Test Report No. 7212328716

***Applicant*: Silk'n Beauty Ltd.**

Equipment Under Test:

Silkin VII (with BLE Transceiver)

Model: **H3500/H3501**

FCC ID: **2BD6K-SILKNH3500**

Issued by:
The Standards Institution of Israel
Electrical & Electronics Laboratory
EMC Branch

ilac-MRA

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ISO/IEC 17025
TESTING LABORATORY
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Applicant:	Silk'n Beauty Ltd.
Address :	Alon-Hatavor 15, Caesarea, 3079516, Israel
Sample for test selected by:	The customer
The date of test:	9 January - 23 March 2023, 30 May 2024

Description of Equipment under Test (EUT):	Silkin VII (with BLE Transceiver)
Model:	H3500/H3501
Software version:	001
Hardware version:	PC116563x
Manufactured by:	Silk'n Beauty Ltd.

Reference Documents:

❖ CFR 47 FCC (2020) — Rules and Regulations: Part 15. Radio frequency devices, Subpart C: Intentional radiators.
Section 15.247: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz

Test Results — The EUT was found to be in compliance with the following standard:

CFR47 Part 15 Subpart C
sections: 15.203, 15.205, 15.207, 15.209 and 15.247.

This Test Report contains 35 pages and may be used only in its entirety.	This Test Report applies only to the specimen tested and may not be applied to other specimens of the same product.

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1. Summary of Test Results

Transmitter characteristic	Ref. Section
6dB and occupied bandwidth	15.247 (a) (2)
Maximum peak conducted output power	15.247 (b) (3)
Power spectral density	15.247 (e)
Radiated emission in restricted and non-restricted bands	15.247 (d), 15.209, 15.205
Band-edge compliance of RF conducted emission	15.247 (d)
AC power line conducted emission measurements	15.207
Antenna requirement	15. 203

Name: Eng. Yuri Rozenberg
Position: Head of Branch

Electrical & Electronics Laboratory
3 June 2024

Tested by: Alexander Konkov
Position: Testing Technician

2. EUT Description

Note: All information in this section was provided by the customer.

2.1. General description:

The H3500/H3501 device is a personal home use hair removal device. It is used for permanent hair reduction of hair re-growth defined as long-term, stable reduction in hair counts following a treatment regiment.

H3500/H3501 is based on well-established Photo-Epilation technology. The term Photo-Epilation describes the use of a pulse of light to remove unwanted hairs.

The H3500/H3501 device have BLE V5.3 transceiver for connecting external devices. Model H3501 has the Bluetooth option disabled, therefore all tests were performed on the H3500 model. As a device owner you can enjoy Bluetooth connectivity. Just download the application and follow the registration process and Bluetooth pairing steps. The free Silk'n Hair Removal application supports your every step with Silk'n hair removal devices. The app creates your personalized treatment plan, helps you make the safest and most informed choices, and makes sure you follow through the entire course of treatment for best results.

The test data contained in this report pertains only to the emissions due to the EUT's BLE transmitter.

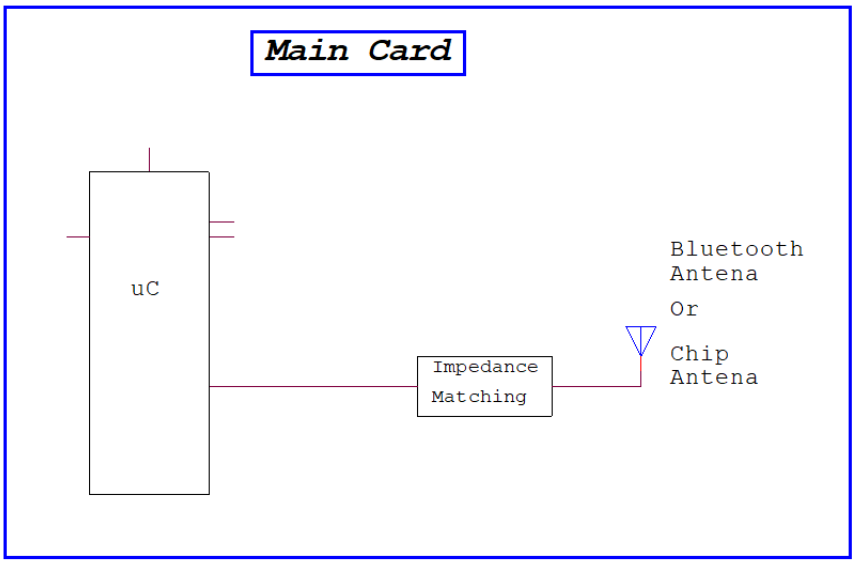


Figure 1. Block diagram

Figure 2. Silkin VII (with BLE Transceiver)

2.2. Transmitter description:

Type of equipment
Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)

BLE standards	BLE 5.3 (max 2Mbit/s)

Assigned frequency range	from 2400MHz to 2483.5MHz	
Operating frequency range	from 2402MHz to 2480MHz (BLE transmitter)	
RF channel spacing	2MHz (BLE transmitter)	
Maximum rated output power	Effective radiated power (for equipment with no RF connector)	-3.80dBm = 0.417mW
Declare temperature range:	10°C - 35°C	Normal indoor use

Antenna information
type of antenna is chip antenna and on PCB
Manufacturer: YAGEO
Antenna gain = 5.05 dBi

Transmitter 99% power bandwidth	
Type of modulation	GFSK

Transmitter power source
Nominal rated voltage 20 VDC (power supply)

2.3. Test setup:

The EUT was tested per the guidance ANSI C63.10: 2020.
The test setup is shown in Figure 3 and 4.

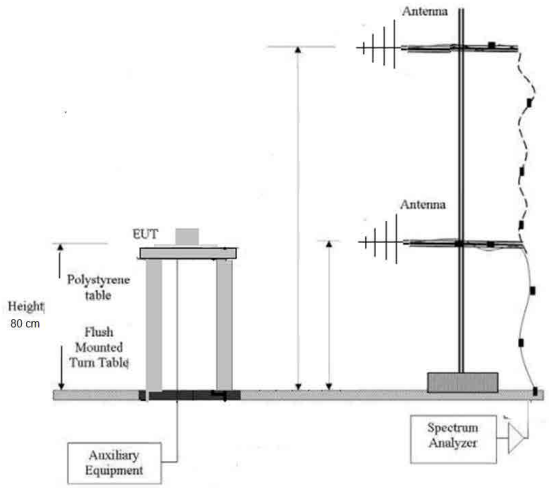


Figure 3. EUT test setup

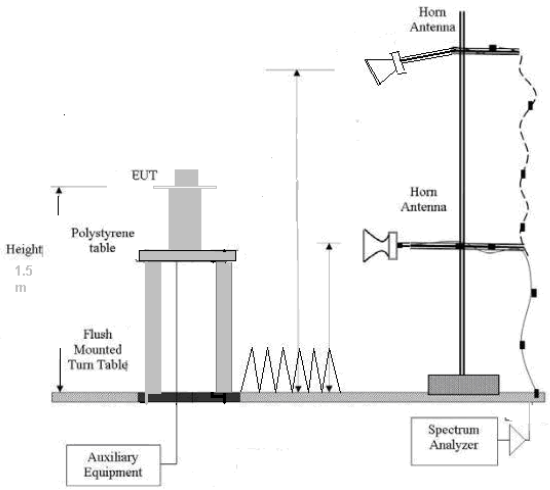


Figure 4. RE test setup above 1 GHz.

2.4. System test configuration:

Table 1. BLE channels / frequencies

Channel	Frequency MHz	Channel	Frequency MHz
37	2402	18	2442
0	2404	19	2444
1	2406	20	2446
2	2408	21	2448
2	2410	22	2450
4	2412	23	2452
5	2414	24	2454
6	2416	25	2456
7	2418	26	2458
8	2420	27	2460
9	2422	28	2462
10	2424	29	2464
38	2426	30	2466
11	2428	31	2468
12	2430	32	2470
13	2432	33	2472
14	2434	34	2474
15	2436	35	2476
16	2438	36	2478
17	2440	39	2480

3. Test specification, methods and procedures

❖ CFR 47 FCC	Rules and Regulations: Part 15. Radio frequency devices, Subpart C: Intentional radiators (2020)
❖ ANSI C63.4:2014	American National Standard for Method of Measurement of Radio Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range 9 kHz to 40 GHz.
❖ ANSI C63.10: 2013	American National Standard for Testing of Unlicensed Wireless Devices

4. Testing Facility:

Laboratory Name: Standards Institution of Israel (SII)
Test site location: 42 Haim Levanon st., Tel-Aviv Israel
Laboratory Accreditation: ANAB: AT-1359

5. Measurement uncertainty

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error.
The laboratory calibrates its standards by a third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements.

Test description	Calculated uncertainty U_{LAB}
Conducted measurements	
Frequency error	37.6 Hz
Spurious emission	± 2.98 dB
Radiated measurements	
Electric field strength in a SAR at 3 m distance 30 MHz – 1.0 GHz	±4.32 dB
Electric field strength in a FAR at 3 m distance 1.0 GHz – 18 GHz	± 4.47
Substitution measurements	
In a FAR at 3 m distance 1.0 GHz – 18 GHz	± 3.41 dB

6. Transmitter characteristics - test results

6.1. Duty Cycle

Limits & methods:

FCC requirements	15.247		
Test procedure	ANSI 63.10 --- 11.6 Duty cycle Radiated Measurement		
Operating mode	BLE, Hight Mid and Low		
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure	1010hPa

Operation mode:

Table 2. Transmitter characteristics - result parameters

DT	100	%

The EUT is configured to transmit continuously, a duty cycle 100%, plot 1
(i.e., with a duty cycle of greater than to 98 % as specified in the standard) at the maximum power control level over a random symbol set.

All measurements are performed with the EUT in operation mode and duty cycle 100% at its maximum power control level.

Plot 1

6.2. 6dB and Occupied Bandwidth

Limits & methods:

FCC requirements	15.247(a)(2)	
Test procedure	ANSI 63.10 --- 11.8.2 Option 2 Radiated Measurement	
Operating mode	BLE, Hight Mid and Low	
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure 1010hPa

Limit:

The minimum 6dB bandwidth shall be at least 500 kHz.

Test procedure

The measurements were performed in hopping transmission mode of operation for carrier (channel) frequency at bottom, middle and at the top of 2402MHz to 2480MHz frequency band and maximum transmitting data rate.

Results:

Table 3. 6dB Bandwidth & Occupied Bandwidth Results

Frequency MHz	6dB Bandwidth kHz	Limit kHz	Verdict	Ref. Plot
2402	884.5	500	Pass	2
2442	897.6	500	Pass	3
2480	911.1	500	Pass	4

BLE

Plot 2

Plot 3

Plot 4

6.3. *Maximum Peak Conducted Output Power 5*

Limits & methods:

FCC requirements	15.247(b)(3)		
Test procedure	ANSI 63.10 11.9.2.2.2 Method AVGSA-1 Radiated Measurement		
Operating mode	BLE, Hight Mid and Low		
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure 1010hPa	

Limit

The maximum peak conducted output power shall not exceed 1 watt.

Test procedure

The measurements were performed in hopping transmission mode of operation for carrier (channel) frequency at bottom, middle and at the top of 2402 MHz to 2480 MHz frequency band and maximum transmitting data rate.

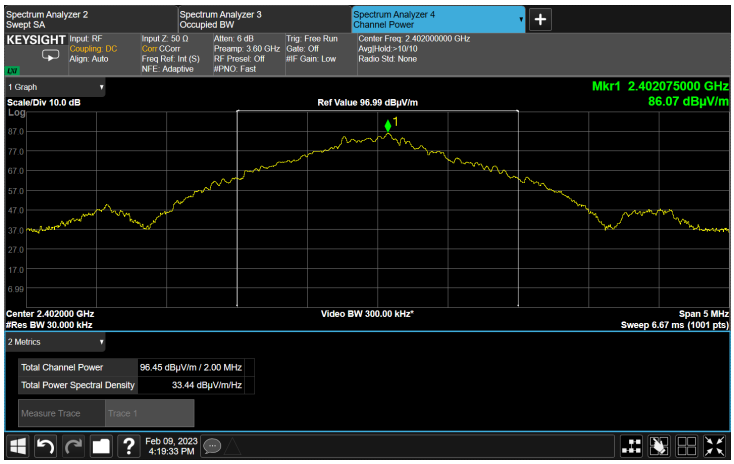
Results:

Table 4. Maximum Peak Conducted Output Power Results

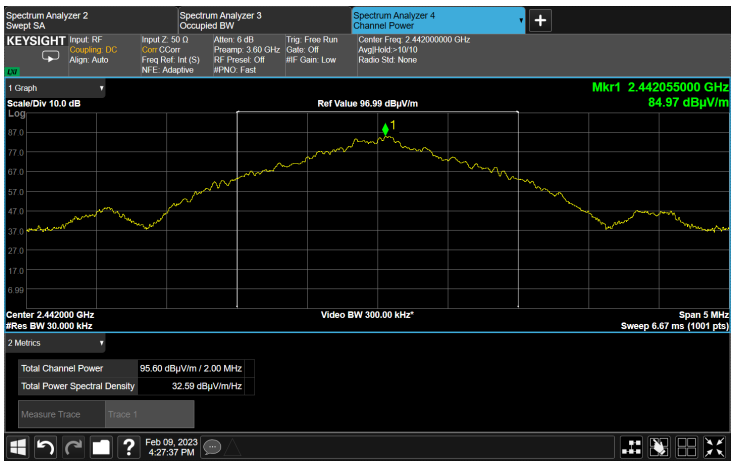
Freq. MHz	Mesure dBm	Calculated mWatt	Limit Watt	Verdict	Plot
2402	-3.80	0.417	1	Pass	5
2442	-4.65	0.343	1	Pass	6
2480	-8.01	0.158	1	Pass	7

Note:
Total power(dBm) = P Mesure(dBuV/m) – 95.2 – Antenna Gain(dBi)
In our case the Antenna Gain(dBi) = 5.05(dBi)

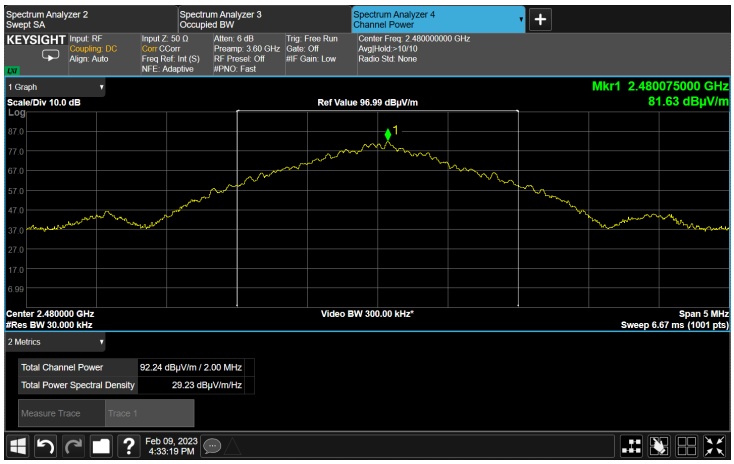
BLE



Plot 5



Plot 6



Plot 7

6.4. Power Spectral Density

Limits & methods:

FCC requirements	15.247(e)		
Test procedure	ANSI 63.10 11.10.3 Method AVGPSD-1 Radiated Measurement		
Operating mode	BLE, Hight Mid and Low		
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure	1010hPa

Limit

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

Test procedure

The measurements were performed in hopping transmission mode of operation for carrier (channel) frequency at bottom, middle and at the top of 2402MHz to 2480MHz frequency band and maximum transmitting data rate.

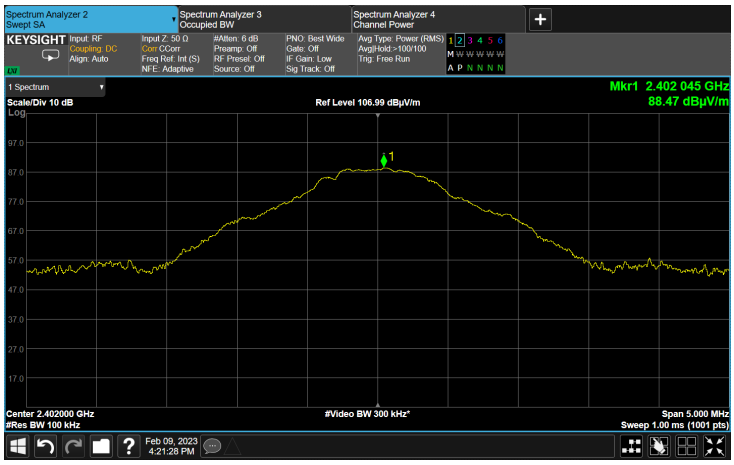
Results:

Table 5. Power Spectral Densiry Test Results

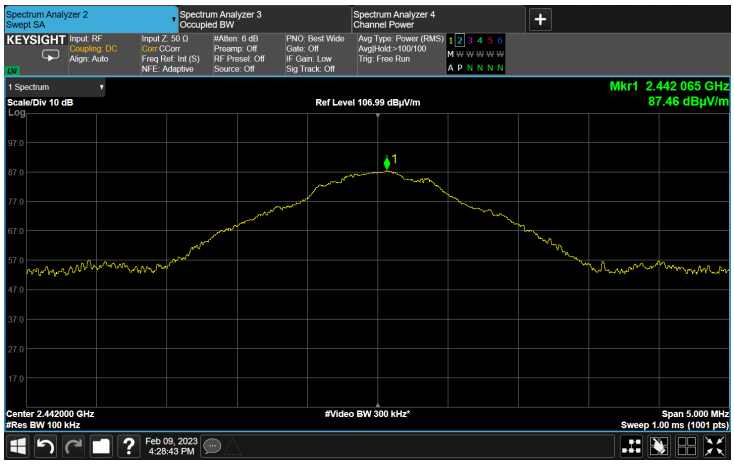
Freq. MHz	Measure dBm/3kHz	Limit dBm/3kHz	Verdict	Plot
2402	-11.85	8	Pass	8
2442	-12.85	8	Pass	9
2480	-16.05	8	Pass	10

Note:
PSD (dBm/3kHz) = PSD Mesure(dBuV/m) – 95.2 – Antenna Gain(dBi)
In our case the Antenna Gain(dBi) = 5.05(dBi)
Worst case RBW=100 kHz maximum.

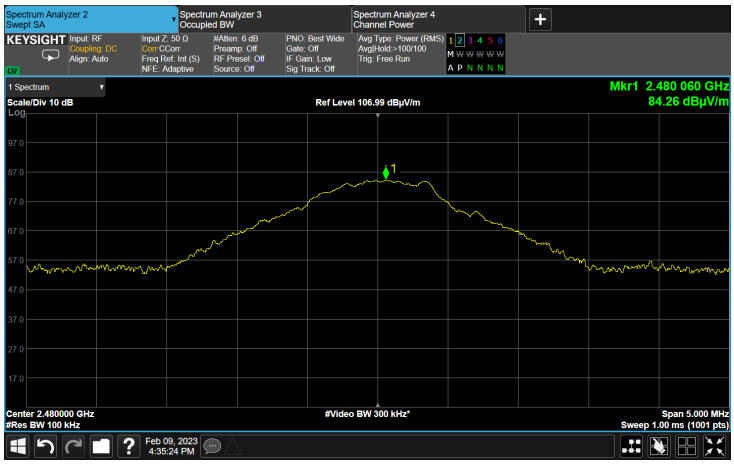
BLE



Plot 8



Plot 9



Plot 10

6.5. Radiated Emissions in Restricted and non-Restricted bands

Limits & methods:

FCC requirements	15.247(d), 15.209, 15.205	
Test procedure	ANSI 63.10 Sections 6.5, 6.6, 11.11, 11.12 Radiated Measurement	
Operating mode	BLE, Hight Mid and Low	
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure 1010hPa

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see below)

FREQUENCIES (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

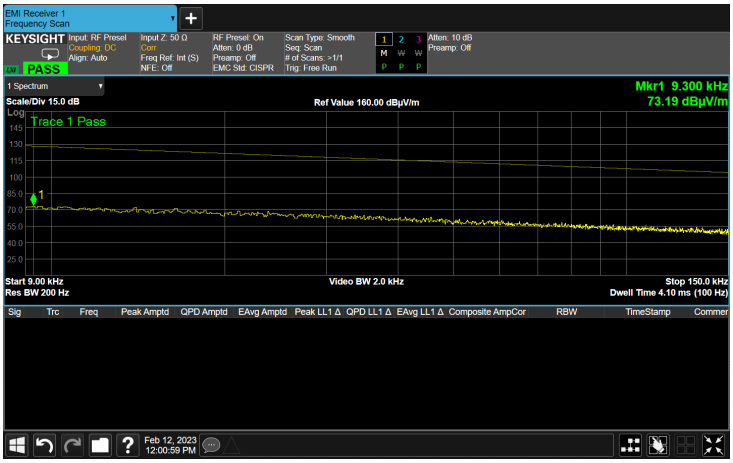
Test procedure

The frequency spectrum was investigated from the lowest radio frequency signal generated in the equipment and up to ten harmonics. The measurements were performed in hopping transmission mode of operation for carrier (channel) frequency at bottom, middle and at the top 2402MHz to 2480MHz frequency band and maximum transmitting data rate.

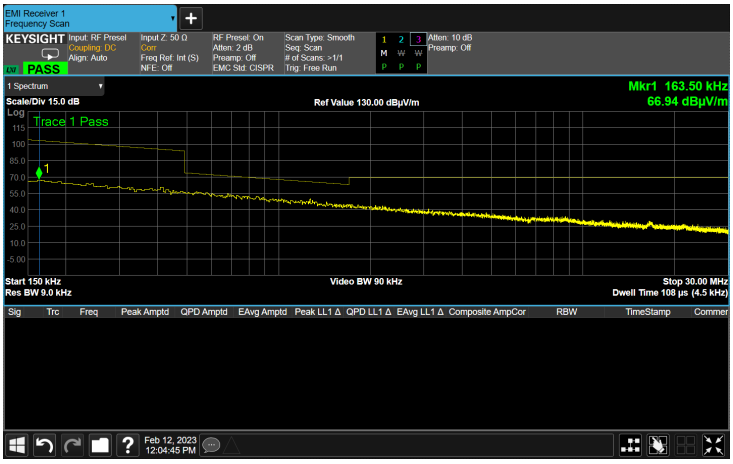
Results:

Range: 9 kHz-30 MHz

All detected emissions in this range meet the -20dBc requirement.



Plot 11

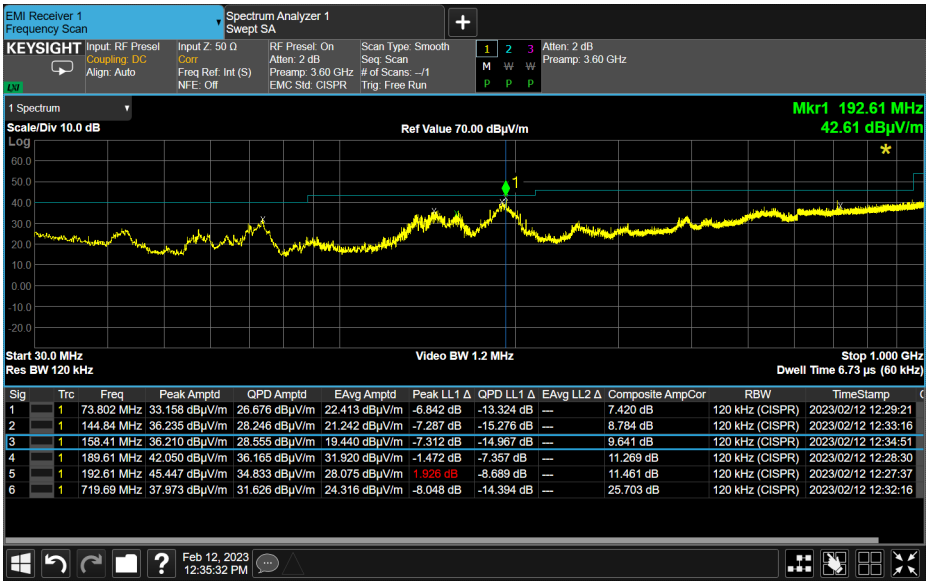


Plot 12

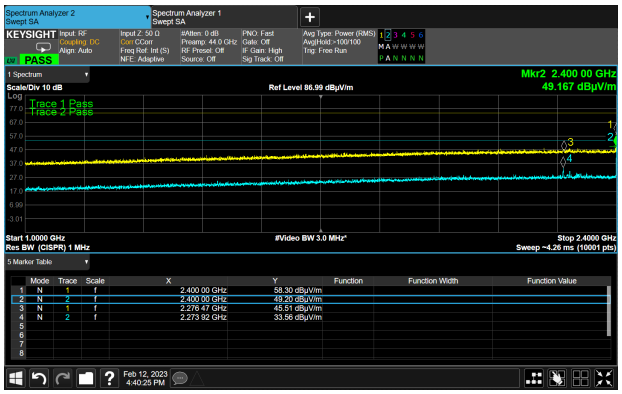
Range: 30 MHz – 40 GHz:

Table 6. CH1 2402 MHz – modulation PRBS - Results

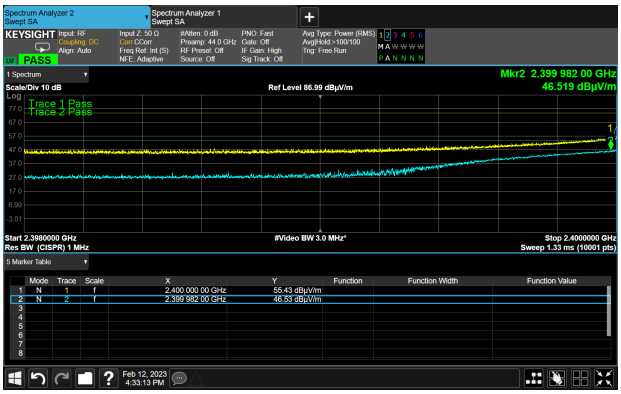
Frequency MHz	Meas Freq. MHz	Pk Det. dbuV/m	QPk Det. dbuV/m	Limit Pk dbuV/m	Limit QPk dbuV/m	Verdict	Ref. Plot
CH 37 2402	73.802	33.158	26.676	-	40	Pass	13
	144.84	36.235	28.246	-	44	Pass	13
	158.41	36.210	28.55	-	44	Pass	13
	189.61	42.050	36.165	-	44	Pass	13
	192.61	45.447	34.833	-	44	Pass	13
	719.69	37.973	31.626	-	46	Pass	13
			AVG Det. dbuV/m		**Limit AVG Det. dbuV/m**		
	2276.47	58.30		74	-	Pass	14
	2273.92	-	33.56	-	54	Pass	14
	2400.0	55.43	-	74	-	Pass	15
	2399.982	-	46.53	-	54	Pass	15
	2529.9	46.15	32.37	74	54	Pass	16
	11739.5	56.57	45.49	74	54	Pass	17
	13401	58.05	46.85	74	54	Pass	18
	25648	57.48	45.29	74	54	Pass	19



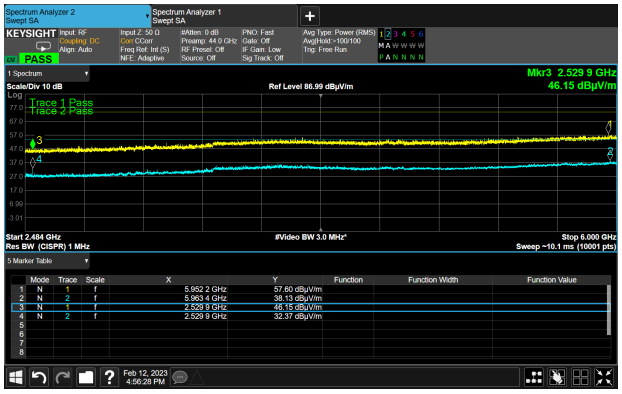
Plot 13



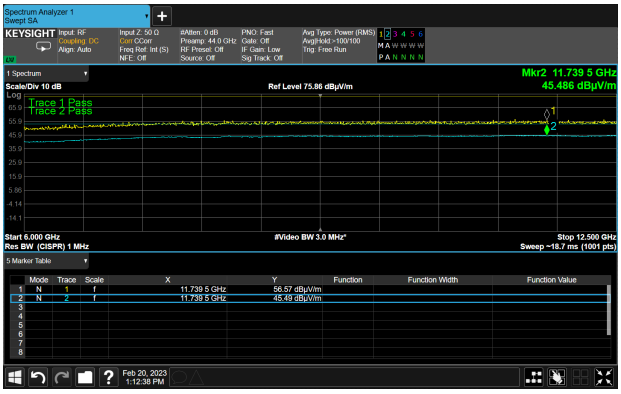
Plot 14



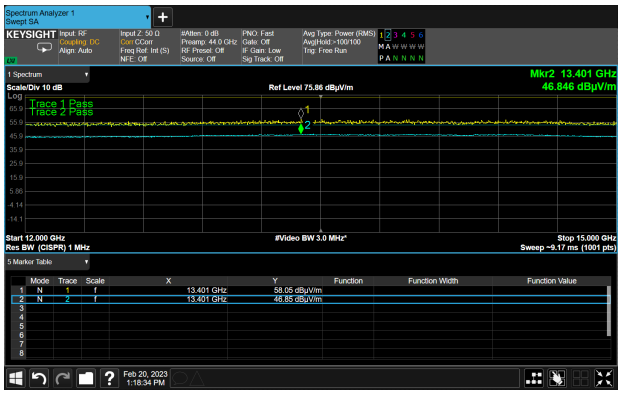
Plot 15



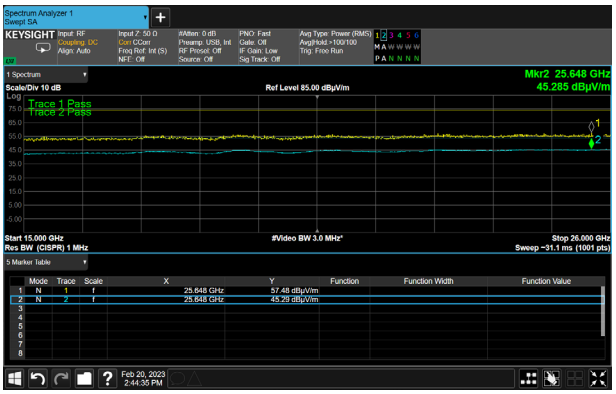
Plot 16



Plot 17



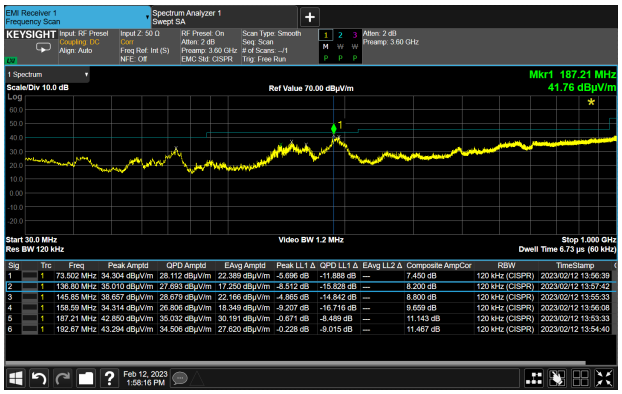
Plot 18



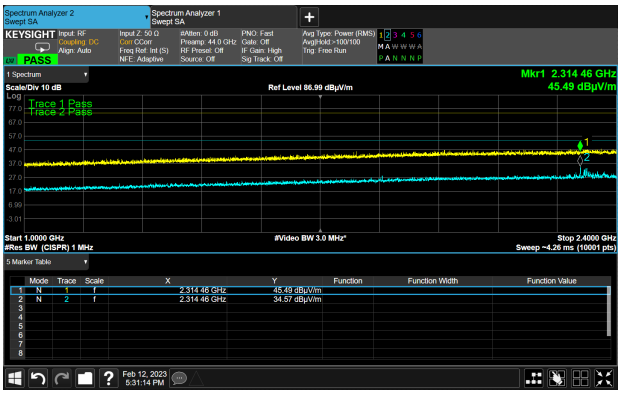
Plot 19

Table 7. CH6 2442 MHz – modulation PRBS - Results

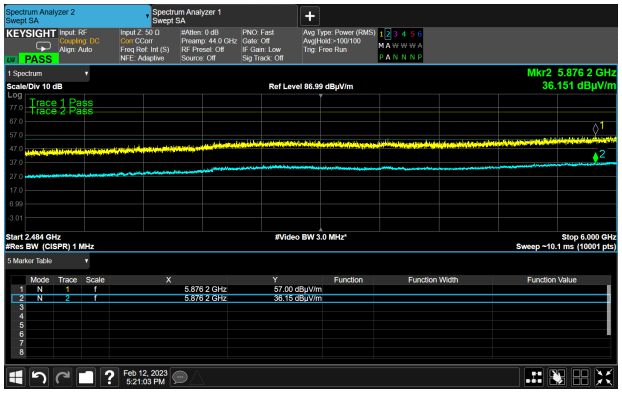
Frequency MHz	Meas Freq. MHz	Pk Det. dbuV/m	QPk Det. dbuV/m	Limit Pk dbuV/m	Limit QPk dbuV/m	Verdict	Ref. Plot
CH 18 2442	73.502	34.304	28.112	-	40	Pass	20
	136.80	35.010	27.693	-	44	Pass	20
	145.85	38.657	28.679	-	44	Pass	20
	158.59	34.314	26.806	-	44	Pass	20
	187.21	42.850	35.032	-	44	Pass	20
	192.67	43.294	34.506	-	44	Pass	20
			AVG Det. dbuV/m		Limit AVG Det. dbuV/m		
	2314.46	45.49	34.57	74	54	Pass	21
	5876.2	57.00	36.15	74	54	Pass	22
	10998.5	57.07	45.10	74	54	Pass	23
	14514	58.10	46.61	74	54	Pass	24
	24218	57.55	45.35	74	54	Pass	25



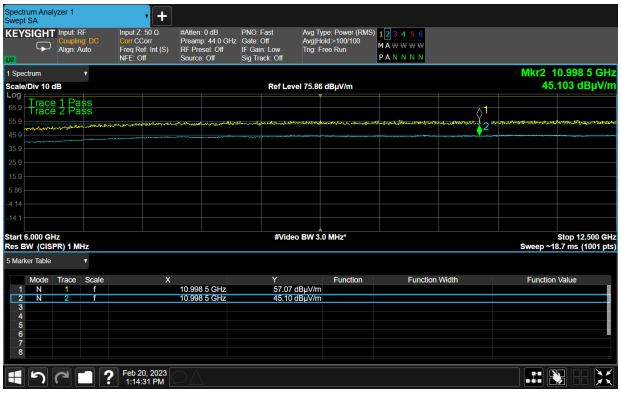
Plot 20



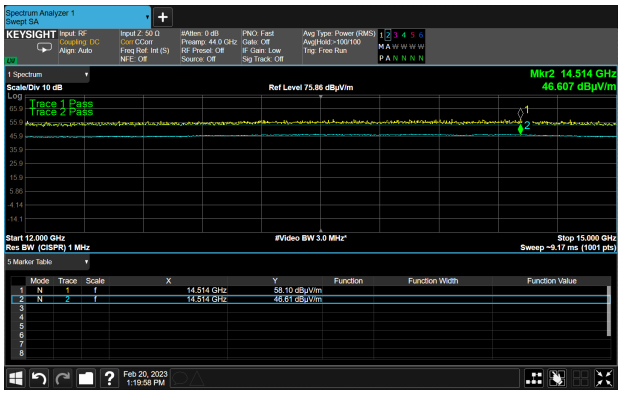
Plot 21



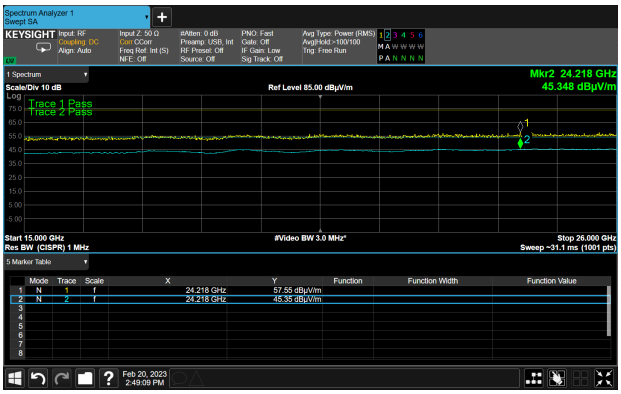
Plot 22



Plot 23



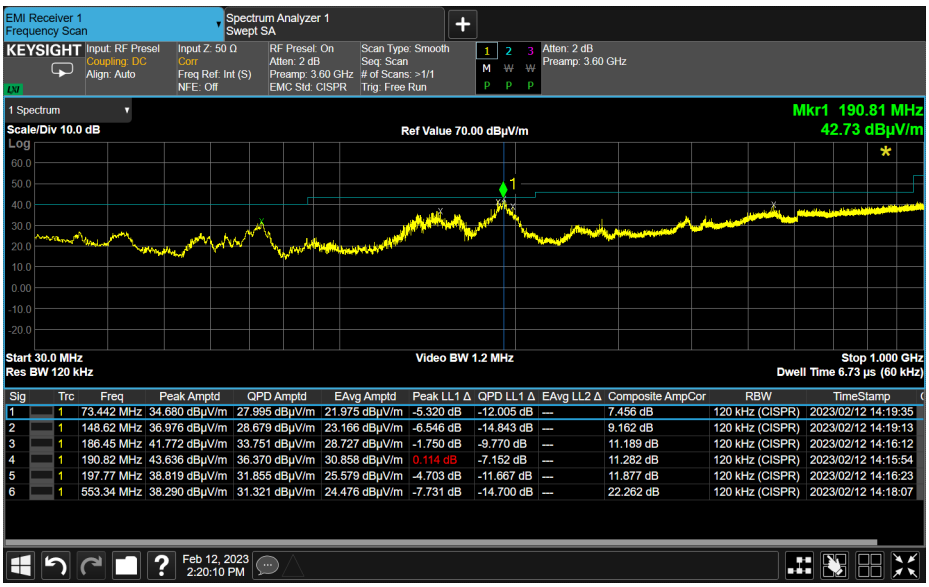
Plot 24



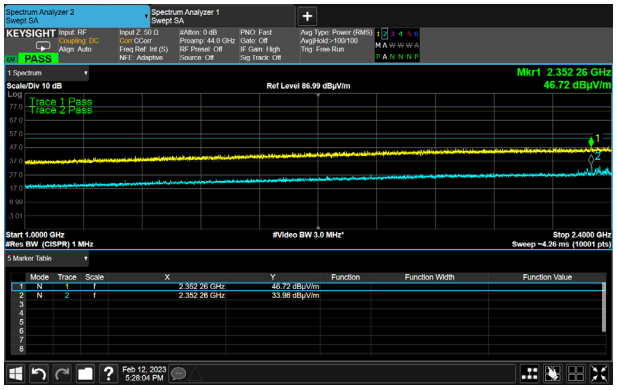
Plot 25

Table 8. CH11 24802 MHz – modulation PRBS - Results

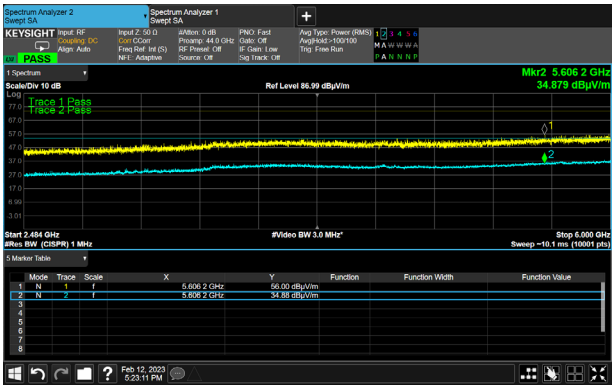
Frequency MHz	Meas Freq. MHz	Pk Det. dbuV/m	QPk Det. dbuV/m	Limit Pk dbuV/m	Limit QPk dbuV/m	Verdict	Ref. Plot
CH 39 2480	73.442	34.680	27.995	-	40	Pass	26
	148.62	36.976	28.679	-	44	Pass	26
	186.45	41.772	33.751	-	44	Pass	26
	190.82	43.636	36.370	-	44	Pass	26
	197.77	38.819	31.855	-	44	Pass	26
	553.34	38.290	31.321	-	46	Pass	26
			AVG Det. dbuV/m		**Limit AVG Det. dbuV/m**		
	2352.26	46.72	33.95	74	54	Pass	27
	5606.2	56.00	34.88	74	54	Pass	28
	11730	56.28	45.63	74	54	Pass	29
	13332	57.89	46.80	74	54	Pass	30
	24779	56.49	45.63	74	54	Pass	31



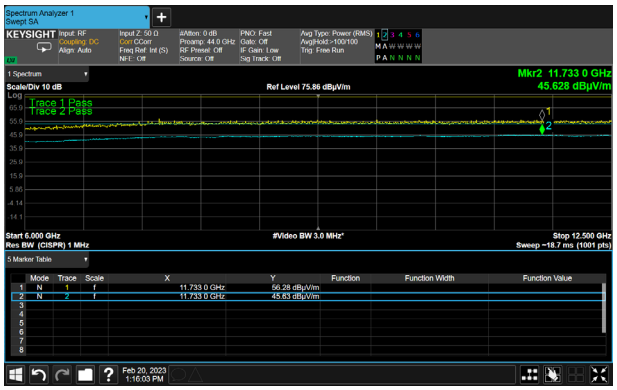
Plot 26



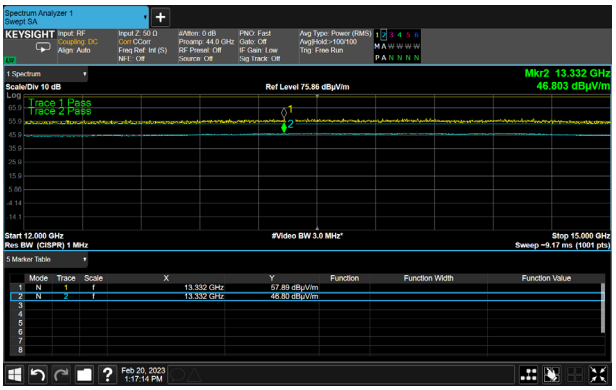
Plot 27



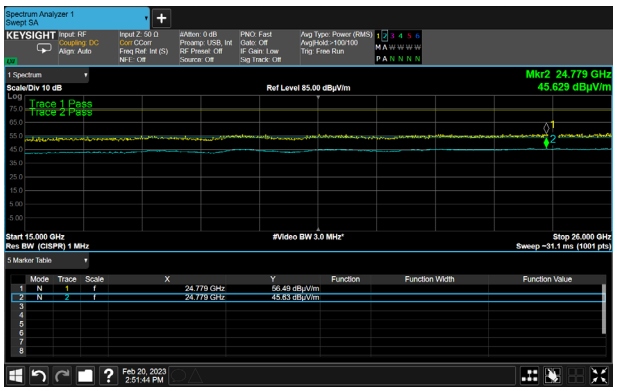
Plot 28



Plot 29



Plot 30



Plot 31

6.6. *Band-edge measurements*

Limits & methods:

FCC requirements	15.247(d)		
Test procedure	ANSI 63.10 Section 11.13 Radiated Measurement		
Operating mode	BLE, Hight Mid and Low		
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure	1010hPa

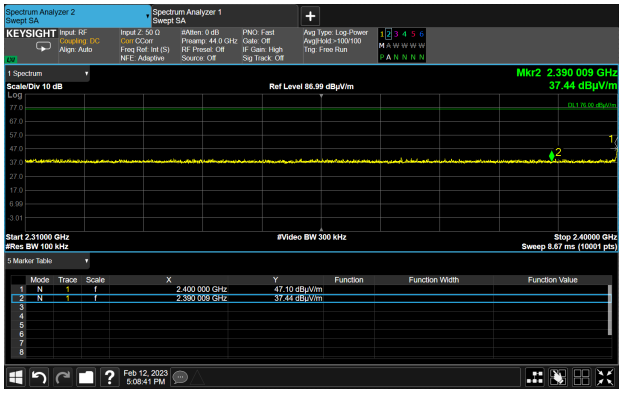
Limit

In any 100 kHz bandwidth outside the frequency band the radio frequency power shall be at least 20 dB below that in the 100 kHz bandwidth within the band.

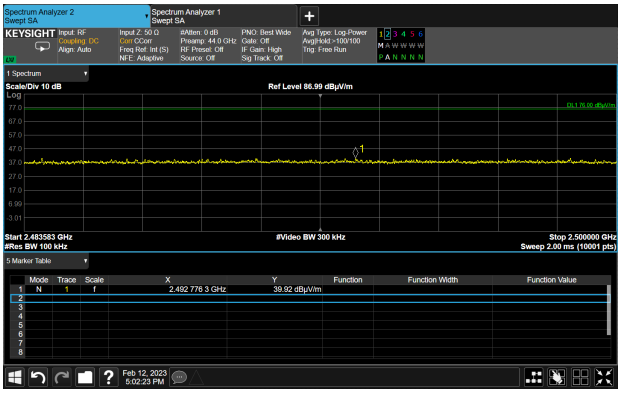
Results:

Table 9. Band-edge Results

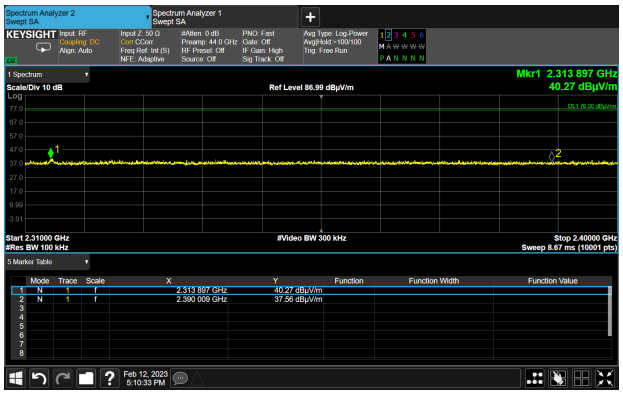
Channel	Freq MHz	Peak, dBµV/m	Limit 20dBc dBµV/m	Verdict	Plot
CH 37	2400.000	47.10	76	Pass	32
2402 MHz	2492.776	39.92	76	Pass	33
CH 18	2313.897	40.27	75	Pass	34
2442 MHz	2492.421	39.99	75	Pass	35
CH 39	2351.715	40.65	72	Pass	36
2480 MHz	2491.245	39.42	72	Pass	37



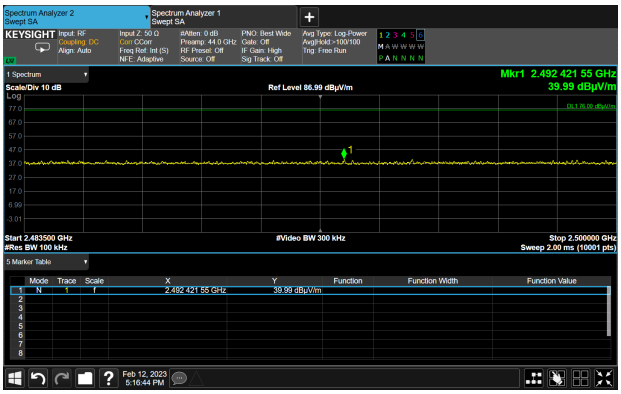
Plot 32



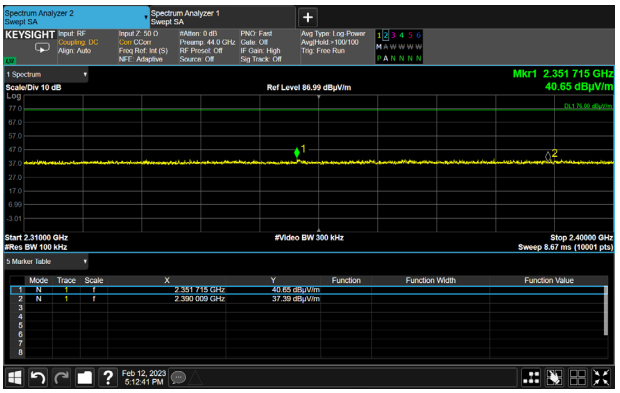
Plot 33



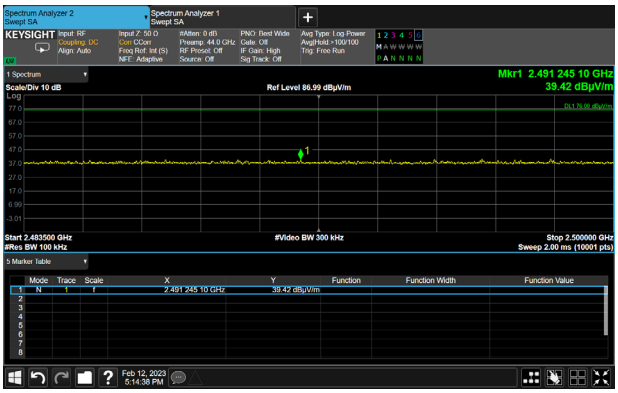
Plot 34



Plot 35



Plot 36



Plot 37

6.7. AC power line conducted emission measurement

Limits & methods:

FCC requirements	15.207		
Test procedure	ANSI 63.10 Section 6.2		
Ambient Temperature 23^{0}C	Relative Humidity 49%	Air Pressure 1010hPa	

Limit:

Frequency, MHz	Class B equipment, dB (μV)	
	QP	AVRG
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

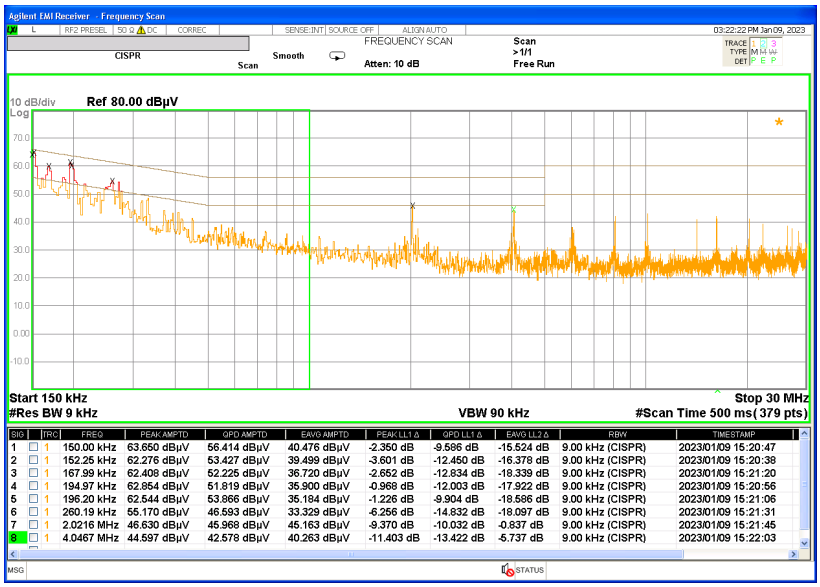
* Decreases linearly with the logarithm of the frequency.

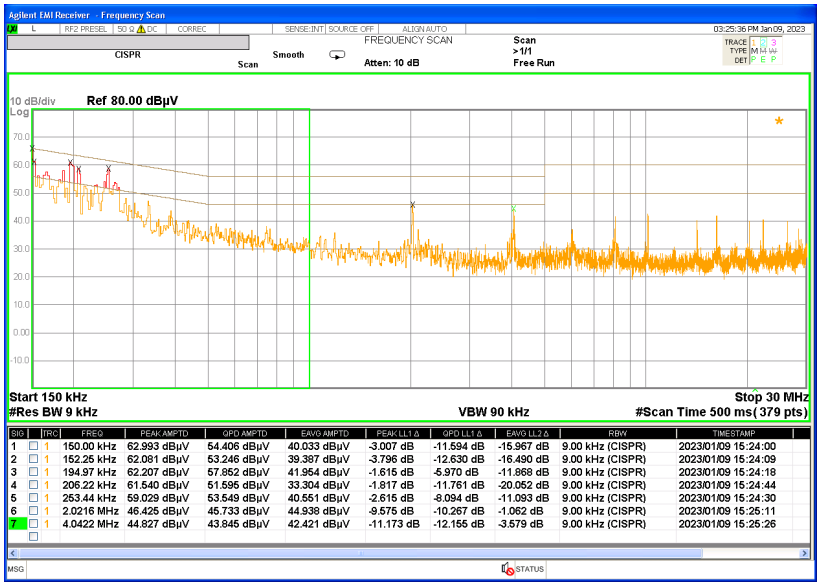
Test Procedure:

EUT was connected to 120VAC main via auxiliary power supply.
The EUT was placed on a table in shielded room at a height 80 cm from floor and 40 cm from the vertical reference plane and at more than 80 cm from any other metal surfaces. The measurements were performed at mains terminals by means of LISN, connected to spectrum analyzer in the frequency range as referred to in the table above. The measurements were made with quasi-peak(CISPR) and average detectors. The position of the EUT cables was varied to determine maximum emission level.

Results:

The results are presented in Plots # 38-39.





Plot 38- Plot 39
Conducted emission on 120VAC mains. Phase & Neutral

7. Antenna requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antenna of the device is **-** inside case box and non-detachable antenna.
There are no provisions for connection to an external antenna.
Manufacturer "YAGEO" - chip antenna and on PCB.

Conclusion: The unit complies with the requirement of §15.203.

Figure 5. Antenna

8. Appendix 1: Test equipment used

All measurements equipment is on SII calibration schedule with a recalibration interval not exceeding one year.

Instrument	Manufacturer	Model	SII No.	Last calibration date	Next calibration date
EMI RECEIVER-MXE 3Hz-44GHz	Keysight	N9038B	6505208	9/22	09/23
Biconilog Antenna 30 – 6000 MHz	ETS Lindgren	3142D	00146488	04/21	04/23
Double Ridged Waveguide Antenna 1-18 GHz	ETS Lindgren	3115	0143138	07/21	07/23
LISN 9kHz – 30 MHz	SCHWARBECK MESS-ELEKTRONIK	NSLK 8128	6505753	08/22	08/23
Semi Anechoic Chamber	ETS-Lindgren	RFSD-F/A-100	5002	N/A	N/A
Multi-Device Positioning Controller	ETS-Lindgren	2090	5002	N/A	N/A
Antenna Tower	ETS-Lindgren	2175	5002	N/A	N/A
Boresight Antenna Tower	ETS-Lindgren	2171B	5002	N/A	N/A
Turntable	ETS-Lindgren	2188	5002	N/A	N/A
MXG Analog Microwave Signal generator 100 KHz - 20 GHz	Agilent	N5183A	6501148	02/23	02/24
Cable Sets for Radio tests 9 kHz-18GHz (7mtr LLEF 142)	-	-	-	02/23	02/24
Cable Sets 9 kHz-6GHz RE Cbl Set (Horn Ant)	- I	-	-	02/23	02/24
Cable Up to 18 GHz for Radio tests	SUCOFLEX	104PE	21323	02/23	02/24

9. Appendix 2: Antenna Factor

Antenna Factor

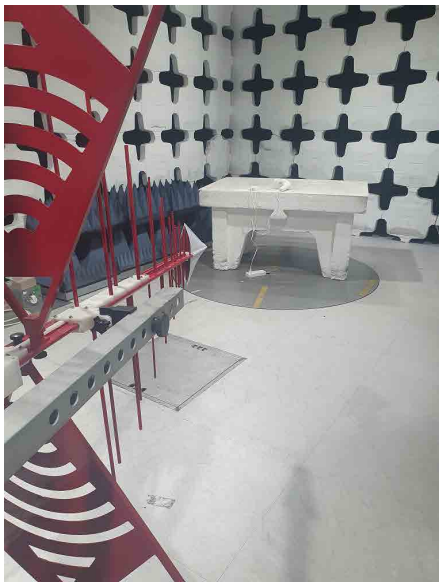
Biconilog Antenna, Model Number: 3142D S/N: 00146488 SII No. 6503046
3 m distance

No.	f / MHz	ACF / dB/m	f / MHz	AF / dB/m
1	30	22.7	200	16.7
2	35	20.4	250	18.0
3	40	17.8	300	19.8
4	45	15.7	400	22.7
5	50	14.2	500	25.8
6	60	13.0	600	27.4
7	70	13.0	700	28.4
8	80	12.4	800	30.0
9	90	13.3	900	31.3
10	100	14.2	1000	32.8
11	120	13.3	1250	35.8
12	140	13.3	1500	42.9
13	160	14.6	1750	36.1
14	180	16.3	2000	34.6

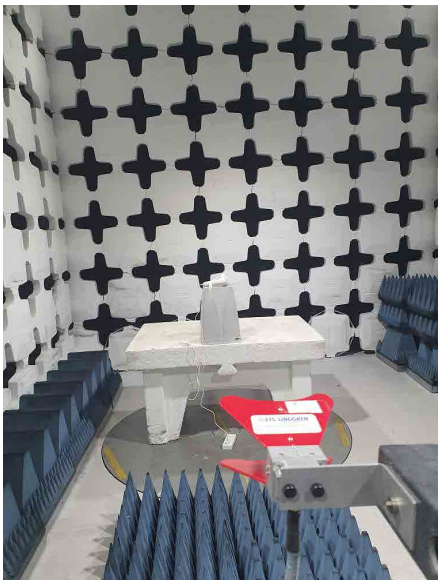
Double Ridged Waveguide Antenna Model Number: 3115 S/N 0143138
3m distance

No.	f / MHz	AF / dB/m	f / MHz	AF / dB/m	f / MHz	AF / dB/m
1	1000	23.6	7000	36.7	13000	39.7
2	1500	25.6	7500	37.3	13500	40.3
3	2000	28.2	8000	37.0	14000	41.0
4	2500	27.8	8500	37.6	14500	41.0
5	3000	29.3	9000	37.8	15000	39.6
6	3500	30.7	9500	38.0	15500	38.8
7	4000	31.8	10000	38.3	16000	39.1
8	4500	32.1	10500	38.6	16500	40.0
9	5000	32.9	11000	38.6	17000	40.9
10	5500	32.9	11500	38.9	17500	42.3
11	6000	34.0	12000	38.8	18000	42.5
12	6500	35.3	12500	38.9	--	--

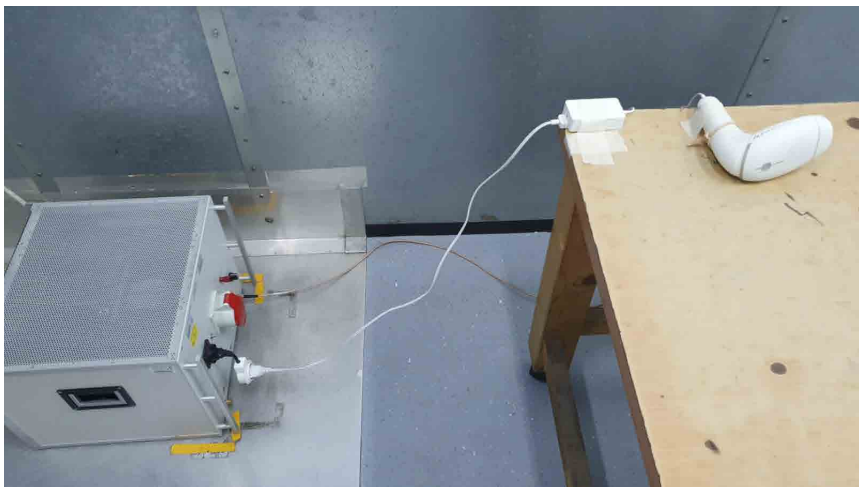
10. Appendix 3: Test illustrations



Picture 1
Radiated spurious emission test setup below 1GHZ.



Picture 2
Radiated spurious emission test setup above 1GHz.



Picture 3
Conducted emission.

END OF THE DOCUMENT