

Prüfbericht-Nr.: Test report no.:	S224FY9-001	Auftrags-Nr.: Order no.:	P00627053	Seite 1 von 50 Page 1 of 50
Kunden-Referenz-Nr.: Client reference no.:	2380811	Auftragsdatum: Order date:	2022.03.14	
Auftraggeber: Client:	Axis Communications AB			
Prüfgegenstand: Test item:	Network surveillance camera including 60GHz radar sensor			
Bezeichnung / Typ-Nr.: Identification / Type no.:	Axis Q1656-DLE / FCC ID: PNB-AXISQ1656-DLE			
Auftrags-Inhalt: Order content:	Accredited testing			
Prüfgrundlage: Test specification:	FCC 47 CFR Part 15.255 with parts 15.207, 15.209 & 15.215 ANSI C63.10: 2013			
Wareneingangsdatum: Date of sample receipt:	2022.05.18			
Prüfmuster-Nr.: Test sample no.:	See section 2.3			
Prüfzeitraum: Testing period:	2022.05.18 – 2022.06.27			
Ort der Prüfung: Place of testing:	Lund, Sweden			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Sweden			
Prüfergebnis*: Test result*:	Pass			
überprüft von: reviewed by:	X 	genehmigt von: authorized by:	X 	
Datum: 2022.09.01 Date:	Signed by: Niall Forrester	Datum: 2022.09.01 Date:	Signed by: Hakan Ahlberg	
Stellung / Position:	Senior Technical Expert	Stellung / Position:	Lab Manager	
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts.</i>				

Revision HistoryS224FY9-001S224FY9-001

REVISION	DATE	REMARKS	AUTHOR
001	2022.08.25	First release	Niall Forrester

Note: Latest revision report will replace all previous reports

This report based on FCC Part 15.255 Template version 1.1

Summary of Test Results

FCC 47 CFR Rule Part	Test Description	Applicability	Report Section	RESULT	REMARKS
15.207	AC Power Line Conducted Emissions (Intentional Radiators)	YES	4.1	PASS	
15.215 (c)	Emission Bandwidth	YES	4.2	PASS	
15.255 (c)(1-3) & (e)	Peak Conducted Output Power and e.i.r.p	YES	4.3	PASS	
15.209 & 15.255 (d)	Spurious Emissions (Intentional Radiators)	YES	4.5	PASS	
15.255 (f)	Frequency Tolerance	YES	4.6	PASS	

Possible test case verdicts:

- | | |
|--|-----------------------|
| - Test case does not apply to the test object: | N/A |
| - Test object complies with the requirement: | PASS or COMPLIANT |
| - Test object does not meet the requirement: | FAIL or NOT COMPLIANT |
| - Test case not performed on the test object: | N.P. |

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1. GENERAL INFORMATION

1.1 Test Site

Test Facility:	TÜV Rheinland Sweden AB
Address:	Mobilvägen 10
	223 62 Lund
	Sweden
Swedac Registration Number:	10325
FCC Test Firm Registration Number:	517458
ISED Test Site Registration Number:	24753

1.2 Client Information

Company Name:	Axis Communications AB
Address:	Gränden 1
	22369 Lund
	Sweden
Contact Person:	Dag Mårtensson / Johan Lundqvist
Contact e-Mail / Telephone	Dag.martensson@axis.com Johan.lundqvist@axis.com

2. PRODUCT INFORMATION

2.1 General Description

Model name:	Axis Q1656-DLE
Manufacturer:	Axis Communications AB
Model number / Marketing name:	Axis Q1656-DLE
FCC ID:	PNB-AXISQ1656-DLE
Description:	Network surveillance camera including 60GHz radar sensor
Ancillary Equipment:	See section 2.7

2.2 Device Characteristics

Type of Power Supply	Power Over Ethernet (PoE) or DC
Nominal Supply Voltage	PoE (class 4): 55V DC DC power port: 12V or 24V DC
Supply Voltage Range	PoE (class 4): 50V to 57V DC DC power port: 10V to 28V DC
Operating Temperature Range	-40°C to 60°C
Operating Air Humidity Range	-
Highest Internal Frequency Source	61.5 GHz

2.3 Test Samples

EUT ID	Description	Hardware & Software Versions	Used For:
P00627053_21-0263_004 (S/N B8A44F3B6E92)	Default sample	Hw: 1.0 Sw: 11.0+snapshot-20220602	Radiated Tests
P00627053_21-0263_005 (S/N B8A44F3B41DF)	Default sample	Hw: 1.0 Sw: 11.0+snapshot-20220602	AC Conducted Emissions

2.4 Wireless Technologies and Bands Supported by the EUT

Technology	Band	Frequency Range (Tx)	Evaluation Performed*
FMCW radar	61 GHz	61.0 GHz – 61.5 GHz	YES

*This statement refers only to this report. Other wireless technologies may be covered by other reports.

2.5 Antenna Information

Technology	Band	Number of Antennas	Antenna Type(s)	Gain
FMCW radar	61 GHz	3 x Tx 4 x Rx	Patch	6 dBi

2.6 Wireless Technology Details

Technology	Band	Modulation Type(s)	Frequency Hopping	No. of Channels	Transmitter Type
FMCW radar	61 GHz	FMCW	NO	2	Field Disturbance Sensor

2.7 Ancillary Equipment

ID	Description	Manufacturer / Model	Hardware & Software Versions
P00627053_21-0263_002	PoE Midspan	Axis T8134	-
P00627053_21-0263_006	PoE Midspan	Axis T8134	-
P00627053_21-0263_007	Laptop PC	HP Elitebook	-
P00627053_21-0263_009	AC/DC Adapter (12V DC)	Axis T8006 PS12 E2	-

2.8 EUT Diagrams

-

3. TEST METHODS

3.1 Test Standards

Testing was performed according to the following standards / references

Standard	Version	Description
FCC 47 CFR 15.255	-	Operation within the band 57-71 GHz
FCC 47 CFR 15.207	-	Conducted limits
FCC 47 CFR 15.209	-	Radiated emission limits; general requirements
FCC 47 CFR 15.215	-	Additional provisions to the general radiated emission limitations

3.2 Additional references

The following standards / references were also considered for the testing

Standard	Version	Description
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.3 Limits

FCC 47 CFR Rule Part	Test Description	Limit Reference (FCC 47 CFR Reference)
15.207	AC Power Line Conducted Emissions (Intentional Radiators)	15.207 (a)
15.215 (c)	Emission Bandwidth	15.215 (c)
15.255 (c)(1-3) & (e)	Peak Conducted Output Power and e.i.r.p	15.255 (c)(1-3) 15.255 (e)(1)
15.209 & 15.255 (d)	Spurious Emissions (Intentional Radiators)	15.209 (a) & 15.255 (d) (3&4) *See Note 1
15.255 (f)	Frequency Tolerance	15.255 (f)

Interpretation of the measurement results has been performed in accordance with ANSI C63.10 section 1.3

Compliance with the requirements has been based on the results of the measurements compared to the specified limits, not taking into account measurement instrumentation uncertainty.

Measurement Uncertainty figures are stated in section 6

Note 1

Radiated Emissions limits in the tables from 47 CFR sections 15.109 & 15.209 are presented in $\mu\text{V/m}$. Measurements on the test system are made in $\text{dB}\mu\text{V/m}$. To convert between these, the following adjustment is used:

$$\text{New Limit} = 20 \log \left(\frac{\text{Original Limit}}{10^6} \right) + 120$$

Example: from 15.209(a) the limit for 30MHz – 88MHz is $100\mu\text{V/m}$ at 3m. This gives:

$$\text{New Limit} = 20 \log \left(\frac{100}{10^6} \right) + 120 = 40\text{dB}\mu\text{V/m at 3m}$$

Radiated Emissions limits in 47 CFR 15.255 (d)(3) are presented in pW/cm^2 . Measurements on the test system are made in $\text{dB}\mu\text{V/m}$. To convert between these, the following adjustment is used:

$$\text{New Limit} = 10 \log \left(\frac{\text{Original Limit}}{10^4} \right) + 115.8$$

Example: from 15.255 (d)(3) the limit for 40GHz – 200GHz is 90 pW/cm^2 at 3m. This gives:

$$\text{New Limit} = 10 \log \left(\frac{90}{10^4} \right) + 115.8 = 85.34\text{dB}\mu\text{V/m at 3m}$$

Additionally, in some cases testing has been performed at distances other than those specified in the tables. When this has occurred, the limits have been adjusted in accordance with the requirements in 47 CFR 15.31, using an extrapolation factor of 40dB/decade at frequencies below 30MHz and 20dB/decade at or above 30MHz

Example: from 15.209(a) the limit for 1.705MHz – 30MHz is $30\mu\text{V/m}$ (=29.54 $\text{dB}\mu\text{V/m}$) at 30m

$$\text{Limit@3m} = \text{Limit@30m} + 40 \log \left(\frac{30}{3} \right) = 29.54 + 40.00 = 69.54 \text{ dB}\mu\text{V/m at 3m}$$

Example: from 15.209(a) the limit for 1GHz – 18GHz is $500\mu\text{V/m}$ (=53.98 $\text{dB}\mu\text{V/m}$) at 3m

$$\text{Limit@1m} = \text{Limit@3m} + 20 \log \left(\frac{3}{1} \right) = 53.98 + 9.54 = 63.52 \text{ dB}\mu\text{V/m at 1m}$$

3.4 Description of Test Methods and Equipment Setup

3.4.1 General Description

Testing was performed in accordance with the various requirements of ANSI C63.10. Any deviations from the test methods are described in section 3.7

Where different arrangements of equipment were used for different types of measurements, these are tabulated in section 3.4.2 and details of each arrangement are included in subsequent sections

3.4.2 Test Equipment Setup Used by Test Type

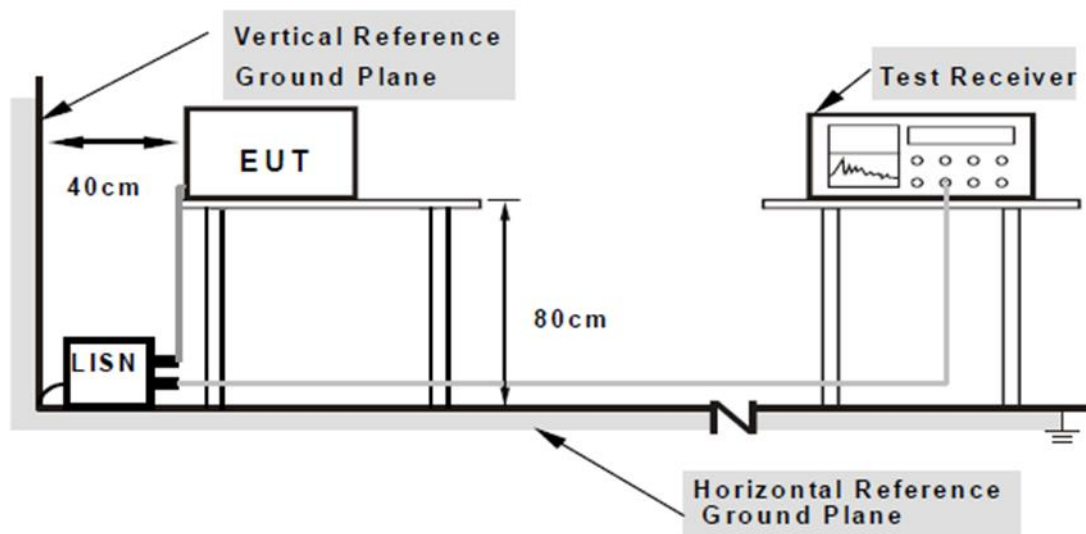
FCC 47 CFR Rule Part	Test Description	Test Equipment Used
15.207	AC Power Line Conducted Emissions (Intentional Radiators)	Conducted Emissions
15.215 (c)	Emission Bandwidth	Radiated RF
15.255 (c)(1-3) & (e)	Peak Conducted Output Power and e.i.r.p	Radiated RF
15.209 & 15.255 (d)	Spurious Emissions (Intentional Radiators)	SAC5
15.255 (f)	Frequency Tolerance	Radiated RF

3.4.3 Test Equipment Setup – Radiated RF

- Radiated RF tests were run with a subset of the equipment used for the SAC5 system. In this case, no controller PC or software (EMC32) was used, and measurement values and graphs were extracted directly from the measuring receiver
- In the case of the frequency stability tests, the device under test was placed inside a climate chamber to allow for control of the temperature. One side of the chamber was extended by use of expanded polystyrene foam, which allowed for measurements to be made with the measuring antenna outside of the chamber. Temperatures were monitored using a calibrated thermometer.

3.4.4 Test Equipment Setup – Conducted Emissions

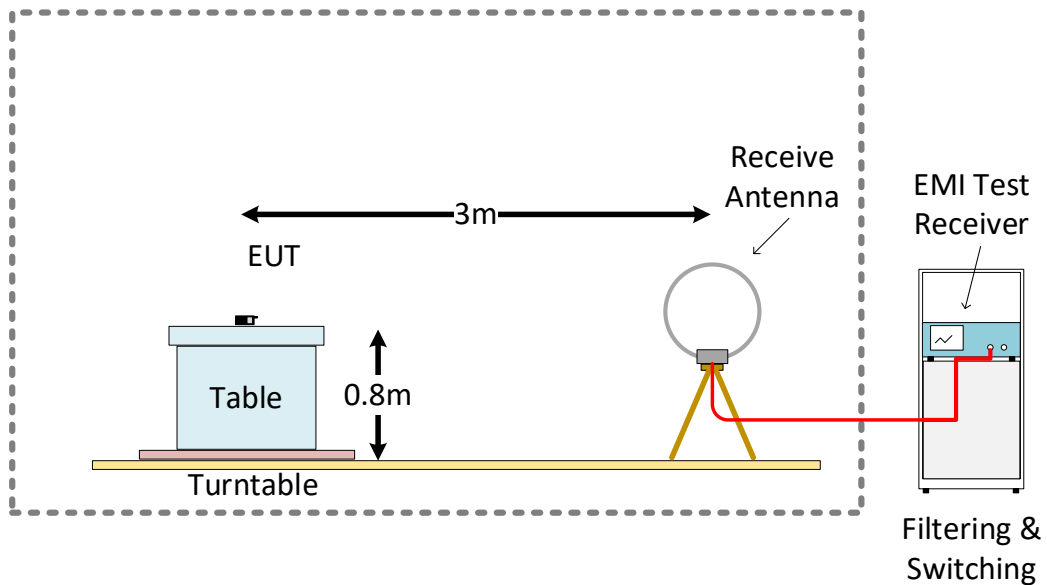
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The LISNs provide 50Ω/ 50μH of coupling impedance for the measuring instrument.
- The lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10 dB under the prescribed limits could not be reported.



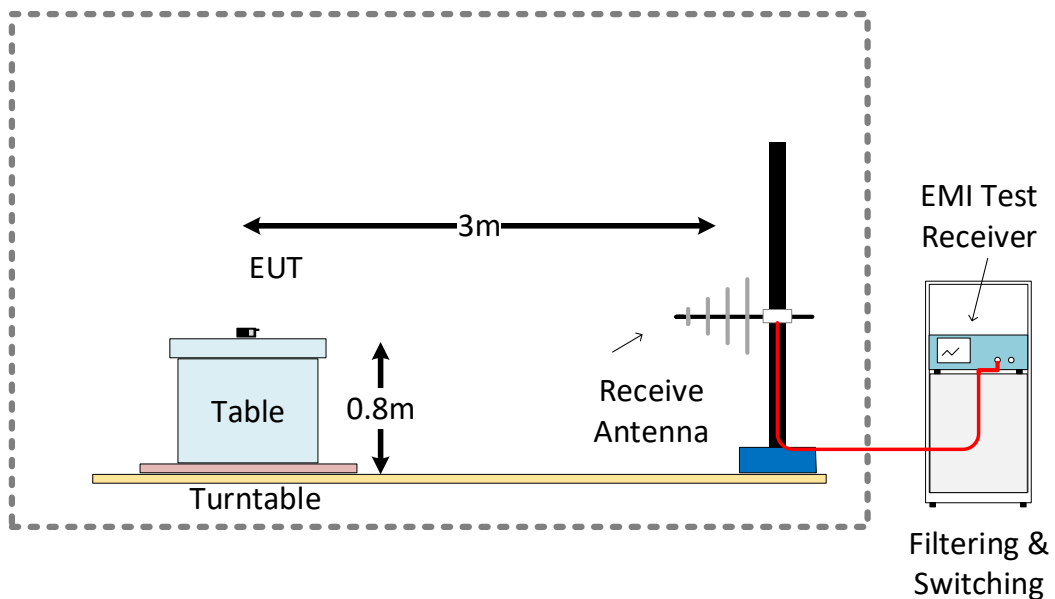
3.4.5 Test Equipment Setup – SAC 5 (Radiated Emissions and Restricted Band Edge)

- For measurements between 9kHz and 30MHz, the device is placed on a table at a height of 80cm from the floor with the radiating structure located above the center of the turntable. A magnetic loop antenna is placed with its reference point at a fixed height of 100cm from the floor and at a distance of 3m from the center of the turntable. The output of the antenna is connected to the external rack to allow for appropriate amplification and filtering where required. Testing is repeated for three different polarisation positions for the loop antenna: 1) Loop of antenna parallel to the axis through antenna and turntable. 2) Loop of antenna perpendicular to the axis through the antenna and turntable. 3) Loop of antenna parallel to the floor. The EUT is rotated using the turntable to determine the position with maximum emissions.
- For measurements between 30MHz and 1GHz, the device is placed on a table at a height of 80cm from the floor with the radiating structure located above the center of the turntable. A bilog antenna is placed with its reference point at a distance of 3m from the center of the turntable. The height of the antenna reference point is varied between 100cm and 400cm above the floor, with the angle continuously adjusted so that the axis of the antenna is oriented towards the EUT. The output of the antenna is connected to the external rack to allow for appropriate amplification and filtering where required. Testing is repeated with the antenna in both horizontal and vertical polarisation positions. The EUT is rotated using the turntable to determine the position with maximum emissions.
- For measurements between 1GHz and 18GHz, the device is placed on a table at a height of 150cm from the floor with the radiating structure located above the center of the turntable. A horn antenna is placed with its reference point at a distance of 3m from the center of the turntable, with absorbers placed on the floor between the EUT and the measurement antenna. A low-noise amplifier and high-pass filter is connected to the output of the antenna for frequencies above 6GHz to improve performance. The output of the antenna or amplifier is connected to the external rack to allow for appropriate amplification and filtering where required. The height of the antenna reference point is varied between 100cm and 400cm above the floor. Testing is repeated with the antenna in both horizontal and vertical polarisation positions. The EUT is rotated using the turntable to determine the position with maximum emissions.
- For measurements between 18GHz and 40GHz, the device is placed on a table at a height of 150cm from the floor with the radiating structure located above the center of the turntable. A mounting with two standard-gain horn antennas with associated low-noise amplifiers is placed so the reference point of the antennas is at a fixed height of 150cm from the floor and at a distance of 1m from the center of the turntable. One antenna is used for measurements between 18GHz and 26GHz, while the second is used between 26GHz and 40GHz. To reduce losses, the measuring instrument is placed close to the antenna mast with the output of the low-noise amplifiers connected directly to its input via a short cable. Absorbers are placed on the floor between the EUT and the measurement antennas. Testing is repeated with the antennas in both horizontal and vertical polarisation positions. The EUT is rotated using the turntable to determine the position with maximum emissions.
- For measurements between 40GHz and 200GHz, the device is placed on a table at a height of 150cm from the floor with the radiating structure located above the center of the turntable. A mounting to hold a standard-gain horn antenna and associated mixer is placed so the reference point of the antenna is at a fixed height of 150cm from the floor and at a fixed distance (see below) from the perimeter of a circle encompassing the device under test. Four separate antennas and mixers are available to cover measurements in the range 40-60GHz, 60-90GHz and 90-140GHz and 140-200GHz. The IF Input and LO Output of the mixer is connected to the measuring instrument which is placed close to the antenna mast. Testing is repeated with the antennas in both horizontal and vertical polarisation positions. The EUT is rotated using the turntable to determine the position with maximum emissions. In addition, where necessary, the signal is maximised manually by tilting the device in the vertical plane while observing the level displayed on the measuring instrument
 - Measurements from 40GHz – 60 GHz performed at a distance of 1m
 - Measurements from 60GHz – 90 GHz performed at a distance of 1m
 - Measurements from 90GHz – 140 GHz performed at a distance of 0.25m
 - Measurements from 140GHz – 200 GHz performed at a distance of 0.25m

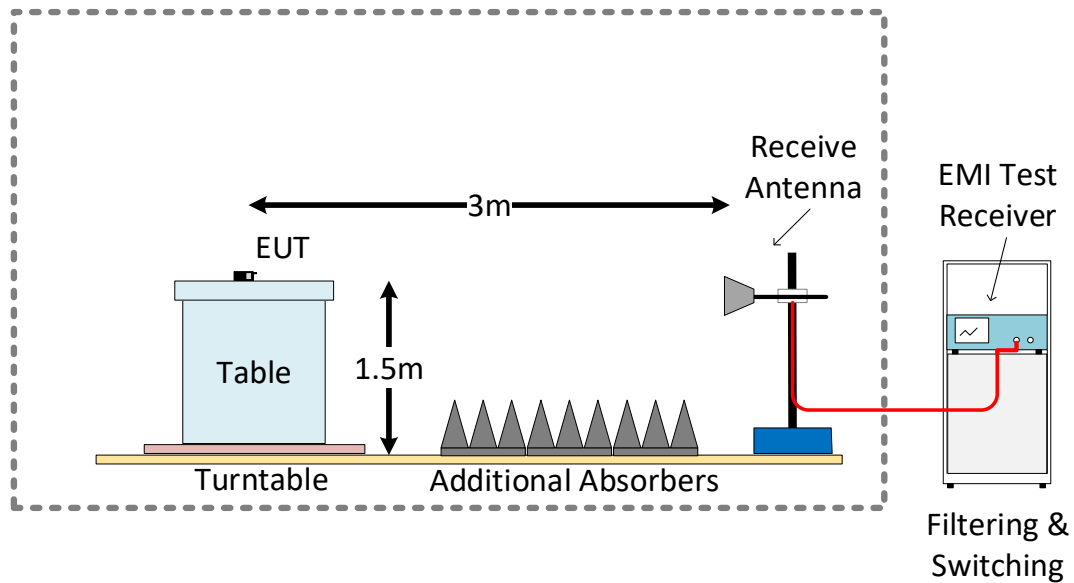
SAC 5 Test Setup Configuration 9kHz – 30MHz



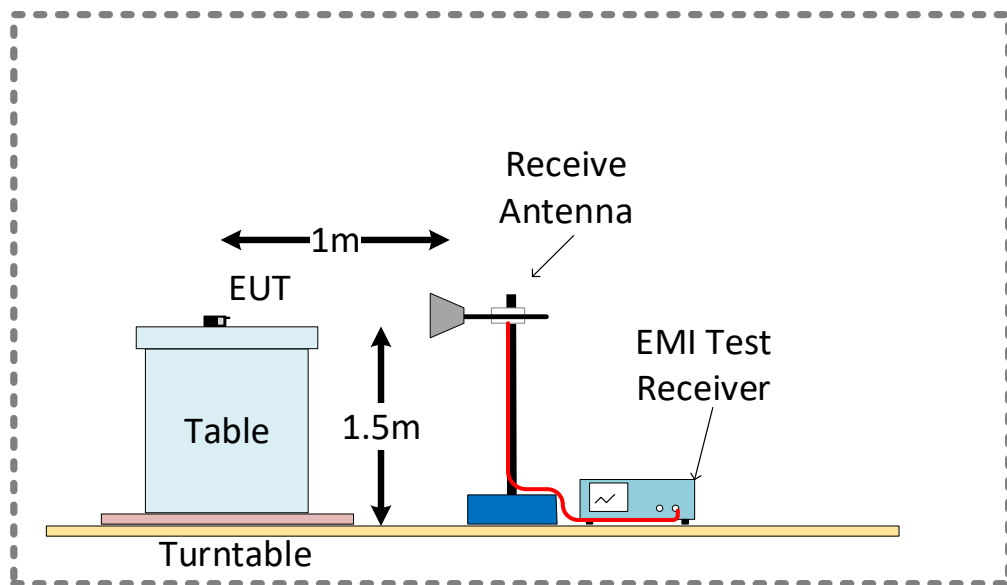
SAC 5 Test Setup Configuration 30MHz – 1GHz



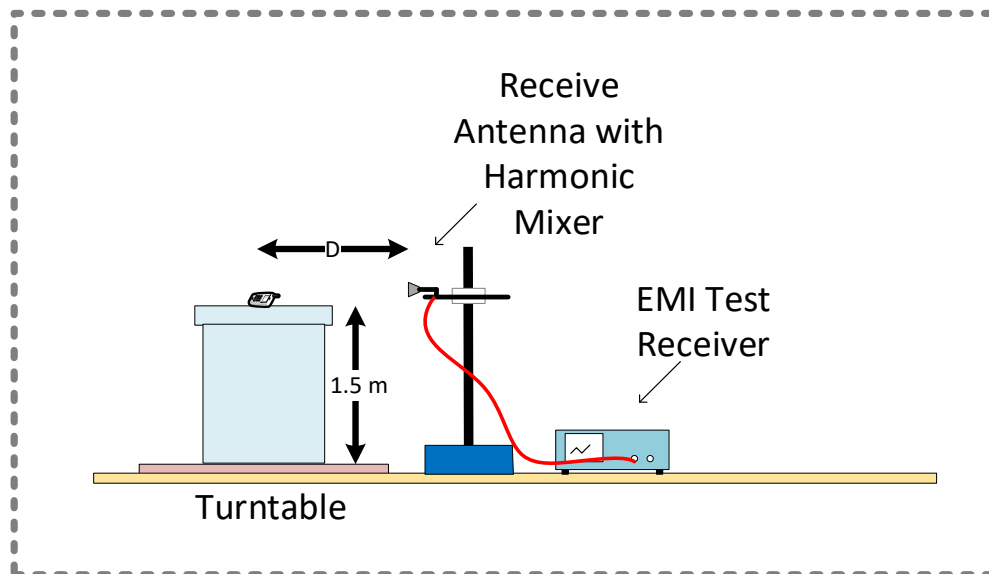
SAC 5 Test Setup Configuration 1GHz – 18GHz



SAC 5 Test Setup Configuration 18GHz – 40GHz

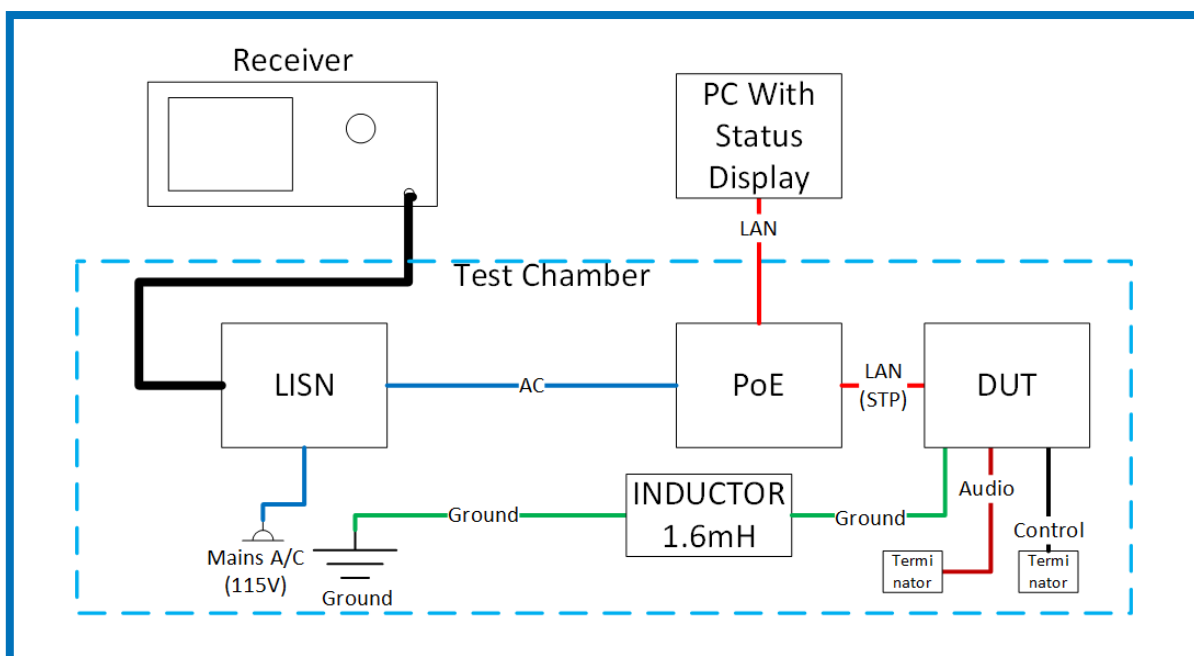


SAC 5 Test Setup Configuration 40GHz – 200GHz



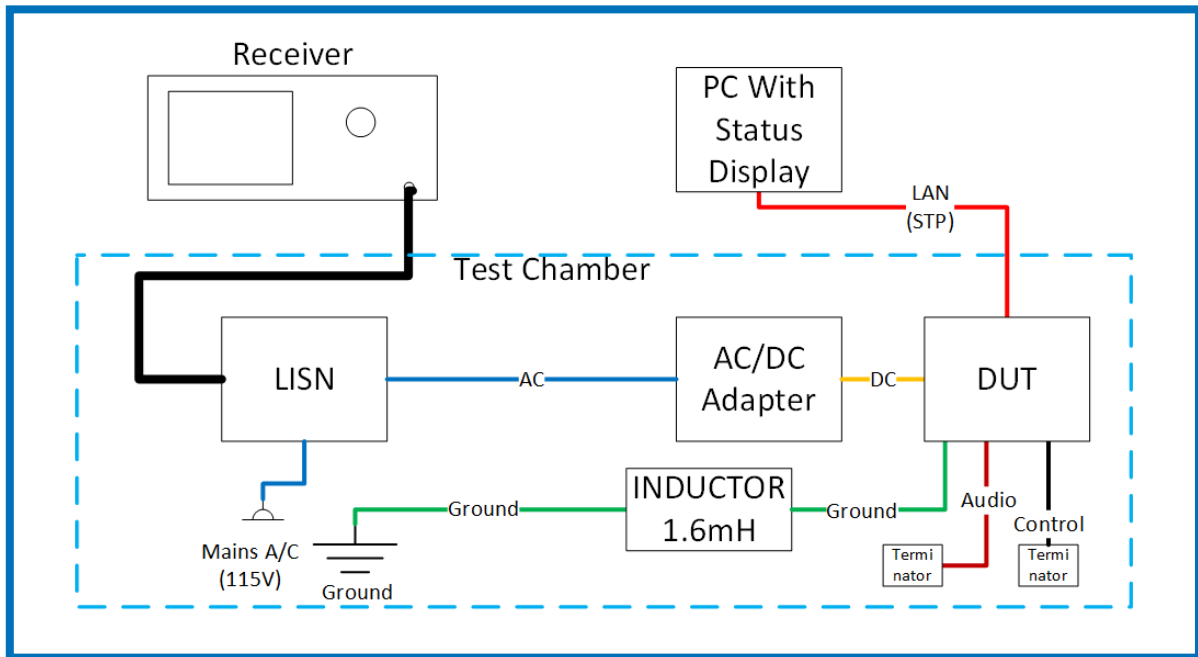
3.5 EUT Configuration During Test

Conducted Emissions Testing: Block Diagram (Power via PoE)



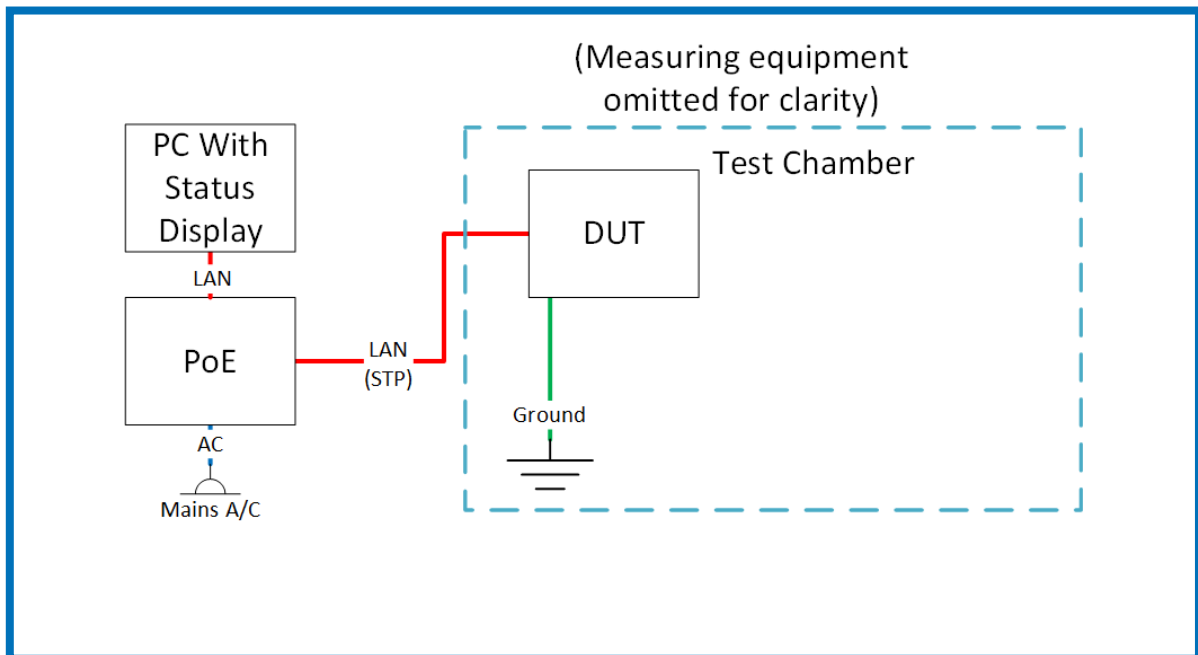
Note that the DUT has its own protective ground connection. To maximise the emissions through the LISN, a 1.6mH inductor was placed in this ground line.

Conducted Emissions Testing: Block Diagram (Power from AC/DC Adapter)



Note that the DUT has its own protective ground connection. To maximise the emissions through the LISN, a 1.6mH inductor was placed in this ground line.

Radiated Emissions & Radiated RF Testing: Block Diagram (Power via PoE)



3.6 EUT Operation Modes

Operation mode	Description
Default (PoE)	The device is powered and the radar is operating as normal. Power via PoE over an STP LAN cable.
Default (AC/DC)	The device is powered and the radar is operating as normal. DC power from an AC/DC adapter.

The radar transceiver supports two different “channels” and two different modes of operation, as follows:

- Channel 0 (“CH0”) – occupies the upper part of the 61.0GHz – 61.5GHz band
- Channel 1 (“CH1”) – occupies the lower part of the 61.0GHz – 61.5GHz band
- “People” mode uses all three Tx antennas and has a higher bandwidth & faster frequency ramp
- “Traffic” mode uses two Tx antennas and has a lower bandwidth and slower frequency ramp

Note on choice of channels/modes used for testing:

The default configuration for the device is “People” mode on Channel 0. In normal operation, the device can be set to use the different modes and can automatically change between channels.

For the purposes of testing, the mode and channel were set manually and fixed for the duration of testing. Where relevant, testing was performed for multiple modes and/or channels.

For the “Spurious Emissions” test, the “People” mode was utilised as this includes all the transmit antennas and has a higher bandwidth. For frequencies above 60GHz (where the carrier wave is found), testing was performed for both Channel 1 and Channel 0 to ensure compliance in both cases, including differing harmonics. Below 60GHz, testing was only performed for the default channel 0 as the channel should have no effect on the frequency of emissions below the carrier frequency.

3.7 Deviations from the Test Standard

General: Note that the device under test was not capable of operation in a fixed ‘continuous wave’ mode, so all tests were run with the radar transmitter operating in ‘chirp’ mode. In this mode, a narrow transmission is swept rapidly across the range of frequencies over a short time. A number of chirps are performed followed by a period with no transmission, as below:

Chirp sweep range: 61.25 GHz – 61.50 GHz (CH0) / 61.00 GHz – 61.25 GHz (CH1)
Chirp duration: 20 µS
Chirp sequence: 20 µS (Ant. 1) - 2 µS gap - 20 µS (Ant. 2) - 2 µS gap - 20 µS (Ant. 3) - 2 µS gap
Frame: Chirp sequence repeated for 25 mS. 25 Frames per second with gaps between

Spurious Emissions: Due to the ‘chirp’ mode, the duration of the tests was increased in order to compensate for the nature of the signal. Where emissions related to the transmitter were expected (i.e. in the transmission band and around the harmonic frequencies), multiple preliminary sweeps were run with max hold enabled on the measuring instrument to decrease the risk of missed transitory signals. Measurements from 9kHz to 30MHz were performed using a Max-Peak detector in place of the Quasi-Peak detector, as described in FCC 47 CFR 15.35

Measurements above 40GHz: It should be noted that it is not practicable to calibrate the horn antennas used for measurements above 40GHz. In these cases, correction factors for the antennas have been calculated based on standard models

3.8 Environmental Conditions

3.8.1 Environmental Conditions – Radiated RF

Date	Time	Temperature (°C)	Relative Humidity (%)
2022.05.18	12:55	20.4	55
2022.06.21	08:40	18.7	58

3.8.2 Environmental Conditions – Conducted Emissions System

Date	Time	Temperature (°C)	Relative Humidity (%)
2022.06.16	11.05	24.3	39

3.8.3 Environmental Conditions – SAC5 (Radiated Emissions)

Date	Time	Temperature (°C)	Relative Humidity (%)
2022.06.13	09:13	18.2	59
2022.06.14	07:40	19.3	52
2022.06.15	15:20	18.7	59
2022.06.16	08:00	20.9	48
2022.06.17	07:50	18.8	56
2022.05.18	12:55	20.4	55
2022.06.20	07:22	19.5	54
2022.06.23	07:30	19.5	56
2022.06.27	07:36	18.9	67

4. TEST RESULTS

4.1 Test Results – AC Power Line Conducted Emissions (Intentional Transmitter)

4.1.1 AC Power Line Conducted Emissions (Intentional) – Test Summary

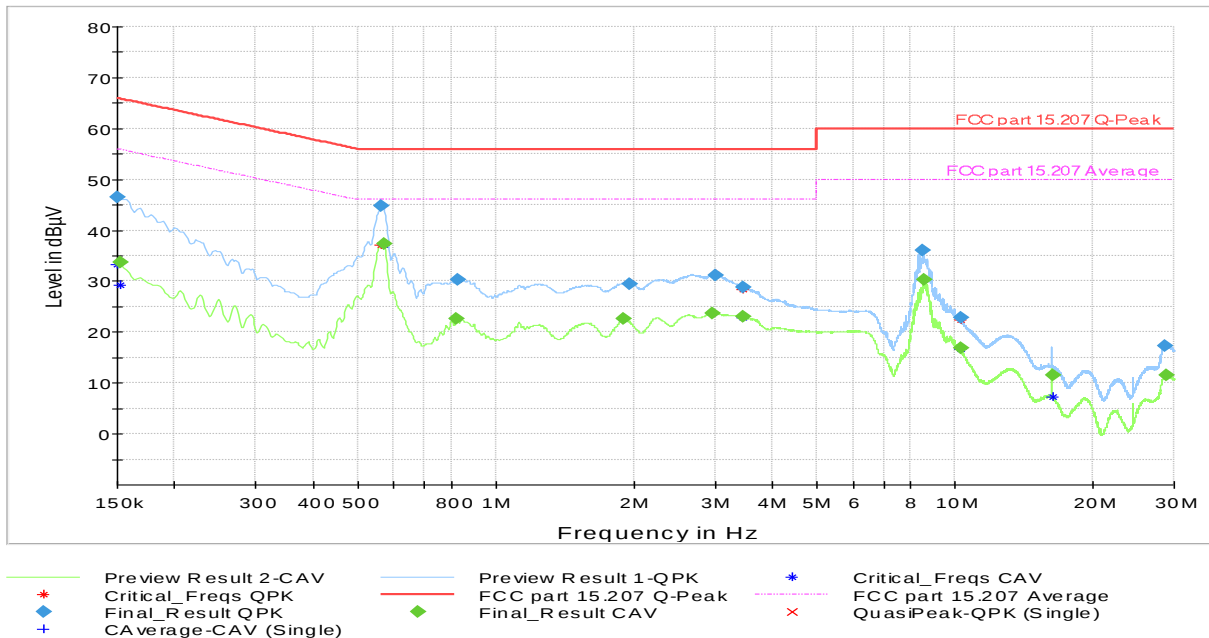
Test Specification	FCC 47 CFR 15.207 (Part 15 Subpart C)		
Test Engineer & Date	Fariborz Abasi	2022.06.16	
EUT and Ancillary Equipment IDs	P00627053_21-0263_005	P00627053_21-0263_006 P00627053_21-0263_009	
EUT Operation Mode(s)	Default (PoE) & Default (AC/DC)		
EUT Wireless Configuration(s)	People CH0		
EUT Hardware Configuration(s)	-		
Overall Result	PASS		
Test Parameter	Wireless Configuration	Frequency Range	Result*
AC Conducted Power Line Emissions – “N” Line (PoE)	People CH0	150 kHz – 30 MHz	PASS
AC Conducted Power Line Emissions – “L1” Line (PoE)	People CH0	150 kHz – 30 MHz	PASS
AC Conducted Power Line Emissions – “N” Line (AC/DC)	People CH0	150 kHz – 30 MHz	PASS
AC Conducted Power Line Emissions – “L1” Line (AC/DC)	People CH0	150 kHz – 30 MHz	PASS

* For detailed measurements, see tables and graphs in sections below

4.1.2 AC Power Line Conducted Emissions (Intentional) – Test Details

AC Power Line Conducted Emissions - PoE

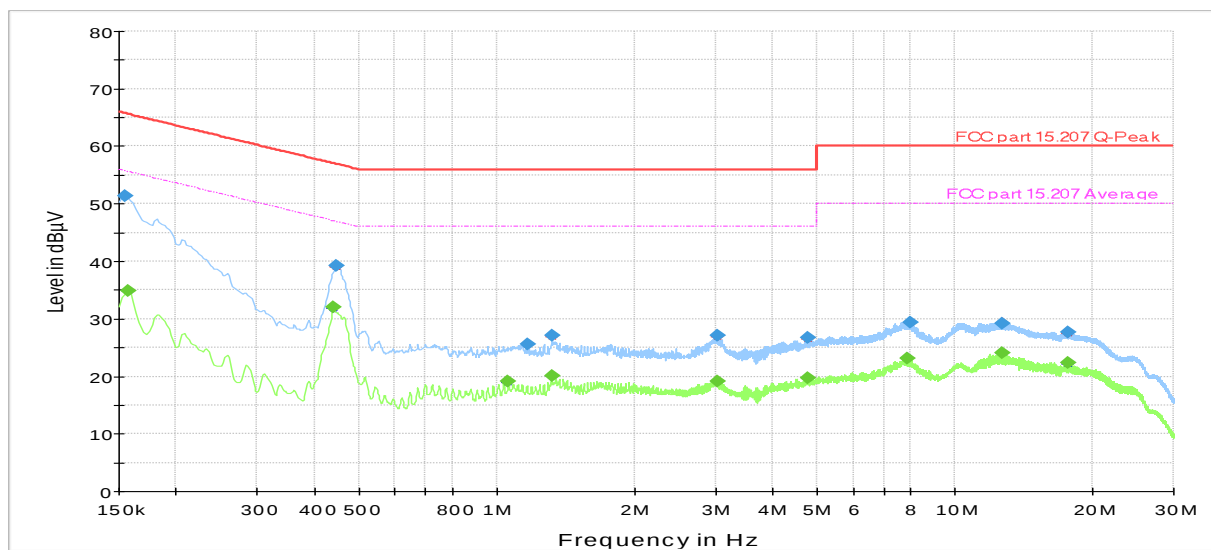
Test mode condition	Conducted Emissions	
Sweep frequency	150 kHz – 30 MHz	
Standard	FCC 47 Part 15.207	
EUT	P00627053_21-0263_005	
Ancillary Equipment	P00627053_21-0263_006	
Test Engineer	Fariborz Abasi	Date: 2022.06.16



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	46.48	---	66.00	19.52	1000.0	9.000	L1	ON	9.7
0.152250	---	33.80	55.88	22.08	1000.0	9.000	N	ON	9.7
0.564000	44.78	---	56.00	11.22	1000.0	9.000	N	ON	9.6
0.570750	---	37.29	46.00	8.71	1000.0	9.000	N	ON	9.6
0.822750	---	22.64	46.00	23.36	1000.0	9.000	N	ON	9.6
0.827250	30.30	---	56.00	25.70	1000.0	9.000	N	ON	9.6
1.902750	---	22.53	46.00	23.47	1000.0	9.000	N	ON	9.7
1.963500	29.44	---	56.00	26.56	1000.0	9.000	N	ON	9.7
2.969250	---	23.72	46.00	22.28	1000.0	9.000	N	ON	9.8
3.003000	31.20	---	56.00	24.80	1000.0	9.000	N	ON	9.8
3.444000	28.83	---	56.00	27.17	1000.0	9.000	N	ON	9.8
3.444000	---	23.03	46.00	22.97	1000.0	9.000	N	ON	9.8
8.506500	35.99	---	60.00	24.01	1000.0	9.000	N	ON	9.8
8.535750	---	30.24	50.00	19.76	1000.0	9.000	N	ON	9.8
10.286250	---	16.85	50.00	33.15	1000.0	9.000	N	ON	9.8
10.286250	22.90	---	60.00	37.10	1000.0	9.000	N	ON	9.8
16.298250	---	11.46	50.00	38.54	1000.0	9.000	N	ON	9.9
28.664250	17.20	---	60.00	42.80	1000.0	9.000	L1	ON	9.9
28.959000	---	11.55	50.00	38.45	1000.0	9.000	L1	ON	9.9

AC Power Line Conducted Emissions – AC/DC

Test mode condition	Conducted Emissions	
Sweep frequency	150 kHz – 30 MHz	
Standard	FCC 47 Part 15.207	
EUT	P00627053_21-0263_005	
Ancillary Equipment	P00627053_21-0263_009	
Test Engineer	Fariborz Abasi	Date: 2022.06.16



— Preview Result 2-CAV
— Preview Result 1-QPK
◆ Critical_Freqs CAV
— FCC part 15.207 Q-Peak
— FCC part 15.207 Average
+ Final_Result QPK
× QuasiPeak-QPK (Single)
◆ CAverage-CAV (Single)

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	51.42	---	65.75	14.33	1000.0	9.000	L1	ON	9.7
0.156750	---	34.81	55.63	20.82	1000.0	9.000	L1	ON	9.7
0.440250	---	32.08	47.06	14.98	1000.0	9.000	L1	ON	9.6
0.447000	39.17	---	56.93	17.76	1000.0	9.000	L1	ON	9.6
1.061250	---	19.06	46.00	26.94	1000.0	9.000	N	ON	9.7
1.164750	25.64	---	56.00	30.36	1000.0	9.000	N	ON	9.7
1.320000	---	20.10	46.00	25.90	1000.0	9.000	N	ON	9.7
1.320000	27.05	---	56.00	28.95	1000.0	9.000	N	ON	9.7
3.025500	---	19.14	46.00	26.86	1000.0	9.000	N	ON	9.8
3.027750	27.08	---	56.00	28.92	1000.0	9.000	N	ON	9.8
4.787250	---	19.69	46.00	26.31	1000.0	9.000	L1	ON	9.8
4.787250	26.67	---	56.00	29.33	1000.0	9.000	L1	ON	9.8
7.865250	---	23.16	50.00	26.84	1000.0	9.000	L1	ON	9.8
7.971000	29.42	---	60.00	30.58	1000.0	9.000	L1	ON	9.8
12.653250	29.26	---	60.00	30.74	1000.0	9.000	L1	ON	9.9
12.653250	---	24.14	50.00	25.86	1000.0	9.000	L1	ON	9.9
17.670750	---	22.34	50.00	27.66	1000.0	9.000	N	ON	9.9
17.673000	27.64	---	60.00	32.36	1000.0	9.000	N	ON	9.9

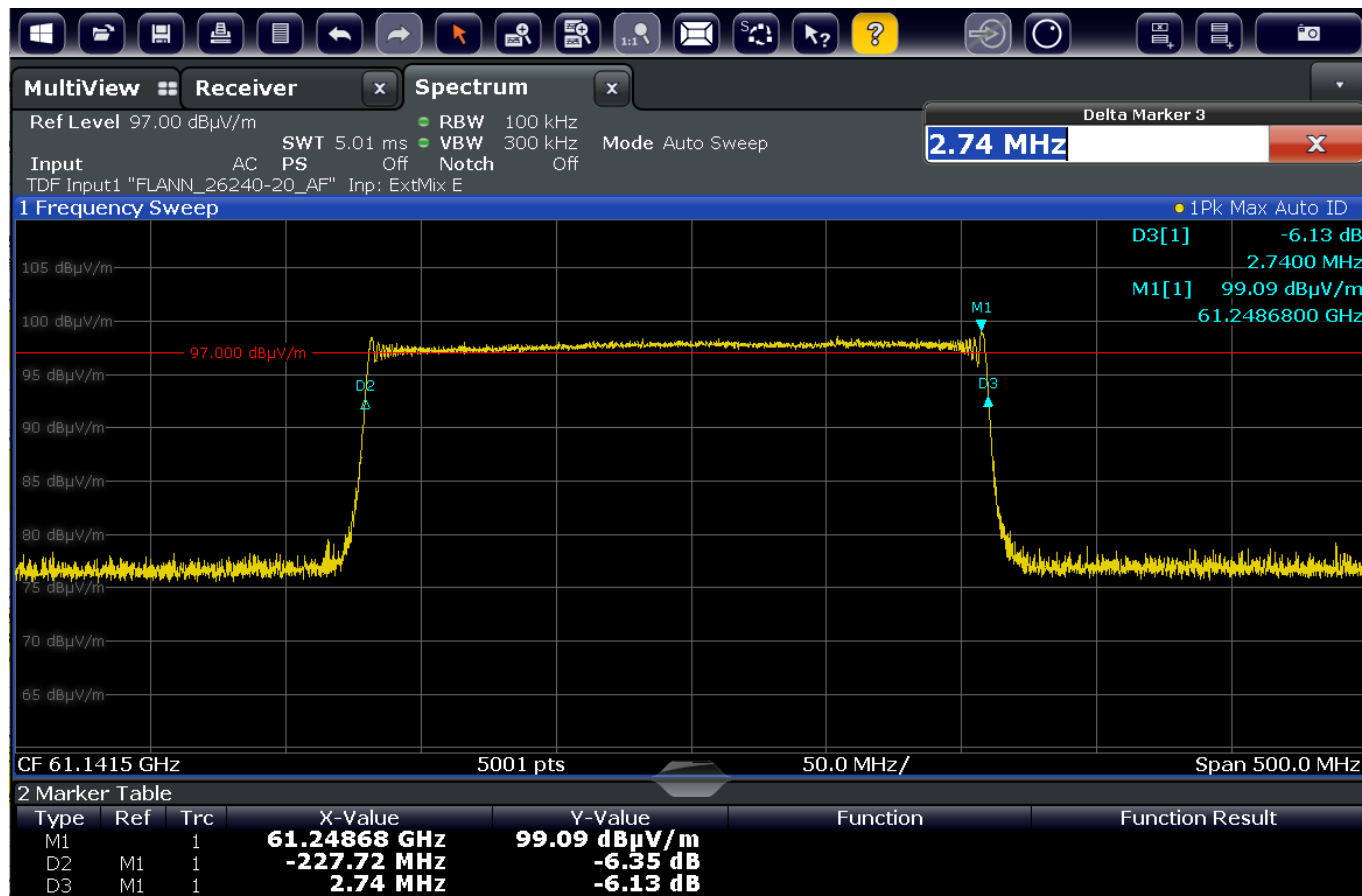
4.2 Test Results – Emission Bandwidth

4.2.1 Emission Bandwidth – Test Summary

Test Specification			FCC 47 CFR 15.215 (c) (Part 15 Subpart C)					
Test Engineer & Date			Niall Forrester			2022.05.18		
EUT and Ancillary Equipment IDs			P00627053_21-0263_004			P00627053_21-0263_002		
EUT Operation Mode(s)			Default (PoE)					
EUT Wireless Configuration(s)			All channel / mode combinations (See below)					
EUT Hardware Configuration(s)			-					
Overall Result			PASS					

Test Parameter	Wireless Configuration	Emission Bandwidth (MHz)	BW Limit (MHz)	F _{Low} (GHz)	Limit F _{Low} (GHz)	F _{High} (GHz)	Limit F _{High} (GHz)	Result
6dB Bandwidth	People CH0	228.56	500	61.25	>61.0	61.48	<61.5	PASS
6dB Bandwidth	People CH1	230.46	500	61.02	>61.0	61.25	<61.5	PASS
6dB Bandwidth	Traffic CH0	179.03	500	61.25	>61.0	61.43	<61.5	PASS
6dB Bandwidth	Traffic CH1	180.72	500	61.05	>61.0	61.23	<61.5	PASS

4.2.2 Emission Bandwidth – Test Details (Example plot: “People CH1”)



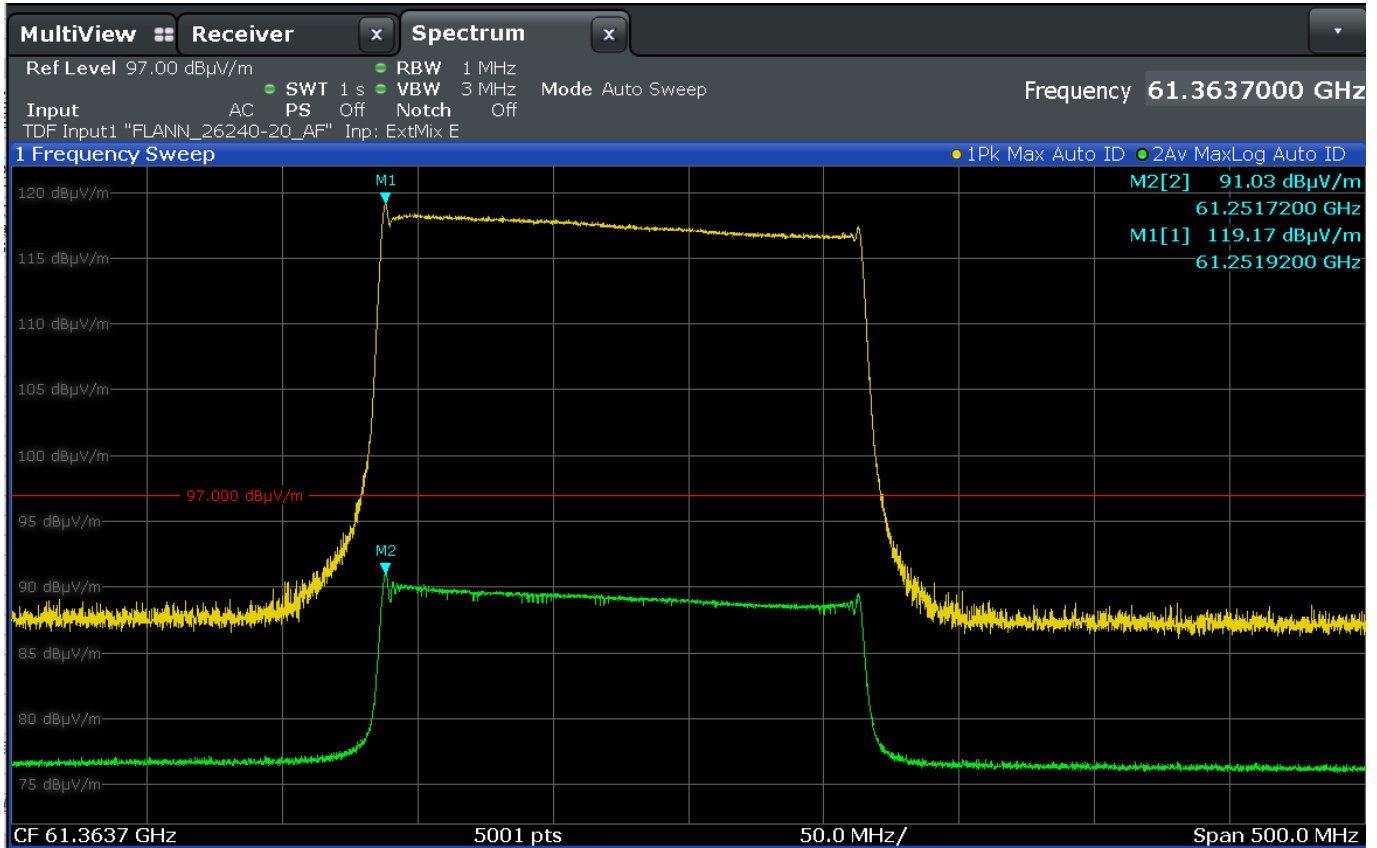
4.3 Test Results – Peak and Average e.i.r.p. and Conducted Power

4.3.1 Peak and Average e.i.r.p. and Conducted Power – Test Summary

Test Specification			FCC 47 CFR 15.255(c)(1-3) (Part 15 Subpart C) FCC 47 CFR 15.255 (e)			
Test Engineer & Date			Niall Forrester		2022.05.18	
EUT and Ancillary Equipment IDs			P00627053_21-0263_004		P00627053_21-0263_002	
EUT Operation Mode(s)			Default (PoE)			
EUT Wireless Configuration(s)			All channel / mode combinations (See below)			
EUT Hardware Configuration(s)			-			
Overall Result			PASS			

Test Parameter	Wireless Configuration	Power (dBm)	Power (mW)	Limit: Power (dBm)	Limit: Power (mW)	Result
Peak e.i.r.p.	People CH0	8.10	6.46	43	-	PASS
Average e.i.r.p.	People CH0	-21.73	0.01	40	-	PASS
Conducted power	People CH0	2.10	1.29	-	500	PASS
Peak e.i.r.p.	People CH1	7.40	5.49	43	-	PASS
Average e.i.r.p.	People CH1	-21.74	0.01	40	-	PASS
Conducted power	People CH1	1.40	1.10	-	500	PASS
Peak e.i.r.p.	Traffic CH0	8.45	7.00	43	-	PASS
Average e.i.r.p.	Traffic CH0	-19.69	0.01	40	-	PASS
Conducted power	Traffic CH0	2.45	1.40	-	500	PASS
Peak e.i.r.p.	Traffic CH1	7.76	5.97	43	-	PASS
Average e.i.r.p.	Traffic CH1	-19.72	0.01	40	-	PASS
Conducted power	Traffic CH1	1.76	1.19	-	500	PASS

4.3.2 Peak and Average e.i.r.p. and Conducted Power – Test Details (Example plot: “Traffic CH0”)



Using equation 22 from ANSI C63.10:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7$$

Where $d_{Meas} = 0.5m$:

$$EIRP (Peak) = 119.73 + 20 \log(0.5) - 104.7 = 8.45 \text{ dBm}$$

$$EIRP (Average) = 91.03 + 20 \log(0.5) - 104.7 = -19.69 \text{ dBm}$$

Conducted power = EIRP – Antenna Gain

$$\text{Conducted power (Peak)} = 8.45 \text{ dBm} - 6.0 \text{ dBi} = 2.45 \text{ dBm}$$

4.4 Test Results – Spurious Emissions (Intentional Transmitter)

4.4.1 Spurious Emissions (Intentional) – Test Summary

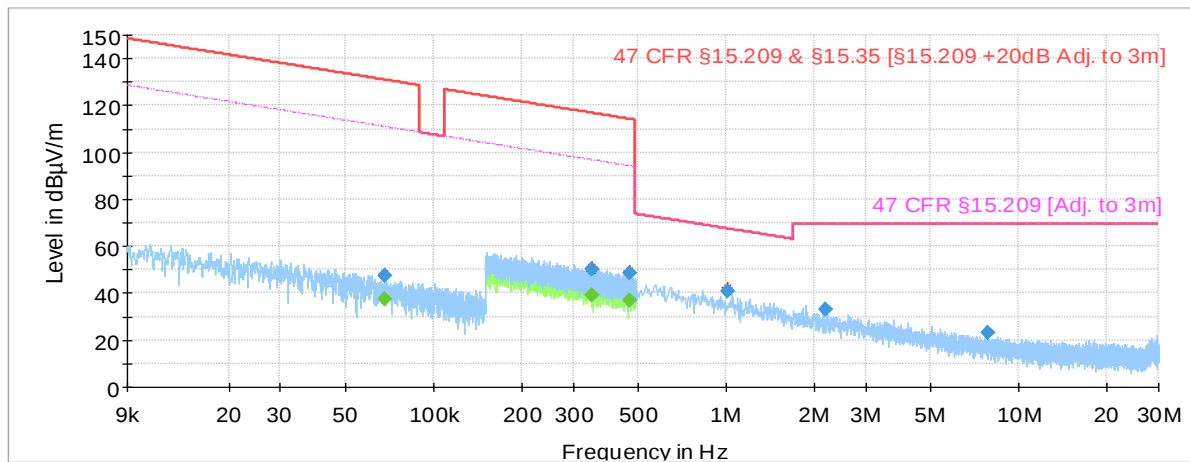
Test Specification		FCC 47 CFR 15.209 (Part 15 Subpart C) FCC 47 CFR 15.255 (d)	
Test Engineer & Date		Niall Forrester	2022.06.13 – 2022.06.23
EUT and Ancillary Equipment IDs		P00627053_21-0263_004	P00627053_21-0263_002
EUT Operation Mode(s)		Default (PoE)	
EUT Wireless Configuration(s)		“People CH0”, “People CH1”: see below	
EUT Hardware Configuration(s)		-	
Overall Result		PASS	

Test Parameter	Wireless Configuration	Frequency Range	Result
Radiated Emissions	People CH0	9 kHz – 30 MHz	PASS
Radiated Emissions	People CH0	30 MHz – 1 GHz	PASS
Radiated Emissions	People CH0	1 GHz – 18 GHz	PASS
Radiated Emissions	People CH0	18 GHz – 40 GHz	PASS
Radiated Emissions	People CH0	40 GHz – 60 GHz	PASS
Radiated Emissions	People CH0	60 GHz – 90 GHz	PASS
Radiated Emissions	People CH1	60 GHz – 90 GHz	PASS
Radiated Emissions	People CH0	90 GHz – 140 GHz	PASS
Radiated Emissions	People CH1	60 GHz – 90 GHz	PASS
Radiated Emissions	People CH0	140 GHz – 200 GHz	PASS
Radiated Emissions	People CH1	60 GHz – 90 GHz	PASS

4.4.2 Spurious Emissions (Intentional) – Test Details

9kHz – 30MHz (Parallel to Axis): People CH0

Test mode condition	Default mode	
Antenna orientation	Loop Antenna Parallel to Axis	
Sweep frequency	9 kHz-30 MHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.27
Chamber details	Chamber: SAC 5	

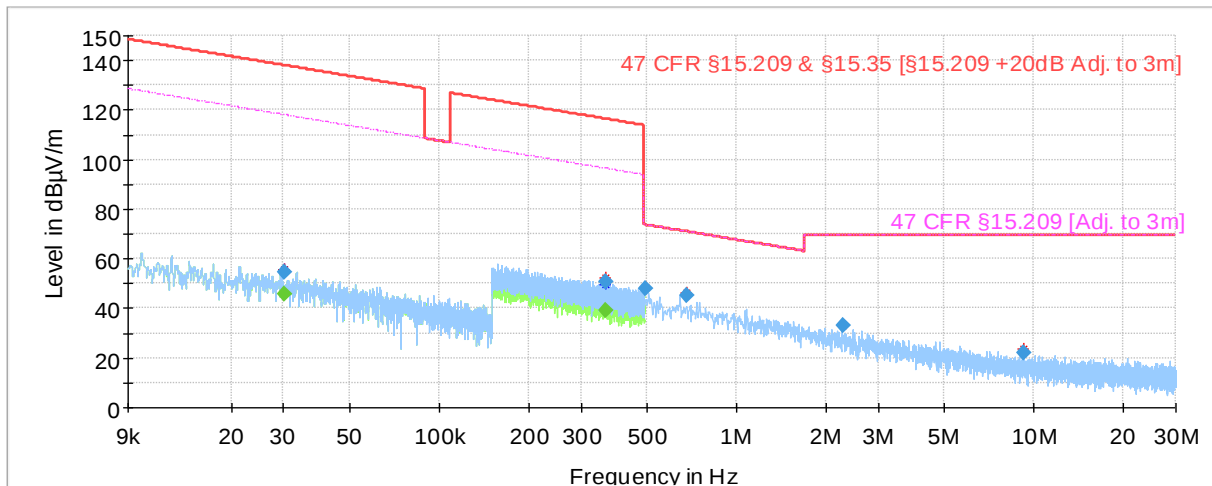


- Preview Result 2-AVG
- Preview Result 1-PK+
- * Critical_Freqs AVG
- * Critical_Freqs PK+
- 47 CFR §15.209 & §15.35 [§15.209 +20dB Adj. to 3m]
- 47 CFR §15.209 [Adj. to 3m]
- ◆ Final_Result PK+
- ◆ Final_Result AVG
- × MaxPeak-PK+ (Single)
- + Average-AVG (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
0.068483	47.22	---	130.89	83.67	1000.0	0.200	100.0	H	105.0
0.068483	---	37.74	110.89	73.16	1000.0	0.200	100.0	H	105.0
0.349218	---	39.27	96.74	57.47	1000.0	9.000	100.0	H	-45.0
0.349218	50.08	---	116.74	66.66	1000.0	9.000	100.0	H	-45.0
0.465948	48.35	---	114.24	65.89	1000.0	9.000	100.0	H	257.0
0.465948	---	36.88	94.24	57.35	1000.0	9.000	100.0	H	257.0
1.006718	40.57	---	67.56	27.00	1000.0	9.000	100.0	H	37.0
2.195367	33.03	---	69.50	36.47	1000.0	9.000	100.0	H	36.0
7.835962	23.11	---	69.50	46.39	1000.0	9.000	100.0	H	11.0

9kHz – 30MHz (Perpendicular to Axis): People CH0

Test mode condition	Default mode	
Antenna orientation	Loop Antenna Perpendicular to Axis	
Sweep frequency	9 kHz-30 MHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.27
Chamber details	Chamber: SAC 5	

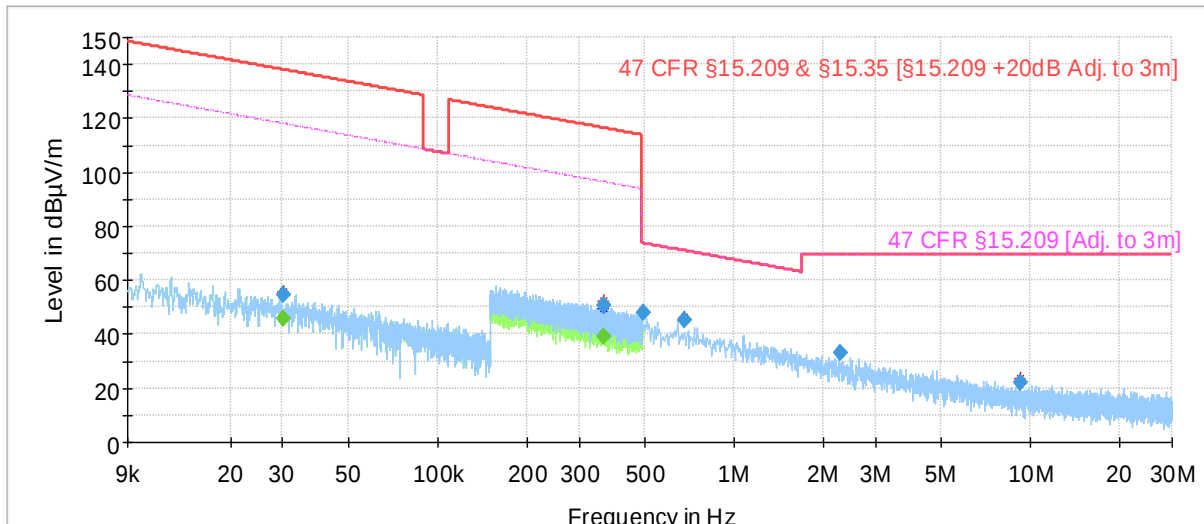


- Preview Result 2-AVG
- Preview Result 1-PK+
- Critical_Freqs AVG
- Critical_Freqs PK+
- 47 CFR §15.209 & §15.35 [§15.209 +20dB Adj. to 3m]
- 47 CFR §15.209 [Adj. to 3m]
- Final_Result PK+
- Final_Result AVG
- MaxPeak-PK+ (Single)
- Average-AVG (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
0.030099	54.32	---	138.03	83.71	1000.0	0.200	100.0	H	94.0
0.030099	---	45.81	118.03	72.23	1000.0	0.200	100.0	H	94.0
0.363898	50.80	---	116.39	65.59	1000.0	9.000	100.0	H	135.0
0.363898	---	38.99	96.39	57.40	1000.0	9.000	100.0	H	135.0
0.492025	47.88	---	73.76	25.88	1000.0	9.000	100.0	H	281.0
0.683466	45.06	---	70.92	25.86	1000.0	9.000	100.0	H	310.0
2.288249	33.29	---	69.50	36.21	1000.0	9.000	100.0	H	-26.0
9.208323	22.04	---	69.50	47.46	1000.0	9.000	100.0	H	179.0

9kHz – 30MHz (Parallel to Floor): People CH0

Test mode condition	Default mode	
Antenna orientation	Loop Antenna Parallel to Floor	
Sweep frequency	9 kHz-30 MHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.27
Chamber details	Chamber: SAC 5	

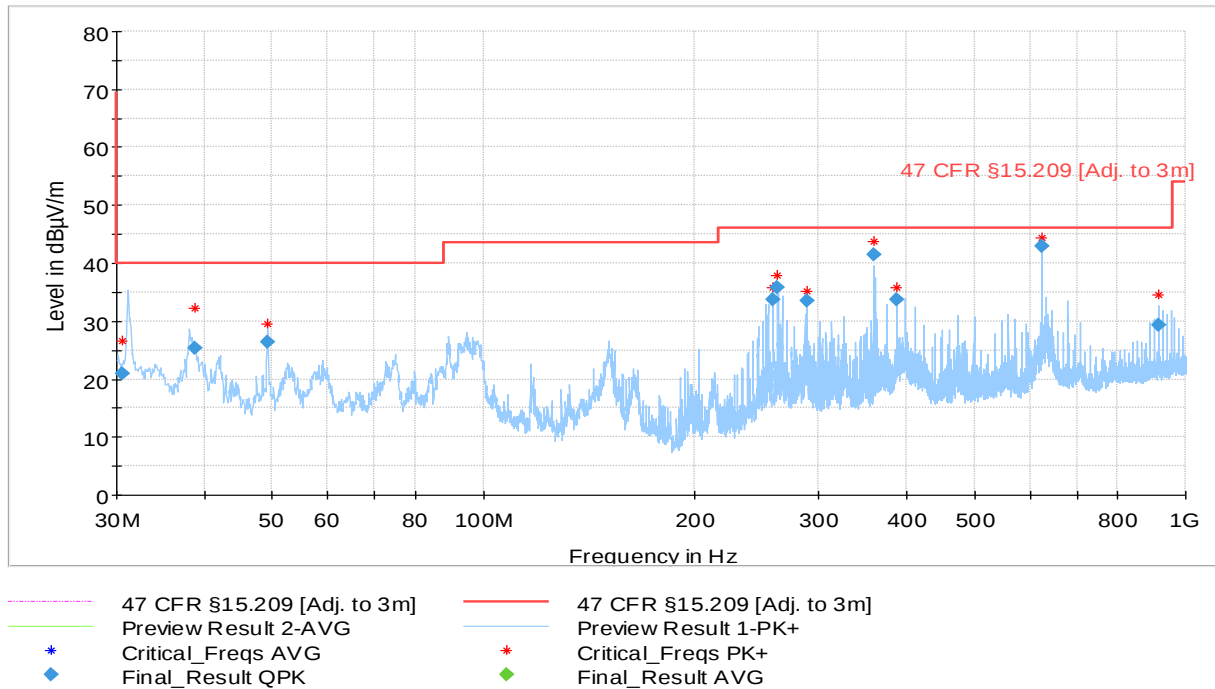


- Preview Result 2-AVG
- Preview Result 1-PK+
- * Critical_Freqs AVG
- * Critical_Freqs PK+
- 47 CFR §15.209 & §15.35 [§15.209 +20dB Adj. to 3m]
- 47 CFR §15.209 [Adj. to 3m]
- ◆ Final_Result PK+
- ◆ Final_Result AVG
- × MaxPeak-PK+ (Single)
- + Average-AVG (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
0.030099	54.32	---	138.03	83.71	1000.0	0.200	100.0	H	94.0
0.030099	---	45.81	118.03	72.23	1000.0	0.200	100.0	H	94.0
0.363898	50.80	---	116.39	65.59	1000.0	9.000	100.0	H	135.0
0.363898	---	38.99	96.39	57.40	1000.0	9.000	100.0	H	135.0
0.492025	47.88	---	73.76	25.88	1000.0	9.000	100.0	H	281.0
0.683466	45.06	---	70.92	25.86	1000.0	9.000	100.0	H	310.0
2.288249	33.29	---	69.50	36.21	1000.0	9.000	100.0	H	-26.0
9.208323	22.04	---	69.50	47.46	1000.0	9.000	100.0	H	179.0

30MHz – 1GHz: People CH0

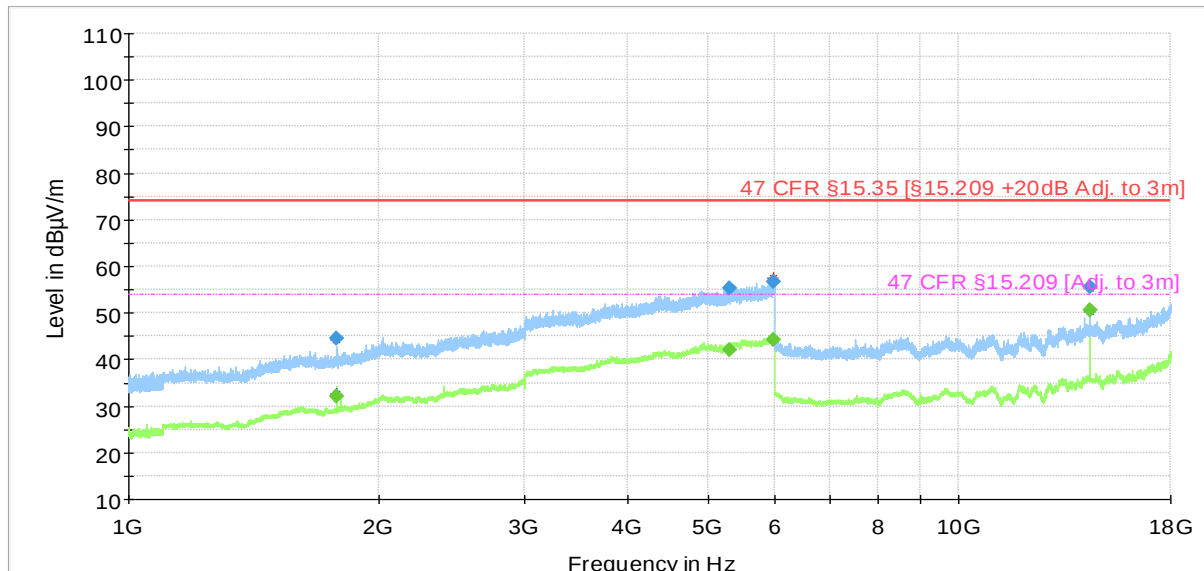
Test mode condition	Default mode	
Antenna orientation	Horizontal and Vertical	
Sweep frequency	30 MHz – 1 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.23
Chamber details	Chamber: SAC 5	



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.585120	20.88	40.00	19.12	1000.0	120.000	104.0	V	68.0
38.711520	25.42	40.00	14.58	1000.0	120.000	100.0	V	177.0
49.302600	26.44	40.00	13.56	1000.0	120.000	100.0	V	143.0
258.161920	33.77	46.02	12.25	1000.0	120.000	104.0	V	177.0
262.375600	35.79	46.02	10.23	1000.0	120.000	100.0	V	162.0
288.756520	33.48	46.02	12.54	1000.0	120.000	157.0	H	9.0
359.503800	41.41	46.02	4.61	1000.0	120.000	307.0	H	131.0
387.074160	33.80	46.02	12.22	1000.0	120.000	100.0	H	9.0
624.998960	42.93	46.02	3.09	1000.0	120.000	100.0	V	266.0
915.445560	29.26	46.02	16.76	1000.0	120.000	100.0	H	252.0

1GHz – 18GHz: People CH0

Test mode condition	Default mode	
Antenna orientation	Horizontal and Vertical	
Sweep frequency	1 GHz – 18 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.17
Chamber details	Chamber: SAC 5	

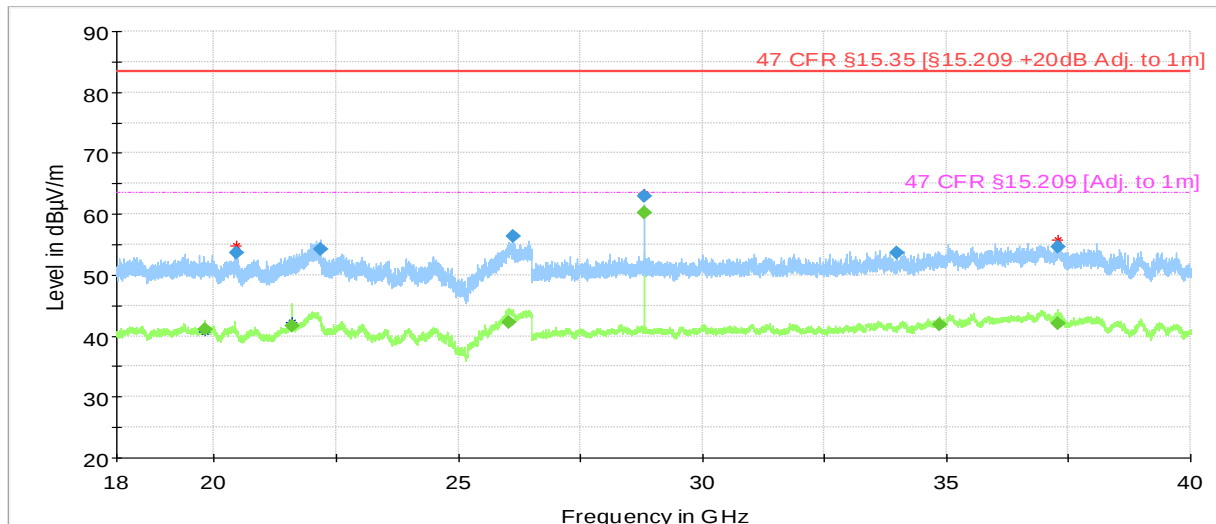


—	Preview Result 2-AVG	—	Preview Result 1-PK+
*	Critical_Freqs AVG	*	Critical_Freqs PK+
—	47 CFR §15.35 [§15.209 +20dB Adj. to 3m]	—	47 CFR §15.209 [Adj. to 3m]
◆	Final_Result PK+	◆	Final_Result AVG
×	MaxPeak-PK+ (Single)	+	Average-AVG (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1782.030000	---	32.12	53.98	21.86	1000.0	1000.000	189.0	V	266.0
1782.158000	44.52	---	73.98	29.46	1000.0	1000.000	100.0	H	222.0
5292.175000	55.30	---	73.98	18.68	1000.0	1000.000	385.0	H	-4.0
5298.667000	---	41.97	53.98	12.01	1000.0	1000.000	410.0	V	188.0
5979.167000	---	44.19	53.98	9.79	1000.0	1000.000	189.0	H	322.0
5984.994000	56.70	---	73.98	17.28	1000.0	1000.000	315.0	V	8.0
14400.010000	---	50.72	53.98	3.26	1000.0	1000.000	165.0	H	322.0
14400.101000	55.66	---	73.98	18.32	1000.0	1000.000	185.0	H	322.0

18GHz – 40GHz: People CH0

Test mode condition	Default mode	
Antenna orientation	Horizontal and Vertical	
Sweep frequency	18 GHz – 40 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.20
Chamber details	Chamber: SAC 5	

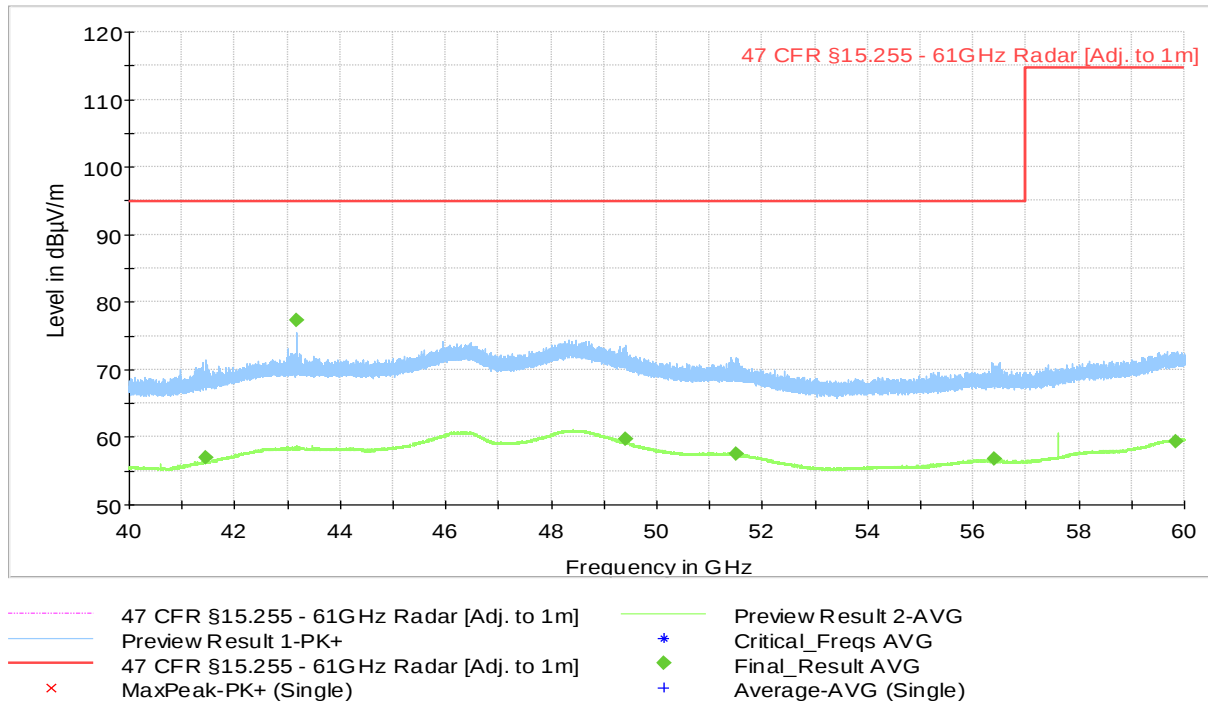


—	Preview Result 2-AVG	—	Preview Result 1-PK+
*	Critical_Freqs AVG	*	Critical_Freqs PK+
—	47 CFR §15.35 [§15.209 +20dB Adj. to 1m]	—	47 CFR §15.209 [Adj. to 1m]
◆	Final_Result PK+	◆	Final_Result AVG
×	MaxPeak-PK+ (Single)	+	Average-AVG (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
19800.102000	---	41.02	63.52	22.50	1000.0	1000.000	152.0	V	0.0
20454.901000	53.63	---	83.52	29.89	1000.0	1000.000	152.0	V	-5.0
21600.193000	---	41.74	63.52	21.78	1000.0	1000.000	152.0	V	335.0
22169.121000	54.23	---	83.52	29.29	1000.0	1000.000	152.0	H	294.0
26042.665000	---	42.18	63.52	21.34	1000.0	1000.000	152.0	H	178.0
26119.004000	56.28	---	83.52	27.24	1000.0	1000.000	152.0	V	158.0
28800.038000	62.92	---	83.52	20.60	1000.0	1000.000	152.0	V	295.0
28800.167000	---	60.22	63.52	3.30	1000.0	1000.000	152.0	V	295.0
33967.723000	53.57	---	83.52	29.95	1000.0	1000.000	152.0	V	162.0
34860.036000	---	41.94	63.52	21.58	1000.0	1000.000	152.0	H	121.0
37269.782000	54.66	---	83.52	28.86	1000.0	1000.000	152.0	H	262.0
37293.896000	---	42.03	63.52	21.49	1000.0	1000.000	152.0	H	154.0

40GHz – 60GHz (Horizontal): People CH0

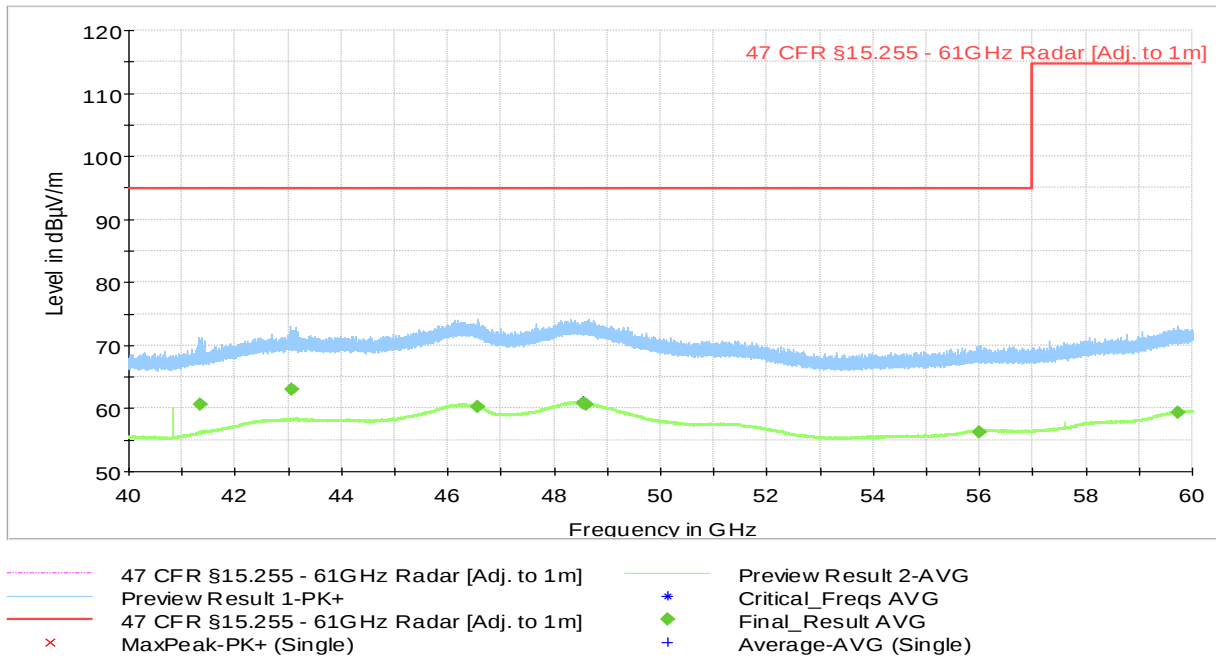
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	40 GHz – 60 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.20
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
41450.076818	---	94.89	20.01	1000.0	1000.000	152.0	H	342.0
41450.076818	56.88	94.89	38.00	1000.0	1000.000	152.0	H	342.0
43163.970000	---	94.89	-14.73	1000.0	1000.000	152.0	H	345.0
43163.970000	77.37	94.89	17.51	1000.0	1000.000	152.0	H	345.0
49398.777728	---	94.89	17.85	1000.0	1000.000	152.0	H	4.0
49398.777728	59.74	94.89	35.14	1000.0	1000.000	152.0	H	4.0
51515.270455	---	94.89	21.13	1000.0	1000.000	152.0	H	348.0
51515.270455	57.59	94.89	37.29	1000.0	1000.000	152.0	H	348.0
56385.954091	---	94.89	20.84	1000.0	1000.000	152.0	H	347.0
56385.954091	56.77	94.89	38.11	1000.0	1000.000	152.0	H	347.0
59851.709545	---	114.77	42.08	1000.0	1000.000	152.0	H	59.0
59851.709545	59.39	114.77	55.38	1000.0	1000.000	152.0	H	59.0

40GHz – 60GHz (Vertical): People CH0

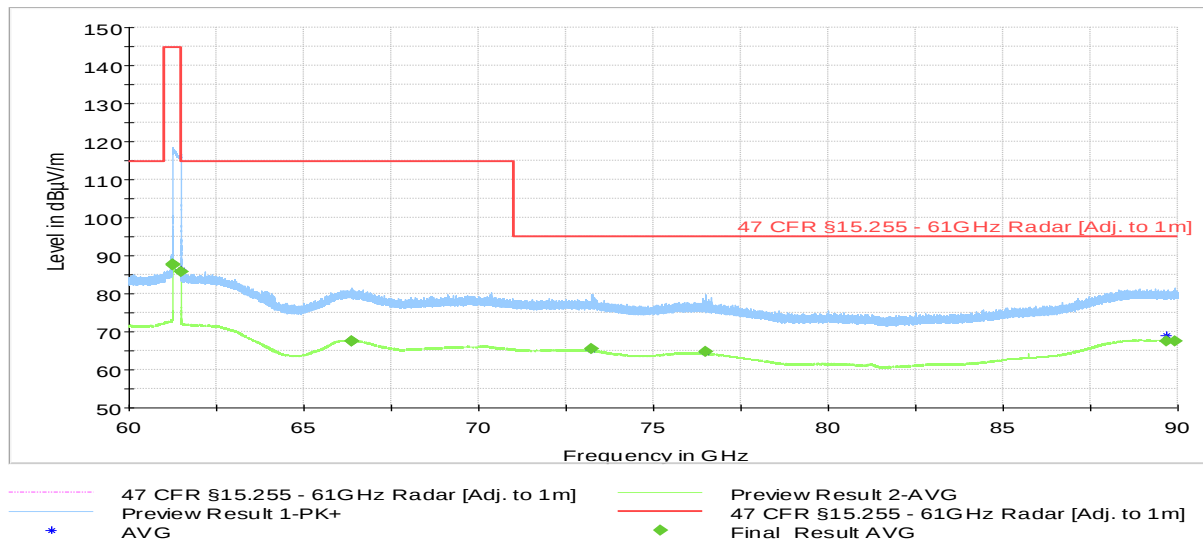
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	40 GHz – 60 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.20
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
41344.100454	---	94.89	7.62	1000.0	1000.000	152.0	H	322.0
41344.100454	60.61	94.89	34.27	1000.0	1000.000	152.0	H	322.0
43074.322727	---	94.89	2.13	1000.0	1000.000	152.0	H	326.0
43074.322727	63.10	94.89	31.78	1000.0	1000.000	152.0	H	326.0
46552.483636	---	94.89	22.05	1000.0	1000.000	152.0	H	147.0
46552.483636	60.23	94.89	34.65	1000.0	1000.000	152.0	H	147.0
48542.422273	---	94.89	21.43	1000.0	1000.000	152.0	H	348.0
48542.422273	60.75	94.89	34.13	1000.0	1000.000	152.0	H	348.0
48612.030910	---	94.89	20.87	1000.0	1000.000	152.0	H	163.0
48612.030910	60.68	94.89	34.20	1000.0	1000.000	152.0	H	163.0
56005.471818	---	94.89	25.18	1000.0	1000.000	152.0	H	168.0
56005.471818	56.27	94.89	38.61	1000.0	1000.000	152.0	H	168.0
59725.419091	---	114.77	42.17	1000.0	1000.000	152.0	H	96.0
59725.419091	59.31	114.77	55.46	1000.0	1000.000	152.0	H	96.0

60GHz – 90GHz (Horizontal): People CH0

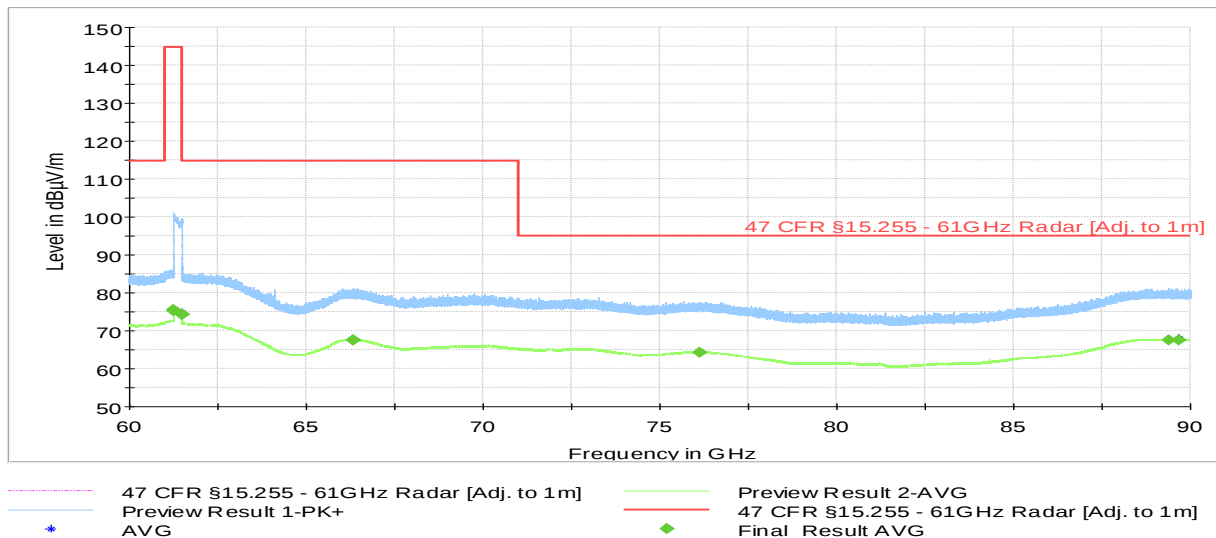
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	60 GHz – 90 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.13
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
61251.700000	---	144.77	25.73	1000.0	1000.000	152.0	H	346.0
61251.700000	87.64	144.77	57.13	1000.0	1000.000	152.0	H	346.0
61251.800000	---	144.77	25.94	1000.0	1000.000	152.0	H	347.0
61251.800000	87.58	144.77	57.19	1000.0	1000.000	152.0	H	347.0
61475.500000	---	144.77	27.88	1000.0	1000.000	152.0	H	346.0
61475.500000	85.73	144.77	59.04	1000.0	1000.000	152.0	H	346.0
66380.888889	67.48	114.77	47.29	1000.0	1000.000	152.0	H	310.0
66380.888889	---	114.77	34.40	1000.0	1000.000	152.0	H	310.0
66381.361111	---	114.77	34.86	1000.0	1000.000	152.0	H	230.0
66381.361111	67.51	114.77	47.26	1000.0	1000.000	152.0	H	230.0
73245.454546	65.47	94.89	29.41	1000.0	1000.000	152.0	H	344.0
73245.454546	---	94.89	12.15	1000.0	1000.000	152.0	H	344.0
76492.272727	64.65	94.89	30.23	1000.0	1000.000	152.0	H	349.0
76492.272727	---	94.89	12.74	1000.0	1000.000	152.0	H	349.0
89693.181818	67.47	94.89	27.41	1000.0	1000.000	152.0	H	81.0
89693.181818	---	94.89	14.73	1000.0	1000.000	152.0	H	81.0
89919.545455	---	94.89	14.37	1000.0	1000.000	152.0	H	197.0
89919.545455	67.41	94.89	27.47	1000.0	1000.000	152.0	H	197.0

60GHz – 90GHz (Vertical): People CH0

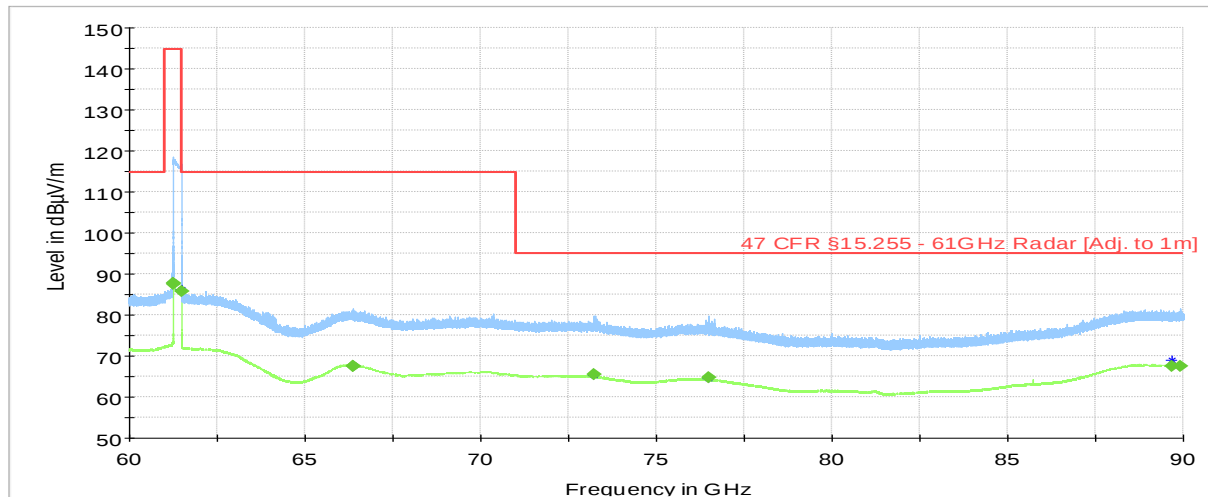
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	60 GHz – 90 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.14
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
61251.700000	---	144.77	43.47	1000.0	1000.000	152.0	H	333.0
61251.700000	75.47	144.77	69.30	1000.0	1000.000	152.0	H	333.0
61251.800000	75.34	144.77	69.43	1000.0	1000.000	152.0	H	327.0
61251.800000	---	144.77	43.41	1000.0	1000.000	152.0	H	327.0
61474.900000	74.31	144.77	70.46	1000.0	1000.000	152.0	H	35.0
61474.900000	---	144.77	45.00	1000.0	1000.000	152.0	H	35.0
61475.600000	74.36	144.77	70.41	1000.0	1000.000	152.0	H	34.0
61475.600000	---	144.77	44.47	1000.0	1000.000	152.0	H	34.0
66316.666667	67.44	114.77	47.33	1000.0	1000.000	152.0	H	175.0
66316.666667	---	114.77	34.75	1000.0	1000.000	152.0	H	175.0
66317.138889	67.46	114.77	47.31	1000.0	1000.000	152.0	H	87.0
66317.138889	---	114.77	34.59	1000.0	1000.000	152.0	H	87.0
76114.545455	64.23	94.89	30.65	1000.0	1000.000	152.0	H	148.0
76114.545455	---	94.89	17.76	1000.0	1000.000	152.0	H	148.0
89387.272727	67.43	94.89	27.45	1000.0	1000.000	152.0	H	16.0
89387.272727	---	94.89	14.35	1000.0	1000.000	152.0	H	16.0
89693.181818	67.40	94.89	27.48	1000.0	1000.000	152.0	H	106.0
89693.181818	---	94.89	13.85	1000.0	1000.000	152.0	H	106.0

60GHz – 90GHz (Horizontal): People CH1

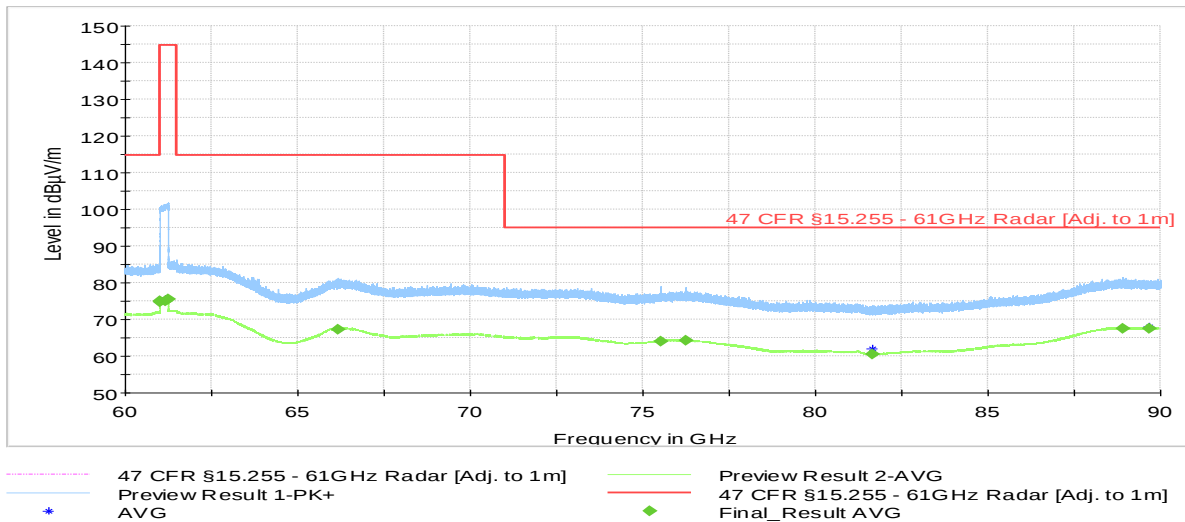
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	60 GHz – 90 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.13
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
61251.700000	---	144.77	25.73	1000.0	1000.000	152.0	H	346.0
61251.700000	87.64	144.77	57.13	1000.0	1000.000	152.0	H	346.0
61251.800000	---	144.77	25.94	1000.0	1000.000	152.0	H	347.0
61251.800000	87.58	144.77	57.19	1000.0	1000.000	152.0	H	347.0
61475.500000	---	144.77	27.88	1000.0	1000.000	152.0	H	346.0
61475.500000	85.73	144.77	59.04	1000.0	1000.000	152.0	H	346.0
66380.888889	67.48	114.77	47.29	1000.0	1000.000	152.0	H	310.0
66380.888889	---	114.77	34.40	1000.0	1000.000	152.0	H	310.0
66381.361111	---	114.77	34.86	1000.0	1000.000	152.0	H	230.0
66381.361111	67.51	114.77	47.26	1000.0	1000.000	152.0	H	230.0
73245.454546	65.47	94.89	29.41	1000.0	1000.000	152.0	H	344.0
73245.454546	---	94.89	12.15	1000.0	1000.000	152.0	H	344.0
76492.272727	64.65	94.89	30.23	1000.0	1000.000	152.0	H	349.0
76492.272727	---	94.89	12.74	1000.0	1000.000	152.0	H	349.0
89693.181818	67.47	94.89	27.41	1000.0	1000.000	152.0	H	81.0
89693.181818	---	94.89	14.73	1000.0	1000.000	152.0	H	81.0
89919.545455	---	94.89	14.37	1000.0	1000.000	152.0	H	197.0
89919.545455	67.41	94.89	27.47	1000.0	1000.000	152.0	H	197.0

60GHz – 90GHz (Vertical): People CH1

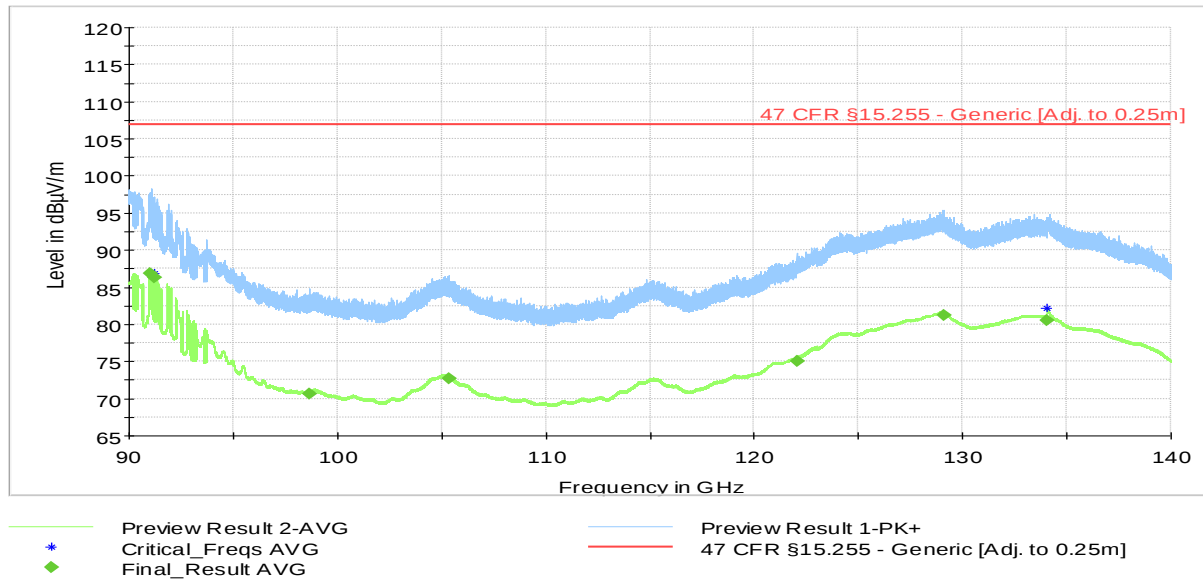
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	60 GHz – 90 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.14
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
61022.400000	74.82	144.77	69.95	1000.0	1000.000	152.0	H	334.0
61022.400000	---	144.77	42.96	1000.0	1000.000	152.0	H	334.0
61022.800000	---	144.77	42.69	1000.0	1000.000	152.0	H	329.0
61022.800000	74.95	144.77	69.82	1000.0	1000.000	152.0	H	329.0
61181.000000	---	144.77	42.83	1000.0	1000.000	152.0	H	23.0
61181.000000	75.03	144.77	69.74	1000.0	1000.000	152.0	H	23.0
61249.200000	---	144.77	42.62	1000.0	1000.000	152.0	H	328.0
61249.200000	75.45	144.77	69.32	1000.0	1000.000	152.0	H	328.0
66172.638889	---	114.77	34.31	1000.0	1000.000	152.0	H	23.0
66172.638889	67.31	114.77	47.46	1000.0	1000.000	152.0	H	23.0
75509.090909	---	94.89	18.17	1000.0	1000.000	152.0	H	95.0
75509.090909	63.95	94.89	30.93	1000.0	1000.000	152.0	H	95.0
76244.545455	---	94.89	18.24	1000.0	1000.000	152.0	H	243.0
76244.545455	64.23	94.89	30.65	1000.0	1000.000	152.0	H	243.0
81666.818182	---	94.89	21.43	1000.0	1000.000	152.0	H	273.0
81666.818182	60.43	94.89	34.45	1000.0	1000.000	152.0	H	273.0
88892.272727	---	94.89	14.37	1000.0	1000.000	152.0	H	309.0
88892.272727	67.50	94.89	27.38	1000.0	1000.000	152.0	H	309.0
89693.181818	---	94.89	14.72	1000.0	1000.000	152.0	H	218.0
89693.181818	67.38	94.89	27.50	1000.0	1000.000	152.0	H	218.0

90GHz – 140GHz (Horizontal): People CH0

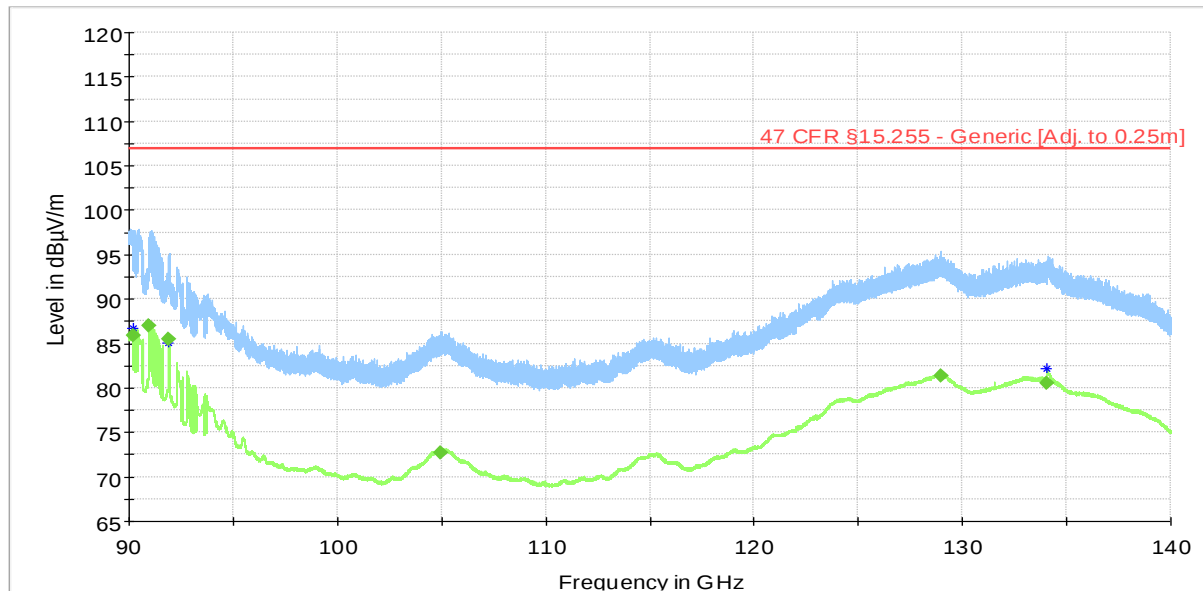
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	90 GHz – 140 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.15
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
91016.363636	---	106.93	6.88	1000.0	1000.000	152.0	H	22.0
91016.363636	86.93	106.93	19.99	1000.0	1000.000	152.0	H	22.0
91190.454546	---	106.93	8.05	1000.0	1000.000	152.0	H	175.0
91190.454546	86.27	106.93	20.65	1000.0	1000.000	152.0	H	175.0
98675.454546	---	106.93	23.76	1000.0	1000.000	152.0	H	121.0
98675.454546	70.59	106.93	36.33	1000.0	1000.000	152.0	H	121.0
105353.636364	---	106.93	21.24	1000.0	1000.000	152.0	H	354.0
105353.636364	72.65	106.93	34.28	1000.0	1000.000	152.0	H	354.0
122036.600000	---	106.93	19.18	1000.0	1000.000	152.0	H	293.0
122036.600000	75.08	106.93	31.85	1000.0	1000.000	152.0	H	293.0
129139.437500	---	106.93	12.65	1000.0	1000.000	152.0	H	203.0
129139.437500	81.28	106.93	25.65	1000.0	1000.000	152.0	H	203.0
134074.545455	---	106.93	13.39	1000.0	1000.000	152.0	H	99.0
134074.545455	80.58	106.93	26.34	1000.0	1000.000	152.0	H	99.0

90GHz – 140GHz (Vertical): People CH0

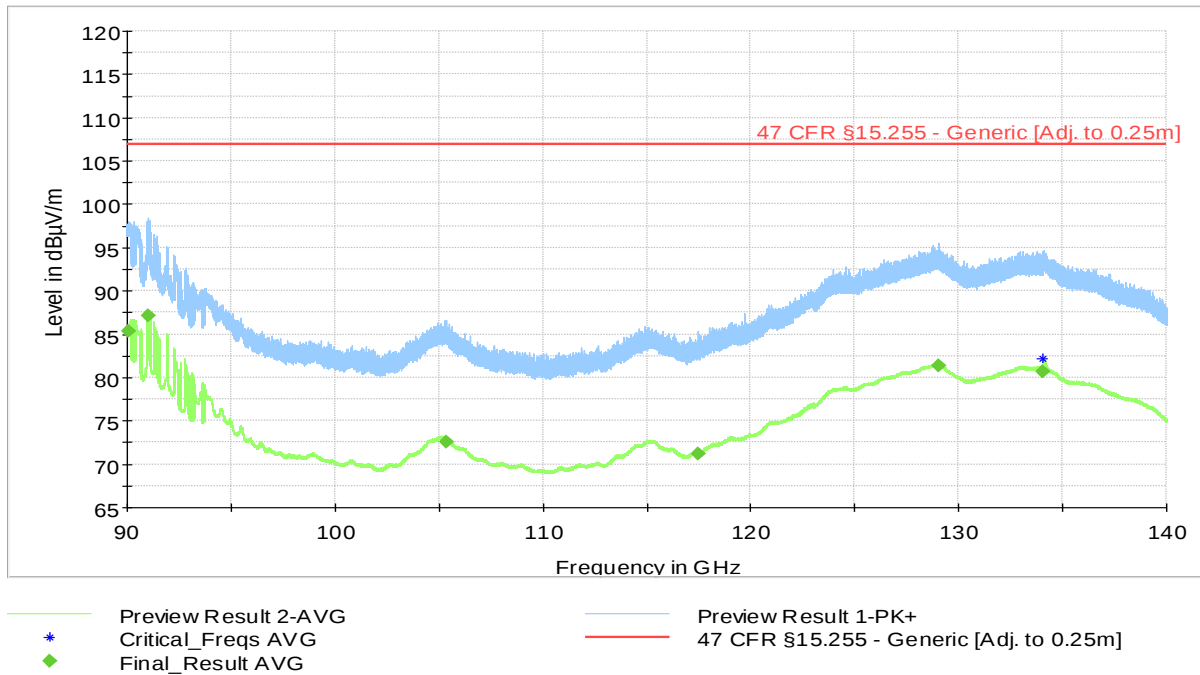
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	90 GHz – 140 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.17
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
90230.454546	85.85	106.93	21.08	1000.0	1000.000	152.0	H	10.0
90230.454546	---	106.93	8.43	1000.0	1000.000	152.0	H	10.0
90975.454546	---	106.93	6.49	1000.0	1000.000	152.0	H	76.0
90975.454546	87.02	106.93	19.91	1000.0	1000.000	152.0	H	76.0
91898.636364	85.54	106.93	21.38	1000.0	1000.000	152.0	H	46.0
91898.636364	---	106.93	8.28	1000.0	1000.000	152.0	H	46.0
104977.727273	72.68	106.93	34.24	1000.0	1000.000	152.0	H	159.0
104977.727273	---	106.93	20.84	1000.0	1000.000	152.0	H	159.0
128965.750000	---	106.93	12.68	1000.0	1000.000	152.0	H	230.0
128965.750000	81.32	106.93	25.61	1000.0	1000.000	152.0	H	230.0
134072.272727	80.57	106.93	26.36	1000.0	1000.000	152.0	H	139.0
134072.272727	---	106.93	12.94	1000.0	1000.000	152.0	H	139.0

90GHz – 140GHz (Horizontal): People CH1

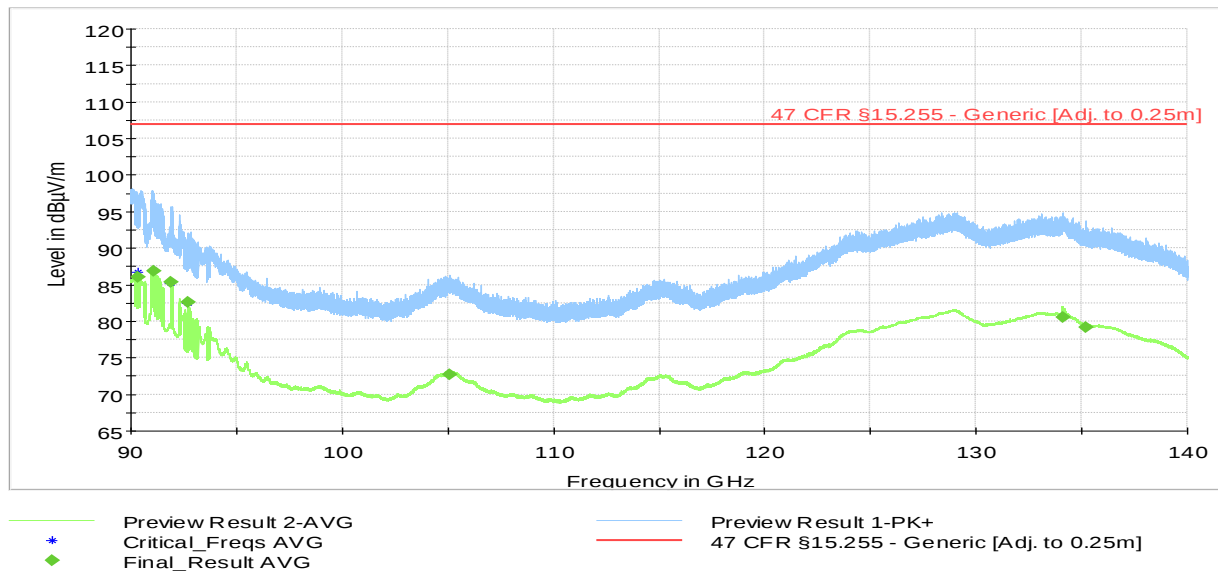
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	90 GHz – 140 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.15
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
90084.090909	85.33	106.93	21.60	1000.0	1000.000	152.0	H	309.0
90084.090909	---	106.93	8.21	1000.0	1000.000	152.0	H	309.0
91000.909091	87.16	106.93	19.77	1000.0	1000.000	152.0	H	34.0
91000.909091	---	106.93	6.73	1000.0	1000.000	152.0	H	34.0
105384.090909	72.57	106.93	34.35	1000.0	1000.000	152.0	H	151.0
105384.090909	---	106.93	21.07	1000.0	1000.000	152.0	H	151.0
117455.454546	71.13	106.93	35.80	1000.0	1000.000	152.0	H	93.0
117455.454546	---	106.93	22.95	1000.0	1000.000	152.0	H	93.0
129017.375000	81.38	106.93	25.55	1000.0	1000.000	152.0	H	203.0
129017.375000	---	106.93	12.55	1000.0	1000.000	152.0	H	203.0
134071.818182	80.66	106.93	26.27	1000.0	1000.000	152.0	H	243.0
134071.818182	---	106.93	13.64	1000.0	1000.000	152.0	H	243.0

90GHz – 140GHz (Vertical): People CH1

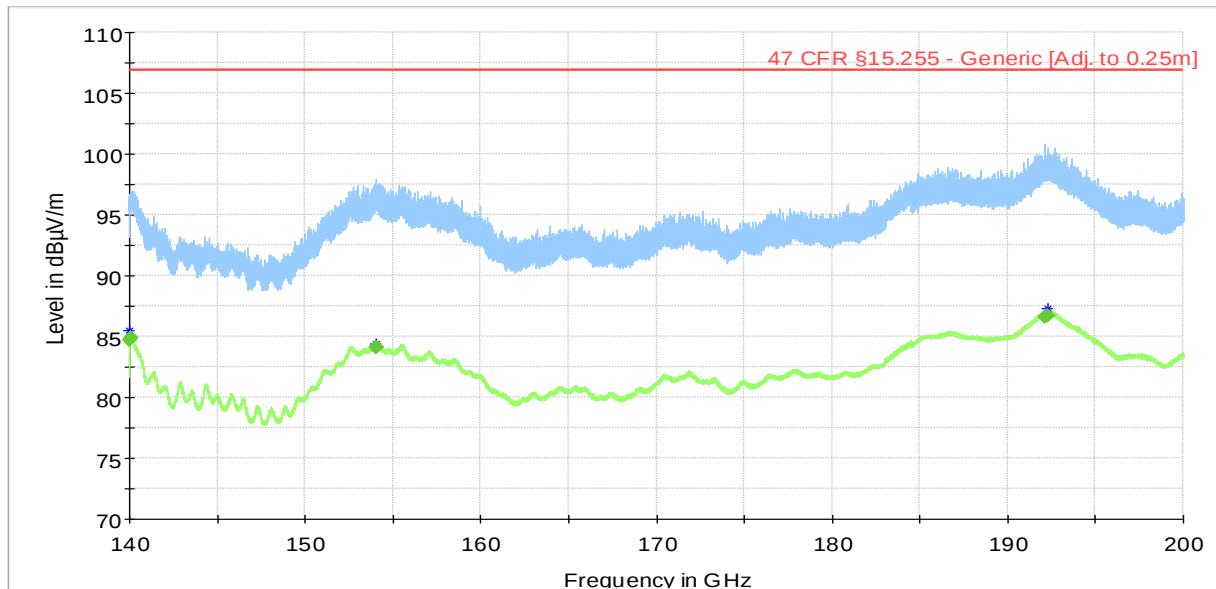
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	90 GHz – 140 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.16
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
90320.454546	86.08	106.93	20.85	1000.0	1000.000	152.0	H	291.0
90320.454546	---	106.93	8.14	1000.0	1000.000	152.0	H	291.0
91087.272727	86.83	106.93	20.10	1000.0	1000.000	152.0	H	149.0
91087.272727	---	106.93	7.10	1000.0	1000.000	152.0	H	149.0
91881.818182	85.36	106.93	21.57	1000.0	1000.000	152.0	H	347.0
91881.818182	---	106.93	8.23	1000.0	1000.000	152.0	H	347.0
92724.545455	82.58	106.93	24.35	1000.0	1000.000	152.0	H	339.0
92724.545455	---	106.93	11.30	1000.0	1000.000	152.0	H	339.0
105117.727273	72.64	106.93	34.29	1000.0	1000.000	152.0	H	159.0
105117.727273	---	106.93	21.43	1000.0	1000.000	152.0	H	159.0
134096.363636	80.60	106.93	26.33	1000.0	1000.000	152.0	H	128.0
134096.363636	---	106.93	13.61	1000.0	1000.000	152.0	H	128.0
135229.545455	79.14	106.93	27.78	1000.0	1000.000	152.0	H	256.0
135229.545455	---	106.93	14.92	1000.0	1000.000	152.0	H	256.0

140GHz – 200GHz (Horizontal): People CH0

Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	140 GHz – 200 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.17
Chamber details	Chamber: SAC 5	

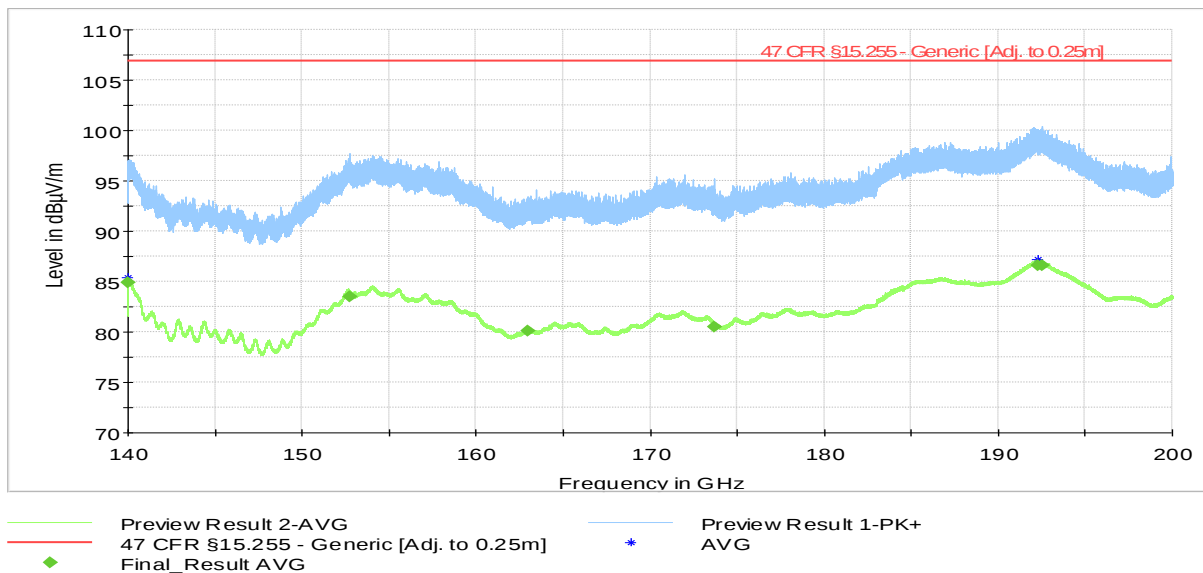


— Preview Result 2-AVG
— 47 CFR §15.255 - Generic [Adj. to 0.25m]
◆ Final_Result AVG
 — Preview Result 1-PK+
* AVG

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
140006.818182	---	106.93	9.23	1000.0	1000.000	152.0	H	156.0
140006.818182	84.74	106.93	22.19	1000.0	1000.000	152.0	H	156.0
140108.181818	84.89	106.93	22.03	1000.0	1000.000	152.0	H	71.0
140108.181818	---	106.93	9.14	1000.0	1000.000	152.0	H	71.0
154069.090909	---	106.93	9.89	1000.0	1000.000	152.0	H	62.0
154069.090909	84.07	106.93	22.86	1000.0	1000.000	152.0	H	62.0
154077.272727	84.13	106.93	22.80	1000.0	1000.000	152.0	H	17.0
154077.272727	---	106.93	9.48	1000.0	1000.000	152.0	H	17.0
192142.727273	---	106.93	7.61	1000.0	1000.000	152.0	H	205.0
192142.727273	86.58	106.93	20.35	1000.0	1000.000	152.0	H	205.0
192319.545455	86.67	106.93	20.26	1000.0	1000.000	152.0	H	9.0
192319.545455	---	106.93	7.15	1000.0	1000.000	152.0	H	9.0

140GHz – 200GHz (Vertical): People CH0

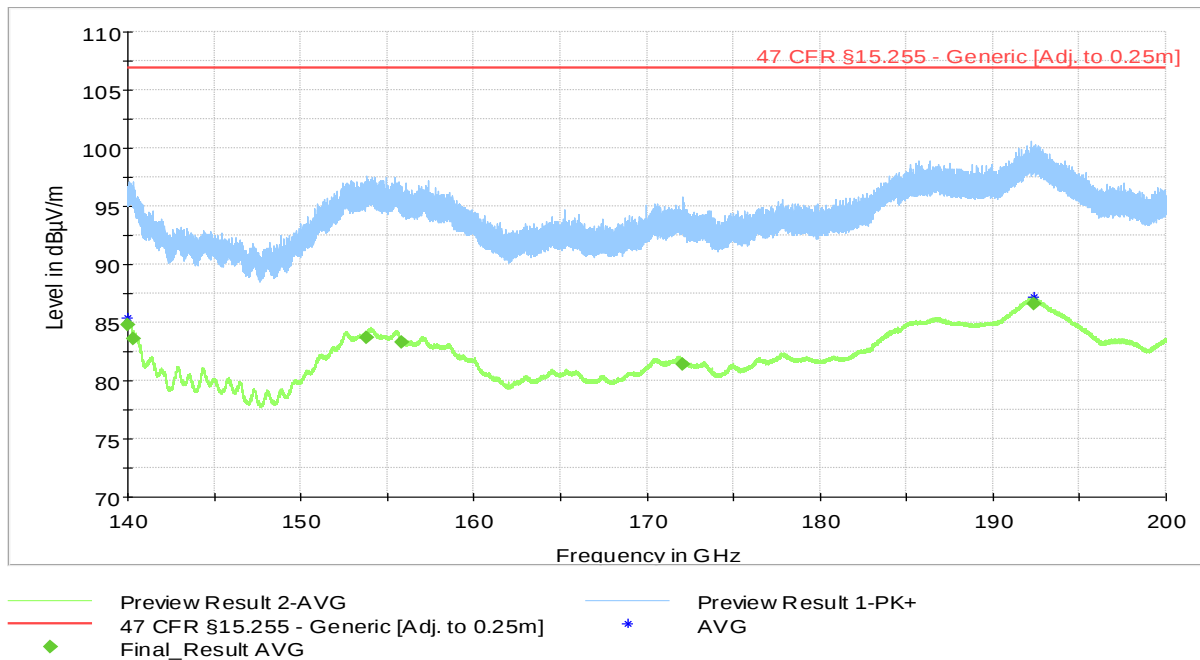
Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	140 GHz – 200 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.18
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
140015.909091	---	106.93	9.37	1000.0	1000.000	152.0	H	210.0
140015.909091	84.86	106.93	22.07	1000.0	1000.000	152.0	H	210.0
152761.363636	83.53	106.93	23.39	1000.0	1000.000	152.0	H	301.0
152761.363636	---	106.93	10.59	1000.0	1000.000	152.0	H	301.0
163000.909091	80.10	106.93	26.83	1000.0	1000.000	152.0	H	189.0
163000.909091	---	106.93	13.31	1000.0	1000.000	152.0	H	189.0
173664.545455	80.52	106.93	26.40	1000.0	1000.000	152.0	H	83.0
173664.545455	---	106.93	13.50	1000.0	1000.000	152.0	H	83.0
192309.545455	86.63	106.93	20.29	1000.0	1000.000	152.0	H	195.0
192309.545455	---	106.93	7.48	1000.0	1000.000	152.0	H	195.0
192555.454546	86.63	106.93	20.29	1000.0	1000.000	152.0	H	115.0
192555.454546	---	106.93	7.46	1000.0	1000.000	152.0	H	115.0

140GHz – 200GHz (Horizontal): People CH1

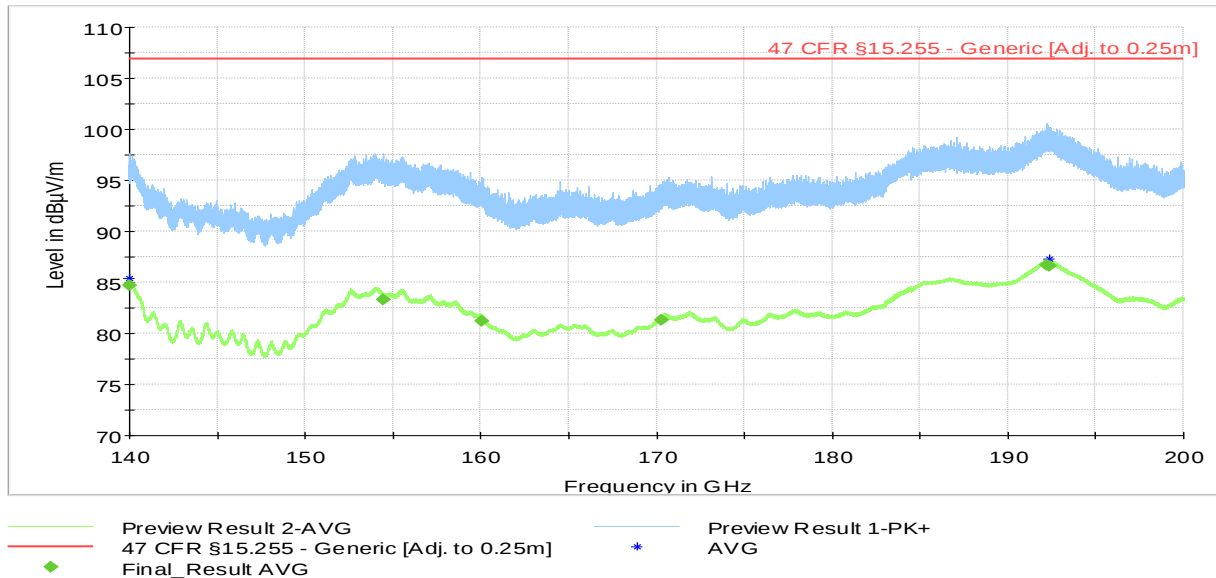
Test mode condition	Default mode	
Antenna orientation	Horizontal	
Sweep frequency	140 GHz – 200 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.16
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
140008.636364	84.82	106.93	22.10	1000.0	1000.000	152.0	H	215.0
140008.636364	---	106.93	9.21	1000.0	1000.000	152.0	H	215.0
140358.181818	---	106.93	10.13	1000.0	1000.000	152.0	H	140.0
140358.181818	83.61	106.93	23.31	1000.0	1000.000	152.0	H	140.0
153804.545455	---	106.93	10.60	1000.0	1000.000	152.0	H	18.0
153804.545455	83.75	106.93	23.17	1000.0	1000.000	152.0	H	18.0
155824.545455	---	106.93	10.54	1000.0	1000.000	152.0	H	171.0
155824.545455	83.28	106.93	23.64	1000.0	1000.000	152.0	H	171.0
172070.909091	---	106.93	12.74	1000.0	1000.000	152.0	H	235.0
172070.909091	81.43	106.93	25.50	1000.0	1000.000	152.0	H	235.0
192350.000000	---	106.93	6.38	1000.0	1000.000	152.0	H	170.0
192350.000000	86.59	106.93	20.34	1000.0	1000.000	152.0	H	170.0

140GHz – 200GHz (Vertical): People CH1

Test mode condition	Default mode	
Antenna orientation	Vertical	
Sweep frequency	140 GHz – 200 GHz	
Standard	47 CFR FCC Part 15 subpart C	
EUT	P00627053_21-0263_004	
Ancillary Equipment	P00627053_21-0263_002	
Test Engineer	Niall Forrester	Date: 2022.06.18
Chamber details	Chamber: SAC 5	



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
140000.000000	84.72	106.93	22.21	1000.0	1000.000	152.0	H	255.0
140000.000000	---	106.93	9.22	1000.0	1000.000	152.0	H	255.0
154466.818182	---	106.93	10.45	1000.0	1000.000	152.0	H	50.0
154466.818182	83.34	106.93	23.59	1000.0	1000.000	152.0	H	50.0
160044.090909	81.19	106.93	25.74	1000.0	1000.000	152.0	H	231.0
160044.090909	---	106.93	13.01	1000.0	1000.000	152.0	H	231.0
170324.090909	---	106.93	12.92	1000.0	1000.000	152.0	H	215.0
170324.090909	81.29	106.93	25.64	1000.0	1000.000	152.0	H	215.0
192245.454546	---	106.93	7.03	1000.0	1000.000	152.0	H	0.0
192245.454546	86.69	106.93	20.23	1000.0	1000.000	152.0	H	0.0
192395.000000	86.64	106.93	20.28	1000.0	1000.000	152.0	H	282.0
192395.000000	---	106.93	7.28	1000.0	1000.000	152.0	H	282.0

4.5 Test Results – Frequency Tolerance

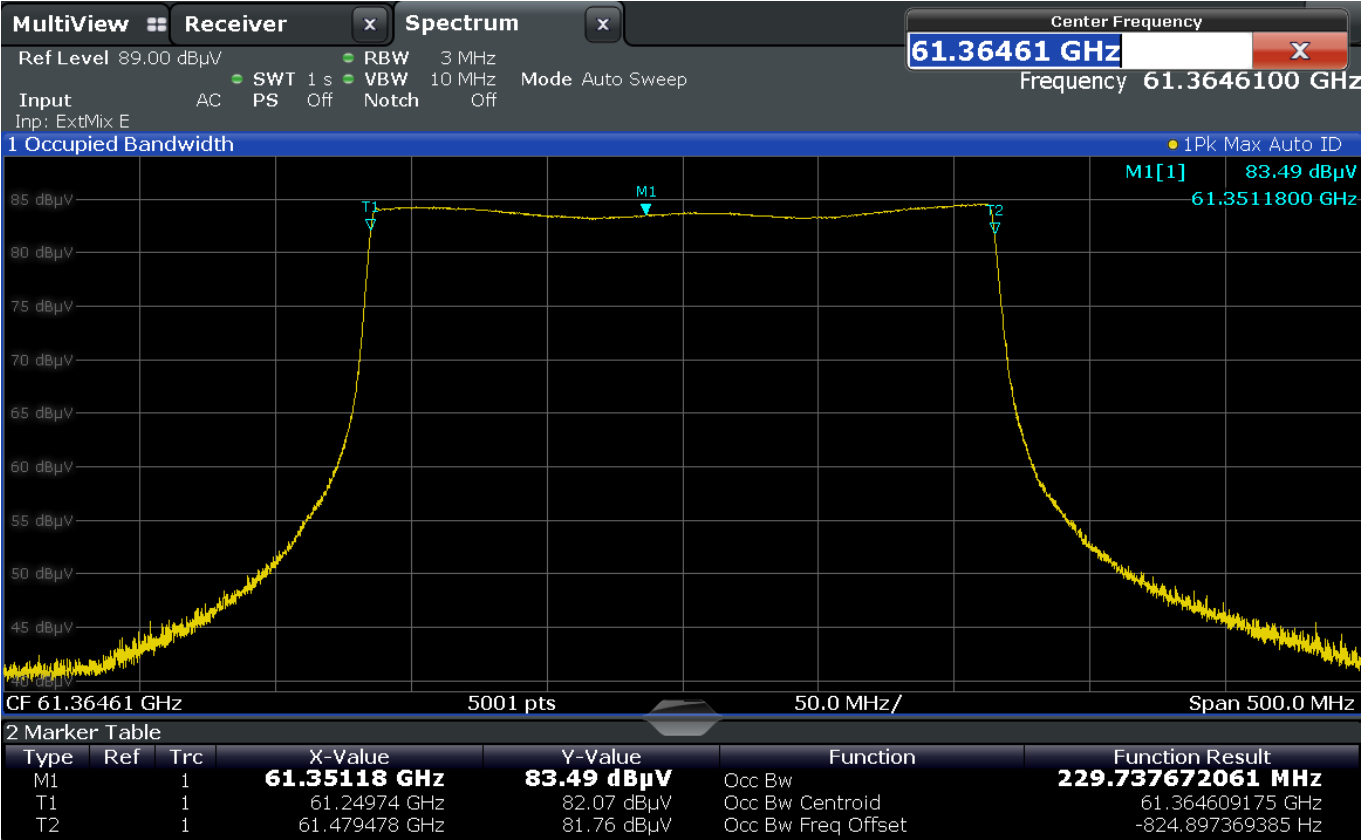
4.5.1 Frequency Tolerance – Test Summary

Test Specification		FCC 47 CFR 15.255 (f) (Part 15 Subpart C)				
Test Engineer & Date		Niall Forrester			2022.06.21	
EUT and Ancillary Equipment IDs		P00627053_21-0263_004			P00627053_21-0263_002	
EUT Operation Mode(s)		Default (PoE)				
EUT Wireless Configuration(s)		“People CH0”, “People CH1”: see below				
EUT Hardware Configuration(s)		-				
Overall Result		PASS				

Test Parameter	Wireless Configuration	Measured Frequency (MHz)				Result
		F _{low} GHz	Limit (GHz)	F _{high} GHz	Limit (GHz)	
Frequency @ 115V -40C	People CH0 People CH1	61.249740 61.020591	>61.0	61.479478 61.252244	<61.5	PASS
Frequency @ 115V -30°C	People CH0 People CH1	61.249734 61.020594	>61.0	61.479476 61.252145	<61.5	PASS
Frequency @ 115V -20C	People CH0 People CH1	61.249677 61.020513	>61.0	61.479401 61.252094	<61.5	PASS
Frequency @ 115V -10°C	People CH0 People CH1	61.249571 61.020402	>61.0	61.479252 61.252011	<61.5	PASS
Frequency @ 115V 0°C	People CH0 People CH1	61.249482 61.020160	>61.0	61.479105 61.251866	<61.5	PASS
Frequency @ 115V 10°C	People CH0 People CH1	61.249357 61.020100	>61.0	61.478868 61.251708	<61.5	PASS
Frequency @ 115V 20°C	People CH0 People CH1	61.249141 61.019815	>61.0	61.478524 61.251305	<61.5	PASS
Frequency @ 98V 25°C	People CH0 People CH1	61.249513 61.020091	>61.0	61.478377 61.251217	<61.5	PASS
Frequency @ 115V 25°C	People CH0 People CH1	61.249512 61.020084	>61.0	61.478460 61.251247	<61.5	PASS
Frequency @ 132V 25°C	People CH0 People CH1	61.249529 61.020085	>61.0	61.478399 61.251227	<61.5	PASS
Frequency @ 115V 30°C	People CH0 People CH1	61.249505 61.020062	>61.0	61.478334 61.251127	<61.5	PASS
Frequency @ 115V 40C	People CH0 People CH1	61.249342 61.019931	>61.0	61.478192 61.250958	<61.5	PASS
Frequency @ 115V 50°C	People CH0 People CH1	61.249166 61.019805	>61.0	61.478029 61.250817	<61.5	PASS
Frequency @ 115V 60°C	People CH0 People CH1	61.249156 61.019793	>61.0	61.478056 61.250637	<61.5	PASS

Note that the AC input voltage to the PoE Injector was varied by +/- 15% for testing variation with voltage.

4.5.2 Frequency Tolerance – Test Details (Example Plot: “People CH0” @115V / -40°C)



5. TEST EQUIPMENT STATUS

5.1 List of Hardware with Calibration Dates

5.1.1 Hardware List – Radiated RF

Type	Manufacturer	Model	Serial Number / ID	Calibration Date	Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESW44	101760 2881044	2021.07.15	2022.07.15
Harmonic Mixer – 60 GHz to 90 GHz	RPG	FS-Z90	101850 2886130	2021.07.14	2022.07.14
Humidity Temperature Probe	Lufft	OPUS 20 THI	126.0118.0802.033 2771042	2020.07.31	2022.07.31

5.1.2 Hardware List – Conducted Emissions System

Type	Manufacturer	Model	Serial Number / ID	Calibration Date	Calibration Due
Two-Line V-network	Rohde & Schwarz	ENV216	101090 2704076	2021.08.03	2022.08.03
Test Receiver 9KHz to 3.5 GHz	Rohde & Schwarz	ESR3	101674 2704016	2021.07.09	2022.07.09
Humidity Temperature Probe	Lufft	OPUS 20 THI	113.0118.0802.033 2771025	2020.07.31	2022.07.31

5.1.3 Hardware List – SAC5 System

Type	Manufacturer	Model	Serial Number / ID	Calibration Date	Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESW44	101760 2881044	2021.07.15	2022.07.15
Ultra Broadband Antenna	Rohde & Schwarz	HL562E	100988 2823181	2021.07.26	2023.07.26
Double Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF907	102678 2823164	2021.07.26	2023.07.26
Horn Antenna	ETS Lindgren	UG-596A/U	20898 2814839	2020.07.27	2022.07.27
Horn Antenna	ETS Lindgren	UG-600A/U	20623 2814834	2020.07.27	2022.07.27
Harmonic Mixer – 40 GHz to 60 GHz	RPG	FS-Z60	100981 2916123	2021.07.15	2022.07.15
Harmonic Mixer – 60 GHz to 90 GHz	RPG	FS-Z90	101850 2886130	2021.07.14	2022.07.14
Harmonic Mixer – 90 GHz to 140 GHz	RPG	FS-Z140	101124 2892049	2021.08.03	2022.08.03
Harmonic Mixer – 140 GHz to 220 GHz	RPG	FS-Z220	101036 9001924	2021.07.22	2022.07.22
Control Device	Maturo	NCD	NCD/393/2372.01	N/A	N/A
Open Switch & Control Unit	Rohde & Schwarz	OSP150	100081 2884198	2021.08.04	2022.08.04
Open Switch & Control Unit	Rohde & Schwarz	OSP120	100084 2761253	2021.08.04	2022.08.04
Shielded Filter Unit	Rohde & Schwarz	OSP-F Extension	101333 2761265	2021.08.04	2022.08.04
Shielded Filter Unit	Rohde & Schwarz	OSP-F Extension	101335 2761266	2021.08.04	2022.08.04
Shielded Filter Unit	Rohde & Schwarz	OSP-F Base Unit	101330 2761262	2021.08.04	2022.08.04
Humidity Temperature Probe	Lufft	OPUS 20 THI	126.0118.0802.033 2771042	2020.07.31	2022.07.31

5.2 Software / Firmware Versions

Equipment	Software / Firmware Name	Version
Conducted Emissions System	EMC 32	V10.60.20
SAC 5	EMC 32	V10.60.20

6. MEASUREMENT UNCERTAINTY

6.1 Measurement Uncertainty for Radiated RF

Parameter	Uncertainty (Coverage Factor k=2)
Field Strength 60 GHz - 90 GHz	5.43 dB
Frequency 60 GHz – 90 GHz (@100kHz - 30MHz BW, 4GHz Span)	0.027%

6.2 Measurement Uncertainty for Conducted Emissions

Parameter	Uncertainty (Coverage Factor k=2)
Conducted emissions with LISN 150KHz to 30 MHz	2.98 dB

6.3 Measurement Uncertainty for SAC 5 (Radiated Emissions)

Parameter	Uncertainty (Coverage Factor k=2)
Field Strength 10 Hz -9 kHz	3.38 dB
Field Strength 9 kHz -30 MHz	3.38 dB
Field Strength 30 MHz -1000 MHz	3.38 dB
Field Strength 1 GHz -18 GHz	4.88 dB
Field Strength 18 GHz - 40 GHz	5.14 dB
Field Strength 40 GHz - 60 GHz	5.43 dB
Field Strength 60 GHz - 90 GHz	5.43 dB
Field Strength 90 GHz - 140 GHz	5.43 dB
Field Strength 140 GHz - 220 GHz	5.43 dB

7. PHOTOGRAPHS

For photographs, see Appendix 1