TEST REPORT

Applicant:	Zhejiang Lierda Internet of Things technology Co., Ltd
Address:	Room 1402, Building 1, No. 1326, Wenyi West Road, Cangqian street, Yuhang District, Hangzhou, Zhejiang Prov., China
Equipment Type:	433M wireless communication module
Model Name:	LSD1RF-ST433M00
Brand Name:	lierda
FCC ID:	2AOFDLSD1RFST433M00
Test Standard:	47 CFR Part 15 Subpart C (refer section 3.1)
Sample Arrival Date:	Apr. 18, 2022
Test Date:	Jul. 22, 2022 - Apr. 11, 2023
Date of Issue:	Apr. 27, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Julie Zhu **Checked by:** Ye Hongji **Approved by:** Liao Jianming (Technical Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	Apr. 23, 2023	Initial Issue
Rev. 02	Apr. 27, 2023	Add two notes in section A.5

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Zhejiang Lierda Internet of Things technology Co., Ltd
Address	Room 1402, Building 1, No. 1326, Wenyi West Road, Cangqian street, Yuhang District, Hangzhou, Zhejiang Prov., China

2.2 Manufacturer Information

Manufacturer	Zhejiang Lierda Internet of Things technology Co., Ltd
Address	Room 1402, Building 1, No. 1326, Wenyi West Road, Cangqian street, Yuhang District, Hangzhou, Zhejiang Prov., China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	433M wireless communication module
Model Name Under Test	LSD1RF-ST433M00
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	03
Software Version	01
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity	434.04 MHz ~ 434.79 MHz

The requirement for the following technical information of the EUT was tested in this report:

Modulation Type	2-FSK
Product Type	☐ Mobile ☒ Portable ☐ Fix Location
Operating Frequency	434.04 MHz ~ 434.79 MHz
Antenna Type	Spring Antenna
Antenna Gain	2.0 dBi

All channel was listed on the following table:

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	**434.065**	11	434.315	21	434.565
2	434.090	12	434.340	22	434.590
3	434.115	13	434.365	23	434.615
4	434.140	14	434.390	24	434.640
5	434.165	**15**	**434.415**	25	434.665
6	434.190	16	434.440	26	434.690
7	434.215	17	434.465	27	434.715
8	434.240	18	434.490	28	434.740
9	434.265	19	434.515	**29**	**434.765**
10	434.290	20	434.540		

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Test Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	--	Pass Note
2	Conducted Emission	15.207	ANNEX A.1	Pass
3	20 dB &99% Bandwidth	15.231(c)	ANNEX A.2	Pass
4	Duty Cycle	15.35	ANNEX A.3	Pass
5	Field Strength of Fundamental Emissions	15.231(b)	ANNEX A.4	Pass
6	Radiated Emissions	15.209 15.231(b)	ANNEX A.5	Pass
7	Transmitting Time	15.231(a)	ANNEX A.6	Pass
Note: Please refer to section 5.1				

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	52% to 57%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+20.9℃ to +25.0℃
Working Voltage of the EUT	NV (Normal Voltage)	3.3 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY50330200	2022.05.19	2023.05.18
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2022.01.04	2023.01.03
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2022.12.28	2023.12.27
Spectrum Analyzer	KEYSIGHT	N9020A	MY52510065	2022.09.06	2023.09.05
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2022.06.29	2023.06.28
Test Antenna-Horn (1-18 GHz)	SCHWARZBECK	BBHA 9120D	01631	2022.02.03	2025.02.02
Test Antenna-Horn (18-40 GHz)	A-INFO	LB-180400KF	J211060273	2021.07.02	2024.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2021.09.04	2024.09.03
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	00884	2021.03.08	2024.03.07
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2022.09.09	2023.09.08
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2021.04.16	2024.04.15
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2021.08.15	2024.08.14

4.3 Measurement Uncertainty

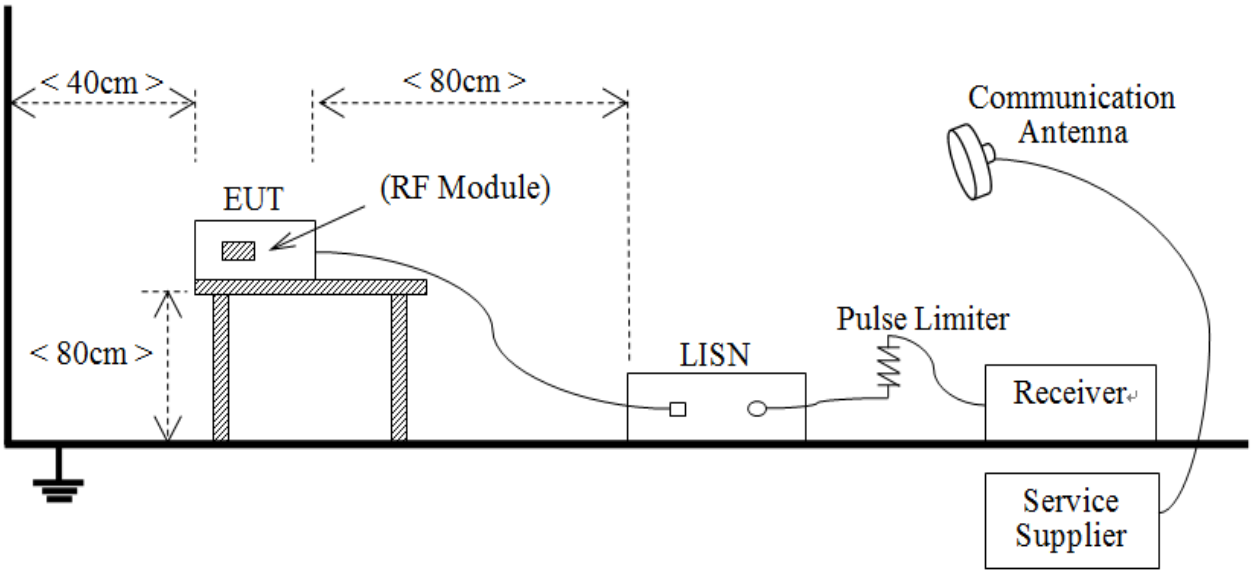
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.82°C
Humidity	4.1%

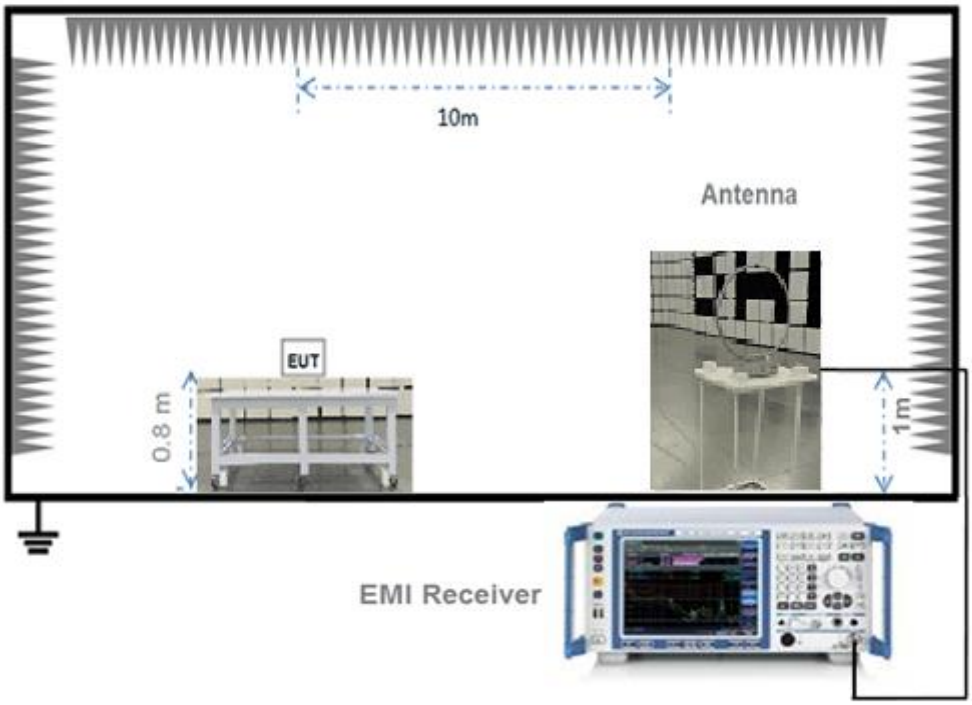
4.4 Description of Test Setup

4.4.1 For AC Power Supply Port Test



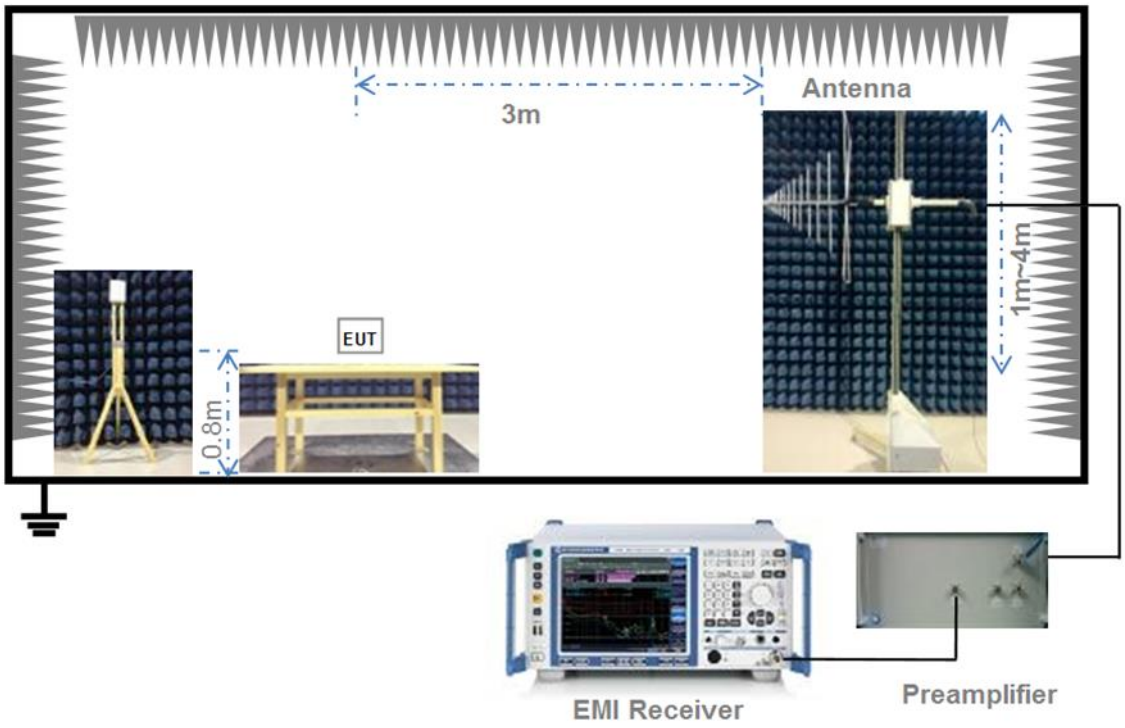
(Diagram 2)

4.4.2 For Radiated Test (Below 30 MHz)



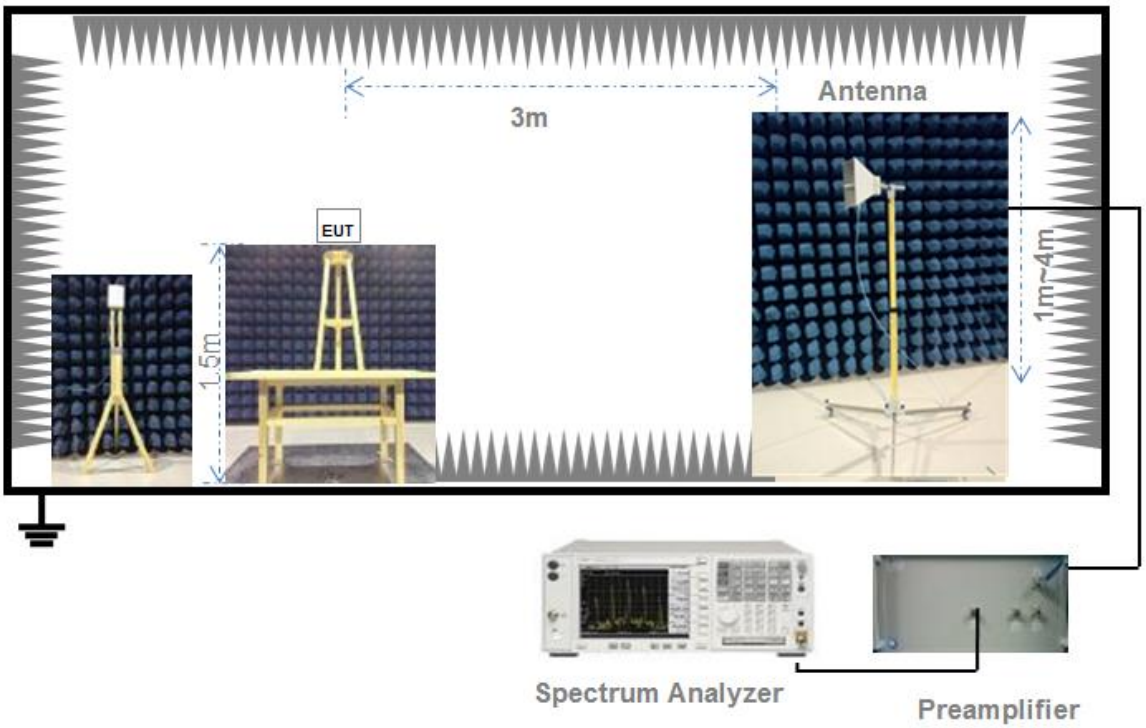
(Diagram 3)

4.4.3 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 5)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203 & 15.247(b)
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 a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Conducted Emission

5.2.1 Limit

FCC §15.207

For an intentional radiator 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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.2.2 Test Setup

See section 4.4.1 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 20 dB Bandwidth

5.3.1 Limit

FCC §15.231

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

5.3.2 Test Setup

See section 4.4.3 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Span = two times and five times the OBW

RBW = 1% to 5% of the OBW

VBW ≥ three times RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Field Strength of Fundamental Emissions and Radiated Emissions

5.4.1 Limit

FCC §15.231 & §15.209

According to FCC section 15.231(b), In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	[1]1250 to 3750	125 to 375
174-260	3750	375
260-470	[1]3750 to 12500	375 to 1250
Above 470	12500	1250
[1]Linear interpolations.		

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)
0.009 - 0.490	2400/F(kHz)
0.490 - 1.705	24000/F(kHz)
1.705 - 30.0	30
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Note:

1. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

2. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.4.2 Test Setup

See section 4.4.2 to 4.4.4 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented. The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.4.4 Test Result

Please refer to ANNEX A.4 & A.5.

5.5 Transmitting Time

5.5.1 Limit

FCC §15.231
(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

5.5.2 Test Setup

See section 4.4.3 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The EUT transmitter was activated, the spectrum analyzer single sweep was triggered while a command on the EUT was activated and plots were captured

5.5.4 Test Result

Please refer to ANNEX A.6.

ANNEX A TEST RESULT

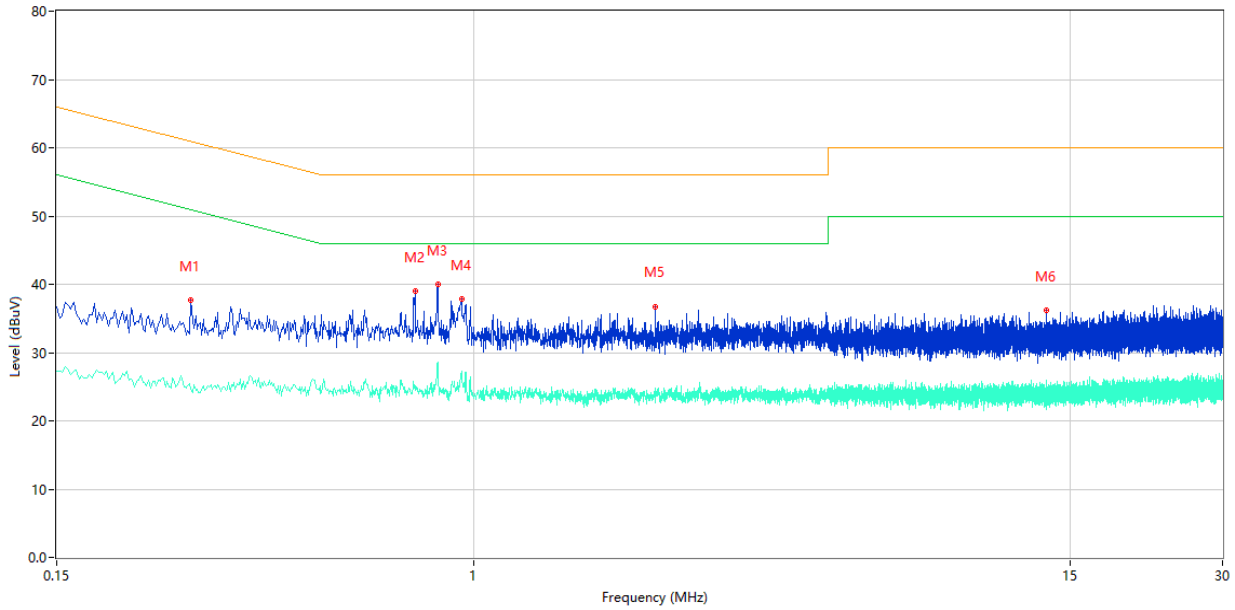
A.1 Conducted Emissions

Note [1]: The EUT is working in the Normal link mode.

Note [2]: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

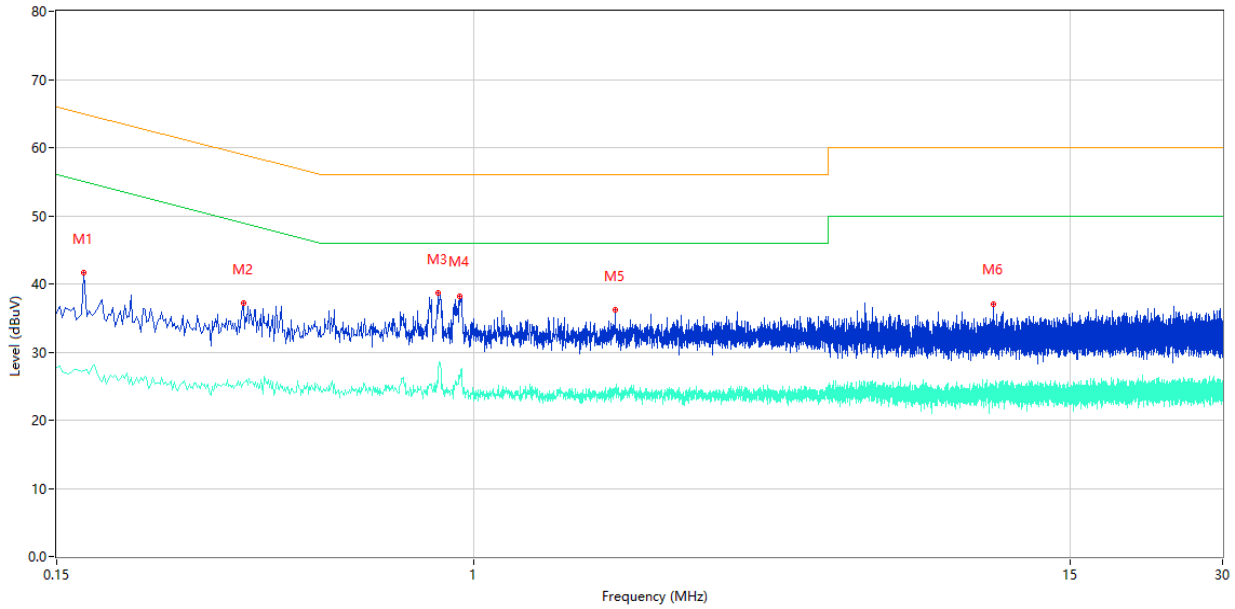
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.276	37.70	10.00	60.94	23.24	Peak	L	Pass
1**	0.276	24.72	10.00	50.94	26.22	AV	L	Pass
2	0.764	39.01	10.43	56.00	16.99	Peak	L	Pass
2**	0.764	24.40	10.43	46.00	21.60	AV	L	Pass
3	0.848	40.07	10.75	56.00	15.93	Peak	L	Pass
3**	0.848	28.58	10.75	46.00	17.42	AV	L	Pass
4	0.944	37.84	10.19	56.00	18.16	Peak	L	Pass
4**	0.944	27.32	10.19	46.00	18.68	AV	L	Pass
5	2.276	36.70	10.32	56.00	19.30	Peak	L	Pass
5**	2.276	24.77	10.32	46.00	21.23	AV	L	Pass
6	13.462	36.23	10.23	60.00	23.77	Peak	L	Pass
6**	13.462	22.49	10.23	50.00	27.51	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.168	35.54	10.08	65.06	29.52	Peak	N	Pass
1**	0.168	27.06	10.08	55.06	28.00	AV	N	Pass
2	0.350	37.11	10.97	58.96	21.85	Peak	N	Pass
2**	0.350	25.42	10.97	48.96	23.54	AV	N	Pass
3	0.850	38.60	10.75	56.00	17.40	Peak	N	Pass
3**	0.850	27.75	10.75	46.00	18.25	AV	N	Pass
4	0.936	38.19	10.21	56.00	17.81	Peak	N	Pass
4**	0.936	26.09	10.21	46.00	19.91	AV	N	Pass
5	1.902	36.20	10.80	56.00	19.80	Peak	N	Pass
5**	1.902	24.79	10.80	46.00	21.21	AV	N	Pass
6	10.602	37.11	10.43	60.00	22.89	Peak	N	Pass
6**	10.602	24.62	10.43	50.00	25.38	AV	N	Pass

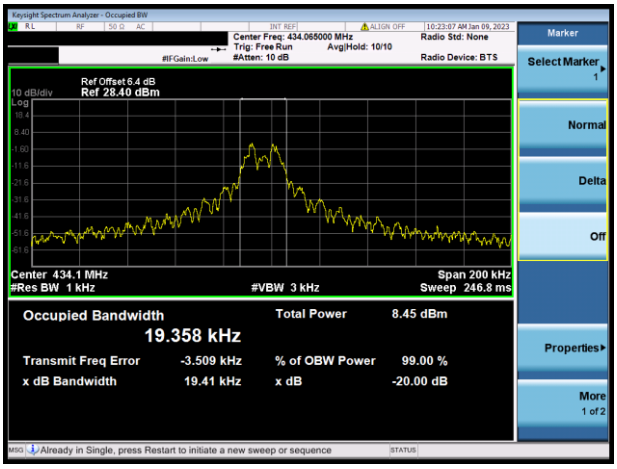
A.2 20 dB Bandwidth

Test Data

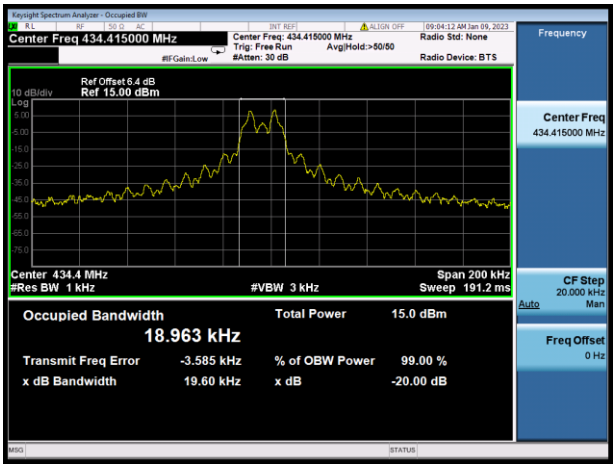
Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit (kHz)	Verdict
434.065	19.410	19.358	1085.1625	Pass
434.415	19.600	18.963	1086.0375	Pass
434.765	19.500	19.032	1086.9125	Pass

Test Plots

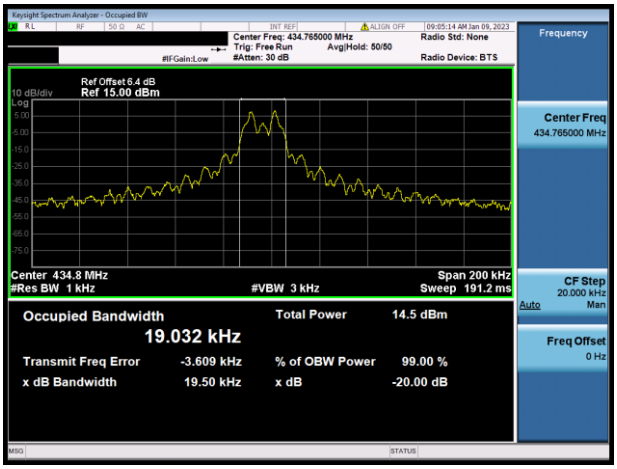
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL

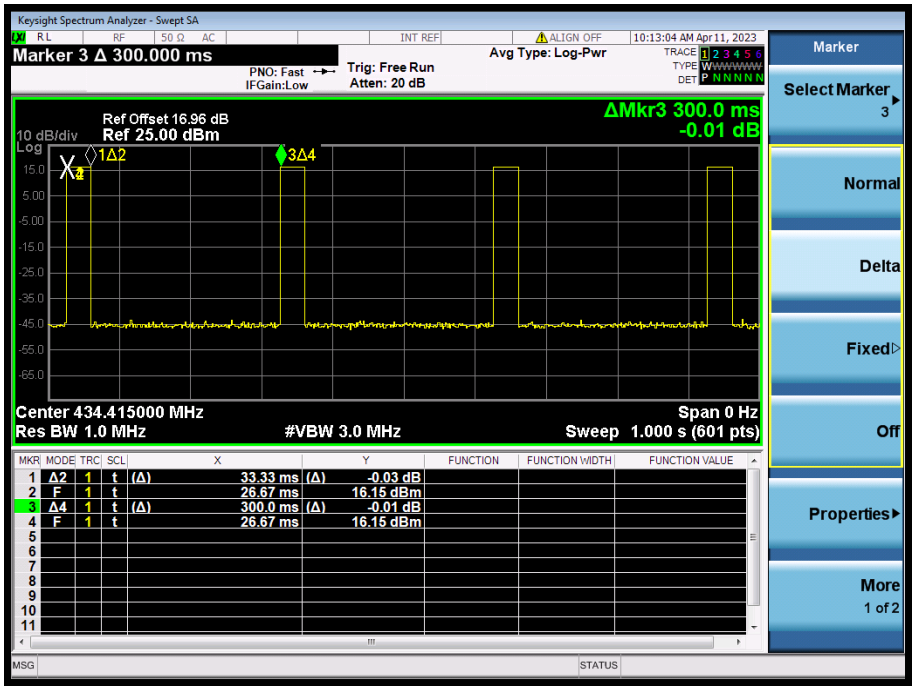


A.3 Duty cycle

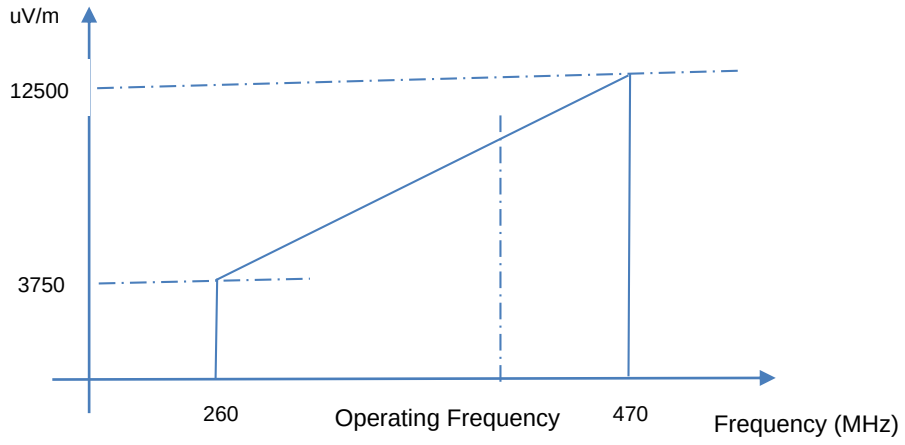
Test Data

Data Transmissions	Number of pulses
Duty cycle correction factor	20*log(33.33/300)=-19.09 dB

Test Plots



A.4 Field Strength of Fundamental Emissions



The Field Strength of Fundamental Emissions (Operating Frequency) is:
3750 uV/m = 20*log (3750) dBuV/m = 71.48 dBuV/m

12500 uV/m = 20*log (12500) dBuV/m = 81.94 dBuV/m

Test Data

Field Strength of Fundamental Emissions and Field strength of spurious emissions Value					
Operating Frequency (MHz)	Field Strength (dBuV/m)	Detector	Limit @3m (dBuV/m)	Margin (dB)	Antenna
434.054	89.06	PEAK	100.8	11.74	Horizontal
	85.35	PEAK	100.8	15.45	Vertical
434.102	69.97	AVERAGE	80.8	10.83	Horizontal
	66.26	AVERAGE	80.8	14.54	Vertical
868.128	47.95	PEAK	80.8	32.85	Horizontal
	40.41	PEAK	80.8	40.39	Vertical
868.128	28.86	AVERAGE	60.8	31.94	Horizontal
	21.32	AVERAGE	60.8	39.48	Vertical
434.442	89.03	PEAK	100.8	11.77	Horizontal
	85.21	PEAK	100.8	15.59	Vertical
434.442	69.94	AVERAGE	80.8	10.86	Horizontal
	66.12	AVERAGE	80.8	14.68	Vertical
868.856	47.37	PEAK	80.8	33.43	Horizontal
	40.02	PEAK	80.8	40.78	Vertical
868.856	28.28	AVERAGE	60.8	32.52	Horizontal
	20.93	AVERAGE	60.8	39.87	Vertical
434.781	89.00	PEAK	100.8	11.80	Horizontal
	85.21	PEAK	100.8	15.59	Vertical
434.781	69.91	AVERAGE	80.8	10.89	Horizontal
	66.12	AVERAGE	80.8	14.68	Vertical
869.535	47.53	PEAK	80.8	33.27	Horizontal
	39.90	PEAK	80.8	40.90	Vertical
869.535	28.44	AVERAGE	60.8	32.36	Horizontal
	20.81	AVERAGE	60.8	39.99	Vertical

A.5 Radiated Emission

Note [1]: The symbol of "--" in the table which means not application.

Note [2]: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

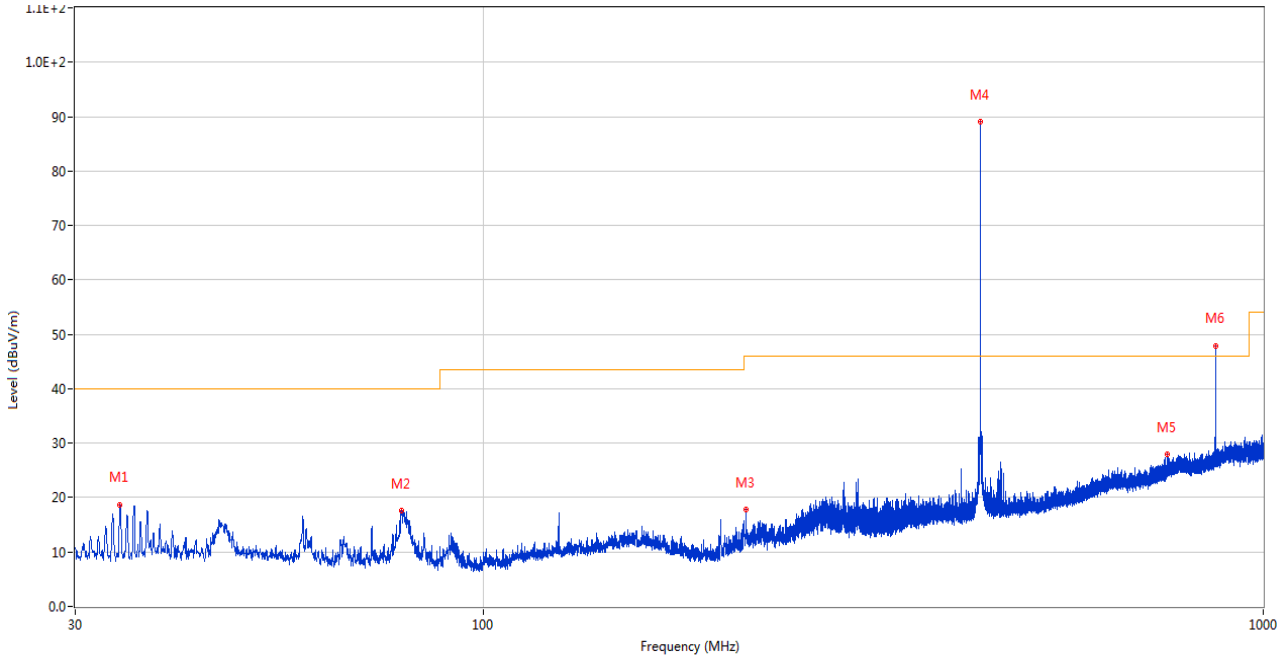
Note [3]: The verdict please refer to the A.3 field strength of fundamental emissions and field strength of spurious emissions value.

Note [4]: Limit field strength of fundamental: 20*log((12500-3750)/(470-260)+(fc-260)+3750)dBuV/m+20dB =100.8dBuV/m@3m (PK)

Note [5]: Limit field strength of harmonics: 20*log((1250-375)/(470-260)+(fc-260)+375)dBuV/m+20dB =80.8dBuV/m@3m (PK)

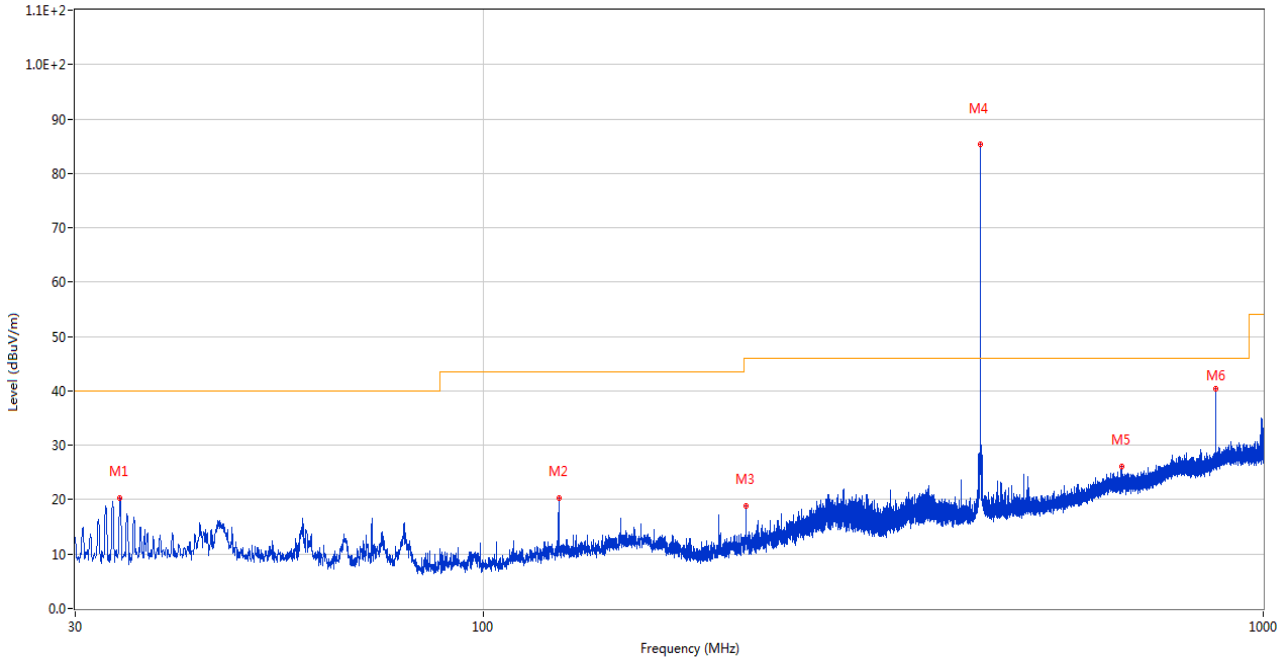
Test Data and Plots

LOW CHANNEL 30 MHz to 1 GHz, ANT H



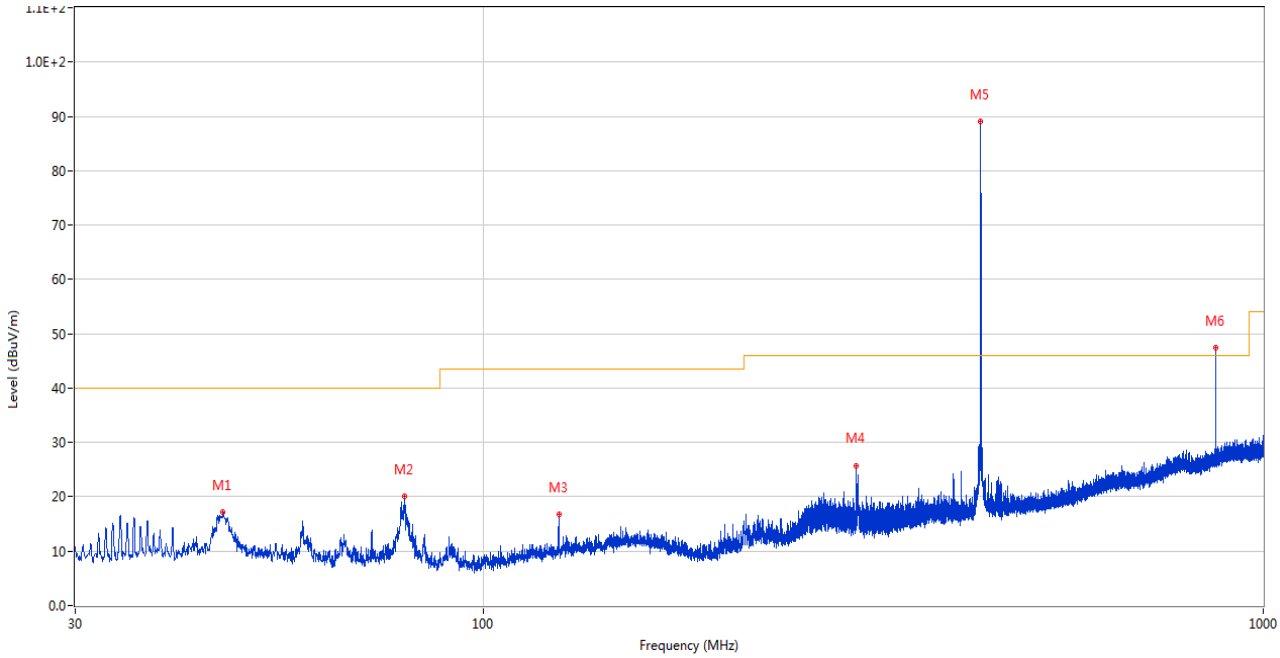
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	34.219	18.73	-26.68	40.0	21.27	Peak	32.00	200	Horizontal	Pass
2	78.500	17.59	-29.67	40.0	22.41	Peak	107.00	200	Horizontal	Pass
3	217.307	17.76	-27.30	46.0	28.24	Peak	360.00	100	Horizontal	Pass
4	434.054	89.06	-20.14	100.8	11.74	Peak	89.00	200	Horizontal	Pass
5	754.347	27.98	-10.58	46.0	18.02	Peak	313.00	200	Horizontal	Pass
6	868.128	47.95	-8.87	80.8	32.85	Peak	91.00	200	Horizontal	Pass

LOW CHANNEL 30 MHz to 1 GHz, ANT V



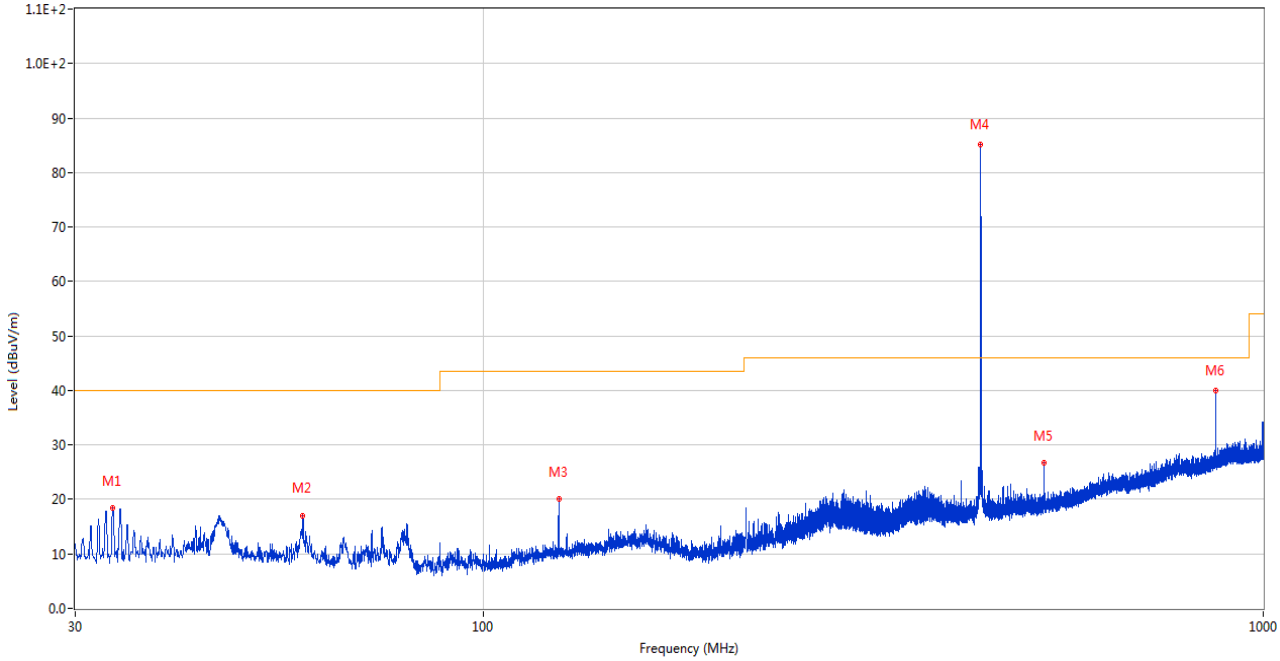
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	34.219	20.32	-26.68	40.0	19.68	Peak	309.00	100	Vertical	Pass
2	125.011	20.31	-26.21	43.5	23.19	Peak	168.00	200	Vertical	Pass
3	217.258	18.88	-27.31	46.0	27.12	Peak	91.00	200	Vertical	Pass
4	434.102	85.35	-20.14	100.8	15.45	Peak	232.00	200	Vertical	Pass
5	658.899	26.05	-13.40	46.0	19.95	Peak	5.00	100	Vertical	Pass
6	868.128	40.41	-8.87	80.8	40.39	Peak	360.00	200	Vertical	Pass

MIDDLE CHANNEL 30 MHz to 1 GHz, ANT H



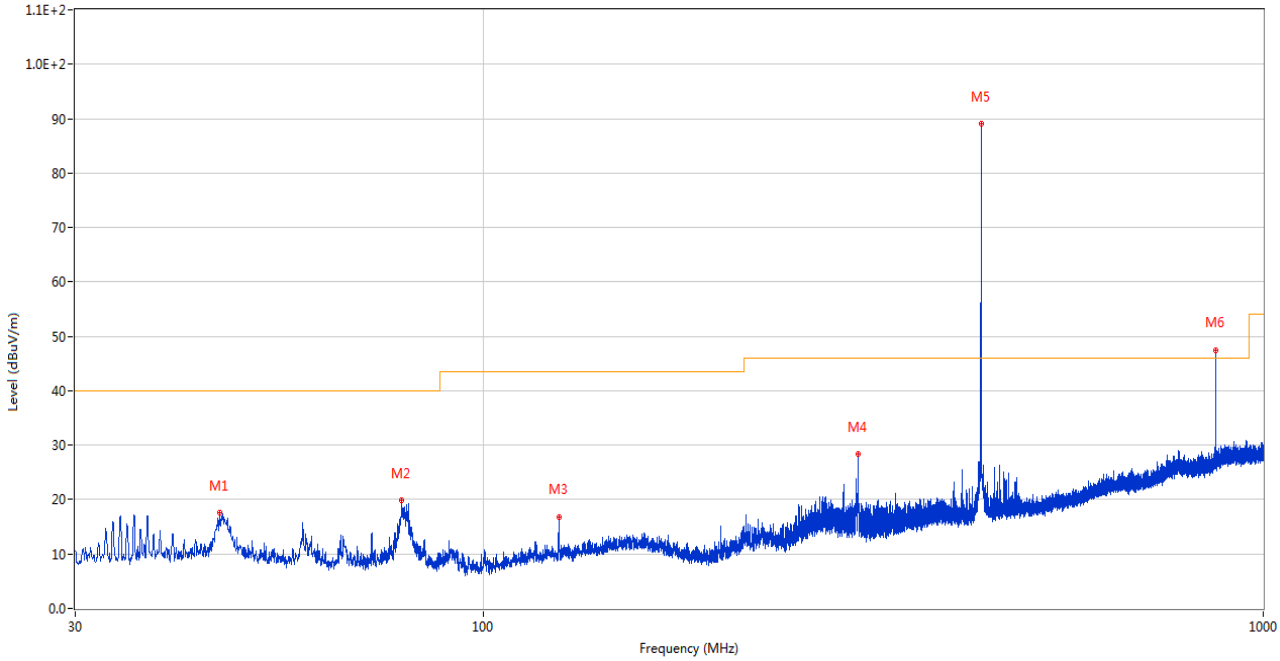
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	46.393	17.25	-26.22	40.0	22.75	Peak	53.00	200	Horizontal	Pass
2	79.325	20.01	-29.79	40.0	19.99	Peak	273.00	200	Horizontal	Pass
3	125.011	16.71	-26.21	43.5	26.79	Peak	331.00	100	Horizontal	Pass
4	300.678	25.77	-23.83	46.0	20.23	Peak	118.00	200	Horizontal	Pass
5	434.442	89.03	-20.14	100.8	11.77	Peak	87.00	200	Horizontal	Pass
6	868.856	47.37	-8.89	80.8	33.43	Peak	93.00	200	Horizontal	Pass

MIDDLE CHANNEL 30 MHz to 1 GHz, ANT V



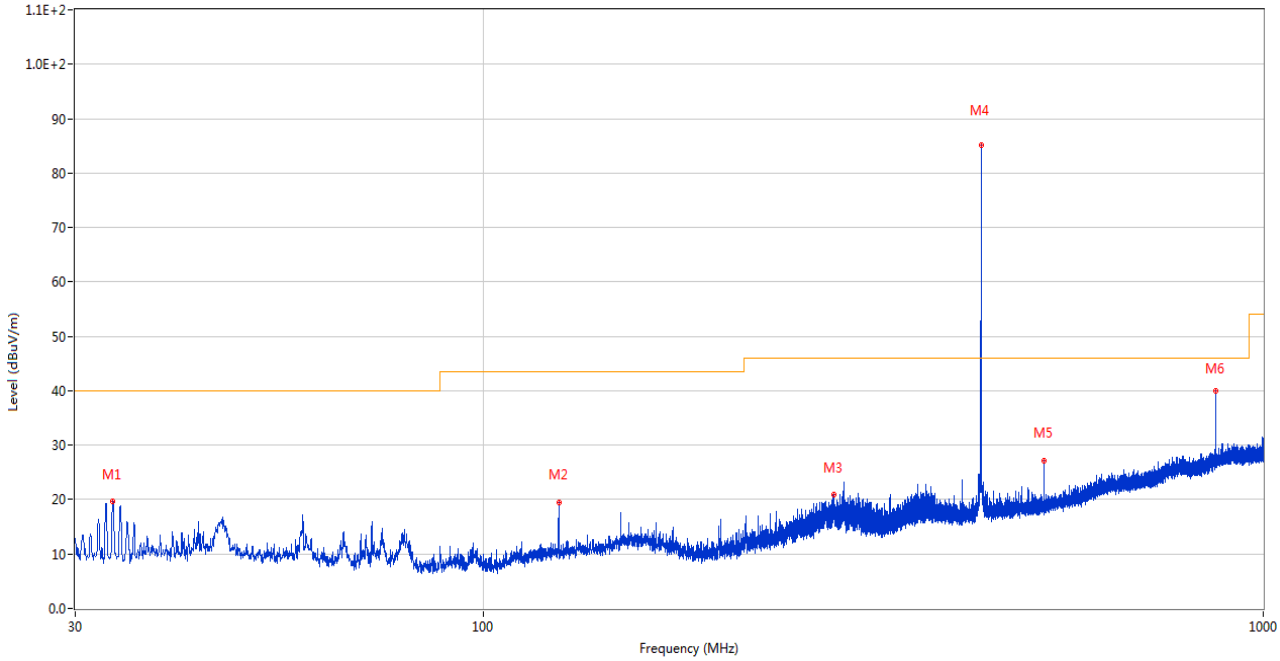
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.541	18.43	-26.75	40.0	21.57	Peak	274.00	100	Vertical	Pass
2	58.761	17.09	-26.74	40.0	22.91	Peak	47.00	100	Vertical	Pass
3	125.011	20.00	-26.21	43.5	23.50	Peak	81.00	200	Vertical	Pass
4	434.442	85.21	-20.14	100.8	15.59	Peak	233.00	200	Vertical	Pass
5	523.730	26.77	-17.78	46.0	19.23	Peak	202.00	100	Vertical	Pass
6	868.856	40.02	-8.89	80.8	40.78	Peak	358.00	200	Vertical	Pass

HIGH CHANNEL 30 MHz to 1 GHz, ANT H



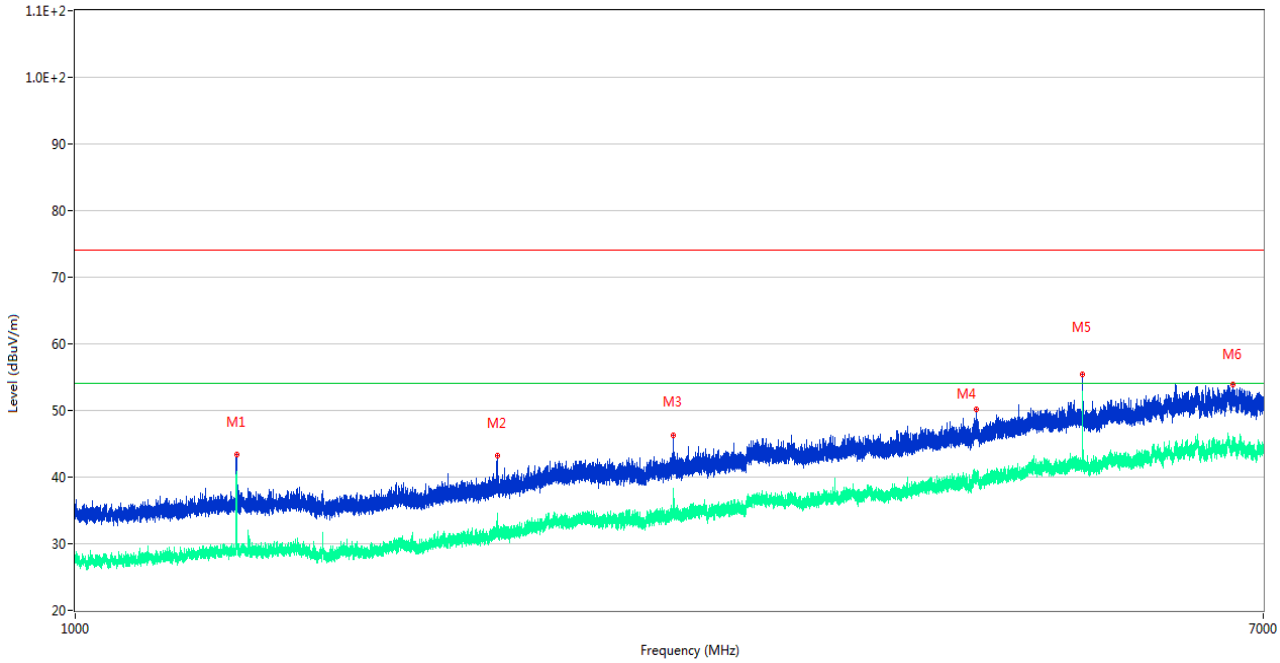
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	45.956	17.67	-26.26	40.0	22.33	Peak	142.00	200	Horizontal	Pass
2	78.597	19.95	-29.68	40.0	20.05	Peak	108.00	200	Horizontal	Pass
3	125.011	16.86	-26.21	43.5	26.64	Peak	56.00	100	Horizontal	Pass
4	302.230	28.30	-23.65	46.0	17.70	Peak	118.00	200	Horizontal	Pass
5	434.781	89.00	-20.14	100.8	11.8	Peak	92.00	200	Horizontal	Pass
6	869.535	47.53	-8.90	80.8	33.27	Peak	92.00	200	Horizontal	Pass

HIGH CHANNEL 30 MHz to 1 GHz, ANT V



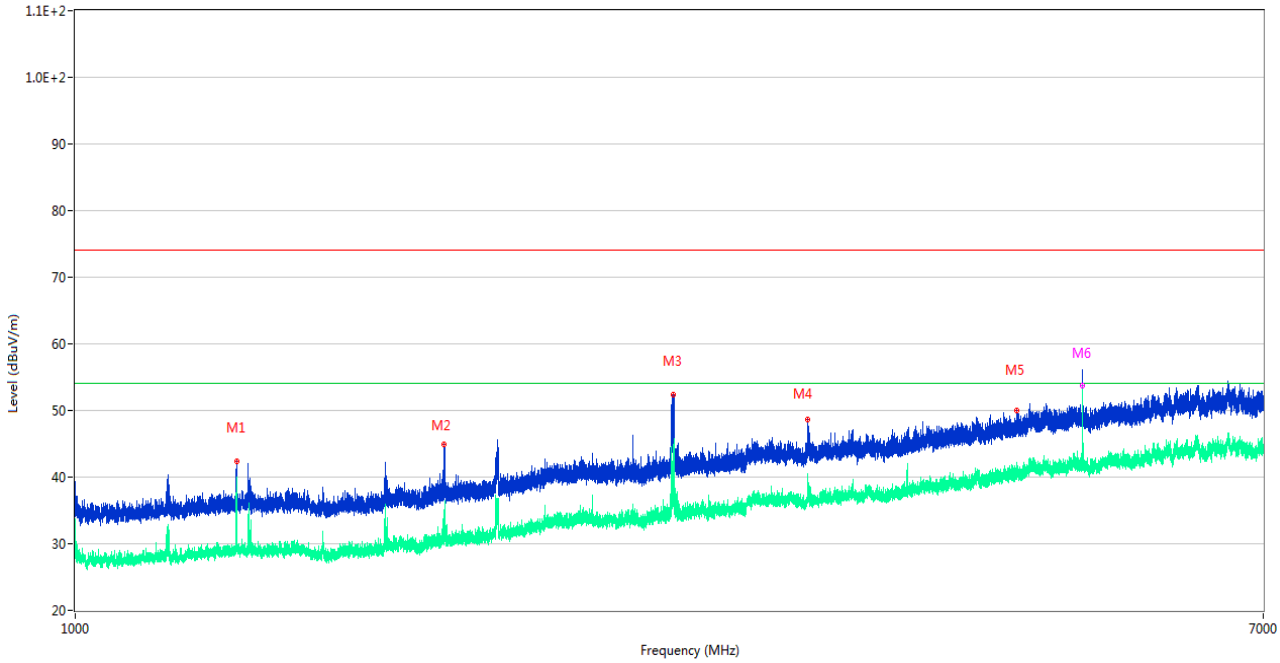
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.541	19.72	-26.75	40.0	20.28	Peak	101.00	100	Vertical	Pass
2	125.011	19.55	-26.21	43.5	23.95	Peak	216.00	200	Vertical	Pass
3	281.618	20.85	-24.41	46.0	25.15	Peak	63.00	100	Vertical	Pass
4	434.781	85.21	-20.14	100.8	15.59	Peak	233.00	200	Vertical	Pass
5	523.682	27.21	-17.79	46.0	18.79	Peak	0.00	100	Vertical	Pass
6	869.535	39.90	-8.90	80.8	40.9	Peak	360.00	200	Vertical	Pass

LOW CHANNEL 1 GHz to 7 GHz, ANT H



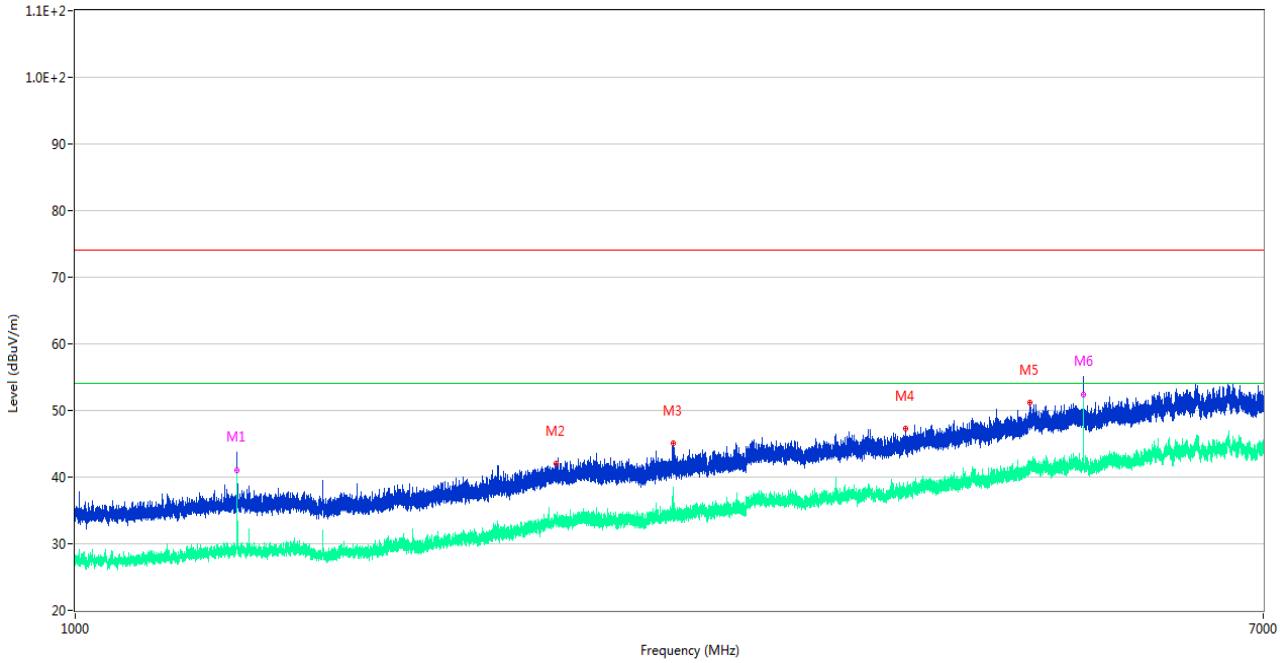
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1302.300	43.34	-16.92	80.8	37.46	Peak	216.00	200	Horizontal	Pass
1**	1302.300	40.61	-16.92	60.8	20.19	AV	216.00	200	Horizontal	Pass
2	1996.600	43.21	-15.05	74.0	30.79	Peak	90.00	150	Horizontal	Pass
2**	1996.600	31.96	-15.05	54.0	22.04	AV	90.00	150	Horizontal	Pass
3	2664.300	46.30	-11.52	74.0	27.70	Peak	204.00	100	Horizontal	Pass
3**	2664.300	37.83	-11.52	54.0	16.17	AV	204.00	100	Horizontal	Pass
4	4378.000	50.17	-2.88	74.0	23.83	Peak	147.00	150	Horizontal	Pass
4**	4378.000	39.73	-2.88	54.0	14.27	AV	147.00	150	Horizontal	Pass
5	5208.600	55.48	-2.00	80.8	25.32	Peak	316.00	100	Horizontal	Pass
5**	5208.600	51.90	-2.00	60.8	8.9	AV	316.00	100	Horizontal	Pass
6	6657.600	53.93	1.04	74.0	20.07	Peak	0.00	150	Horizontal	Pass
6**	6657.600	44.71	1.04	54.0	9.29	AV	0.00	150	Horizontal	Pass

LOW CHANNEL 1 GHz to 7 GHz, ANT V



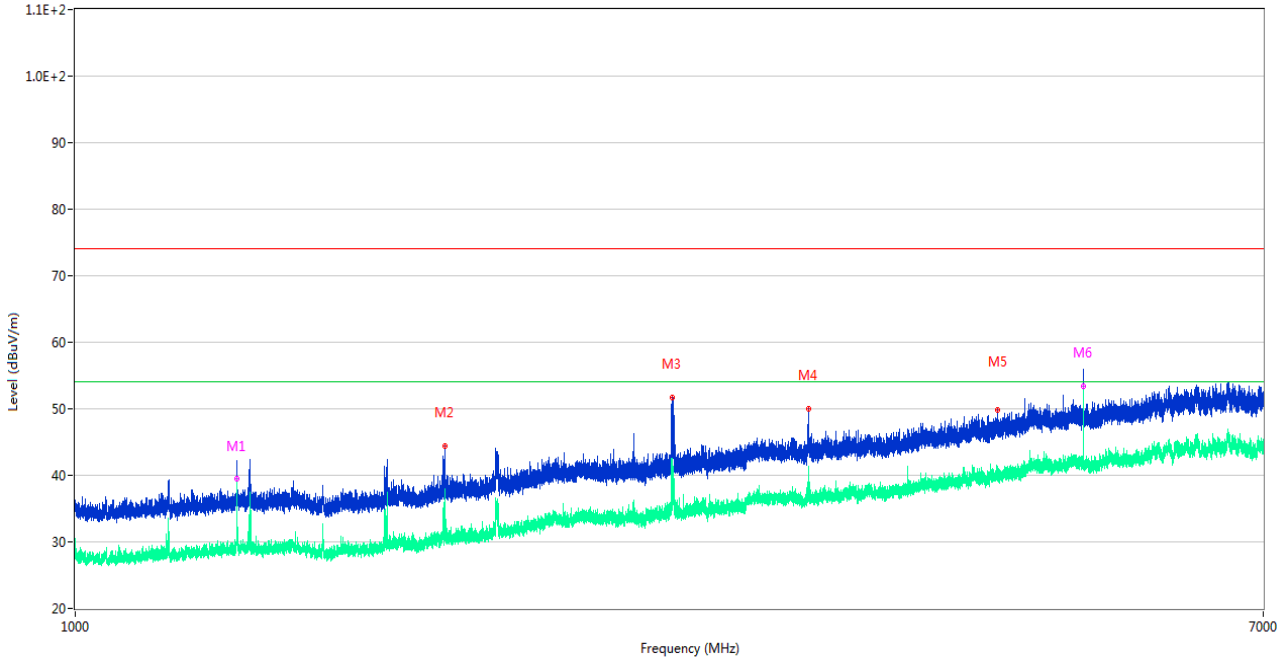
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1302.200	42.39	-16.94	80.8	38.41	Peak	17.00	200	Vertical	Pass
1**	1302.200	38.41	-16.94	60.8	22.39	AV	17.00	200	Vertical	Pass
2	1828.700	44.99	-16.27	74.0	29.01	Peak	151.00	150	Vertical	Pass
2**	1828.700	30.40	-16.27	54.0	23.60	AV	151.00	150	Vertical	Pass
3	2665.300	52.42	-11.66	74.0	21.58	Peak	157.00	100	Vertical	Pass
3**	2665.300	37.49	-11.66	54.0	16.51	AV	157.00	100	Vertical	Pass
4	3318.000	48.59	-7.74	74.0	25.41	Peak	115.00	150	Vertical	Pass
4**	3318.000	37.29	-7.74	54.0	16.71	AV	115.00	150	Vertical	Pass
5	4671.800	50.08	-2.25	74.0	23.92	Peak	213.00	100	Vertical	Pass
5**	4671.800	40.05	-2.25	54.0	13.95	AV	213.00	100	Vertical	Pass
6	5209.200	55.06	-2.01	80.8	25.74	Peak	360.00	200	Vertical	Pass
6**	5209.200	53.65	-2.01	60.8	7.15	AV	360.00	200	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 7 GHz, ANT H



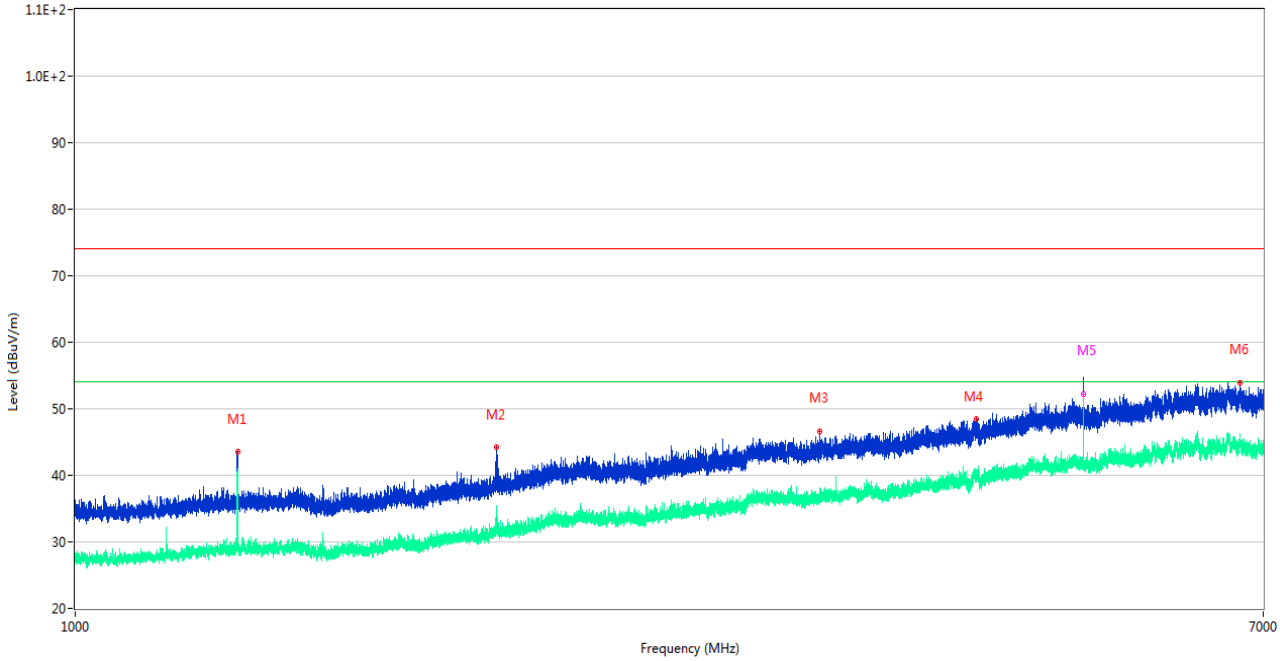
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1303.400	43.38	-16.87	80.8	37.42	Peak	216.00	150	Horizontal	Pass
1**	1303.400	41.03	-16.87	60.8	19.77	AV	216.00	150	Horizontal	Pass
2	2197.600	41.99	-12.77	74.0	32.01	Peak	3.00	100	Horizontal	Pass
2**	2197.600	33.23	-12.77	54.0	20.77	AV	3.00	100	Horizontal	Pass
3	2662.700	45.04	-11.23	74.0	28.96	Peak	120.00	150	Horizontal	Pass
3**	2662.700	35.41	-11.23	54.0	18.59	AV	120.00	150	Horizontal	Pass
4	3895.400	47.26	-4.98	74.0	26.74	Peak	3.00	200	Horizontal	Pass
4**	3895.400	37.22	-4.98	54.0	16.78	AV	3.00	200	Horizontal	Pass
5	4773.200	51.13	-1.42	74.0	22.87	Peak	92.00	100	Horizontal	Pass
5**	4773.200	42.17	-1.42	54.0	11.83	AV	92.00	100	Horizontal	Pass
6	5213.000	55.01	-2.36	80.8	25.79	Peak	320.00	150	Horizontal	Pass
6**	5213.000	52.34	-2.36	60.8	8.46	AV	320.00	150	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 7 GHz, ANT V



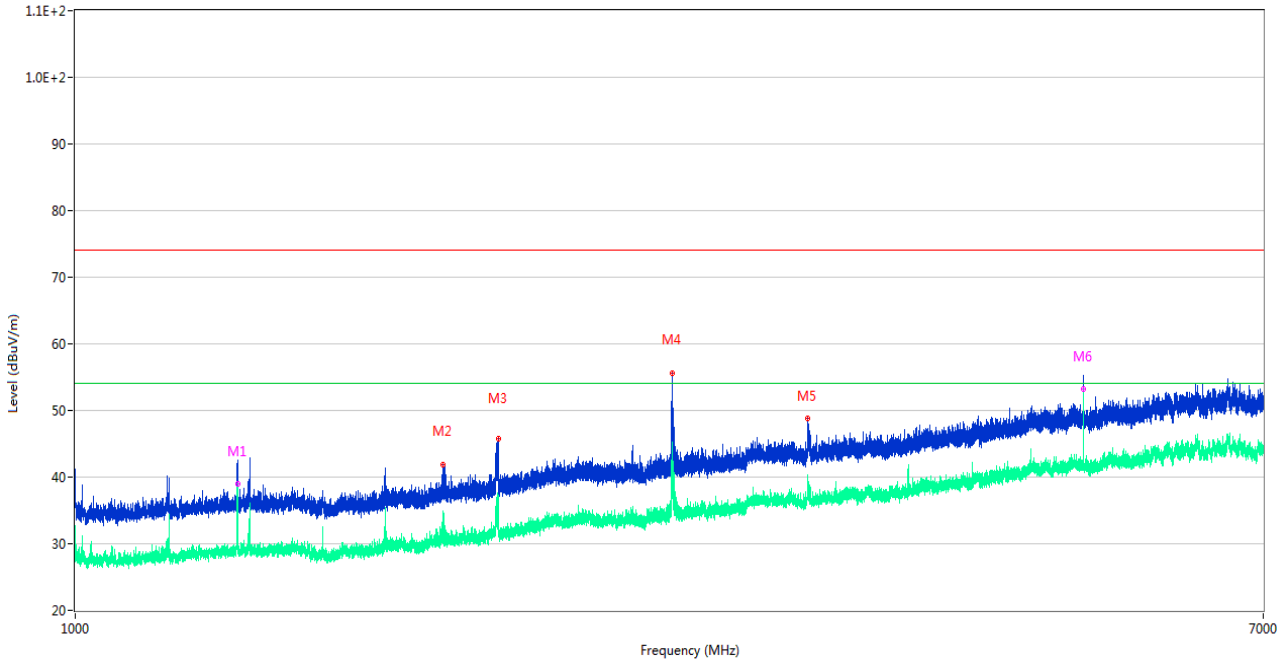
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1303.300	42.19	-16.86	80.8	38.61	Peak	19.00	150	Vertical	Pass
1**	1303.300	39.41	-16.86	60.8	21.39	AV	19.00	150	Vertical	Pass
2	1830.900	44.42	-16.29	74.0	29.58	Peak	140.00	150	Vertical	Pass
2**	1830.900	30.92	-16.29	54.0	23.08	AV	140.00	150	Vertical	Pass
3	2658.700	51.72	-11.21	74.0	22.28	Peak	154.00	100	Vertical	Pass
3**	2658.700	39.63	-11.21	54.0	14.37	AV	154.00	100	Vertical	Pass
4	3324.800	50.02	-7.99	74.0	23.98	Peak	145.00	150	Vertical	Pass
4**	3324.800	37.46	-7.99	54.0	16.54	AV	145.00	150	Vertical	Pass
5	4527.000	49.75	-3.34	74.0	24.25	Peak	0.00	100	Vertical	Pass
5**	4527.000	40.95	-3.34	54.0	13.05	AV	0.00	100	Vertical	Pass
6	5213.200	55.86	-2.35	80.8	24.94	Peak	326.00	200	Vertical	Pass
6**	5213.200	53.46	-2.35	60.8	7.34	AV	326.00	200	Vertical	Pass

HIGH CHANNEL 1 GHz to 7 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1304.200	43.53	-16.96	80.8	37.27	Peak	93.00	150	Horizontal	Pass
1**	1304.200	40.79	-16.96	60.8	20.01	AV	93.00	150	Horizontal	Pass
2	1994.200	44.22	-15.18	74.0	29.78	Peak	66.00	200	Horizontal	Pass
2**	1994.200	35.40	-15.18	54.0	18.60	AV	66.00	200	Horizontal	Pass
3	3386.600	46.61	-6.54	74.0	27.39	Peak	339.00	150	Horizontal	Pass
3**	3386.600	38.14	-6.54	54.0	15.86	AV	339.00	150	Horizontal	Pass
4	4374.200	48.50	-3.14	74.0	25.50	Peak	138.00	100	Horizontal	Pass
4**	4374.200	39.56	-3.14	54.0	14.44	AV	138.00	100	Horizontal	Pass
5	5217.400	54.64	-2.54	80.8	26.16	Peak	42.00	100	Horizontal	Pass
5**	5217.400	52.25	-2.54	60.8	8.55	AV	42.00	100	Horizontal	Pass
6	6736.600	53.91	2.43	74.0	20.09	Peak	177.00	200	Horizontal	Pass
6**	6736.600	45.55	2.43	54.0	8.45	AV	177.00	200	Horizontal	Pass

HIGH CHANNEL 1 GHz to 7 GHz, ANT V



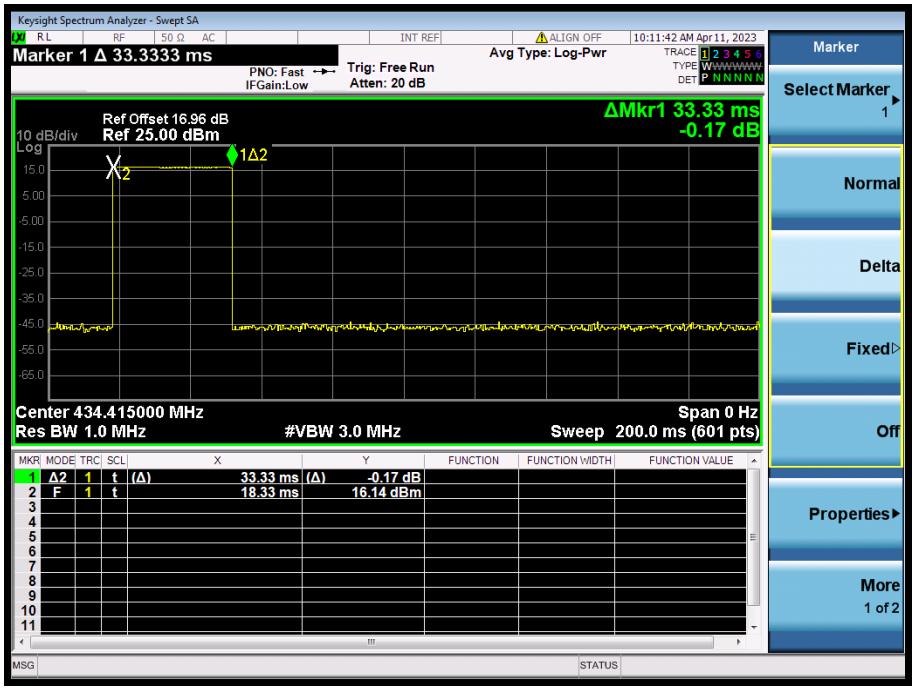
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1304.300	41.67	-16.97	80.8	39.13	Peak	19.00	100	Vertical	Pass
1**	1304.300	38.92	-16.97	60.8	21.88	AV	19.00	100	Vertical	Pass
2	1827.200	41.91	-16.12	74.0	32.09	Peak	155.00	200	Vertical	Pass
2**	1827.200	30.28	-16.12	54.0	23.72	AV	155.00	200	Vertical	Pass
3	1999.800	45.71	-15.20	74.0	28.29	Peak	122.00	100	Vertical	Pass
3**	1999.800	36.42	-15.20	54.0	17.58	AV	122.00	100	Vertical	Pass
4	2659.100	55.67	-11.23	74.0	18.33	Peak	155.00	150	Vertical	Pass
4**	2659.100	45.28	-11.23	54.0	8.72	AV	155.00	150	Vertical	Pass
5	3318.800	48.75	-7.80	74.0	25.25	Peak	147.00	100	Vertical	Pass
5**	3318.800	37.51	-7.80	54.0	16.49	AV	147.00	100	Vertical	Pass
6	5217.200	55.19	-2.50	80.8	25.61	Peak	0.00	150	Vertical	Pass
6**	5217.200	53.15	-2.50	60.8	7.65	AV	0.00	150	Vertical	Pass

A.6 Transmitter Time

Test Data and Plot

The active time is less than 5 seconds

Active time



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2270796-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2270796-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2270796-AI.PDF”.

Statement

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--END OF REPORT--