

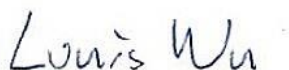


FCC RADIO TEST REPORT

FCC ID : 2AEUPBHASC081
Equipment : Stick Up Cam Pro
Brand Name : ring
Model Name : 5E72E9
Applicant : Ring LLC
12515 Cerise Ave, Hawthorne, CA 90250, USA
Manufacturer : Ring LLC
12515 Cerise Ave, Hawthorne, CA 90250, USA
Standard : FCC Part 15 Subpart C §15.249

The product was received on Apr. 28, 2022 and testing was performed from Jun. 06, 2022 to Jul. 12, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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. Wensan Laboratory, the test report shall not be reproduced except in full.



Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR242615E	01	Initial issue of report	Sep. 16, 2022
FR242615E	02	1. Revise Product Feature 2. This report is an updated version, replacing the report issued on Sep. 16, 2022.	Mar. 27, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.249(a) 15.249(d)	Field Strength of Fundamental and Radiated Spurious Emission	Pass	1.97 dB under the limit at 24250.000 MHz
3.3	15.207	AC Conducted Emission	Pass	16.97 dB under the limit at 0.538 MHz
-	15.249(b)	Frequency Stability	Not Required	Note
3.4	15.203	Antenna Requirements	Pass	

Note: Only applicable to fixed point to point systems.

Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- The measurement uncertainty please refer to report "Uncertainty of Evaluation".

Comments and Explanations:

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

Reviewed by: Keven Cheng
Report Producer: Ruby Zou

1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth-LE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, LoRa, and 24G Radar.

Product Feature		
Antenna Type	WLAN: PIFA Antenna Bluetooth-LE: PIFA Antenna LoRa: PIFA Antenna 24GHz Radar: Patch Antenna	
SW Version	1.12.21	
HW Version	B6	
Antenna information		
24.05 GHz ~ 24.25 GHz	Peak Gain (dBi)	2

Remark: The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory			
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855			
Test Site No.	Sporton Site No.			
	TH05-HY	CO07-HY	03CH10-HY	03CH18-HY
Test Engineer	Eric Jeng	Louis Chung	Eric Jeng	Eric Jeng
Temperature (°C)	24~25	22.4~25.6	23.5~24.1	22.5~23.6
Relative Humidity (%)	52~56	48.2~57.1	50.5~51.3	54.5~56.1

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786



1.4 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.249
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find Y plane as worst plane.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Test Mode

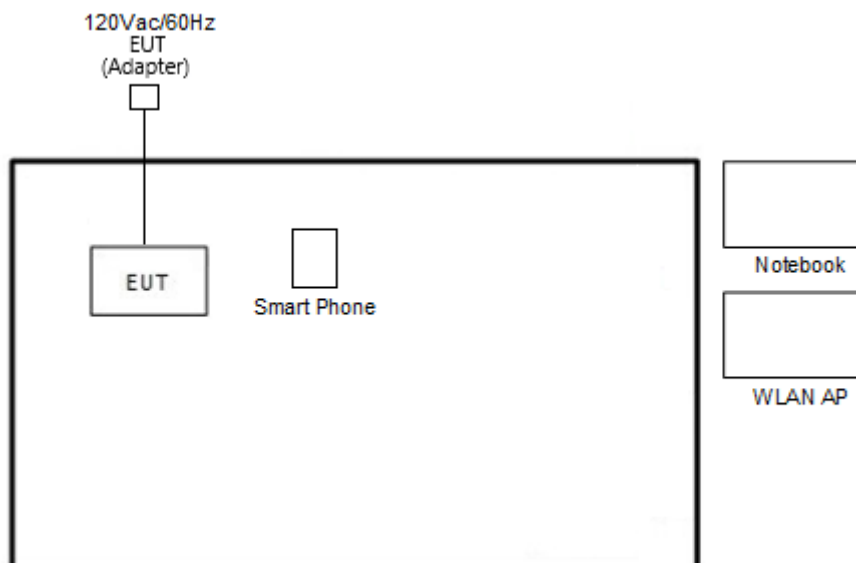
Frequency Band	Frequency (MHz)	Modulation
24.05-24.25 GHz	24060	CW
24.05-24.25 GHz	24150	CW
24.05-24.25 GHz	24240	CW

Note: The 99%OBW is tested by using FMCW, and the rest of test cases use CW mode in accordance with FCC Part 15.31(c).

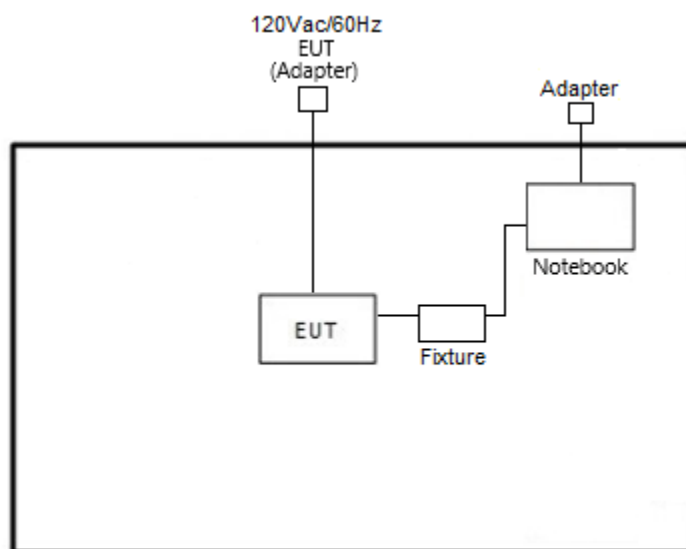
Test Cases	
AC Conducted Emission	Mode 1 :IR LED On + PIR Sensor On+ Lora Tx + WLAN (2.4GHz) Link + Camera On + Mounting Plate (Base) + Charging Battery 1 + Adapter + Bluetooth-LE Link + Speaker + 24G Radar On
Remark: For Radiated Test Cases, the tests were performed with Battery 1.	

2.2 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx Mode>



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC52	N/A	N/A	Unshielded,1.8m
2.	Notebook	Dell	P79G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Smartphone	HTC	M9pw	N/A	N/A	N/A
4.	Fixture	Segger	J-LINK V9	N/A	N/A	N/A

2.4 EUT Operation Test Setup

The RF test items, utility “J-Link V6.34g” was installed in Notebook and connected to the EUT which was programmed in order to make the EUT get into the engineering modes for continuous transmitting signals.

3 Test Result

3.1 99% Bandwidth Measurement

3.1.1 Limit of 99% Bandwidth

For reference only.

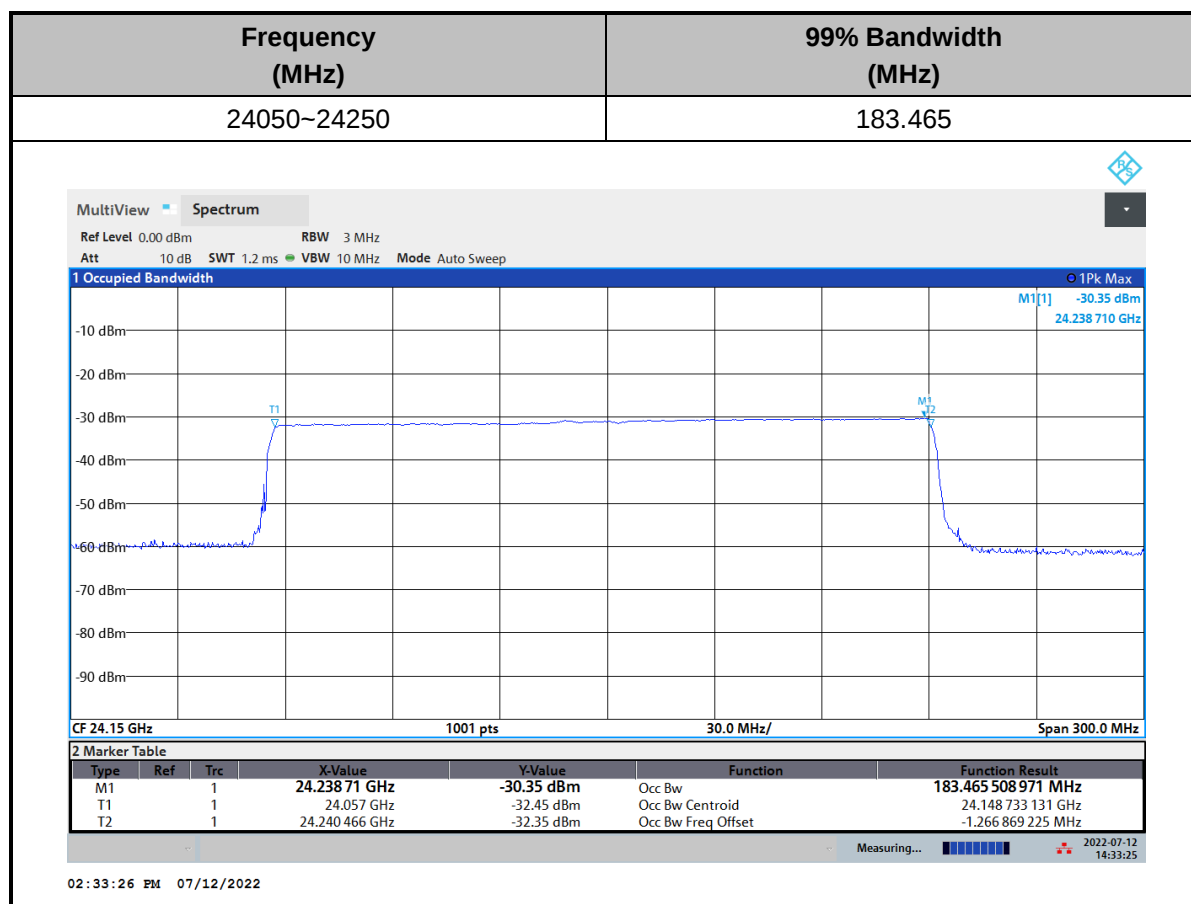
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3.
2. Enable the EUT transmit continuously under FMCW mode.
3. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 * RBW$.
4. Measure and record the results in the test report.

3.1.4 Test Result of 99% Occupied Bandwidth



3.2 Field Strength of Fundamental/Harmonics and Radiated Spurious Emission Measurement

3.2.1 Limit

The field strength measured at 3 meters shall not exceed the limits in the following table:

Rules and specifications	FCC CFR 47 Part 15 section 15.249	
Description	Field strength of fundamental	
24.0~24.25 (GHz)	Field strength of fundamental (millivolts/meter) at 3m	Field strength of fundamental (dBμV/m) at 3m
Average limits	250	107.95
Peak limits	-	127.95
Description	Field strength of harmonics	
24.0~24.25 (GHz)	Field strength of harmonics (microvolts/meter) at 3m	Field strength of harmonics (dBμV/m) at 3m
Average limits	2500	67.95
Peak limits	-	87.95
Note: Above 18GHz, the distance correction factor is used, 18GHz to 90GHz : $20\log(1m/3m) = -9.54dB$; 90GHz – 100GHz: $20\log(0.5m/3m) = -15.56dB$.		

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	$2400/F(kHz)$	300
0.490 – 1.705	$24000/F(kHz)$	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

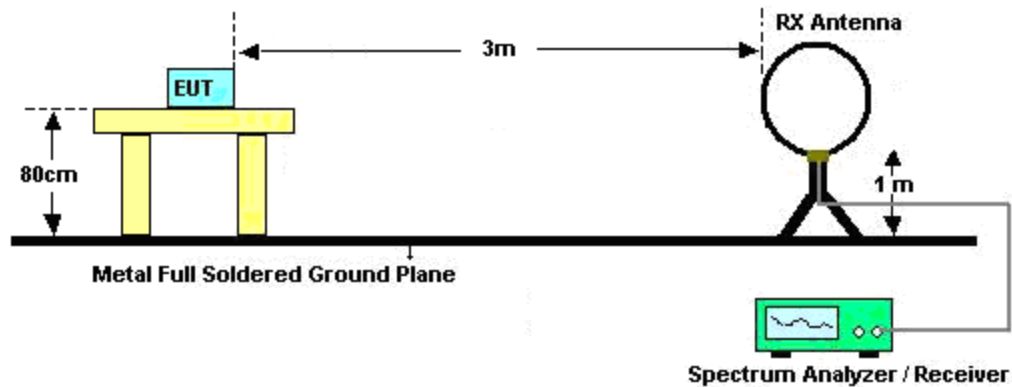
See list of measuring equipment of this test report.

3.2.3 Test Procedures

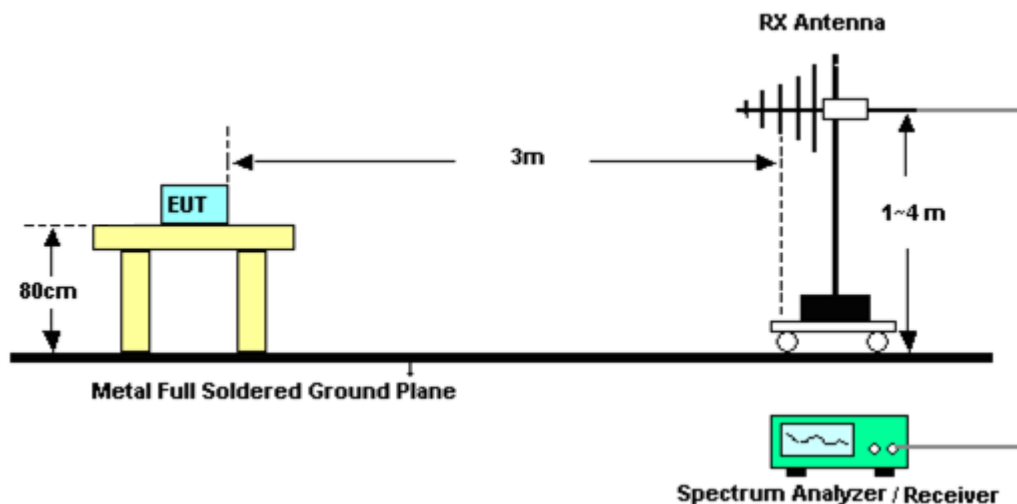
For emissions 9KHz to 40GHz, ANSI C63.10 Section 6.3 Radiated emissions testing follows, and for emissions 40GHz to 100GHz, ANSI C63.10 Section 9.8 and 9.9 radiated measurements follows. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and with 1.5 meter height for frequency above 1GHz, and was arranged test distance as shown in Section 3.4 Test Setup, respectively. For emissions, test results are attenuated more than 20 dB below the permissible value need not be reported in accordance with FCC Part 15.31(O).

3.2.4 Test Setup

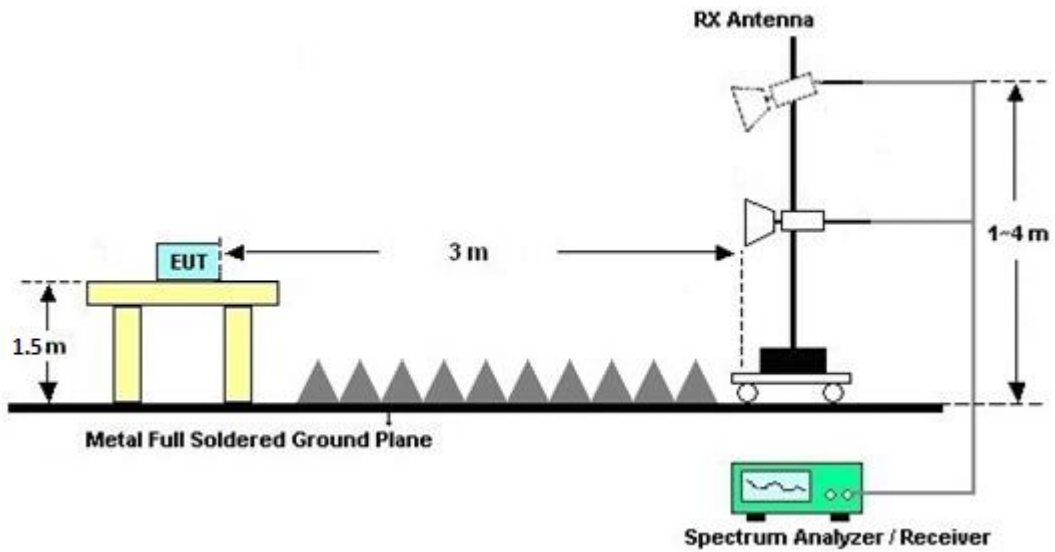
<For radiated emissions below 30MHz>



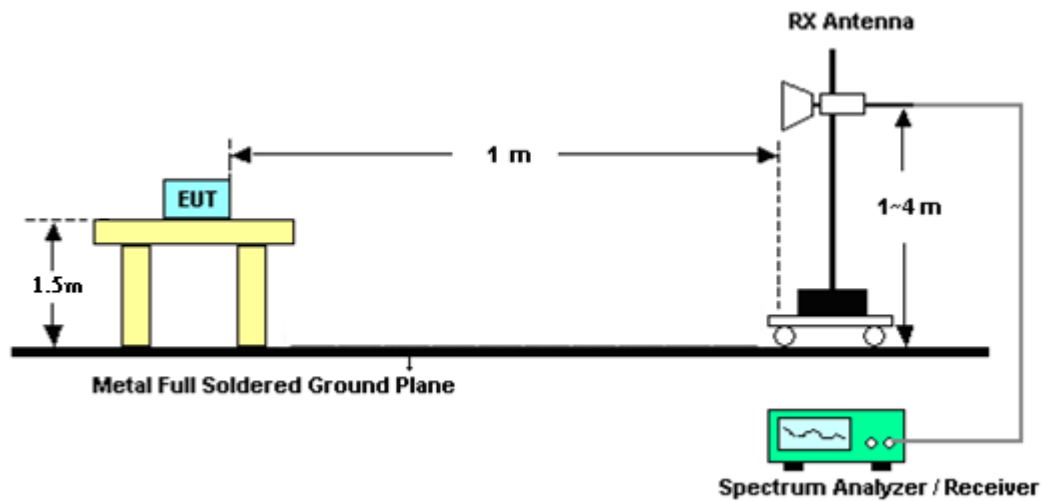
<For radiated emissions from 30MHz ~ 1GHz>



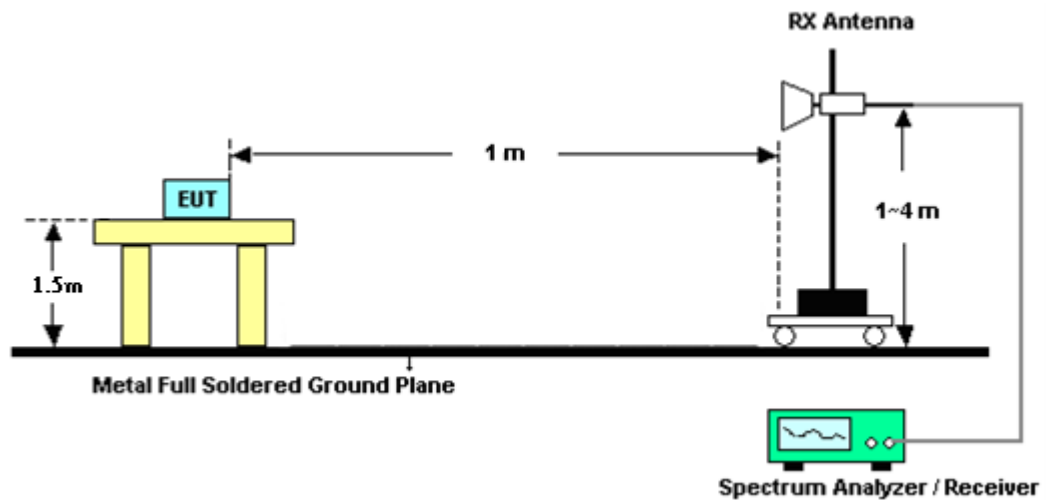
<For radiated emissions from 1 ~ 18GHz>



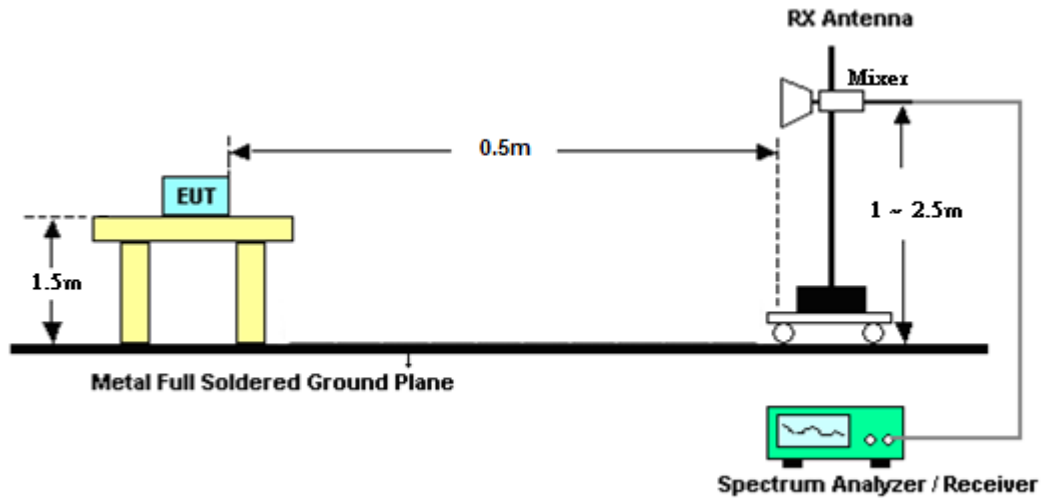
<For radiated emissions from 18 ~ 40GHz>



<For radiated emissions above 40 ~ 90GHz>



<For radiated emissions above 90 ~ 100GHz>



3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

3.2.6 Test Result of Field Strength of Fundamental and Radiated Spurious Emission

Please refer to Appendix B and C.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

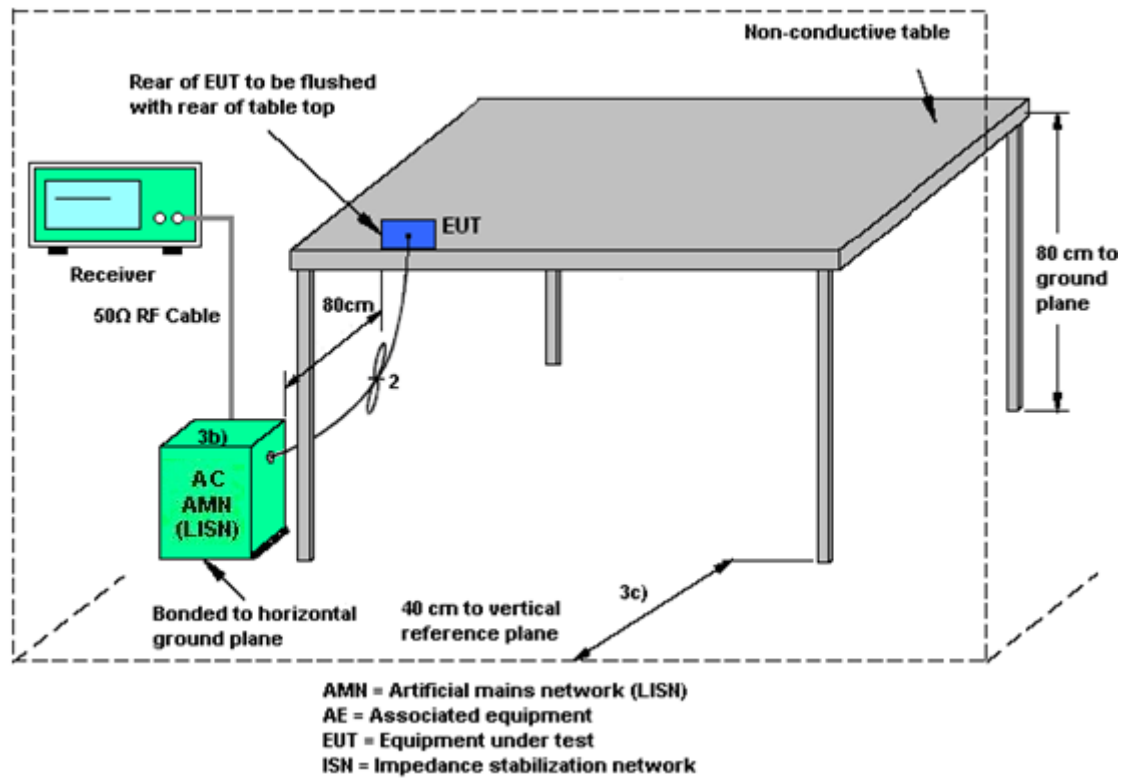
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

1. Connect EUT to the power mains through a line impedance stabilization network (LISN).
2. All the support units are connecting to the other LISN.
3. The LISN provides 50 ohm coupling impedance for the measuring instrument.
4. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



3.4 Antenna Requirements

3.4.1 Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

3.4.2 Antenna Connector Construction

Embedded in Antenna.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101009	9kHz to 44GHz	Nov. 11, 2021	Jun. 06, 2022~ Jun.11, 2022	Nov. 10, 2022	Radiation (03CH18-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170980	18GHz-40GHz	Jan. 25, 2022	Jun. 06, 2022~ Jun.11, 2022	Jan. 24, 2023	Radiation (03CH18-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Jun. 06, 2022~ Jun.11, 2022	Dec. 23, 2022	Radiation (03CH18-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519226/2,804014/2,804026 /2	30MHz~40GHz	Jan. 19, 2022	Jun. 06, 2022~ Jun.11, 2022	Jan. 18, 2023	Radiation (03CH18-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101009	9kHz to 44GHz	Nov. 11, 2021	Jun. 16, 2022~ Jun. 22, 2022	Nov. 10, 2022	Radiation (03CH18-HY)
Harmonic Mixer	Rohde & Schwarz	RPG FS-Z60	100986	40GHz to 60GHz	Apr. 09, 2021	Jun. 16, 2022~ Jun. 22, 2022	Apr. 08, 2024	Radiation (03CH18-HY)
Harmonic Mixer	Rohde & Schwarz	RPG FS-Z75	101557	50 GHz to 75 GHz	Apr. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Apr. 05, 2024	Radiation (03CH18-HY)
Harmonic Mixer	Rohde & Schwarz	FSZ-90	101811	60GHz to 90GHz	Nov. 16, 2021	Jun. 16, 2022~ Jun. 22, 2022	Nov. 15, 2024	Radiation (03CH18-HY)
Harmonic Mixer	Rohde & Schwarz	RPG FS-Z140	101128	90GHz to 140GHz	Oct. 26, 2020	Jun. 16, 2022~ Jun. 22, 2022	Oct. 25, 2023	Radiation (03CH18-HY)
Antenna	Quinstar	QWH-UPRR00	QWH-UPRR00-01	40-60 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Antenna	Quinstar	QWH-VPRR00	1371800009	50-75 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Antenna	Quinstar	QWH-EPRR00	1372000000	60-90 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Antenna	Quinstar	QWH-FPRR00	1011500008	90-140 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Solid State Amplifier	Quinstar	QLW-40605030-00	953500005	40 ~ 60 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Solid State Amplifier	Quinstar	QLW-50754530-12	953600006	50 ~ 75 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
Solid State Amplifier	Quinstar	QLW-70905030-12	953700007	70 ~ 90 GHz	Jul. 06, 2021	Jun. 16, 2022~ Jun. 22, 2022	Jul. 05, 2024	Radiation (03CH18-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801589/2	N/A	Nov. 30, 2021	Jun. 16, 2022~ Jun. 22, 2022	Nov. 29, 2022	Radiation (03CH18-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801607/2	N/A	Nov. 30, 2021	Jun. 16, 2022~ Jun. 22, 2022	Nov. 29, 2022	Radiation (03CH18-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Oct. 20, 2021	Jun. 17, 2022~ Jun. 18, 2022	Oct. 19, 2022	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35413 & 02	30MHz~1GHz	Nov. 18, 2021	Jun. 17, 2022~ Jun. 18, 2022	Nov. 17, 2022	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz~18GHz	Oct. 21, 2021	Jun. 17, 2022~ Jun. 18, 2022	Oct. 20, 2022	Radiation (03CH10-HY)
Preamplifier	Jet-Power	JAP00101800-30-10P	160118550004	1GHz~18GHz	Feb. 27, 2022	Jun. 17, 2022~ Jun. 18, 2022	Feb. 26, 2023	Radiation (03CH10-HY)
Signal Analyzer	Keysight	N9010B	MY60241055	10Hz~44GHz	Jul. 12, 2021	Jun. 17, 2022~ Jun. 18, 2022	Jul. 11, 2022	Radiation (03CH10-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jun. 17, 2022~ Jun. 18, 2022	N/A	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jun. 17, 2022~ Jun. 18, 2022	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Jun. 17, 2022~ Jun. 18, 2022	N/A	Radiation (03CH10-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Jun. 17, 2022~ Jun. 18, 2022	N/A	Radiation (03CH10-HY)
EMI Test Receiver	Keysight	N9038A	MY59053012	3Hz~26.5GHz	Nov. 18, 2021	Jun. 17, 2022~ Jun. 18, 2022	Nov. 17, 2022	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E, MY11693/4P E, MY2855/2	30MHz~1GHz	Nov. 04, 2021	Jun. 17, 2022~ Jun. 18, 2022	Nov. 03, 2022	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E, MY11693/4P E, MY2855/2	1GHz~18GHz	Nov. 04, 2021	Jun. 17, 2022~ Jun. 18, 2022	Nov. 03, 2022	Radiation (03CH10-HY)
Hygrometer	TECEPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Jul. 12, 2022	Nov. 15, 2022	Conducted (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519226/2,804 014/2,804026 /2	30MHz~40GHz	Jan. 19, 2022	Jul. 12, 2022	Jan. 18, 2023	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101009	9kHz to 44GHz	Nov. 11, 2021	Jul. 12, 2022	Nov. 10, 2022	Conducted (TH05-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jul. 06, 2022	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 06, 2022	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 29, 2021	Jul. 06, 2022	Oct. 28, 2022	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 16, 2022	Jul. 06, 2022	Mar. 15, 2023	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 16, 2022	Jul. 06, 2022	Feb. 15, 2023	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	9kHz~7GHz	Feb. 24, 2022	Jul. 06, 2022	Feb. 23, 2023	Conduction (CO07-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.30 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.90 dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.30 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.80 dB
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Uncertainty of Radiated Emission Measurement (40 GHz ~ 140 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.60 dB
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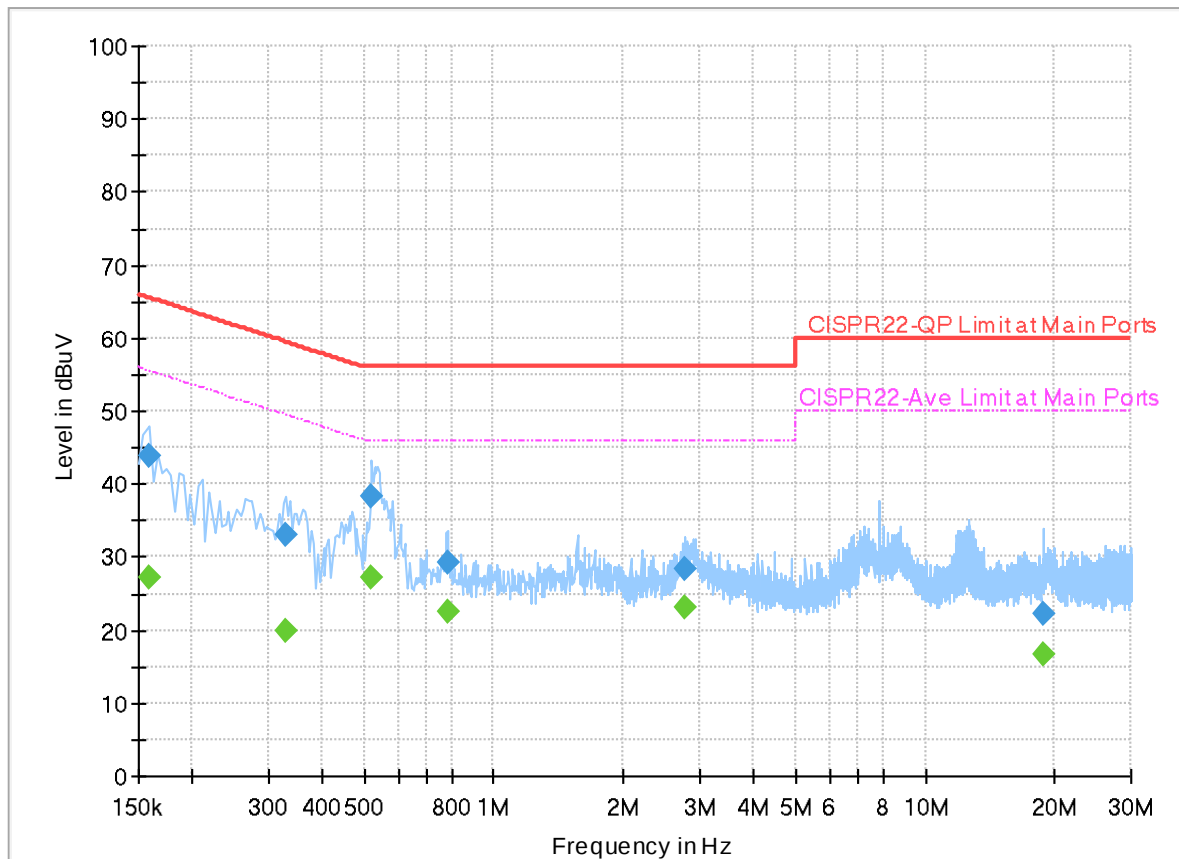


Appendix A. AC Conducted Emission Test Results

EUT Information

Report NO : 242615
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



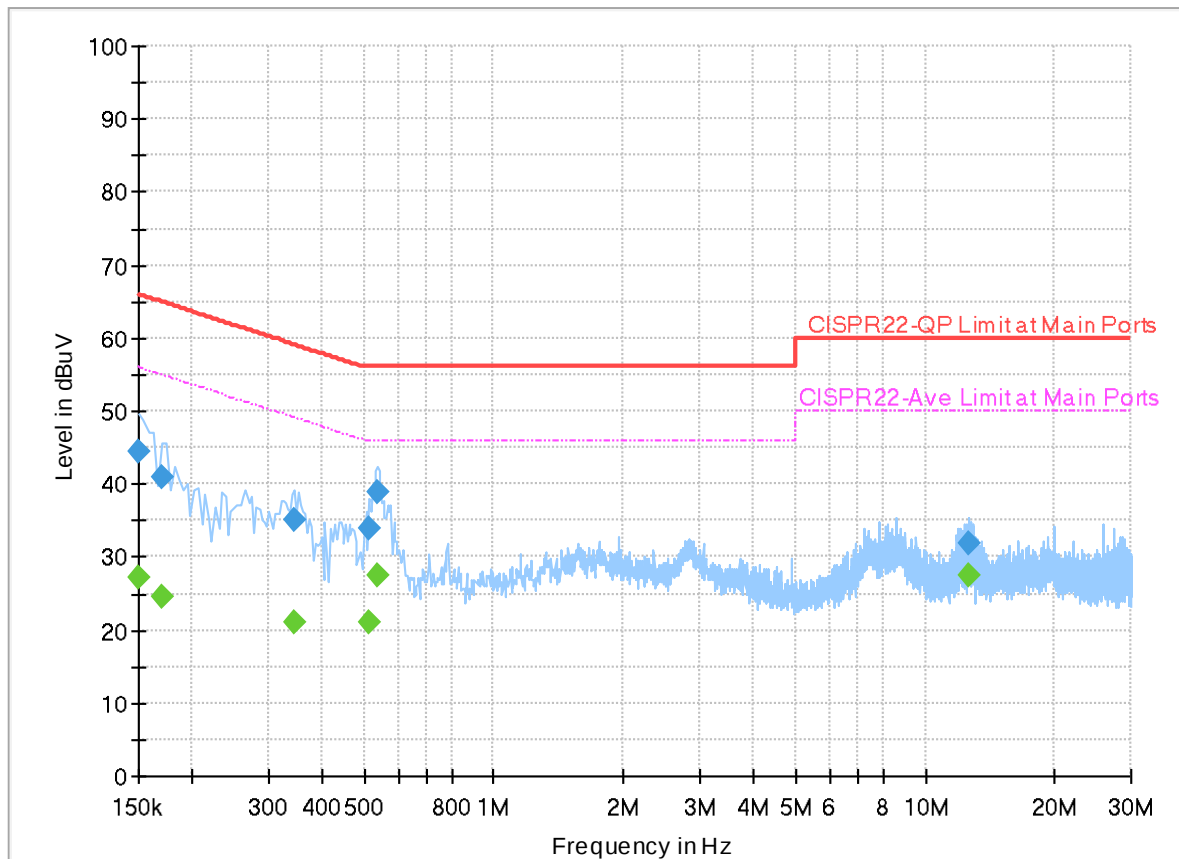
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.158000	---	27.24	55.57	28.33	L1	OFF	20.0
0.158000	43.78	---	65.57	21.79	L1	OFF	20.0
0.330000	---	19.90	49.45	29.55	L1	OFF	20.0
0.330000	32.90	---	59.45	26.55	L1	OFF	20.0
0.522000	---	27.13	46.00	18.87	L1	OFF	20.0
0.522000	38.39	---	56.00	17.61	L1	OFF	20.0
0.782000	---	22.38	46.00	23.62	L1	OFF	20.0
0.782000	29.11	---	56.00	26.89	L1	OFF	20.0
2.778000	---	23.24	46.00	22.76	L1	OFF	20.0
2.778000	28.35	---	56.00	27.65	L1	OFF	20.0
18.826000	---	16.71	50.00	33.29	L1	OFF	20.2
18.826000	22.14	---	60.00	37.86	L1	OFF	20.2

EUT Information

Report NO : 242615
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	27.25	56.00	28.75	N	OFF	20.0
0.150000	44.49	---	66.00	21.51	N	OFF	20.0
0.170000	---	24.66	54.96	30.30	N	OFF	20.0
0.170000	40.91	---	64.96	24.05	N	OFF	20.0
0.346000	---	21.01	49.06	28.05	N	OFF	20.0
0.346000	34.96	---	59.06	24.10	N	OFF	20.0
0.514000	---	21.10	46.00	24.90	N	OFF	20.0
0.514000	34.05	---	56.00	21.95	N	OFF	20.0
0.538000	---	27.36	46.00	18.64	N	OFF	20.0
0.538000	39.03	---	56.00	16.97	N	OFF	20.0
12.686000	---	27.60	50.00	22.40	N	OFF	20.2
12.686000	32.01	---	60.00	27.99	N	OFF	20.2



Appendix B. Radiated Spurious Emission

Test Engineer :	Eric Jeng	Temperature :	23.5~24.1°C
		Relative Humidity :	50.5~51.3%

24GHz 24000~24250MHz

(Field strength of fundamental @ 3m)

24GHz	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	Line (dBμV/m)	Level (dBμV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	Avg. (P/A)	(H/V)
24.06GHz		23530	47.19	-26.81	74	65.22	38.95	6.55	53.99	144	322	P	H
		23502	33.7	-20.3	54	51.7	39	6.54	54	144	322	A	H
	*	24058	91.19	-36.76	127.95	109.1	38.7	6.68	53.75	144	322	P	H
	*	24058	90.71	-17.29	108	108.62	38.7	6.68	53.75	144	322	A	H
		24712	47.66	-26.34	74	64.72	39.03	6.72	53.27	144	322	P	H
		24750	33.59	-20.41	54	50.66	39	6.72	53.25	144	322	A	H
		23500	48	-26	74	66	39	6.54	54	158	331	P	V
		23502	33.39	-20.61	54	51.39	39	6.54	54	158	331	A	V
	*	24058	98.19	-29.76	127.95	116.1	38.7	6.68	53.75	158	331	P	V
	*	24058	97.39	-10.61	108	115.3	38.7	6.68	53.75	158	331	A	V
		24750	46.87	-27.13	74	63.94	39	6.72	53.25	158	331	P	V
		24748	33.21	-20.79	54	50.28	39	6.72	53.25	158	331	A	V
24.15GHz		23520	42.31	-31.69	74	60.32	38.97	6.55	53.99	140	322	P	H
		23502	28.13	-25.87	54	46.13	39	6.54	54	140	322	A	H
	*	24148	91.34	-36.61	127.95	109.17	38.7	6.69	53.68	140	322	P	H
	*	24148	90.21	-17.79	108	108.04	38.7	6.69	53.68	140	322	A	H
		25320	42.21	-31.79	74	59.29	38.79	6.77	53.1	140	322	P	H
		24700	27.32	-26.68	54	44.38	39.04	6.72	53.28	140	322	A	H
		23538	40.65	-33.35	74	58.68	38.94	6.55	53.98	144	322	P	V
		23500	27	-27	54	45	39	6.54	54	144	322	A	V
	*	24148	97.54	-30.41	127.95	115.37	38.7	6.69	53.68	144	322	P	V
	*	24148	96.38	-11.62	108	114.21	38.7	6.69	53.68	144	322	A	V
		24886	40.32	-33.68	74	57.25	39.05	6.73	53.17	144	322	P	V
		24748	26.81	-27.19	54	43.88	39	6.72	53.25	144	322	A	V



24GHz	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.24GHz		23572	33.43	-40.57	74	51.5	38.88	6.56	53.97	144	322	P	H
		23570	20.58	-33.42	54	38.64	38.89	6.56	53.97	144	322	A	H
	*	24238	95.73	-32.22	127.95	113.49	38.7	6.69	53.61	144	322	P	H
	*	24238	95.23	-12.77	108	112.99	38.7	6.69	53.61	144	322	A	H
		24250	64.49	-9.51	74	82.24	38.7	6.69	53.6	144	322	P	H
		24250	52.03	-1.97	54	69.78	38.7	6.69	53.6	144	322	A	H
		23552	39.53	-34.47	74	57.58	38.92	6.55	53.98	144	322	P	V
		23574	26.2	-27.8	54	44.27	38.88	6.56	53.97	144	322	A	V
	*	24238	90.24	-37.71	127.95	108	38.7	6.69	53.61	144	322	P	V
	*	24238	89.76	-18.24	108	107.52	38.7	6.69	53.61	144	322	A	V
		24250	58.88	-15.12	74	76.63	38.7	6.69	53.6	144	322	P	V
		24250	46.22	-7.78	54	63.97	38.7	6.69	53.6	144	322	A	V
Remark	1. No other spurious found. 2. All results are Pass against Peak and Average limit line. 3. The general radiated emission limits in §15.209 is lesser attenuation as limit. 4. The maximized peak level complies with the average limit, unnecessary to perform an average measurement 5. Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB) Distance extrapolation factor = $20 \log (1\text{m}/3\text{m}) = -9.54$ (dB)												



24GHz 24000~24250MHz
(Radiated Spurious Emission @ 3m)

24GHz	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.06GHz		17864	52.08	-21.92	74	50.77	41.22	18.65	58.56	-	-	P	H
		17864	41.95	-12.05	54	40.64	41.22	18.65	58.56	-	-	A	H
		39866	56.19	-17.81	74	67.65	45.3	8.71	55.93	-	-	P	H
		40000	43.63	-10.37	54	54.83	45.3	8.84	55.8	-	-	A	H
		17966	52.39	-21.61	74	50.42	41.79	18.73	58.55	-	-	P	V
		17966	42.35	-11.65	54	40.38	41.79	18.73	58.55	-	-	A	V
		39988	56.32	-17.68	74	67.54	45.3	8.83	55.81	-	-	P	V
		40000	43.45	-10.55	54	54.65	45.3	8.84	55.8	-	-	A	V
24.15GHz		17949	52.53	-21.47	74	50.64	41.72	18.72	58.55	-	-	P	H
		17949	42.47	-11.53	54	40.58	41.72	18.72	58.55	-	-	A	H
		39984	52.01	-21.99	74	63.25	45.3	8.82	55.82	-	-	P	H
		39986	38.06	-15.94	54	49.28	45.3	8.83	55.81	-	-	A	H
		17949	52.17	-21.83	74	50.28	41.72	18.72	58.55	-	-	P	V
		17949	42.25	-11.75	54	40.36	41.72	18.72	58.55	-	-	A	V
		39896	50.32	-23.68	74	61.72	45.3	8.74	55.9	-	-	P	V
		39988	37.32	-16.68	54	48.54	45.3	8.83	55.81	-	-	A	V
24.24GHz		17949	52.71	-21.29	74	50.82	41.72	18.72	58.55	-	-	P	H
		17949	42.82	-11.18	54	40.93	41.72	18.72	58.55	-	-	A	H
		39978	56.12	-17.88	74	67.36	45.3	8.82	55.82	-	-	P	H
		39978	43.37	-10.63	54	54.61	45.3	8.82	55.82	-	-	A	H
		17949	52.63	-21.37	74	50.74	41.72	18.72	58.55	-	-	P	V
		17949	42.58	-11.42	54	40.69	41.72	18.72	58.55	-	-	A	V
		39966	56.32	-17.68	74	67.58	45.3	8.81	55.83	-	-	P	V
		39988	43.11	-10.89	54	54.33	45.3	8.83	55.81	-	-	A	V
Remark	1. No other spurious found. 2. All results are Pass against Peak and Average limit line. 3. The general radiated emission limits in §15.209 is lesser attenuation as limit. 4. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only 5. Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB) Distance extrapolation factor = $20 \log (1\text{m}/3\text{m}) = -9.54$ (dB)												

24GHz 24000~24250MHz
(Radiated Spurious Emission & Harmonic @ 3m)

24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.06GHz		48.12	46.44	-41.51	87.95	-	-	P	H
		48.12	39.45	-28.50	67.95	-	-	A	H
		42.39	53.51	-20.49	74	-	-	P	H
		40.47	43.16	-10.84	54	-	-	A	H
		72.18	58.14	-29.81	87.95	-	-	P	H
		72.18	47.04	-20.91	67.95	-	-	A	H
		73.82	62.60	-11.40	74	-	-	P	H
		75.00	49.85	-4.15	54	-	-	A	H
		81.47	54.22	-19.78	74	-	-	P	H
		81.98	44.09	-9.91	54	-	-	A	H
		96.24	56.64	-31.31	87.95	-	-	P	H
		96.24	47.35	-20.60	67.95	-	-	A	H
		92.23	63.05	-10.95	74	-	-	P	H
		92.21	50.81	-3.19	54	-	-	A	H
		48.12	49.52	-38.43	87.95	-	-	P	V
		48.12	39.09	-28.86	67.95	-	-	A	V
		40.14	54.44	-19.56	74	-	-	P	V
		40.14	43.10	-10.90	54	-	-	A	V

24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.06GHz		72.18	57.60	-30.35	87.95	-	-	P	V
		72.18	46.25	-21.70	67.95	-	-	A	V
		74.84	62.71	-11.29	74	-	-	P	V
		75.00	48.32	-5.68	54	-	-	A	V
		83.20	55.77	-18.23	74	-	-	P	V
		83.45	44.08	-9.92	54	-	-	A	V
		96.24	55.02	-32.93	87.95	-	-	P	V
		96.24	47.24	-20.71	67.95	-	-	A	V
		91.83	61.74	-12.26	74	-	-	P	V
		96.24	47.24	-6.76	54	-	-	A	V
Remark	- No other spurious found. - All results are Pass against Peak and Average limit line. - The general radiated emission limits in §15.209 is lesser attenuation as limit. - The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only - Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB) Distance extrapolation factor = $20 \log (1\text{m}/3\text{m}) = -9.54$ (dB) Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)								

24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.15GHz		48.30	48.49	-39.46	87.95	-	-	P	H
		48.30	39.73	-28.22	67.95	-	-	A	H
		40.53	54.96	-19.04	74	-	-	P	H
		40.55	43.15	-10.85	54	-	-	A	H
		72.45	58.00	-29.95	87.95	-	-	P	H
		72.45	46.33	-21.62	67.95	-	-	A	H
		73.78	63.59	-10.41	74	-	-	P	H
		75.00	49.17	-4.83	54	-	-	A	H
		84.54	54.28	-19.72	74	-	-	P	H
		83.33	44.20	-9.80	54	-	-	A	H
		96.60	57.15	-30.80	87.95	-	-	P	H
		96.60	46.40	-21.55	67.95	-	-	A	H
		91.93	62.56	-11.44	74	-	-	P	H
		92.21	50.61	-3.39	54	-	-	A	H
		48.30	47.84	-40.11	87.95	-	-	P	V
		48.30	39.81	-28.14	67.95	-	-	A	V
		45.14	53.97	-20.03	74	-	-	P	V
		40.47	43.22	-10.78	54	-	-	A	V

24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.15GHz		72.45	58.14	-29.81	87.95	-	-	P	V
		72.45	46.27	-21.68	67.95	-	-	A	V
		73.85	63.15	-10.85	74	-	-	P	V
		75.00	49.23	-4.77	54	-	-	A	V
		80.45	55.76	-18.24	74	-	-	P	V
		83.47	44.14	-9.86	54	-	-	A	V
		96.60	55.72	-32.23	87.95	-	-	P	V
		96.60	46.46	-21.49	67.95	-	-	A	V
		92.06	61.86	-12.14	74	-	-	P	V
		91.93	50.63	-3.37	54	-	-	A	V
Remark	- No other spurious found. - All results are Pass against Peak and Average limit line. - The general radiated emission limits in §15.209 is lesser attenuation as limit. - The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only - Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB) Distance extrapolation factor = $20 \log (1\text{m}/3\text{m}) = -9.54$ (dB) Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)								



24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.24GHz		48.48	49.19	-38.76	87.95	-	-	P	H
		48.48	40.10	-27.85	67.95	-	-	A	H
		40.22	53.94	-20.06	74	-	-	P	H
		54.48	43.21	-10.79	54	-	-	A	H
		72.72	57.33	-30.62	87.95	-	-	P	H
		72.72	46.09	-21.86	67.95	-	-	A	H
		73.85	60.07	-13.93	74	-	-	P	H
		75.00	49.18	-4.82	54	-	-	A	H
		81.94	55.77	-18.23	74	-	-	P	H
		83.43	44.12	-9.88	54	-	-	A	H
		96.96	55.82	-32.13	87.95	-	-	P	H
		96.96	46.07	-21.88	67.95	-	-	A	H
		92.16	62.53	-11.47	74	-	-	P	H
		91.99	50.80	-3.20	54	-	-	A	H

24GHz	Note	Frequency (GHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.24GHz		48.48	47.56	-40.39	87.95	-	-	P	V
		48.48	40.28	-27.67	67.95	-	-	A	V
		59.12	53.95	-20.05	74	-	-	P	V
		40.45	43.31	-10.69	54	-	-	A	V
		72.72	58.05	-29.90	87.95	-	-	P	V
		72.72	46.75	-21.20	67.95	-	-	A	V
		74.94	62.93	-11.07	74	-	-	P	V
		75.00	49.80	-4.20	54	-	-	A	V
		82.80	54.80	-19.20	74	-	-	P	V
		82.09	44.15	-9.85	54	-	-	A	V
		96.96	54.75	-33.20	87.95	-	-	P	V
		96.96	45.95	-22.00	67.95	-	-	A	V
		91.53	61.56	-12.44	74	-	-	P	V
		92.00	50.60	-3.40	54	-	-	A	V
Remark	- No other spurious found. - All results are Pass against Peak and Average limit line. - The general radiated emission limits in §15.209 is lesser attenuation as limit. - The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only - Distance extrapolation factor = $20 \log (\text{test distance [X m]}/\text{specific distance [3 m]})$ (dB) Distance extrapolation factor = $20 \log (1\text{m}/3\text{m}) = -9.54$ (dB) Distance extrapolation factor = $20 \log (0.5\text{m}/3\text{m}) = -15.56$ (dB)								



Emission below 1GHz

24GHz (LF)

24GHz	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.06GHz LF		30	22.01	-17.99	40	28.73	24.9	0.63	32.25	-	-	P	H
		139.61	25.82	-17.68	43.5	39.47	17.28	1.33	32.26	-	-	P	H
		784.66	30.3	-15.7	46	30.6	28.71	3.17	32.18	-	-	P	H
		840.92	29.97	-16.03	46	29.41	29.22	3.26	31.92	-	-	P	H
		898.15	29.93	-16.07	46	29.06	29.1	3.37	31.6	-	-	P	H
		947.62	31.45	-14.55	46	28.5	30.71	3.47	31.23	-	-	P	H
		47.46	29.48	-10.52	40	45.33	15.72	0.79	32.36	100	104	Q	V
		59.1	30.23	-9.77	40	49.92	11.81	0.87	32.37		-	P	V
		139.61	30.99	-12.51	43.5	44.64	17.28	1.33	32.26	-	-	P	V
		837.04	30.78	-15.22	46	30.4	29.08	3.25	31.95	-	-	P	V
		926.28	30.43	-15.57	46	28.94	29.45	3.43	31.39	-	-	P	V
		954.41	32.16	-13.84	46	28.74	31.08	3.49	31.15	-	-	P	V
24.15GHz LF		47.46	21.63	-18.37	40	37.48	15.72	0.79	32.36	-	-	P	H
		139.61	25.64	-17.86	43.5	39.29	17.28	1.33	32.26	-	-	P	H
		759.44	30.8	-15.2	46	31.04	28.88	3.1	32.22	-	-	P	H
		857.41	30.35	-15.65	46	29.65	29.25	3.28	31.83	-	-	P	H
		926.28	30.23	-15.77	46	28.74	29.45	3.43	31.39	-	-	P	H
		956.35	31.59	-14.41	46	28.02	31.21	3.49	31.13	-	-	P	H
		47.46	30.12	-9.88	40	45.97	15.72	0.79	32.36	100	103	Q	V
		59.1	30.03	-9.97	40	49.72	11.81	0.87	32.37			P	V
		139.61	31.07	-12.43	43.5	44.72	17.28	1.33	32.26	-	-	P	V
		863.23	30.84	-15.16	46	30.08	29.26	3.3	31.8	-	-	P	V
		899.12	30.31	-15.69	46	29.43	29.1	3.37	31.59	-	-	P	V
		953.44	31.94	-14.06	46	28.58	31.04	3.49	31.17	-	-	P	V



24GHz	Note	Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
24.24GHz LF		30	20.61	-19.39	40	27.33	24.9	0.63	32.25	-	-	P	H
		139.61	25.43	-18.07	43.5	39.08	17.28	1.33	32.26	-	-	P	H
		769.14	30.14	-15.86	46	30.33	28.88	3.13	32.2	-	-	P	H
		838.98	29.93	-16.07	46	29.44	29.16	3.26	31.93	-	-	P	H
		905.91	29.79	-16.21	46	28.86	29.1	3.38	31.55	-	-	P	H
		939.86	31.88	-14.12	46	29.42	30.29	3.46	31.29	-	-	P	H
		47.46	30.48	-9.52	40	46.33	15.72	0.79	32.36	100	104	Q	V
		57.16	32.22	-7.78	40	51.7	12.04	0.86	32.38	-	-	P	V
		139.61	30.86	-12.64	43.5	44.51	17.28	1.33	32.26	-	-	P	V
		857.41	29.93	-16.07	46	29.23	29.25	3.28	31.83	-	-	P	V
		932.1	29.64	-16.36	46	27.78	29.77	3.44	31.35	-	-	P	V
		955.38	32.49	-13.51	46	29.01	31.13	3.49	31.14	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The general radiated emission limits in §15.209 is lesser attenuation as limit. 4. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical

A calculation example for radiated spurious emission is shown as below:

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
(MHz)	(dBμV/m)	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
24058	91.19	-36.76	127.95	109.1	38.7	6.68	53.75	144	322	P	H
24058	90.71	-17.29	108	108.62	38.7	6.68	53.75	144	322	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 24058MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB) - Distance factor

= 38.7(dB/m) + 6.68(dB) + 109.1(dBμV) – 53.75 (dB)-9.54

= 91.19(dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 91.19(dBμV/m) – 127.95(dBμV/m)

= -36.76(dB)

For Average Limit @ 24058MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB) - Distance factor

= 38.7(dB/m) + 6.68(dB) + 108.62(dBμV) – 53.75 (dB)-9.54

= 90.71 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 90.71(dBμV/m) – 108(dBμV/m)

= -17.29(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix C. Radiated Spurious Emission Plots

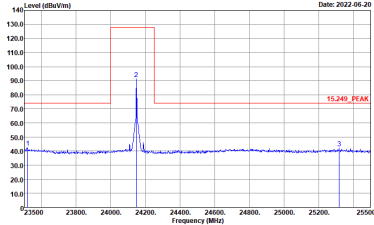
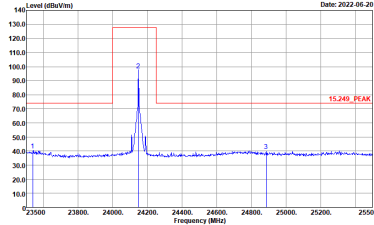
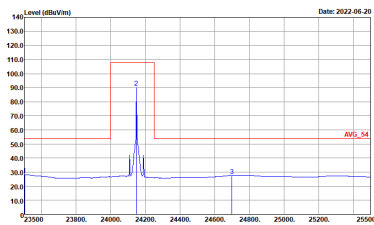
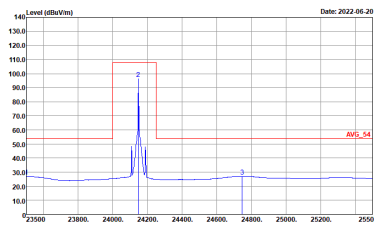
Test Engineer :	Eric Jeng	Temperature :	23.5~24.1°C
		Relative Humidity :	50.5~51.3%

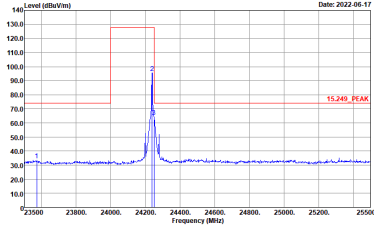
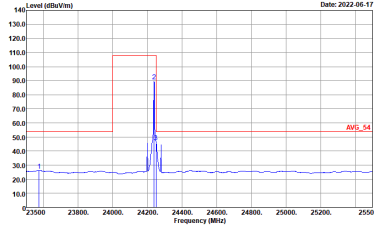
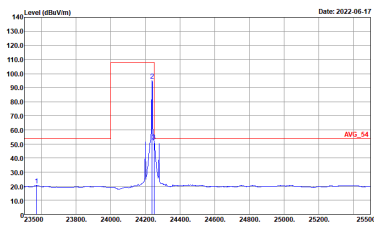
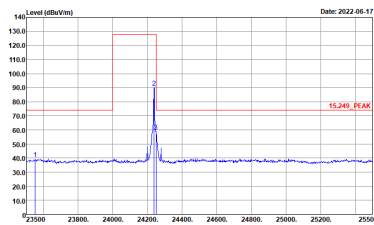


24GHz 24000~24250MHz
Field strength of fundamental@ 3m

24GHz	Field strength of fundamental	
	Test frequency:24.06GHz	
	Horizontal	Vertical
Peak	Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg.	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y



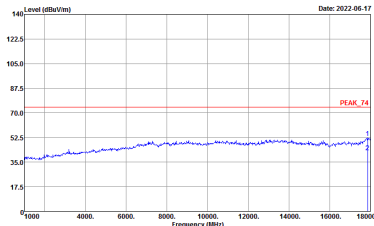
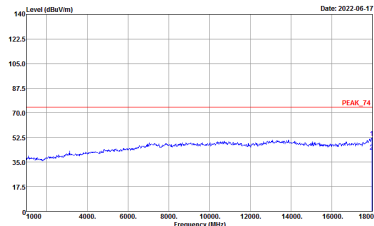
24GHz	Field strength of fundamental	
	Test frequency :24.15GHz	
	Horizontal	Vertical
Peak	 Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	 Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg.	 Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	 Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y

24GHz	Field strength of fundamental	
	Test frequency :24.24GHz	
	Horizontal	Vertical
Peak	 Site : 03CH18-HY Condition : 15.249_PEAk 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	 Site : 03CH18-HY Condition : AV6_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg.	 Site : 03CH18-HY Condition : AV6_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	 Site : 03CH18-HY Condition : 15.249_PEAk 1m SHF_0980_220125 VERTICAL Project : 242615 : Y



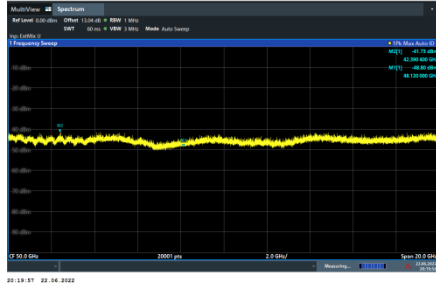
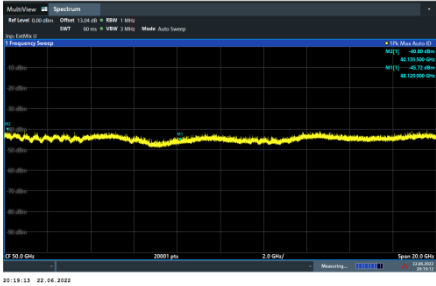
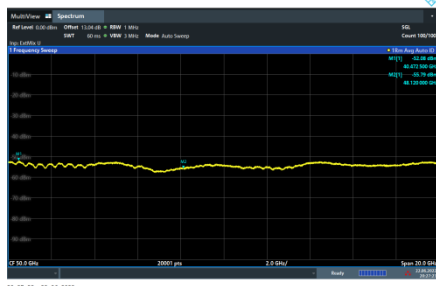
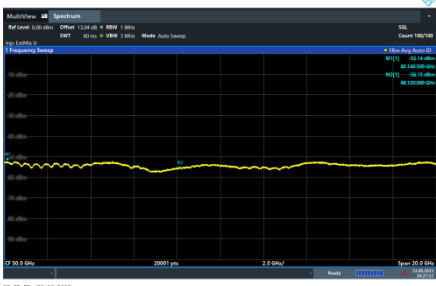
24GHz 24000~24250MHz

(Radiated Spurious Emission& Harmonic @ 3m)

24GHz	Test frequency :24.06GHz	
	1-18GHz	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH10-14V Condition : PEAK_74 3m 91200-1329_211021 HORIZONTAL Project : 242615 Mode : 1 : 24.066	 Site : 03CH10-14V Condition : PEAK_74 3m 91200-1329_211021 VERTICAL Project : 242615 Mode : 1 : 24.066

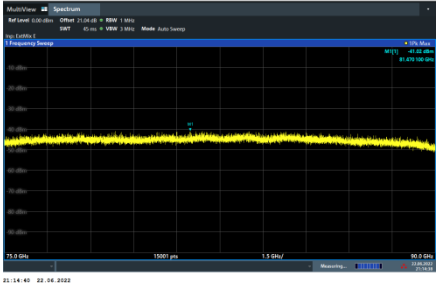
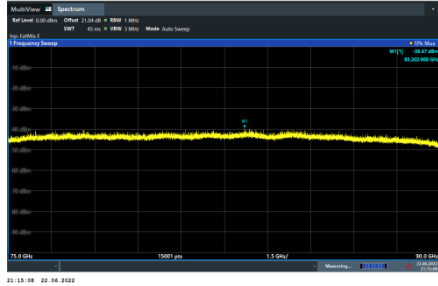
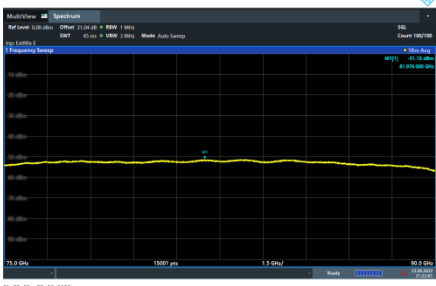
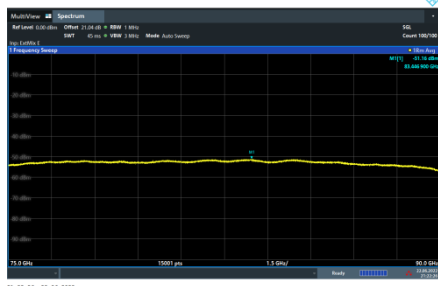


24GHz	Test frequency :24.06GHz	
	18-40GHz	
	Horizontal	Vertical
Peak	Site : 03CHB-HY Condition : 15249_PEAK 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CHB-HY Condition : 15249_PEAK 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg.	Site : 03CHB-HY Condition : AVG_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CHB-HY Condition : AVG_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y

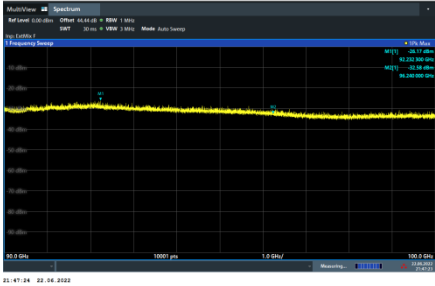
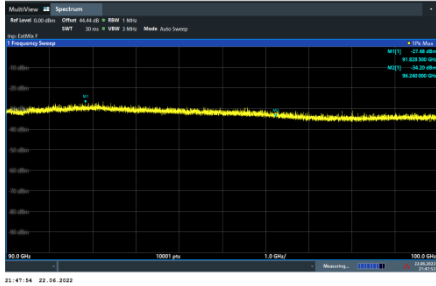
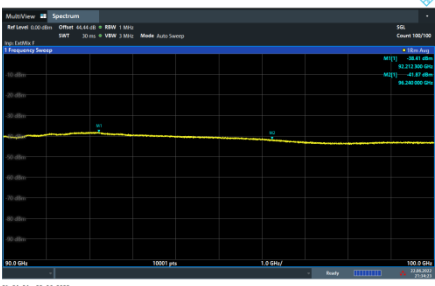
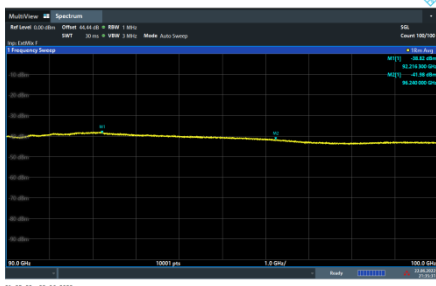
24GHz	Test frequency :24.06GHz	
	40-60GHz	
	Horizontal	Vertical
Peak.		
Avg		



24GHz	Test frequency :24.06GHz	
	60-75GHz	
	Horizontal	Vertical
Peak		
Avg		

24GHz	Test frequency :24.06GHz	
	75-90GHz	
	Horizontal	Vertical
Peak		
Avg.		



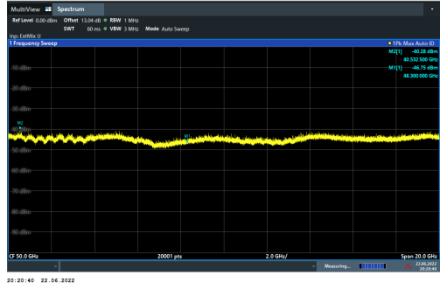
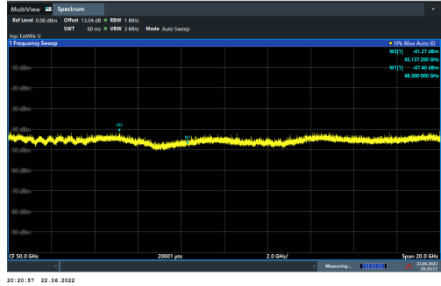
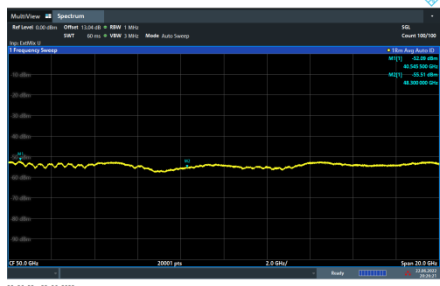
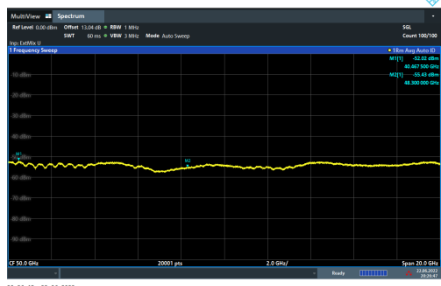
24GHz	Test frequency :24.06GHz	
	90-100GHz	
	Horizontal	Vertical
Peak	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 1000 Hz Sweep: 20 Hz Span: 1000 Hz Mode: Auto Sweep Freq: 24.06 GHz Frequency Span: 1000 Hz M1(1) -20.17 dBm M1(2) -21.70 dBm M1(3) -22.06 dBm M1(4) -23.20 dBm 21:47:24 22-04-2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 1000 Hz Sweep: 20 Hz Span: 1000 Hz Mode: Auto Sweep Freq: 24.06 GHz Frequency Span: 1000 Hz M1(1) -22.48 dBm M1(2) -21.62 dBm M1(3) -24.28 dBm M1(4) -26.24 dBm 21:47:54 22-04-2022
Avg.	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 1000 Hz Sweep: 20 Hz Span: 1000 Hz Mode: Auto Sweep Freq: 24.06 GHz Frequency Span: 1000 Hz M1(1) -20.18 dBm M1(2) -21.72 dBm M1(3) -22.07 dBm M1(4) -23.20 dBm 21:14:24 22-04-2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 1000 Hz Sweep: 20 Hz Span: 1000 Hz Mode: Auto Sweep Freq: 24.06 GHz Frequency Span: 1000 Hz M1(1) -20.84 dBm M1(2) -21.76 dBm M1(3) -24.06 dBm M1(4) -26.00 dBm 21:19:32 22-04-2022

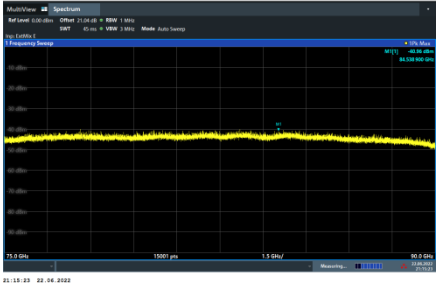
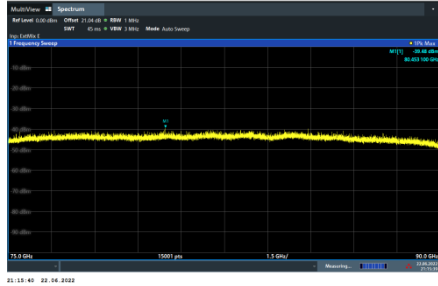
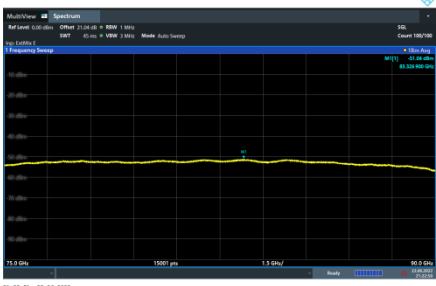
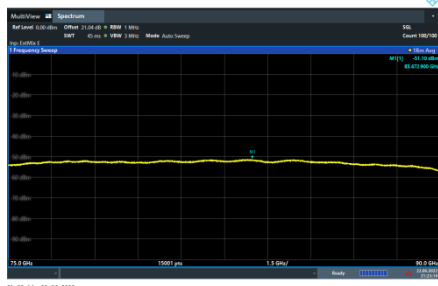


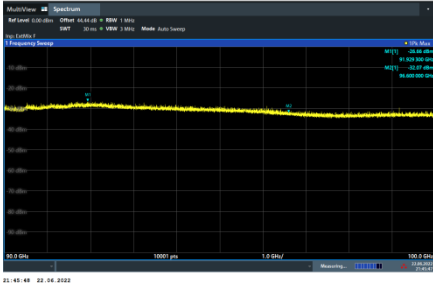
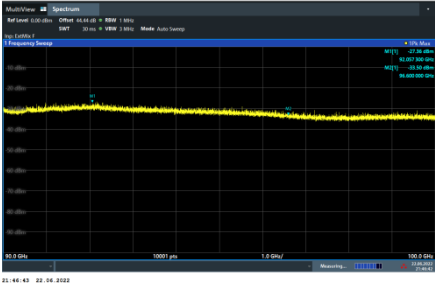
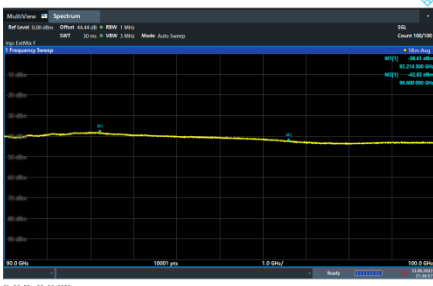
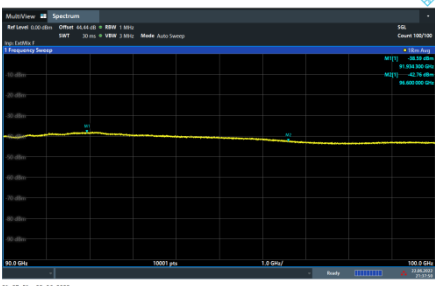
24GHz	Test frequency :24.15GHz	
	1-18GHz	
	Horizontal	Vertical
Peak Avg	Level (dBm/1m) Date: 2022-06-17 Site : 03CH10-HY Condition : PEAK_74 3m 91200-1329_211021 HORIZONTAL Project : 242615 Mode : 2 : 24.156	Level (dBm/1m) Date: 2022-06-17 Site : 03CH10-HY Condition : PEAK_74 3m 91200-1329_211021 VERTICAL Project : 242615 Mode : 2 : 24.156



24GHz	Test frequency :24.15GHz	
	18-40GHz	
	Horizontal	Vertical
Peak	Site : 03CH18-HY Condition : 15.249_PEAK 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : 15.249_PEAK 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y

24GHz	Test frequency :24.15GHz	
	40-60GHz	
	Horizontal	Vertical
Peak.		
Avg		

24GHz	Test frequency :24.15GHz	
	75-90GHz	
	Horizontal	Vertical
Peak		
Avg.		

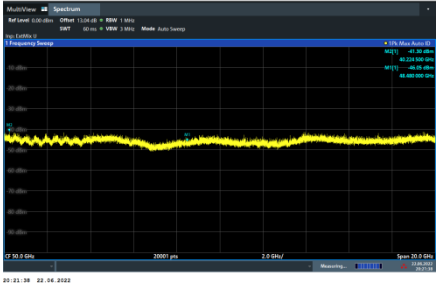
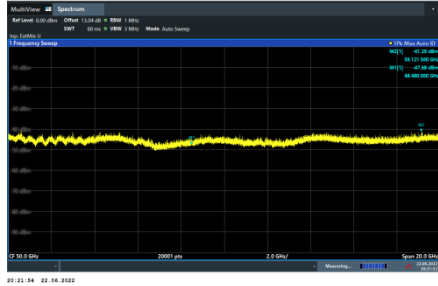
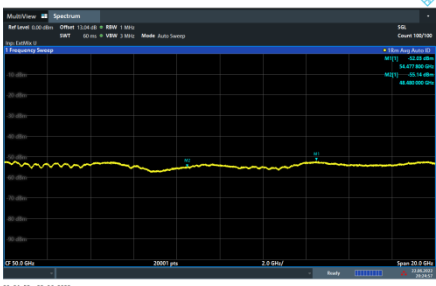
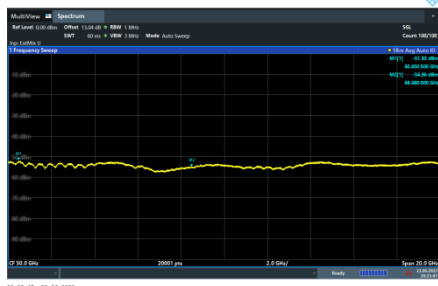
24GHz	Test frequency :24.15GHz	
	90-100GHz	
	Horizontal	Vertical
Peak	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -26.86 dBm M1(2) -27.00 dBm M1(3) -26.97 dBm M1(4) -26.99 dBm 21:45:48 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.28 dBm M1(2) -27.30 dBm M1(3) -27.33 dBm M1(4) -27.35 dBm 21:46:43 22:04:2022
Avg.	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -26.86 dBm M1(2) -27.00 dBm M1(3) -26.97 dBm M1(4) -26.99 dBm 21:36:58 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 00.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.28 dBm M1(2) -27.30 dBm M1(3) -27.33 dBm M1(4) -27.35 dBm 21:37:51 22:04:2022

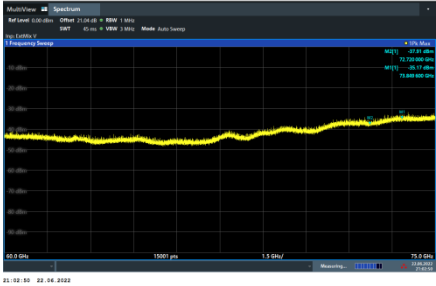
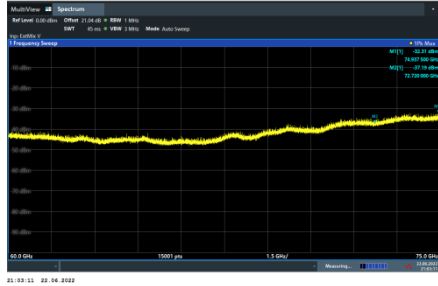
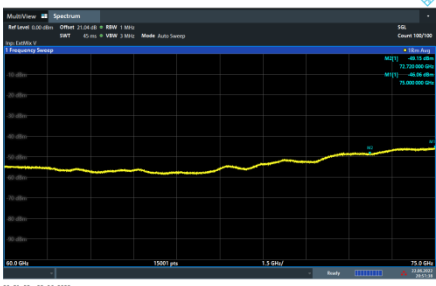
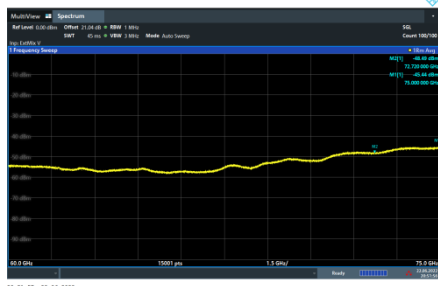


24GHz	Test frequency :24.24GHz	
	1-18GHz	
	Horizontal	Vertical
Peak Avg.	Level (dBm/100MHz) Date: 2022-06-17 Frequency (MHz) Site : 03CH10-HY Condition : PEAK_74 3m 91200-1329_211021 HORIZONTAL Project : 242615 Mode : 3 : 24.246	Level (dBm/100MHz) Date: 2022-06-17 Frequency (MHz) Site : 03CH10-HY Condition : PEAK_74 3m 91200-1329_211021 VERTICAL Project : 242615 Mode : 3 : 24.246



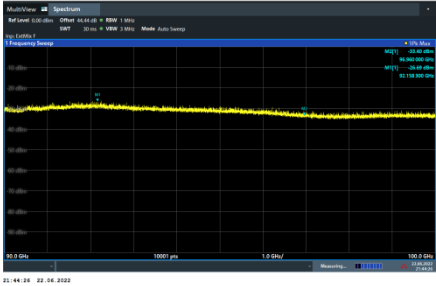
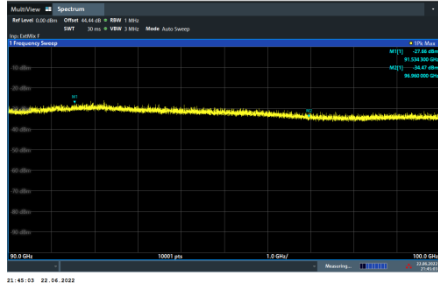
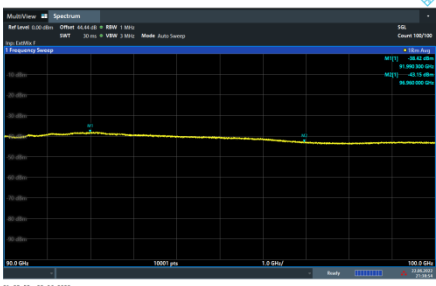
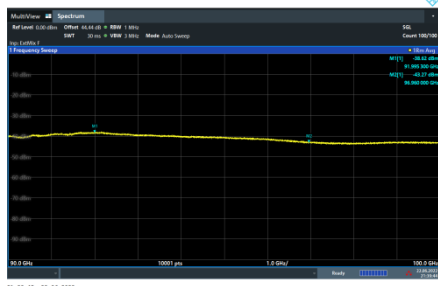
24GHz	Test frequency :24.24GHz	
	18-40GHz	
	Horizontal	Vertical
Peak	Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : 15.249_Peak 1m SHF_0980_220125 VERTICAL Project : 242615 : Y
Avg	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 HORIZONTAL Project : 242615 : Y	Site : 03CH18-HY Condition : AVG_54 1m SHF_0980_220125 VERTICAL Project : 242615 : Y

24GHz	Test frequency :24.24GHz	
	40-60GHz	
	Horizontal	Vertical
Peak.		
Avg		

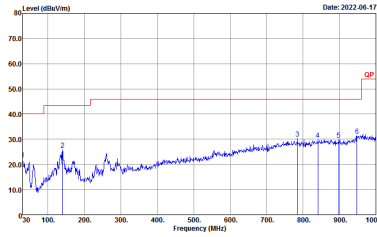
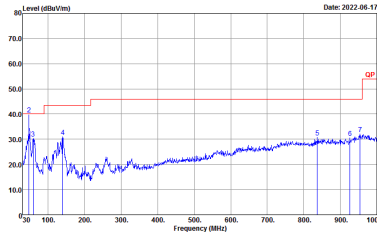
24GHz	Test frequency :24.24GHz	
	60-75GHz	
	Horizontal	Vertical
Peak	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 21.04 dB @ 9000 1 kHz BW: 40 Hz @ 9000 1 kHz Mode: Auto Sweep Frequency Range: 60.0 GHz to 75.0 GHz M1(1) -27.41 dBm M1(2) -27.70 dBm M1(3) -28.17 dBm M1(4) -28.60 dBm 21:00:00 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 21.04 dB @ 9000 1 kHz BW: 40 Hz @ 9000 1 kHz Mode: Auto Sweep Frequency Range: 60.0 GHz to 75.0 GHz M1(1) -28.21 dBm M1(2) -28.60 dBm M1(3) -29.18 dBm M1(4) -29.70 dBm 21:03:12 22:04:2022
Avg	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 21.04 dB @ 9000 1 kHz BW: 40 Hz @ 9000 1 kHz Mode: Auto Sweep Frequency Range: 60.0 GHz to 75.0 GHz M1(1) -28.10 dBm M1(2) -28.60 dBm M1(3) -29.00 dBm M1(4) -29.40 dBm 21:11:08 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 21.04 dB @ 9000 1 kHz BW: 40 Hz @ 9000 1 kHz Mode: Auto Sweep Frequency Range: 60.0 GHz to 75.0 GHz M1(1) -28.40 dBm M1(2) -28.80 dBm M1(3) -29.20 dBm M1(4) -29.60 dBm 21:11:07 22:04:2022



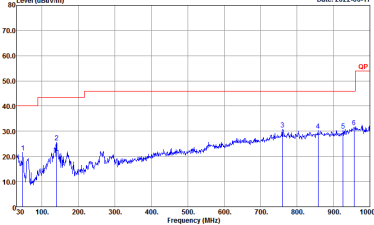
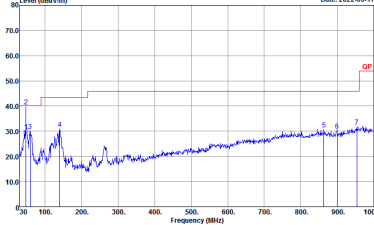
24GHz	Test frequency :24.24GHz	
	75-90GHz	
	Horizontal	Vertical
Peak		
Avg.		

24GHz	Test frequency :24.24GHz	
	90-100GHz	
	Horizontal	Vertical
Peak	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 40.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.48 dBm M1(2) -28.00 dBm M1(3) -28.47 dBm M1(4) -28.99 dBm 21:44:24 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 40.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.48 dBm M1(2) -28.00 dBm M1(3) -28.47 dBm M1(4) -28.99 dBm 21:45:02 22:04:2022
Avg.	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 40.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.48 dBm M1(2) -28.00 dBm M1(3) -28.47 dBm M1(4) -28.99 dBm 21:39:55 22:04:2022	 MultiView - Spectrum Ref Level: 0.00 dBm Offset: 40.00 dB BW: 100Hz Sweep: 20.00s F: 90.00 F: 100.00 Mode: Auto Sweep Frequency Span: 10.0 GHz M1(1) -27.48 dBm M1(2) -28.00 dBm M1(3) -28.47 dBm M1(4) -28.99 dBm 21:39:45 22:04:2022

Emission below 1GHz
24GHz

24GHz	24GHz	
	Test frequency :24.06GHz_LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH10-11V Condition : QP 3m BT-LOG61111DLF211118 HORIZONTAL Project : 242615 Mode : 1 : 24.06G	 Site : 03CH10-11V Condition : QP 3m BT-LOG61111DLF211118 VERTICAL Project : 242615 Mode : 1 : 24.06G



24GHz	24GHz	
	Test frequency :24.15GHz_LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH10-11V Condition : QP-3m BT-LOG61111DLF211118 HORIZONTAL Project : 242615 Mode : 2 : 24.15G	 Site : 03CH10-11V Condition : QP-3m BT-LOG61111DLF211118 VERTICAL Project : 242615 Mode : 2 : 24.15G



24GHz	24GHz	
	Test frequency :24.24GHz_LF	
	Horizontal	Vertical
QP / Peak	Level (dBuV/m) Date: 2022-06-17 Site : 03CH10-11V Condition : QP-3m BT-LOG6111DLF211118 HORIZONTAL Project : 242615 Mode : 3 : 24.24G	Level (dBuV/m) Date: 2022-06-17 Site : 03CH10-11V Condition : QP-3m BT-LOG6111DLF211118 VERTICAL Project : 242615 Mode : 3 : 24.24G