FCC TEST REPORT

For

Shenzhen Jiayz photo industrial., Ltd

Wireless Microphone

Test Model: UwMic9S TX Mini

Prepared for	:	Shenzhen Jiayz photo industrial., Ltd
Address	:	A16 Building, Intelligent Terminal Industrial Park of Silicon Valley Power, Guanlan, Longhua District, Shenzhen, China
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	July 02, 2021
Number of tested samples	:	1
Sample No	:	210701049A
Serial number	:	Prototype
Date of Test	:	July 02, 2021 ~ July 27, 2021
Date of Report	:	July 28, 2021

FCC TEST REPORT
FCC CFR 47 PART 74

Report Reference No.	**:**	**LCS210701049AEA**
Date of Issue	:	July 28, 2021
Testing Laboratory Name ..... :		**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name ..... :		**Shenzhen Jiayz photo industrial., Ltd**
Address	:	A16 Building, Intelligent Terminal Industrial Park of Silicon Valley Power, Guanlan, Longhua District, Shenzhen, China
Test Specification		
Standard.....	:	FCC CFR 47 PART 74
Test Report Form No..... :		LCSEMC-1.0
TRF Originator	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

EUT Description. ..... :		Wireless Microphone
Trade Mark.....	:	N/A
Test Model	:	UwMic9S TX Mini
Ratings.....	:	Input: DC 5V DC 3.7V by Rechargeable Li-ion Battery, 1000mAh
Result	:	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Ray Yang/ File administrators	Jin Wang/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS210701049AEA	July 28, 2021 Date of issue

Test Model.....	: UwMic9S TX Mini
EUT.....	: Wireless Microphone
Applicant.....	**: Shenzhen Jiayz photo industrial., Ltd**
Address.....	: A16 Building, Intelligent Terminal Industrial Park of Silicon Valley Power, Guanlan, Longhua District, Shenzhen, China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Shenzhen Jiayz photo industrial., Ltd**
Address.....	: A16 Building, Intelligent Terminal Industrial Park of Silicon Valley Power, Guanlan, Longhua District, Shenzhen, China
Telephone.....	: /
Fax.....	: /
Factory.....	**: *I***
Address.....	: /
Telephone.....	: /
Fax.....	: /

Test Result	**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	July 28, 2021	Initial Issue	Gavin Liang

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: Wireless Microphone
Test Model	: UwMic9S TX Mini
Additional Model No	: UwMic9S Mini, UwMic9S Kit1 Mini, UwMic9S Kit2 Mini
Model Declaration	: PCB board, structure and internal of these model(s) are the same , So no additional models were tested.
Hardware Version	: /
Software Version	: /
Power Supply	: Input: DC 5V DC 3.7V by Rechargeable Li-ion Battery, 1000mAh
Frequency Range	: 514.560MHz - 595.460MHz
Channel Number	: 192
Modulation Type	: FM
Antenna Type	: External Antenna
Antenna Gain	: 0dBi
Extreme temp. Tolerance	: -30°C to +50°C

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
OPPO	Adapter	OP52KAUH	--	FCC

Note: The adapter is supplied by lab and only use tested.

1.3. External I/O Cable

I/O Port Description	Quantity	Cable
MIC Port	1	N/A
USB DC IN Port	1	N/A

1.4. Description of Test Facility

NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
Test Firm Registration Number: 254912
CAB identifier is CN0071.
CNAS Registration Number is L4595.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

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

1.7. Description of Test Modes

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in Y position.

The following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

Modulation Type	Test Channel	Test Frequency (MHz)
Channel (A)	1	514.560
	48	533.830
	96	553.510
Channel (B)	1	556.510
	48	575.780
	96	595.460

1.8. Frequency of Channels

Channel A

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	514.56	25	524.400	49	534.240	73	544.080
2	514.970	26	524.810	50	534.650	74	544.490
3	515.380	27	525.220	51	535.060	75	544.900
4	515.790	28	525.630	52	535.470	76	545.310
5	516.200	29	526.040	53	535.880	77	545.720
6	516.610	30	526.450	54	536.290	78	546.130
7	517.020	31	526.860	55	536.700	79	546.540
8	517.430	32	527.270	56	537.110	80	546.950
9	517.840	33	527.680	57	537.520	81	547.360
10	518.250	34	528.090	58	537.930	82	547.770
11	518.660	35	528.500	59	538.340	83	548.180
12	519.070	36	528.910	60	538.750	84	548.590
13	519.480	37	529.320	61	539.160	85	549.000
14	519.890	38	529.730	62	539.570	86	549.410
15	520.300	39	530.140	63	539.980	87	549.820
16	520.710	40	530.550	64	540.390	88	550.230
17	521.120	41	530.960	65	540.800	89	550.640
18	521.530	42	531.370	66	541.210	90	551.050
19	521.940	43	531.780	67	541.620	91	551.460
20	522.350	44	532.190	68	542.030	92	551.870
21	522.760	45	532.600	69	542.440	93	552.280
22	523.170	46	533.010	70	542.850	94	552.690
23	523.580	47	533.420	71	543.260	95	553.100
24	523.990	48	533.830	72	543.670	96	553.510

Channel B

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	556.510	25	566.350	49	576.190	73	586.030
2	556.920	26	566.760	50	576.600	74	586.440
3	557.330	27	567.170	51	577.010	75	586.850
4	557.740	28	567.580	52	577.420	76	587.260
5	558.150	29	567.990	53	577.830	77	587.670
6	558.560	30	568.400	54	578.240	78	588.080
7	558.970	31	568.810	55	578.650	79	588.490
8	559.380	32	569.220	56	579.060	80	588.900
9	559.790	33	569.630	57	579.470	81	589.310
10	560.200	34	570.040	58	579.880	82	589.720
11	560.610	35	570.450	59	580.290	83	590.130
12	561.020	36	570.860	60	580.700	84	590.540
13	561.430	37	571.270	61	581.110	85	590.950
14	561.840	38	571.680	62	581.520	86	591.360
15	562.250	39	572.090	63	581.930	87	591.770
16	562.660	40	572.500	64	582.340	88	592.180
17	563.070	41	572.910	65	582.750	89	592.590
18	563.480	42	573.320	66	583.160	90	593.000
19	563.890	43	573.730	67	583.570	91	593.410
20	564.300	44	574.140	68	583.980	92	593.820
21	564.710	45	574.550	69	584.390	93	594.230
22	565.120	46	574.960	70	584.800	94	594.640
23	565.530	47	575.370	71	585.210	95	595.050
24	565.940	48	575.780	72	585.620	96	595.460

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.26-2015:American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section FCC Rules Part 74.

2.3. General Test Procedures

2.3.1 Power Line Conducted Emissions(N/A)

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.4-2014 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

Please refer to radiated spurious emission.

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmits condition.

3.2. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and transmission frequency by switch button control.

3.3. Special Accessories

N/A

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 74		
FCC Rules	Description of Test	Result
FCC Part 74.861(e)(1)(ii) FCC Part 2.1046	Maximum Conducted Output Power	Compliant
FCC Part 74.861 (e)(5) FCC Part 2.1049	Occupied Bandwidth	Compliant
FCC Part 74.861 (e)(4) FCC Part 2.1055	Frequency error	Compliant
FCC Part 74.861(e)(7) 2.1053	Transmitter unwanted emissions(radiated or conducted)	Compliant
FCC Part 2.1049 FCC Part 2.1047	Modulation characteristic	Compliant
FCC Part 74.861 (e)(7) FCC Part 2.1049	Necessary bandwidth (BN)	Compliant

5. TEST RESULT

5.1. Transmitter output power

5.1.1. Description:

The power may not exceed the following values.

(i) 54-72, 76-88, and 174-216 MHz bands: 50 mW EIRP

(ii) 470-608 and 614-698: 250 mW conducted power

(iii) 600 MHz duplex gap: 20 mW EIRP

5.1.2. Measurement:

Measurement parameter	
Detector:	Peak (worst case) / Average (RMS)
Sweep time:	Auto / 20s
Resolution bandwidth:	> emission bandwidth
Video bandwidth:	> resolution bandwidth
Span:	> 2 times emissions bandwidth
Trace mode:	Max. hold
EUT configuration:	Peak: Unmodulated carrier RMS: Modulate the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of ± 75 kHz, or to produce 50% of the manufacturer's rated deviation, whichever is less.

5.1.3. Limits:

FCC
470 MHz to 608 MHz 250 mW (average) / 24 dBm (average)

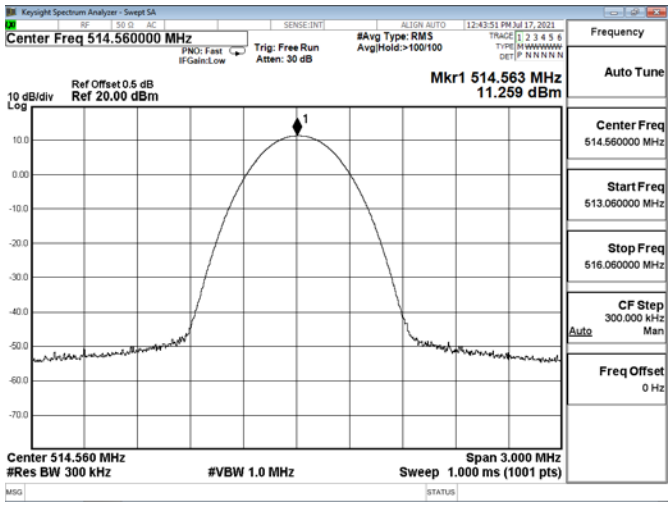
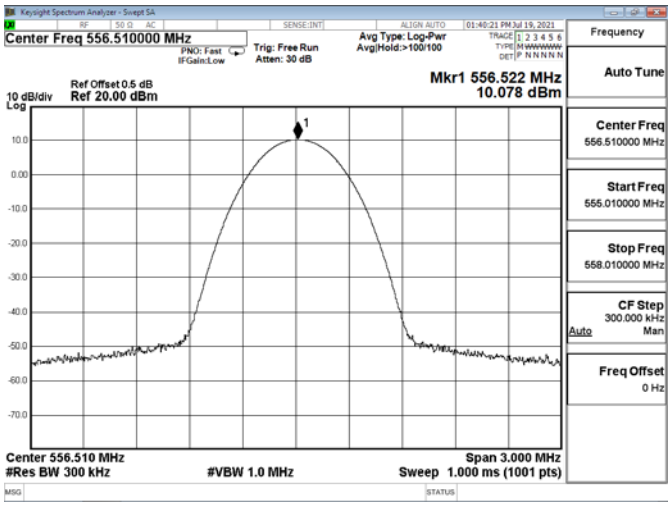
5.1.4. Test result:

The EUT was programmed to be in continuously transmitting mode.

5.1.5. Test result

Test Mode	Channel	Frequency (MHz)	Measured Maximum Peak Power(dBm)	Measured Maximum Average Power(dBm)	Limits Average (dBm)	Verdict
GFSK(A)	1	514.560	11.259	/	24	PASS
	2	533.830	10.571	/		
	3	553.510	9.929	/		
GFSK(B)	1	556.510	10.078	/	24	PASS
	2	575.780	9.672	/		

	3	595.460	9.591	/		

Maximum Peak Output Power	Maximum Peak Output Power
	
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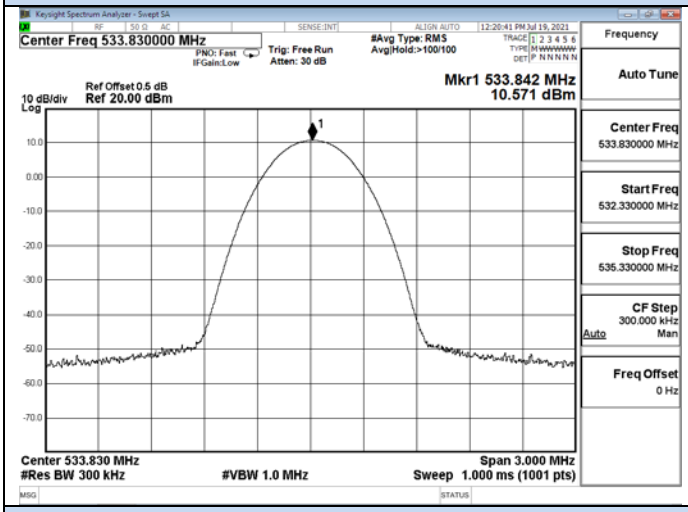	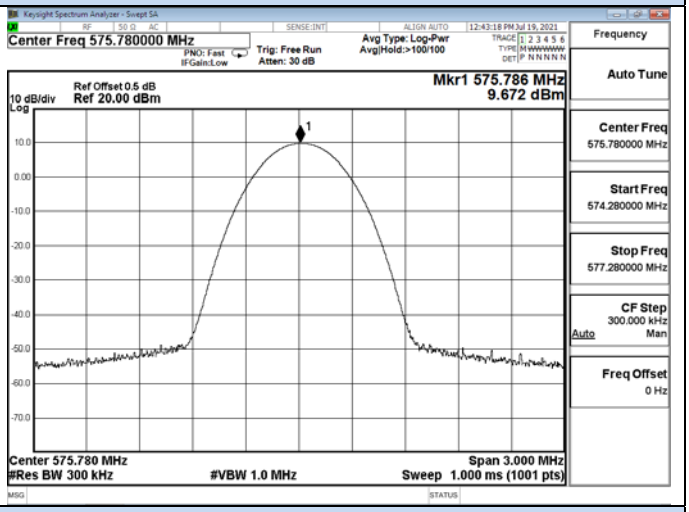
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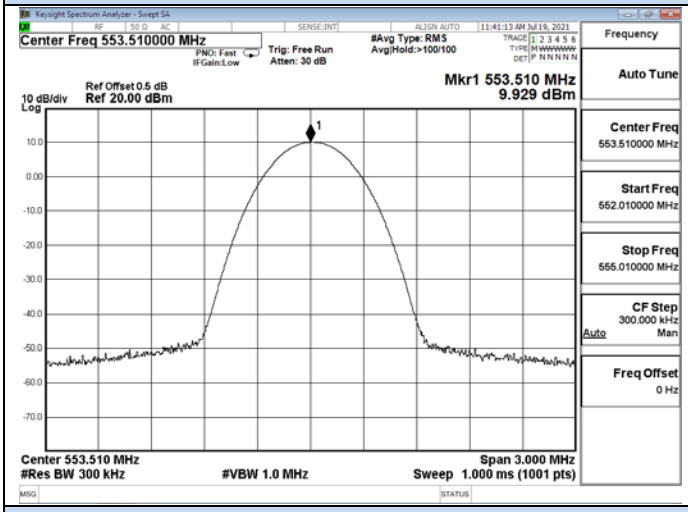
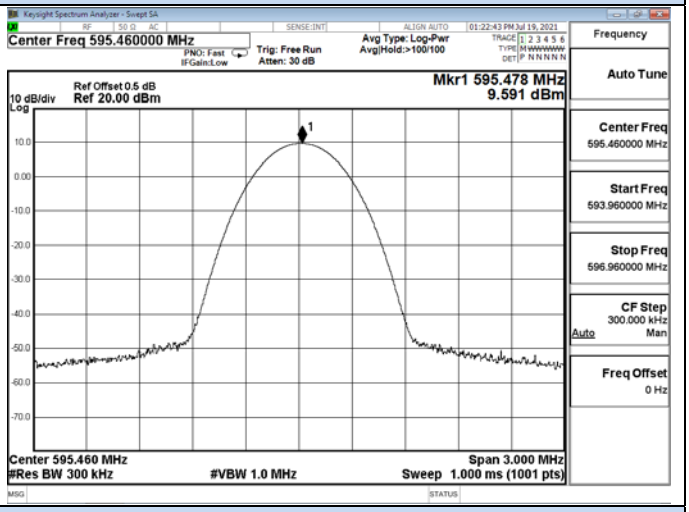
	
Channel 03 / 553.510 MHz	Channel 03 / 595.460 MHz

5.2. Occupied bandwidth and Emission Mask

5.2.1. Description:

The operating bandwidth shall not exceed 200 kHz.

The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;

(ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;

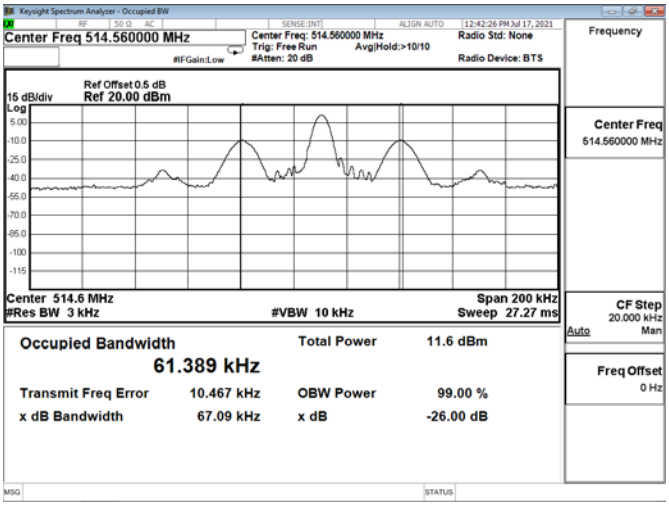
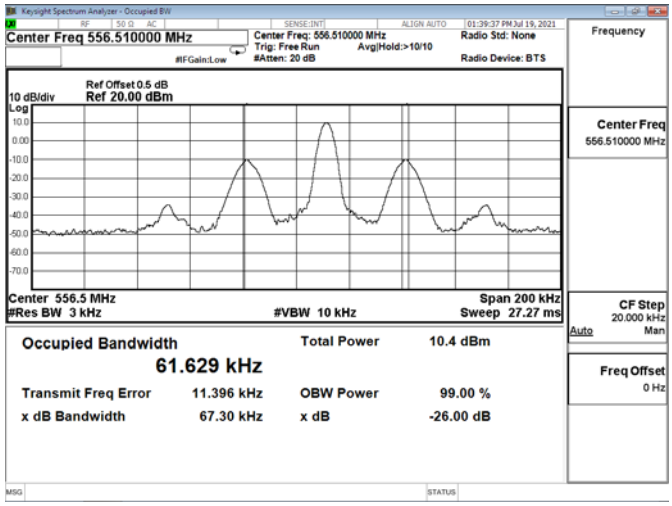
(iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43 + 10log10 (mean output power in watts) dB.

5.2.2. Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 % to 5 % of the occupied bandwidth
Video bandwidth:	3 x resolution bandwidth
Span:	2 x emission bandwidth
Trace mode:	Max. hold
Analyzer function:	99% power occupied bandwidth function
EUT:	Modulated signal with max. frequency deviation

5.2.3. Result:

Test Mode	Channel	Frequency (MHz)	99% Bandwidth (KHz)	Limits (KHz)	Verdict
GFSK(A)	1	514.560	61.389	200	PASS
	2	533.830	62.909		
	3	553.510	61.571		
GFSK(B)	1	556.510	61.629		
	2	575.780	63.082		
	3	595.460	61.584		

99% Bandwidth	99% Bandwidth
	
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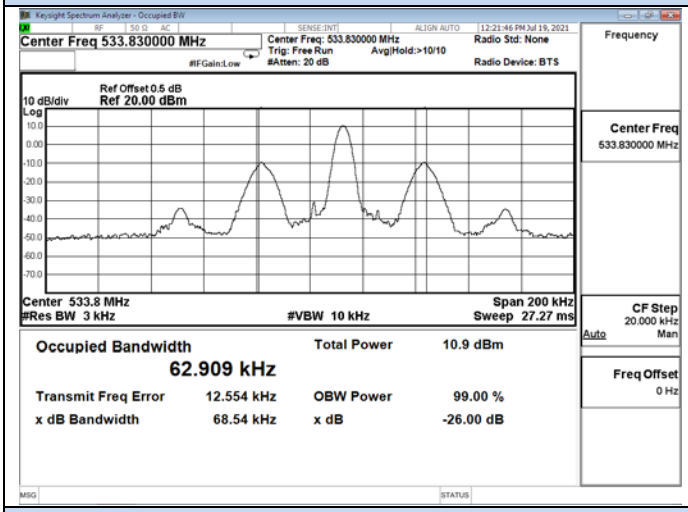	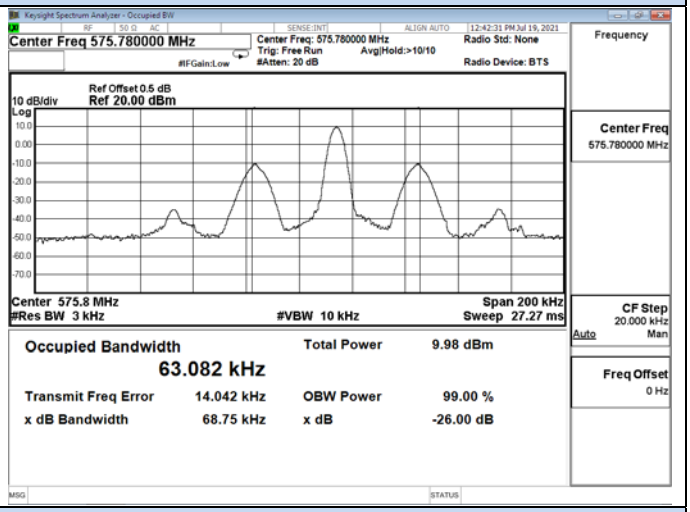
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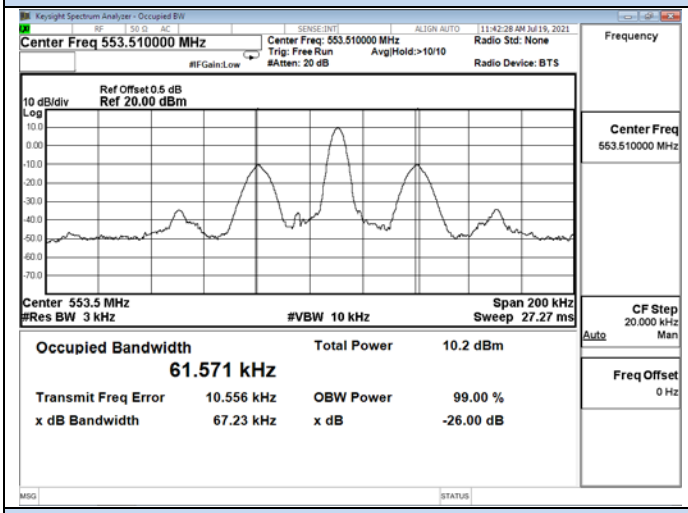
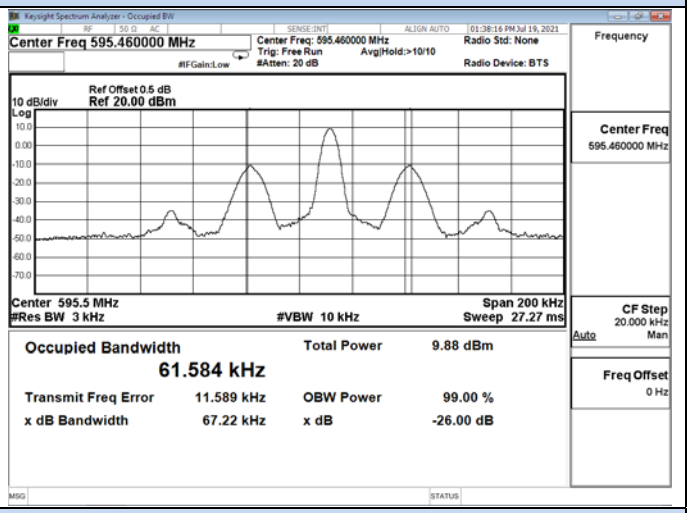
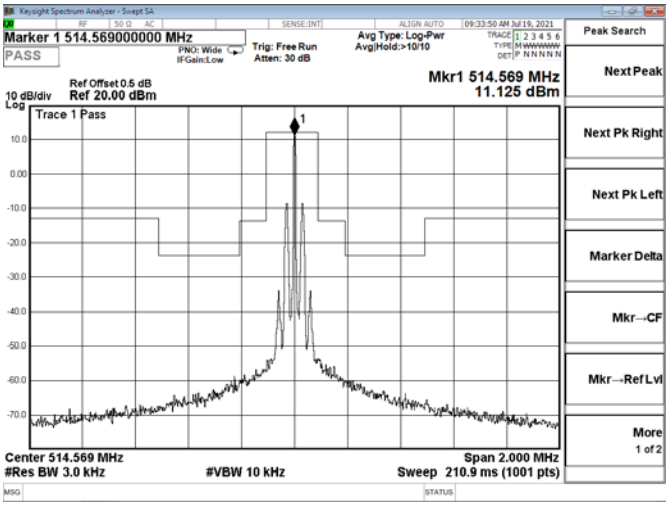
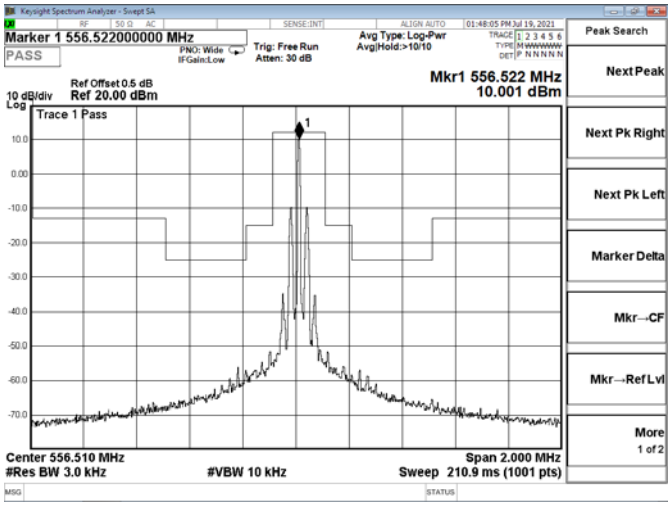
	
Channel 03 / 553.510 MHz	Channel 03 / 595.460 MHz

Spectrum mask	Spectrum mask
	
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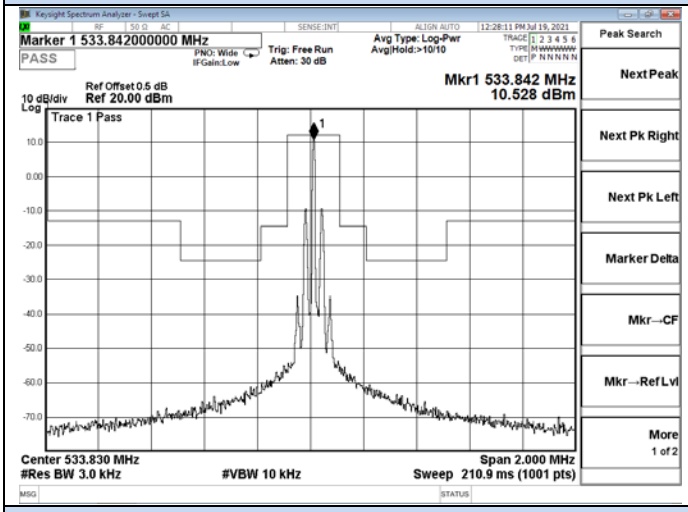	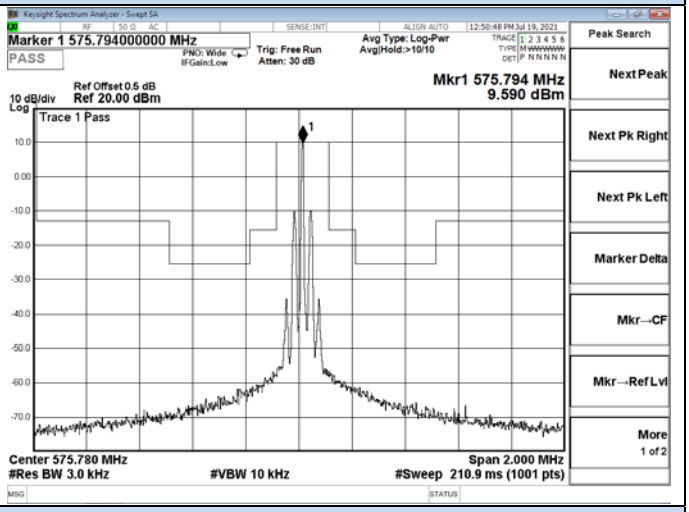
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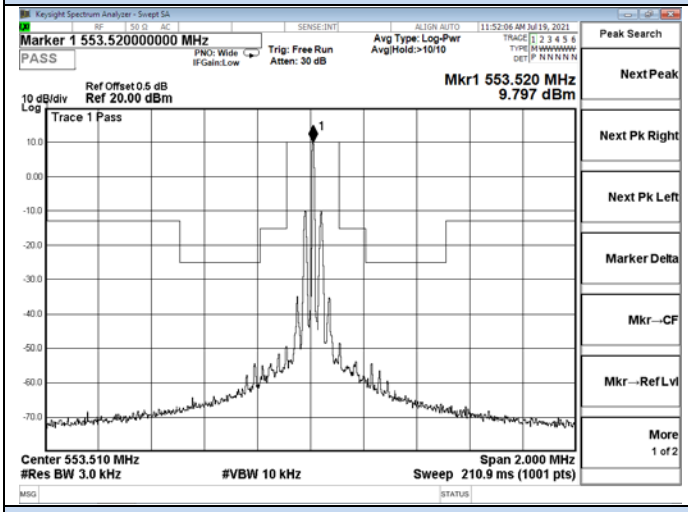
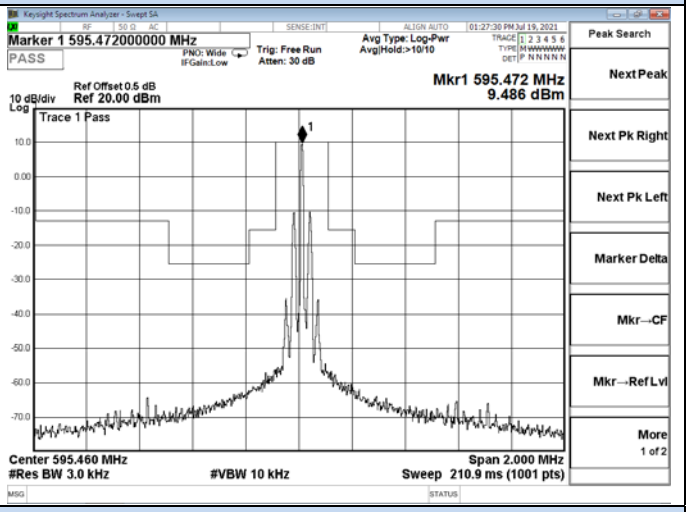
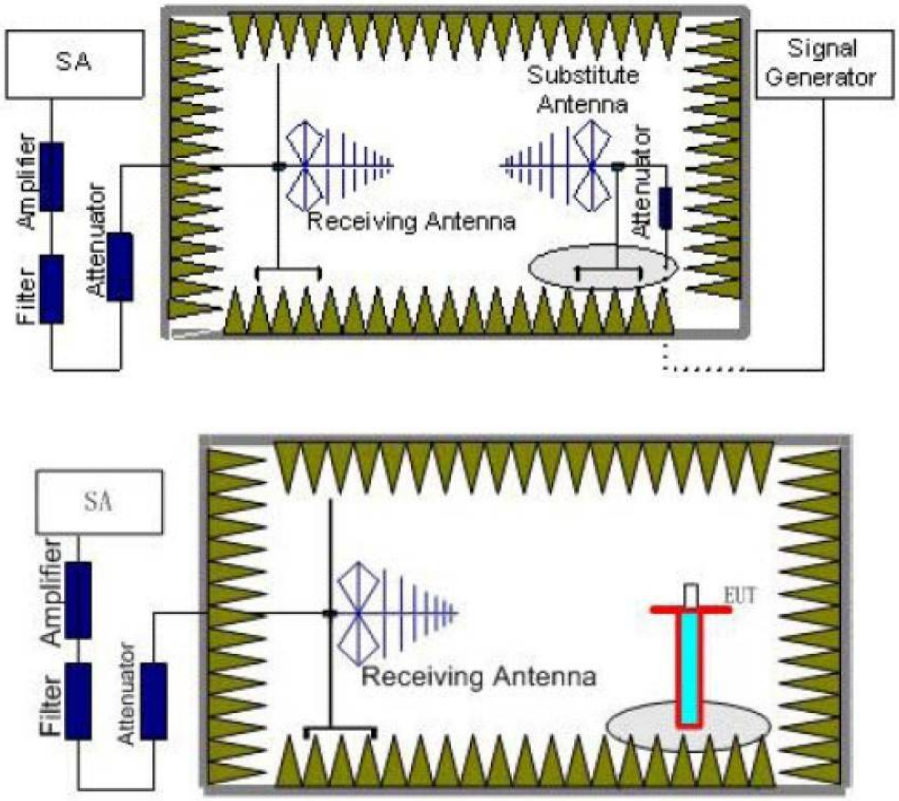
	
Channel 03 / 553.510 MHz	Channel 03 / 595.460 MHz

5.3. Transmitter unwanted emissions(radiated)

5.3.1. Measurement description:

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The

power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} + G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.
8. In order to make sure test results more clearly,we set frequency range and sweep time for difference frequency range as follows table:

TEST LIMITS

FCC & IC (according to ETSI EN 300 422-1 V2.1.2 (2017-01))			
State	**Max. spurious level**		
	47 MHz to 74 MHz 87.5 MHz to 118 MHz 174 MHz to 230 MHz	Other frequencies ≤ 1000 MHz	All frequencies > 1000 MHz
Operating	4.0 nW	250 nW	1.00 µW
Standby	2.0 nW	2.0 nW	20.0 nW

FCC & IC	
The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:	
On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the	25 dB
On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of	35 dB
On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least	43 + 10log10 (mean output power in watts) dB

$$P = 10 \cdot \log_{10}\left(\frac{p}{p_0}\right) \qquad p_0 = 1\text{mW}$$

$$U = 20 \cdot \log_{10}\left(\frac{u}{u_0}\right) \qquad u_0 = 1\mu\text{V}$$

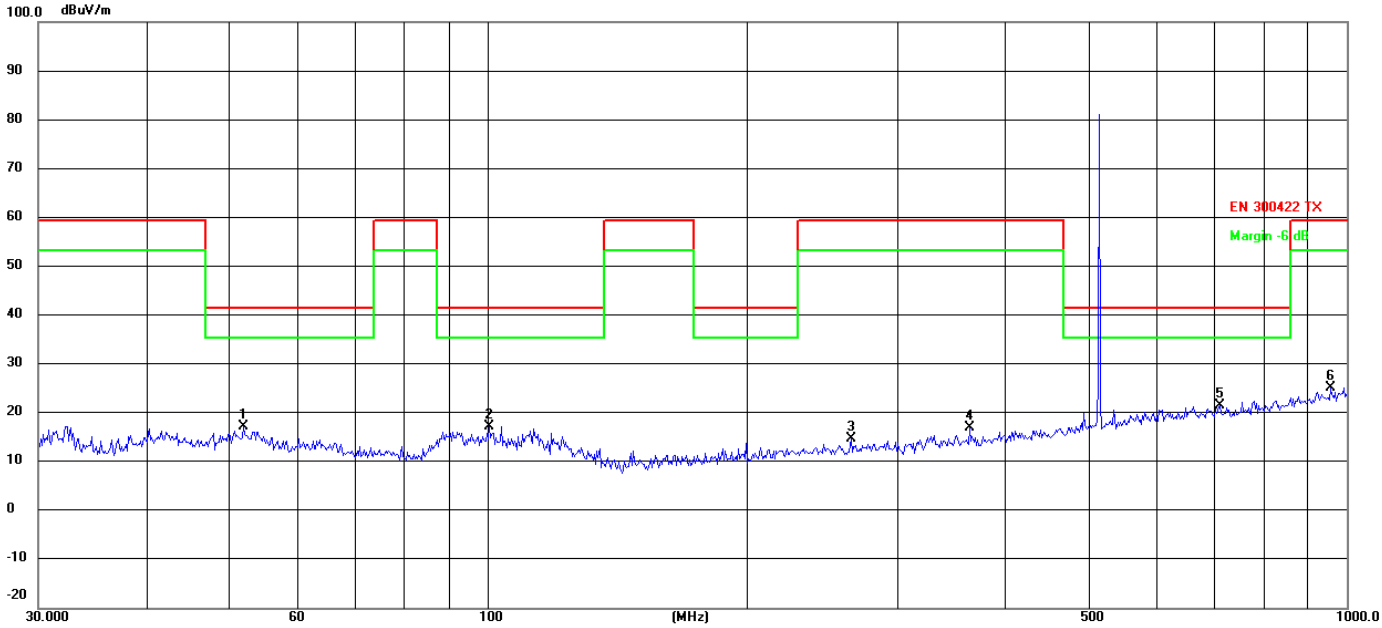
$$p = \frac{u^2}{Z_C} \qquad Z_C = 50$$

5.3.2. Results for Radiated Emissions

A

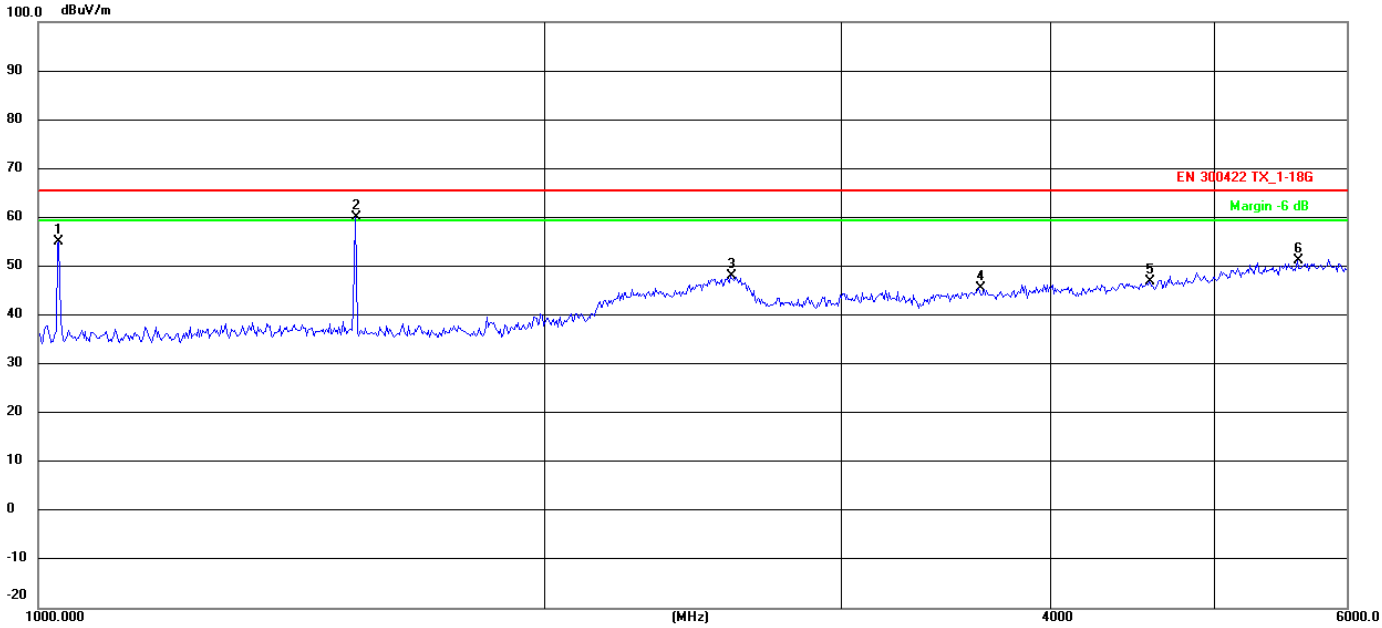
Channel 01 / 514.560MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	52.0251	46.22	-29.06	17.16	41.28	-24.12	QP
2	100.5806	44.77	-27.43	17.34	41.28	-23.94	QP
3	264.7457	43.77	-29.00	14.77	59.24	-44.47	QP
4	364.2595	43.68	-26.72	16.96	59.24	-42.28	QP
5 *	711.6734	42.30	-20.70	21.60	41.28	-19.68	QP
6	958.7943	42.80	-17.72	25.08	59.24	-34.16	QP

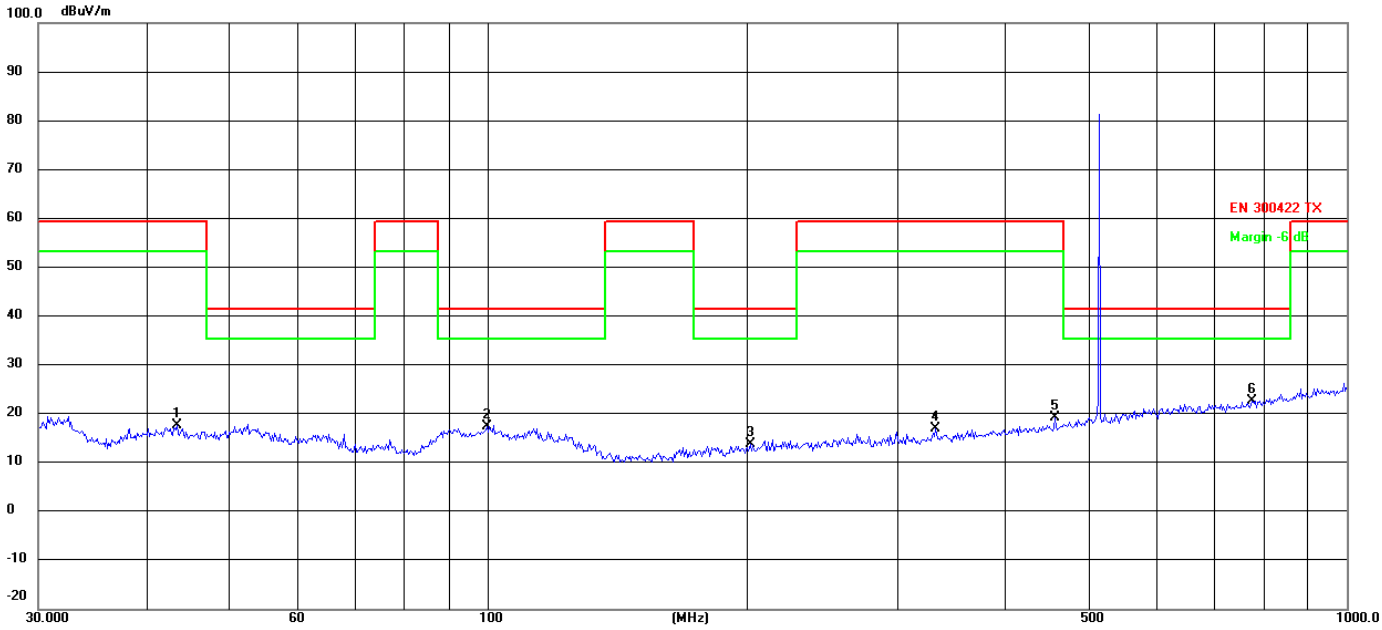
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1029.083	70.86	-15.74	55.12	65.25	-10.13	QP
2 *	1542.811	74.04	-14.09	59.95	65.25	-5.30	QP
3	2580.133	52.24	-4.24	48.00	65.25	-17.25	QP
4	3626.526	53.22	-7.77	45.45	65.25	-19.80	QP
5	4577.733	51.93	-5.09	46.84	65.25	-18.41	QP
6	5605.076	51.93	-0.83	51.10	65.25	-14.15	QP

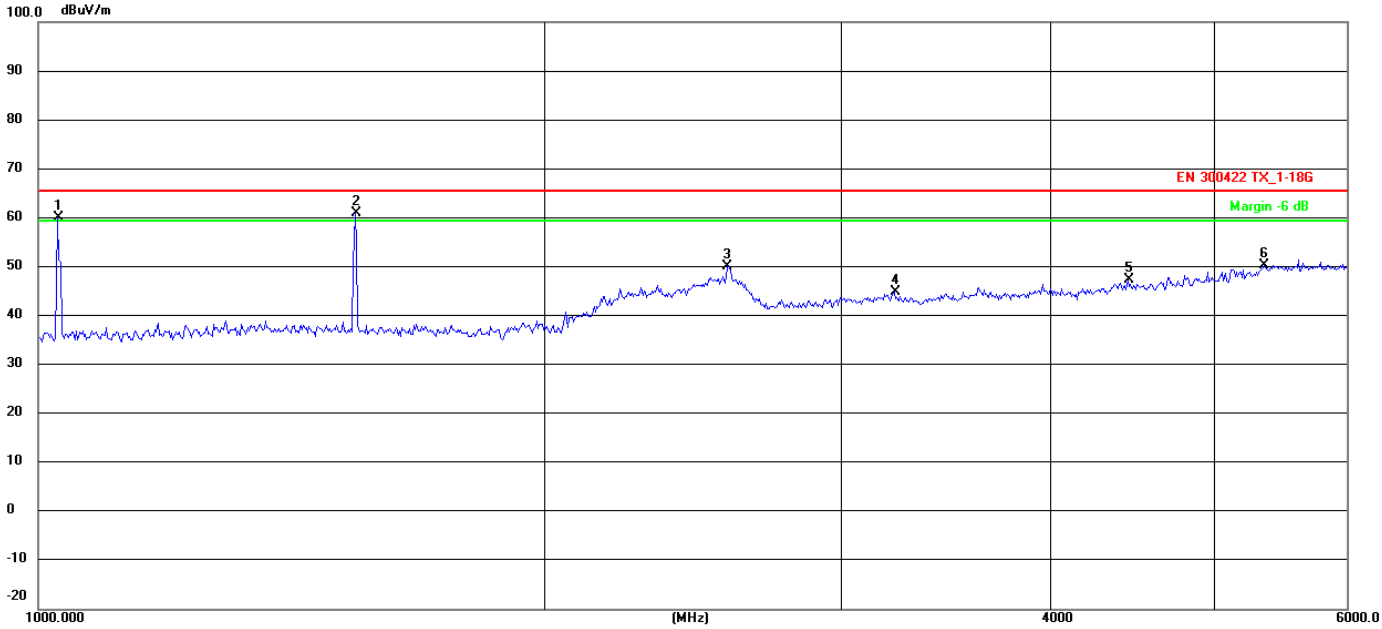
Channel 01 / 514.560MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	43.5057	46.87	-29.21	17.66	59.24	-41.58	QP
2	99.8777	45.01	-27.43	17.58	41.28	-23.70	QP
3	202.1004	44.39	-30.45	13.94	41.28	-27.34	QP
4	332.5187	44.51	-27.46	17.05	59.24	-42.19	QP
5	457.5073	43.97	-24.80	19.17	59.24	-40.07	QP
6 *	776.8778	42.51	-19.86	22.65	41.28	-18.63	QP

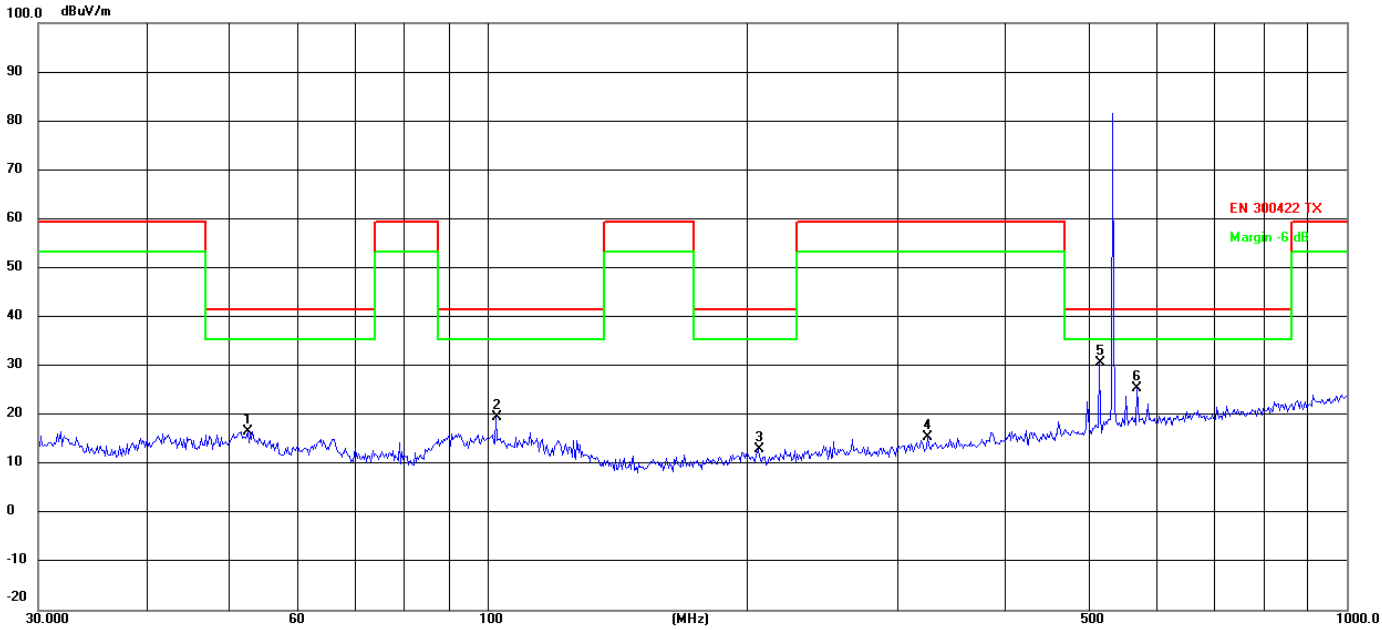
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 !	1027.241	75.86	-15.74	60.12	65.25	-5.13	QP
2 *	1542.811	75.02	-14.09	60.93	65.25	-4.32	QP
3	2570.903	54.42	-4.25	50.17	65.25	-15.08	QP
4	3227.832	53.56	-8.69	44.87	65.25	-20.38	QP
5	4448.361	52.76	-5.49	47.27	65.25	-17.98	QP
6	5359.542	51.98	-1.77	50.21	65.25	-15.04	QP

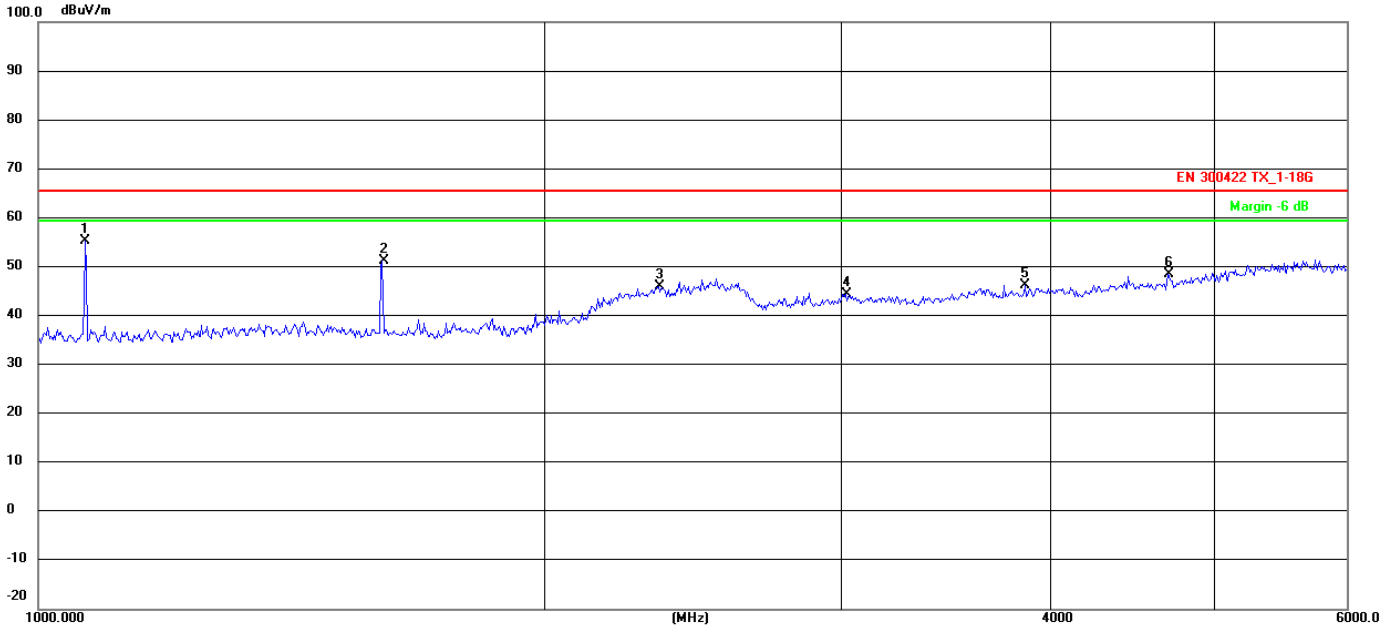
Channel 02/ 533.830MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	52.5753	45.77	-29.13	16.64	41.28	-24.64	QP
2	102.3597	46.90	-27.47	19.43	41.28	-21.85	QP
3	206.3976	43.39	-30.36	13.03	41.28	-28.25	QP
4	325.5958	43.09	-27.63	15.46	59.24	-43.78	QP
5 *	515.4374	54.15	-23.63	30.52	41.28	-10.76	QP
6	570.6100	47.92	-22.42	25.50	41.28	-15.78	QP

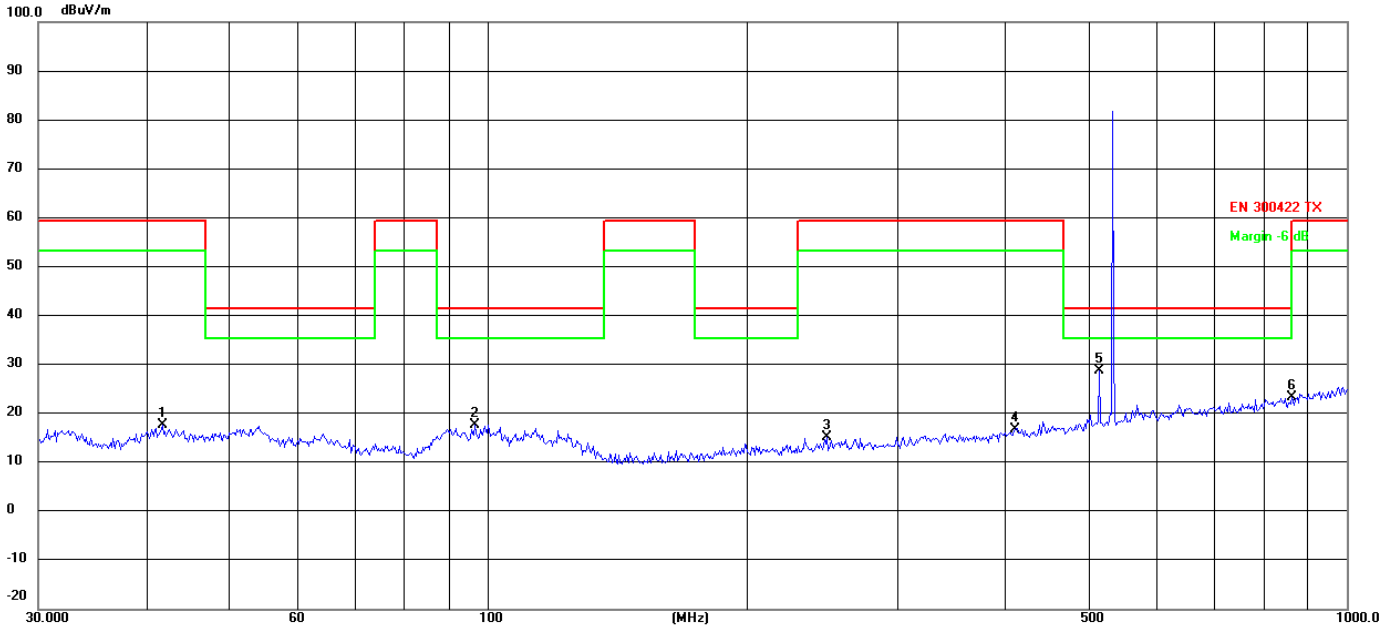
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1066.629	70.91	-15.72	55.19	65.25	-10.06	QP
2	1601.968	65.26	-14.04	51.22	65.25	-14.03	QP
3	2337.996	52.56	-6.47	46.09	65.25	-19.16	QP
4	3020.782	53.01	-8.63	44.38	65.25	-20.87	QP
5	3861.233	53.52	-7.21	46.31	65.25	-18.94	QP
6	4694.016	53.08	-4.66	48.42	65.25	-16.83	QP

Channel 02/ 533.830MHz

Vertical



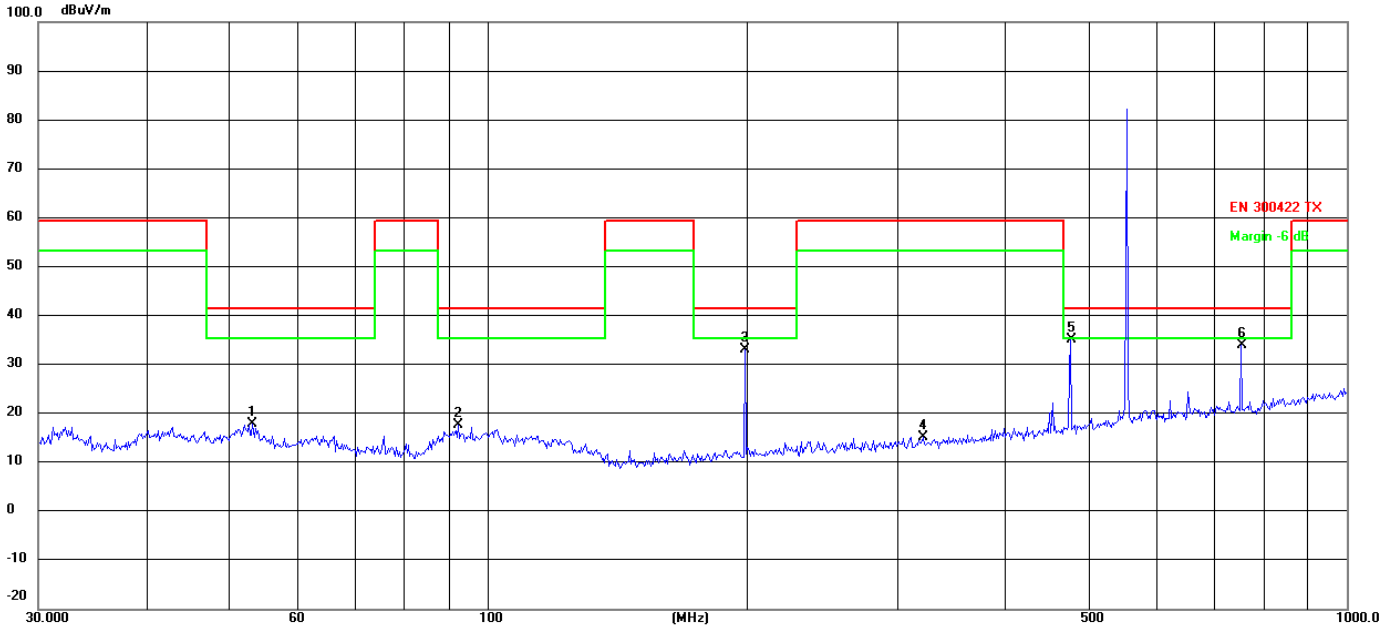
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	41.8595	47.22	-29.52	17.70	59.24	-41.54	QP
2	96.7749	45.64	-27.88	17.76	41.28	-23.52	QP
3	248.5519	44.50	-29.36	15.14	59.24	-44.10	QP
4	411.8240	42.41	-25.63	16.78	59.24	-42.46	QP
5 *	515.4373	52.52	-23.63	28.89	41.28	-12.39	QP
6	863.0562	42.05	-18.75	23.30	59.24	-35.94	QP

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1066.629	76.18	-15.72	60.46	65.25	-4.79	QP
2	1601.968	72.79	-14.04	58.75	65.25	-6.50	QP
3	2566.301	53.26	-4.26	49.00	65.25	-16.25	QP
4	3498.869	52.91	-8.17	44.74	65.25	-20.51	QP
5	4284.092	52.24	-6.02	46.22	65.25	-19.03	QP
6	4988.864	52.34	-3.39	48.95	65.25	-16.30	QP

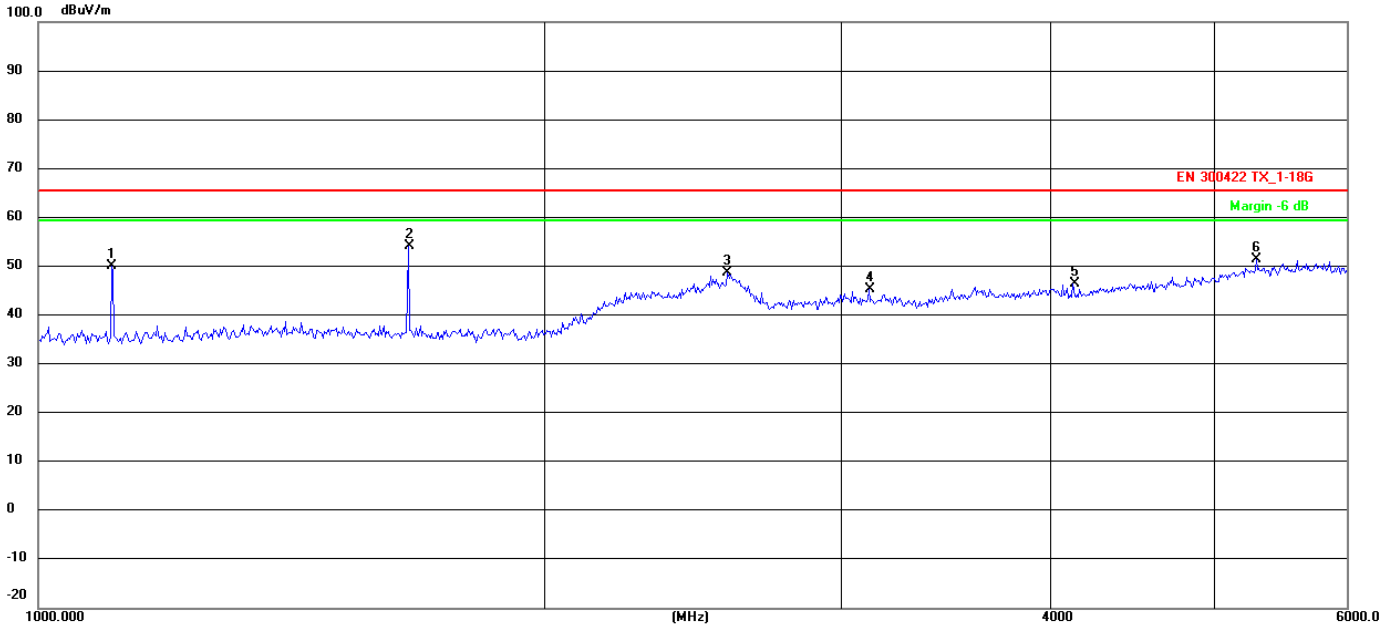
Channel 03 / 553.510MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	53.3179	47.16	-29.24	17.92	41.28	-23.36	QP
2	92.4624	46.08	-28.48	17.60	41.28	-23.68	QP
3	199.2855	63.66	-30.56	33.10	41.28	-8.18	QP
4	321.0608	43.04	-27.75	15.29	59.24	-43.95	QP
5 *	477.1694	59.66	-24.43	35.23	41.28	-6.05	QP
6	752.7432	54.18	-20.18	34.00	41.28	-7.28	QP

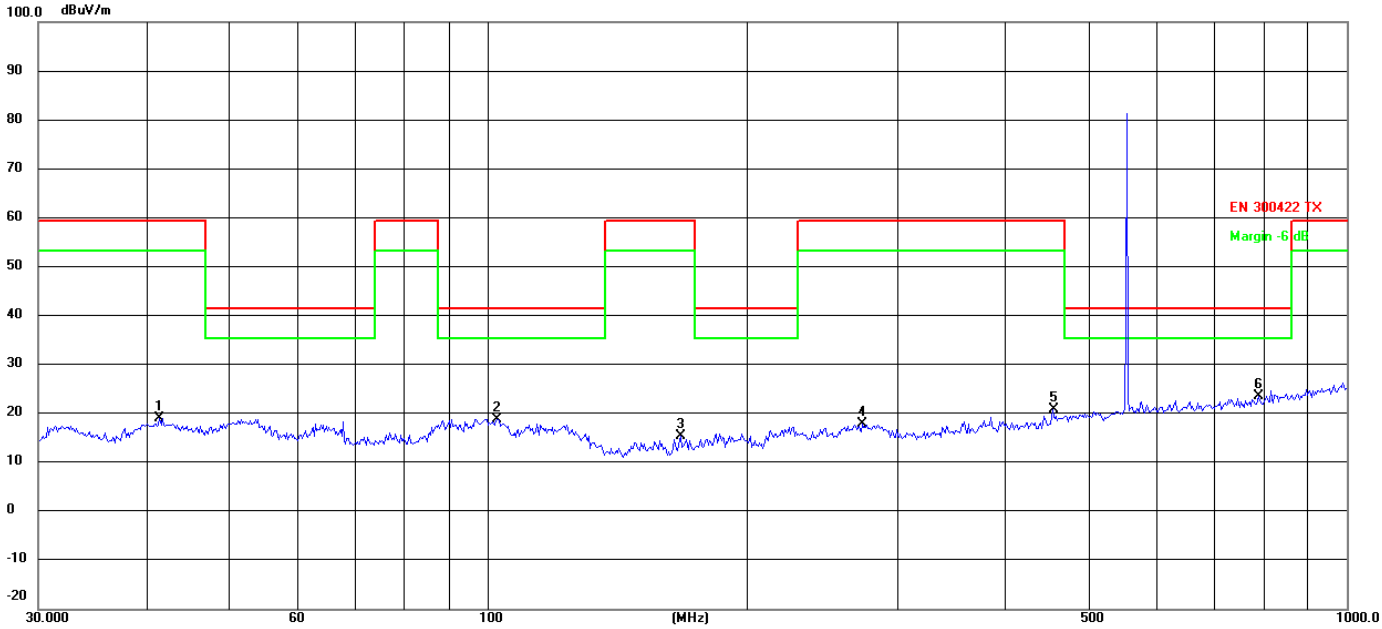
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1105.545	65.78	-15.67	50.11	65.25	-15.14	QP
2 *	1660.416	68.29	-14.05	54.24	65.25	-11.01	QP
3	2570.903	52.97	-4.25	48.72	65.25	-16.53	QP
4	3119.795	53.76	-8.50	45.26	65.25	-19.99	QP
5	4125.890	52.85	-6.40	46.45	65.25	-18.80	QP
6	5302.233	53.34	-2.01	51.33	65.25	-13.92	QP

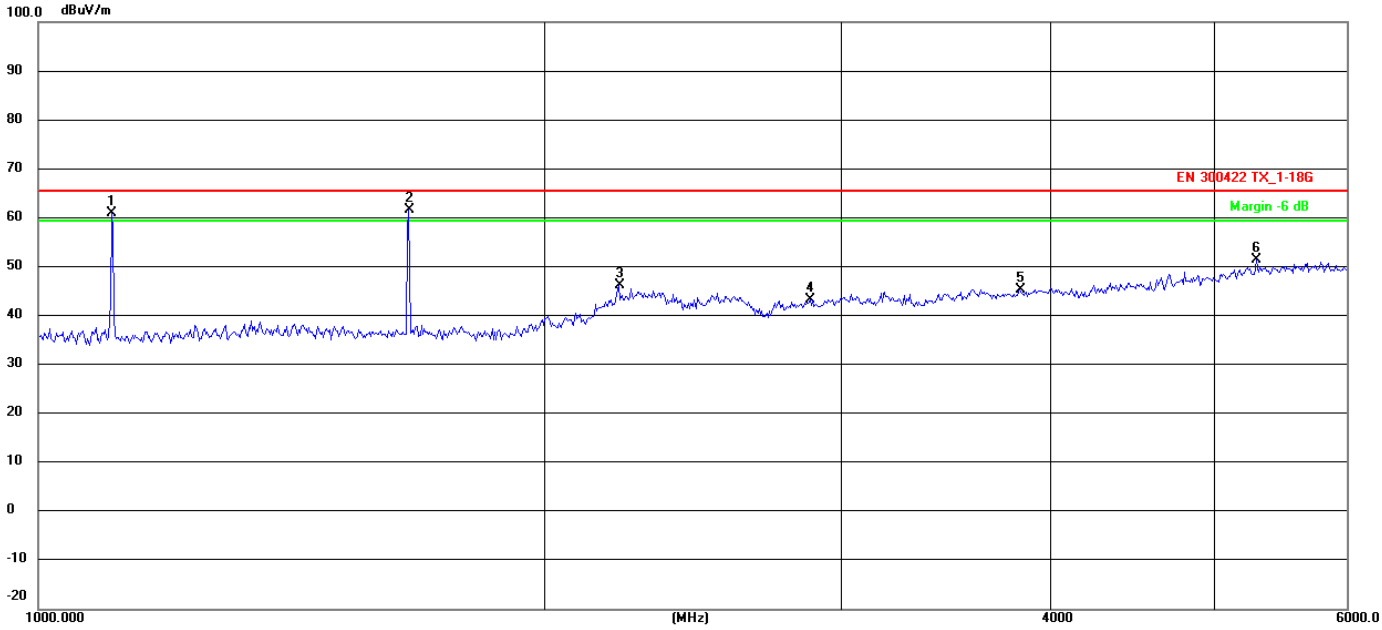
Channel 03 / 553.510MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	41.5670	48.73	-29.57	19.16	59.24	-40.08	QP
2	102.7192	46.41	-27.48	18.93	41.28	-22.35	QP
3	167.8242	47.98	-32.61	15.37	59.24	-43.87	QP
4	273.2340	46.63	-28.81	17.82	59.24	-41.42	QP
5	454.3100	45.64	-24.85	20.79	59.24	-38.45	QP
6 *	790.6187	43.37	-19.68	23.69	41.28	-17.59	QP

Vertical



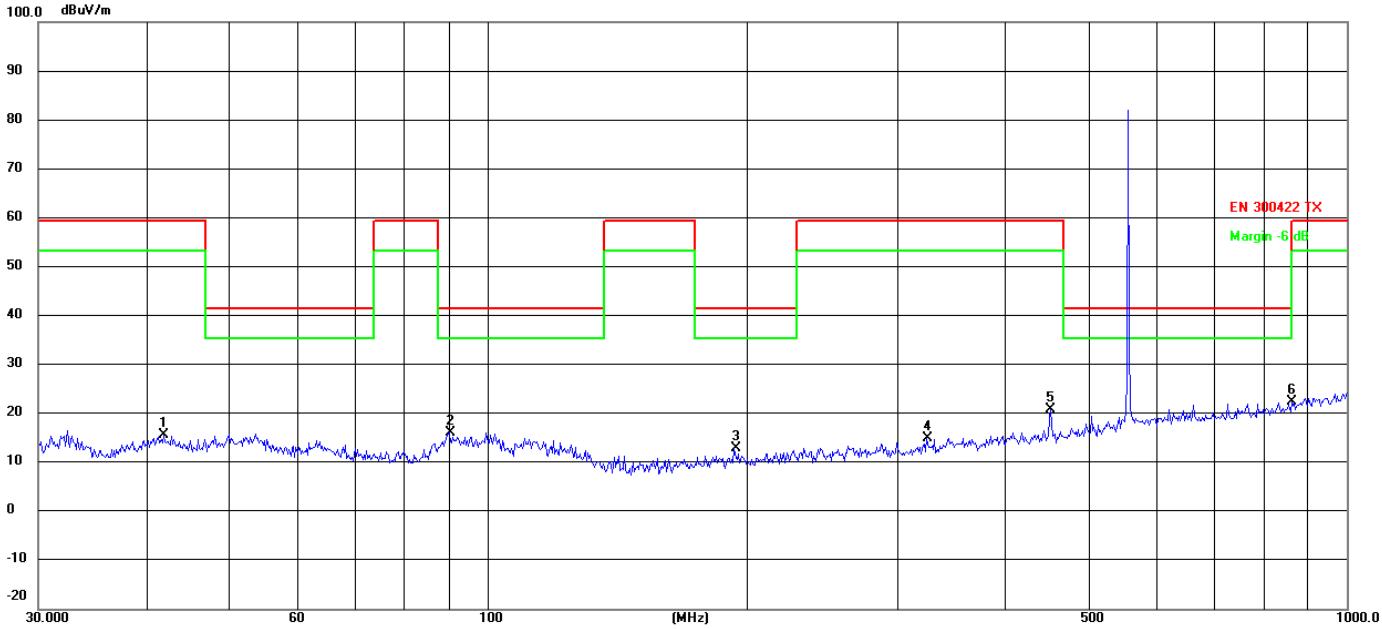
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 !	1105.545	76.66	-15.67	60.99	65.25	-4.26	QP
2 *	1660.416	75.63	-14.05	61.58	65.25	-3.67	QP
3	2215.640	53.82	-7.60	46.22	65.25	-19.03	QP
4	2878.122	52.23	-9.04	43.19	65.25	-22.06	QP
5	3833.659	52.71	-7.30	45.41	65.25	-19.84	QP
6	5302.233	53.47	-2.01	51.46	65.25	-13.79	QP

Note: 1, All detected emissions are more than 20 dB below the limit,In addition to main frequency.
2, Factor = Antenna Factor + Cable Loss + Amplifier Factor
3, Emission Level = Reading level + Factor Margin = Emission Level - Limit

B

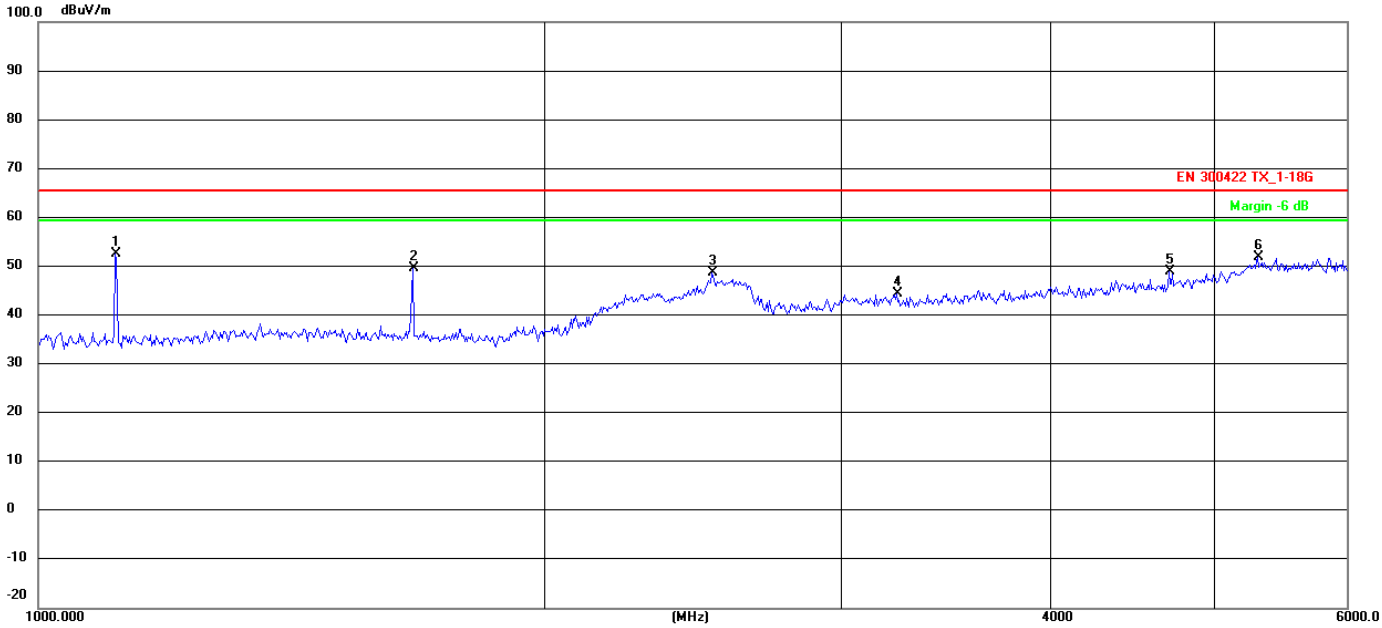
Channel 01 / 556.510MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	42.0066	45.06	-29.49	15.57	59.24	-43.67	QP
2 *	90.2205	45.18	-29.09	16.09	41.28	-25.19	QP
3	193.7728	43.89	-31.05	12.84	41.28	-28.44	QP
4	324.4561	42.74	-27.66	15.08	59.24	-44.16	QP
5	452.7197	45.75	-24.89	20.86	59.24	-38.38	QP
6	863.0562	41.12	-18.75	22.37	59.24	-36.87	QP

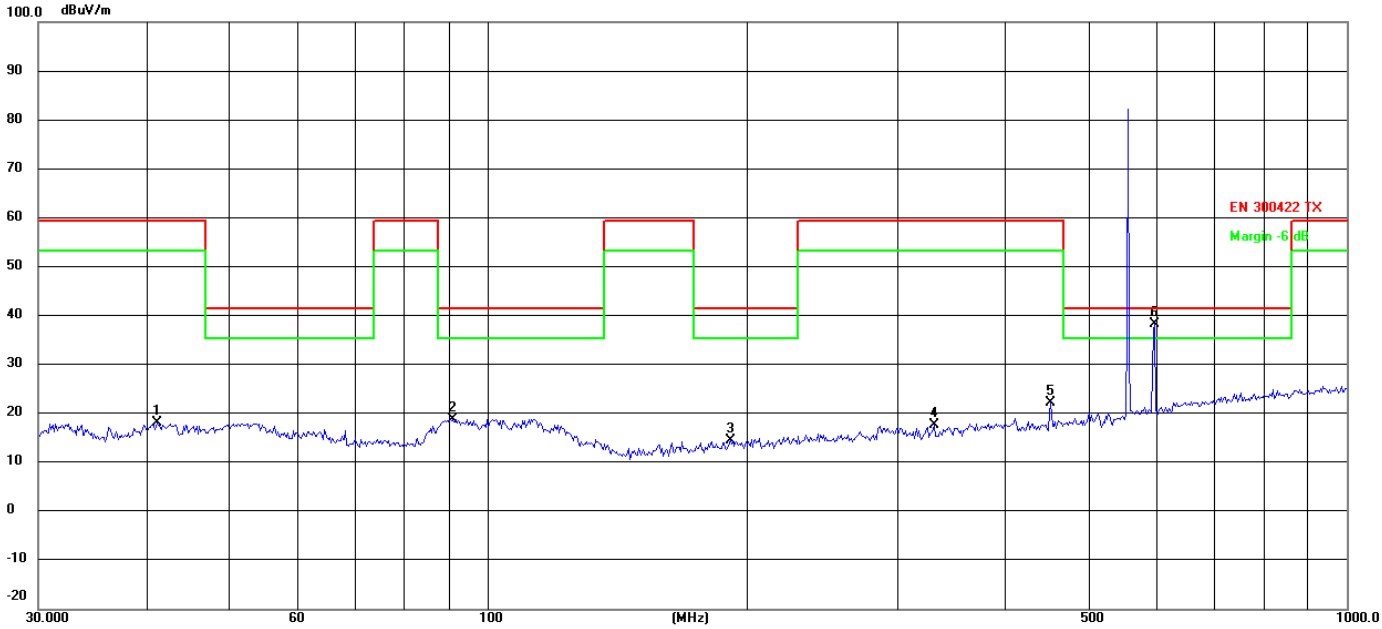
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1111.504	68.18	-15.65	52.53	65.25	-12.72	QP
2	1669.365	63.67	-14.05	49.62	65.25	-15.63	QP
3	2516.216	53.01	-4.37	48.64	65.25	-16.61	QP
4	3239.420	53.18	-8.74	44.44	65.25	-20.81	QP
5	4702.434	53.57	-4.63	48.94	65.25	-16.31	QP
6	5311.742	53.85	-1.97	51.88	65.25	-13.37	QP

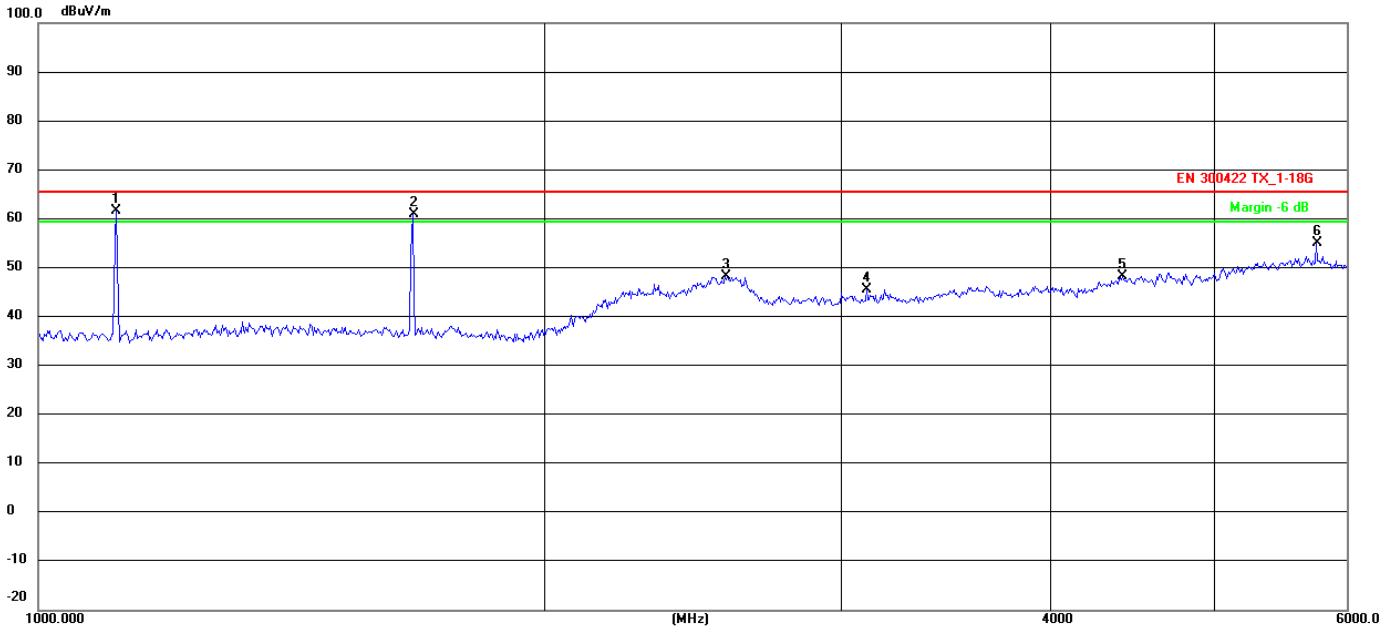
Channel 01 / 556.510MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	41.2765	47.80	-29.62	18.18	59.24	-41.06	QP
2	91.1745	47.74	-28.81	18.93	41.28	-22.35	QP
3	191.7450	45.78	-31.23	14.55	41.28	-26.73	QP
4	331.3546	45.11	-27.49	17.62	59.24	-41.62	QP
5	452.7197	47.18	-24.89	22.29	59.24	-36.95	QP
6 *	597.2234	60.07	-21.84	38.23	41.28	-3.05	QP

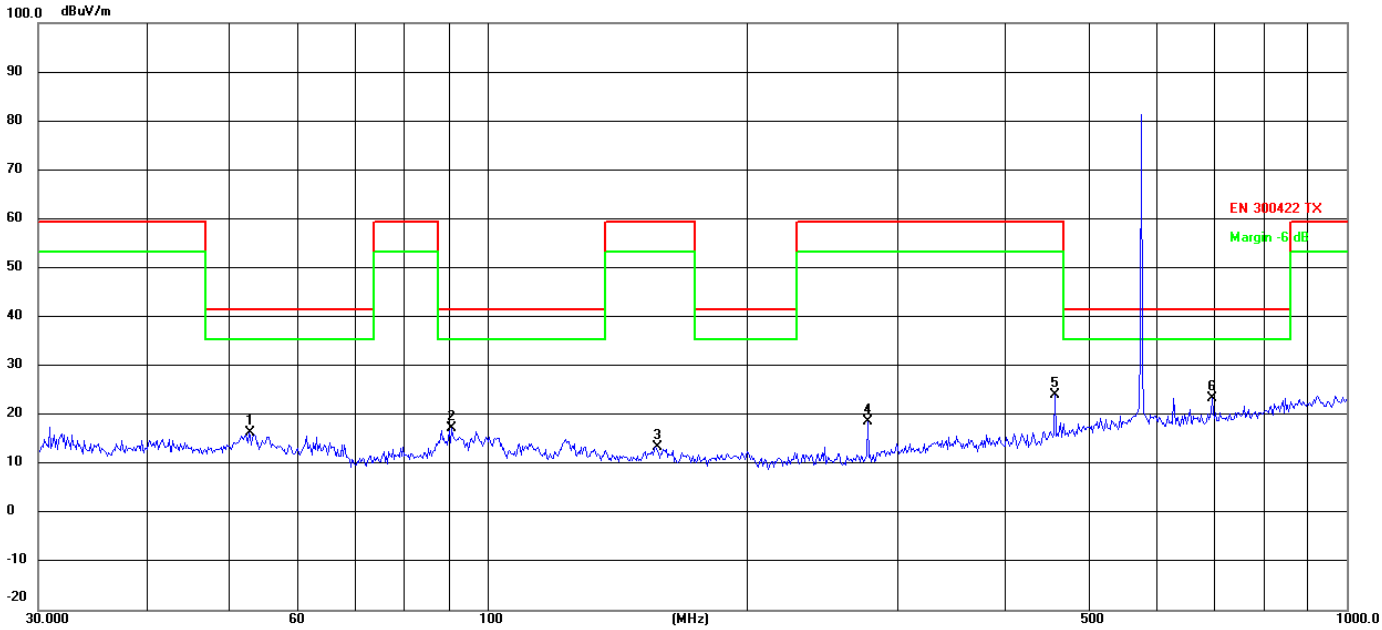
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1113.497	77.35	-15.63	61.72	65.25	-3.53	QP
2 !	1669.365	75.06	-14.05	61.01	65.25	-4.24	QP
3	2561.707	52.47	-4.28	48.19	65.25	-17.06	QP
4	3108.635	54.09	-8.48	45.61	65.25	-19.64	QP
5	4416.593	53.84	-5.60	48.24	65.25	-17.01	QP
6	5757.763	55.83	-0.86	54.97	65.25	-10.28	QP

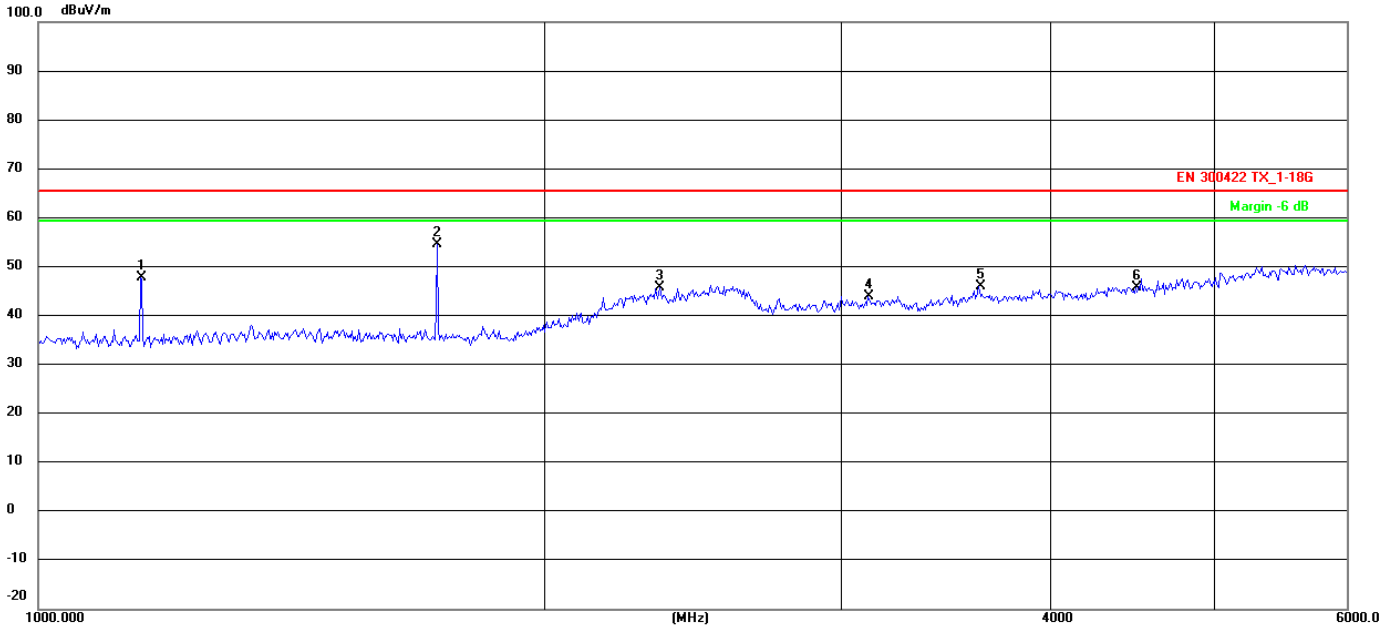
Channel 02/ 575.780MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	52.7600	45.51	-29.15	16.36	41.28	-24.92	QP
2	90.8554	46.07	-28.90	17.17	41.28	-24.11	QP
3	157.0074	46.43	-32.95	13.48	59.24	-45.76	QP
4	277.0935	47.41	-28.71	18.70	59.24	-40.54	QP
5	457.5073	48.87	-24.80	24.07	59.24	-35.17	QP
6 *	696.8567	44.24	-20.88	23.36	41.28	-17.92	QP

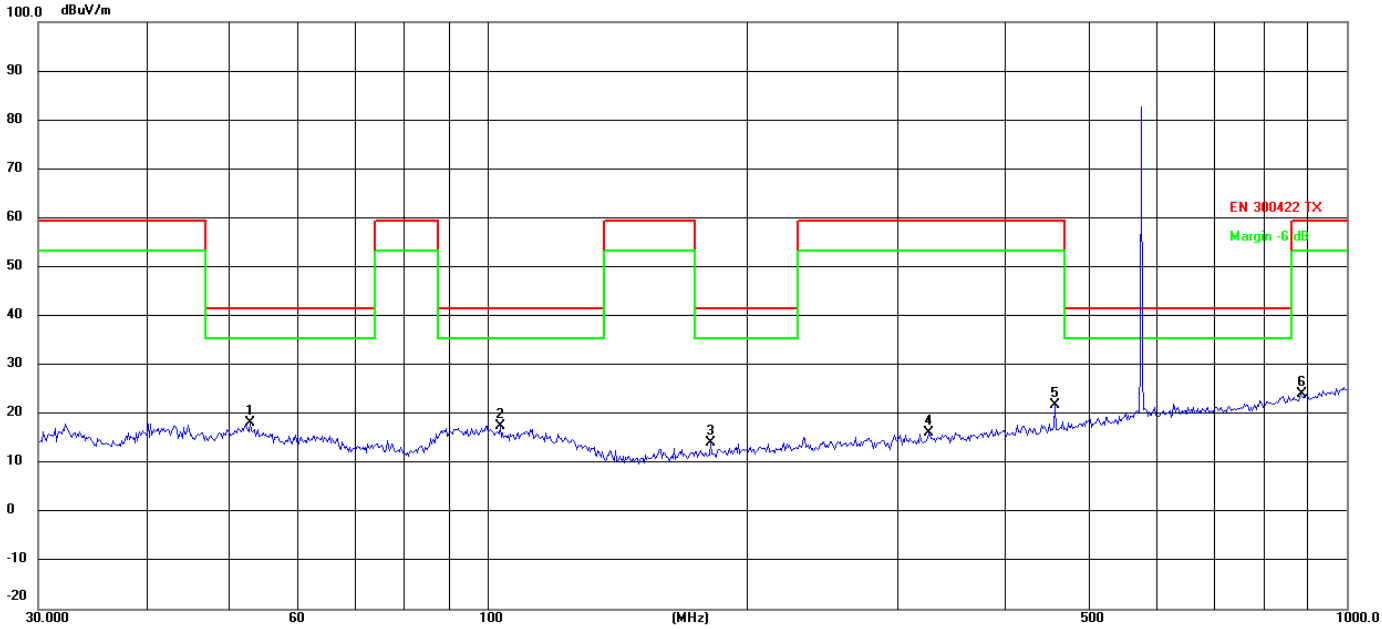
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1149.995	63.24	-15.48	47.76	65.25	-17.49	QP
2 *	1727.174	68.53	-13.92	54.61	65.25	-10.64	QP
3	2342.188	52.18	-6.46	45.72	65.25	-19.53	QP
4	3114.210	52.49	-8.50	43.99	65.25	-21.26	QP
5	3626.526	53.85	-7.77	46.08	65.25	-19.17	QP
6	4496.441	51.20	-5.33	45.87	65.25	-19.38	QP

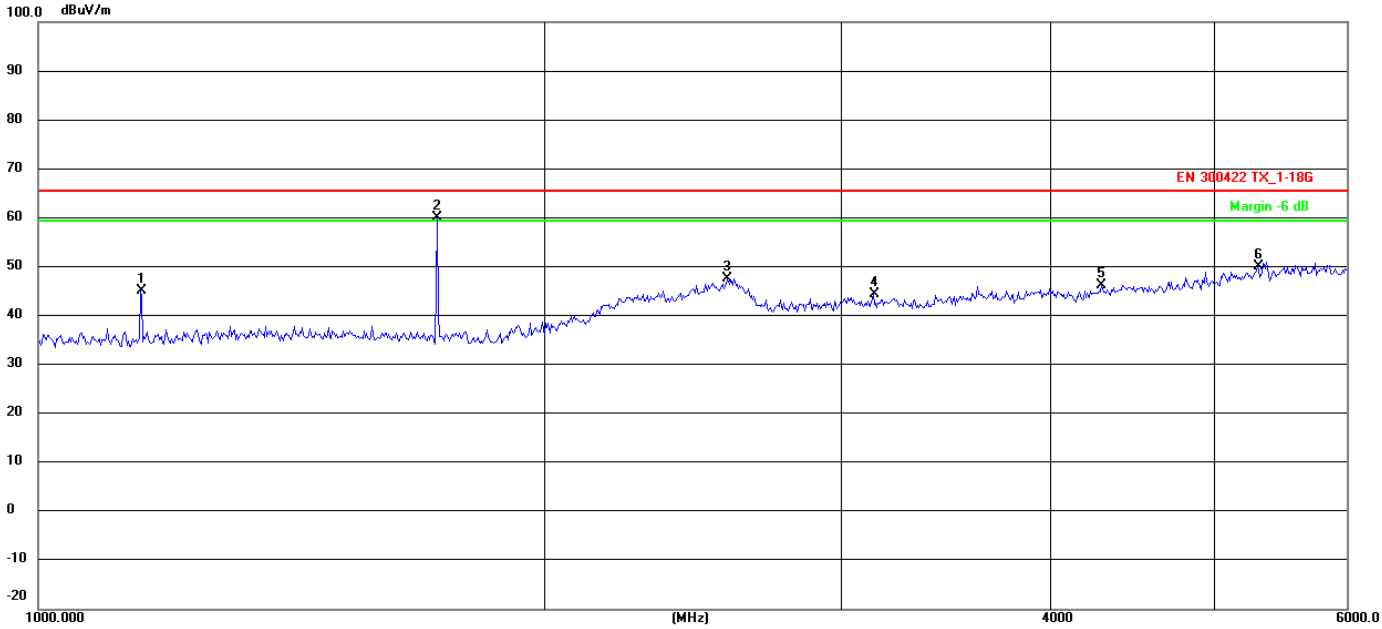
Channel 02/ 575.780MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	52.9453	47.44	-29.18	18.26	41.28	-23.02	QP
2	103.4421	44.93	-27.49	17.44	41.28	-23.84	QP
3	181.9202	46.09	-32.01	14.08	41.28	-27.20	QP
4	326.7395	43.62	-27.60	16.02	59.24	-43.22	QP
5	457.5073	46.65	-24.80	21.85	59.24	-37.39	QP
6	884.5029	42.59	-18.48	24.11	59.24	-35.13	QP

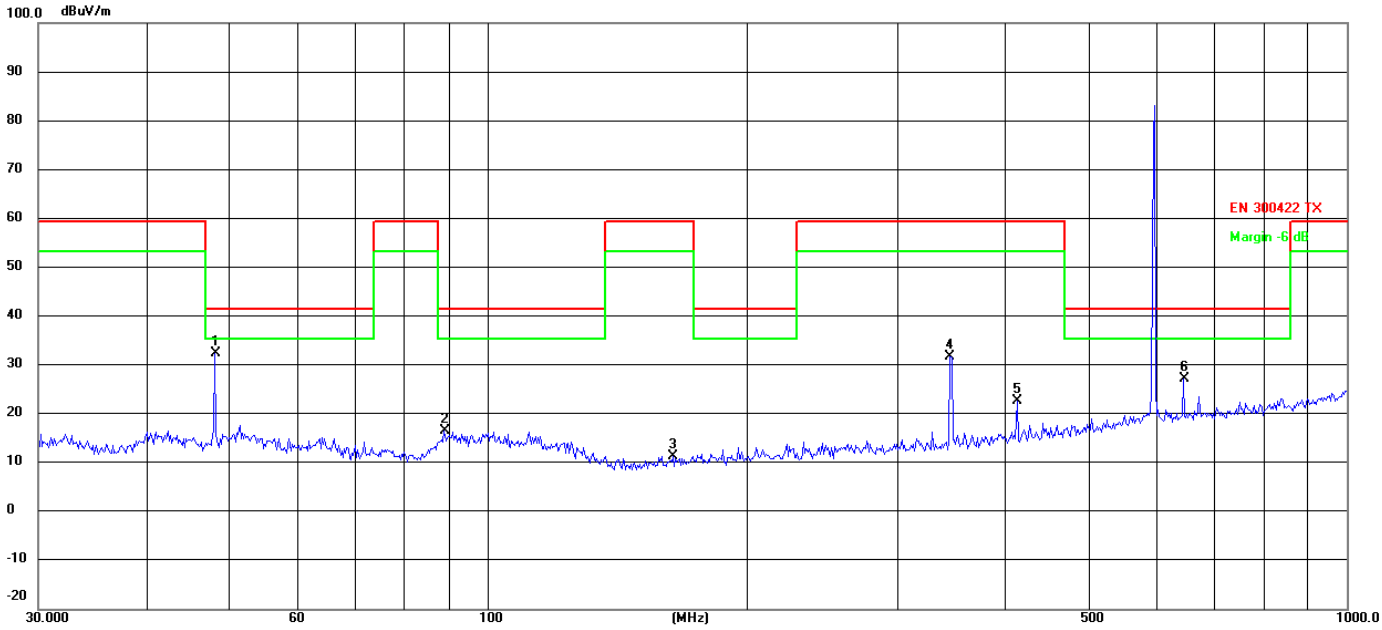
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1149.995	60.51	-15.48	45.03	65.25	-20.22	QP
2 *	1727.174	74.05	-13.92	60.13	65.25	-5.12	QP
3	2570.903	51.89	-4.25	47.64	65.25	-17.61	QP
4	3136.610	52.98	-8.52	44.46	65.25	-20.79	QP
5	4291.775	52.26	-5.99	46.27	65.25	-18.98	QP
6	5311.742	52.00	-1.97	50.03	65.25	-15.22	QP

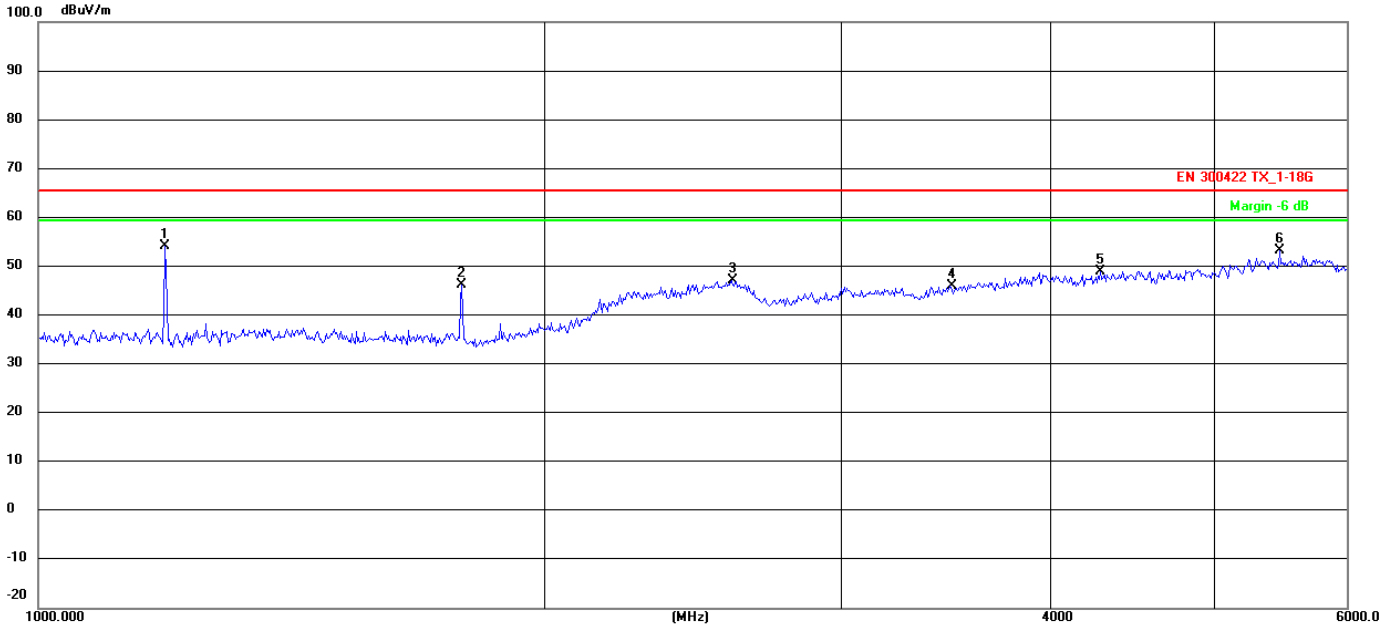
Channel 03 / 595.460MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	48.1626	61.15	-28.84	32.31	41.28	-8.97	QP
2	88.9639	46.09	-29.53	16.56	41.28	-24.72	QP
3	164.3301	44.08	-32.74	11.34	59.24	-47.90	QP
4	345.5952	58.84	-27.16	31.68	59.24	-27.56	QP
5	413.2706	48.33	-25.61	22.72	59.24	-36.52	QP
6	645.1195	48.52	-21.36	27.16	41.28	-14.12	QP

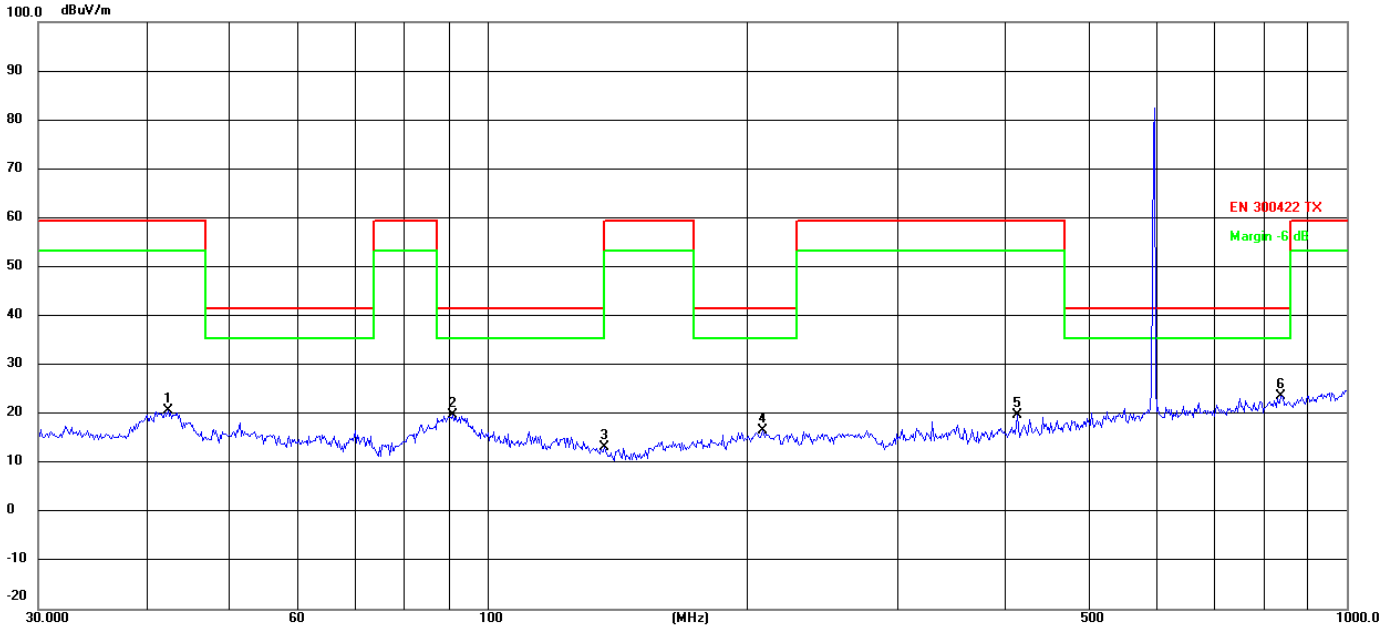
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1189.818	69.55	-15.30	54.25	65.25	-11.00	QP
2	1786.985	59.95	-13.69	46.26	65.25	-18.99	QP
3	2584.760	51.43	-4.22	47.21	65.25	-18.04	QP
4	3486.354	54.19	-8.24	45.95	65.25	-19.30	QP
5	4284.092	54.98	-6.02	48.96	65.25	-16.29	QP
6	5476.026	54.34	-1.20	53.14	65.25	-12.11	QP

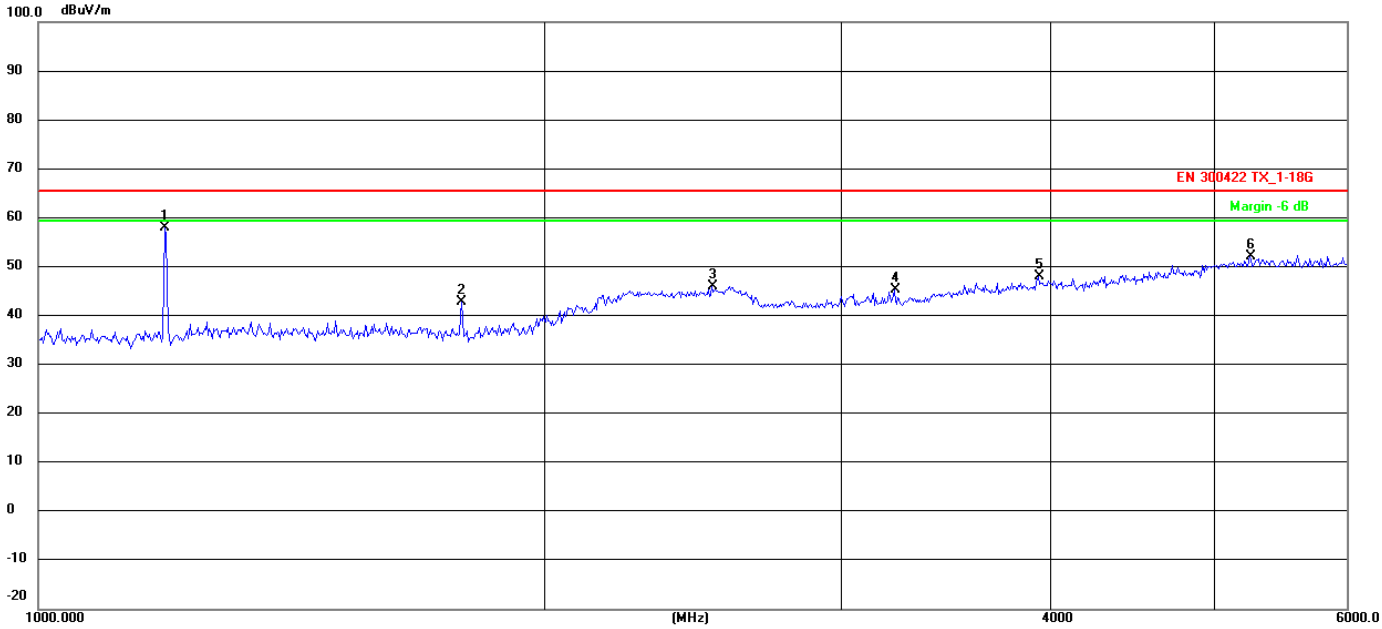
Channel 03 / 595.460MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	42.4508	49.93	-29.40	20.53	59.24	-38.71	QP
2	91.1744	48.54	-28.81	19.73	41.28	-21.55	QP
3	136.9390	45.92	-32.72	13.20	41.28	-28.08	QP
4	209.3129	46.94	-30.30	16.64	41.28	-24.64	QP
5	413.2706	45.33	-25.61	19.72	59.24	-39.52	QP
6 *	839.1817	42.65	-19.06	23.59	41.28	-17.69	QP

Vertical



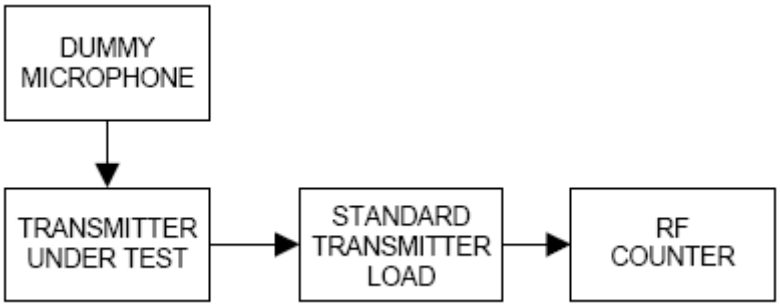
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	1189.818	73.37	-15.30	58.07	65.25	-7.18	QP
2	1786.985	56.41	-13.69	42.72	65.25	-22.53	QP
3	2516.216	50.42	-4.37	46.05	65.25	-19.20	QP
4	3227.832	53.99	-8.69	45.30	65.25	-19.95	QP
5	3931.041	54.94	-6.96	47.98	65.25	-17.27	QP
6	5254.944	54.29	-2.20	52.09	65.25	-13.16	QP

Note: 1, All detected emissions are more than 20 dB below the limit,In addition to main frequency.
2, Factor = Antenna Factor + Cable Loss + Amplifier Factor
3, Emission Level = Reading level + Factor Margin = Emission Level - Limit

5.5.Frequency Stability

Test Requirement:FCC CFR 47 Part 74.e) 4)
Test Method:FCC CFR 47 Part 2.1055
Requirements:+/-50 ppm
(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(4) The frequency tolerance of the transmitter shall be 0.005 percent.
Test Procedure:
Frequency stability versus Environmental Temperature
The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators.
The EUT was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

Frequency Stability versus Input Voltage
At room temperature (25 ± 5°C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage. For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Result:

Assigned Frequency: 514.560 MHz,		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 25.73kHz (KHz)
50	3.7	+2.93
40	3.7	+2.13
30	3.7	+2.61
20	3.7	+2.55
10	3.7	+2.33
0	3.7	+2.56
-10	3.7	+2.94
-20	3.7	+2.68
-30	3.7	+2.11
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 25.73 kHz (KHz)
25	3.7	+2.02
25	3.3	+2.31
25	4.2	+2.57

Assigned Frequency: 533.830 MHz,		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 26.69 kHz (KHz)
50	3.7	+2.31
40	3.7	+2.16
30	3.7	+2.71
20	3.7	+2.85
10	3.7	+2.72
0	3.7	+2.04
-10	3.7	+2.23
-20	3.7	+2.52
-30	3.7	+2.14
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 26.69 kHz (KHz)
25	3.7	+2.06
25	3.3	+2.12
25	4.2	+2.26

Assigned Frequency: 553.510 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 27.68 kHz (KHz)
50	3.7	+2.71
40	3.7	+2.15
30	3.7	+2.53
20	3.7	+2.81
10	3.7	+2.32
0	3.7	+2.94
-10	3.7	+2.12
-20	3.7	+2.77
-30	3.7	+2.33
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 27.68 kHz (KHz)
25	3.7	+2.45
25	3.3	+2.84
25	4.2	+2.01

Assigned Frequency: 556.510 MHz,		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 27.83kHz (KHz)
50	3.7	+2.93
40	3.7	+2.13
30	3.7	+2.61
20	3.7	+2.55
10	3.7	+2.33
0	3.7	+2.56
-10	3.7	+2.94
-20	3.7	+2.68
-30	3.7	+2.11
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 27.83 kHz (KHz)
25	3.7	+2.02
25	3.3	+2.31
25	4.2	+2.57

Assigned Frequency: 575.780 MHz,		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 28.79 kHz (KHz)
50	3.7	+2.31
40	3.7	+2.16
30	3.7	+2.71
20	3.7	+2.85
10	3.7	+2.72
0	3.7	+2.04
-10	3.7	+2.23
-20	3.7	+2.52
-30	3.7	+2.14
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 28.79 kHz (KHz)
25	3.7	+2.06
25	3.3	+2.12
25	4.2	+2.26

Assigned Frequency: 595.460 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 29.77 kHz (KHz)
50	3.7	+2.71
40	3.7	+2.15
30	3.7	+2.53
20	3.7	+2.81
10	3.7	+2.32
0	3.7	+2.94
-10	3.7	+2.12
-20	3.7	+2.77
-30	3.7	+2.33
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 29.77 kHz (KHz)
25	3.7	+2.45
25	3.3	+2.84
25	4.2	+2.01

Battery end point: 3.7 Vdc

The results: The unit does meet the FCC requirements.

5.6.Modulation Characteristics

Test Requirement:FCC CFR 47 Part 74.e) 3)

Test Method:FCC CFR 47 Part 2.1047 & TIA/EIA 603 E 2016:Land Mobile π/4-DQPSK or PM Communications Equipment Measurement and Performance Standards

Requirements:

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:

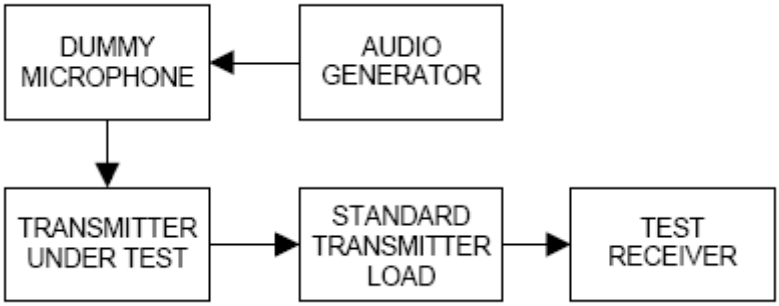
(3) Any form of modulation may be used. A maximum deviation of ±75 kHz is permitted when frequency modulation is employed.

Test Procedure:

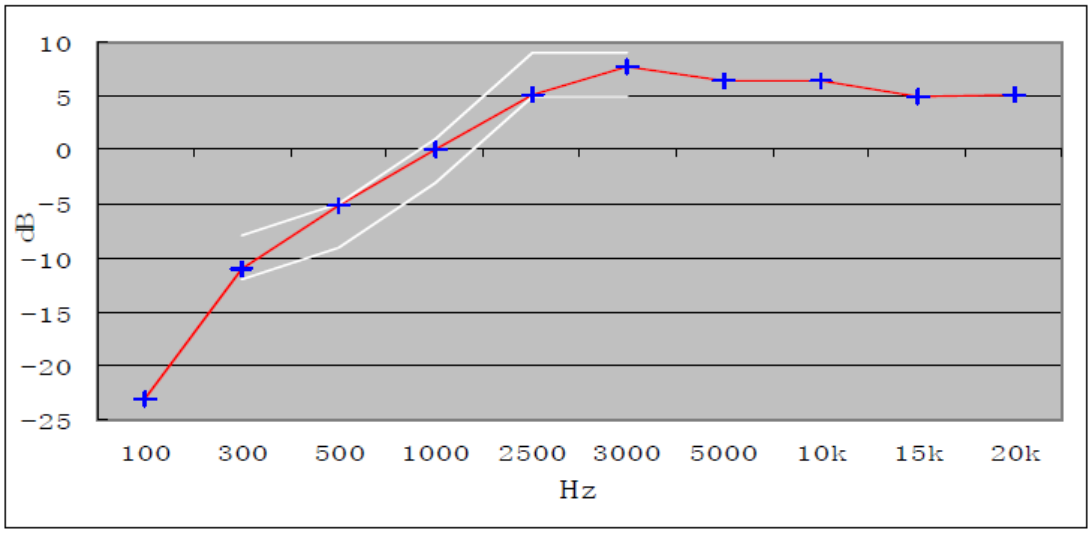
Audio Frequency Response

The RF output of the transceiver was connected to the input of FSP 30 with FM deviation module through sufficient attenuation so as not to overload the meter or distort the reading. An audio signal generator was connected to the audio input of microphone.

The audio signal input level was adjusted to obtain 20% of the maximum rated system deviation at 1 kHz, and recorded as DEV REF . With the audio signal generator level unchanged, set the generator frequency between 100 to 5000 Hz. The transmitter deviations (DEV FREQ) were measured and the audio frequency response was calculated as 20log10 [DEV FREQ / DEV REF]



The plot(s) of Audio Frequency Response is presented hereinafter as reference.

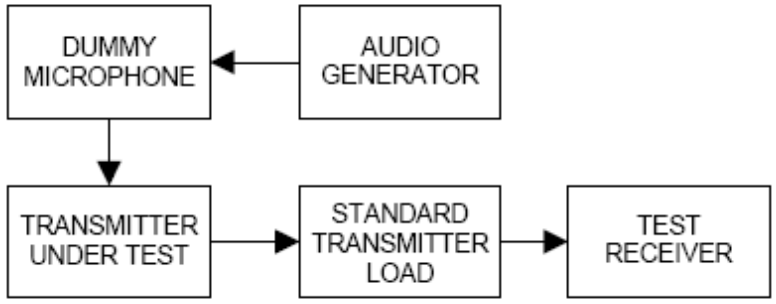


0dB=10mV at 1kHz (20% of the maximum rated systemdeviation).

Modulation Limiting

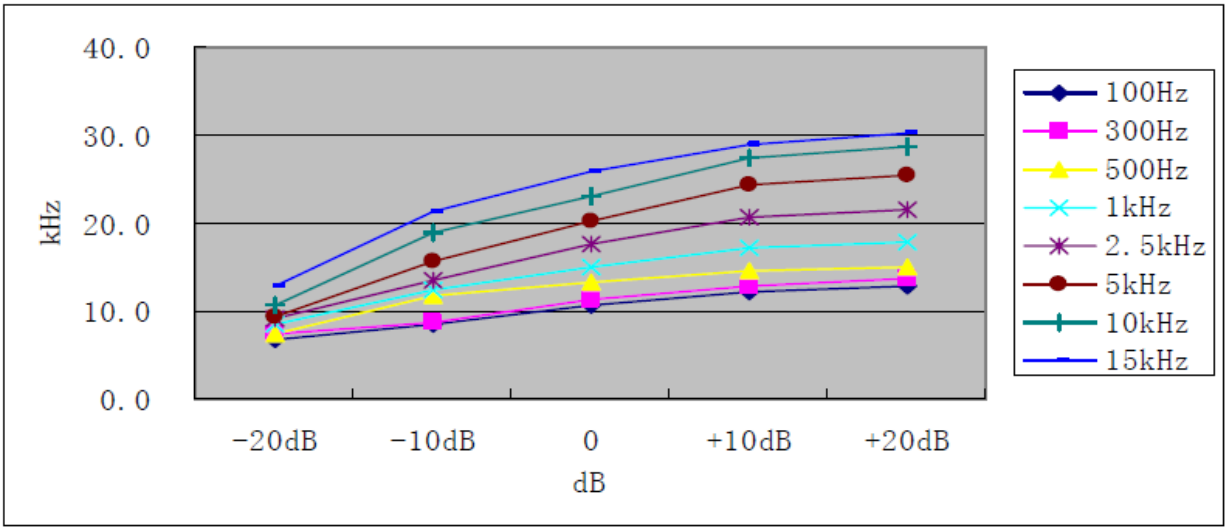
a) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤0.25 Hz to ≥15,000 Hz. Turn the de-emphasis function off.
c) Apply a **1000 Hz** modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain **60% of full rated system deviation**.
d) Increase the level from the audio frequency generator by 20 dB in one step (rise time between the 10% and 90% points shall be 0.1 second maximum).
e) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.

With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 100 to 15k Hz and observe the steady-state deviation. Record the maximum deviation.



Test at five different modulating frequencies (100Hz ,300Hz, 500Hz, 1KHz, 2.5kHz, 5kHz, 10kHz，15kHz), the output level of the audio generator was varied up to 1V and the FM deviation level was recorded.

Positive peak deviation

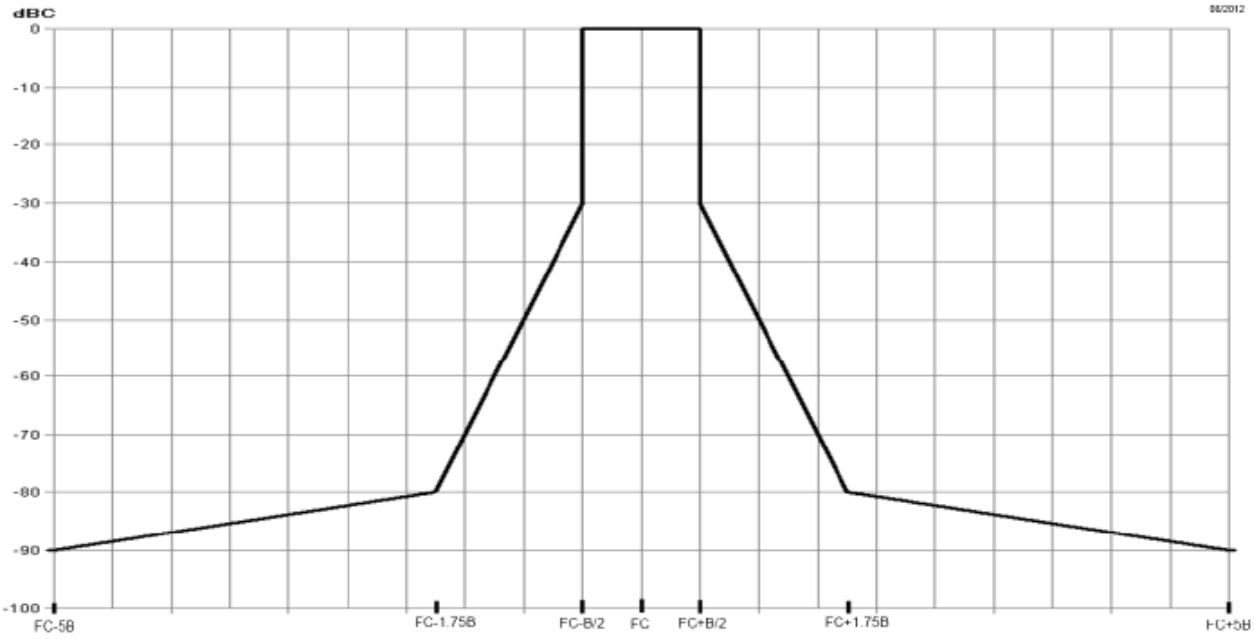


5.7.Necessary bandwidth (BN)

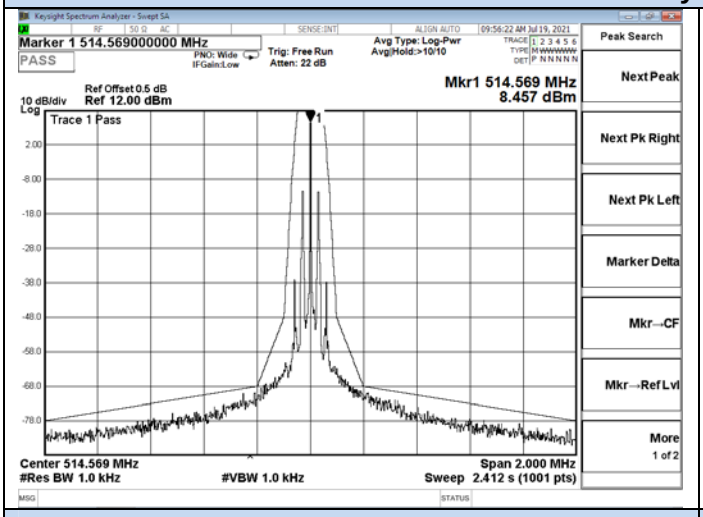
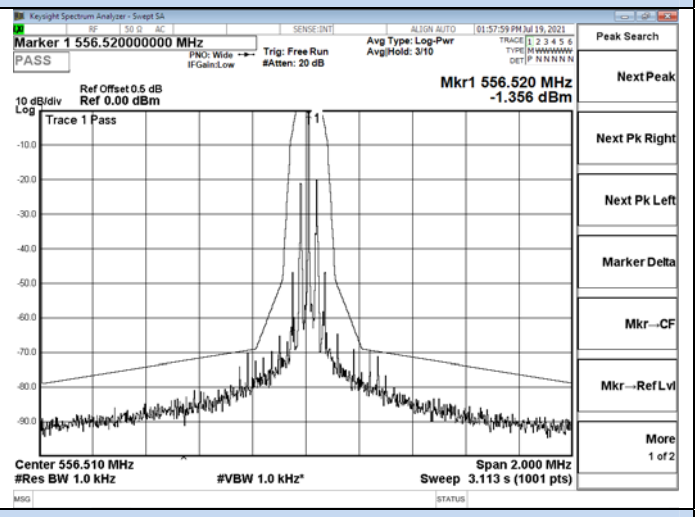
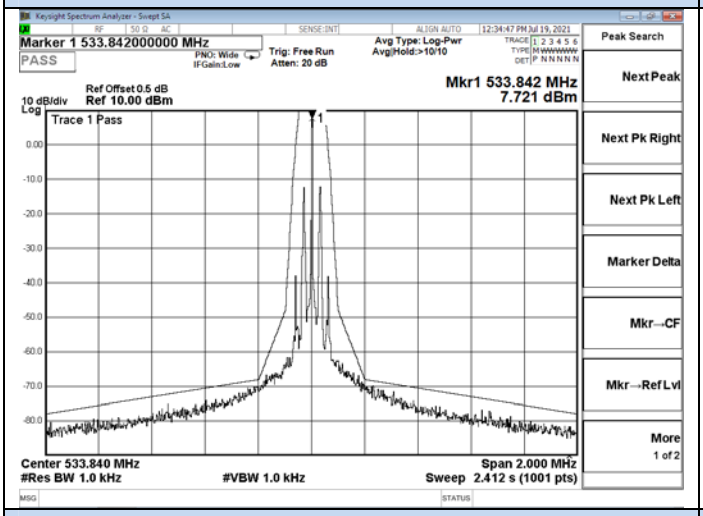
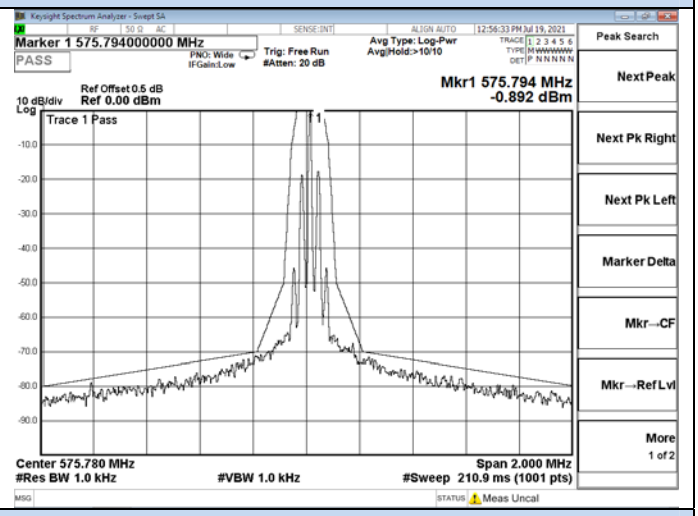
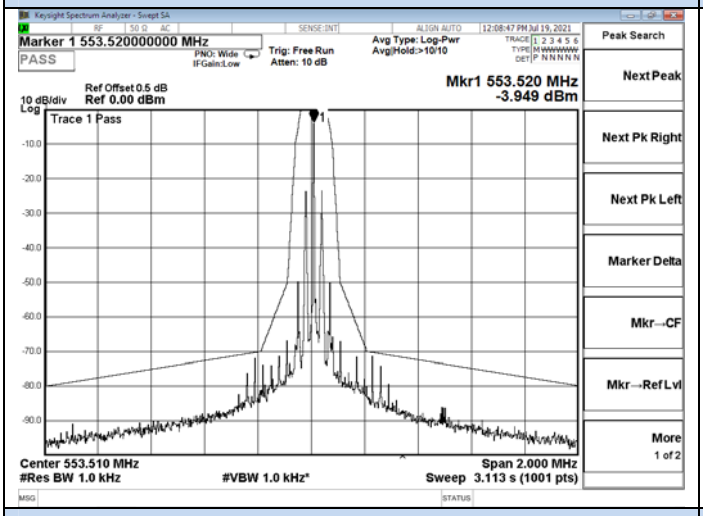
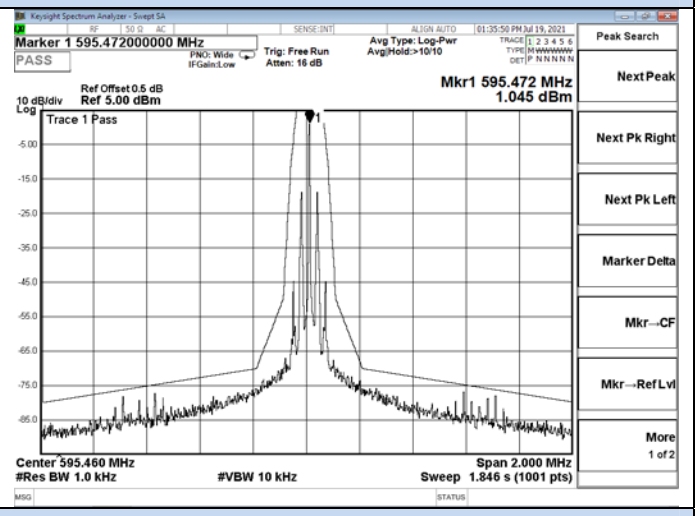
5.7.1.Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Resolution bandwidth:	1 kHz
Video bandwidth:	1 kHz
Span:	Fc-1MHz to fc+1MHz(2MHz)
Trace mode:	Max Hold

5.7.2.Limits:



5.7.3. Results:

Necessary bandwidth	
	
Channel 01 / 514.560 MHz	*Channel 01 / 556.510 MHz*
	
Channel 02/ 533.830 MHz	*Channel 24/ 575.780 MHz*
	
Channel 03/ 553.510 MHz	*Channel 48/ 595.460 MHz*

6. LIST OF MEASURING EQUIPMENTS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2020-11-17	2021-11-16
2	DC Power Supply	Agilent	E3642A	N/A	2020-11-13	2021-11-12
3	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2020-10-08	2021-10-07
4	EMI Test Software	Farad	EZ	/	N/A	N/A
5	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2020-09-26	2021-09-25
6	Positioning Controller	MF	MF7082	MF78020803	2021-06-21	2022-06-20
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2018-07-26 2021-07-24	2021-07-25 2024-07-23
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-07-26 2021-07-24	2021-07-25 2024-07-23
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-07-01	2024-06-30
10	EMI Test Receiver	R&S	ESR 7	101181	2021-06-21	2022-06-20
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2020-11-17	2021-11-16
12	Broadband Preamplifier	/	BP-01M18G	P190501	2021-06-21	2022-06-20
13	RF Cable-R03m	Jye Bao	RG142	CB021	2021-06-21	2022-06-20
14	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2021-06-21	2022-06-20
15	EMI Test Receiver	R&S	ESPI	101840	2021-06-21	2022-06-20
16	Artificial Mains	R&S	ENV216	101288	2021-06-21	2022-06-20
17	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2021-06-21	2022-06-20
18	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-09-25	2021-09-25

7. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

8. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

9. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

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