

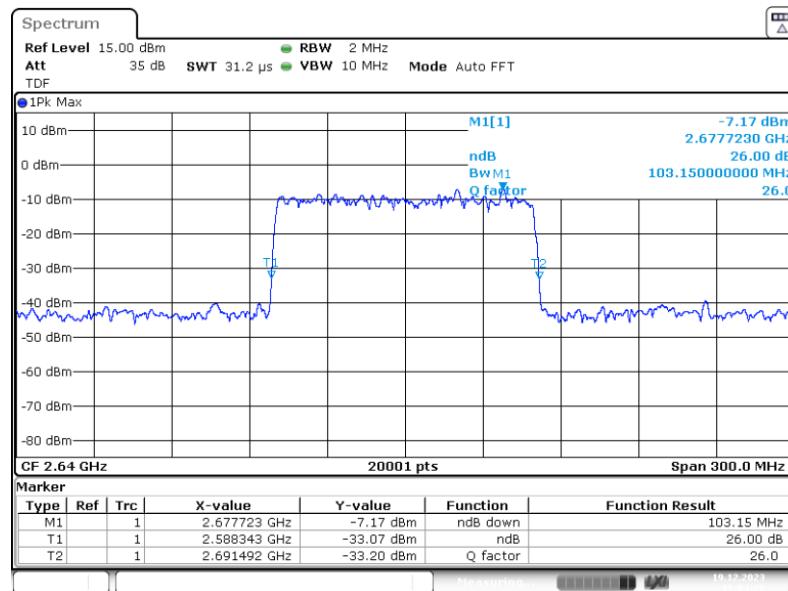


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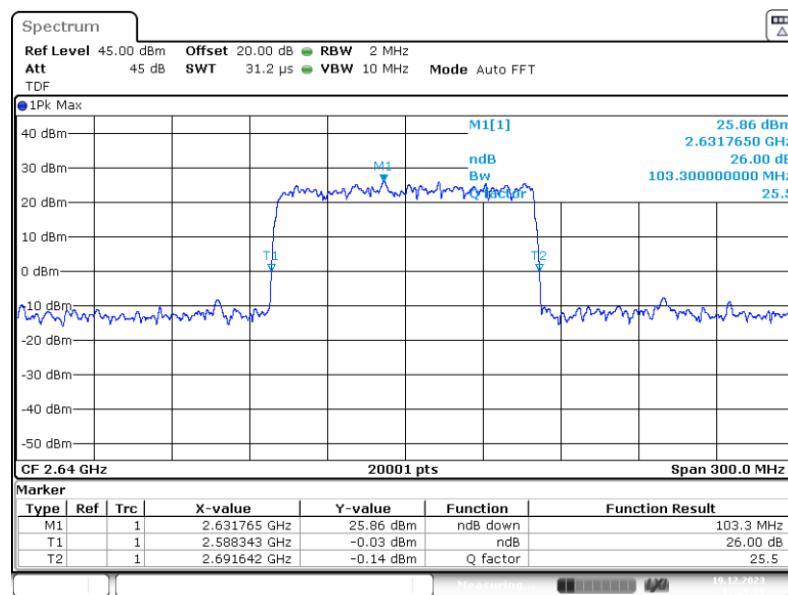
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

.Band 41 BRS (UBS); Frequency: 2.6400 GHz; Band Edge: mid; Mod: AWGN100; Input OCBw 3 dB > AGC



.Band 41 BRS (UBS); Frequency: 2.6400 GHz; Band Edge: mid; Mod: AWGN100; Output OCBw 3 dB > AGC





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#### 4.3.5 TEST EQUIPMENT USED

- Conducted



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### 4.4 CONDUCTED SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Standard FCC Part §2.1051. §27.53

**The test was performed according to:**

ANSI C63.26

**Test date:** 2023-12-19

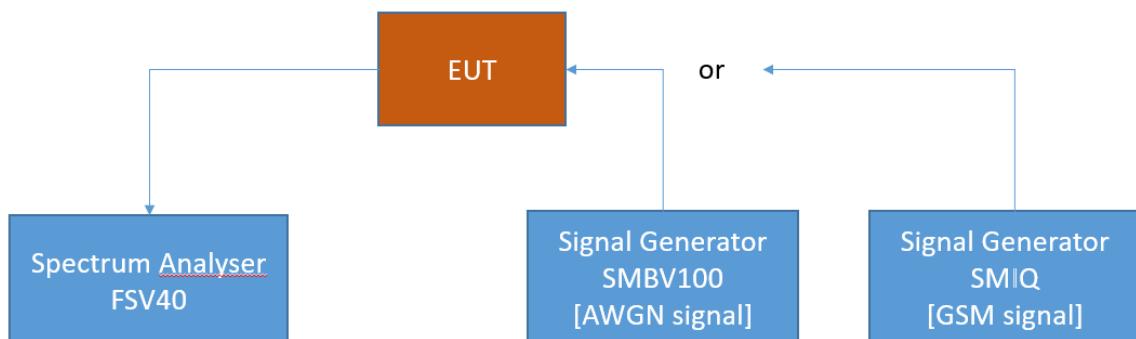
**Environmental conditions:** 23 °C ± 5 K; 40 % r. F. ± 20 % r. F.

**Test engineer:** Thomas Hufnagel

#### 4.4.1 TEST DESCRIPTION

This test case is intended to demonstrate compliance to the signal booster power and gain limits and requirements for industrial signal boosters.

The EUT was connected to the test setup according to the following diagram:



FCC Part 22/24/27/90 Industrial signal booster – Test Setup; RF Output Power / Gain

The attenuation of the measuring and stimulus path are known for each measured frequency and are considered.

The Spectrum Analyzer settings can be directly found in the measurement diagrams.



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#### 4.4.2 TEST REQUIREMENTS/LIMITS

**FCC Part 2.1051; Measurement required: Spurious emissions at antenna terminal:**

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.



## **Part 27; Miscellaneous Wireless Communication Services**

### **Subpart C – Technical standards**

#### **§27.53 – Emission limits**

##### **Band 41BRS (LBS/UBS):**

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(1) Prior to the transition, and thereafter, solely within the MBS, for analog operations with an EIRP in excess of  $-9$  dBW, the signal shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies.

(2) For digital base stations, the attenuation shall be not less than  $43 + 10 \log (P)$  dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.



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### 4.4.3 TEST PROTOCOL

General considerations concerning the limits:

The measuring bandwidth of 1 MHz was chosen according the test requirements except at the band edges: At the band edges reducing of measurement bandwidth was necessary to prevent overlaying the RF-signal over the spurious emissions.

Also outside the Downlink frequency band at lower frequencies the measurement bandwidths were reduced to have the possibility to record the spurious emissions at these lower frequencies.

At frequencies where measuring bandwidths were reduced also the limit lines were reduced according the given formula:

$$p \text{ RBW reduced } [\text{dBm}] = 10 * \log\left(\frac{\text{RBW reduced } [\text{kHz}]}{1000 \text{ kHz}}\right) + p \text{ RBW } 1 \text{ MHz } [\text{dBm}]$$

Hereby "p" are the limit lines' values.

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Test Frequency	Signal Type	Spurious Freq. [MHz]	Spurious Level [dBm]	Detector	RBW [kHz]	Limit [dBm]	Margin to Limit [dB]
low	Wideband	0.00947	-56.4	RMS	1	-43.0	13.4
low	Wideband	0.08249	-52.1	RMS	10	-33.0	19.1
low	Wideband	813.7	-37.8	RMS	100	-23.0	14.8
low	Wideband	1725.0	-31.5	RMS	1000	-13.0	18.5
low	Wideband	2487.5	-34.6	RMS	100	-23.0	11.6
low	Wideband	2598.1	-39.7	RMS	100	-23.0	16.7
low	Wideband	4982.3	-27.8	RMS	1000	-13.0	14.8
low	Wideband	6887.1	-24.7	RMS	1000	-13.0	11.7
low	Wideband	19991.3	-29.9	RMS	1000	-13.0	16.9
low	Wideband	20290.7	-29.3	RMS	1000	-13.0	16.3
low	Wideband	31314.4	-28.9	RMS	1000	-13.0	15.9
mid	Wideband	0.01336	-57.2	RMS	1	-43.0	14.2
mid	Wideband	0.10749	-51.0	RMS	10	-33.0	18.0
mid	Wideband	811.7	-38.5	RMS	100	-23.0	15.5
mid	Wideband	2425.3	-31.7	RMS	1000	-13.0	18.7
mid	Wideband	2487.5	-34.5	RMS	100	-23.0	11.5
mid	Wideband	2600.4	-41.2	RMS	100	-23.0	18.2
mid	Wideband	4777.3	-28.1	RMS	1000	-13.0	15.1
mid	Wideband	6829.6	-24.8	RMS	1000	-13.0	11.8
mid	Wideband	19961.3	-29.8	RMS	1000	-13.0	16.8
mid	Wideband	20392.2	-29.3	RMS	1000	-13.0	16.3
mid	Wideband	30844.9	-28.9	RMS	1000	-13.0	15.9
high	Wideband	0.01045	-55.5	RMS	1	-43.0	12.5
high	Wideband	0.06250	-51.6	RMS	10	-33.0	18.6
high	Wideband	796.9	-38.4	RMS	100	-23.0	15.4
high	Wideband	2130.4	-31.3	RMS	1000	-13.0	18.3
high	Wideband	2487.5	-34.6	RMS	100	-23.0	11.6
high	Wideband	2597.2	-38.6	RMS	100	-23.0	15.6
high	Wideband	4785.3	-28.0	RMS	1000	-13.0	15.0
high	Wideband	6800.6	-24.8	RMS	1000	-13.0	11.8
high	Wideband	19601.8	-29.5	RMS	1000	-13.0	16.5
high	Wideband	20287.7	-29.3	RMS	1000	-13.0	16.3
high	Wideband	30738.9	-28.8	RMS	1000	-13.0	15.8

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EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

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VERITAS****Band 41. BRS (LBS). downlink**

<b>Test Frequency</b>	<b>Signal Type</b>	<b>Spurious Freq. [MHz]</b>	<b>Spurious Level [dBm]</b>	<b>Detector</b>	<b>RBW [kHz]</b>	<b>Limit [dBm]</b>	<b>Margin to Limit [dB]</b>
low	Narrowband	0.00992	-55.8	RMS	1	-43.0	12.8
low	Narrowband	0.05250	-51.8	RMS	10	-33.0	18.8
low	Narrowband	950.2	-38.7	RMS	100	-23.0	15.7
low	Narrowband	2336.3	-31.7	RMS	1000	-13.0	18.7
low	Narrowband	2487.5	-24.4	RMS	100	-23.0	1.4
low	Narrowband	2598.1	-41.0	RMS	100	-23.0	18.0
low	Narrowband	4154.4	-28.3	RMS	1000	-13.0	15.3
low	Narrowband	6921.1	-24.4	RMS	1000	-13.0	11.4
low	Narrowband	19531.8	-29.8	RMS	1000	-13.0	16.8
low	Narrowband	20014.7	-29.5	RMS	1000	-13.0	16.5
low	Narrowband	30053.5	-29.1	RMS	1000	-13.0	16.1
mid	Narrowband	0.01103	-56.0	RMS	1	-43.0	13.0
mid	Narrowband	0.10749	-51.8	RMS	10	-33.0	18.8
mid	Narrowband	793.7	-38.1	RMS	100	-23.0	15.1
mid	Narrowband	2190.8	-31.2	RMS	1000	-13.0	18.2
mid	Narrowband	2487.5	-34.5	RMS	100	-23.0	11.5
mid	Narrowband	2603.3	-40.7	RMS	100	-23.0	17.7
mid	Narrowband	4929.8	-28.3	RMS	1000	-13.0	15.3
mid	Narrowband	6858.6	-25.1	RMS	1000	-13.0	12.1
mid	Narrowband	19936.3	-29.8	RMS	1000	-13.0	16.8
mid	Narrowband	20271.7	-29.9	RMS	1000	-13.0	16.9
mid	Narrowband	30778.4	-28.9	RMS	1000	-13.0	15.9
high	Narrowband	0.01246	-56.3	RMS	1	-43.0	13.3
high	Narrowband	0.14748	-51.5	RMS	10	-33.0	18.5
high	Narrowband	949.6	-38.6	RMS	100	-23.0	15.6
high	Narrowband	1755.0	-31.5	RMS	1000	-13.0	18.5
high	Narrowband	2487.5	-34.8	RMS	100	-23.0	11.8
high	Narrowband	2597.2	-39.9	RMS	100	-23.0	16.9
high	Narrowband	4728.3	-27.9	RMS	1000	-13.0	14.9
high	Narrowband	6881.1	-24.7	RMS	1000	-13.0	11.7
high	Narrowband	19563.8	-29.7	RMS	1000	-13.0	16.7
high	Narrowband	20271.2	-29.6	RMS	1000	-13.0	16.6
high	Narrowband	30813.9	-29.1	RMS	1000	-13.0	16.1

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**BUREAU  
VERITAS****Band 41. BRS (LBS). downlink**

Test Frequency	Signal Type	Spurious Freq. [MHz]	Spurious Level [dBm]	Detector	RBW [kHz]	Limit [dBm]	Margin to Limit [dB]
low	Wideband 5G	0.00902	-56.6	RMS	1	-43.0	13.6
low	Wideband 5G	0.15248	-52.4	RMS	10	-33.0	19.4
low	Wideband 5G	797.4	-38.0	RMS	100	-23.0	15.0
low	Wideband 5G	2085.4	-31.0	RMS	1000	-13.0	18.0
low	Wideband 5G	2487.5	-34.3	RMS	100	-23.0	11.3
low	Wideband 5G	2603.6	-39.0	RMS	100	-23.0	16.0
low	Wideband 5G	4406.4	-28.0	RMS	1000	-13.0	15.0
low	Wideband 5G	6968.1	-24.6	RMS	1000	-13.0	11.6
low	Wideband 5G	19984.8	-29.2	RMS	1000	-13.0	16.2
low	Wideband 5G	20277.2	-29.6	RMS	1000	-13.0	16.6
low	Wideband 5G	30671.4	-28.7	RMS	1000	-13.0	15.7
mid	Wideband 5G	0.01013	-56.6	RMS	1	-43.0	13.6
mid	Wideband 5G	0.05250	-51.0	RMS	10	-33.0	18.0
mid	Wideband 5G	952.7	-38.3	RMS	100	-23.0	15.3
mid	Wideband 5G	1714.5	-31.6	RMS	1000	-13.0	18.6
mid	Wideband 5G	2487.5	-34.1	RMS	100	-23.0	11.1
mid	Wideband 5G	2600.5	-39.1	RMS	100	-23.0	16.1
mid	Wideband 5G	4224.9	-27.9	RMS	1000	-13.0	14.9
mid	Wideband 5G	6981.1	-24.8	RMS	1000	-13.0	11.8
mid	Wideband 5G	19970.8	-30.0	RMS	1000	-13.0	17.0
mid	Wideband 5G	20128.7	-29.6	RMS	1000	-13.0	16.6
mid	Wideband 5G	31055.9	-29.0	RMS	1000	-13.0	16.0
high	Wideband 5G	0.00902	-56.8	RMS	1	-43.0	13.8
high	Wideband 5G	0.06250	-51.0	RMS	10	-33.0	18.0
high	Wideband 5G	811.0	-38.5	RMS	100	-23.0	15.5
high	Wideband 5G	1781.5	-31.2	RMS	1000	-13.0	18.2
high	Wideband 5G	2487.5	-34.8	RMS	100	-23.0	11.8
high	Wideband 5G	2601.6	-38.9	RMS	100	-23.0	15.9
high	Wideband 5G	4253.9	-27.8	RMS	1000	-13.0	14.8
high	Wideband 5G	6840.1	-24.8	RMS	1000	-13.0	11.8
high	Wideband 5G	19999.3	-29.8	RMS	1000	-13.0	16.8
high	Wideband 5G	20385.7	-29.6	RMS	1000	-13.0	16.6
high	Wideband 5G	31322.4	-29.0	RMS	1000	-13.0	16.0

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EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS****Band 41. BRS (UBS). downlink**

<b>Test Frequency</b>	<b>Signal Type</b>	<b>Spurious Freq. [MHz]</b>	<b>Spurious Level [dBm]</b>	<b>Detector</b>	<b>RBW [kHz]</b>	<b>Limit [dBm]</b>	<b>Margin to Limit [dB]</b>
low	Wideband	0.00902	-56.4	RMS	1	-43.0	13.4
low	Wideband	0.09249	-50.8	RMS	10	-33.0	17.8
low	Wideband	950.2	-38.2	RMS	100	-23.0	15.2
low	Wideband	2512.8	-28.8	RMS	1000	-13.0	15.8
low	Wideband	2588.5	-37.7	RMS	100	-23.0	14.7
low	Wideband	2697.8	-40.7	RMS	100	-23.0	17.7
low	Wideband	4893.8	-27.7	RMS	1000	-13.0	14.7
low	Wideband	6800.1	-24.5	RMS	1000	-13.0	11.5
low	Wideband	19966.8	-30.0	RMS	1000	-13.0	17.0
low	Wideband	20275.7	-29.8	RMS	1000	-13.0	16.8
low	Wideband	30844.9	-28.3	RMS	1000	-13.0	15.3
mid	Wideband	0.01250	-56.6	RMS	1	-43.0	13.6
mid	Wideband	0.05250	-51.9	RMS	10	-33.0	18.9
mid	Wideband	948.8	-38.8	RMS	100	-23.0	15.8
mid	Wideband	2512.8	-29.0	RMS	1000	-13.0	16.0
mid	Wideband	2585.4	-41.3	RMS	100	-23.0	18.3
mid	Wideband	2696.1	-41.0	RMS	100	-23.0	18.0
mid	Wideband	4899.8	-28.1	RMS	1000	-13.0	15.1
mid	Wideband	6819.6	-24.4	RMS	1000	-13.0	11.4
mid	Wideband	19954.3	-30.1	RMS	1000	-13.0	17.1
mid	Wideband	20307.2	-29.6	RMS	1000	-13.0	16.6
mid	Wideband	30706.9	-28.9	RMS	1000	-13.0	15.9
high	Wideband	0.01123	-57.3	RMS	1	-43.0	14.3
high	Wideband	0.15248	-51.5	RMS	10	-33.0	18.5
high	Wideband	950.2	-38.6	RMS	100	-23.0	15.6
high	Wideband	2512.8	-29.7	RMS	1000	-13.0	16.7
high	Wideband	2584.4	-40.9	RMS	100	-23.0	17.9
high	Wideband	2691.1	-37.0	RMS	100	-23.0	14.0
high	Wideband	4951.3	-27.8	RMS	1000	-13.0	14.8
high	Wideband	6875.6	-25.0	RMS	1000	-13.0	12.0
high	Wideband	19594.8	-29.5	RMS	1000	-13.0	16.5
high	Wideband	19996.3	-29.9	RMS	1000	-13.0	16.9
high	Wideband	30055.0	-29.0	RMS	1000	-13.0	16.0

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VERITAS****Band 41. BRS (UBS). downlink**

<b>Test Frequency</b>	<b>Signal Type</b>	<b>Spurious Freq. [MHz]</b>	<b>Spurious Level [dBm]</b>	<b>Detector</b>	<b>RBW [kHz]</b>	<b>Limit [dBm]</b>	<b>Margin to Limit [dB]</b>
low	Narrowband	0.00902	-56.9	RMS	1	-43.0	13.9
low	Narrowband	0.06250	-50.3	RMS	10	-33.0	17.3
low	Narrowband	810.0	-38.4	RMS	100	-23.0	15.4
low	Narrowband	2500.3	-29.7	RMS	1000	-13.0	16.7
low	Narrowband	2587.5	-40.1	RMS	100	-23.0	17.1
low	Narrowband	2697.6	-40.5	RMS	100	-23.0	17.5
low	Narrowband	4827.3	-27.9	RMS	1000	-13.0	14.9
low	Narrowband	6993.1	-24.6	RMS	1000	-13.0	11.6
low	Narrowband	19989.7	-29.9	RMS	1000	-13.0	16.9
low	Narrowband	20302.2	-29.3	RMS	1000	-13.0	16.3
low	Narrowband	31263.9	-28.8	RMS	1000	-13.0	15.8
mid	Narrowband	0.00927	-57.1	RMS	1	-43.0	14.1
mid	Narrowband	0.05250	-52.3	RMS	10	-33.0	19.3
mid	Narrowband	956.6	-37.8	RMS	100	-23.0	14.8
mid	Narrowband	2500.3	-29.3	RMS	1000	-13.0	16.3
mid	Narrowband	2583.7	-39.9	RMS	100	-23.0	16.9
mid	Narrowband	2696.5	-41.3	RMS	100	-23.0	18.3
mid	Narrowband	4744.8	-27.9	RMS	1000	-13.0	14.9
mid	Narrowband	6971.6	-24.3	RMS	1000	-13.0	11.3
mid	Narrowband	19923.3	-29.9	RMS	1000	-13.0	16.9
mid	Narrowband	20295.2	-29.5	RMS	1000	-13.0	16.5
mid	Narrowband	30065.5	-29.0	RMS	1000	-13.0	16.0
high	Narrowband	0.01045	-57.7	RMS	1	-43.0	14.7
high	Narrowband	0.08749	-52.6	RMS	10	-33.0	19.6
high	Narrowband	815.2	-38.3	RMS	100	-23.0	15.3
high	Narrowband	2500.3	-29.8	RMS	1000	-13.0	16.8
high	Narrowband	2585.5	-40.2	RMS	100	-23.0	17.2
high	Narrowband	2691.0	-39.1	RMS	100	-23.0	16.1
high	Narrowband	4936.8	-28.3	RMS	1000	-13.0	15.3
high	Narrowband	6881.6	-25.0	RMS	1000	-13.0	12.0
high	Narrowband	19974.8	-30.1	RMS	1000	-13.0	17.1
high	Narrowband	20263.2	-29.3	RMS	1000	-13.0	16.3
high	Narrowband	30750.9	-29.0	RMS	1000	-13.0	16.0

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EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

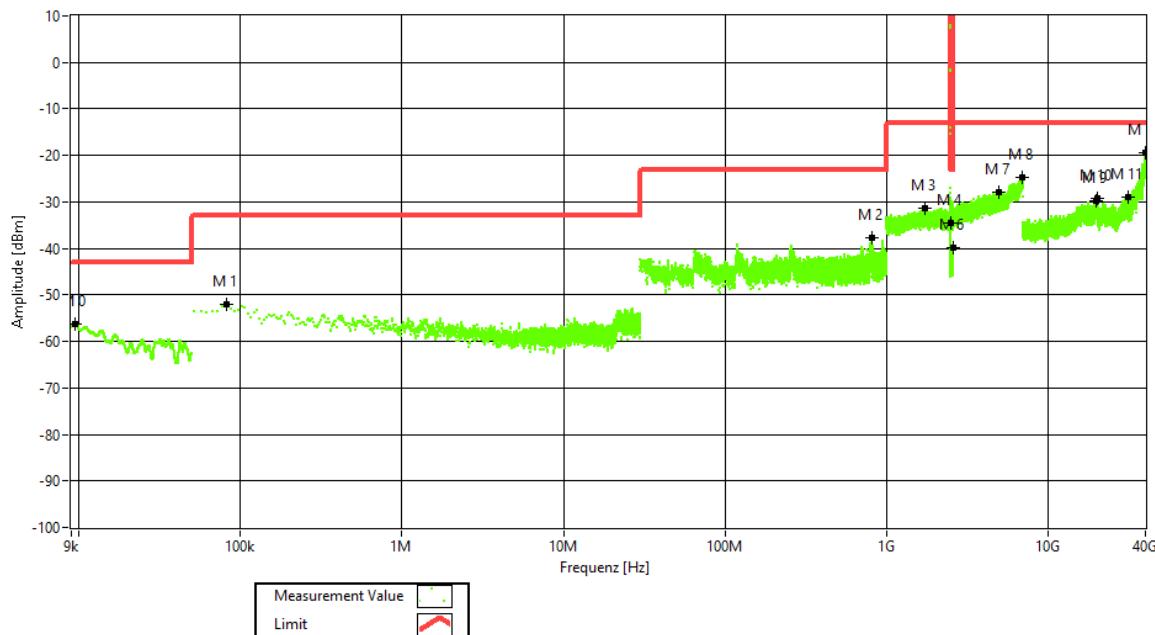
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<b>Band 41. BRS (UBS). downlink</b>						
<b>Test Frequency</b>	<b>Signal Type</b>	<b>Spurious Freq. [MHz]</b>	<b>Spurious Level [dBm]</b>	<b>Detector</b>	<b>RBW [kHz]</b>	<b>Margin to Limit [dB]</b>
low	Wideband 5G	0.00902	-56.6	RMS	1	-43.0
low	Wideband 5G	0.07250	-51.8	RMS	10	-33.0
low	Wideband 5G	812.0	-38.1	RMS	100	-23.0
low	Wideband 5G	2563.3	-29.7	RMS	1000	-13.0
low	Wideband 5G	2587.8	-40.2	RMS	100	-23.0
low	Wideband 5G	2697.7	-40.7	RMS	100	-23.0
low	Wideband 5G	4832.8	-28.3	RMS	1000	-13.0
low	Wideband 5G	6842.1	-24.7	RMS	1000	-13.0
low	Wideband 5G	19573.8	-29.8	RMS	1000	-13.0
low	Wideband 5G	20290.2	-29.6	RMS	1000	-13.0
low	Wideband 5G	30768.9	-29.0	RMS	1000	-13.0
mid	Wideband 5G	0.00902	-56.3	RMS	1	-43.0
mid	Wideband 5G	0.12249	-53.1	RMS	10	-33.0
mid	Wideband 5G	811.7	-38.3	RMS	100	-23.0
mid	Wideband 5G	2500.3	-29.6	RMS	1000	-13.0
mid	Wideband 5G	2581.1	-40.6	RMS	100	-23.0
mid	Wideband 5G	2692.0	-39.7	RMS	100	-23.0
mid	Wideband 5G	4651.8	-28.1	RMS	1000	-13.0
mid	Wideband 5G	6983.6	-24.9	RMS	1000	-13.0
mid	Wideband 5G	19918.3	-29.7	RMS	1000	-13.0
mid	Wideband 5G	20371.7	-29.4	RMS	1000	-13.0
mid	Wideband 5G	30753.9	-28.8	RMS	1000	-13.0
high	Wideband 5G	0.00927	-57.0	RMS	1	-43.0
high	Wideband 5G	0.15748	-52.1	RMS	10	-33.0
high	Wideband 5G	952.2	-38.3	RMS	100	-23.0
high	Wideband 5G	2512.8	-29.6	RMS	1000	-13.0
high	Wideband 5G	2582.0	-39.9	RMS	100	-23.0
high	Wideband 5G	2691.3	-39.4	RMS	100	-23.0
high	Wideband 5G	4911.3	-28.2	RMS	1000	-13.0
high	Wideband 5G	6997.1	-24.8	RMS	1000	-13.0
high	Wideband 5G	19998.3	-29.8	RMS	1000	-13.0
high	Wideband 5G	20342.2	-29.6	RMS	1000	-13.0
high	Wideband 5G	30906.9	-28.6	RMS	1000	-13.0

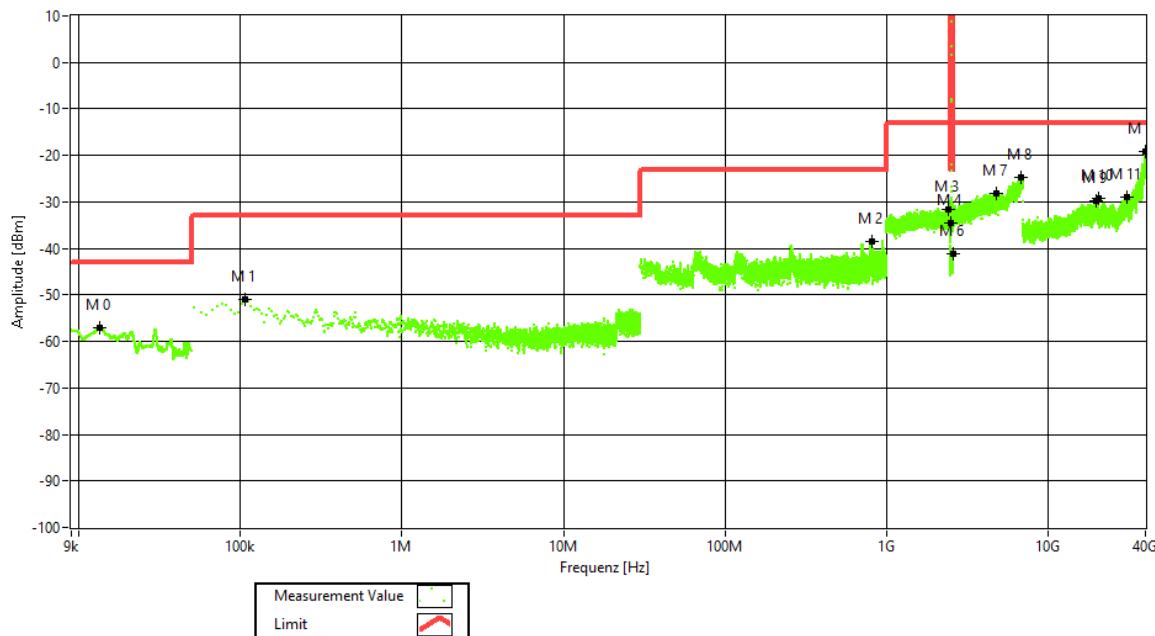
Remark: Please see next sub-clause for the measurement plot.

#### 4.4.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE. "WORST CASE")

Frequency Band = Band 41 BRS (LBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = AWGN



Frequency Band = Band 41 BRS (LBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = AWGN



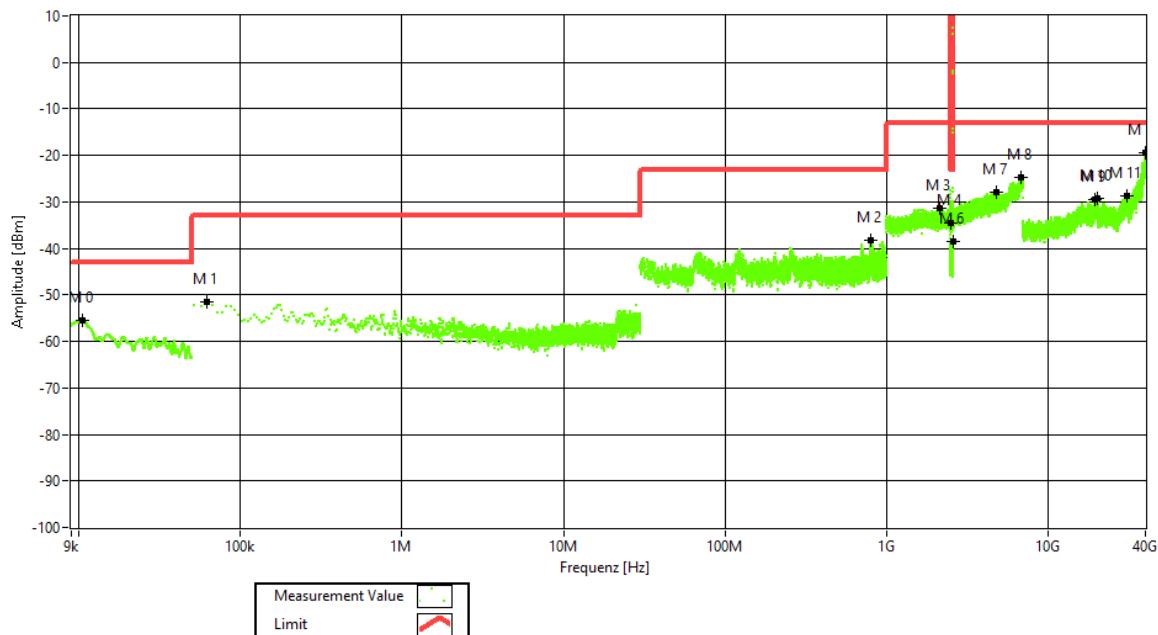


BUREAU  
VERITAS

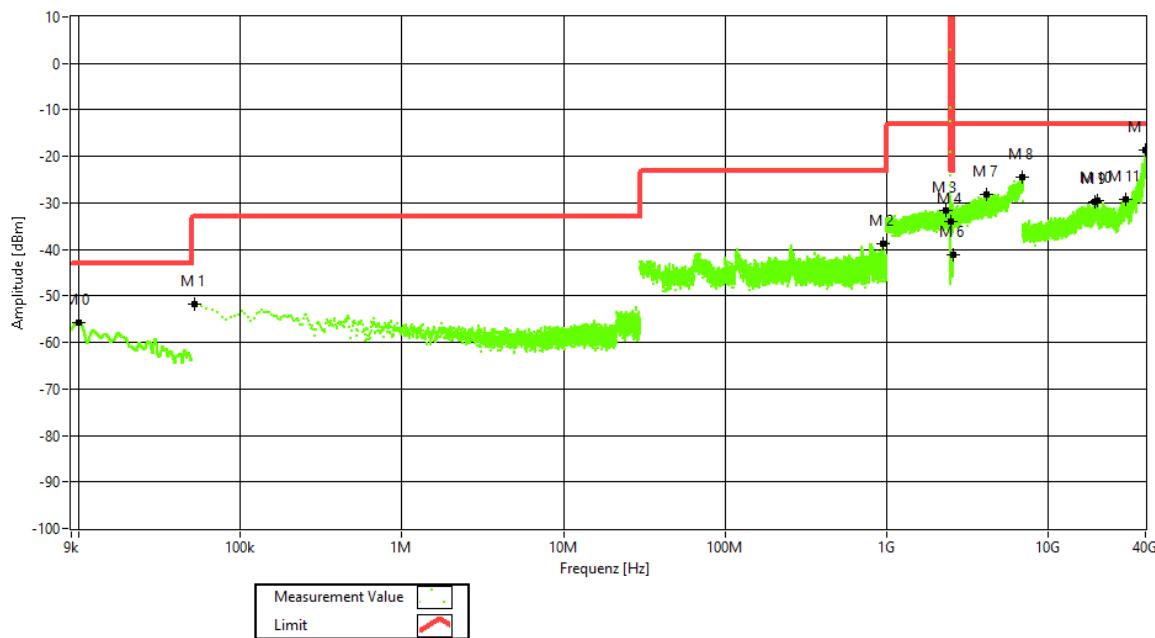
**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

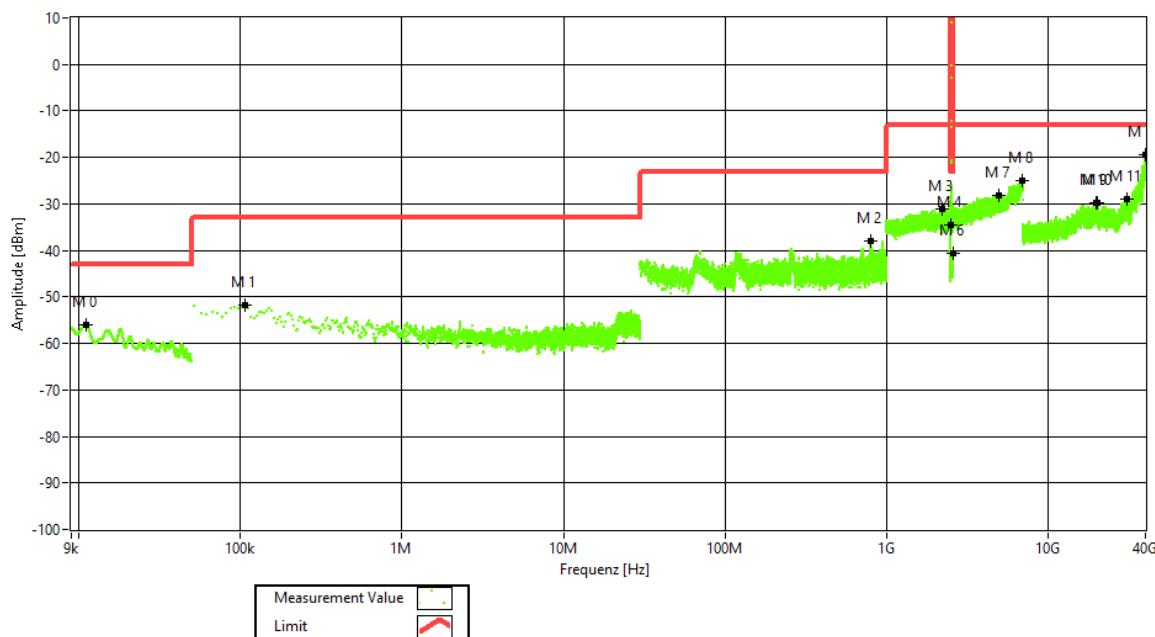
Frequency Band = Band 41 BRS (LBS), ANT 1, Test Frequency = high, Direction = RF  
downlink,  
Signal Type = AWGN



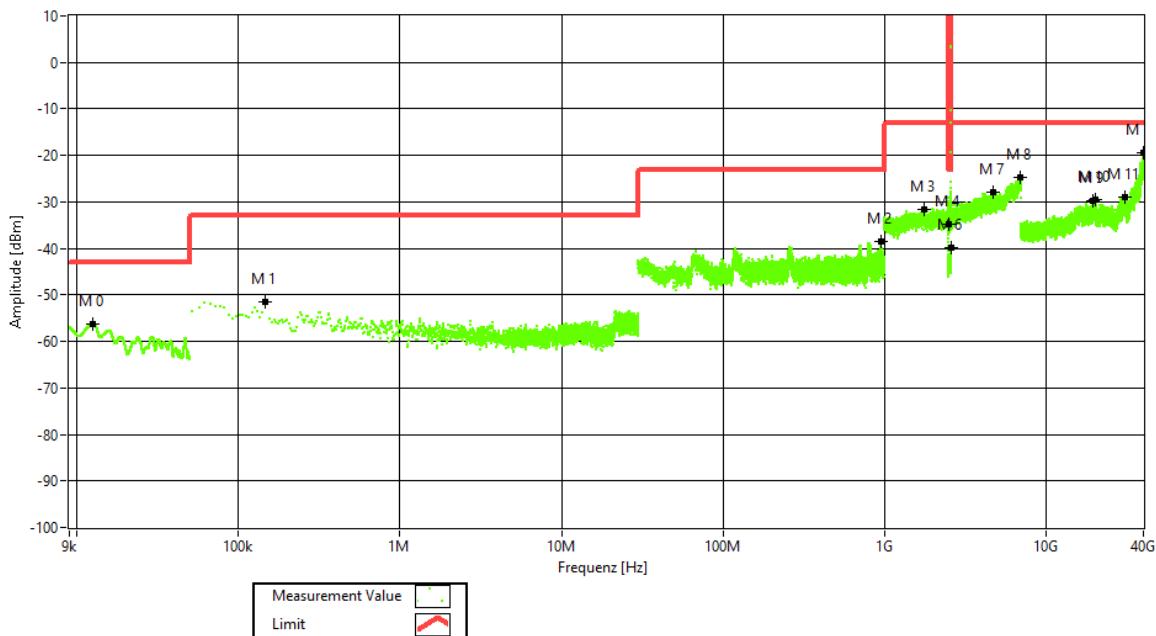
Frequency Band = Band 41 BRS (LBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = Narrowband



Frequency Band = Band 41 BRS (LBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = Narrowband



Frequency Band = Band 41 BRS (LBS), Test Frequency = high, Direction = RF downlink,  
Signal Type = Narrowband

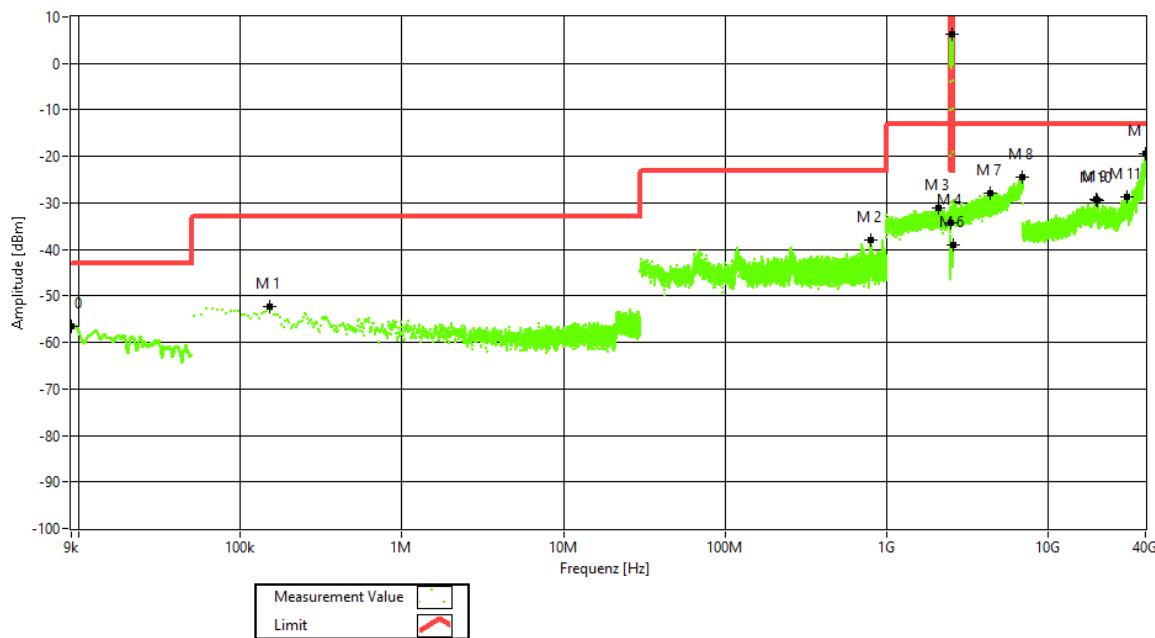


**EMC Test Report No.: 24-0001**

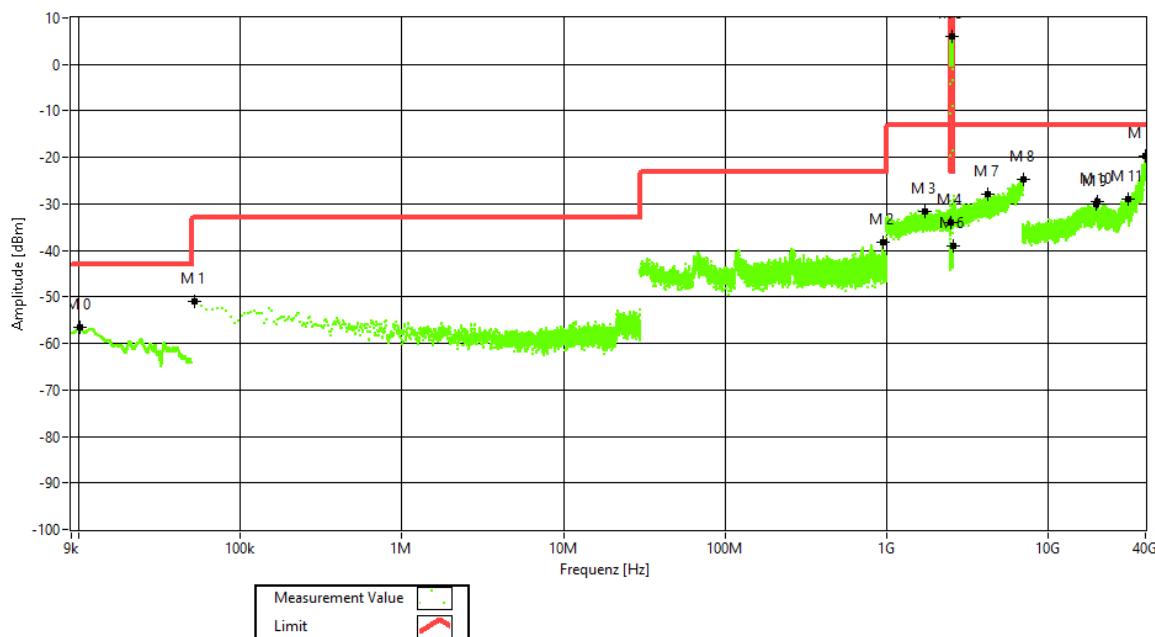
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS**

Frequency Band = Band 41 BRS (LBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = AWGN100



Frequency Band = Band 41 BRS (LBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = AWGN100

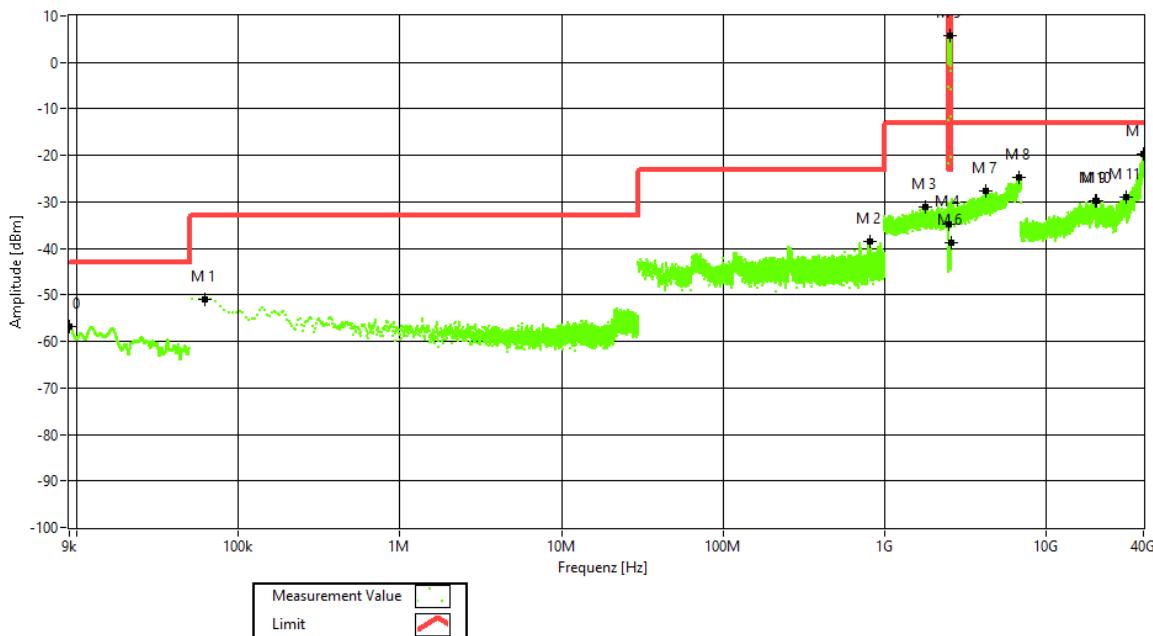


**EMC Test Report No.: 24-0001**

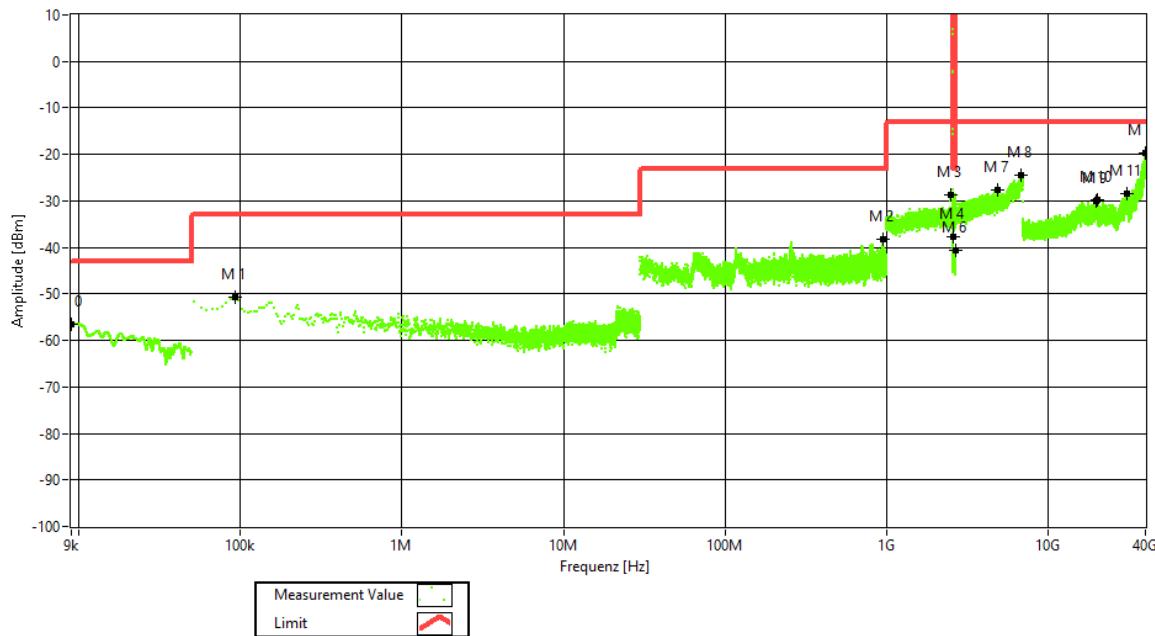
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS**

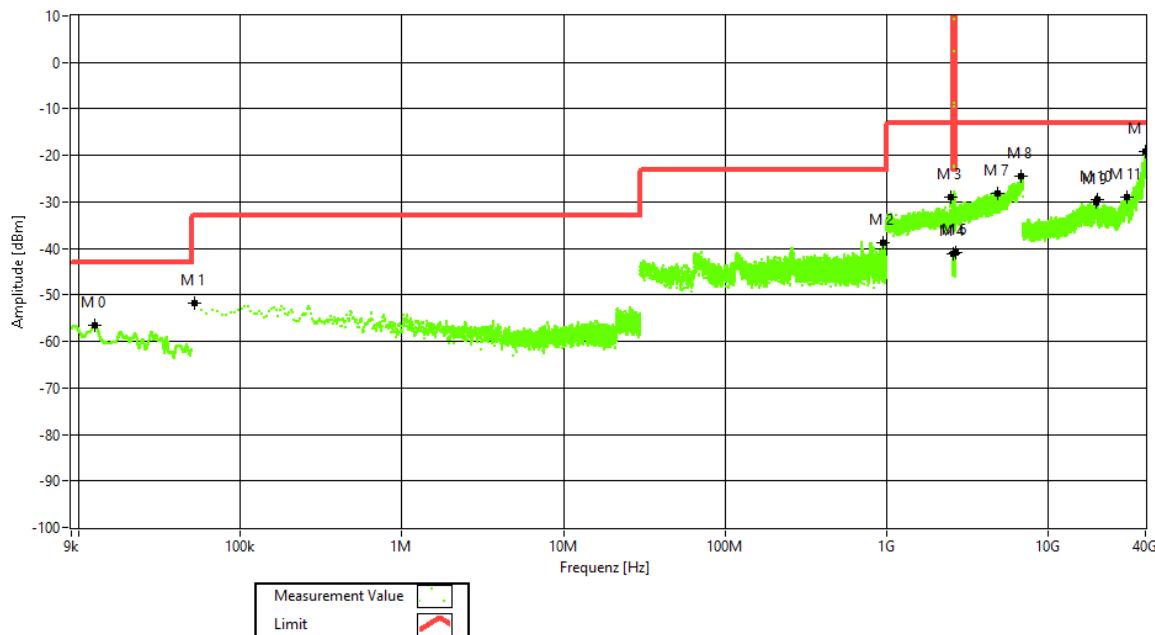
Frequency Band = Band 41 BRS (LBS), Test Frequency = high, Direction = RF downlink,  
Signal Type = AWGN100



Frequency Band = Band 41 BRS (UBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = AWGN



Frequency Band = Band 41 BRS (UBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = AWGN

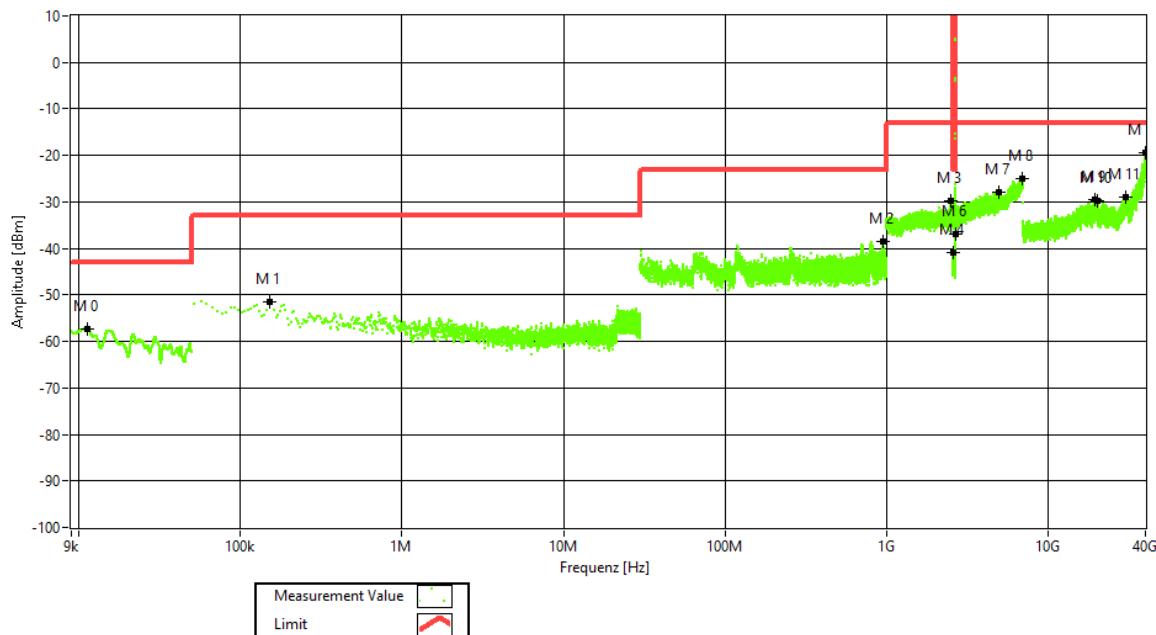


**EMC Test Report No.: 24-0001**

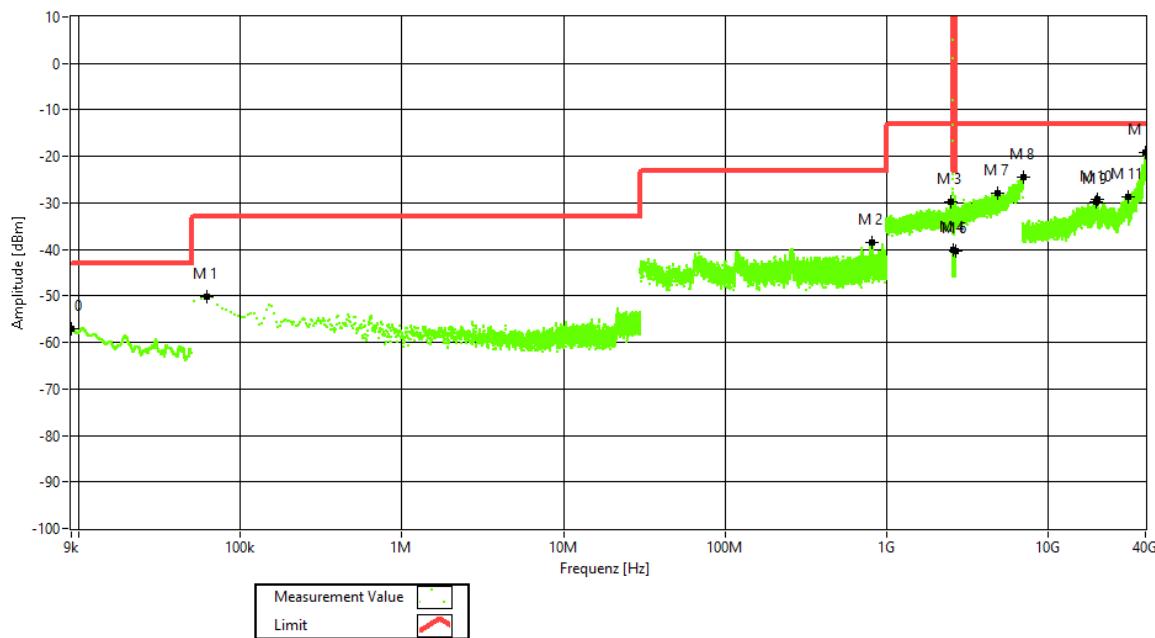
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS**

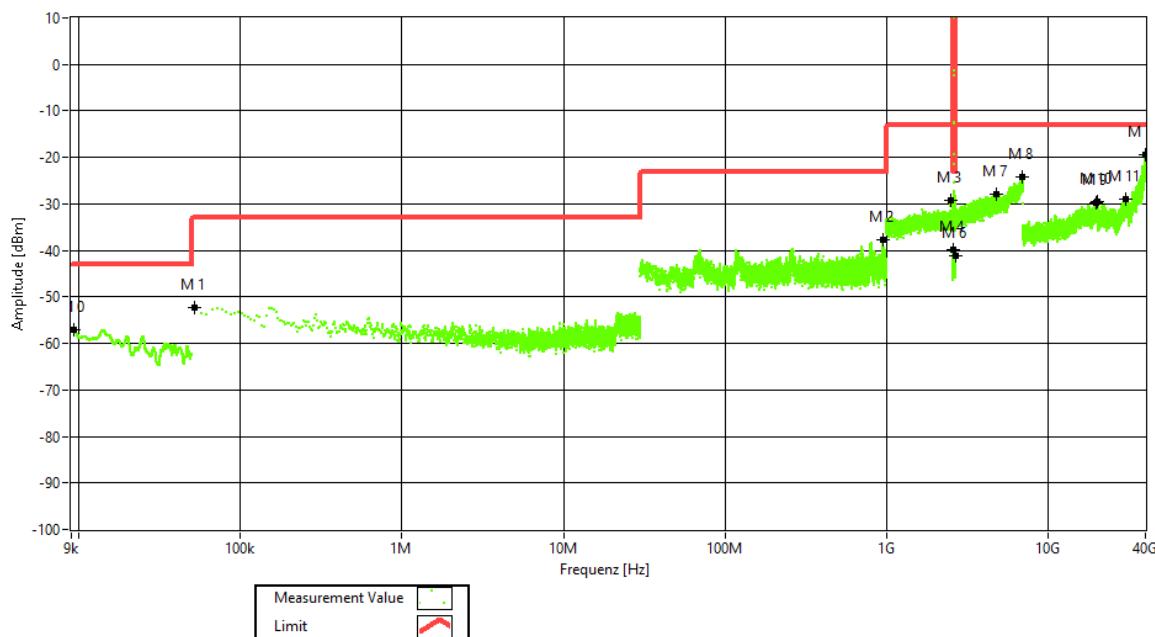
Frequency Band = Band 41 BRS (UBS), ANT 1, Test Frequency = high, Direction = RF  
downlink,  
Signal Type = AWGN



Frequency Band = Band 41 BRS (UBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = Narrowband



Frequency Band = Band 41 BRS (UBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = Narrowband



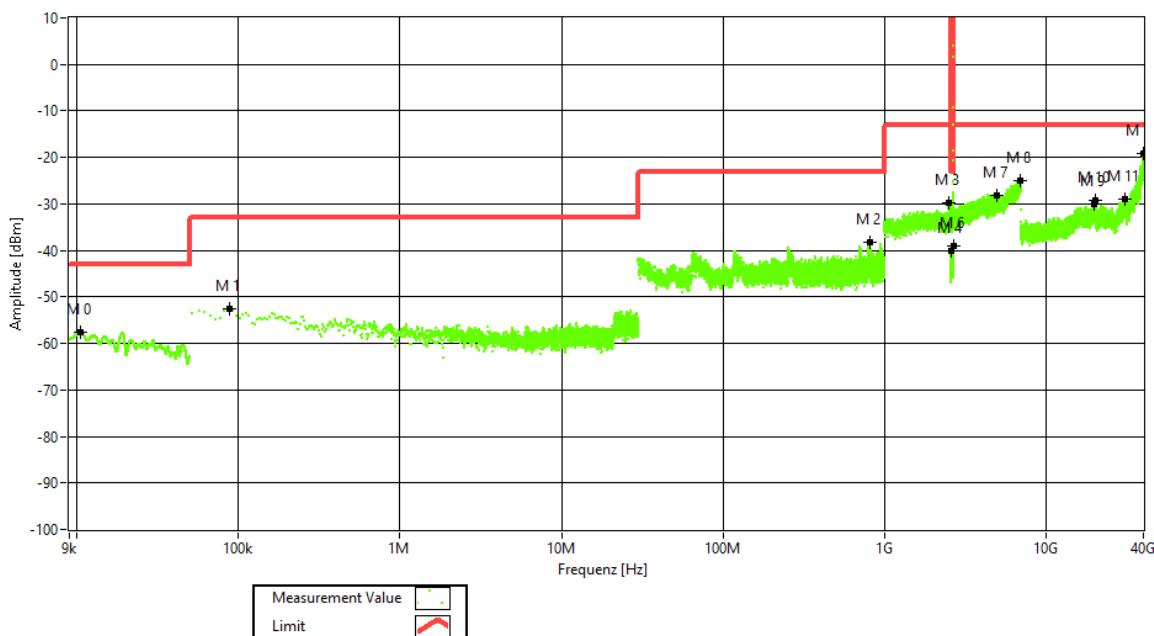


BUREAU  
VERITAS

**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Frequency Band = Band 41 BRS (UBS), Test Frequency = high, Direction = RF downlink,  
Signal Type = Narrowband

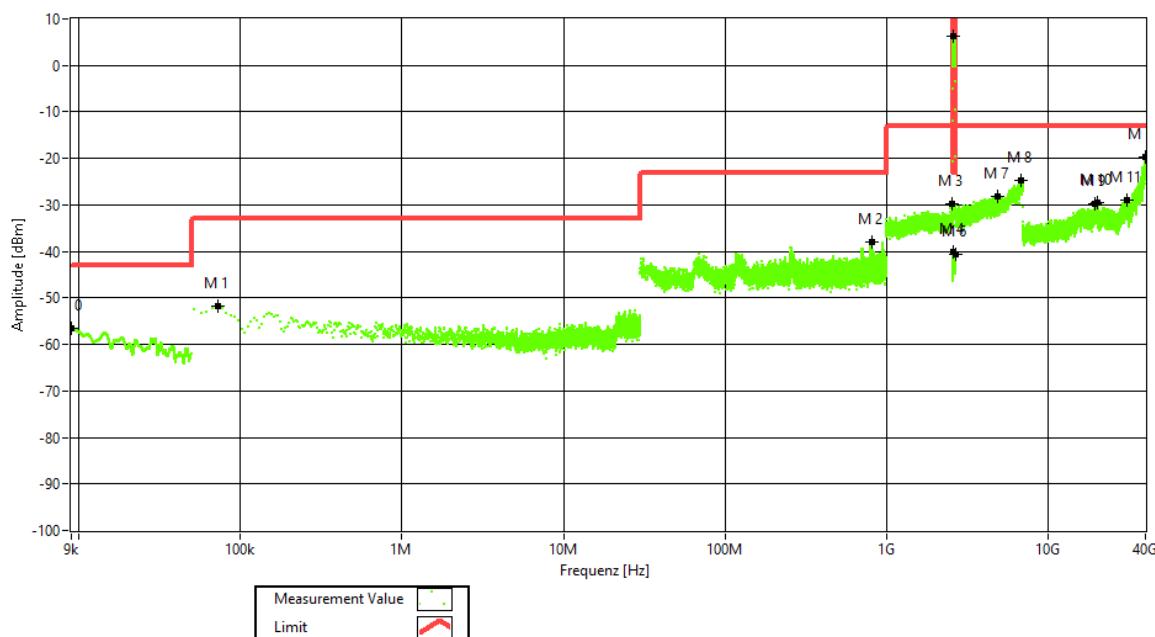


**EMC Test Report No.: 24-0001**

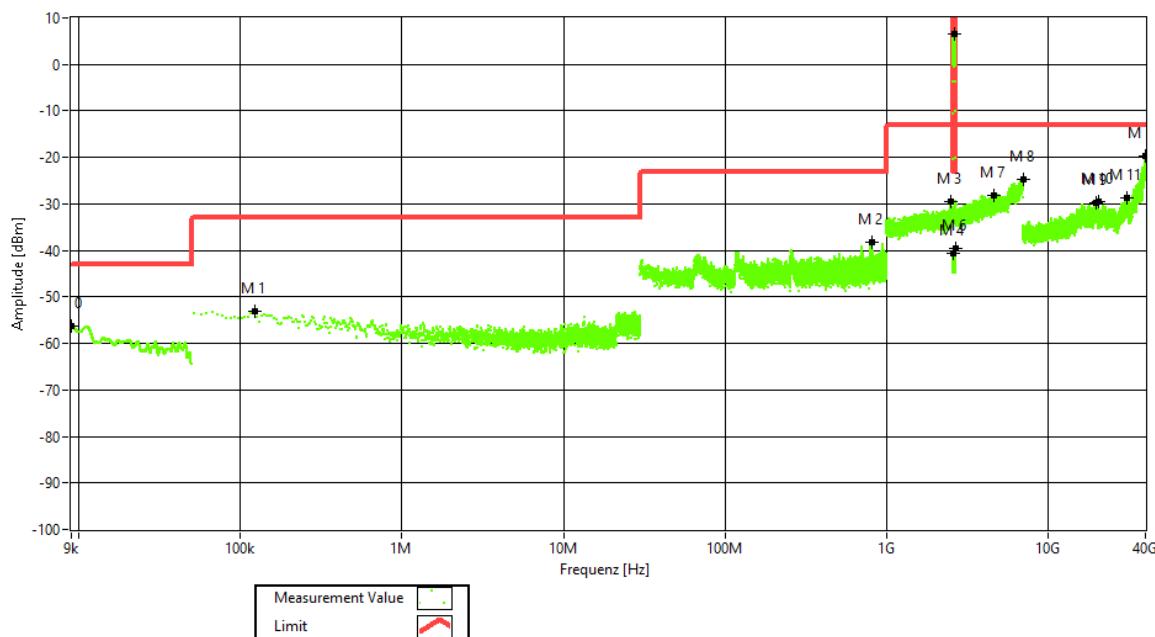
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

 BUREAU  
VERITAS

Frequency Band = Band 41 BRS (UBS), Test Frequency = low, Direction = RF downlink,  
Signal Type = AWGN100



Frequency Band = Band 41 BRS (UBS), Test Frequency = mid, Direction = RF downlink,  
Signal Type = AWGN100

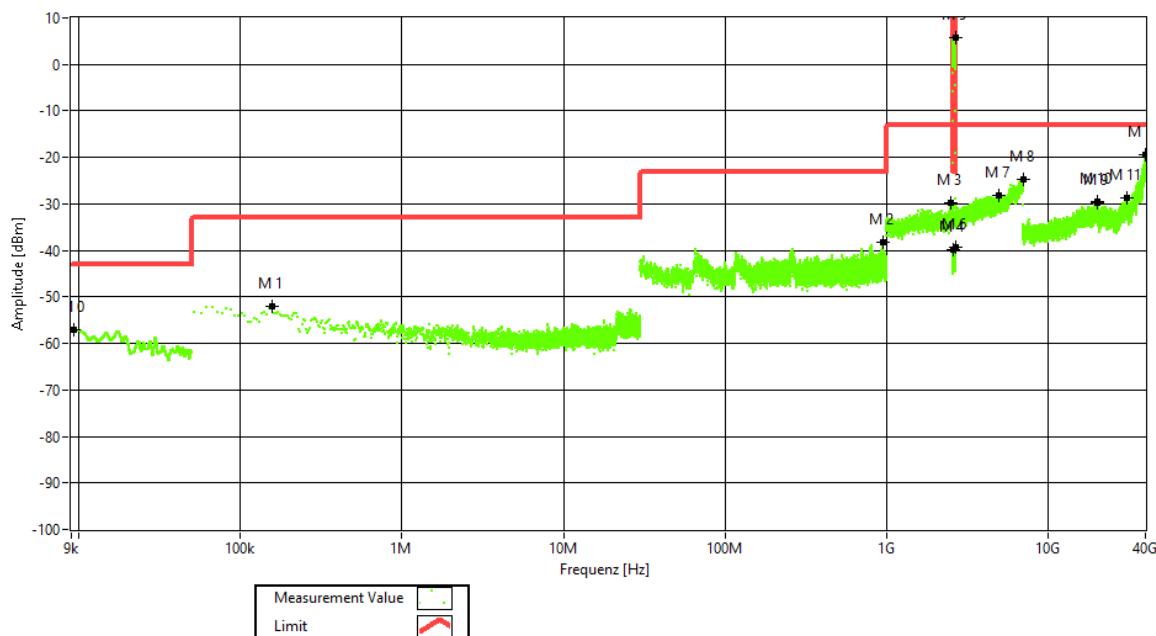


**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS**

Frequency Band = Band 41 BRS (UBS), Test Frequency = high, Direction = RF downlink,  
Signal Type = AWGN100





BUREAU  
VERITAS

**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

#### 4.4.5 TEST EQUIPMENT USED

- Conducted

## 4.5 OUT-OF-BAND EMISSION LIMITS

Standard FCC Part §2.1051. §27.53

**The test was performed according to:**

ANSI C63.26. KDB KDB 935210 D05 v01r04: 3.6

**Test date:** 2023-10-27

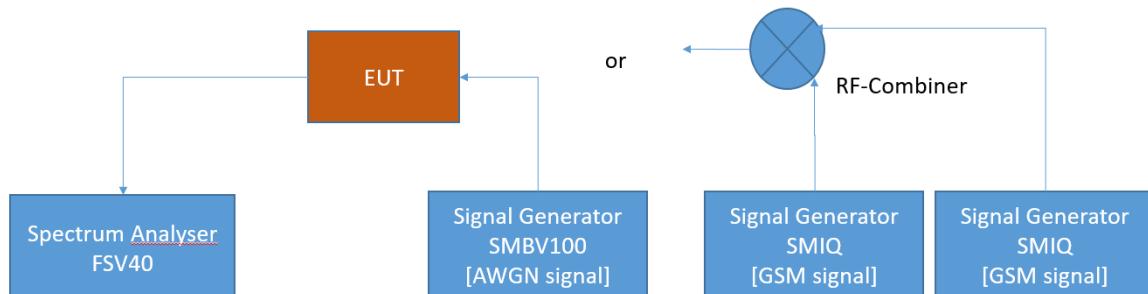
**Environmental conditions:** 23 °C ± 5 K; 40 % r. F. ± 20 % r. F.

**Test engineer:** Thomas Hufnagel

### 4.5.1 TEST DESCRIPTION

This test case is intended to demonstrate compliance to the out-of-band emission limit for industrial signal boosters. The limits itself come from the applicable rule part for each operating band.

The EUT was connected to the test setup according to the following diagram:



FCC Part 22/24/27/90 Industrial signal booster – Test Setup; Out-of-band emissions

The attenuation of the measuring and stimulus path are known for each measured frequency and are considered.

The Spectrum Analyzer settings can be directly found in the measurement diagrams.



## 4.5.2 TEST REQUIREMENTS/LIMITS

### **Part 27; Miscellaneous Wireless Communication Services**

#### **Subpart C – Technical standards**

##### **§27.53 – Emission limits**

###### **Band 41 BRS (LBS/UBS)**

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(1) Prior to the transition, and thereafter, solely within the MBS, for analog operations with an EIRP in excess of  $-9$  dBW, the signal shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies.

(2) For digital base stations, the attenuation shall be not less than  $43 + 10 \log (P)$  dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS****4.5.3 TEST PROTOCOL**

<b>Band 41 BRS (LBS), downlink, Number of input signals = 1</b>							
<b>Signal Type</b>	<b>Input Power</b>	<b>Band Edge</b>	<b>Signal Frequency [MHz]</b>	<b>Input Power [dBm]</b>	<b>Maximum Out-of-band Power [dBm]</b>	<b>Limit Out-of-band Power [dBm]</b>	<b>Margin to Limit [dB]</b>
Wideband	0.3 dB < AGC	upper	2593.50	-3.9	-34.6	-13	21.6
Wideband	3 dB > AGC	upper	2593.50	-0.6	-34.2	-13	21.2
Wideband 5G	0.3 dB < AGC	upper	2546.00	-4.2	-29.5	-13	16.5
Wideband 5G	3 dB > AGC	upper	2546.00	-1.2	-29.2	-13	16.2
Narrowband	-0.3 dB < AGC	upper	2595.80	-3.5	-27.3	-13	14.3
Narrowband	3 dB > AGC	upper	2595.80	-0.2	-28.3	-13	15.3
Wideband	0.3 dB < AGC	lower	2498.50	-3.3	-31.9	-13	18.9
Wideband	3 dB > AGC	lower	2498.50	0.0	-32.8	-13	19.8
Wideband 5G	0.3 dB < AGC	lower	2546.00	-3.6	-29.9	-13	16.9
Wideband 5G	3 dB > AGC	lower	2546.00	-0.6	-29.8	-13	16.8
Narrowband	-0.3 dB < AGC	lower	2496.20	-3.3	-27.7	-13	14.7
Narrowband	3 dB > AGC	lower	2496.20	0.0	-28.6	-13	15.6

<b>Band 41 BRS (LBS), downlink, Number of input signals = 2</b>								
<b>Signal Type</b>	<b>Input Power</b>	<b>Band Edge</b>	<b>Signal Frequency f1 [MHz]</b>	<b>Signal Frequency f2 [MHz]</b>	<b>Input Power [dBm]</b>	<b>Maximum Out-of-band Power [dBm]</b>	<b>Limit Out-of-band Power [dBm]</b>	
Wideband	0.3 dB < AGC	upper	2593.5	2591.0	-3.9	-35.1	-13	22.1
Wideband	3 dB > AGC	upper	2593.5	2591.0	-0.6	-34.8	-13	21.8
Narrowband	0.3 dB < AGC	upper	2595.8	2595.6	-3.7	-30.3	-13	17.3
Narrowband	3 dB > AGC	upper	2595.8	2595.6	-0.4	-30.8	-13	17.8
Wideband	0.3 dB < AGC	lower	2498.5	2501.0	-3.5	-34.1	-13	21.1
Wideband	3 dB > AGC	lower	2498.5	2501.0	-0.2	-34.8	-13	21.8
Narrowband	0.3 dB < AGC	lower	2496.2	2496.4	-3.5	-31.5	-13	18.5
Narrowband	3 dB > AGC	lower	2496.2	2496.4	-0.2	-32.0	-13	19.0

**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**BUREAU  
VERITAS****Band 41 BRS (UBS), downlink, Number of input signals = 1**

Signal Type	Input Power	Band Edge	Signal Frequency [MHz]	Input Power [dBm]	Maximum Out-of-band Power [dBm]	Limit Out-of-band Power [dBm]	Margin to Limit [dB]
Wideband	0.3 dB < AGC	upper	2687.50	-4.5	-34.7	-13	21.7
Wideband	3 dB > AGC	upper	2687.50	-1.2	-33.4	-13	20.4
Wideband 5G	0.3 dB < AGC	upper	2640.00	-4.8	-29.6	-13	16.6
Wideband 5G	3 dB > AGC	upper	2640.00	-1.8	-29.4	-13	16.4
Narrowband	-0.3 dB < AGC	upper	2689.80	-4.3	-28.5	-13	15.5
Narrowband	3 dB > AGC	upper	2689.80	-1.0	-28.0	-13	15.0
Wideband	0.3 dB < AGC	lower	2592.50	-4.1	-34.9	-13	21.9
Wideband	3 dB > AGC	lower	2592.50	-0.8	-35.1	-13	22.1
Wideband 5G	0.3 dB < AGC	lower	2640.00	-4.4	-29.6	-13	16.6
Wideband 5G	3 dB > AGC	lower	2640.00	-1.4	-29.8	-13	16.8
Narrowband	-0.3 dB < AGC	lower	2590.20	-3.9	-29.3	-13	16.3
Narrowband	3 dB > AGC	lower	2590.20	-0.6	-28.7	-13	15.7

**Band 41 BRS (UBS), downlink, Number of input signals = 2**

Signal Type	Input Power	Band Edge	Signal Frequency f1 [MHz]	Signal Frequency f2 [MHz]	Input Power [dBm]	Maximum Out-of-band Power [dBm]	Limit Out-of-band Power [dBm]	Margin to Limit [dB]
Wideband	0.3 dB < AGC	upper	2687.5	2685.0	-4.5	-34.6	-13	21.6
Wideband	3 dB > AGC	upper	2687.5	2685.0	-1.2	-34.1	-13	21.1
Narrowband	0.3 dB < AGC	upper	2689.8	2689.6	-4.3	-31.1	-13	18.1
Narrowband	3 dB > AGC	upper	2689.8	2689.6	-1.0	-30.2	-13	17.2
Wideband	0.3 dB < AGC	lower	2592.5	2595.0	-4.1	-35.3	-13	22.3
Wideband	3 dB > AGC	lower	2592.5	2595.0	-0.8	-35.1	-13	22.1
Narrowband	0.3 dB < AGC	lower	2590.2	2590.4	-4.1	-31.9	-13	18.9
Narrowband	3 dB > AGC	lower	2590.2	2590.4	-0.8	-30.8	-13	17.8



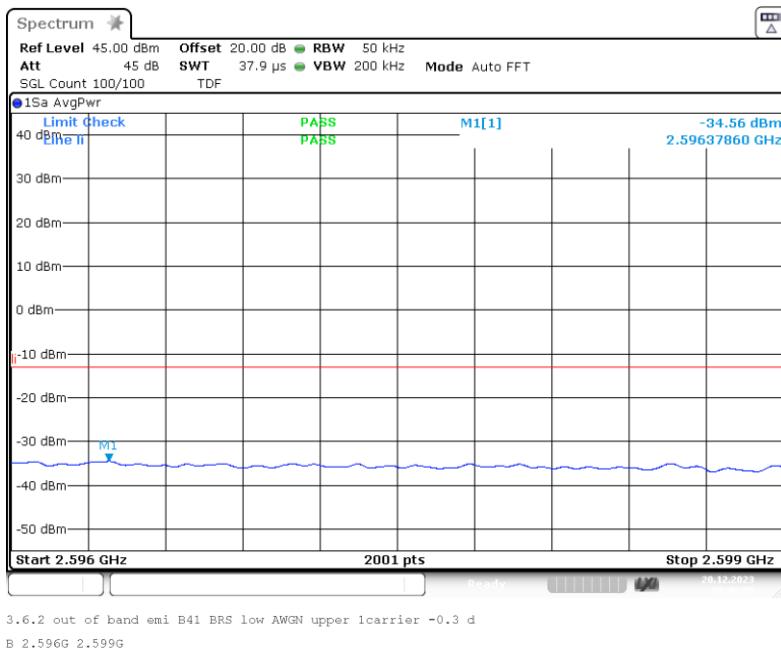
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VERITAS

## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

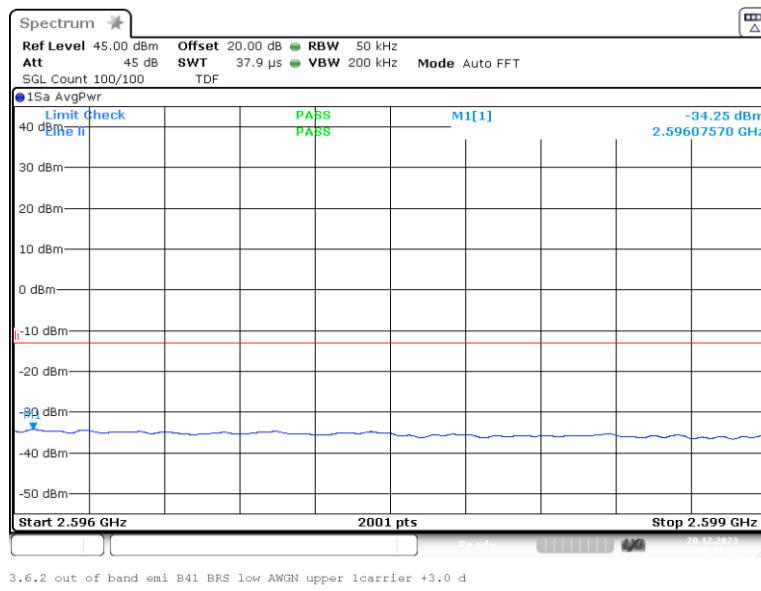
### 4.5.4 MEASUREMENT PLOT

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN upper lcarrrier -0.3 d  
B 2.596G 2.599G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN upper lcarrrier +3.0 d  
B 2.596G 2.599G

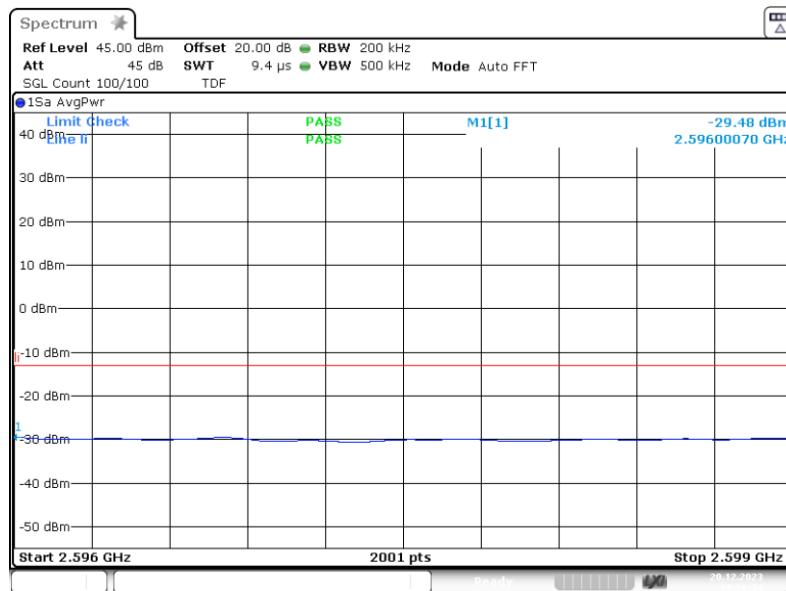


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VERITAS

## EMC Test Report No.: 24-0001

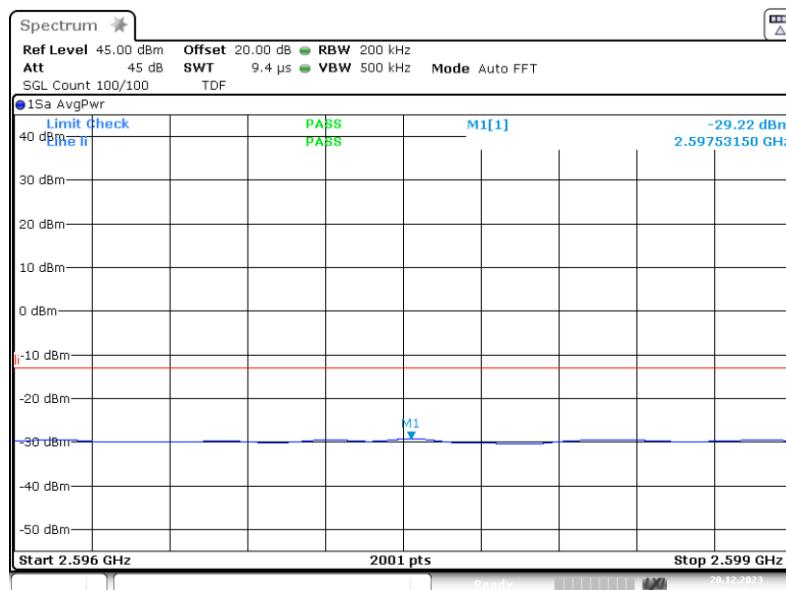
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN100; Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN100 upper 1carrier -0.  
3 dB 2.596G 2.599G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN100; Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN100 upper 1carrier +3.  
0 dB 2.596G 2.599G

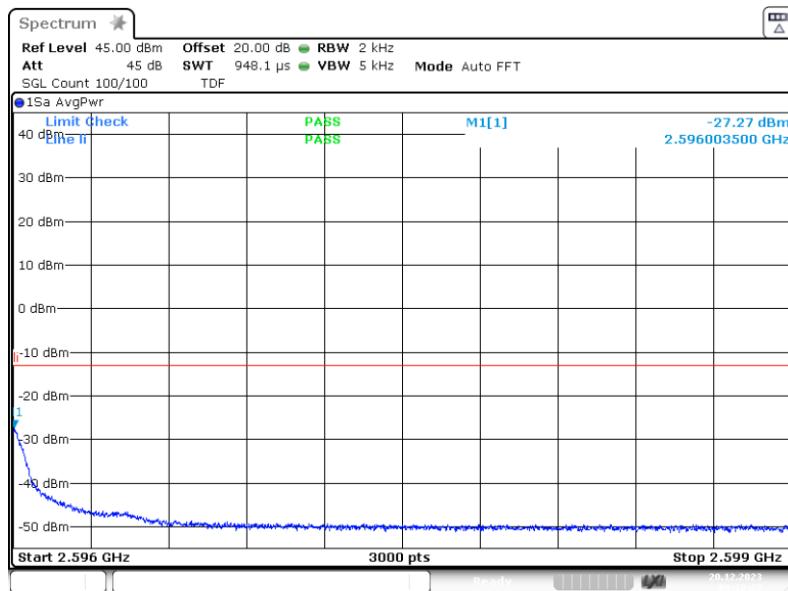


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VERITAS

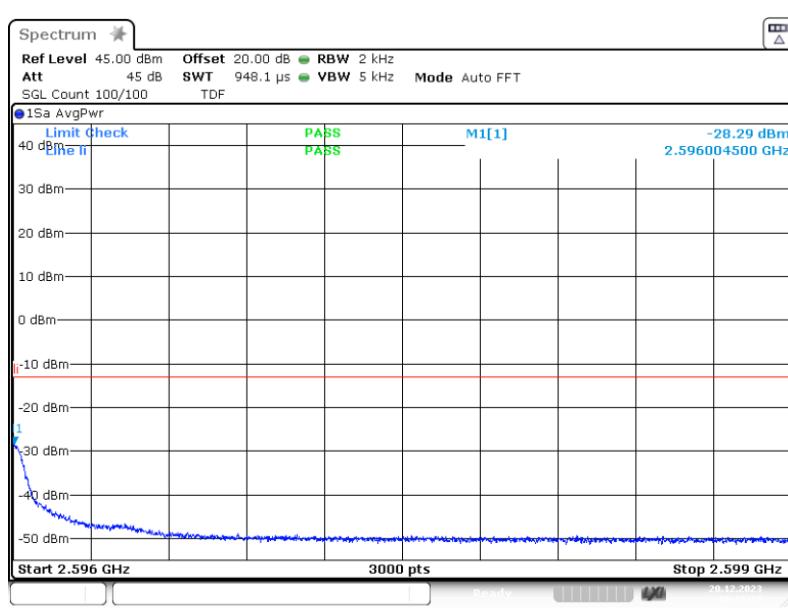
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 1



Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 1



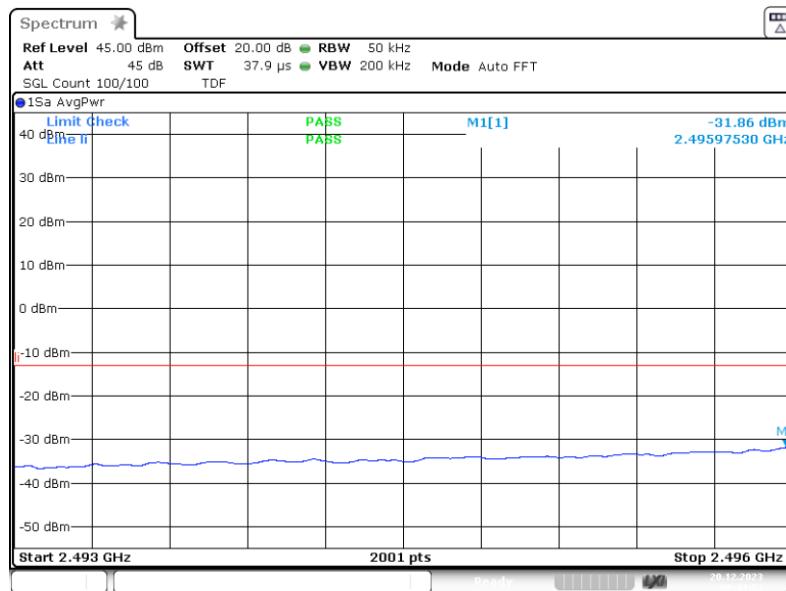


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VERITAS

## EMC Test Report No.: 24-0001

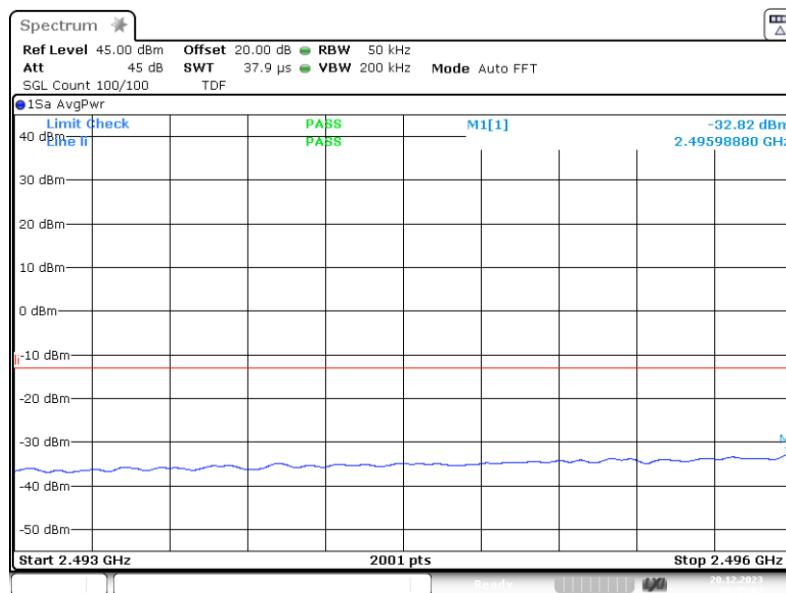
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN lower icarrier -0.3 d  
B 2.493G 2.496G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN lower icarrier +3.0 d  
B 2.493G 2.496G

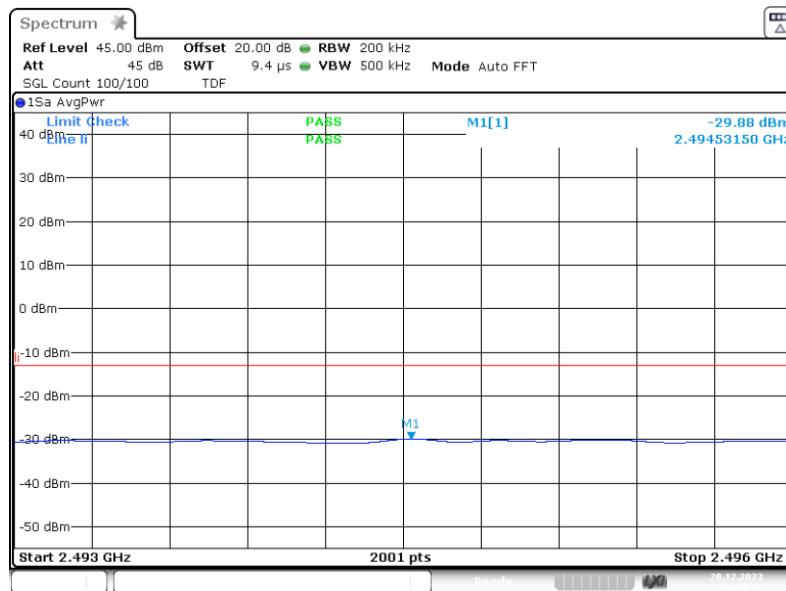


BUREAU  
VERITAS

## EMC Test Report No.: 24-0001

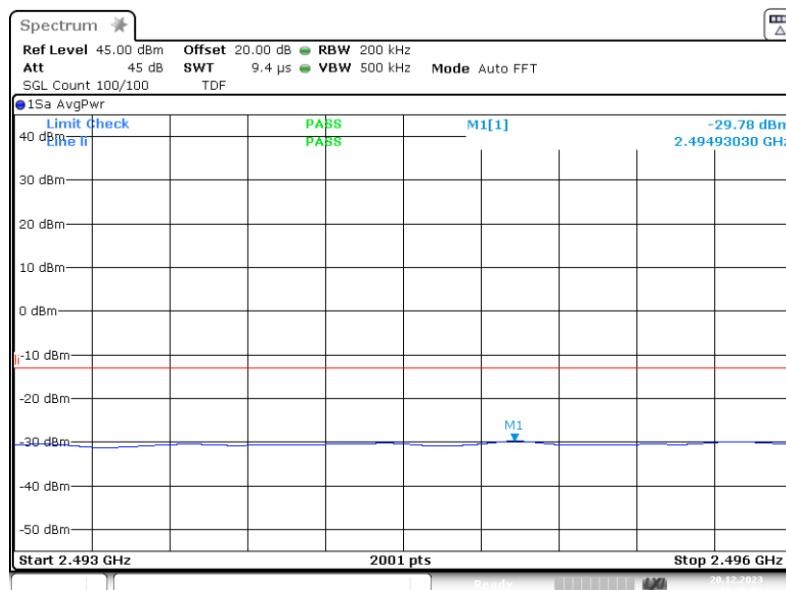
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN100; Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN100 lower 1carrier -0.  
3 dB 2.493G 2.496G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN100; Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low AWGN100 lower 1carrier +3.  
0 dB 2.493G 2.496G

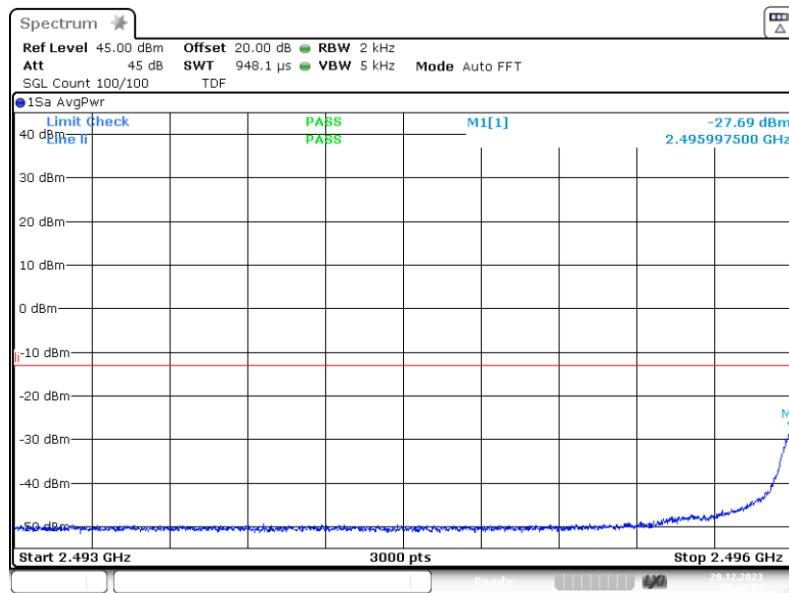


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## EMC Test Report No.: 24-0001

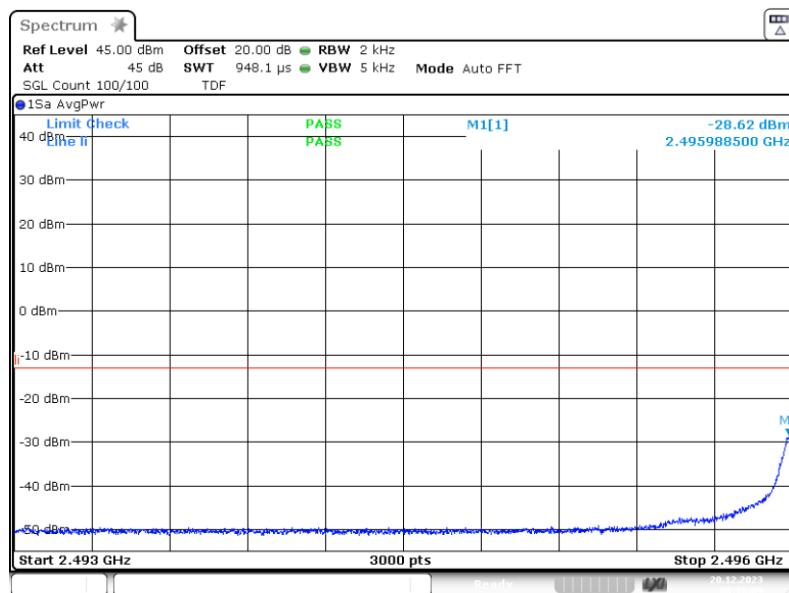
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low GSM lower lcarrier -0.3 dB  
2.493G 2.496G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS low GSM lower lcarrier +3.0 dB  
2.493G 2.496G

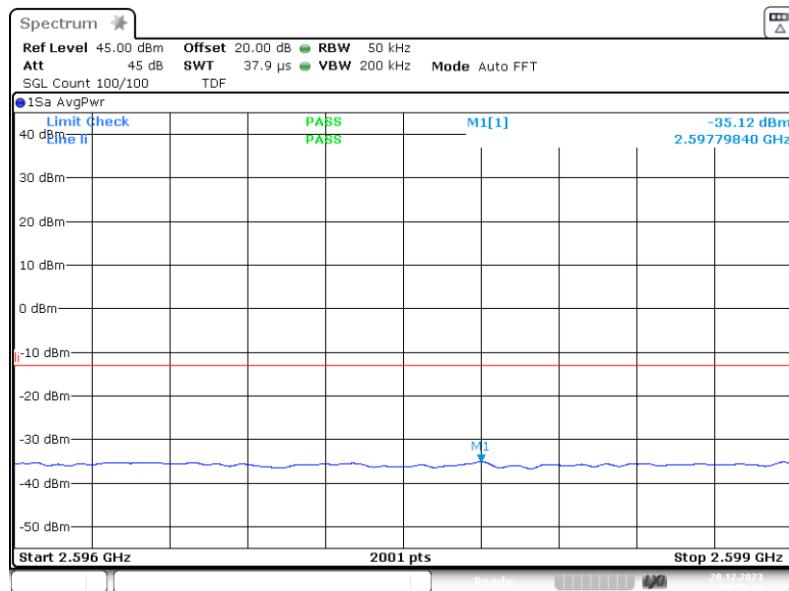


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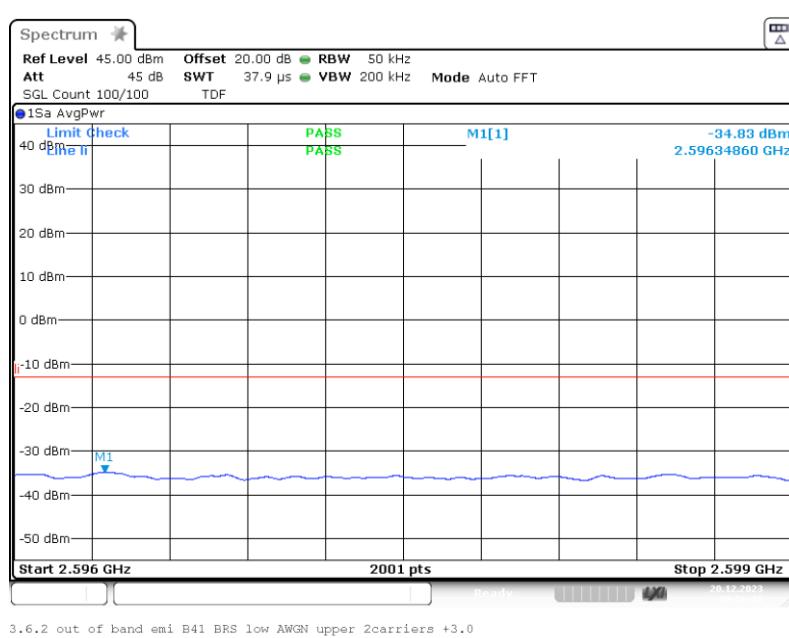
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 2



Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 2



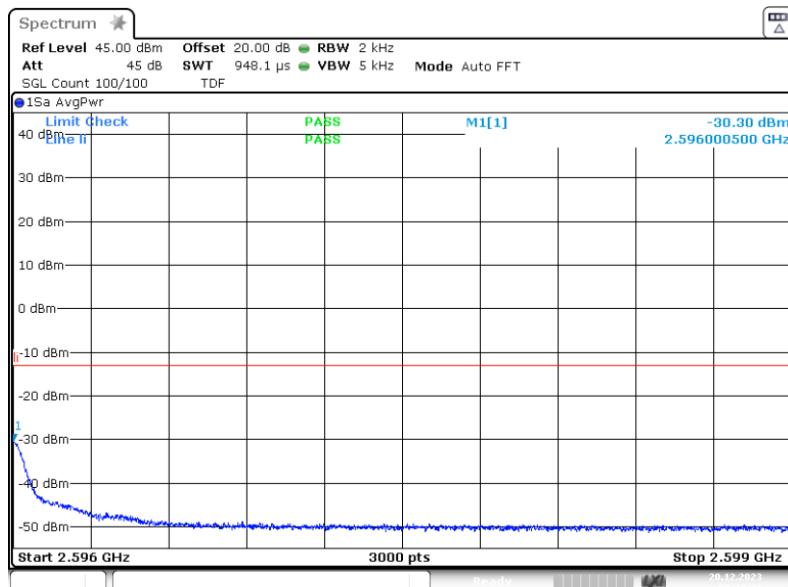


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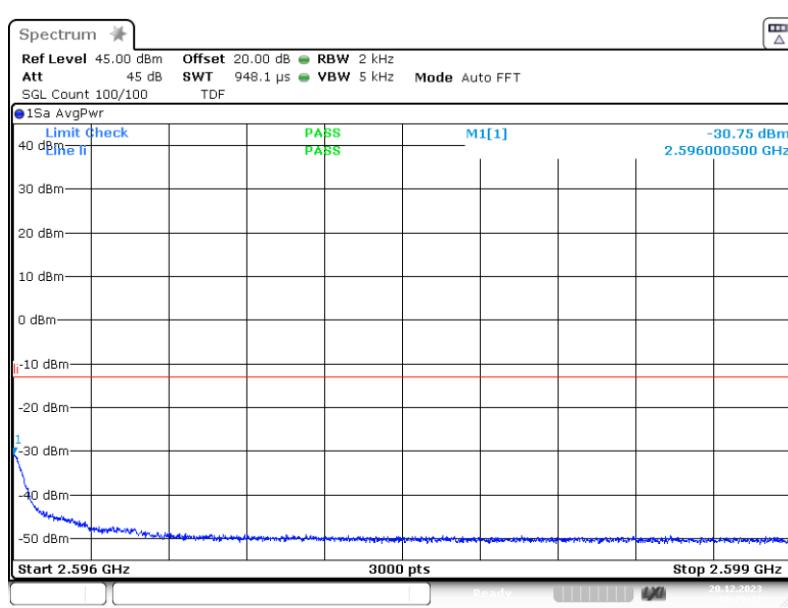
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Input Power = 0.3 dB < AGC; Number of signals 2



Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 2



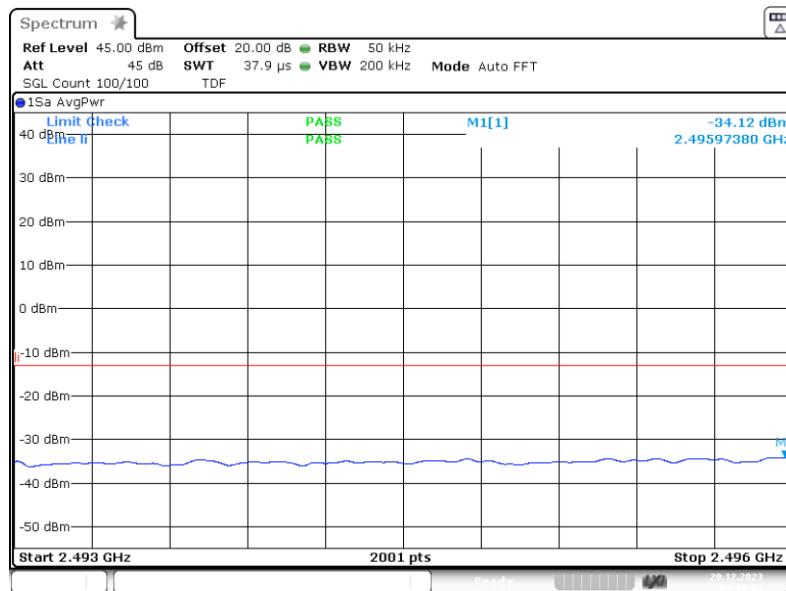


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## EMC Test Report No.: 24-0001

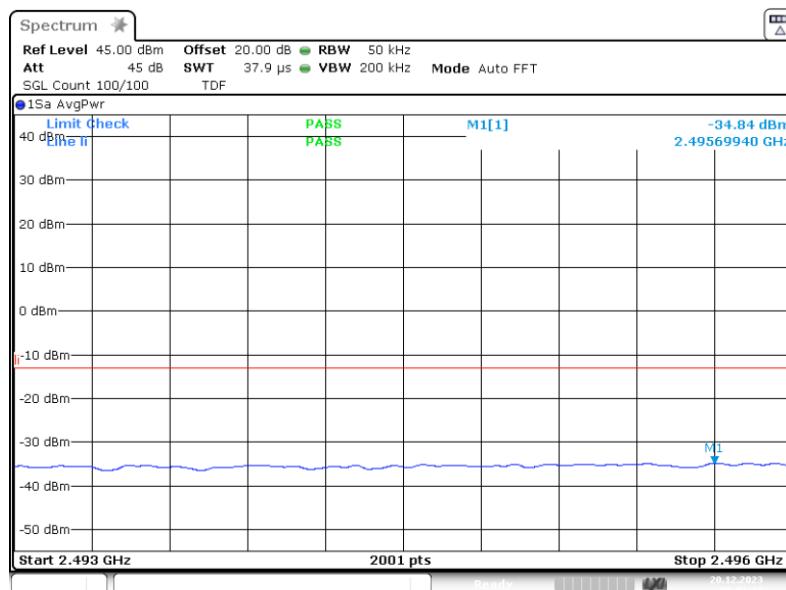
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS low AWGN lower 2carriers -0.3  
dB 2.493G 2.496G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS low AWGN lower 2carriers +3.0  
dB 2.493G 2.496G

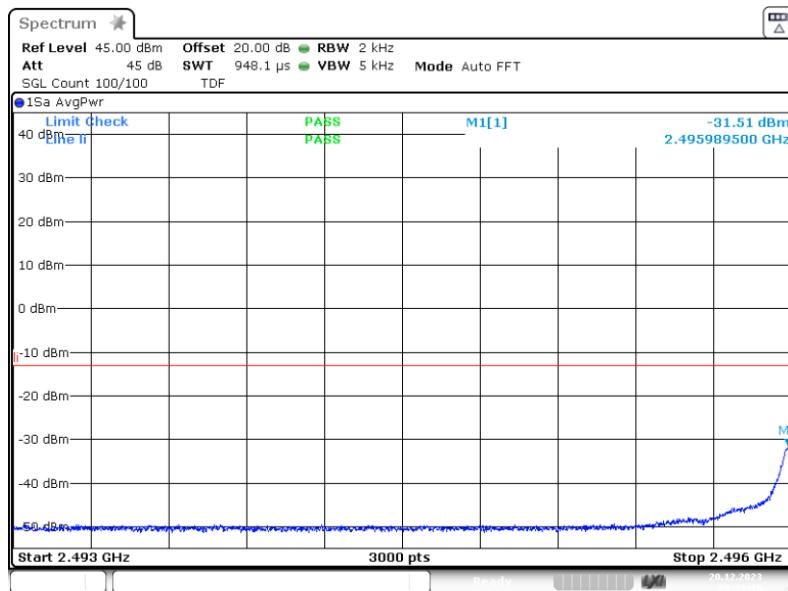


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## EMC Test Report No.: 24-0001

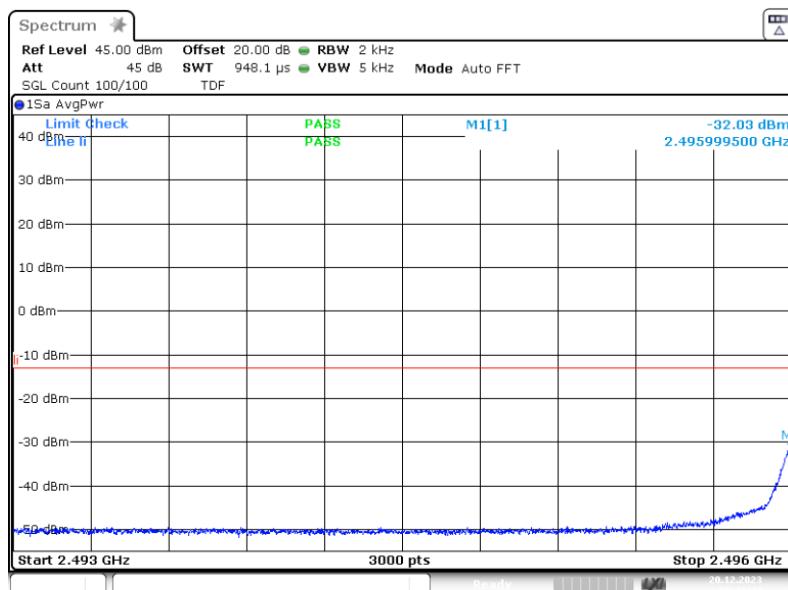
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS low GSM lower 2carriers -0.3 d  
B 2.493G 2.496G

Band 41 BRS (LBS); Frequency: 2.4960 GHz to 2.5960 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS low GSM lower 2carriers +3.0 d  
B 2.493G 2.496G

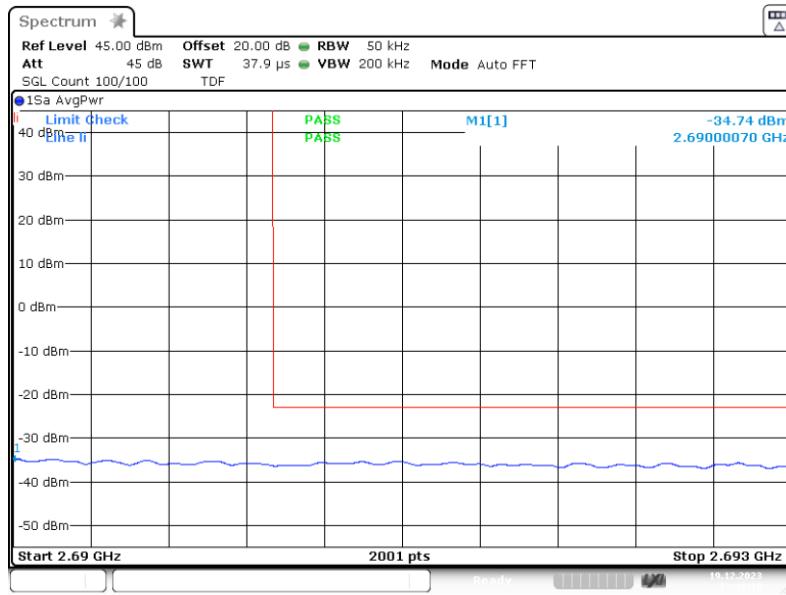


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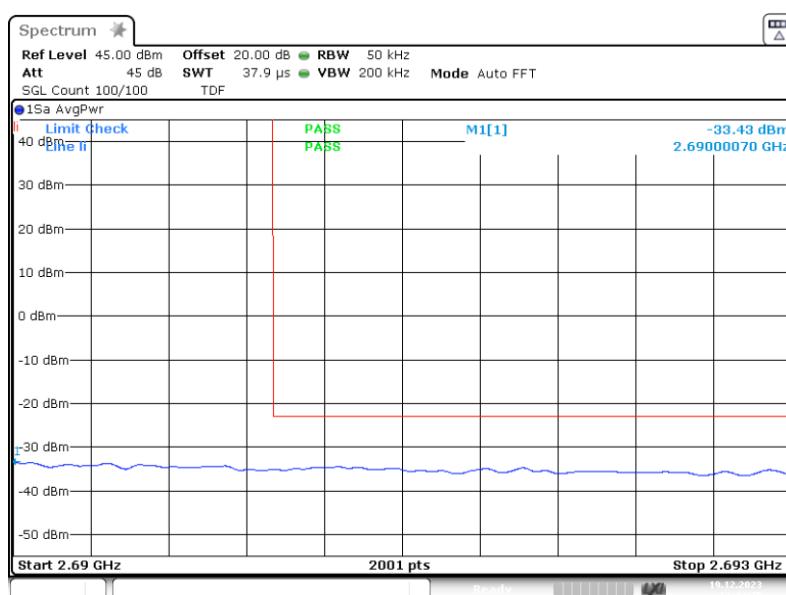
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 1



Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 1



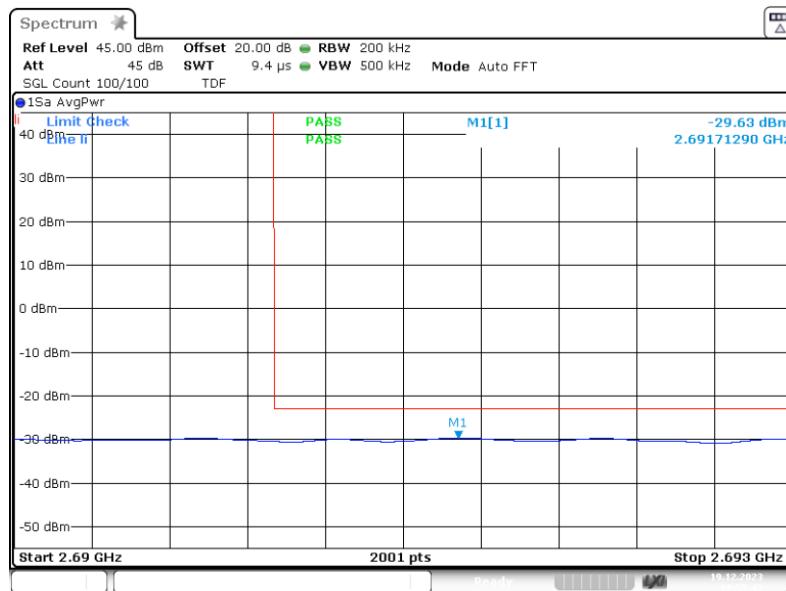


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## EMC Test Report No.: 24-0001

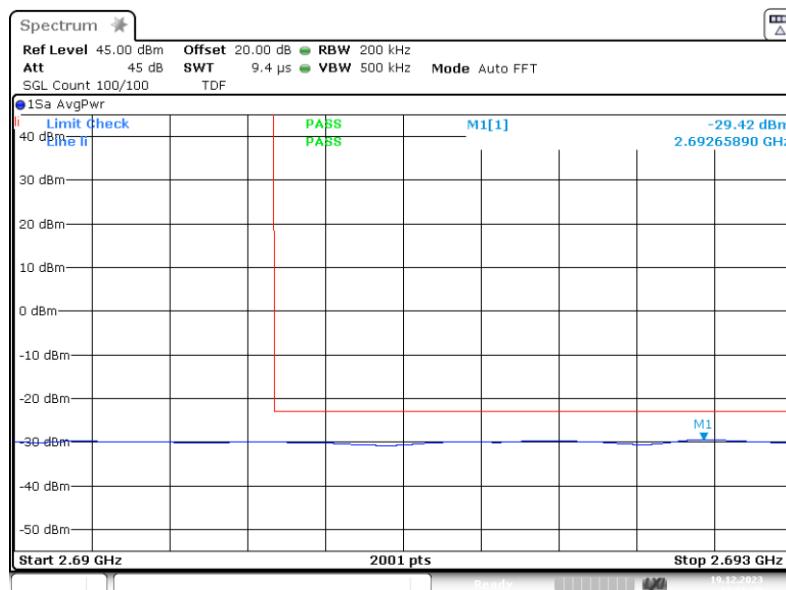
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN100; Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high AWGN100 upper lcarrier -0  
.3 dB 2.690G 2.693G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN100; Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high AWGN100 upper lcarrier +3  
.0 dB 2.690G 2.693G

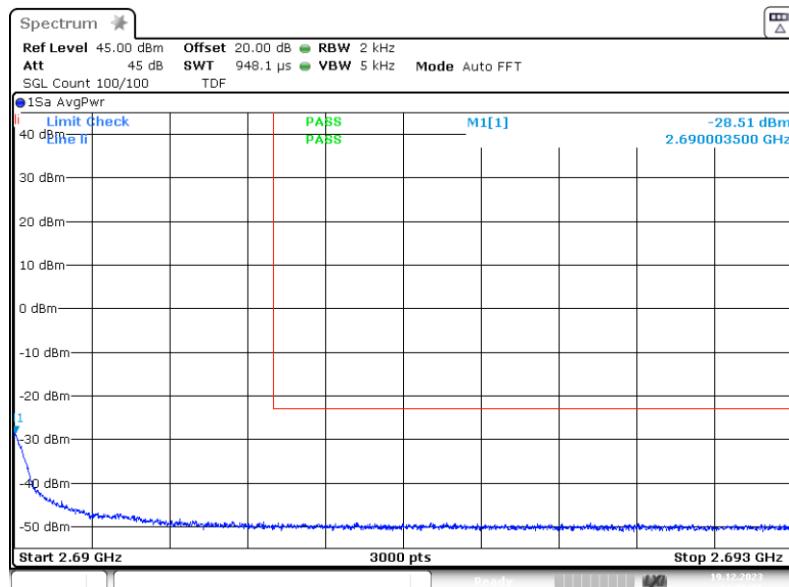


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## EMC Test Report No.: 24-0001

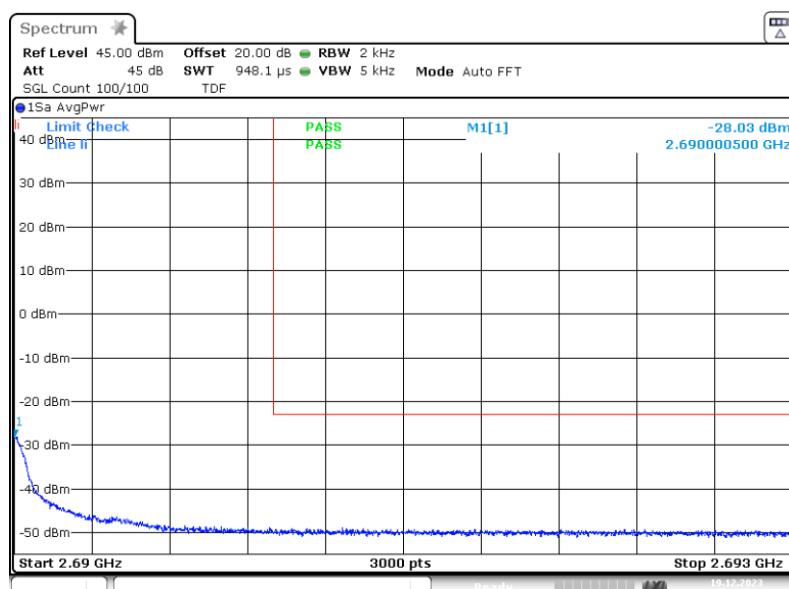
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high GSM upper lcarrier -0.3 d  
B 2.690G 2.693G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high GSM upper lcarrier +3.0 d  
B 2.690G 2.693G

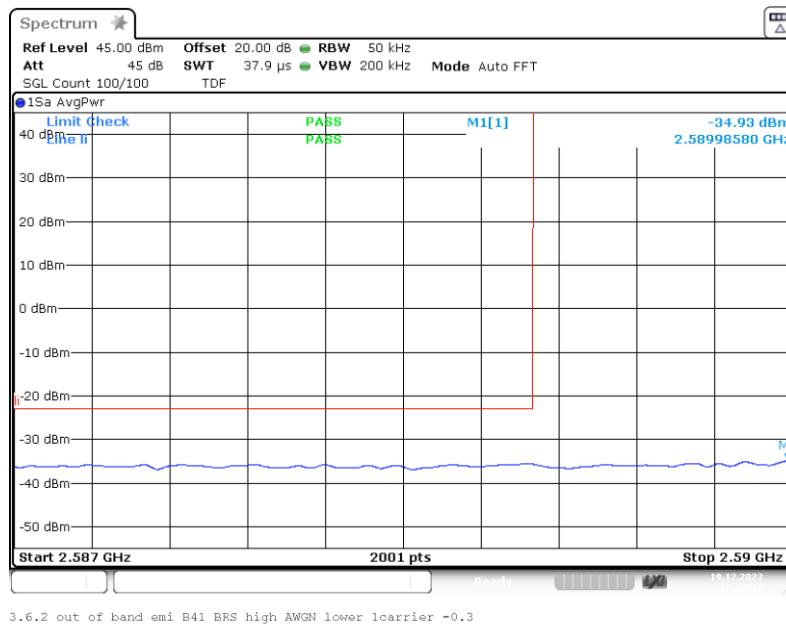


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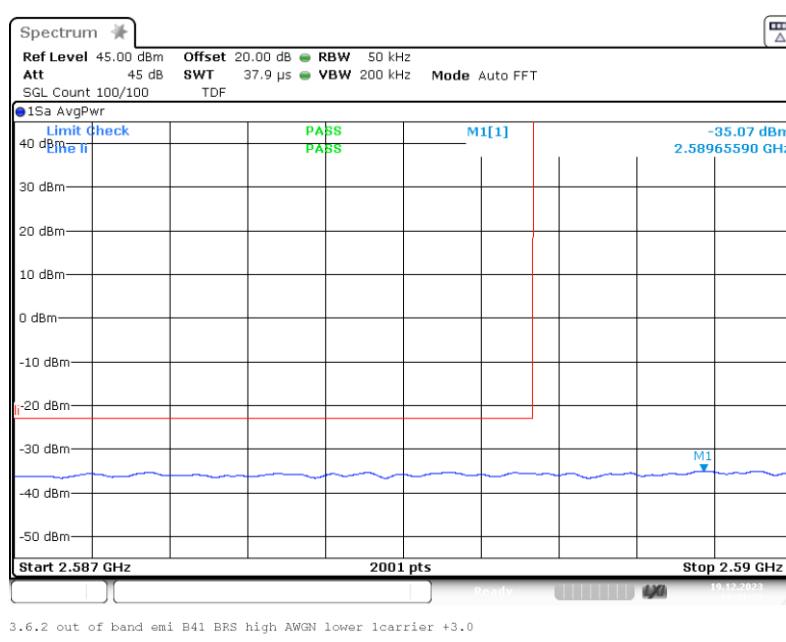
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 1



Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 1



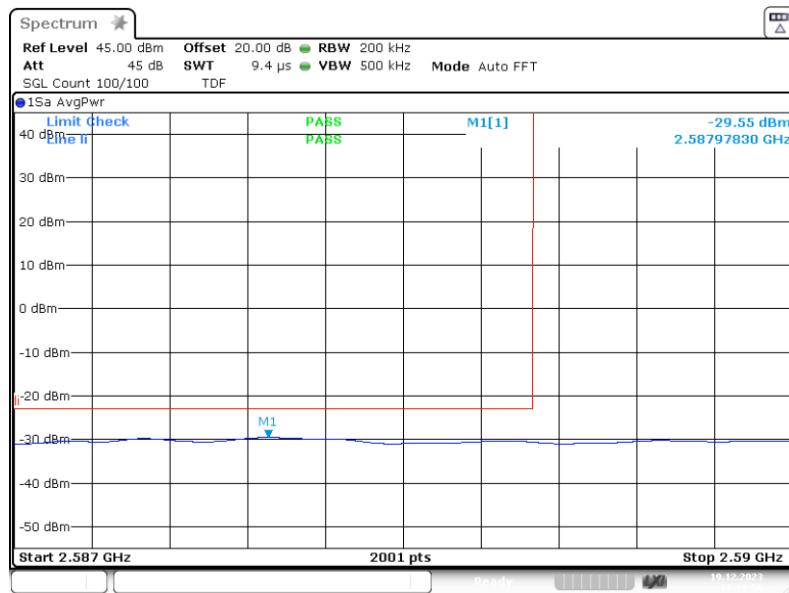


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## EMC Test Report No.: 24-0001

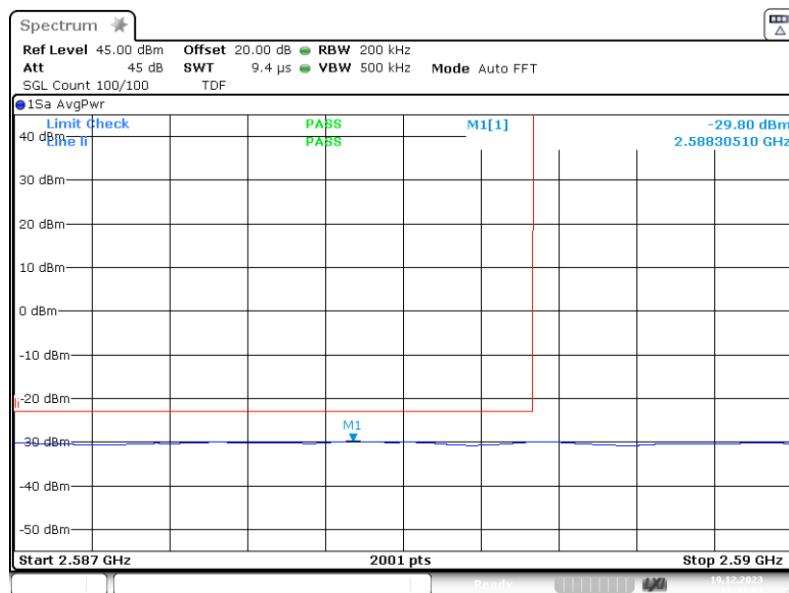
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN100; Input Power = 0.3 dB < AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high AWGN100 lower lcarrier -0  
.3 dB 2.587G 2.590G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN100; Input Power = 3 dB > AGC; Number of signals 1



3.6.2 out of band emi B41 BRS high AWGN100 lower lcarrier +3  
.0 dB 2.587G 2.590G

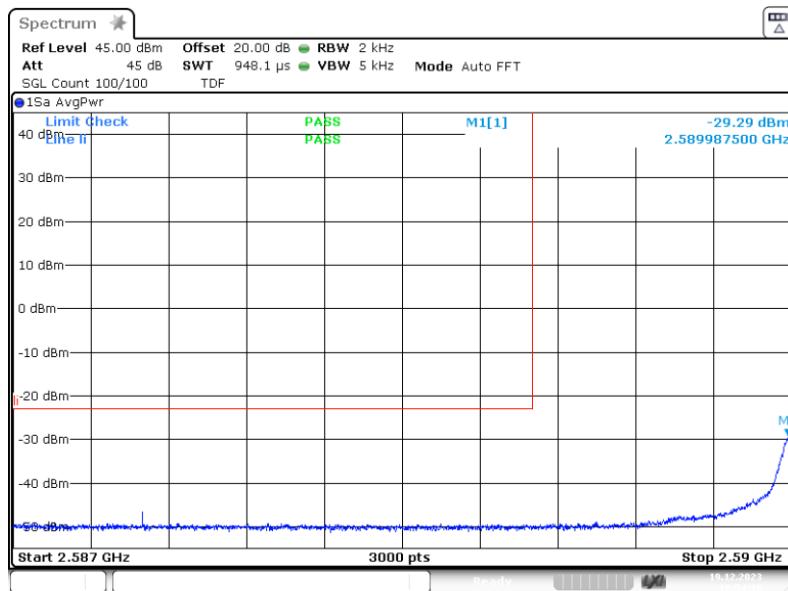


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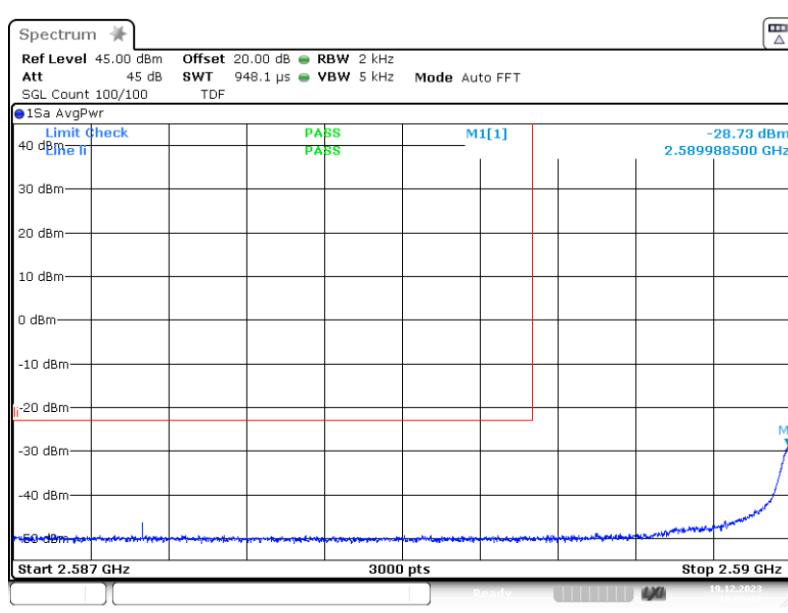
## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 1



Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 1



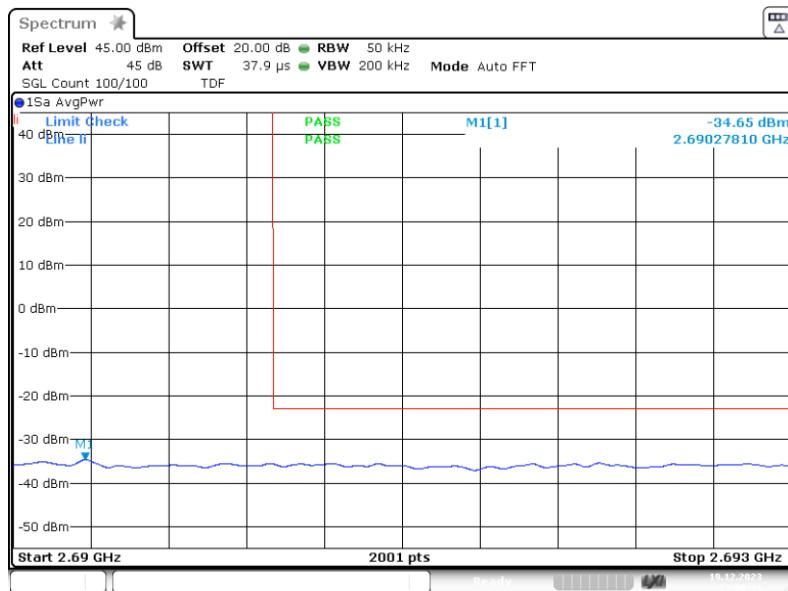


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## EMC Test Report No.: 24-0001

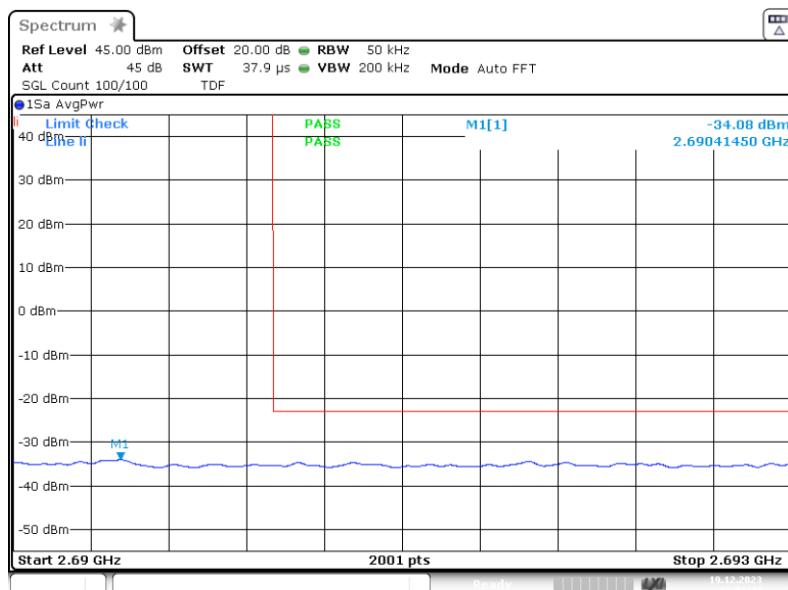
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high AWGN upper 2carriers -0.3  
dB 2.690G 2.693G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high AWGN upper 2carriers +3.0  
dB 2.690G 2.693G

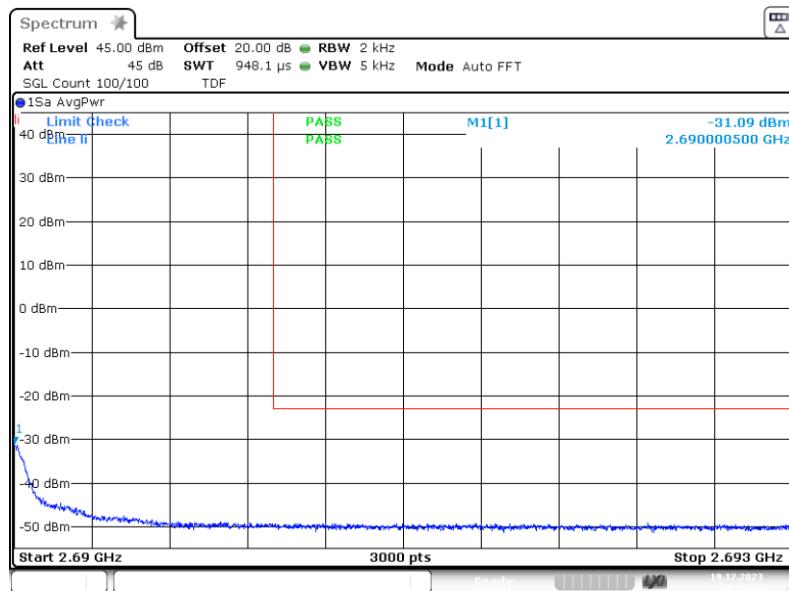


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## EMC Test Report No.: 24-0001

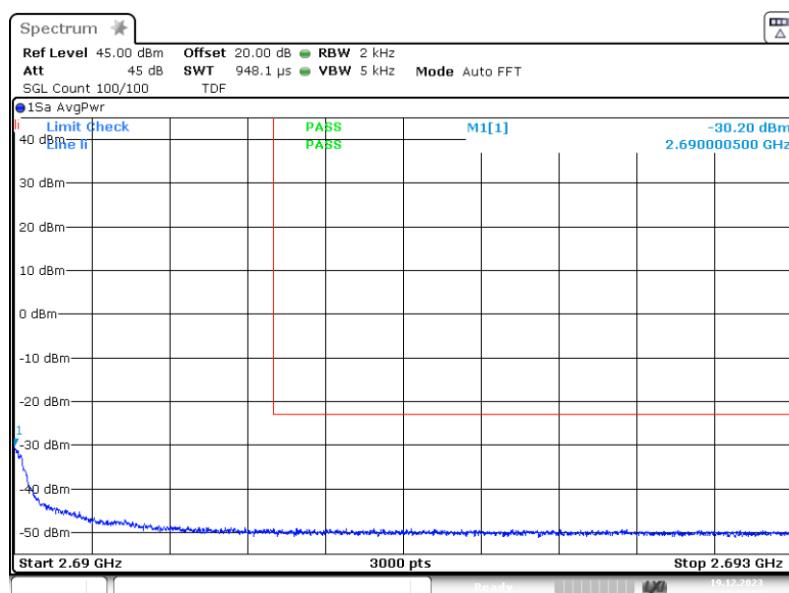
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high GSM upper 2carriers -0.3  
dB 2.690G 2.693G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: upper; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high GSM upper 2carriers +3.0  
dB 2.690G 2.693G

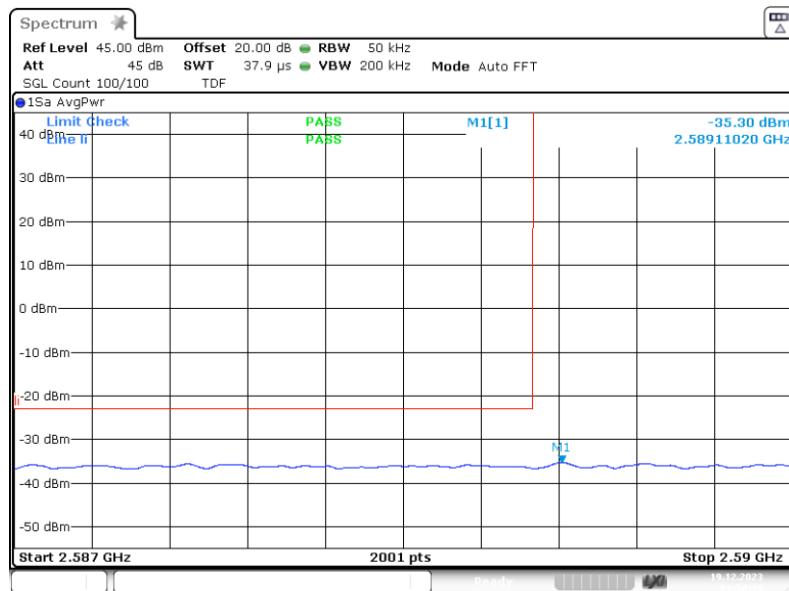


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## EMC Test Report No.: 24-0001

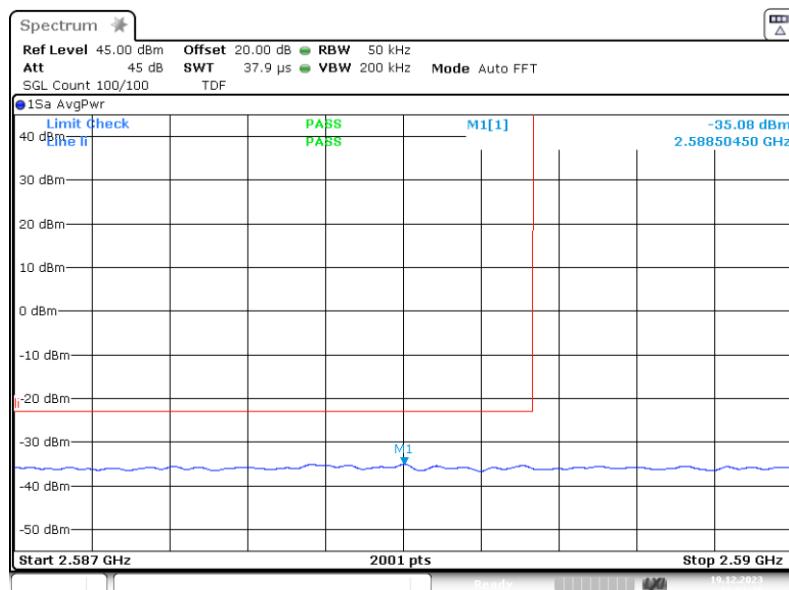
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high AWGN lower 2carriers -0.3  
dB 2.587G 2.590G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: AWGN;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high AWGN lower 2carriers +3.0  
dB 2.587G 2.590G

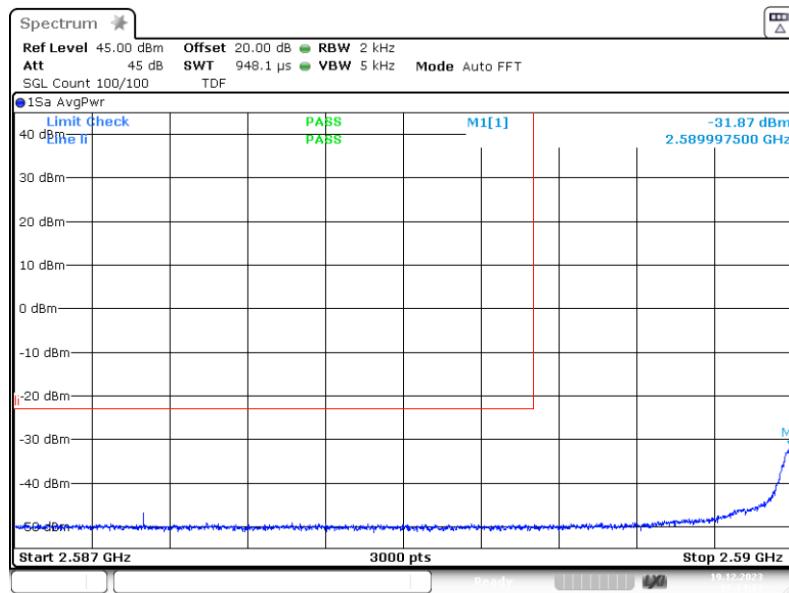


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## EMC Test Report No.: 24-0001

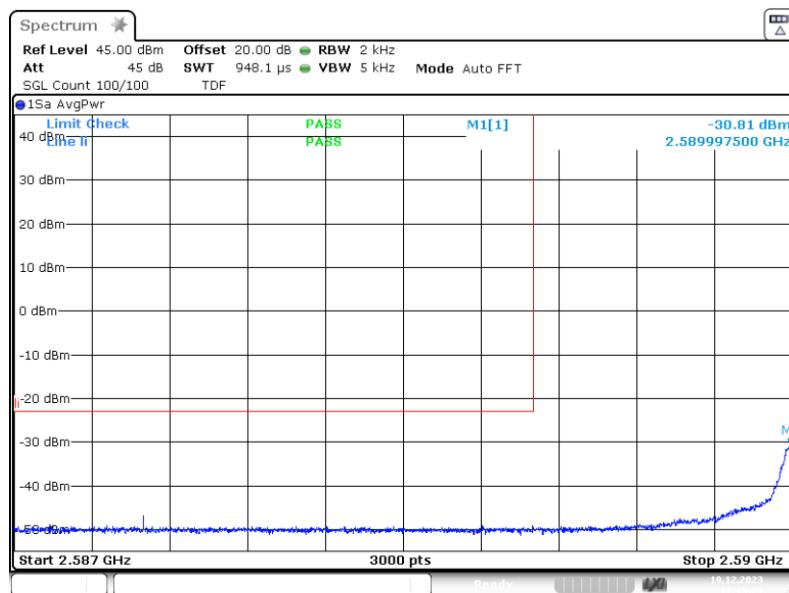
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 0.3 dB < AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high GSM lower 2carriers -0.3  
dB 2.587G 2.590G

Band 41 BRS (UBS); Frequency: 2.5900 GHz to 2.6900 GHz; Band Edge: lower; Mod: GSM;  
Input Power = 3 dB > AGC; Number of signals 2



3.6.2 out of band emi B41 BRS high GSM lower 2carriers +3.0  
dB 2.587G 2.590G



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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

#### 4.5.5 TEST EQUIPMENT USED

- Conducted



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## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

### 4.6 OUT-OF-BAND REJECTION

Standard FCC Part 27

**The test was performed according to:**

ANSI C63.26

**Test date:** 2023-12-19

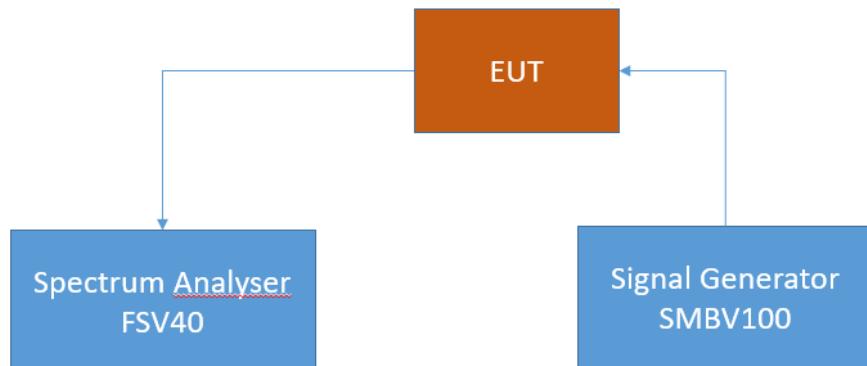
**Environmental conditions:** 23 °C ± 5 K; 40 % r. F. ± 20 % r. F.

**Test engineer:** Thomas Hufnagel

#### 4.6.1 TEST DESCRIPTION

This test case is intended to demonstrate compliance to the out-of-band rejection test case for industrial signal boosters.

The EUT was connected to the test setup according to the following diagram:



FCC Part 22/24/27/90 Industrial signal booster – Test Setup; Out-of-band rejection

The attenuation of the measuring and stimulus path are known for each measured frequency and are considered.

The Spectrum Analyzer settings can be directly found in the measurement diagrams.

#### 4.6.2 TEST REQUIREMENTS/LIMITS

For this test case exists no applicable limit



#### 4.6.3 TEST PROTOCOL

<b>Band 41 BRS (LBS), downlink</b>				
<b>Highest Power Frequency [MHz]</b>	<b>Output Power [dBm]</b>	<b>Lower Highest Power -20 dB Frequency [MHz]</b>	<b>Upper Highest Power -20 dB Frequency [MHz]</b>	<b>20 dB Bandwidth [MHz]</b>
2593.4	22.30	2492.375	2599.675	107.30

<b>Band 41 BRS (UBS), downlink</b>				
<b>Highest Power Frequency [MHz]</b>	<b>Output Power [dBm]</b>	<b>Lower Highest Power -20 dB Frequency [MHz]</b>	<b>Upper Highest Power -20 dB Frequency [MHz]</b>	<b>20 dB Bandwidth [MHz]</b>
2687.5	22.82	2586.475	2693.625	107.15

Remark: Please see next sub-clause for the measurement plots.



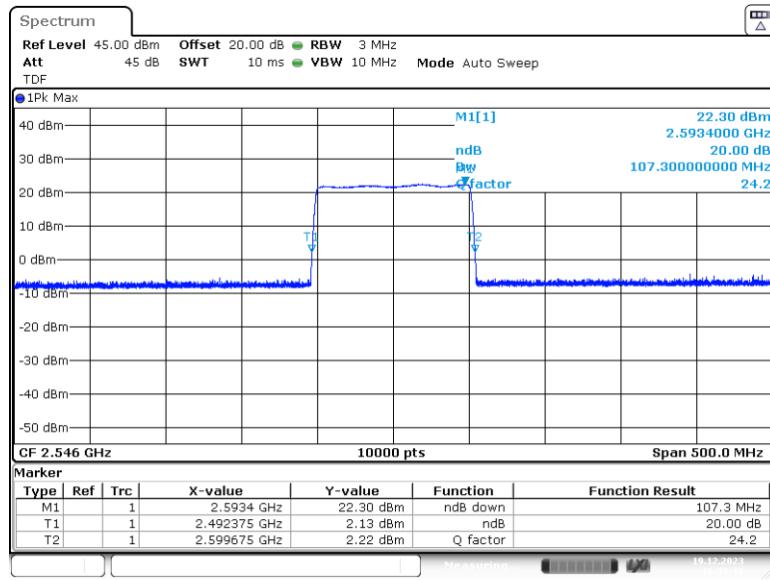
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## EMC Test Report No.: 24-0001

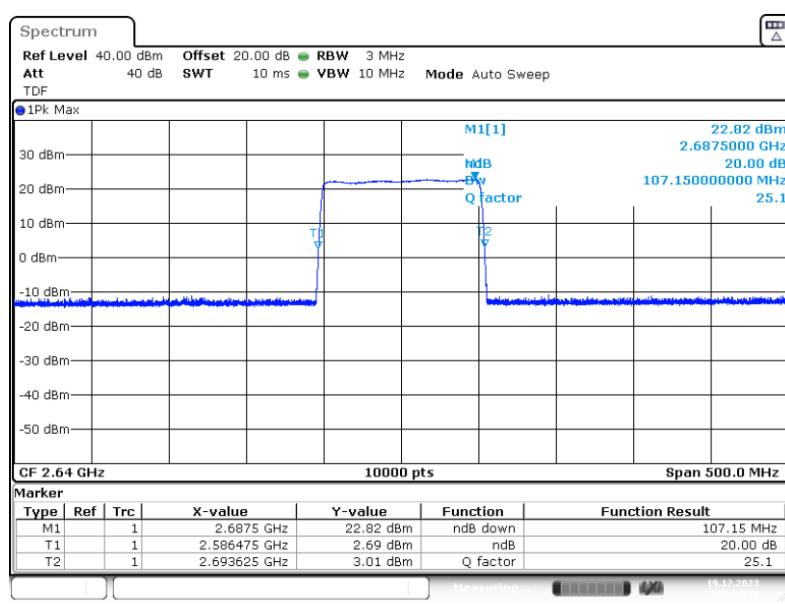
EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

### 4.6.4 MEASUREMENT PLOTS

Frequency Band = Band 41 BRS (LBS); Direction = RF downlink



Frequency Band = Band 41 BRS (UBS); Direction = RF downlink





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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

#### 4.6.5 TEST EQUIPMENT USED

- Conducted



#### 4.7 FREQUENCY STABILITY

The frequency stability test case was not carried out, as any frequency errors are eliminated by the given system architecture. This is achieved by generating the LOs in the head-end station and the LOs in the remote unit with a common reference clock. This reference clock is transmitted from the head-end station to the remote unit and regenerated there. This means that the same reference frequency is used for all signal conversions (up- and down-conversion as well as analog-to-digital and digital-to-analog conversion) and any frequency error in the reference clock is compensated therefore. This is already clear from the measurement markings for the occupied bandwidth (26 dB bandwidth). It can be seen that the DUT has no influence on the frequency (comparison between input and output signal). In addition, it is operationally necessary for the frequency deviation to be significantly smaller than the spectral distance between the transmission bandwidth edge and the channel bandwidth edge in order to meet the signal quality requirement (signal purity) and such ensure that the fundamental emissions remain within the authorized bands of operation.



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## EMC Test Report No.: 24-0001

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

## 5 TEST EQUIPMENT

### 5.1 CONDUCTED EMISSIONS

Ref.No.	Type	Description	Manufacturer	Inventory no.	Last Calibration	Calibration Due
1.1	FSV40	Signal Analyzer 10 Hz - 40 GHz	Rohde & Schwarz	E-003139	2023-10	2024-10
1.2	SMBV100A	Vector Signal Generator 9 kHz - 6 GHz	Rohde & Schwarz	E-003206	2023-01	2025-01
1.3	LabView	Software	NI	Auto Messung 1 Channel V8	---	---

The calibration interval is the time interval between "Last Calibration" and "Calibration Due".



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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

## 6 MEASUREMENT UNCERTAINTIES

<b>KDB 935210 D05</b>	<b>ECL</b>
Power measurement	0.68 dB
Measuring AGC threshold level	0.90 dB
Out of band rejection	0.90 dB
Input-versus-output signal comparison	0.91 dB
Mean power output	0.90 dB
Measuring out-of-band/out-of-block (including intermodulation) emissions and spurious emissions	0.90 dB
Out-of-band/out-of-block emissions conducted measurements	0.90 dB
Spurious emissions conducted	2.18 dB
Spurious emissions radiated measurements	5.38 dB
Total frequency uncertainty	$2 \times 10^{-7}$

Reference :

ECL-MU5.4.6.3-EMC-14-001-V03.00 MU Wireless.xlsx



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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

## 7 PHOTO REPORT

Please see separate photo report.



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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

**ANNEX A: ACCREDITATION CERTIFICATE (FOR INFORMATION)**

The accreditation relates to competences stated on the accreditation certificate. The current certificate is available on the homepage of the DAkkS and can be downloaded under accredited bodies with the processing number:

<https://www.dakks.de/en>



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**EMC Test Report No.: 24-0001**

EMC tests on Andrew CAP MX 6/7E/80-85/17/E/19/23/25 T-AC [BRS]

ANNEX B: ADDITIONAL INFORMATION PROVIDED BY CLIENT

None.

\*\*\*\*\* End of test report \*\*\*\*\*