

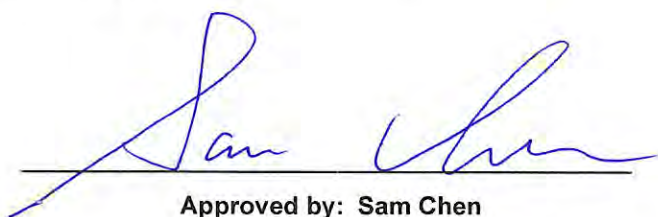


RADIO TEST REPORT

FCC ID : Z9W-TNA303L65
Equipment : 60 GHz PTP Fixed Wireless
Brand Name : 8devices
Model Name : TNA-303L-65
Applicant : 8devices
Antakalnio 17-6 Vilnius Lithuania 10312
Manufacturer : 8devices
Antakalnio 17-6 Vilnius Lithuania 10312
Standard : 47 CFR FCC Part 15.255

The product was received on Jul. 23, 2025, and testing was started from Aug. 11, 2025 and completed on Sep. 10, 2025. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2020 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Temp.late No.: CB-A9_2 Ver1.3



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.207	AC Power Conducted Emissions	PASS	-
3.2	15.255(e)	Occupied Bandwidth	PASS	-
3.3	15.255(C)(1)(ii)	EIRP Power	PASS	-
3.4	15.255(c)	Peak Conducted Power	PASS	-
3.5	15.255(d)	Transmitter Spurious Emissions	PASS	-
3.6	15.255(f)	Frequency Stability	PASS	-
3.7	15.255(a),(h)	Operation Restriction and Group Installation	PASS	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Cathy Chiu



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information	
Frequency Range	57-71 GHz
The Channel Plan(s)	Channel 1: 58.32 GHz Channel 2: 60.48 GHz Channel 3: 62.64 GHz Channel 4: 64.80 GHz Channel 5: 66.96 GHz Channel 6: 69.12 GHz

1.1.2 Modulation

MCS Index	Modulation	Code rate	Data rate (Mbit/s)
1	$\pi/2$ -BPSK	1/2	385
2	$\pi/2$ -BPSK	1/2	770
3	$\pi/2$ -BPSK	5/8	962.5
4	$\pi/2$ -BPSK	3/4	1155
5	$\pi/2$ -BPSK	13/16	1251.25
6	$\pi/2$ -QPSK	1/2	1540
7	$\pi/2$ -QPSK	5/8	1925
8	$\pi/2$ -QPSK	3/4	2310
9	$\pi/2$ -QPSK	13/16	2502.5
10	$\pi/2$ -16QAM	1/2	3080
11	$\pi/2$ -16QAM	5/8	3850
12	$\pi/2$ -16QAM	3/4	4620

1.1.3 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Tachyon Networks	TNC-A-32H	Microstrip Patch Antenna	N/A	32.3

Note: The above information was declared by manufacturer.

**1.1.4 Operating Conditions**

Operating Conditions			
☐ -20 °C to +50 °C			
☐ 0 °C to +40 °C			
☒ Other: -30 °C to +55 °C			
EUT Power Type	From PoE		
Test Software Version	DOS [ver 6.1.7601]		
Supply Voltage	☒ AC	State AC voltage	120 V
Supply Voltage	☐ DC	State DC voltage	V

1.1.5 Equipment Use Condition

Equipment Use Condition
☐ Fixed field disturbance sensors at 61-61.5GHz
☐ Except fixed field disturbance sensors at 61-61.5GHz
☒ Except fixed field disturbance sensors

1.1.6 User Condition

Intended Operation
☐ Indoor
☐ Outdoor (except outdoor fixed Point to Point)
☒ Outdoor fixed Point to Point

Note: The above information was declared by manufacturer.

1.1.7 Duty Cycle

TX-on(ms)	TX-on+TX-off(ms)	Duty Cycle (%)	Duty Cycle factor(dB)
10	10	100	0



1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15.255
- ♦ ANSI C63.10-2020 Section 9. "Procedures for testing millimeter-wave systems"

The following reference test guidance is not within the scope of accreditation of TAF.

- ♦ FCC KDB 414788 D01 v01r01

1.3 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	TH03-CB	Gino Huang	21.4~22.3 / 59~61	Aug. 11, 2025~ Aug. 20, 2025
Radiated (below 1GHz)	03CH04-CB	Gino Huang	21.4~22.6 / 57~61	Aug. 11, 2025~Sep. 10, 2025
Radiated (above 1GHz)	03CH05-CB	Gino Huang	21.5~22.9 / 57~60	Aug. 11, 2025~Sep. 10, 2025
AC Conduction	CO01-CB	Allen Chung	23~24 / 61~62	Sep. 09, 2025



2 Test Configuration of Equipment under Test

2.1 Parameters of Test Software Setting

Parameters of Test Software Setting	
Test Frequencies (GHz)	Software Setting
58.32	Default
64.80	Default
69.12	Default

2.2 Conformance Tests and Related Test Frequencies

Test Item	Test Frequencies (GHz)
AC Power Conducted Emissions Test Voltage: 120Vac / 60Hz	58.32
Occupied Bandwidth	58.32, 64.80, 69.12
EIRP Power	58.32, 64.80, 69.12
Peak Conducted Power	58.32, 64.80, 69.12
Transmitter Spurious Emissions (below 1 GHz)	58.32
Transmitter Spurious Emissions (1 GHz-40 GHz)	58.32
Transmitter Spurious Emissions (above 40 GHz)	58.32, 64.80, 69.12
Frequency Stability	64.80

Note: After evaluating, and the worst case was found at Y axis, so it was selected to perform test and its test result was written in the report.

2.3 EUT Operation during Test

During the test, "DOS [ver 6.1.7601]" under WIN 7 was executed the test program to control the EUT continuously transmit RF signal.

2.4 Accessories

Others
L-shaped iron sheet*1
U-shaped fixed bracket*1
Screw*2 (for U-shaped fixed bracket used)
Waterproof cover*2



2.5 Support Equipment

For AC Power Conducted Emissions test:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	LAN PC	ASUS	S300TA	TX2-RTL8821CE
B	USB WiFi client dongle	Proxim	M01-U7520-D10	N/A
C	PoE	GOSPELL DIGITAL TECHNOLOGY CO.,LTD	G0720-480-050	N/A

For Others test items:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	PoE	GOSPELL DIGITAL TECHNOLOGY CO.,LTD	G0720-480-050	N/A

2.6 Far Field Boundary Calculations

The far-field boundary is given as:

$$\text{far field} = (2 * L^2) / \lambda$$

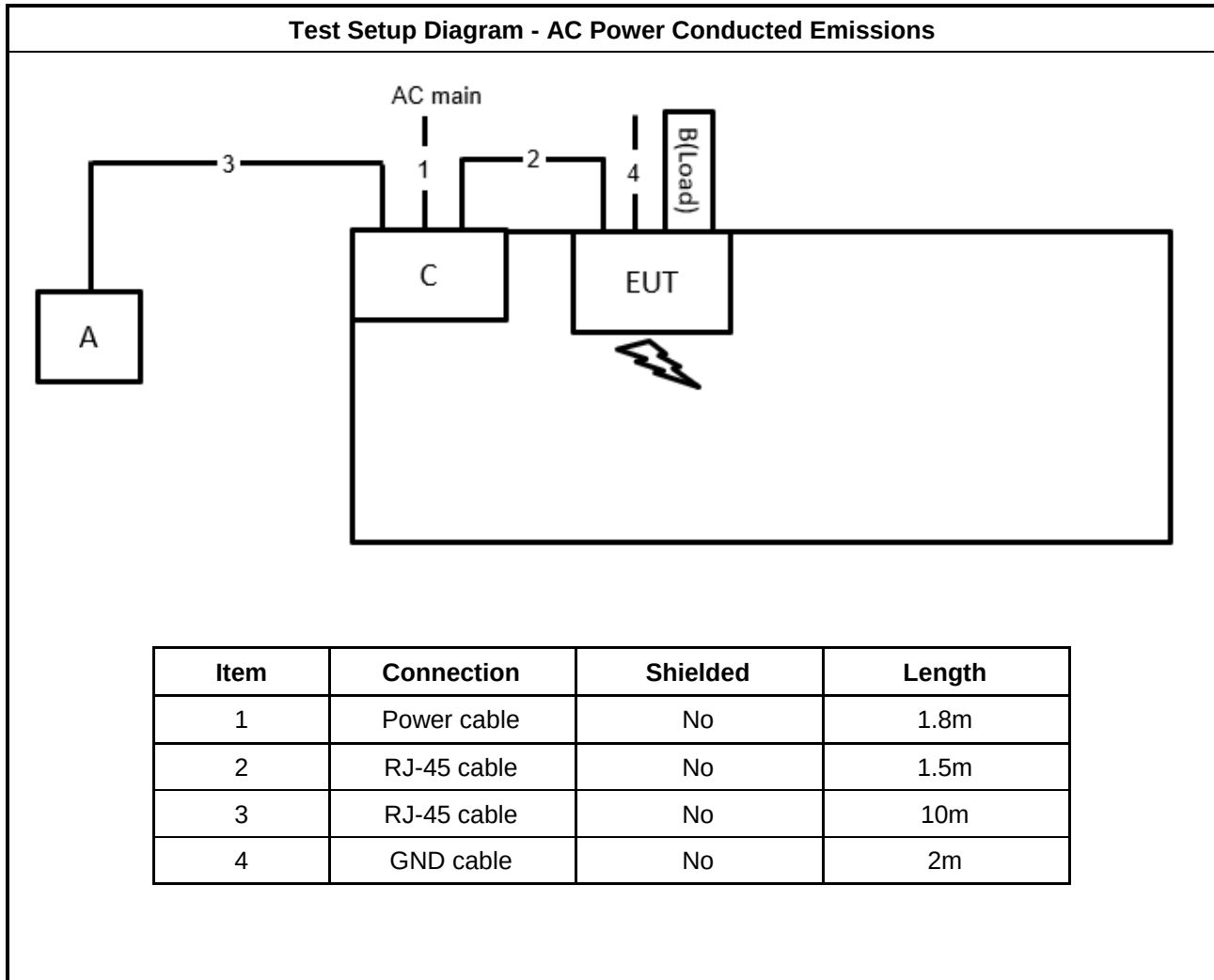
where:

L = Largest Antenna Dimension, including the reflector, in meters

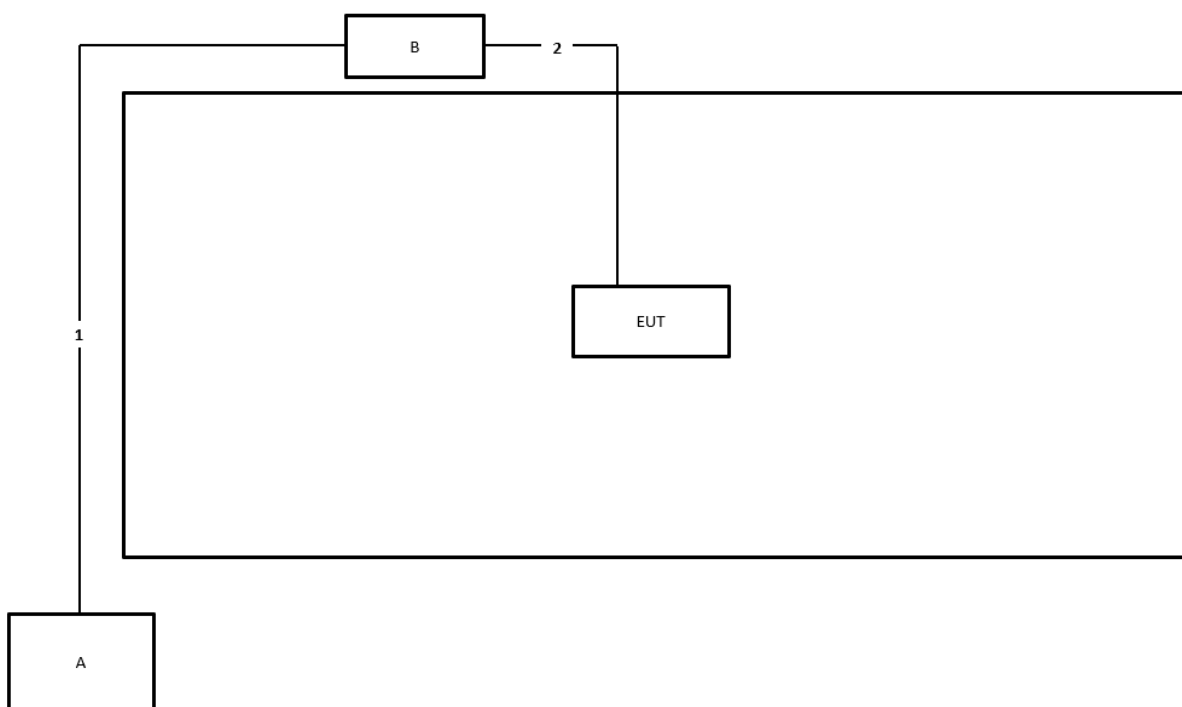
λ = wavelength in meters

Far Field (m)				
Frequency (GHz)	L (m)	Lambda (m)	d(Far Field) (m)	d(Far Field) (cm)
58.32	0.027	0.0051440	0.283	28.34
64.80	0.027	0.0046296	0.315	31.49
69.12	0.027	0.0043403	0.336	33.59

2.7 Test Setup Diagram



Test Setup Diagram - Transmitter Spurious Emissions



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1m



3 Transmitter Test Result

3.1 AC Power Conducted Emissions

3.1.1 Limit of AC Power Conducted Emissions

AC Power Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

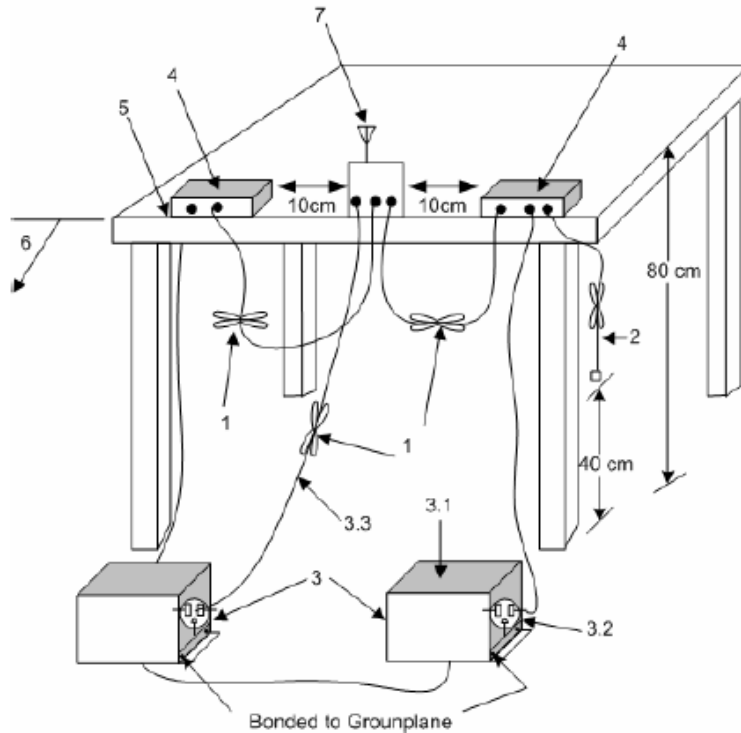
Refer a measuring instruments list in this test report.

3.1.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020, clause 6.2.

3.1.4 Test Setup

AC Power Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.

3.1—All other equipment powered from additional LISN(s).

3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.

3.3—LISN at least 80 cm from nearest part of EUT chassis.

4—Non-EUT components of EUT system being tested.

5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.

6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- Margin = -Limit + Level



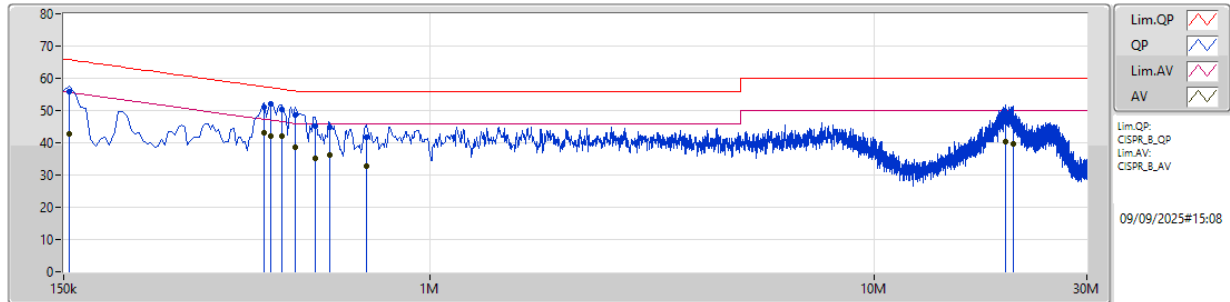
3.1.6 Test Result of AC Power Conducted Emissions

Test Conditions	see ANSI C63.10, clause 5.11
Test Setup	see ANSI C63.10, clause 6.2.3
NOTE 1: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes. If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing. NOTE 2: ">20dB" means the tables in this clause should only list values of spurious emissions that exceed the level of 20 dB below the applicable limit, see ANSI C63.4, clause 10.1.8.1.	



Phase	Line	Configuration	CTX
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Mode 1

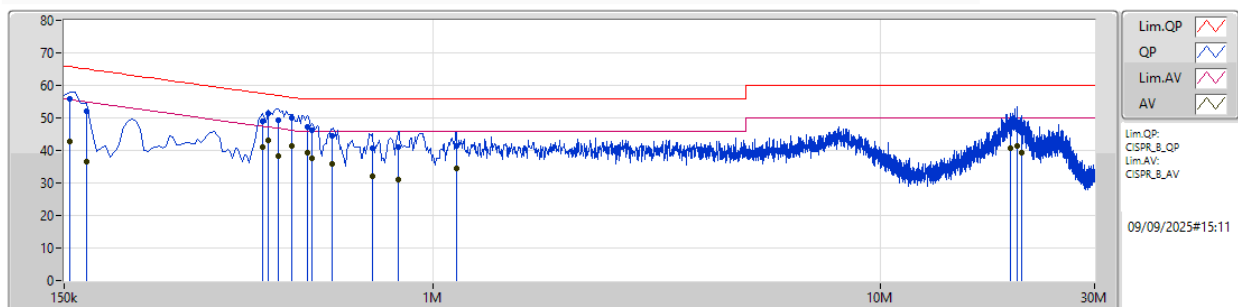


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	154.5k	55.74	65.75	-10.01	10.05	Line	-	45.69	0.05	0.08	9.92						
AV	154.5k	42.78	55.75	-12.97	10.05	Line	-	32.73	0.05	0.08	9.92						
QP	424.5k	50.91	57.36	-6.45	10.22	Line	-	40.69	0.05	0.10	10.07						
AV	424.5k	43.12	47.36	-4.24	10.22	Line	"Worst"	32.90	0.05	0.10	10.07						
QP	438k	51.94	57.11	-5.17	10.22	Line	-	41.72	0.05	0.10	10.07						
AV	438k	42.09	47.11	-5.02	10.22	Line	-	31.87	0.05	0.10	10.07						
QP	465k	50.30	56.61	-6.31	10.23	Line	-	40.07	0.05	0.10	10.08						
AV	465k	41.92	46.61	-4.69	10.23	Line	-	31.69	0.05	0.10	10.08						
QP	496.5k	48.73	56.06	-7.33	10.24	Line	-	38.49	0.06	0.10	10.08						
AV	496.5k	38.71	46.06	-7.35	10.24	Line	-	28.47	0.06	0.10	10.08						
QP	550.5k	45.14	56.00	-10.86	10.25	Line	-	34.89	0.06	0.10	10.09						
AV	550.5k	35.16	46.00	-10.84	10.25	Line	-	24.91	0.06	0.10	10.09						
QP	595.5k	44.82	56.00	-11.18	10.26	Line	-	34.56	0.06	0.10	10.10						
AV	595.5k	36.05	46.00	-9.95	10.26	Line	-	25.79	0.06	0.10	10.10						
QP	721.5k	41.80	56.00	-14.20	10.28	Line	-	31.52	0.07	0.09	10.12						
AV	721.5k	32.76	46.00	-13.24	10.28	Line	-	22.48	0.07	0.09	10.12						
QP	19.658M	47.96	60.00	-12.04	10.58	Line	-	37.38	0.32	0.32	9.94						
AV	19.658M	40.43	50.00	-9.57	10.58	Line	-	29.85	0.32	0.32	9.94						
QP	20.49M	47.09	60.00	-12.91	10.60	Line	-	36.49	0.33	0.33	9.94						
AV	20.49M	39.58	50.00	-10.42	10.60	Line	-	28.98	0.33	0.33	9.94						



Phase	Neutral	Configuration	CTX
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Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	154.5k	56.02	65.75	-9.73	10.08	Neutral	-	45.94	0.08	0.08	9.92						
AV	154.5k	42.63	55.75	-13.12	10.08	Neutral	-	32.55	0.08	0.08	9.92						
QP	168k	51.91	65.06	-13.15	10.09	Neutral	-	41.82	0.08	0.08	9.93						
AV	168k	36.71	55.06	-18.35	10.09	Neutral	-	26.62	0.08	0.08	9.93						
QP	415.5k	49.00	57.53	-8.53	10.24	Neutral	-	38.76	0.08	0.10	10.06						
AV	415.5k	41.08	47.53	-6.45	10.24	Neutral	-	30.84	0.08	0.10	10.06						
QP	429k	51.38	57.28	-5.90	10.25	Neutral	-	41.13	0.08	0.10	10.07						
AV	429k	43.27	47.28	-4.01	10.25	Neutral	"Worst"	33.02	0.08	0.10	10.07						
QP	451.5k	49.21	56.84	-7.63	10.25	Neutral	-	38.96	0.08	0.10	10.07						
AV	451.5k	38.39	46.84	-8.45	10.25	Neutral	-	28.14	0.08	0.10	10.07						
QP	483k	49.91	56.29	-6.38	10.26	Neutral	-	39.65	0.08	0.10	10.08						
AV	483k	41.40	46.29	-4.89	10.26	Neutral	-	31.14	0.08	0.10	10.08						
QP	523.5k	47.26	56.00	-8.74	10.27	Neutral	-	36.99	0.08	0.10	10.09						
AV	523.5k	39.33	46.00	-6.67	10.27	Neutral	-	29.06	0.08	0.10	10.09						
QP	537k	46.19	56.00	-9.81	10.27	Neutral	-	35.92	0.08	0.10	10.09						
AV	537k	37.46	46.00	-8.54	10.27	Neutral	-	27.19	0.08	0.10	10.09						
QP	595.5k	44.51	56.00	-11.49	10.28	Neutral	-	34.23	0.08	0.10	10.10						
AV	595.5k	35.77	46.00	-10.23	10.28	Neutral	-	25.49	0.08	0.10	10.10						
QP	730.5k	40.73	56.00	-15.27	10.31	Neutral	-	30.42	0.09	0.09	10.13						
AV	730.5k	31.96	46.00	-14.04	10.31	Neutral	-	21.65	0.09	0.09	10.13						
QP	834k	41.19	56.00	-14.81	10.32	Neutral	-	30.87	0.09	0.09	10.14						
AV	834k	31.05	46.00	-14.95	10.32	Neutral	-	20.73	0.09	0.09	10.14						
QP	1.127M	41.29	56.00	-14.71	10.31	Neutral	-	30.98	0.09	0.10	10.12						
AV	1.127M	34.45	46.00	-11.55	10.31	Neutral	-	24.14	0.09	0.10	10.12						
QP	19.446M	47.73	60.00	-12.27	10.57	Neutral	-	37.16	0.31	0.32	9.94						
AV	19.446M	40.59	50.00	-9.41	10.57	Neutral	-	30.02	0.31	0.32	9.94						
QP	20.117M	48.55	60.00	-11.45	10.58	Neutral	-	37.97	0.31	0.33	9.94						
AV	20.117M	41.23	50.00	-8.77	10.58	Neutral	-	30.65	0.31	0.33	9.94						
QP	20.598M	46.71	60.00	-13.29	10.59	Neutral	-	36.12	0.32	0.33	9.94						
AV	20.598M	39.31	50.00	-10.69	10.59	Neutral	-	28.72	0.32	0.33	9.94						



3.2 Occupied Bandwidth

3.2.1 Limit of Occupied Bandwidth

6dBc Bandwidth (see Note 1)	None
99% Occupied Bandwidth (see Note 2)	None
NOTE 1: The 6dBc bandwidth is the frequency bandwidth of the signal power at the -6 dBc points when measured with a 100 kHz resolution bandwidth. These measurements shall also be performed at normal test conditions.	
NOTE 2: The 99% occupied bandwidth is the frequency bandwidth of the signal power at the 99% channel power of occupied bandwidth when resolution bandwidth should be approximately 1 % to 5 % of the occupied bandwidth (OBW). These measurements shall also be performed at normal test conditions.	

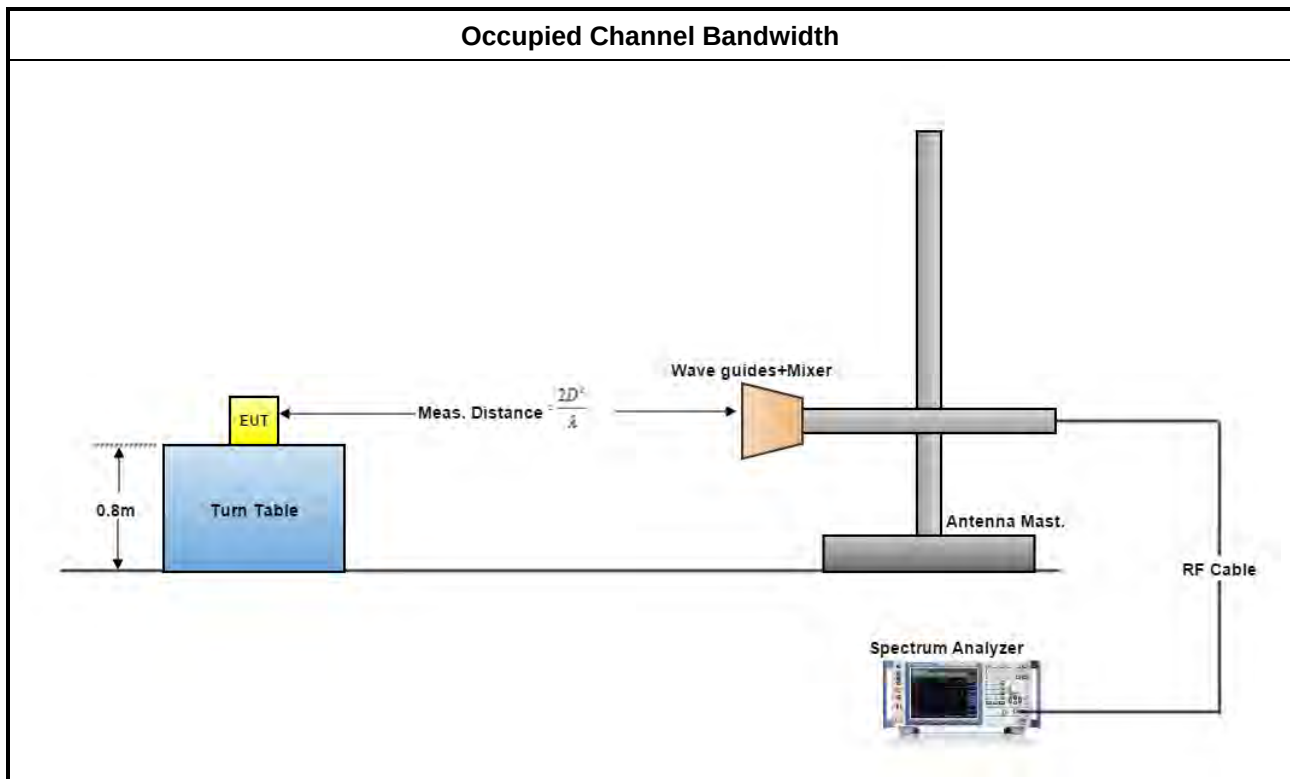
3.2.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.2.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020, clauses 6.9.2.

3.2.4 Test Setup



**3.2.5 Test Result of Occupied Bandwidth**

Test Conditions	see ANSI C63.10, clause 5.11
Test Setup	see ANSI C63.10, clause 6.9.2
NOTE: If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing. Refer as ANSI C63.10, clause 15, observe and record with plotted graphs or photographs the worst-case (i.e., widest) occupied bandwidth produced by these different modulation sources.	

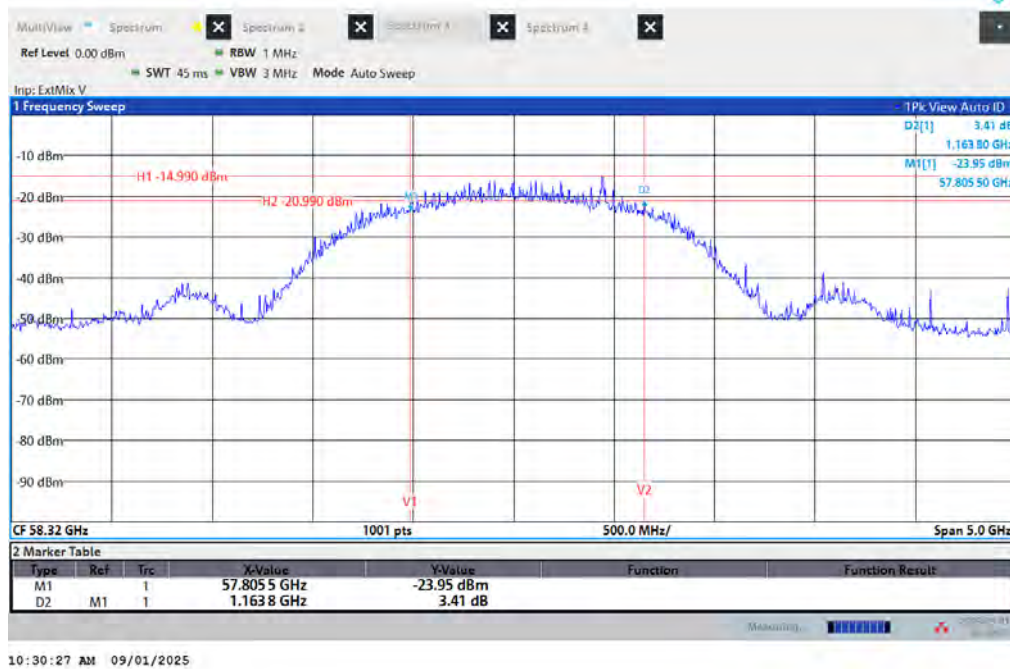
Test Results			
Test Freq. (GHz)	6 dBc Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)
58.32	1163.8	1915.866	N/A
64.80	1253.7	1956.912	N/A
69.12	1278.7	1860.792	N/A



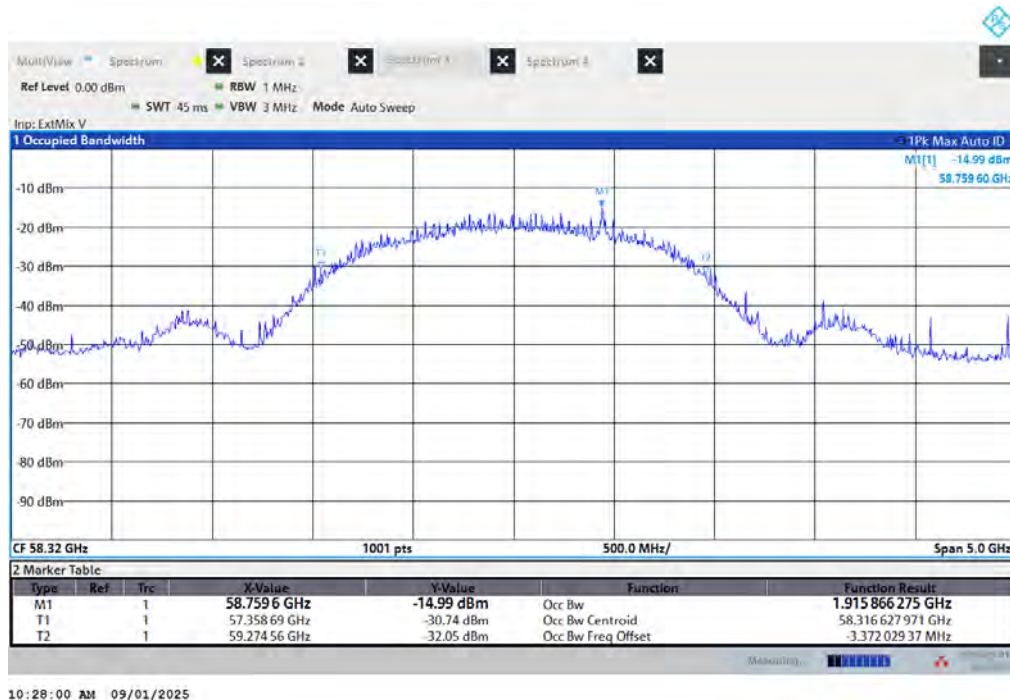
3.2.5.1 Bandwidth Plots

Test Frequency: 58.32 GHz

6 dBc Bandwidth



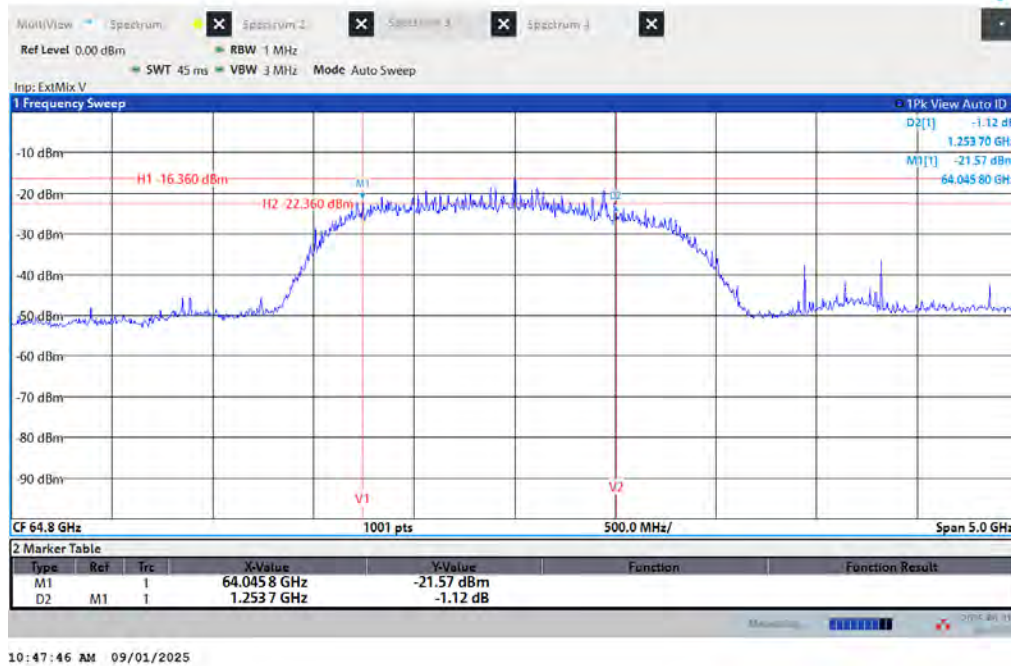
Occupied Bandwidth



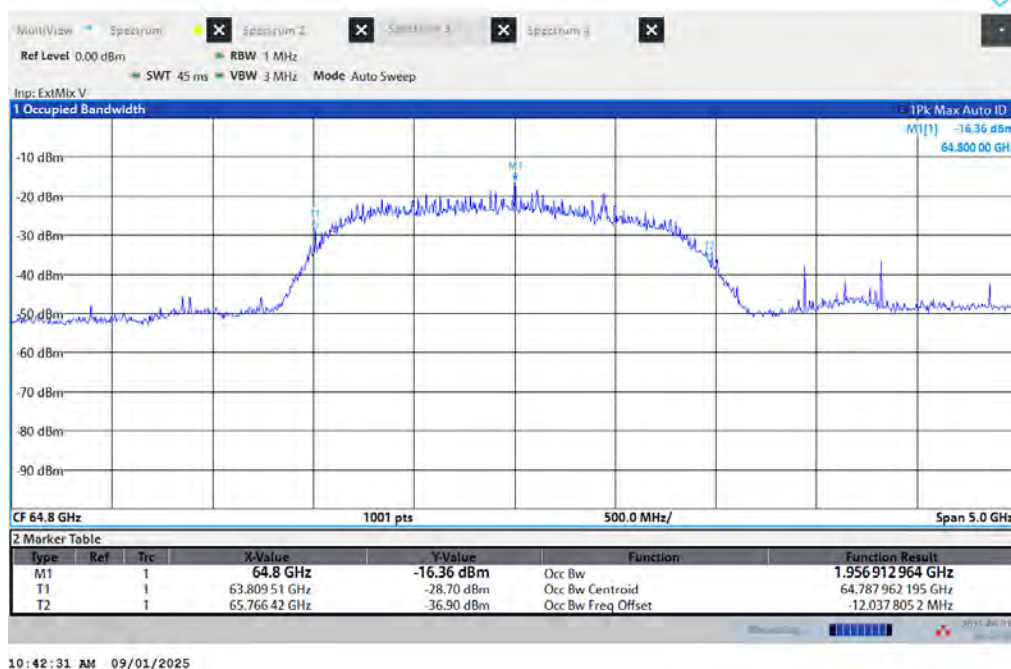


Test Frequency: 64.80 GHz

6 dBc Bandwidth



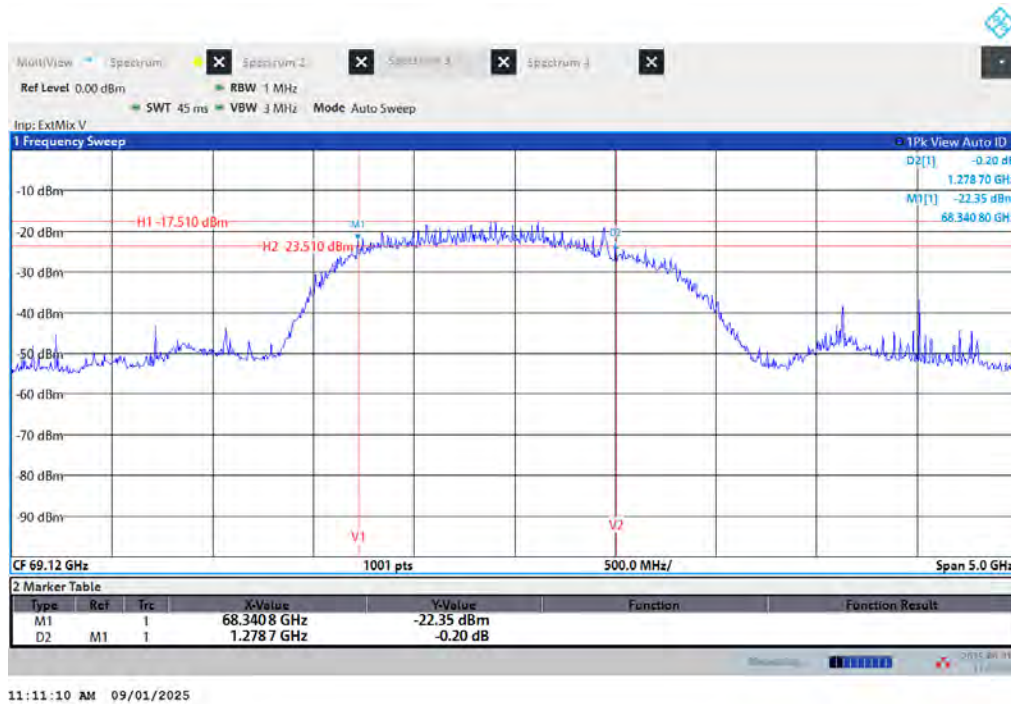
Occupied Bandwidth



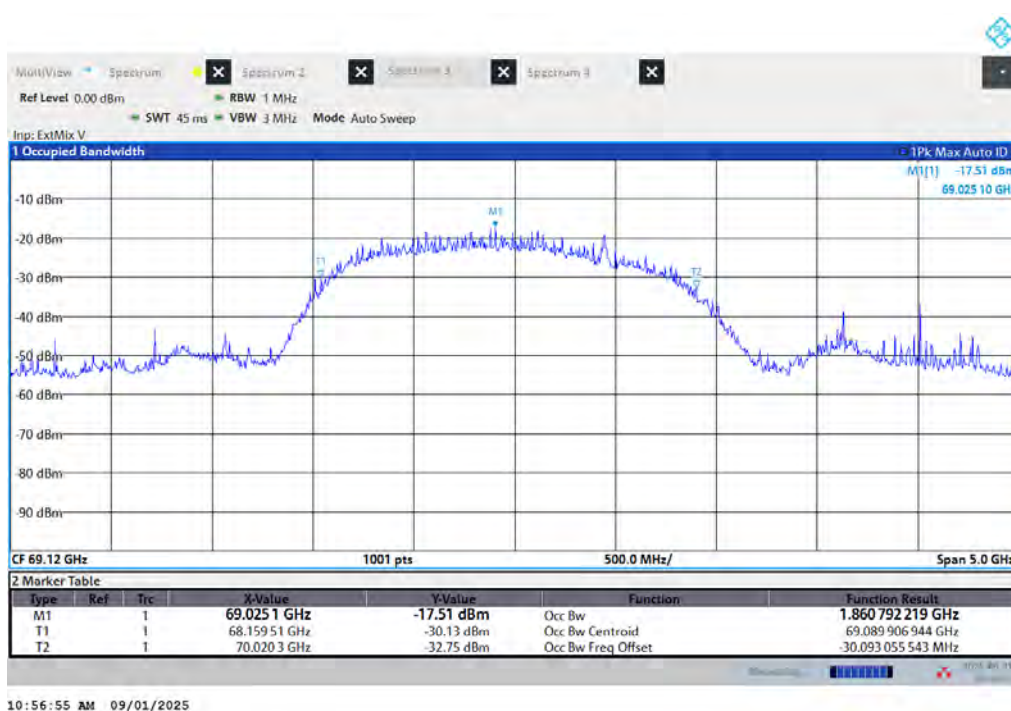


Test Frequency: 69.12 GHz

6 dBc Bandwidth



Occupied Bandwidth



3.3 EIRP Power

3.3.1 Limit of EIRP Power

EIRP Power Limit		
Use Condition	EIRP Average Power	EIRP Peak Power
Fixed field disturbance sensors at within the frequency band 61-61.5GHz	40 dBm	43 dBm
Fixed field disturbance sensors at outside of the band 61-61.5GHz	10 dBm	13 dBm
Except fixed field disturbance sensors at 61-61.5GHz	N/A	10 dBm
Except outdoor fixed Point to Point	40 dBm	43 dBm
Outdoor fixed Point to Point	82 dBm	85 dBm
Note: For fixed point-to-point transmitters located outdoors, the average power of any emission shall not exceed 82 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi. The peak power of any emission shall not exceed 85 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi.		

NOTE: For the applicable limit, see 15.255 (c)

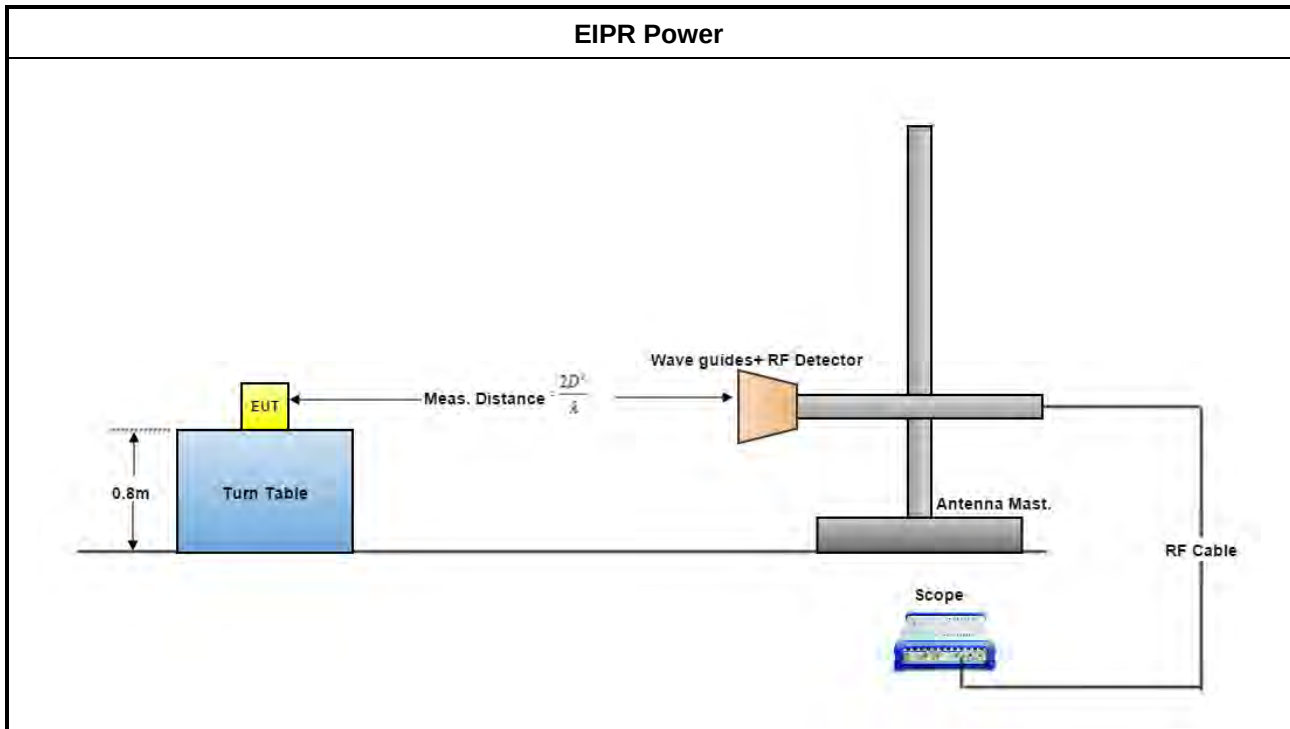
3.3.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.3.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020 clause 9.3 & 9.5.

3.3.4 Test Setup



3.3.5 Test Result of EIRP Power

Test Conditions see ANSI C63.10, clause 5.11 & clause 9

Test Setup see ANSI C63.10, clause 9.11

NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worst case combination to be used for the conformance testing.

**3.3.5.1 Test Result of EIRP Power**

Test Distance				0.50 m							
Test Results											
Test Freq. (GHz)	Rx Gain (dBi)	DSO (mV)		Power Measured (dBm)		E _{Meas} (dBuV/m)		EIRP (dBm)		EIRP Limit (dBm) (note 1)	
		Peak	AV	Peak	AV	Peak	AV	Peak	AV	Peak	AV
58.32	23.6	169.11	126.10	8.49	6.42	157.46	155.39	46.64	44.57	47.6	44.6
64.80	23.6	50.66	35.49	0.32	-1.27	150.21	148.62	39.39	37.80	47.6	44.6
69.12	23.6	72.16	52.31	2.38	0.49	152.83	150.94	42.01	40.12	47.6	44.6
The measured power level is converted to EIRP using the Friis equation: For radiated emissions, calculate the field strength (E) in dBμV/meter. E = 126.8 – 20log(λ) + P - G where: E : is the field strength of the emission at the measurement distance, in dBμV/m P : is the power measured at the output of the test antenna, in dBm λ: is the wavelength of the emission under investigation [300/fMHz], in m G : is the gain of the test antenna, in dBi For radiated emissions, calculate the EIRP (dBm). If the measurement was performed in the far field, calculate the EIRP. EIRP = E-meas +20log(d-meas)-104.7 where: EIRP : is the equivalent isotopically radiated power, in dBm E-meas. : is the field strength of the emission at the measurement distance, in dBμV/m d-meas. : is the measurement distance, in m NOTE 1: For the applicable limit, see 15.255 (c) NOTE 2: The comparison method which replaces EUT with a signal generator is used to find the correct conversion factor between “DSO(mV)” & “Power Measured(dBm)”.											

3.4 Peak Conducted Power

3.4.1 Limit of Peak Conducted Power

Peak Conducted Power Limit			
Use Condition	6dBc Bandwidth	Occupied Bandwidth	Peak Conducted Power (note 1)
Fixed field disturbance sensors at within the frequency band 61-61.5GHz	> 100MHz	≤ 500MHz	500mW
	≤ 100MHz		500mW x (BW/100) (see note 2)
Fixed field disturbance sensors at outside of the band 61-61.5GHz and within 57 -71 GHz	> 100MHz	N/A	500mW
	≤ 100MHz		500mW x (BW/100) (see note 2)
Except fixed field disturbance sensors at 61-61.5GHz	N/A	> 500MHz	-10 dBm
Except outdoor fixed Point to Point,	> 100MHz	N/A	500mW
Outdoor fixed Point to Point	≤ 100MHz	N/A	500mW x (BW/100) (see note 2)
NOTE 1: For the applicable limit, see FCC 15.255(c)			
NOTE 2: BW= 6dB bandwidth (measured at RBW 100kHz)			

3.4.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.4.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020, clause 9.5

3.4.4 Test Result of Peak Conducted Power

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.11
NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worst case combination to be used for the conformance testing.	

3.4.4.1 Peak Conducted Power

Test Results						
Test Freq. (GHz)	EIRP (dBm)	Max. Ant. Gain (dBi)	Peak Power (dBm) (note1)	Peak Power (mW)	6dBc BW (MHz) (note2)	Peak Power Limit (mW) (note3)
58.32	46.64	32.3	14.34	27.185	1163.80	500.00
64.80	39.39	32.3	7.09	5.115	1253.70	500.00
69.12	42.01	32.3	9.71	9.352	1278.70	500.00
NOTE 1: Because EUT used for the integral antenna without temporary RF connector provided. Therefore peak conducted power is equal to EIRP power subtract the antenna gain. NOTE 2: For the 6dBc bandwidth, see test report clause 3.2.5. NOTE 3: For the applicable limit, see FCC 15.255(c) NOTE 4: For radiated emission measurements, calculate conducted transmitter output power P(cond)(dBm) $P(\text{cond}) = \text{EIRP} - G(\text{dBi})$ where: G(dBi) is gain of EUT antenna.						



3.5 Transmitter Spurious Emissions

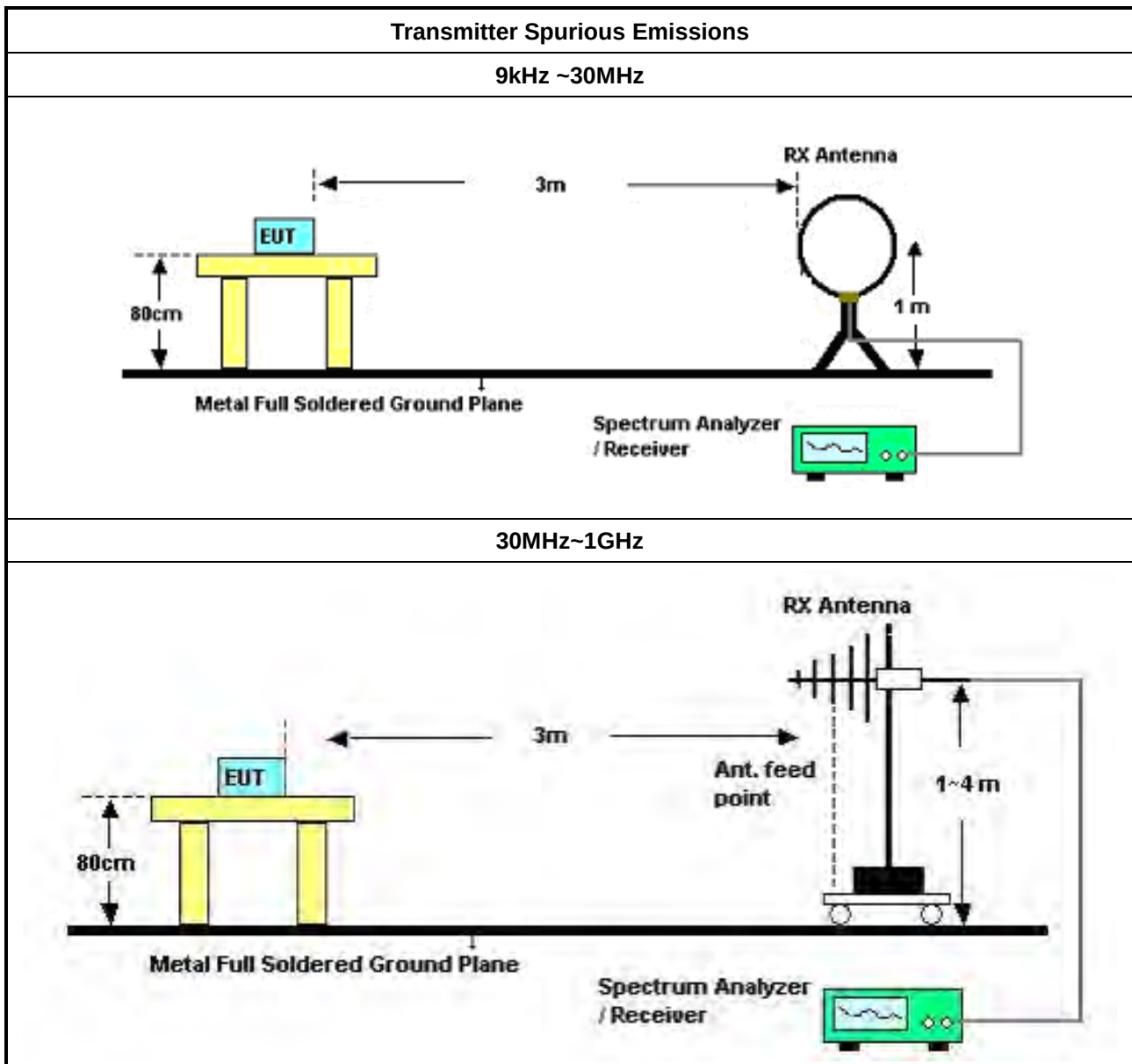
3.5.1 Limit of Transmitter Spurious Emissions

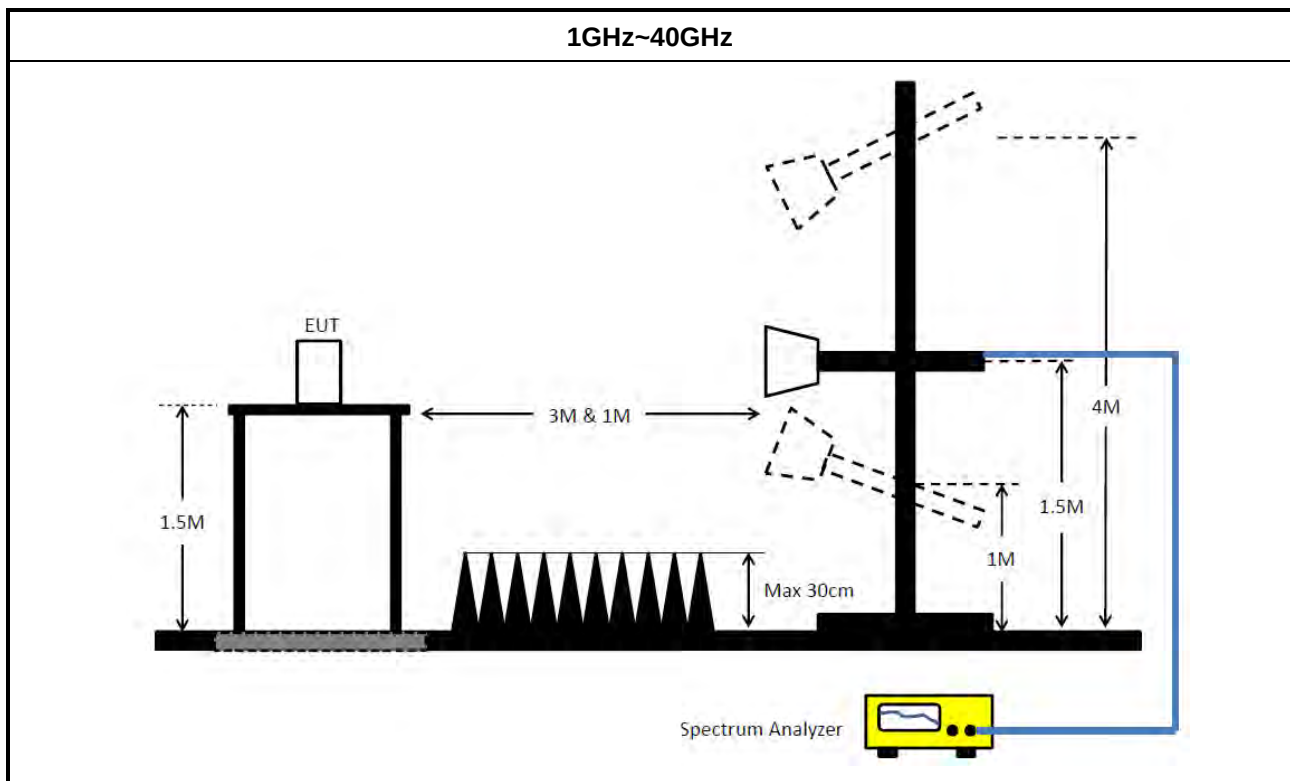
Frequency Range	Limit
Radiated emissions below 40 GHz	Reference to section 15.209
Radiated emissions above 40 GHz – 200GHz	90 pW/cm ² @ 3 m (Equivalent EIRP 102 µW, -9.91dBm)
NOTE 1: For the applicable limit, see 15.255(d)	
NOTE 2: Spurious emissions shall not exceed the level of the fundamental emission.	

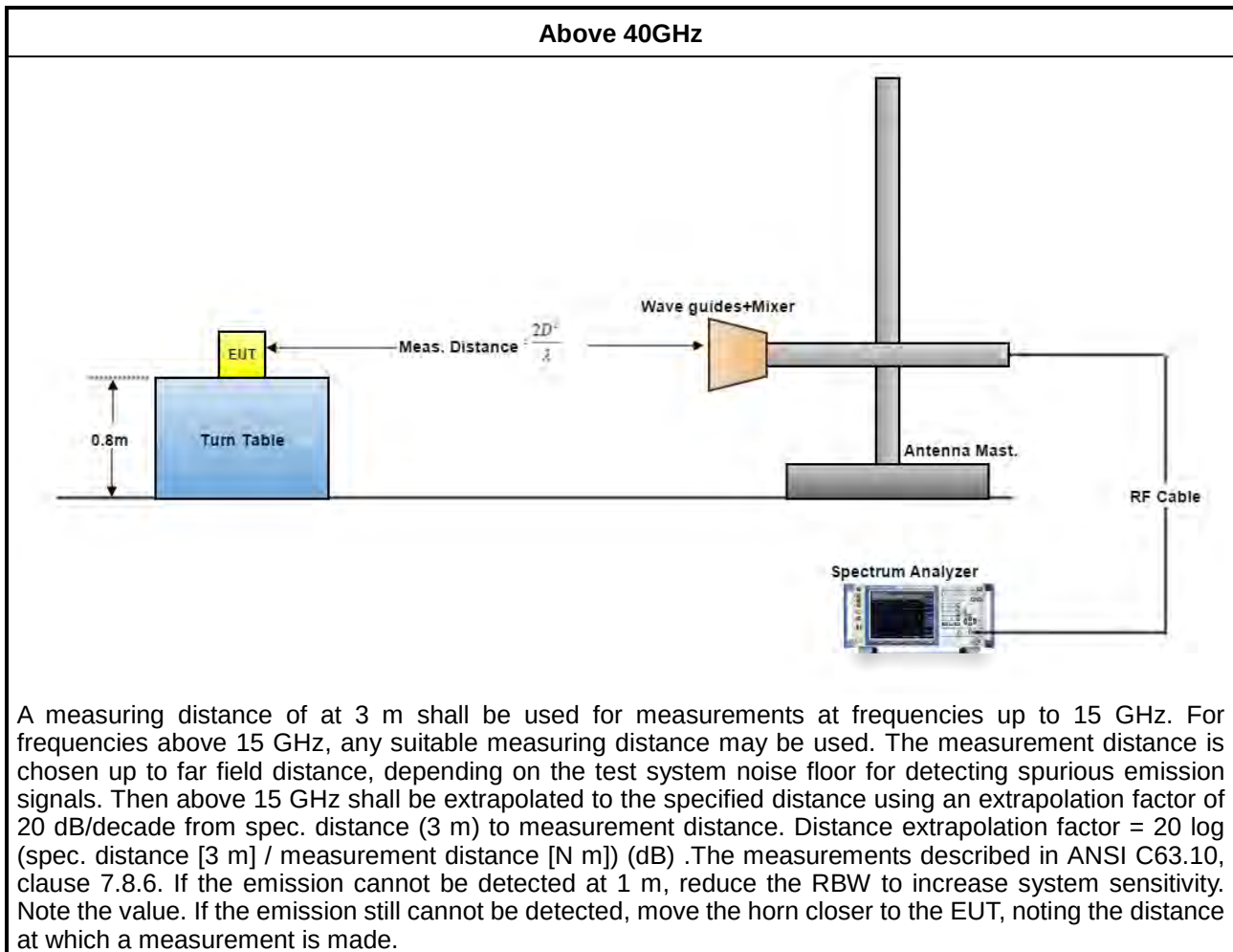
3.5.2 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020, clause 9.12

3.5.3 Test Setup







3.5.4 Measurement Results Calculation

The measured Level is calculated using:

For below 40GHz

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

For above 40GHz

EIRP = Meas. Level - RX Antenna Gain + $20 \cdot \log(4 \cdot \pi \cdot (3.14159) \cdot D / (300 / (\text{Frequency} \cdot 1000)))$



3.5.5 Test Result of Transmitter Spurious Emissions

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.12 ~ 9.13
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

3.5.5.1 Test Result of Transmitter Spurious Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

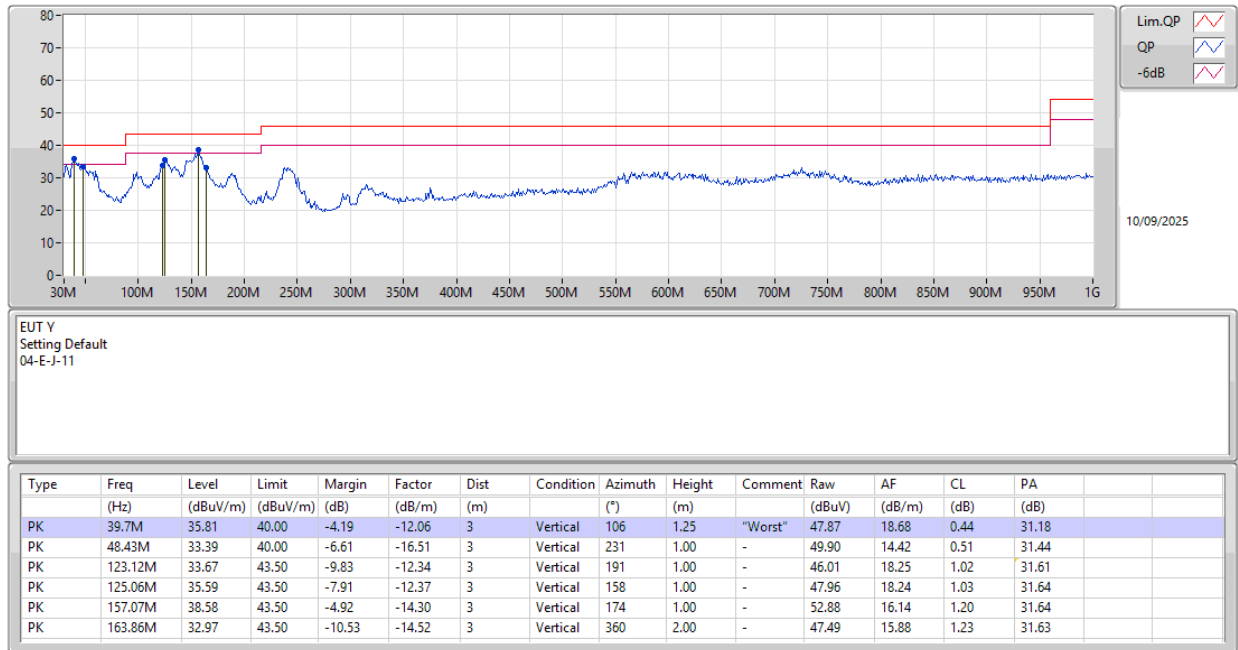


3.5.5.2 Test Result of Transmitter Spurious Emissions

Test Range	30 MHz – 1000 MHz	Test Distance	3 m
Test Configuration	CTX		

Vertical

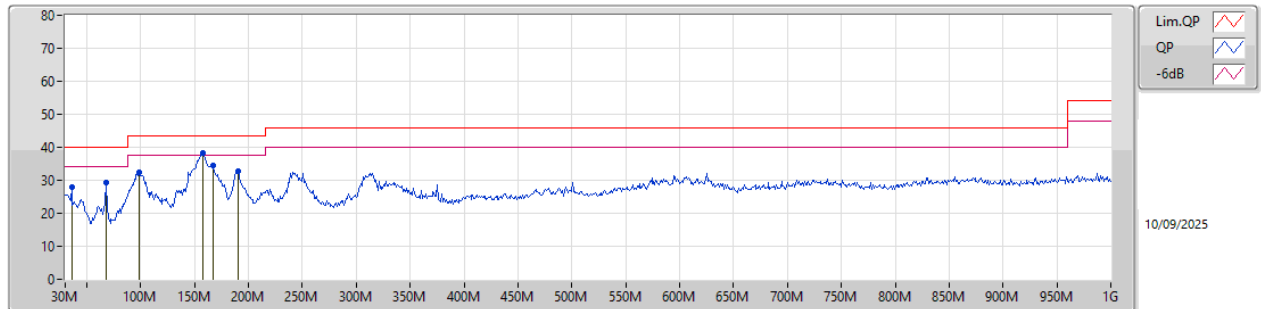
Mode 1





Horizontal

Mode 1



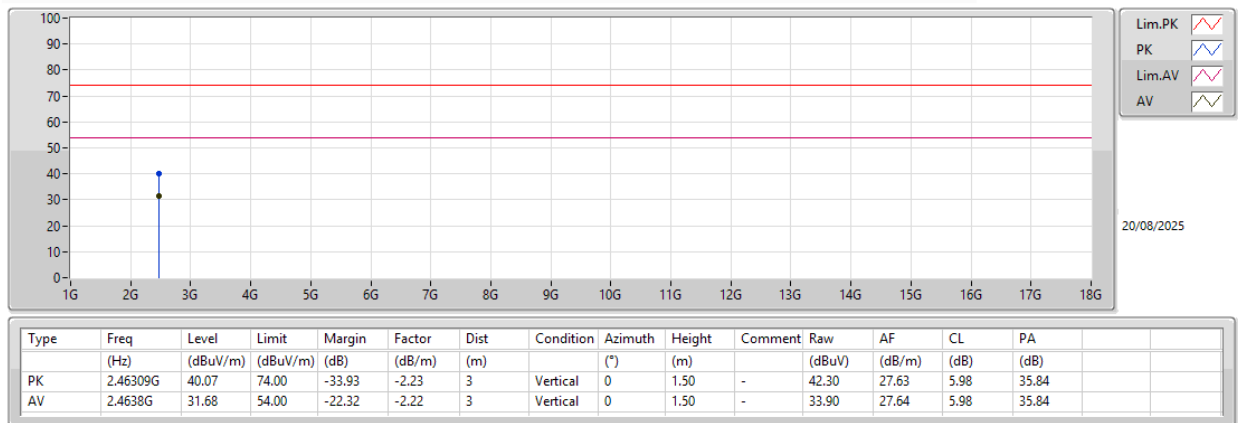
EUT V
Setting Default
04-E-J-11

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	35.82M	28.06	40.00	-11.94	-9.91	3	Horizontal	340	1.00	-	37.97	20.78	0.40	31.09		
PK	67.83M	29.41	40.00	-10.59	-18.72	3	Horizontal	340	1.00	-	48.13	12.26	0.67	31.65		
PK	98.87M	32.54	43.50	-10.96	-14.11	3	Horizontal	72	2.00	-	46.65	16.68	0.90	31.69		
PK	158.04M	38.28	43.50	-5.22	-14.33	3	Horizontal	251	2.00	-	52.61	16.10	1.20	31.63		
PK	166.77M	34.63	43.50	-8.87	-14.56	3	Horizontal	280	1.50	-	49.19	15.84	1.25	31.65		
PK	190.05M	32.81	43.50	-10.69	-15.25	3	Horizontal	283	2.00	-	48.06	15.12	1.37	31.74		

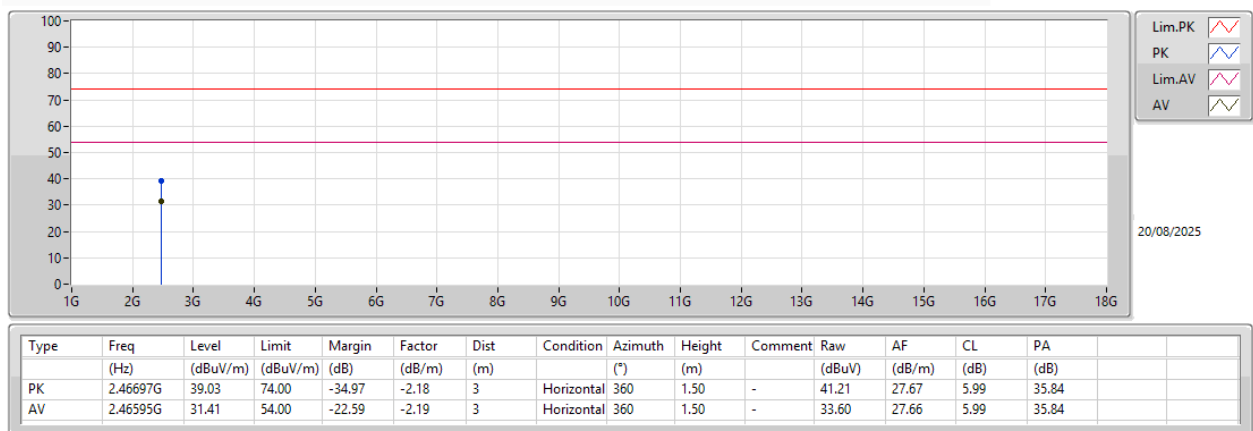


Test Range	1 GHz – 18 GHz	Test Distance	3 m
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Vertical

Mode 1

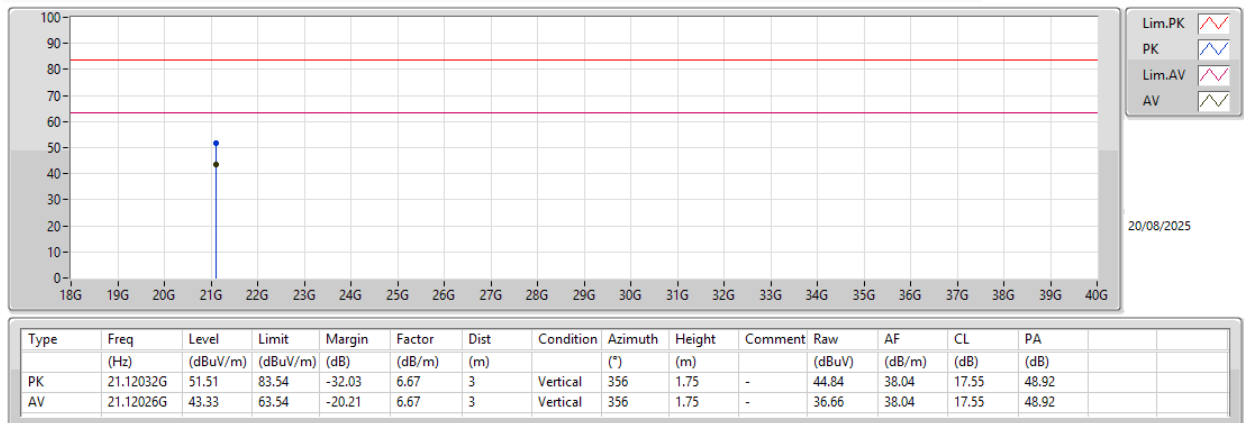
Horizontal

Mode 1

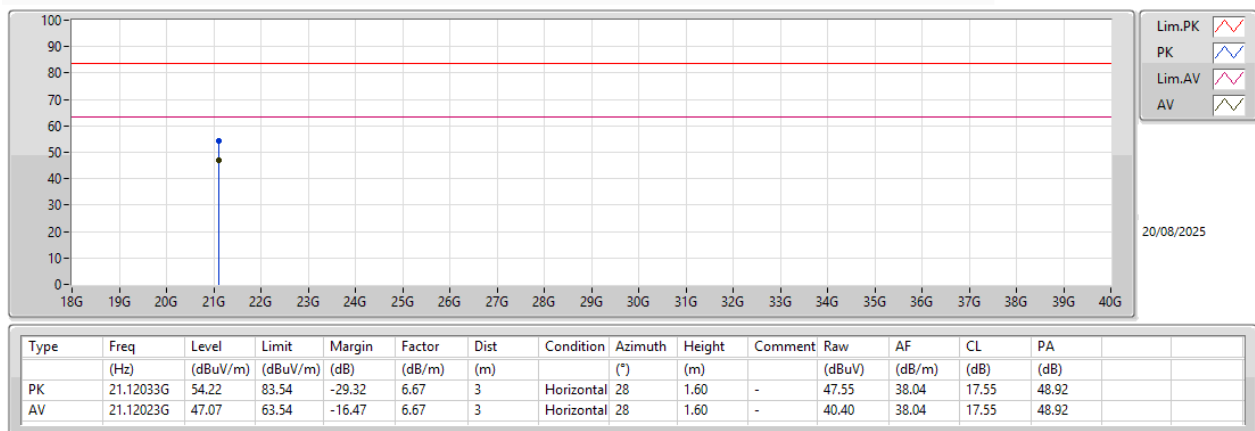


Test Range	18 GHz – 40 GHz	Test Distance	1 m
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Vertical

Mode 1

Horizontal

Mode 1



Test Range	40GHz – 200GHz
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Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
58.32	23.6	1.00	73.012	-87.28
EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm ²)	Limit (pW/cm ²)	Test Result
-41.17	3	0.0675	90.00	PASS

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
64.80	23.6	1.00	75.998	-87.36
EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm ²)	Limit (pW/cm ²)	Test Result
-40.90	3	0.0718	90.00	PASS

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
69.12	23.6	1.00	107.566	-80.48
EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm ²)	Limit (pW/cm ²)	Test Result
-31.00	3	0.7016	90.00	PASS

Note:

$$\text{EIRP} = \text{Prx} - \text{Grx} + \text{Free Space Path Loss} = \text{Prx} - \text{Grx} + 20\log(4\pi d / \lambda)^2$$

Which

Prx = Read Level.

Grx = Rx Antenna Gain.

A distance factor is offset and the formula is $20\log(D1/D2)$

Which

D1 = Specification Distance

D2 = Measurement Distance

3.6 Frequency Stability

3.6.1 Limit of Frequency Stability

Frequency Stability	Limit
Refer as 15.255(f) and ANSI C63.10-2020, clause 9.14	within the frequency bands
Note: These measurements shall also be performed at normal and extreme test conditions.	

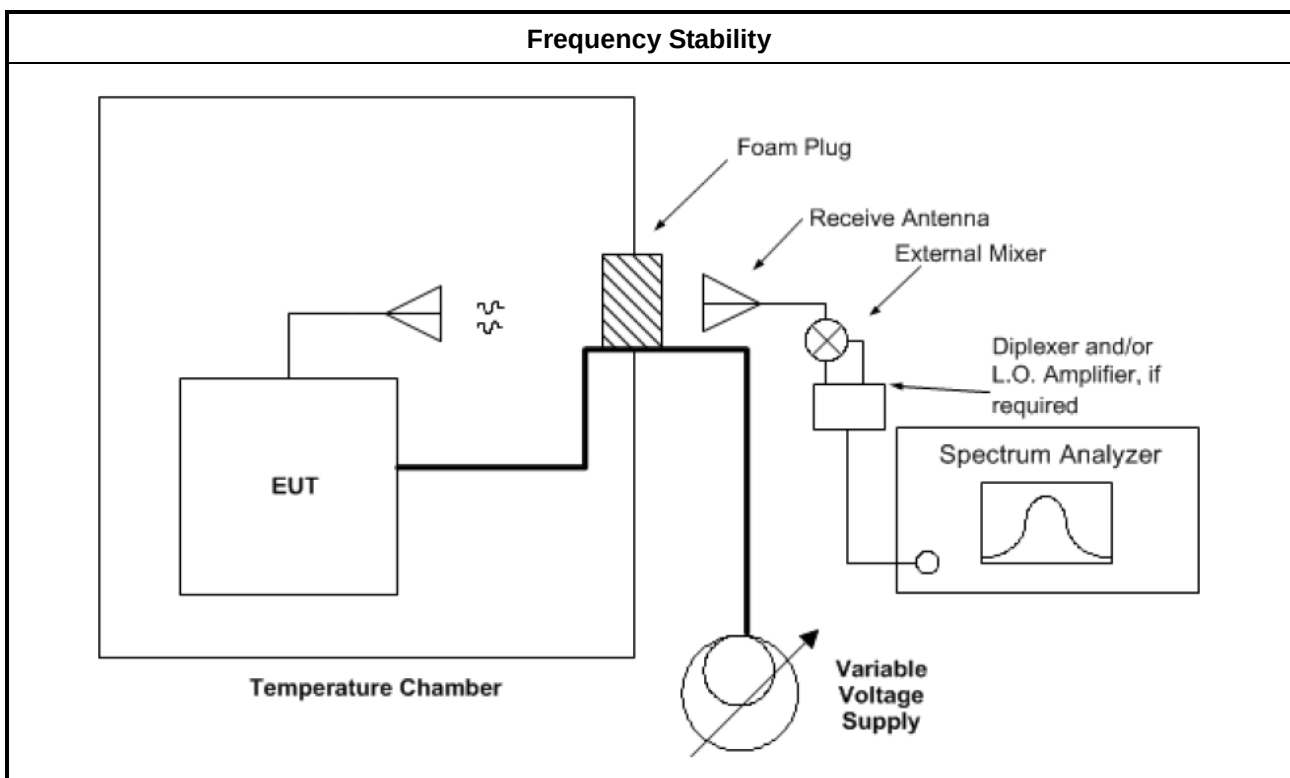
3.6.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.6.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2020, clauses 9.14.

3.6.4 Test Setup





3.6.5 Test Result of Frequency Stability

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.14
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

3.6.5.1 Frequency Stability with Respect to Ambient Temperature

Frequency Stability with Respect to Ambient Temperature			
Test Results			
Test Temperature (°C)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
-30	64759.328	29143	Within band
-20	64756.568	26383	Within band
-10	64743.81	13625	Within band
0	64746.202	16017	Within band
10	64732.066	1881	Within band
20	64730.185	Reference	Within band
30	64732.259	2074	Within band
40	64758.857	28672	Within band
50	64667.982	-62203	Within band
55	64657.357	-72828	Within band
NOTE: The manufacturer's specified temperature range of -30 to 55°C.			

**3.6.5.2 Frequency Stability When Varying Supply Voltage**

Frequency Stability When Varying Supply Voltage			
Test Results			
Test Voltage: (Vdc)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
93.5	64754.32	-1178	Within band
110	64755.496	Reference	Within band
126.5	64754.352	-1144	Within band



3.7 Operation Restriction and Group Installation

3.7.1 Limit of Operation Restriction and Group Installation

Item	Limit
Operation Restriction	Operation is not permitted for the following products: ♦ Equipment used on aircraft or satellites. (Refer as 15.255 (a)) ♦ Field disturbance sensors, including vehicle radar systems, unless the field disturbance sensors are employed for fixed operation. (Refer as 15.255 (a))
Group Installation	Operation is not permitted for the following products: ♦ External phase-locking (Refer as 15.255 (h))

3.7.2 Result of Operation Restriction

Manufacturer declares that EUT will not be used on aircraft or satellites. Then user manual will include a statement to caution EUT is not permitted for use on aircraft or satellites.

3.7.3 Result of Group Installation

The frequency, amplitude and phase of the transmit signal are set within the EUT. There are no external phase-locking inputs or any other means of combining two or more units together to realize a beam-forming array.



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Mar. 06, 2025	Mar. 05, 2026	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 18, 2025	Feb. 17, 2026	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	May 10, 2025	May 09, 2026	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	Conduction (CO01-CB)
COND Cable	Woken	Cable	CO01	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	Conduction (CO01-CB)
Test Software	SPORTON	SENSE-EMI	V5.11	150kHz-30MHz	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30MHz	Oct. 17, 2024	Oct. 16, 2025	Radiation (03CH04-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Jul. 30, 2025	Jul. 29, 2026	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N0 607	30MHz ~ 1GHz	Oct. 05, 2024	Oct. 04, 2025	Radiation (03CH04-CB)
Pre-Amplifier	EMCI	EMC330N	980391	20MHz ~ 3GHz	May 21, 2025	May 20, 2026	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Mar. 24, 2025	Mar. 23, 2026	Radiation (03CH04-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 21, 2024	Oct. 20, 2025	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz ~ 1GHz	Apr. 25, 2025	Apr. 24, 2026	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.8	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Sep. 28, 2024	Sep. 27, 2025	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Jun. 06, 2025	Jun. 05, 2026	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz ~ 26.5GHz	Jun. 28, 2025	Jun. 27, 2026	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Apr. 21, 2025	Apr. 20, 2026	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH05-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
*Harmonic Mixer	R&S	FS-Z60	100114	40GHz~60GHz	Nov. 22, 2024	Nov. 21, 2026	Radiation (03CH05-CB)
*Harmonic Mixer	R&S	FS-Z75	100966	50GHz~75GHz	Nov. 22, 2024	Nov. 21, 2026	Radiation (03CH05-CB)
*Harmonic Mixer	R&S	FS-Z90	102135	60GHz~90GHz	Sep. 13, 2024	Sep. 12, 2026	Radiation (03CH05-CB)
*Harmonic Mixer	R&S	FS-Z140	101160	90GHz~140GHz	Jan. 20, 2025	Jan. 19, 2027	Radiation (03CH05-CB)
*Harmonic Mixer	R&S	FS-Z220	101065	140GHz~220GHz	Jan. 20, 2025	Jan. 19, 2027	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M19RH	U91113-A	40 ~ 60 GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M15RH	V91113-A	50 ~ 75 GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M12RH	E91113-A	60 ~ 90 GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M08RH	F91113-A	90 ~ 140 GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M05RH	G91113-A	140 ~ 220 GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Detector	MI-WAVE	950V/385	04YYP5	50 GHz ~ 75 GHz	Nov. 26, 2024	Nov. 25, 2025	Radiation (03CH05-CB)
PC Oscilloscope	PICO TECH	6402C	CX372/002	N/A	Jun. 16, 2025	Jun. 15, 2026	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.8	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Jan. 02, 2025	Jan. 01, 2026	Radiation (TH03-CB)
Temp. and Humidity Chamber	Gaint Force	GTH-408-40-CP-AR	MAA1410-011	-40~100 degree	Aug. 30, 2024	Aug. 29, 2025	Radiation (TH03-CB)
RF Cable	Woken	RG402	High Cable-11	30MHz ~18 GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (TH03-CB)
RF Cable	Woken	RG402	High Cable-12	30MHz ~18 GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (TH03-CB)
RF Cable	Woken	RG402	High Cable-13	30MHz ~18 GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (TH03-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.



5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (40GHz ~ 60GHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (60GHz ~ 90GHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (90GHz ~ 200GHz)	3.1 dB	Confidence levels of 95%
Occupied Bandwidth	2.1 %	Confidence levels of 95%
Frequency Stability	0.02 ppm	Confidence levels of 95%
Radiated EIRP	3.2 dB	Confidence levels of 95%
Temperature	1.0°C	Confidence levels of 95%