks:			

Table 7.3.2 Out of band radiated emissions test results

TEST DISTANCE: 3 m
EUT POSITION: X, Y, Z
MODULATION: CW
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz
RESOLUTION BANDWIDTH: 1.0 kHz (9 kHz – 150 kHz)
9.0 kHz (150 kHz – 30 MHz)
120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH: ≥ Resolution bandwidth
TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
Biconilog (30 MHz – 1000 MHz)

Frequency, MHz	Peak emission, dB(μV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
180.512	40.83	32.36	43.5	-11.14	Vertical	102	-169	Pass
240.232	42.69	36.96	46.0	-9.04	Vertical	310	-141	
280.721	44.31	35.64	46.0	-10.36	Horizontal	104	-38	
316.146	41.86	33.56	46.0	-12.44	Horizontal	100	-54	
480.044	40.28	35.39	46.0	-10.61	Vertical	102	-15	
719.940	47.52	41.00	46.0	-5.00	Horizontal	102	143	
750.092	45.48	42.78	46.0	-3.22	Horizontal	100	7	
919.987	41.58	38.91	46.0	-7.09	Vertical	102	-156	
959.972	44.89	42.10	46.0	-3.90	Vertical	102	-156	

*****- Margin = Measured emission - specification limit.
******- EUT front panel refer to 0 degrees position of turntable.

TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / AVERAGE
FREQUENCY RANGE: 1000 MHz – 40000 MHz
RESOLUTION BANDWIDTH: 1000 kHz

Frequency, MHz	Peak			Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
	Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
1203.533	38.23	74.0	-35.77	20.48	54.0	-33.52	Vertical	100	-18	Pass
1679.933	46.84	74.0	-27.16	27.40	54.0	-26.60	Vertical	160	-73	
2500.467	50.19	74.0	-23.81	45.04	54.0	-8.96	Vertical	161	12	
5000.667	51.54	74.0	-22.46	46.30	54.0	-7.70	Vertical	131	168	
7500.233	51.43	74.0	-22.57	41.86	54.0	-12.14	Vertical	130	-162	
14559.767	53.04	74.0	-20.96	36.14	54.0	-17.86	Vertical	194	163	
15839.867	57.53	74.0	-16.47	50.87	54.0	-3.13	Horizontal	161	51	
31354.200	57.42	74.0	-16.58	43.51	54.0	-10.49	Horizontal	100	173	
31888.700	61.63	74.0	-12.37	43.89	54.0	-10.11	Vertical	160	164	

*****- Margin = Measured emission - specification limit.
******- EUT front panel refer to 0 degrees position of turntable.

Reference numbers of test equipment used

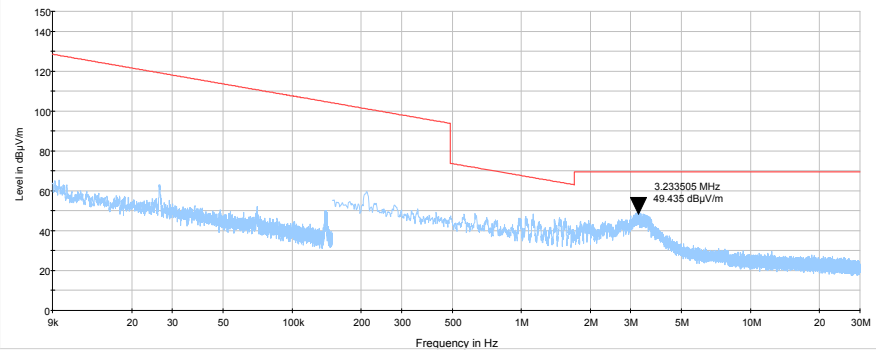
HL 0446	HL 0604	HL 3903	HL 4360	HL 4933	HL 4956	HL 5405	HL5111

Full description is given in Appendix A.

Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

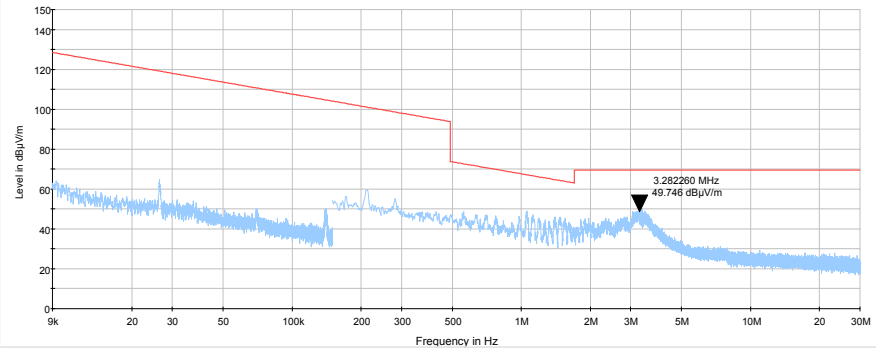
Plot 7.3.1 Radiated emission measurements from 9 kHz to 30 MHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION X



Plot 7.3.2 Radiated emission measurements from 9 kHz to 30 MHz

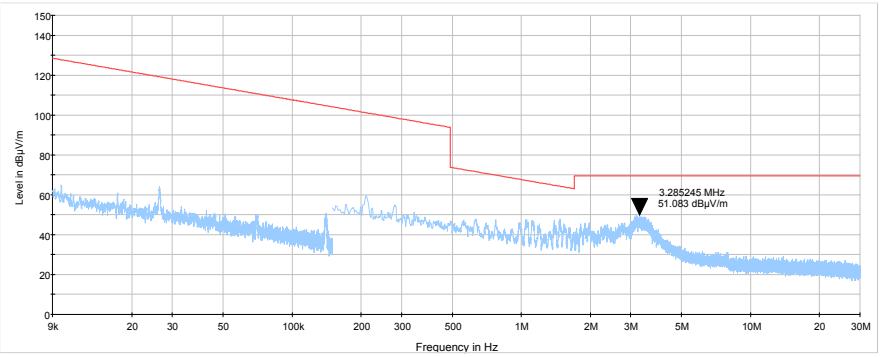
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Y



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Plot 7.3.3 Radiated emission measurements from 9 kHz to 30 MHz

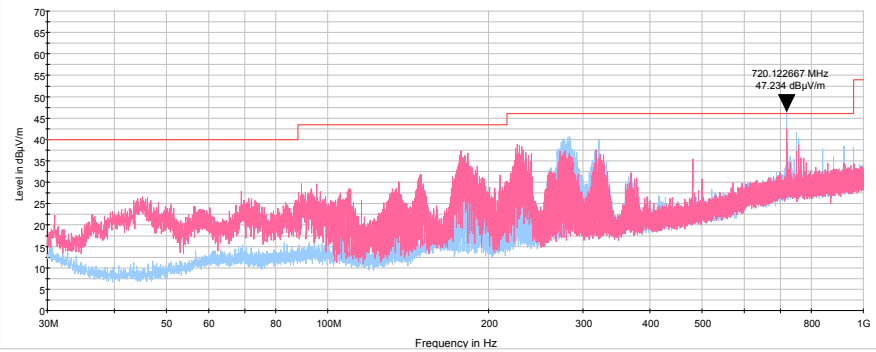
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Z



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

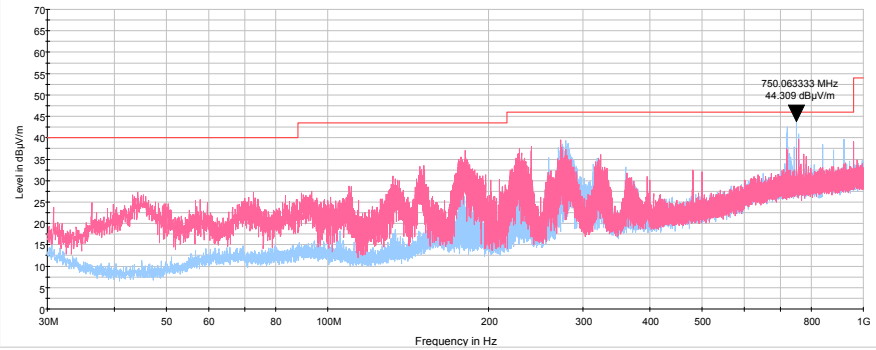
Plot 7.3.4 Radiated emission measurements from 30 to 1000 MHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION X



Plot 7.3.5 Radiated emission measurements from 30 to 1000 MHz

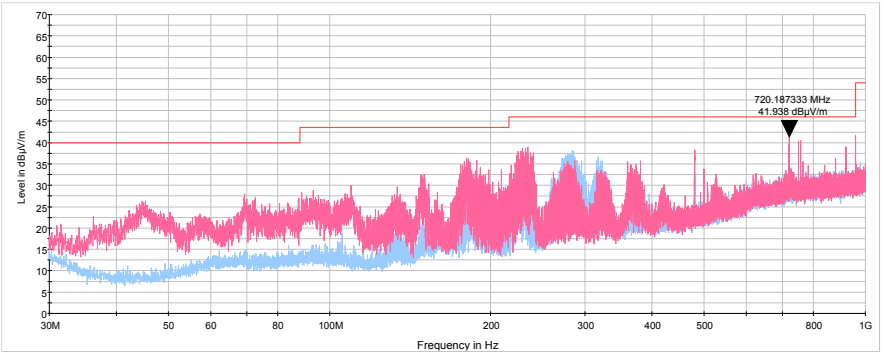
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Y



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Plot 7.3.6 Radiated emission measurements from 30 to 1000 MHz

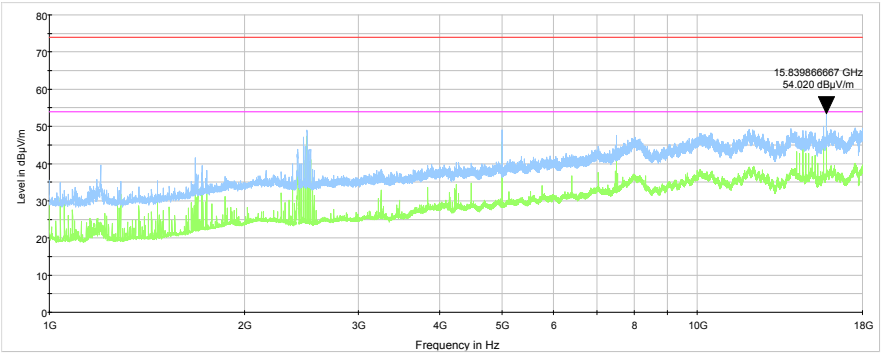
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Z



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

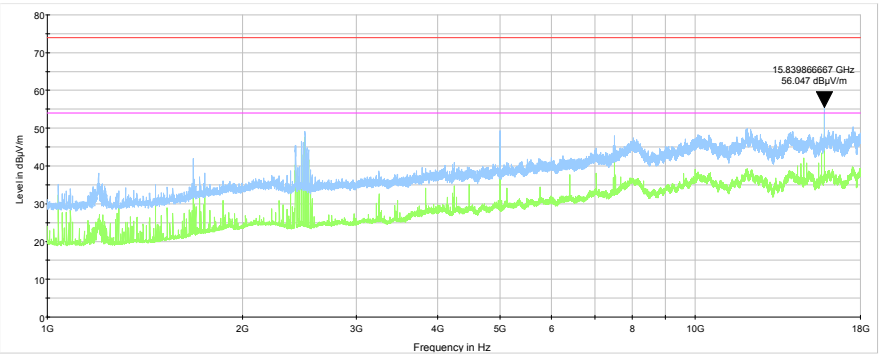
Plot 7.3.7 Radiated emission measurements from 1 to 18 GHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION X



Plot 7.3.8 Radiated emission measurements from 1 to 18 GHz

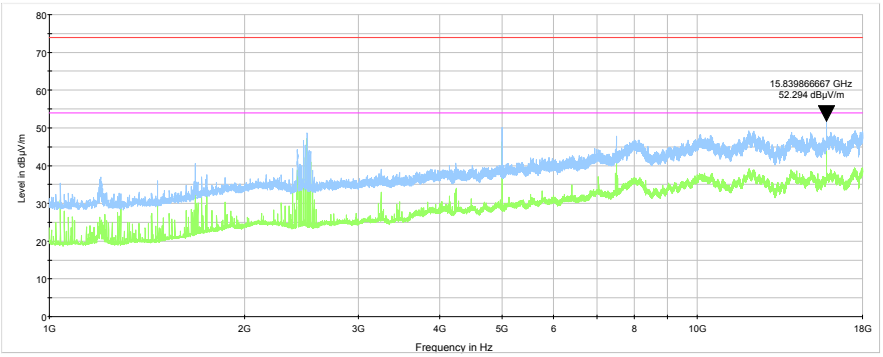
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Y



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Plot 7.3.9 Radiated emission measurements from 1 to 18 GHz

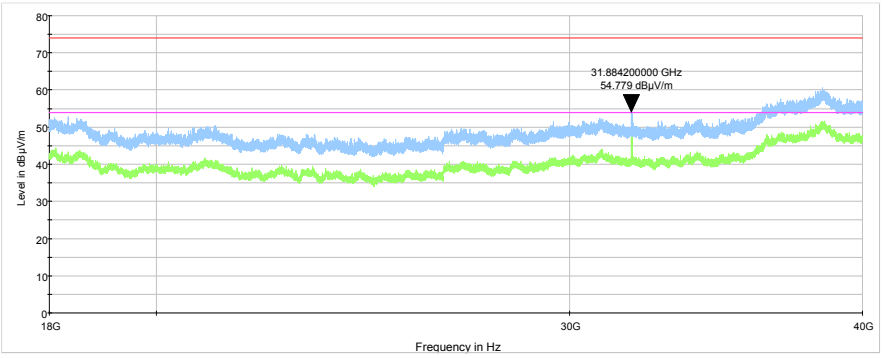
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Z



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

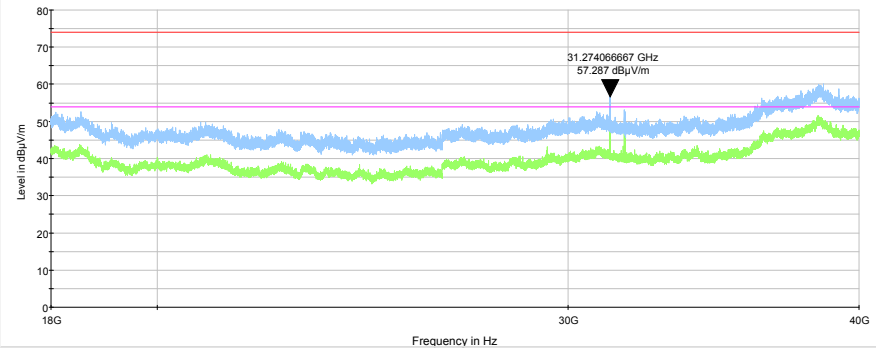
Plot 7.3.10 Radiated emission measurements from 18 to 40 GHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION X



Plot 7.3.11 Radiated emission measurements from 18 to 40 GHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Y



Test specification:	Section 15.255(c)(2), Out of band radiated emissions below 40 GHz		
Test procedure:	ANSI C63.10, Section 9.13		
Test mode:	Compliance	Verdict:	PASS
Date(s):	26-May-19 - 27-May-19		
Temperature: 22 ºC	Relative Humidity: 48 %	Air Pressure: 1013 hPa	Power: 5 VDC
Remarks:			

Plot 7.3.12 Radiated emission measurements from 18 to 40 GHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
EUT POSITION Z