

TEST REPORT

of

FCC CFR Title 47 Part 15 Subpart C

Product: **Bluetooth 5.1 Module**
Brand: **Fanstel**
Main Model: **BM833**
Series Model: **BM833E; BM833F; BM833P**
FCC ID: **X8WBM833**
Standard: **§15.247, Cat: DTS**
Reference: **ANSI C63.10: 2013**
KDB 558074 D01 v05r02
Applicant: **Fanstel Corporation, Taipei**
Address: **10F-10, No. 79, Sec. 1, Hsin Tai Wu Rd., Hsi-Chih, New Taipei City 221 Taiwan**

Test Performed by:



International Standards Laboratory Corp. LT Lab.

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No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

Report No.: **ISL-19LR247FCBLE-R5**

Issue Date : **June 19, 2025**



FCC Registration Number: 487532

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein. According to customer agreement, the laboratory issues test reports based on the regulations or standards specifications, the measurement uncertainty is not considered in conformity decision rules.

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VERIFICATION OF COMPLIANCE

Applicant: Fanstel Corporation, Taipei
Equipment Under Test: Bluetooth 5.1 Module
Brand: Fanstel
Main Model: BM833
Series Model: BM833E; BM833F; BM833P
Model Difference: Antenna Type differences
FCC ID: X8WBM833
Date of Test: May 23, 2025 ~ June 19, 2025
Date of EUT Received: May 23, 2025

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC Part 15.247	Complied

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory Corp.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Prepared By: Gigi Yeh

Test By: Barry Lee
Barry Lee

Approved By: Jerry Liu
Jerry Liu / Manager

Version

Version No.	Date	Description
00	Oct. 10, 2019	Initial creation of document
01	June 19, 2025	This report is prepared for FCC class II permissive change of the original report no.: ISL-19LR0247FCBLE. The difference from the original report is to add Series model: BM833P and changed antenna position. Therefore, test items for RF output power & radiated emission are performed. Refer to original report for the other test data.

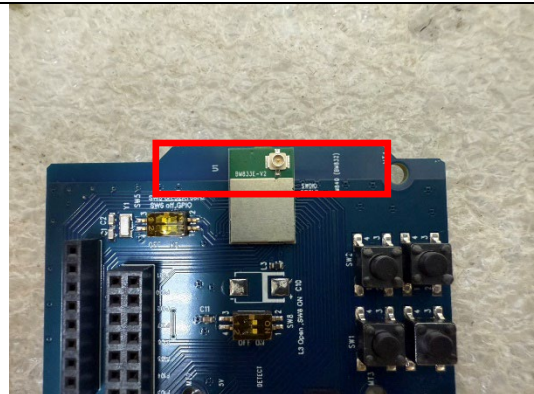
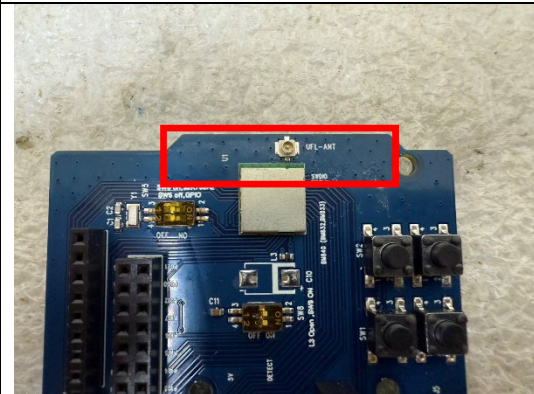
BM833E	BM833P
	

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1. Description of Equipment under Test (EUT)

General Information	
Product Name:	Bluetooth 5.1 Module
Brand Name:	Fanstel
Model Name:	BM833;BM833E; BM833F; BM833P
Model Difference:	Antenna Type
Temperature Range	-40°C to +125°C
Power Supply:	5VDC from USB
Bluetooth Information	
Frequency Range:	2402– 2480MHz
Max Output Power:	8.16dBm
Channel number:	40 Channels
Modulation type:	GFSK
Product HW Version:	BM833
Product SW Version:	nrf52833 s132
Product FW Version:	nrf52833 s132
Test SW Version:	Putty ver.0.60.0.0
RF power setting:	Pos8dBm

	Antenna Type	Brand	Model	Peak Gain	Frequency Range	Connector Type
1	Dipole	Fanstel	ANT060	6.00dBi	2400-2485 MHz	u.FL
2	PCB	Fanstel	F Type	0.51dBi	2400-2485 MHz	--
3	PCB	Fanstel	M Type	-0.56dBi	2400-2485 MHz	--

Model Summaries

module	BM833P	BM833	BM833F	BM833E
APprotect	BM833P-T	BM833-T	BM833F-T	BM833E-T
SoC	nRF52833 QIAA	nRF52833 QIAA	nRF52833 QIAA	nRF52833 QIAA
Flash/RAM	512KB/128KB	512KB/128KB	512KB/128KB	512KB/128KB
Size	15x20.6x1.9mm	10.2x15x1.9mm	15x20.6x1.9mm	10.2x15x1.9mm
GPIO	42	42	42	42
Operating temp.	-40°C to +125°C ^{note1}	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C
Max. TX, conducted	+8.16 dBm	+8.16 dBm	+8.16 dBm	+8.16 dBm
Antenna	High perform. PCB	PCB trace	High perform. PCB	u.FL
Est. BLE Range	3000M at 125 Kbps	1400M at 125 Kbps	2300M at 125Kbps	3400M at 125 Kbps
FCC ID		X8WBM833 + SAR	X8WBM833	X8WBM833
ISED		4100A-BM833	4100A-BM833	4100A-BM833
TELEC		201-19838/00	201-19838/00	201-19838/00
Taiwan NCC		CCAL25Y10180T2	CCAL25Y10182T3	CCAL25Y10181T1
CE, RCM	Compliant	Compliant	Compliant	Compliant
QDID	138767	138767	138767	138767
Availability	Production	Production	Production	Production

2. Description of Test Modes

The EUT has been tested under engineering operating condition.

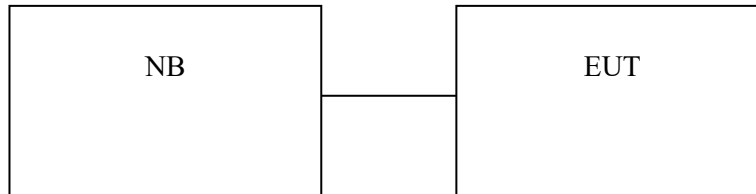
Test program used to control the EUT for staying in continuous transmitting mode is programmed.

BLE:

Channel low (2402MHz), mid (2442MHz), (2480MHz) with each modulation were chosen for full testing.

2.1 Configuration of Tested System

Configuration of Tested System (Fixed channel)



Equipment Used in Tested System

Item	Equipment	Brand	Model	S/N	Data Cable	Power Cord
1	Notebook	Lenovo	F230	N/A	100cm	N/A

3. Standards, reference documents and applicable test methods

The EUT According to the Specifications, it must comply with the requirements of the following standards:

1. FCC Title 47 CFR part 15 - Subpart C – §15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
2. FCC Title 47 CFR part 15 - Subpart C – §15.207 Conducted limits.
3. FCC Title 47 CFR part 15 - Subpart C – §15.209 Radiated emission limits; general requirements.
4. FCC OET KDB 558074 D01 v05r02 - Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules
5. FCC OET KDB 662911 D01 v02r01 - Emissions Testing of Transmitters with Multiple Outputs in the Same Band
6. ANSI C63.10-2013 - American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

4. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.247(b) (3), (4)	Peak Output Power/ EIRP	Compliant
§15.247(d)	Spurious Emission	Compliant

5. Peak Output Power Measurement

5.1 Standard Applicable

According to §15.247

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(c) Operation with directional antenna gains greater than 6 dBi.

(1) Fixed point-to-point operation:

(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

5.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum analyzer with proper instrument's parameters.
3. Record the max. reading.
4. Repeat above procedures until all frequency measured were complete.

5.3 Measurement Result

Peak Power

Mode	Freq. (MHz)	Output Power (dBm)	Duty Factor (dB)	Total Output Power (dBm)	Output Power Limit (dBm)
BLE	2402	7.82	-----	7.82	30
	2442	7.96	-----	7.96	30
	2480	8.16	-----	8.16	30

6. Radiated Spurious Emission Test

6.1 Standard Applicable

According to §15.247(d), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). And according to §15.33(a)(1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

6.2 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m/1.5m above ground plane in 966 chamber.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until all frequency measured were complete.

Test receiver setting	: Blew 1GHz
Detector	: Average (9kHz – 90kHz, 110kHz – 90kHz), Quasi-Peak
Bandwidth	: 200Hz, 120kHz
Test spectrum setting	: Above 1GHz
Peak	: RBW=1MHz, VBW $\geq$ 3*RBW, Sweep=auto
Average	: RBW=1MHz, VBW $\geq$ 1/T _{on} , Sweep=auto

6.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Remark:

<1GHz

1. No further spurious emissions detected from the lowest internal frequency and 30MHz.
2. Measuring frequencies from the lowest internal frequency to the 1GHz.
3. Radiated emissions measured in frequency range from 9kHz to 1000MHz were made with an instrument detector setting 9-90kHz/110-490kHz using PK/AV and other Frequency Band using PK/QP
4. Measurement result within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

>1GHz

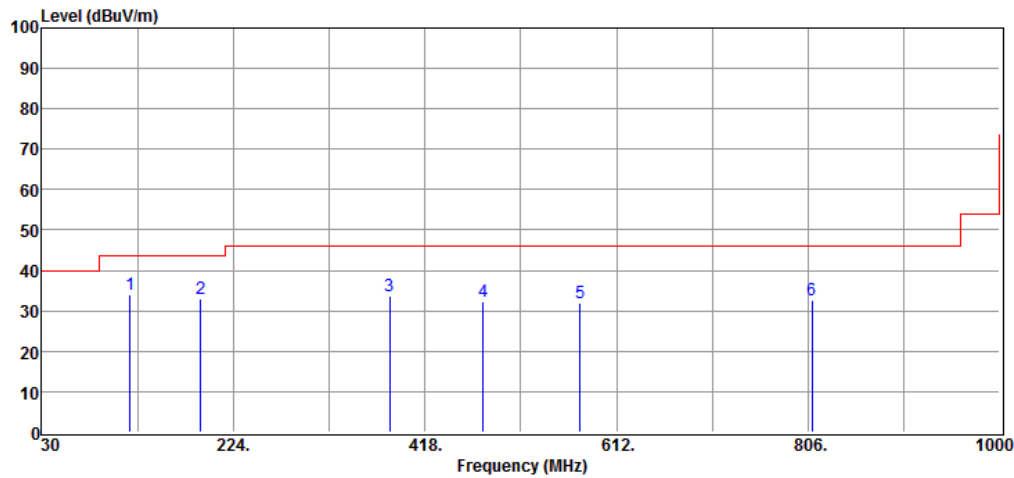
- 5 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 6 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 7 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

6.4 Measurement Result

6.4.1 Radiated Spurious Emission Measurement Result (below 1GHz)

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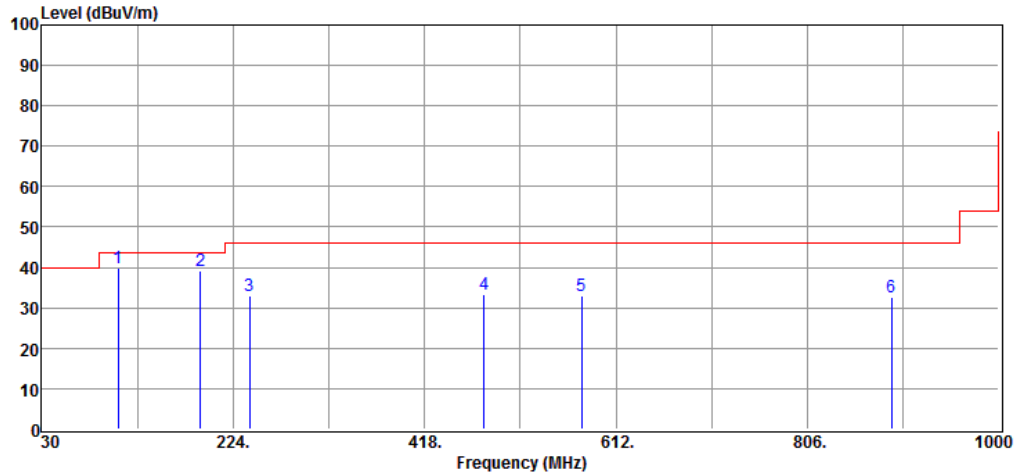
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx low ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	119.24	43.18	-9.01	34.17	43.50	-9.33	Peak	VERTICAL
2	191.02	41.83	-8.80	33.03	43.50	-10.47	Peak	VERTICAL
3	382.11	37.17	-3.61	33.56	46.00	-12.44	Peak	VERTICAL
4	477.17	34.43	-2.01	32.42	46.00	-13.58	Peak	VERTICAL
5	575.14	32.32	-0.30	32.02	46.00	-13.98	Peak	VERTICAL
6	809.88	28.55	4.07	32.62	46.00	-13.38	Peak	VERTICAL

International Standard Laboratory Corp.
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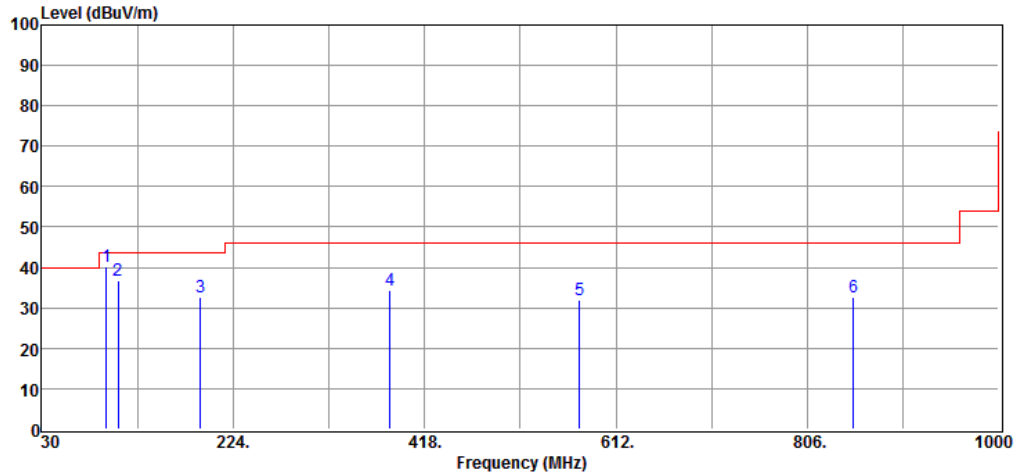
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx low ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	107.60	49.83	-10.01	39.82	43.50	-3.68	Peak	HORIZONTAL
2	191.02	48.11	-8.80	39.31	43.50	-4.19	Peak	HORIZONTAL
3	240.49	40.57	-7.45	33.12	46.00	-12.88	Peak	HORIZONTAL
4	478.14	35.28	-1.99	33.29	46.00	-12.71	Peak	HORIZONTAL
5	577.08	33.20	-0.23	32.97	46.00	-13.03	Peak	HORIZONTAL
6	891.36	27.67	5.10	32.77	46.00	-13.23	Peak	HORIZONTAL

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Company Address:No.120,Lane 180, Hsin Ho Rd.
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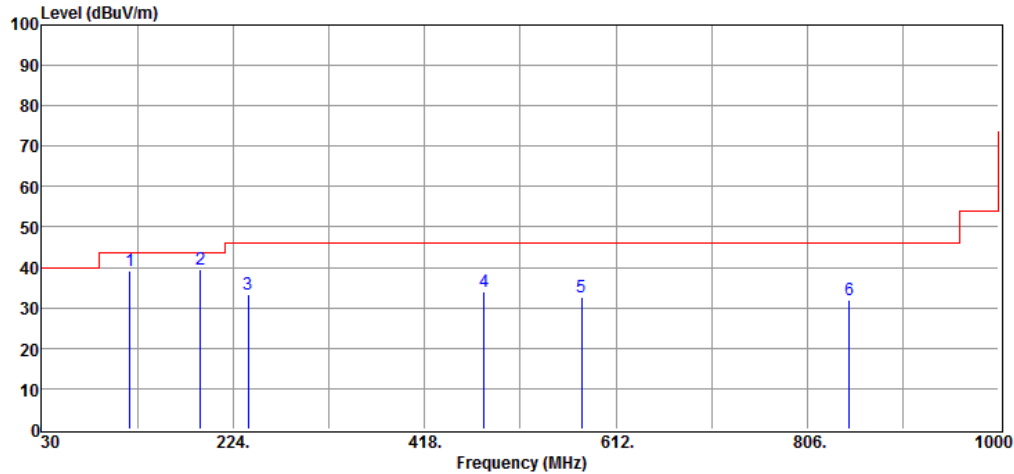
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx mid ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	95.96	52.15	-12.01	40.14	43.50	-3.36	Peak	VERTICAL
2	107.60	46.80	-10.01	36.79	43.50	-6.71	Peak	VERTICAL
3	191.02	41.34	-8.80	32.54	43.50	-10.96	Peak	VERTICAL
4	383.08	37.93	-3.60	34.33	46.00	-11.67	Peak	VERTICAL
5	575.14	32.31	-0.30	32.01	46.00	-13.99	Peak	VERTICAL
6	852.56	27.83	4.83	32.66	46.00	-13.34	Peak	VERTICAL

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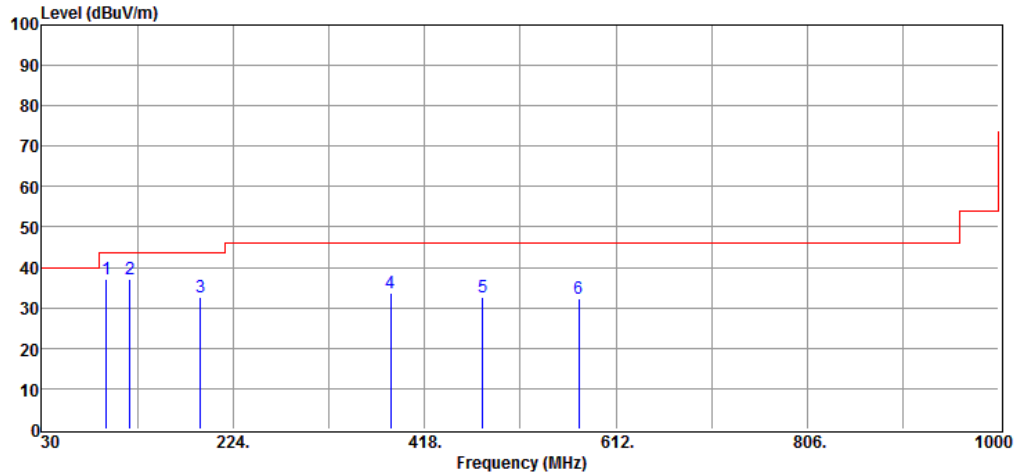
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx mid ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	119.24	48.24	-9.01	39.23	43.50	-4.27	Peak	HORIZONTAL
2	191.02	48.32	-8.80	39.52	43.50	-3.98	Peak	HORIZONTAL
3	239.52	40.73	-7.53	33.20	46.00	-12.80	Peak	HORIZONTAL
4	478.14	35.88	-1.99	33.89	46.00	-12.11	Peak	HORIZONTAL
5	577.08	32.77	-0.23	32.54	46.00	-13.46	Peak	HORIZONTAL
6	848.68	27.27	4.74	32.01	46.00	-13.99	Peak	HORIZONTAL

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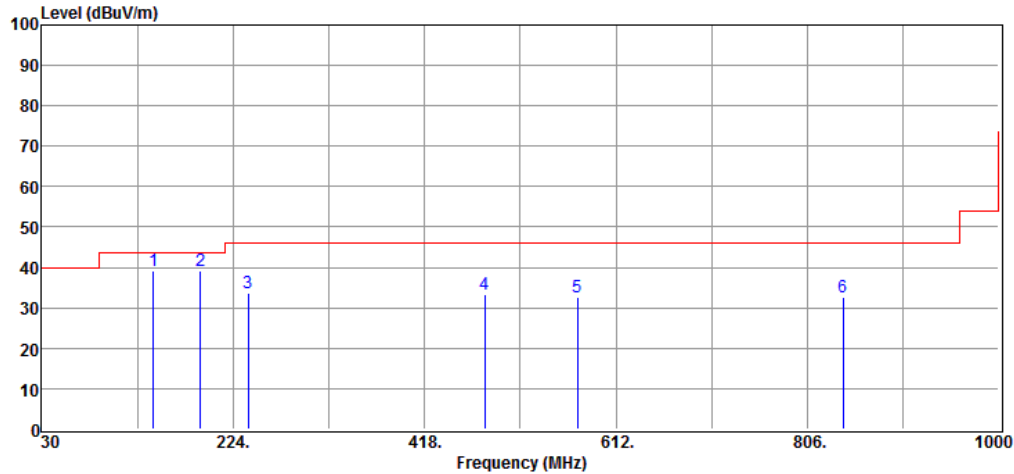
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx high ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	95.96	49.13	-12.01	37.12	43.50	-6.38	Peak	VERTICAL
2	119.24	46.16	-9.01	37.15	43.50	-6.35	Peak	VERTICAL
3	191.02	41.40	-8.80	32.60	43.50	-10.90	Peak	VERTICAL
4	384.05	37.26	-3.59	33.67	46.00	-12.33	Peak	VERTICAL
5	477.17	34.64	-2.01	32.63	46.00	-13.37	Peak	VERTICAL
6	574.17	32.77	-0.33	32.44	46.00	-13.56	Peak	VERTICAL

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Test Mode : Tx high ch Dipole Tested by : Barry Lee



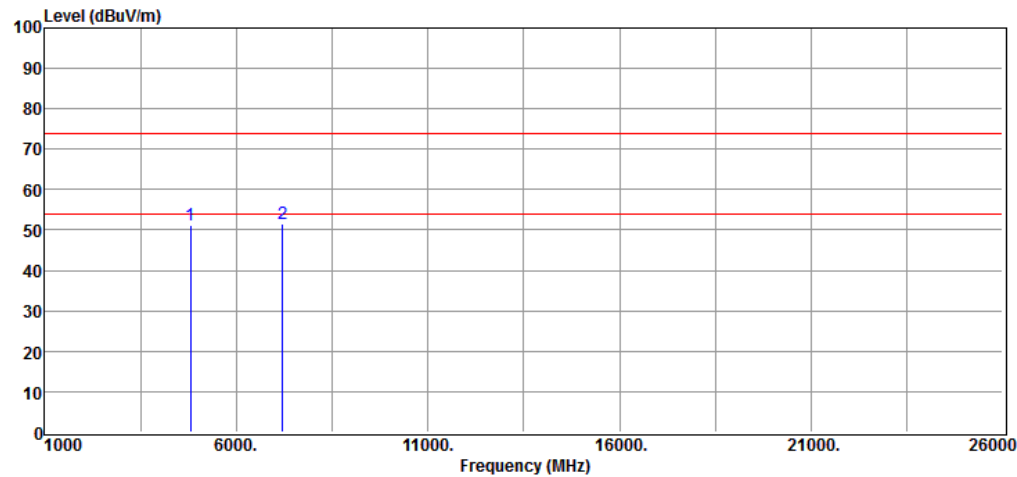
No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	143.49	45.61	-6.54	39.07	43.50	-4.43	Peak	HORIZONTAL
2	191.02	48.08	-8.80	39.28	43.50	-4.22	Peak	HORIZONTAL
3	239.52	41.12	-7.53	33.59	46.00	-12.41	Peak	HORIZONTAL
4	479.11	35.41	-1.98	33.43	46.00	-12.57	Peak	HORIZONTAL
5	573.20	33.10	-0.36	32.74	46.00	-13.26	Peak	HORIZONTAL
6	841.89	27.87	4.63	32.50	46.00	-13.50	Peak	HORIZONTAL

6.4.2 Radiated Spurious Emission Measurement Result (above 1GHz)

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Date: 2025-06-13

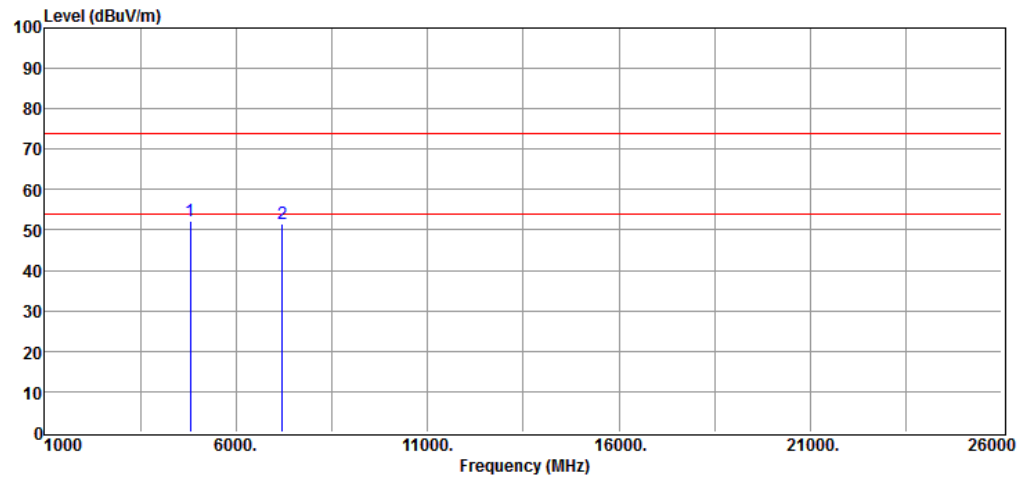
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx low ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4804.00	43.07	7.96	51.03	74.00	-22.97	Peak	VERTICAL
2	7206.00	41.01	10.66	51.67	74.00	-22.33	Peak	VERTICAL

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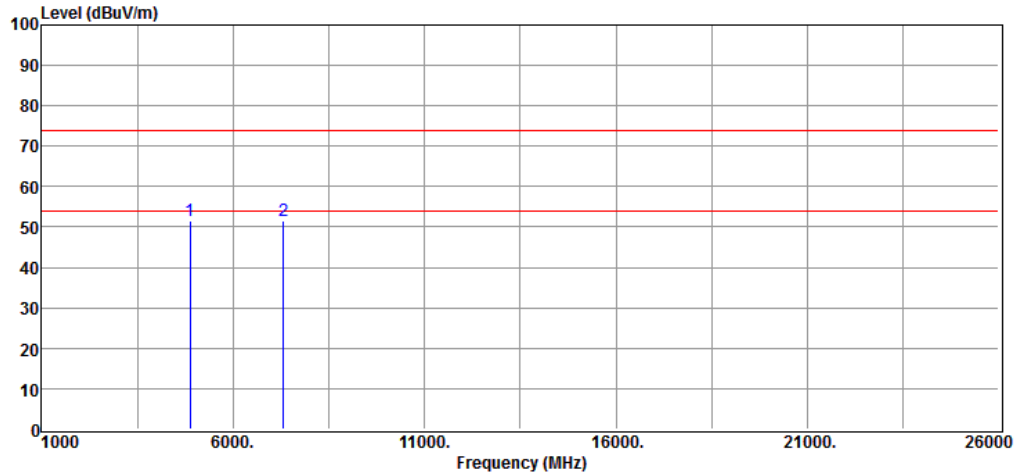
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx low ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4804.00	44.34	7.96	52.30	74.00	-21.70	Peak	HORIZONTAL
2	7206.00	40.89	10.66	51.55	74.00	-22.45	Peak	HORIZONTAL

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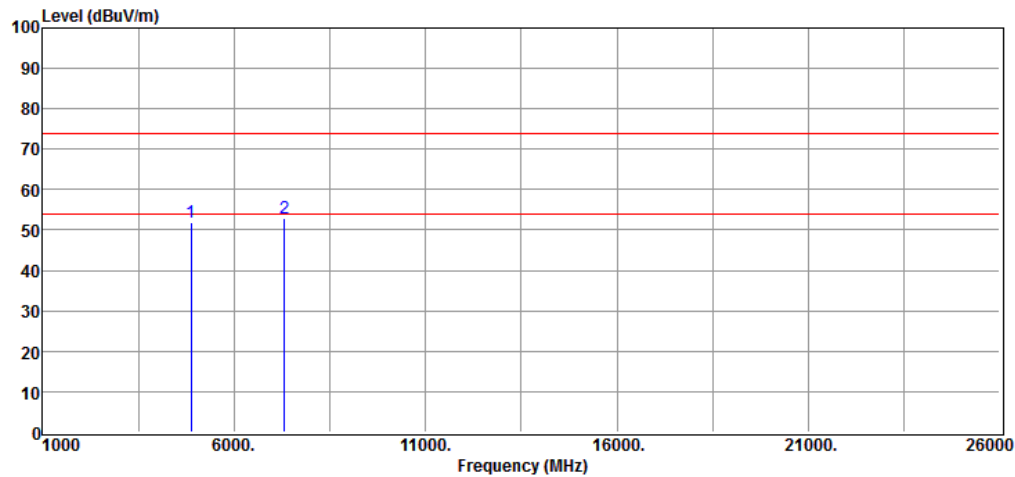
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx mid ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4884.00	43.40	8.02	51.42	74.00	-22.58	Peak	VERTICAL
2	7326.00	40.89	10.70	51.59	74.00	-22.41	Peak	VERTICAL

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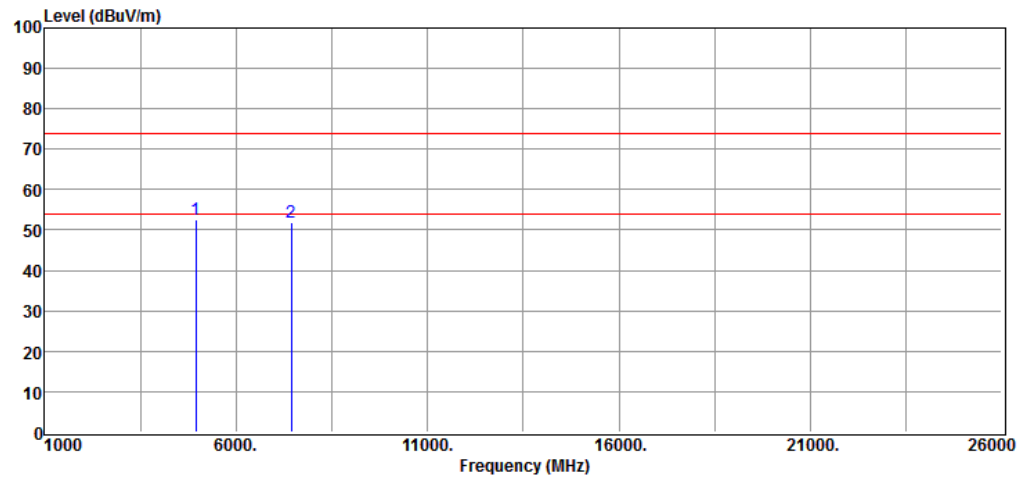
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx mid ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4884.00	43.85	8.02	51.87	74.00	-22.13	Peak	HORIZONTAL
2	7326.00	42.21	10.70	52.91	74.00	-21.09	Peak	HORIZONTAL

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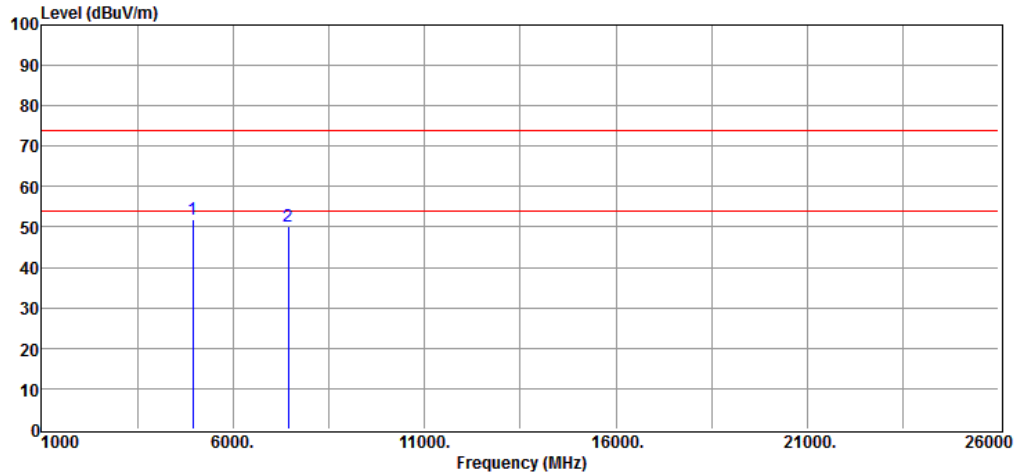
Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx high ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4960.00	44.58	8.12	52.70	74.00	-21.30	Peak	VERTICAL
2	7440.00	41.29	10.75	52.04	74.00	-21.96	Peak	VERTICAL

International Standard Laboratory Corp.
Company Address:No.120,Lane 180, Hsin Ho Rd.
Lung-Tan Dist., Tao Yuan City 325, Taiwa
Date: 2025-06-13

Project Number. : 19LR0247-R5 Temp.(°C)/RH(%) : 25/60
Test Mode : Tx high ch Dipole Tested by : Barry Lee



No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol V/H
1	4960.00	43.82	8.12	51.94	74.00	-22.06	Peak	HORIZONTAL
2	7440.00	39.29	10.75	50.04	74.00	-23.96	Peak	HORIZONTAL

6.4.3 Conducted Spurious Emission Measurement Result

Location Conducted	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Chamber 19	Spectrum analyzer	R&S	FSV40	101919	07/13/2024	07/13/2025
Chamber 19	EMI Receiver	R&S	ESR3	102461	05/12/2025	05/12/2026
Chamber 19	Loop Antenna	EM	EM-6879	271	09/25/2024	09/25/2025
Chamber 19	Bilog Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168 w 5dB Att.	9168-736	04/21/2025	04/21/2026
Chamber 19	Horn antenna (1GHz-18GHz)	ETS • LINDGREN	3117	00218718	10/04/2024	10/04/2025
Chamber 19	Horn antenna (18GHz-26GHz)	Com-power	AH-826	081001	11/28/2024	11/28/2025
Chamber 19	Horn antenna (26GHz-40GHz)	Com-power	AH-640	100A	03/27/2025	03/27/2026
Chamber 19	Preamplifier (100kHz-1.3GHz)	HP	8447F	3113A04621	06/21/2024	06/21/2025
Chamber 19	Preamplifier (1GHz-26GHz)	HP	8449B	3008A02471	10/23/2024	10/23/2025
Chamber 19	Preamplifier (26GHz-40GHz)	MITEQ	JS4-26004000-27-5A	818471	05/06/2025	05/06/2026
Chamber 19	RF Cable (9kHz-26.5GHz)	Huber Suhner	Sucoflex 104A	MY1394/4A & 50886/4A	07/15/2024	07/15/2025
Chamber 19	RF Cable (18GHz-40GHz)	HUBER SUHNER	Sucoflex 102	27963/2&37421/2	11/22/2024	11/22/2025
Chamber 19	MXG Vector Signal Generator	Keysight	N5182B	MY53052399	12/26/2023	12/26/2025
Chamber 19	Test Software	Audix	E3 Ver:6.120203b	N/A	N/A	N/A

7. Appendix

7.1 Appendix A: Equipment List

Location Conducted	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conducted	Power Meter	Anritsu	ML2495A	1116010	09/26/2024	09/26/2025
Conducted	Power Sensor	Anritsu	MA2411B	34NKF50	09/26/2024	09/26/2025
Conducted	Temperature Chamber	KSON	THS-B4H+-100	2287	05/23/2025	05/23/2026
Conducted	DC Power supply	ABM	8185D	N/A	12/27/2024	12/27/2025
Conducted	AC Power supply	EXTECH	CFC105W	NA	N/A	N/A
Conducted	Spectrum analyzer	Keysight	N9010A	MY56070257	09/25/2024	09/25/2025
Conducted	Test Software	DARE	Radiation Ver:2013.1.23	NA	NA	NA
Conducted	Wideband Radio Comm. Tester	R&S	CMW500	1201.002K50108 793-JG	10/26/2024	10/26/2025
Conducted	Radio Communication Test Station	Anritsu	MT8000A	6272539604	08/29/2024	08/29/2025
Conducted	MT8000A Test Software	Anritsu	MX800000A Application Launcher v10.10.34.0	NA	NA	NA
Conducted	BT Simulator	Agilent	N4010A	MY48100200	NA	NA
Conducted	MXG Vector Signal Generator	KEYSIGHT	N5182B	MY53052399	12/26/2023	12/26/2025
Conducted (TS8997)	Wideband Radio Comm. Tester	R&S	CMW500	168811	09/25/2024	09/25/2025
Conducted (TS8997)	UP/DOWN converter	R&S	CMW-Z800A	100566	09/25/2024	09/25/2025
Conducted (TS8997)	Signal Generator	R&S	SMB100A	183701	09/10/2024	09/10/2025
Conducted (TS8997)	Vector Signal Generator	R&S	SMM100A	101908	09/10/2024	09/10/2025
Conducted (TS8997)	Signal analyzer 40GHz	R&S	FSV40	101884	09/11/2024	09/11/2025
Conducted (TS8997)	OSP150 extension unit CAM-BUS	R&S	OSP150	101107	09/11/2024	09/11/2025
Conducted (TS8997)	Test Software	R&S	EMC32 Ver:12.00.00	NA	NA	NA

7.2 Appendix B: Uncertainty of Measurement

ISO/IEC 17025 requires that an estimate of measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

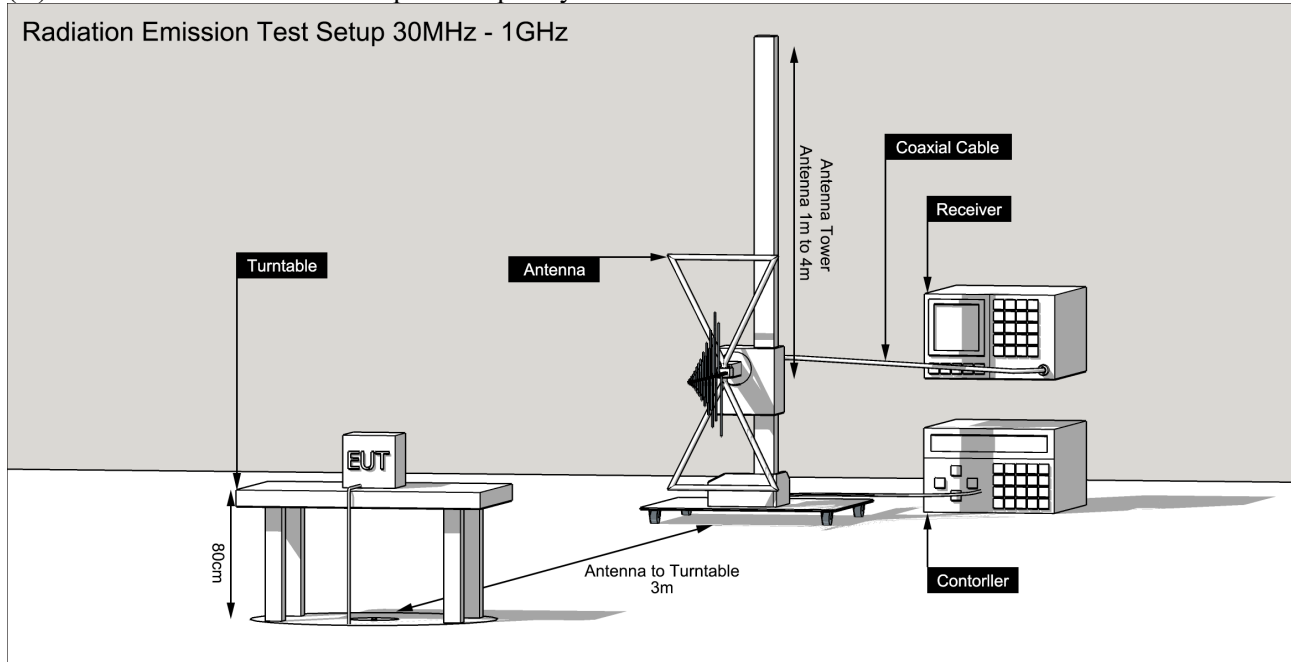
Parameter	Uncertainty ($k=2$)
Conducted Emission (AC power line)	± 1.6 dB
Spurious emissions, radiated	± 4.8 dB
RF power, conducted	± 2.2 dB
Power Density	± 2.3 dB
RF Frequency	± 1.5 %
DC Voltage	± 2.2 %

AC Line Conduced Emission Test Setup

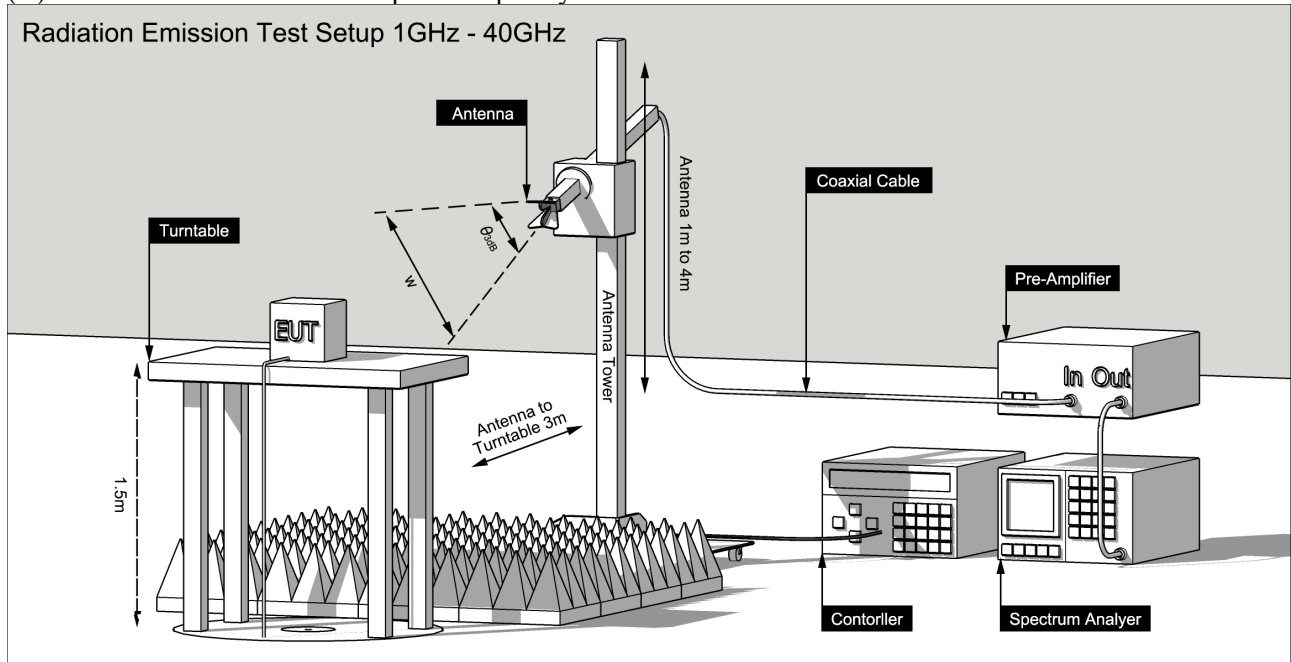
-
- Conducted Emission Test Setup**
- The diagram illustrates the setup for a conducted emission test. Key components and dimensions include:
- EUT/AE PSU**: The device under test, placed on a table.
 - EUT**: The equipment under test, connected to the PSU.
 - EUT/AE**: The equipment under test, connected to the PSU.
 - Cable to AE**: Connected to the EUT/AE.
 - Cable 0.04 m from VRGP**: Connected to the EUT/AE.
 - CVP**: Current probe, connected to the EUT/AE.
 - Current probe**: Connected to the EUT/AE.
 - AMN / LISN**: Antenna Modulator / Line Impedance Stabilization Network, connected to the EUT/AE.
 - Vertical reference ground plan**: The ground plane for the test.
 - AMNs bonded to a reference ground plan**: The AMNs are connected to the ground plane.
 - 0.4 m to vertical reference ground plane**: The distance from the EUT/AE to the ground plane.
 - 0.8 m**: The height of the table.
 - 0.1 m**: The distance from the EUT/AE to the PSU.
 - 0.3 m**: The distance from the EUT/AE to the CVP.
 - ≥ 0.8 m to other metallic objects**: The minimum distance from the EUT/AE to other metallic objects.

Radiated Spurious Emission Test & 100kHz Bandwidth of Band Edges Measurement Test Setup

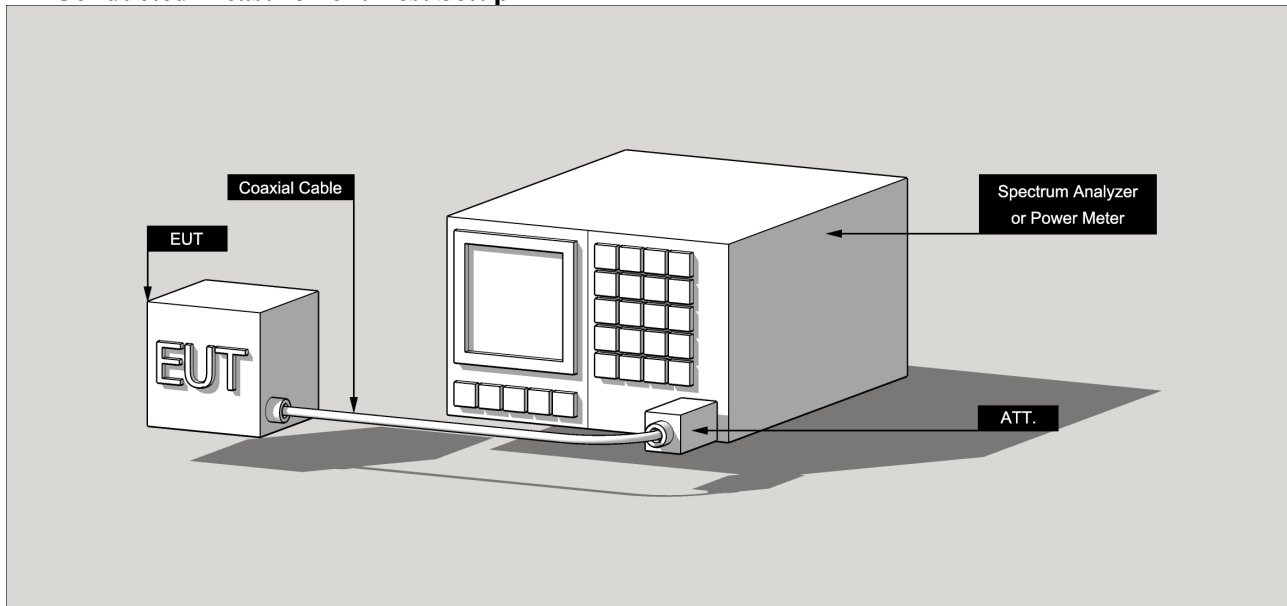
(A) Radiated Emission Test Setup for frequency below 1000MHz



(B) Radiated Emission Test Setup for frequency above 1 GHz



RF Conducted Measurement Test Setup



7.4 Appendix E: Photographs of EUT

Please refer to the File of **ISL-19LR247P-R5**

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