中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

TEST REPORT

Applicant: **Proxim Wireless Corporation**

Address: 2114 Ringwood Ave, San Jose, CA 95131, USA

FCC ID: **HZB-NGPPS**

Product Name: **NGP LC 4.9+5 GHz radio**

Model Number: **MP-1045-BS3-US, AB-CCCCD-XXX-YYY-ZZ**

Standard(s): **47 CFR Part 2**
47 CFR Part 90
ANSI C63.26-2015

The above equipment has been tested and found compliance with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **CR21090075-00D**

Date Of Issue: **2022-06-03**

Reviewed By: **Sun Zhong** Sun Zhong

Title: Manager

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

1.1.1 General:

EUT Name:	NGP LC 4.9+5 GHz radio
EUT Model:	MP-1045-BS3-US
Multiple Model	AB-CCCCD-XXX-YYY-ZZ (Refer to the DOS letter for details)
Operation Frequency:	4942.5-4987.5 MHz(5MHz) 4945-4985 MHz(10MHz) 4950-4980 MHz(20MHz)
Maximum Average Output Power (Conducted):	21.91dBm
Modulation Type:	OFDM
Rated Input Voltage:	DC 56V from POE
Serial Number:	CR21090075-RF-S1
EUT Received Date:	2021.09.29
EUT Received Status:	Good
Note: The Multiple models are identical with Test model, please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.1.2 Operation Frequency Detail:

5MHz Mode		**10MHz Mode**		**20MHz Mode**	
Channel	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**
1	4942.5	1	4945	1	4950
2	4947.5	2	4950	2	4955
3	4952.5	3	4955	3	4960
4	4957.5	4	4960	4	4965
5	4962.5	5	4965	5	4970
6	4967.5	6	4970	6	4975
7	4972.5	7	4975	7	4980
8	4977.5	8	4980	/	/
9	4982.5	9	4985	/	/
10	4987.5	/	/	/	/
Per C63.26, the below frequencies were performed the test as below:					
1	4942.5	1	4945	1	4950
5	4962.5	5	4965	4	4965
10	4987.5	9	4985	7	4980

1.1.3 Antenna Information Detail▲:

Manufacturer	Model	Antenna Type	input impedance (Ohm)	Antenna Gain /Used Frequency Range
ARC Wireless	ARC-OA5813SD1	Dual Pol Omni Antenna	50	13 dBi/ 4.9-5.875GHz
ARC Wireless	ARC-VS5821SD1	Dual Polarization Variable Beamwidth Sector Antenna	50	21 dBi/ 4.94-5.875GHz
Proxim	PA5-0823-DP	High Gain Dual Polarized/Dual Slant Antenna	50	23 dBi/ 4.9-5.875GHz
UBIQUITI Networks	RD5G34	2x2 PtP Bridge Dish Antenna	50	34 dBi/ 4.9-5.875GHz

1.1.4 Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
Adapter	Proxim / RISUNIC	RP025-5600536YG/Proxim 400-00021	Input AC 100-240V 50/60Hz 0.7A Max Output: DC 56.0V 0.536A

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
Equipment Modifications:	No
EUT Exercise Software:	QRCT

The software " QRCT "was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:

For 13 dBi Antenna:

Frequency Band	Test Modes	Data Rate	Power Level Setting					
			Lowest Channel		Middle Channel		Highest Channel	
			Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
4940-4990 MHz	5MHz	Default	35	35	35	35	35	35
	10MHz	Default	24	24	24	24	24	24
	20MHz	Default	30	30	30	30	30	29

For 21 dBi Antenna:

Frequency Band	Test Modes	Data Rate	Power Level Setting					
			Lowest Channel		Middle Channel		Highest Channel	
			Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
4940-4990 MHz	5MHz	Default	33	33	33	33	33	33
	10MHz	Default	40	40	40	40	40	40
	20MHz	Default	40	40	40	40	40	40

For 23 dBi Antenna:

Frequency Band	Test Modes	Data Rate	Power Level Setting					
			Lowest Channel		Middle Channel		Highest Channel	
			Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
4940-4990 MHz	5MHz	Default	33	33	33	33	33	33
	10MHz	Default	40	40	40	40	40	40
	20MHz	Default	40	40	40	40	40	40

For 34 dBi Antenna:

Frequency Band	Test Modes	Data Rate	Power Level Setting					
			Lowest Channel		Middle Channel		Highest Channel	
			Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
4940-4990 MHz	5MHz	Default	35	35	35	35	35	35
	10MHz	Default	24	24	24	24	24	24
	20MHz	Default	30	30	30	30	30	29

The system support 5MHz/10MHz/20MHz modes.
The device supports SISO and MIMO in all modes, per pretest, MIMO 2TX mode was the worst mode and reported.
13dBi and 34 dBi antennas have same power setting, so antenna port test items were performed once.
21dBi and 23 dBi antennas have same power setting, so antenna port test items were performed once.

1.2.2 Support Equipment List and Details

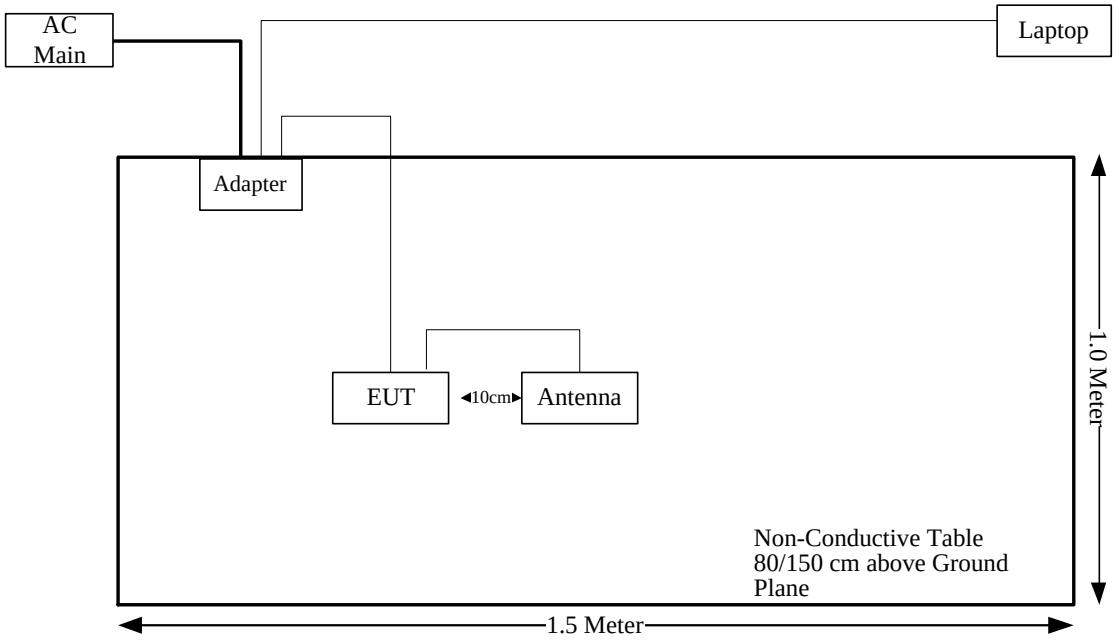
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	E480	PF-1QQYYP 19/06

1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	No	10	PoE Adapter	Laptop

1.2.4 Block Diagram of Test Setup

Radiated emissions:



1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB,200M~1GHz: 5.61 dB,1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

2. SUMMARY OF TEST RESULTS

Standard(s) Section	Test Items	Result
FCC §2.1046, §90.1215	Maximum conducted output power	Compliance
FCC §90.1215	Maximum power spectral density	Compliance
FCC §90.1215	Peak Excursion Ratio	Compliance
FCC §2.1049, §90.1215, §90.209	Emission Bandwidth	Compliance
FCC §2.1051, §90.210	Emission Mask	Compliance
FCC §2.1051, §90.210	Conducted Spurious Emission	Compliance
FCC §2.1053, §90.210	Radiated Spurious Emission	Compliance
FCC §2.1053, §90.210	Frequency Stability	Compliance

3. REQUIREMENTS AND TEST PROCEDURES

3.1 Maximum conducted output power:

3.1.1 Applicable Standard

FCC §90.1215
The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.
(a)(1) The maximum conducted output power should not exceed:

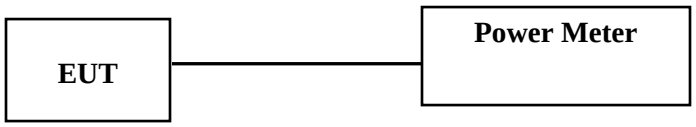
Channel bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

(2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be theamount in decibels that the directional gain of the antenna exceeds 26 dBi.

(b) Low power devices are also limited to a peak power spectral density of 8 dBm per one MHz. Low power devices using channel bandwidths other than those listed above are permitted; however, they are limited to a peak power spectral density of 8 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

(c) The maximum conducted output power is measured as a conducted emission over any interval of continuous transmission using instrumentation calibrated in terms of an RMS-equivalent voltage. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true maximum conducted output power measurement conforming to the definitions in this paragraph for the emission in question.

3.1.2 EUT Setup



3.1.3 Test Procedure

According to ANSI C63.26-2015 Section 5.2.4.2 a)

Method PM-G is measurement using a gated RF average power meter.
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2 Maximum power spectral density:

3.2.1 Applicable Standard

FCC §90.1215
The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.
(a)(1) The maximum conducted output power should not exceed:

Channel bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

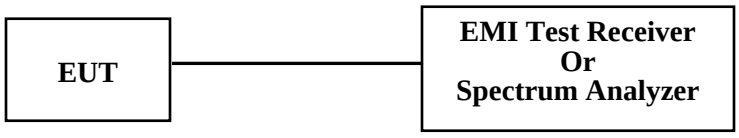
(2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be theamount in decibels that the directional gain of the antenna exceeds 26 dBi.

(b) Low power devices are also limited to a peak power spectral density of 8 dBm per one MHz. Low power devices using channel bandwidths other than those listed above are permitted; however, they are limited to a peak power spectral density of 8 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.

(c) The maximum conducted output power is measured as a conducted emission over any interval of continuous transmission using instrumentation calibrated in terms of an RMS-equivalent voltage. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true maximum conducted output power measurement conforming to the definitions in this paragraph for the emission in question.

(d) The peak power spectral density is measured as conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of one MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

3.2.2 EUT Setup



3.2.3Test Procedure

According to ANSI C63.26-2015 Section 5.2.4.5

Some regulatory requirements specify the RF output power limits in terms of maximum or average PSD, (i.e., the output power or unwanted emissions power limits are defined within a specified reference bandwidth).
When average PSD limits are specified, the same fundamental measurement condition applies as previously discussed (i.e., averaging is to be performed only over durations of active transmissions at maximum output power level). Thus, when performing this measurement, the EUT must either be configured to transmit continuously at full power while the compliance measurement is performed, or else the measurement instrumentation must be configured to acquire data only over durations when the EUT is actively transmitting at full power. In circumstances where neither of these conditions can be realized, then alternative procedures are provided for both constant duty cycle and non-constant duty cycle transmissions. The PSD is measured following the same procedures described in 5.2.4.4 for measuring the total average power, but with the RBW set to the reference bandwidth specified by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW. If the fundamental measurement condition cannot be realized, then one of the alternative procedures in 5.2.4.4.2 or 5.2.4.4.3 should be selected, based on whether the transmitter duty cycle is constant (variations $\leq \pm 2\%$) or non-constant (variations $> \pm 2\%$), respectively.

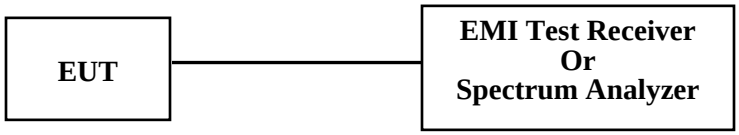
3.3 Peak Excursion Ratio:

3.3.1 Applicable Standard

FCC §90.1215

(e) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

3.3.2 EUT Setup



3.3.3Test Procedure

According to ANSI C63.26-2015 Section 5.2.3.4

See instrumentation-specific application literature for further guidance regarding use of the CCDF capability. The following guidelines are offered for performing a CCDF measurement.
a) Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.
b) Set the number of counts to a value that stabilizes the measured CCDF curve.
c) Set the measurement interval as follows:
1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms.
2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
d) Record the maximum PAPR level associated with a probability of 0.1%.
e) The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

3.4 Occupied Bandwidth

3.4.1 Applicable Standard

FCC §90.1215

(d) The peak power spectral density is measured as conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of one MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

FCC §90.209

(a) Each authorization issued to a station licensed under this part will show an emission designator representing the class of emission authorized. The designator will be prefixed by a specified necessary bandwidth. This number does not necessarily indicate the bandwidth occupied by the emission at any instant. In those cases where §2.202 of this chapter does not provide a formula for the computation of necessary bandwidth, the occupied bandwidth, as defined in part 2 of this chapter, may be used in lieu of the necessary bandwidth.

(b) (5)Unless specified elsewhere, channel spacings and bandwidths that will be authorized in the following frequency bands are given in the following table: STANDARD CHANNEL SPACING/BANDWIDTH

3.4.2 Test Procedure

According to ANSI C63.26-2015 Section 5.4.3

The reference level is either the amplitude of the unmodulated carrier, or the highest amplitude of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements can specify a particular maximum or minimum value for the "−X dB" bandwidth; other requirements can specify that the "−X dB" bandwidth be entirely contained within the authorized or designated frequency band.
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in4.2.3.
NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.
d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
f) Determine the reference value by either of the following:
1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.
g) Determine the "−X dB amplitude" as equal to (Reference Value − X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).
i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "−X dB amplitude" determined in step f). If a marker is below this "−X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers The spectral envelope can cross the "−X dB amplitude" at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the "−X dB amplitude."
j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

According to ANSI C63.26-2015 Section 5.4.4

The OBW is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring (99%) power bandwidth:
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient).
b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.
d) Set the detection mode to peak, and the trace mode to max-hold.
e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.
f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

3.5 Emission Mask & Conducted Spurious Emission

3.5.1 Applicable Standard

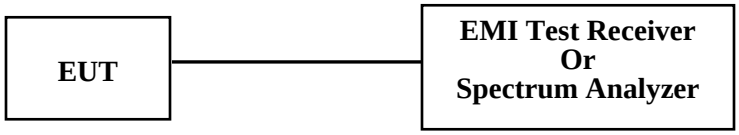
FCC §90.210
(l) Emission Mask L. For low power transmitters (20 dBm or less) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW): 0 dB.
(2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth: 219 log (% of (BW)/45) dB.
(3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth: 10 + 242 log (% of (BW)/50) dB.
(4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth: 20 + 31 log (% of (BW)/55) dB attenuation.
(5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth: 28 + 68 log (% of (BW)/100) dB attenuation.
(6) On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 40 dB.
(7) The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

(m) Emission Mask M. For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:
(1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW): 0 dB.
(2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth: 568 log (% of (BW)/45) dB.
(3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth: 26 + 145 log (% of BW/50) dB.
(4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth: 32 + 31 log (% of (BW)/55) dB.
(5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth: 40 + 57 log (% of (BW)/100) dB.
(6) On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.
(7) The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels

are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

3.5.2 EUT Setup



3.5.3Test Procedure

C63.26-2015, Clause 5.7.4

a) Set the spectrum analyzer start frequency to the lowest frequency generated by the EUT, without going below 9 kHz, and the stop frequency to the lower frequency covered by the measurements previously performed in 5.7.3. As an alternative, the stop frequency can be set to the value specified in 5.1.1, depending on the EUT operating range, if the resulting plot can clearly demonstrate compliance for all frequencies not addressed by the out-of-band emissions measurements performed as per 5.7.3.

b) When using an average power (rms) detector, ensure that the number of points in the sweep ≥ 2 × (span / RBW). This may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the spectrum analyzer capabilities. This requirement does not apply to peak-detected power measurements. When average power is specified by the applicable regulation, a peak-detector can be utilized for preliminary measurements to accommodate wider frequency spans. Any emissions found in the preliminary measurement to exceed the applicable limit(s) shall be further examined using a power averaging (rms) detector with the minimum number of measurement points as defined above.

c) The sweep time should be set to auto-couple for performing peak-detector measurements. For measurements that use a power averaging (rms) detector, the sweep time shall be set as described for out-of-band emissions measurements in item d) of 5.7.3.

d) Identify and measure the highest spurious emission levels in each frequency range. It is not necessary to re-measure the out-of-band emissions as a part of this test. Record the frequencies and amplitudes corresponding to the measured emissions and capture the data plots.

e) Repeat step b) through step d) for the upper spurious emission frequency range if not already captured by a wide span measurement performed as per the alternative provided in step a). The upper frequency for this measurement is defined in 5.1.1 as a function of the EUT operating range.

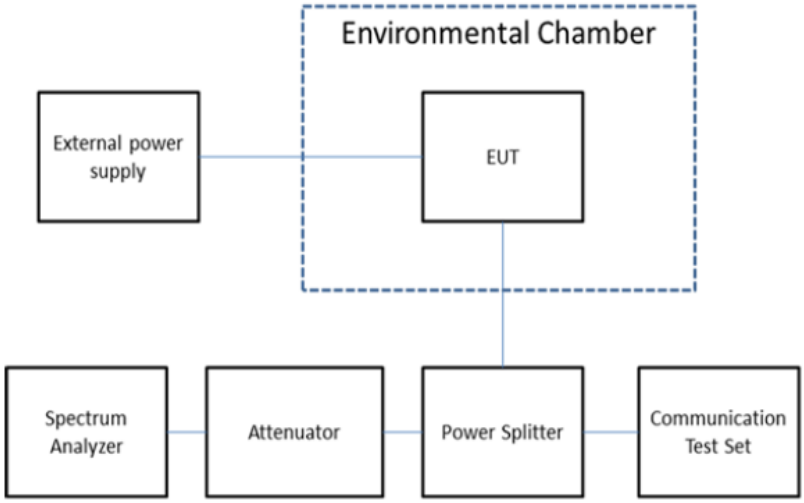
f) Compare the results with the corresponding limit in the applicable regulation.
g) The test report shall include the data plots of the measuring instrument display and the measured data.

3.6 Frequency Stability

3.6.1 Applicable Standard

FCC §2.1055, 90.213

3.6.2 EUT Setup Block Diagram



3.6.3 Test Procedure

C63.26-2015, Clause 5.6

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 ℃ and rated supply voltage. The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency determining circuit element shall be made subsequent to this initial set-up. Frequency stability is tested:
a) At 10 ℃ intervals of temperatures between −30 °C and +50 °C at the manufacturer's rated supply voltage, and
b) At +20 ℃ temperature and ±15% supply voltage variations. If a product is specified to operate over a range of input voltage then the −15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage. During the test all necessary settings, adjustments and control of the EUT have to be performed without disturbing the test environment, i.e., without opening the environmental chamber. The frequency stabilities can be maintained to a lesser temperature range provided that the transmitter is automatically inhibited from operating outside the lesser temperature range. For handheld equipment that is only capable of operating from internal batteries and the supply voltage cannot be varied, the frequency stability tests shall be performed at the nominal battery voltage and the battery end point voltage specified by the manufacturer. An external supply voltage can be used and set at the internal battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.
If an unmodulated carrier is not available, the mean frequency of a modulated carrier can be obtained by using a frequency counter with gating time set to an appropriately large multiple of bit periods (gating time depending on the required accuracy). Full details on the choice of values shall be included in the test report.

3.7 Radiated Spurious emissions

3.7.1 Test setup:

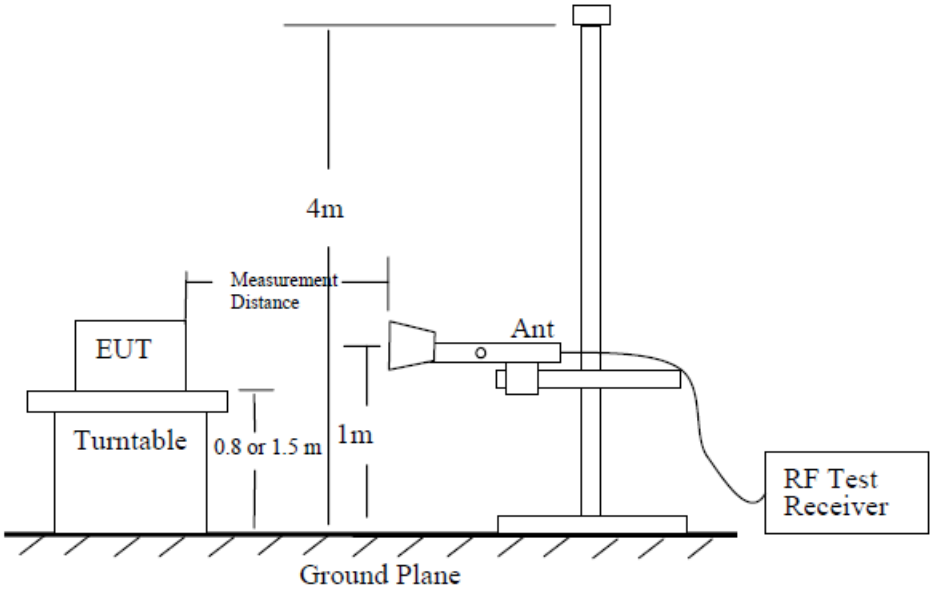


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

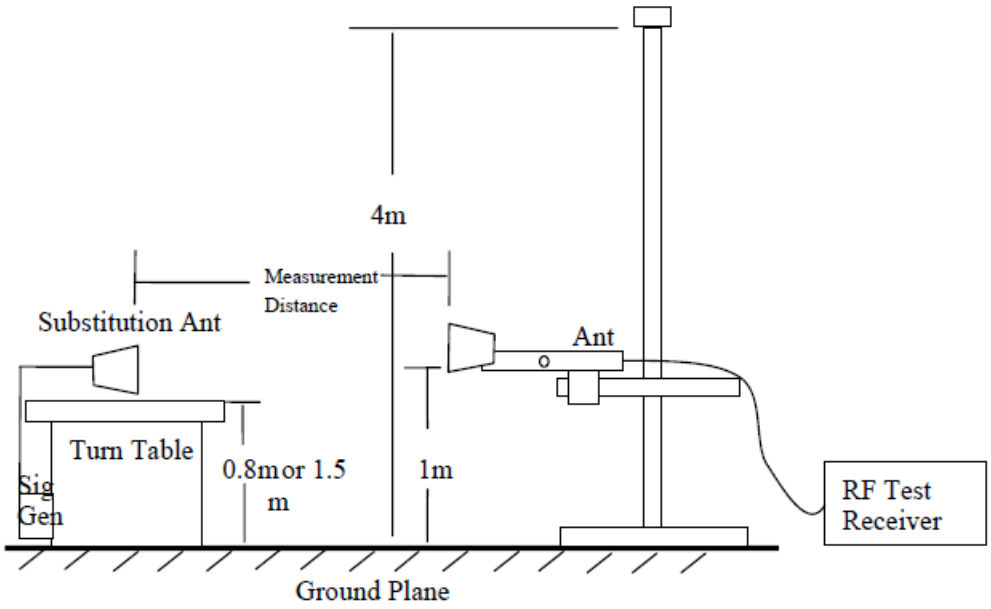


Figure 7—Substitution method set-up for radiated emission

3.7.2 Test Procedure:

ANSI C63.26-2015 Section 5.5.3

a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

b) Each emission under consideration shall be evaluated:

1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.

2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

3) Return the turntable to the azimuth where the highest emission amplitude level was observed.

4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

5) Record the measured emission amplitude level and frequency using the appropriate RBW.

c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

d) Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.

e) Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.

f) Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.

g) For each emission that was detected and measured in the initial test [i.e., in step b) and step c)]:

1) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.

2) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step b) and step c).

3) Record the output power level of the signal generator when equivalence is achieved in step 2).

h) Repeat step e) through step g) with the measurement antenna oriented in the opposite polarization.

i) Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:

$$Pe = Ps(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

where

Pe = equivalent emission power in dBm
Ps = source (signal generator) power in dBm

NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.

j) Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from: gain (dBd) = gain (dBi) − 2.15 dB. If necessary, the antenna gain can be calculated from calibrated antenna factor information

k) Provide the complete measurement results as a part of the test report.

4. TEST DATA AND RESULTS

4.1 Radiation Spurious Emissions

Serial Number:	CR21090075-RF-S1	Test Date:	2022-02-12
Test Site:	966-1,966-2	Test Mode:	Transmitting
Tester:	Great Qiao, Carl Liang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	19.1	Relative Humidity: (%)	70	ATM Pressure: (kPa)	101.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020-10-19	2023-10-18
R&S	EMI Test Receiver	ESR3	102724	2021-07-22	2022-07-21
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2021-07-18	2022-07-17
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2021-07-18	2022-07-17
Sonoma	Amplifier	310N	186165	2021-07-18	2022-07-17
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
MICRO-COAX	Coaxial Cable	UFA210B-0-0720-300300	99G1448	2021-07-25	2022-07-24
Agilent	Signal Generator	E8247C	MY43321350	2021-04-25	2022-04-24
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020-10-13	2023-10-12
PASTERNACK	Horn Antenna	PE9852/2F-20	112002	2021-02-05	2023-02-04
R&S	Spectrum Analyzer	FSV40	101591	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2021-08-08	2022-08-07
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2021-08-08	2022-08-07
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2021-08-08	2022-08-07
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2021-11-10	2022-11-09
AH	Preamplifier	PAM-1840VH	190	2021-11-10	2022-11-09
AH	Double Ridge Guide Horn Antenna	SAS-571	1396	2021-10-18	2023-10-17
PASTERNACK	Horn Antenna	PE9852/2F-20	112001	2021-02-05	2023-02-04
Mini Circuits	High Pass Filter	VHF-6010+	31119	2021-08-08	2022-08-07

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Note: Simultaneous transmission please refer to the report CR21090075-00B.

Note: For below 1GHz, pre-scan all antennas and 13dBi antenna is the worst case.
13 dBi Antenna:
5MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4942.5 MHz								
9885.00	H	33.75	-53.38	11.61	2.46	-44.23	-25.00	19.23
9885.00	V	33.47	-53.50	11.61	2.46	-44.35	-25.00	19.35
14827.50	H	33.63	-47.14	13.69	2.67	-36.12	-25.00	11.12
14827.50	V	34.00	-47.55	13.69	2.67	-36.53	-25.00	11.53
6389.50	H	42.34	-49.71	11.21	1.88	-40.38	-25.00	15.38
6589.50	V	43.86	-47.94	11.28	1.90	-38.56	-25.00	13.56
3209.00	H	49.54	-47.54	10.28	1.12	-38.38	-25.00	13.38
186.50	H	56.11	-56.51	0.00	0.26	-56.77	-25.00	31.77
133.20	V	62.32	-44.90	0.00	0.22	-45.12	-25.00	20.12
Middle Channel: 4962.5 MHz								
9925.00	H	33.91	-52.97	11.64	2.45	-43.78	-25.00	18.78
9925.00	V	33.24	-53.57	11.64	2.45	-44.38	-25.00	19.38
14887.50	H	34.06	-47.07	13.80	2.55	-35.82	-25.00	10.82
14887.50	V	33.83	-47.71	13.80	2.55	-36.46	-25.00	11.46
6616.50	H	41.48	-50.23	11.28	1.91	-40.86	-25.00	15.86
6616.50	V	45.08	-46.59	11.28	1.91	-37.22	-25.00	12.22
3237.00	H	43.91	-53.04	10.29	1.15	-43.90	-25.00	18.90
133.20	H	58.46	-53.77	0.00	0.22	-53.99	-25.00	28.99
133.20	V	65.06	-42.16	0.00	0.22	-42.38	-25.00	17.38
Highest Channel: 4987.5 MHz								
9975.00	H	33.69	-52.72	11.68	2.43	-43.47	-25.00	18.47
9975.00	V	33.91	-52.56	11.68	2.43	-43.31	-25.00	18.31
14962.50	H	33.75	-47.83	13.93	2.51	-36.41	-25.00	11.41
14962.50	V	34.26	-47.27	13.93	2.51	-35.85	-25.00	10.85
6650.00	H	41.59	-49.96	11.27	1.90	-40.59	-25.00	15.59
6650.00	V	45.19	-46.22	11.27	1.90	-36.85	-25.00	11.85
3278.00	H	53.21	-43.56	10.31	1.16	-34.41	-25.00	9.41
133.20	H	56.68	-55.55	0.00	0.22	-55.77	-25.00	30.77
133.20	V	63.32	-43.90	0.00	0.22	-44.12	-25.00	19.12

10MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4945 MHz								
9890.00	H	33.47	-53.66	11.61	2.46	-44.51	-25.00	19.51
9890.00	V	33.63	-53.34	11.61	2.46	-44.19	-25.00	19.19
14835.00	H	33.42	-47.39	13.70	2.66	-36.35	-25.00	11.35
14835.00	V	33.34	-48.21	13.70	2.66	-37.17	-25.00	12.17
6593.00	H	41.82	-49.97	11.28	1.90	-40.59	-25.00	15.59
6593.00	V	43.26	-48.54	11.28	1.90	-39.16	-25.00	14.16
3216.00	H	39.75	-57.30	10.29	1.13	-48.14	-25.00	23.14
133.20	H	56.00	-56.23	0.00	0.22	-56.45	-25.00	31.45
133.20	V	64.00	-43.22	0.00	0.22	-43.44	-25.00	18.44
Middle Channel: 4965 MHz								
9930.00	H	33.45	-53.38	11.64	2.45	-44.19	-25.00	19.19
9930.00	V	34.15	-52.63	11.64	2.45	-43.44	-25.00	18.44
14895.00	H	33.38	-47.79	13.81	2.53	-36.51	-25.00	11.51
14895.00	V	33.82	-47.72	13.81	2.53	-36.44	-25.00	11.44
6620.00	H	40.70	-50.99	11.28	1.91	-41.62	-25.00	16.62
6620.00	V	43.18	-48.46	11.28	1.91	-39.09	-25.00	14.09
3244.00	H	42.14	-54.78	10.30	1.16	-45.64	-25.00	20.64
187.90	H	56.18	-56.47	0.00	0.26	-56.73	-25.00	31.73
133.20	V	64.38	-42.84	0.00	0.22	-43.06	-25.00	18.06
Highest Channel: 4985 MHz								
9970.00	H	33.87	-52.58	11.68	2.43	-43.33	-25.00	18.33
9970.00	V	33.12	-53.38	11.68	2.43	-44.13	-25.00	19.13
14955.00	H	34.01	-47.52	13.92	2.51	-36.11	-25.00	11.11
14955.00	V	34.70	-46.83	13.92	2.51	-35.42	-25.00	10.42
6647.00	H	40.68	-50.88	11.27	1.90	-41.51	-25.00	16.51
6647.00	V	43.77	-47.66	11.27	1.90	-38.29	-25.00	13.29
3271.00	H	43.27	-53.53	10.31	1.16	-44.38	-25.00	19.38
187.90	H	56.46	-56.19	0.00	0.26	-56.45	-25.00	31.45
133.20	V	64.52	-42.70	0.00	0.22	-42.92	-25.00	17.92

20MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4950 MHz								
9900.00	H	33.35	-53.76	11.62	2.45	-44.59	-25.00	19.59
9900.00	V	33.47	-53.51	11.62	2.45	-44.34	-25.00	19.34
14850.00	H	33.89	-47.01	13.73	2.63	-35.91	-25.00	10.91
14850.00	V	33.65	-47.90	13.73	2.63	-36.80	-25.00	11.80
6600.00	H	40.79	-51.00	11.28	1.91	-41.63	-25.00	16.63
6600.00	V	41.71	-50.09	11.28	1.91	-40.72	-25.00	15.72
3223.00	H	39.29	-57.73	10.29	1.14	-48.58	-25.00	23.58
133.20	H	55.45	-56.78	0.00	0.22	-57.00	-25.00	32
133.20	V	63.66	-43.56	0.00	0.22	-43.78	-25.00	18.78
Middle Channel: 4965 MHz								
9930.00	H	33.06	-53.77	11.64	2.45	-44.58	-25.00	19.58
9930.00	V	33.82	-52.96	11.64	2.45	-43.77	-25.00	18.77
14895.00	H	33.56	-47.61	13.81	2.53	-36.33	-25.00	11.33
14895.00	V	33.42	-48.12	13.81	2.53	-36.84	-25.00	11.84
6620.00	H	40.84	-50.85	11.28	1.91	-41.48	-25.00	16.48
6620.00	V	42.41	-49.23	11.28	1.91	-39.86	-25.00	14.86
3240.00	H	39.66	-57.28	10.30	1.16	-48.14	-25.00	23.14
186.50	H	56.07	-56.55	0.00	0.26	-56.81	-25.00	31.81
133.20	V	63.39	-43.83	0.00	0.22	-44.05	-25.00	19.05
Highest Channel: 4980 MHz								
9960.00	H	33.76	-52.79	11.67	2.44	-43.56	-25.00	18.56
9960.00	V	33.40	-53.17	11.67	2.44	-43.94	-25.00	18.94
14940.00	H	33.73	-47.71	13.89	2.51	-36.33	-25.00	11.33
14940.00	V	33.20	-48.34	13.89	2.51	-36.96	-25.00	11.96
6640.00	H	40.78	-50.81	11.27	1.90	-41.44	-25.00	16.44
6640.00	V	42.61	-48.88	11.27	1.90	-39.51	-25.00	14.51
3257.00	H	41.30	-55.56	10.30	1.17	-46.43	-25.00	21.43
186.50	H	56.74	-55.88	0.00	0.26	-56.14	-25.00	31.14
133.20	V	63.37	-43.85	0.00	0.22	-44.07	-25.00	19.07

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

21 dBi Antenna:
5MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4942.5 MHz								
9885.00	H	34.96	-52.17	11.61	2.46	-43.02	-25.00	18.02
9885.00	V	33.59	-53.38	11.61	2.46	-44.23	-25.00	19.23
14827.50	H	33.54	-47.23	13.69	2.67	-36.21	-25.00	11.21
14827.50	V	33.78	-47.77	13.69	2.67	-36.75	-25.00	11.75
6589.00	H	49.10	-42.68	11.28	1.90	-33.30	-25.00	8.30
6589.00	V	34.97	-56.83	11.28	1.90	-47.45	-25.00	22.45
Middle Channel: 4962.5 MHz								
9925.00	H	33.88	-53.00	11.64	2.45	-43.81	-25.00	18.81
9925.00	V	33.45	-53.36	11.64	2.45	-44.17	-25.00	19.17
14887.50	H	33.97	-47.16	13.80	2.55	-35.91	-25.00	10.91
14887.50	V	33.21	-48.33	13.80	2.55	-37.08	-25.00	12.08
6616.00	H	47.18	-44.53	11.28	1.91	-35.16	-25.00	10.16
6616.00	V	38.48	-53.20	11.28	1.91	-43.83	-25.00	18.83
Highest Channel: 4987.5 MHz								
9975.00	H	33.85	-52.56	11.68	2.43	-43.31	-25.00	18.31
9975.00	V	32.28	-54.19	11.68	2.43	-44.94	-25.00	19.94
14962.50	H	34.43	-47.15	13.93	2.51	-35.73	-25.00	10.73
14962.50	V	34.63	-46.90	13.93	2.51	-35.48	-25.00	10.48
6648.00	H	46.99	-44.56	11.27	1.90	-35.19	-25.00	10.19
6648.00	V	39.34	-52.09	11.27	1.90	-42.72	-25.00	17.72

10MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4945 MHz								
9890.00	H	33.25	-53.88	11.61	2.46	-44.73	-25.00	19.73
9890.00	V	33.63	-53.34	11.61	2.46	-44.19	-25.00	19.19
14835.00	H	33.47	-47.34	13.70	2.66	-36.30	-25.00	11.30
14835.00	V	33.24	-48.31	13.70	2.66	-37.27	-25.00	12.27
6593.00	H	47.52	-44.27	11.28	1.90	-34.89	-25.00	9.89
6593.00	V	34.21	-57.59	11.28	1.90	-48.21	-25.00	23.21
Middle Channel: 4965 MHz								
9930.00	H	33.52	-53.31	11.64	2.45	-44.12	-25.00	19.12
9930.00	V	32.74	-54.04	11.64	2.45	-44.85	-25.00	19.85
14895.00	H	33.31	-47.86	13.81	2.53	-36.58	-25.00	11.58
14895.00	V	33.81	-47.73	13.81	2.53	-36.45	-25.00	11.45
6620.00	H	45.69	-46.00	11.28	1.91	-36.63	-25.00	11.63
6620.00	V	38.64	-53.00	11.28	1.91	-43.63	-25.00	18.63
Highest Channel: 4985 MHz								
9970.00	H	32.54	-53.91	11.68	2.43	-44.66	-25.00	19.66
9970.00	V	32.02	-54.48	11.68	2.43	-45.23	-25.00	20.23
14955.00	H	33.72	-47.81	13.92	2.51	-36.40	-25.00	11.40
14955.00	V	34.24	-47.29	13.92	2.51	-35.88	-25.00	10.88
6647.00	H	45.63	-45.93	11.27	1.90	-36.56	-25.00	11.56
6647.00	V	40.25	-51.18	11.27	1.90	-41.81	-25.00	16.81

20MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4950 MHz								
9900.00	H	33.21	-53.90	11.62	2.45	-44.73	-25.00	19.73
9900.00	V	33.26	-53.72	11.62	2.45	-44.55	-25.00	19.55
14850.00	H	33.15	-47.75	13.73	2.63	-36.65	-25.00	11.65
14850.00	V	33.87	-47.68	13.73	2.63	-36.58	-25.00	11.58
6600.00	H	47.62	-44.17	11.28	1.91	-34.80	-25.00	9.80
6600.00	V	34.28	-57.52	11.28	1.91	-48.15	-25.00	23.15
Middle Channel: 4965 MHz								
9930.00	H	33.33	-53.50	11.64	2.45	-44.31	-25.00	19.31
9930.00	V	32.65	-54.13	11.64	2.45	-44.94	-25.00	19.94
14895.00	H	33.23	-47.94	13.81	2.53	-36.66	-25.00	11.66
14895.00	V	34.01	-47.53	13.81	2.53	-36.25	-25.00	11.25
6620.00	H	45.68	-46.01	11.28	1.91	-36.64	-25.00	11.64
6620.00	V	38.81	-52.83	11.28	1.91	-43.46	-25.00	18.46
Highest Channel: 4980 MHz								
9960.00	H	32.61	-53.94	11.67	2.44	-44.71	-25.00	19.71
9960.00	V	32.82	-53.75	11.67	2.44	-44.52	-25.00	19.52
14940.00	H	32.95	-48.49	13.89	2.51	-37.11	-25.00	12.11
14940.00	V	33.28	-48.26	13.89	2.51	-36.88	-25.00	11.88
6639.00	H	45.36	-46.24	11.27	1.90	-36.87	-25.00	11.87
6639.00	V	41.24	-50.26	11.27	1.90	-40.89	-25.00	15.89

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

23 dBi Antenna:
5MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4942.5 MHz								
9885.00	H	40.76	-46.37	11.61	2.46	-37.22	-25.00	12.22
9885.00	V	41.97	-45.00	11.61	2.46	-35.85	-25.00	10.85
14827.50	H	34.25	-46.52	13.69	2.67	-35.50	-25.00	10.50
14827.50	V	34.21	-47.34	13.69	2.67	-36.32	-25.00	11.32
6589.00	H	50.09	-41.69	11.28	1.90	-32.31	-25.00	7.31
6589.00	V	50.54	-41.26	11.28	1.90	-31.88	-25.00	6.88
Middle Channel: 4962.5 MHz								
9925.00	H	44.31	-42.57	11.64	2.45	-33.38	-25.00	8.38
9925.00	V	36.89	-49.92	11.64	2.45	-40.73	-25.00	15.73
14887.50	H	33.59	-47.54	13.80	2.55	-36.29	-25.00	11.29
14887.50	V	33.98	-47.56	13.80	2.55	-36.31	-25.00	11.31
6613.00	H	50.81	-40.92	11.28	1.91	-31.55	-25.00	6.55
6613.00	V	50.71	-40.99	11.28	1.91	-31.62	-25.00	6.62
Highest Channel: 4987.5 MHz								
9975.00	H	44.08	-42.33	11.68	2.43	-33.08	-25.00	8.08
9975.00	V	38.04	-48.43	11.68	2.43	-39.18	-25.00	14.18
14962.50	H	33.95	-47.63	13.93	2.51	-36.21	-25.00	11.21
14962.50	V	33.26	-48.27	13.93	2.51	-36.85	-25.00	11.85
6653.00	H	50.63	-40.90	11.27	1.90	-31.53	-25.00	6.53
6653.00	V	50.19	-41.20	11.27	1.90	-31.83	-25.00	6.83

10MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4945 MHz								
9890.00	H	35.15	-51.98	11.61	2.46	-42.83	-25.00	17.83
9890.00	V	33.69	-53.28	11.61	2.46	-44.13	-25.00	19.13
14835.00	H	33.52	-47.29	13.70	2.66	-36.25	-25.00	11.25
14835.00	V	33.62	-47.93	13.70	2.66	-36.89	-25.00	11.89
6593.00	H	53.88	-37.91	11.28	1.90	-28.53	-25.00	3.53
6593.00	V	50.78	-41.02	11.28	1.90	-31.64	-25.00	6.64
Middle Channel: 4965 MHz								
9930.00	H	37.53	-49.30	11.64	2.45	-40.11	-25.00	15.11
9930.00	V	34.26	-52.52	11.64	2.45	-43.33	-25.00	18.33
14895.00	H	33.29	-47.88	13.81	2.53	-36.60	-25.00	11.60
14895.00	V	33.46	-48.08	13.81	2.53	-36.80	-25.00	11.80
6623.00	H	53.16	-38.52	11.28	1.91	-29.15	-25.00	4.15
6623.00	V	50.97	-40.65	11.28	1.91	-31.28	-25.00	6.28
Highest Channel: 4985 MHz								
9970.00	H	34.57	-51.88	11.68	2.43	-42.63	-25.00	17.63
9970.00	V	33.56	-52.94	11.68	2.43	-43.69	-25.00	18.69
14955.00	H	33.75	-47.78	13.92	2.51	-36.37	-25.00	11.37
14955.00	V	33.61	-47.92	13.92	2.51	-36.51	-25.00	11.51
6643.00	H	53.96	-37.62	11.27	1.90	-28.25	-25.00	3.25
6643.00	V	50.89	-40.57	11.27	1.90	-31.20	-25.00	6.20

20MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4950 MHz								
9900.00	H	32.62	-54.49	11.62	2.45	-45.32	-25.00	20.32
9900.00	V	35.44	-51.54	11.62	2.45	-42.37	-25.00	17.37
14850.00	H	33.28	-47.62	13.73	2.63	-36.52	-25.00	11.52
14850.00	V	33.95	-47.60	13.73	2.63	-36.50	-25.00	11.50
6600.00	H	49.53	-42.26	11.28	1.91	-32.89	-25.00	7.89
6600.00	V	51.72	-40.08	11.28	1.91	-30.71	-25.00	5.71
Middle Channel: 4965 MHz								
9930.00	H	33.09	-53.74	11.64	2.45	-44.55	-25.00	19.55
9930.00	V	33.10	-53.68	11.64	2.45	-44.49	-25.00	19.49
14895.00	H	34.09	-47.08	13.81	2.53	-35.80	-25.00	10.80
14895.00	V	32.78	-48.76	13.81	2.53	-37.48	-25.00	12.48
6620.00	H	51.79	-39.90	11.28	1.91	-30.53	-25.00	5.53
6620.00	V	51.58	-40.06	11.28	1.91	-30.69	-25.00	5.69
Highest Channel: 4980 MHz								
9960.00	H	33.57	-52.98	11.67	2.44	-43.75	-25.00	18.75
9960.00	V	33.23	-53.34	11.67	2.44	-44.11	-25.00	19.11
14940.00	H	34.08	-47.36	13.89	2.51	-35.98	-25.00	10.98
14940.00	V	33.71	-47.83	13.89	2.51	-36.45	-25.00	11.45
6639.00	H	49.19	-42.41	11.27	1.90	-33.04	-25.00	8.04
6639.00	V	50.52	-40.98	11.27	1.90	-31.61	-25.00	6.61

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

34 dBi Antenna:
5MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4942.5 MHz								
9885.00	H	33.65	-53.48	11.61	2.46	-44.33	-25.00	19.33
9885.00	V	34.57	-52.40	11.61	2.46	-43.25	-25.00	18.25
14827.50	H	34.51	-46.26	13.69	2.67	-35.24	-25.00	10.24
14827.50	V	33.74	-47.81	13.69	2.67	-36.79	-25.00	11.79
6639.00	H	40.52	-51.08	11.27	1.90	-41.71	-25.00	16.71
6639.00	V	34.62	-56.88	11.27	1.90	-47.51	-25.00	22.51
Middle Channel: 4962.5 MHz								
9925.00	H	32.96	-53.92	11.64	2.45	-44.73	-25.00	19.73
9925.00	V	32.54	-54.27	11.64	2.45	-45.08	-25.00	20.08
14887.50	H	33.49	-47.64	13.80	2.55	-36.39	-25.00	11.39
14887.50	V	33.86	-47.68	13.80	2.55	-36.43	-25.00	11.43
6616.00	H	42.39	-49.32	11.28	1.91	-39.95	-25.00	14.95
6616.00	V	33.74	-57.94	11.28	1.91	-48.57	-25.00	23.57
Highest Channel: 4987.5 MHz								
9975.00	H	32.44	-53.97	11.68	2.43	-44.72	-25.00	19.72
9975.00	V	33.26	-53.21	11.68	2.43	-43.96	-25.00	18.96
14962.50	H	34.65	-46.93	13.93	2.51	-35.51	-25.00	10.51
14962.50	V	33.87	-47.66	13.93	2.51	-36.24	-25.00	11.24
6650.00	H	42.32	-49.23	11.27	1.90	-39.86	-25.00	14.86
6650.00	V	33.71	-57.70	11.27	1.90	-48.33	-25.00	23.33

10MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4945 MHz								
9890.00	H	33.25	-53.88	11.61	2.46	-44.73	-25.00	19.73
9890.00	V	32.68	-54.29	11.61	2.46	-45.14	-25.00	20.14
14835.00	H	33.47	-47.34	13.70	2.66	-36.30	-25.00	11.30
14835.00	V	33.60	-47.95	13.70	2.66	-36.91	-25.00	11.91
6593.00	H	40.65	-51.14	11.28	1.90	-41.76	-25.00	16.76
6593.00	V	33.49	-58.31	11.28	1.90	-48.93	-25.00	23.93
Middle Channel: 4965 MHz								
9930.00	H	32.58	-54.25	11.64	2.45	-45.06	-25.00	20.06
9930.00	V	33.45	-53.33	11.64	2.45	-44.14	-25.00	19.14
14895.00	H	33.51	-47.66	13.81	2.53	-36.38	-25.00	11.38
14895.00	V	33.42	-48.12	13.81	2.53	-36.84	-25.00	11.84
6620.00	H	41.04	-50.65	11.28	1.91	-41.28	-25.00	16.28
6620.00	V	34.17	-57.47	11.28	1.91	-48.10	-25.00	23.10
Highest Channel: 4985 MHz								
9970.00	H	32.67	-53.78	11.68	2.43	-44.53	-25.00	19.53
9970.00	V	32.64	-53.86	11.68	2.43	-44.61	-25.00	19.61
14955.00	H	33.64	-47.89	13.92	2.51	-36.48	-25.00	11.48
14955.00	V	34.88	-46.65	13.92	2.51	-35.24	-25.00	10.24
6647.00	H	39.68	-51.88	11.27	1.90	-42.51	-25.00	17.51
6647.00	V	33.78	-57.65	11.27	1.90	-48.28	-25.00	23.28

20MHz mode(2Tx was the worst)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lowest Channel: 4950 MHz								
9900.00	H	33.21	-53.90	11.62	2.45	-44.73	-25.00	19.73
9900.00	V	32.98	-54.00	11.62	2.45	-44.83	-25.00	19.83
14850.00	H	33.51	-47.39	13.73	2.63	-36.29	-25.00	11.29
14850.00	V	33.65	-47.90	13.73	2.63	-36.80	-25.00	11.80
6600.00	H	39.56	-52.23	11.28	1.91	-42.86	-25.00	17.86
6600.00	V	33.57	-58.23	11.28	1.91	-48.86	-25.00	23.86
Middle Channel: 4965 MHz								
9930.00	H	33.29	-53.54	11.64	2.45	-44.35	-25.00	19.35
9930.00	V	33.14	-53.64	11.64	2.45	-44.45	-25.00	19.45
14895.00	H	33.67	-47.50	13.81	2.53	-36.22	-25.00	11.22
14895.00	V	34.07	-47.47	13.81	2.53	-36.19	-25.00	11.19
6620.00	H	41.35	-50.34	11.28	1.91	-40.97	-25.00	15.97
6620.00	V	33.97	-57.67	11.28	1.91	-48.30	-25.00	23.30
Highest Channel: 4980 MHz								
9960.00	H	32.57	-53.98	11.67	2.44	-44.75	-25.00	19.75
9960.00	V	32.56	-54.01	11.67	2.44	-44.78	-25.00	19.78
14940.00	H	33.94	-47.50	13.89	2.51	-36.12	-25.00	11.12
14940.00	V	34.62	-46.92	13.89	2.51	-35.54	-25.00	10.54
6639.00	H	40.66	-50.94	11.27	1.90	-41.57	-25.00	16.57
6639.00	V	34.85	-56.65	11.27	1.90	-47.28	-25.00	22.28

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

4.2 Emission Bandwidth:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-26
Test Site:	RF	Test Mode:	Transmitting (Test only performed at chain 0 at maximum power level setting)
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.4	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.4

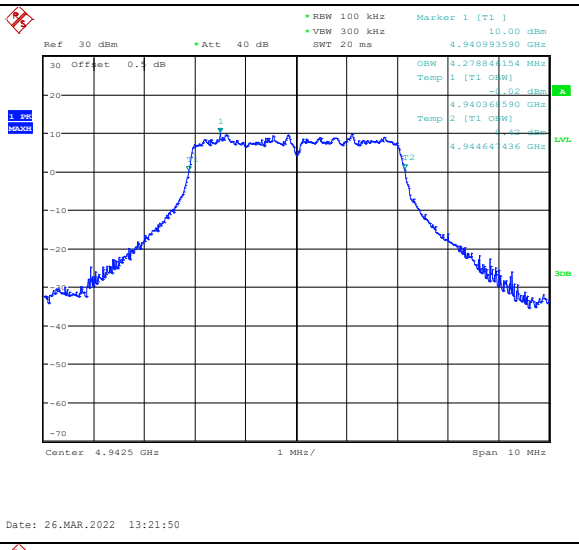
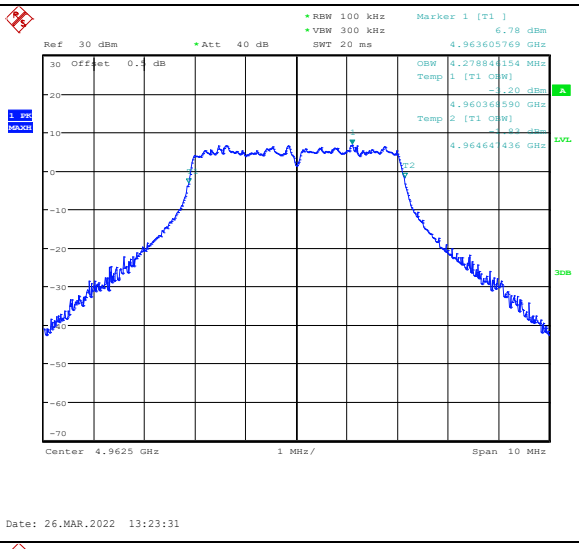
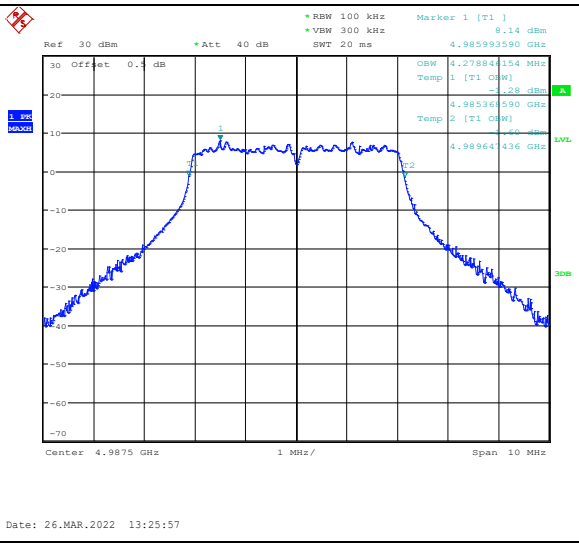
Test Equipment List and Details:

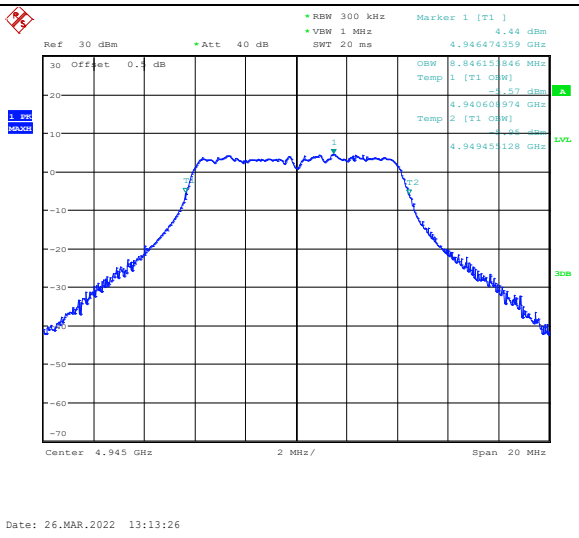
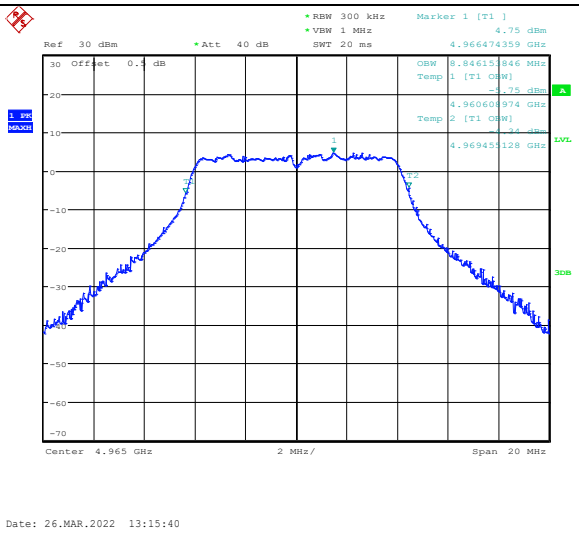
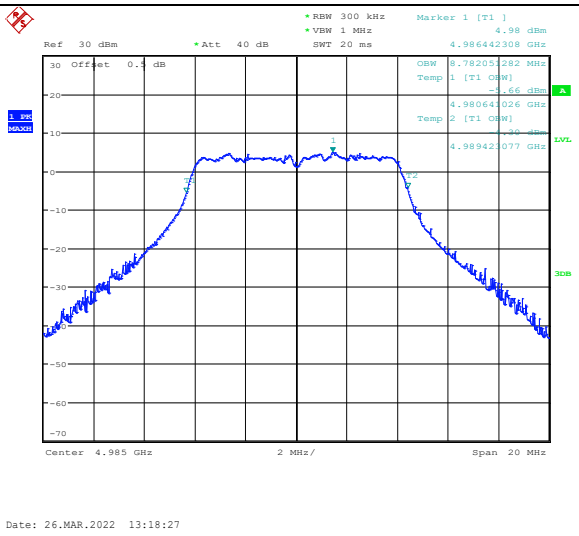
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200160/026	2021-10-26	2022-10-25
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A

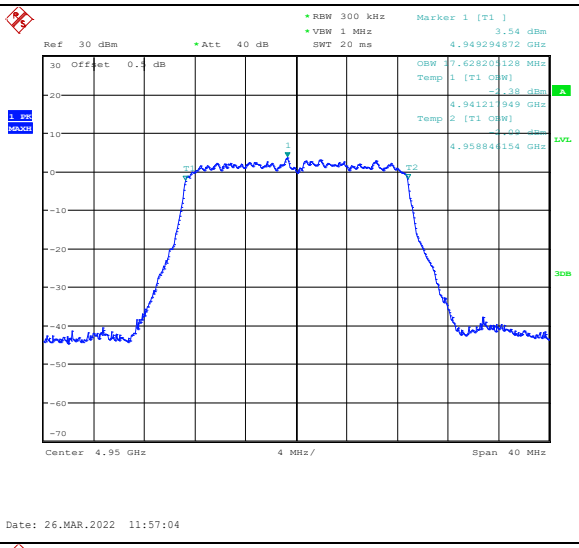
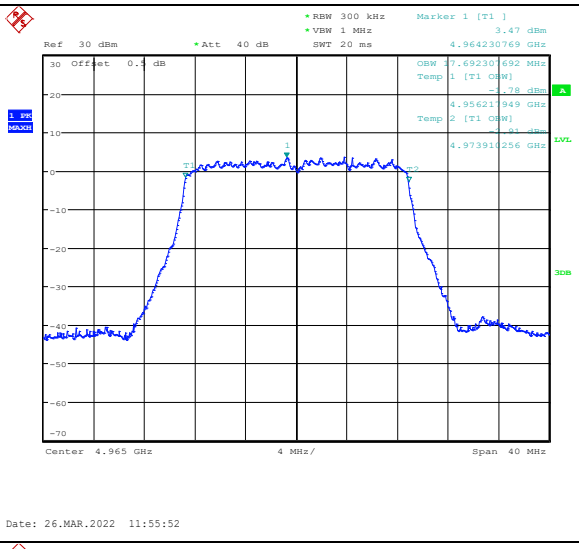
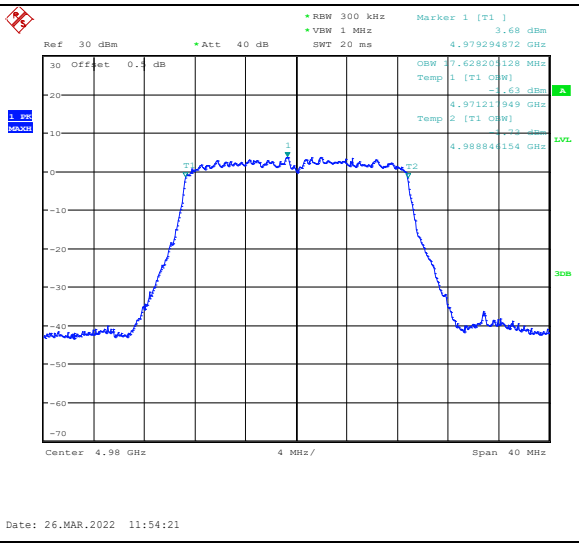
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
5M	Lowest	4942.5	4.279
	Middle	4962.5	4.279
	Highest	4987.5	4.279
10M	Lowest	4945	8.846
	Middle	4965	8.846
	Highest	4985	8.782
20M	Lowest	4950	17.628
	Middle	4965	17.692
	Highest	4980	17.628
Note: Test only was performed at Chain 0.			

99% Occupied Bandwidth	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

99% Occupied Bandwidth	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

99% Occupied Bandwidth	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

4.3 Maximum Conducted Output Power:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-28
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.3	Relative Humidity: (%)	65	Temperature: (℃)	101.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
Agilent	USB Wideband Power Sensor	U2022XA	MY54170006	2021-07-22	2022-07-21

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Note:
13dBi power level setting same with 34dBi, share the data, all result listed is for calculation different antenna compliance with the limits
21dBi power level setting same with 23dBi, share the data, all result listed is for calculation different antenna compliance with the limits

13 dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	15.89	15.7	18.81	23
	Middle	4962.5	15.6	15.74	18.68	23
	High	4987.5	15.06	15.47	18.28	23
10M	Low	4945	10.2	11.22	13.75	26
	Middle	4965	10.44	11.34	13.92	26
	High	4985	10.6	11.46	14.06	26
20M	Low	4950	13.07	14.19	16.68	29
	Middle	4965	13.21	14.39	16.85	29
	High	4980	13.35	14.03	16.71	29

Note: The device employed Cyclic Delay Diversity (CDD) for MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01:
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leqslant 4$
Not point-to-point and point-to-multipoint operations, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.
The limit should be reduced by 4dB.

34 dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	15.89	15.7	18.81	19
	Middle	4962.5	15.6	15.74	18.68	19
	High	4987.5	15.06	15.47	18.28	19
10M	Low	4945	10.2	11.22	13.75	22
	Middle	4965	10.44	11.34	13.92	22
	High	4985	10.6	11.46	14.06	22
20M	Low	4950	13.07	14.19	16.68	25
	Middle	4965	13.21	14.39	16.85	25
	High	4980	13.35	14.03	16.71	25

Note: The device employed Cyclic Delay Diversity (CDD) for MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01:
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leqslant 4$
Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.
The limit should be reduced by 8dB.

21 dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	13.59	11.89	15.83	27
	Middle	4962.5	13.83	11.97	16.01	27
	High	4987.5	11.02	12.56	14.87	27
10M	Low	4945	10.07	11.69	13.97	30
	Middle	4965	10.25	11.68	14.03	30
	High	4985	10.35	11.8	14.15	30
20M	Low	4950	17.67	19.38	21.62	33
	Middle	4965	17.96	19.46	21.78	33
	High	4980	18.11	19.56	21.91	33

Note: The device employed Cyclic Delay Diversity (CDD) for MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leqslant 4$

Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

The limit don`t need reduce.

23 dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	13.59	11.89	15.83	27
	Middle	4962.5	13.83	11.97	16.01	27
	High	4987.5	11.02	12.56	14.87	27
10M	Low	4945	10.07	11.69	13.97	30
	Middle	4965	10.25	11.68	14.03	30
	High	4985	10.35	11.8	14.15	30
20M	Low	4950	17.67	19.38	21.62	33
	Middle	4965	17.96	19.46	21.78	33
	High	4980	18.11	19.56	21.91	33

Note: The device employed Cyclic Delay Diversity (CDD) for MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leqslant 4$

Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

The limit don`t need reduce.

4.4 Maximum power spectral density:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-25~2022-03-26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.4~23.6	Relative Humidity: (%)	65~67	Temperature: (℃)	100.4~101.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200160/026	2021-10-26	2022-10-25
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

For 13dBi/34dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum power spectral density (dBm/MHz)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	9.91	9.37	12.66	13
	Middle	4962.5	8.68	9.10	11.91	13
	High	4987.5	9.43	9.44	12.45	13
10M	Low	4945	9.25	9.49	12.38	13
	Middle	4965	9.19	9.27	12.24	13
	High	4985	10.12	9.34	12.76	13
20M	Low	4950	9.73	9.91	12.83	13
	Middle	4965	9.86	9.82	12.85	13
	High	4980	10.18	9.57	12.90	13

Antenna Consider:
13dBi Antenna:
Array Gain = 10 log(N_{ANT}/N_{SS}) dB
Not point-to-point and point-to-multipoint operations, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi.
The limit should be reduced by 7dB.

34dBi Antennas:
This Antenna has two Cross-polarized antennas, per KDB 662911 D01 Multiple Transmitter Output v02r01, Clause F)

c) *Cross-polarized antennas*. For a system in which the antennas have fixed orientations relative to one another that ensure that the antennas are cross-polarized regardless of any user actions, the directional gain is computed as follows.

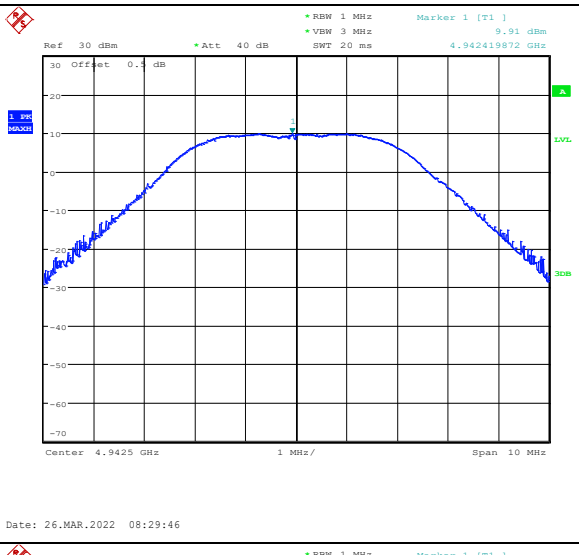
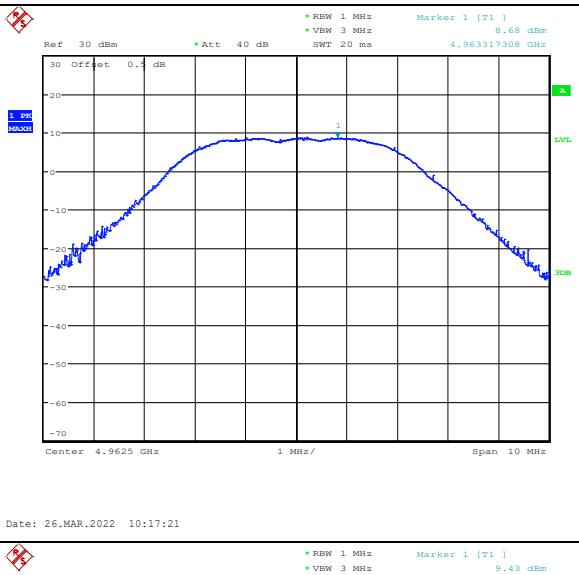
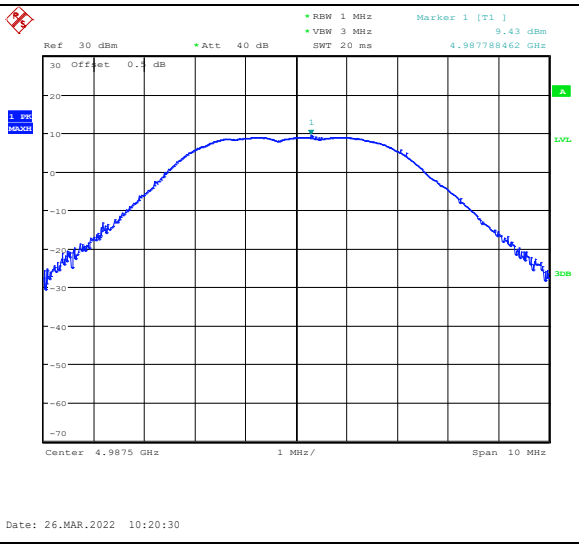
(i) *Cross-polarized antennas with $N_{ANT} = 2$*. In the case of a transmitter with only two outputs driving a pair of antennas that are cross-polarized (*e.g.*, vertical and horizontal or left-circular and right-circular), directional gain is the gain of an individual antenna. If the two antennas have different gains, the larger gain applies.

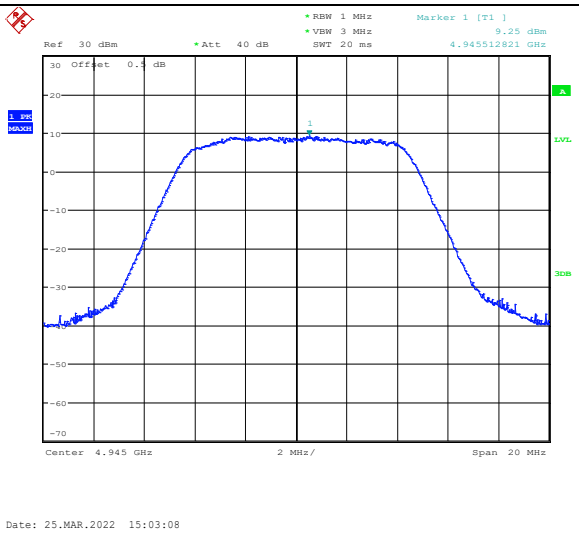
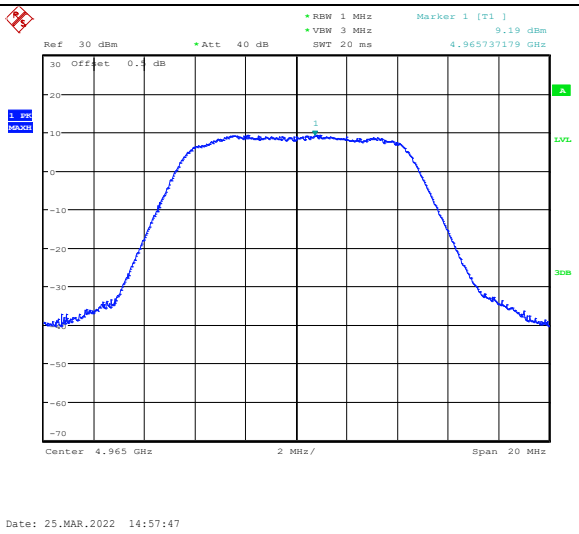
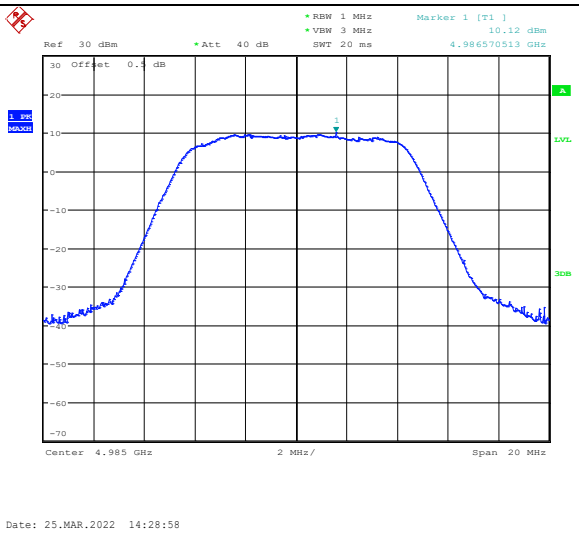
Array Gain = 0 dB

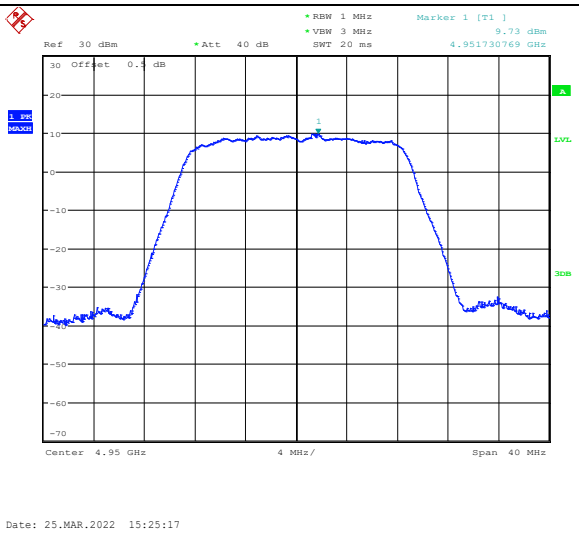
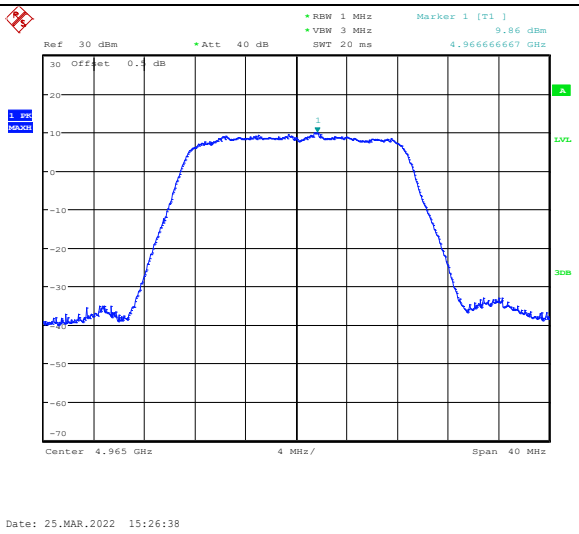
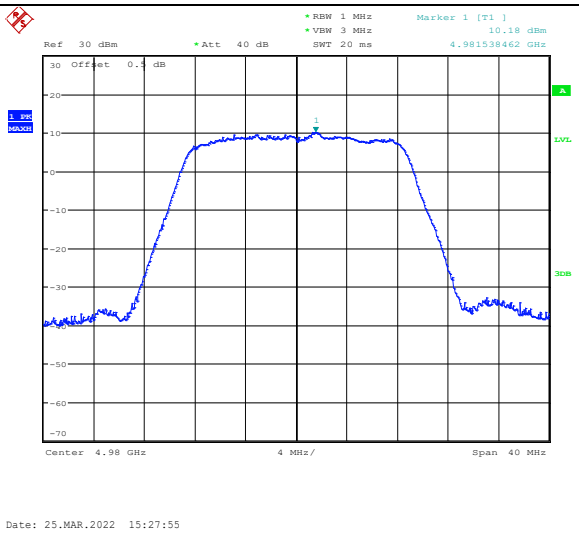
34 dBi Antenna:
Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.
The limit should be reduced by 8dB.

So: The Worst is reduced by 8dB.

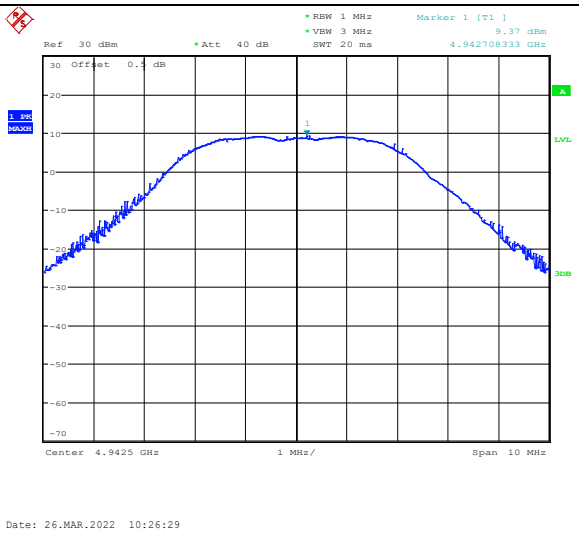
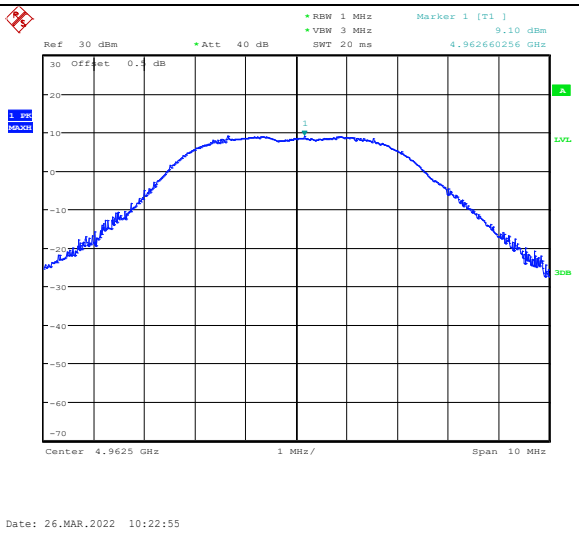
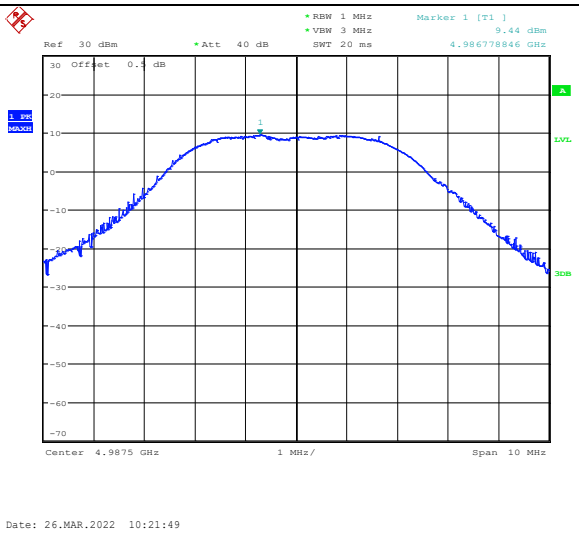
Chain 0：

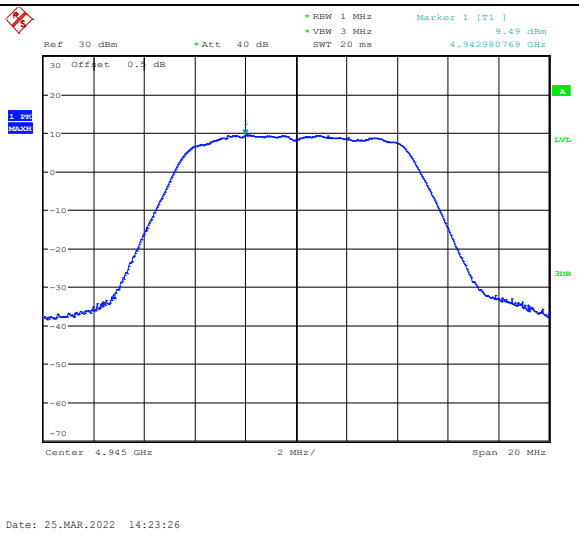
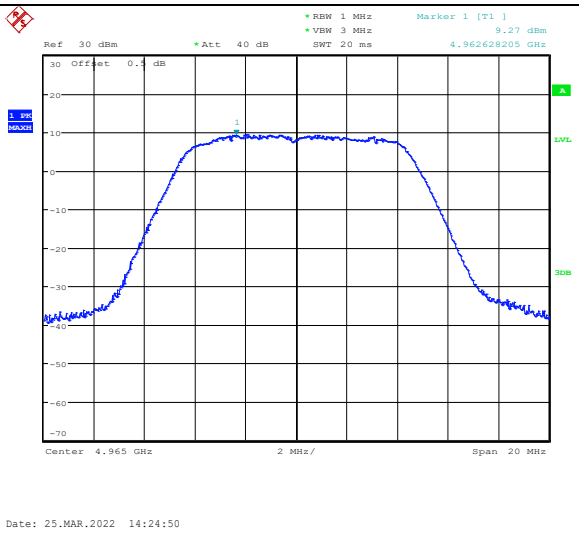
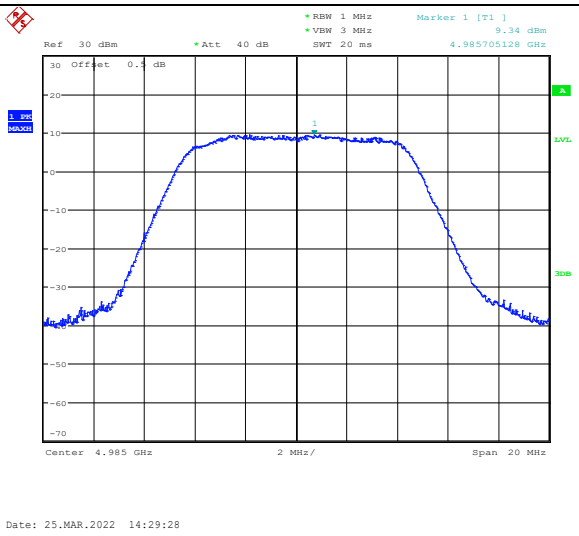
Maximum power spectral density	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

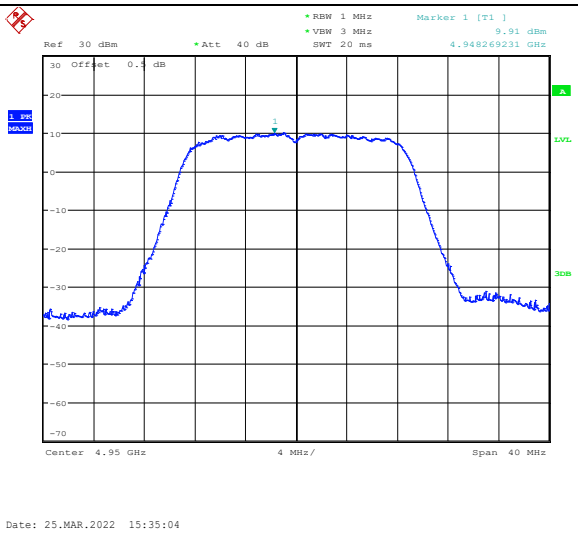
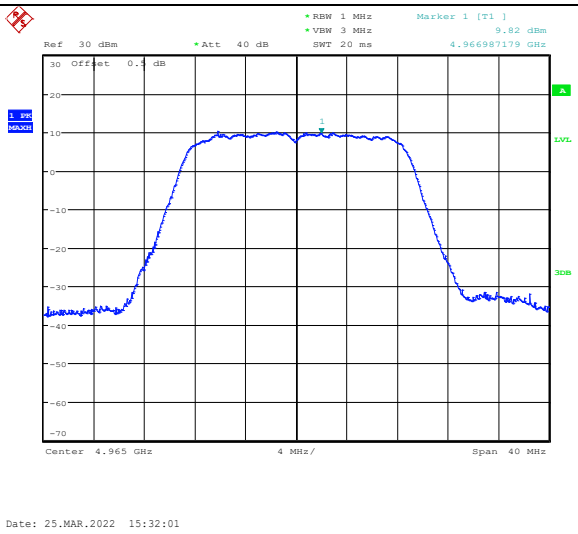
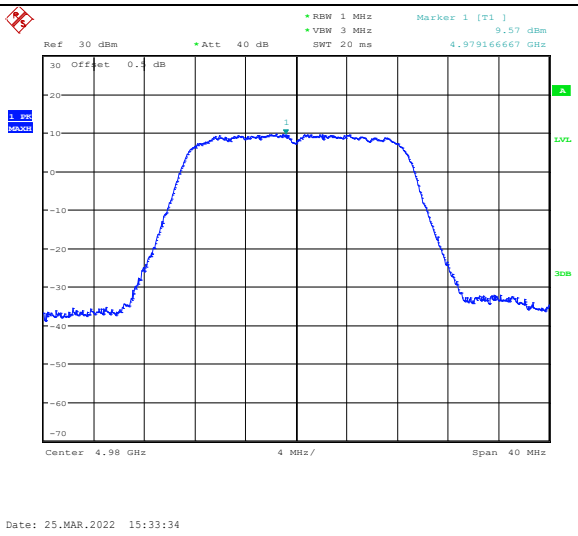
Maximum power spectral density	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Maximum power spectral density	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

Chain 1：

Maximum power spectral density	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

Maximum power spectral density	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Maximum power spectral density	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

21dBi/23dBi Antenna:

Mode	Test Channel	Frequency (MHz)	Maximum power spectral density (dBm/MHz)			
			Chain 0	Chain 1	total	Limit
5M	Low	4942.5	17.55	17.46	20.52	21
	Middle	4962.5	18.03	17.13	20.61	21
	High	4987.5	17.80	17.53	20.68	21
10M	Low	4945	16.84	17.07	19.97	21
	Middle	4965	16.9	17.32	20.13	21
	High	4985	17.13	17.53	20.34	21
20M	Low	4950	14.25	15.32	17.83	21
	Middle	4965	14.11	14.80	17.48	21
	High	4980	14.37	15.25	17.84	21

Antenna Consider:
21 dBi/23dBi Antennas:
This Antenna has two Cross-polarized antennas, per KDB 662911 D01 Multiple Transmitter Output v02r01, Clause F)

c) *Cross-polarized antennas*. For a system in which the antennas have fixed orientations relative to one another that ensure that the antennas are cross-polarized regardless of any user actions, the directional gain is computed as follows.

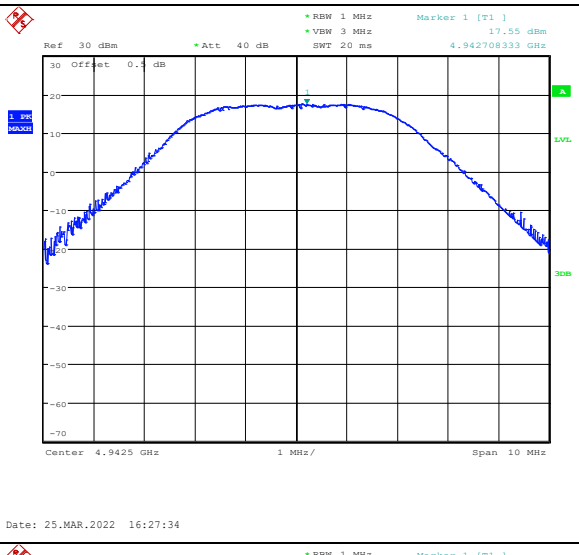
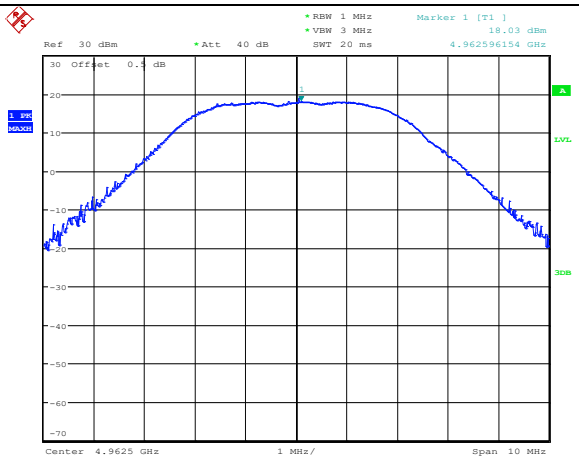
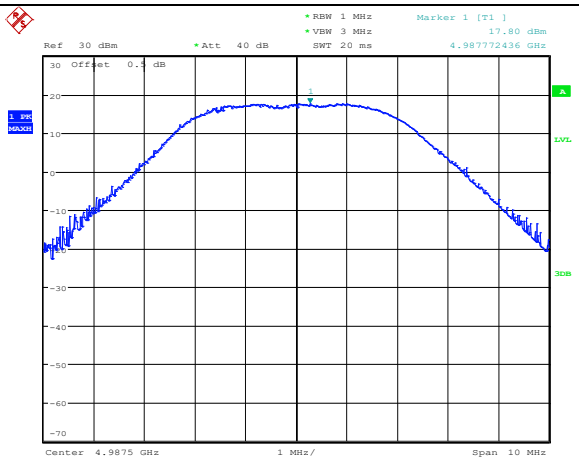
(i) *Cross-polarized antennas with* $N_{ANT} = 2$. In the case of a transmitter with only two outputs driving a pair of antennas that are cross-polarized (*e.g.*, vertical and horizontal or left-circular and right-circular), directional gain is the gain of an individual antenna. If the two antennas have different gains, the larger gain applies.

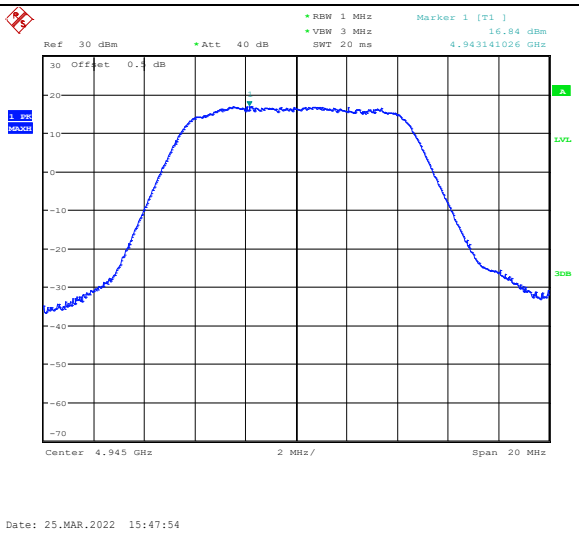
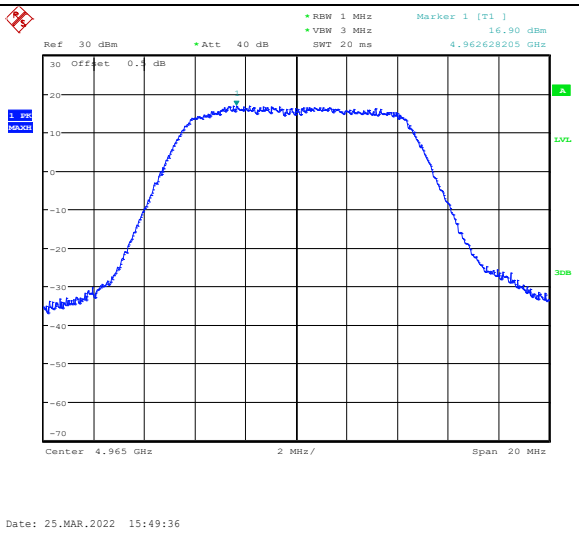
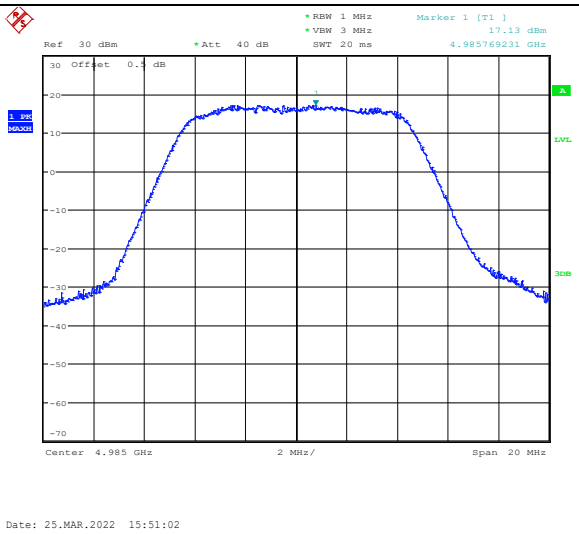
Array Gain = 0 dB

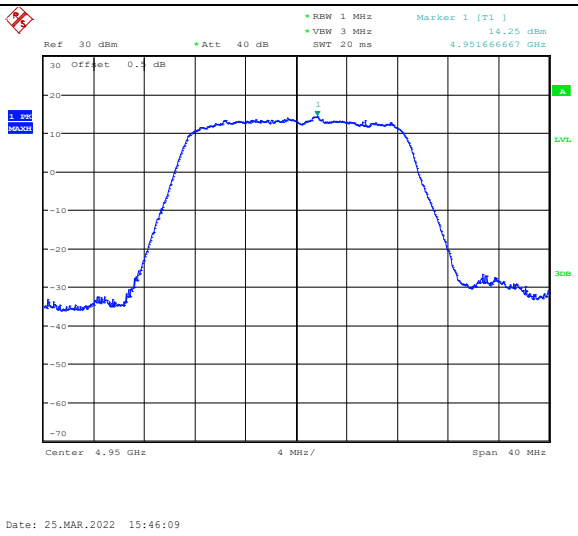
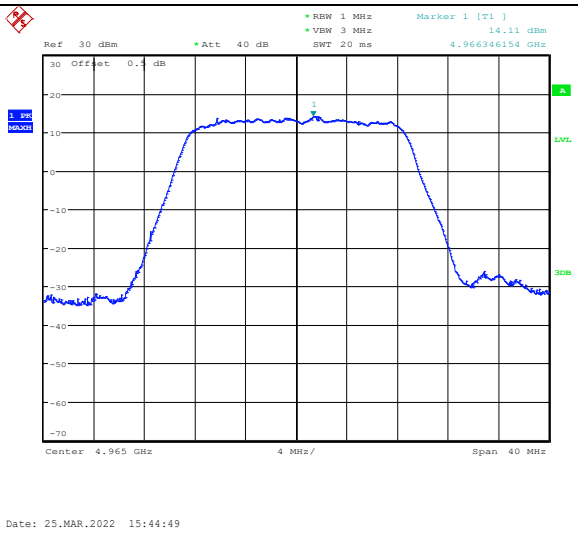
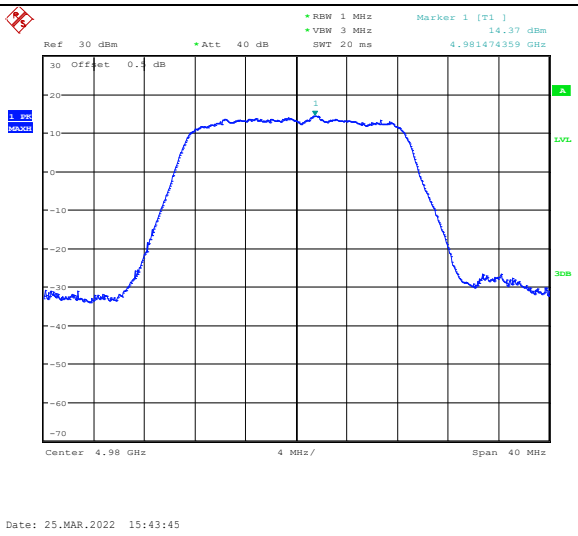
21 dBi Antenna:
Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.
The limit don`t need reduce.

23 dBi Antenna:
Point-to-point operations, corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.
The limit don`t need reduce.

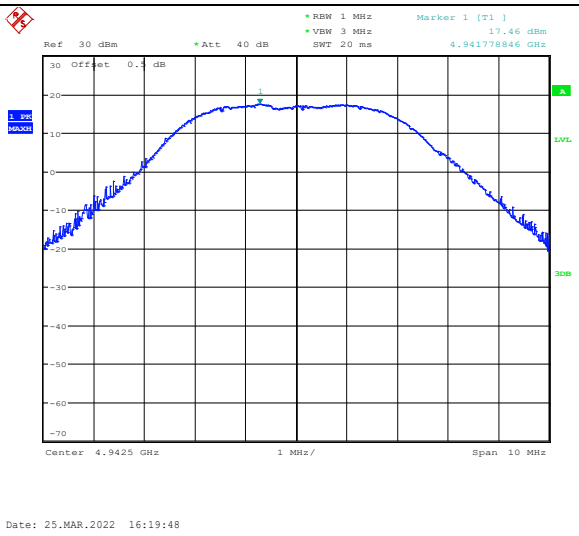
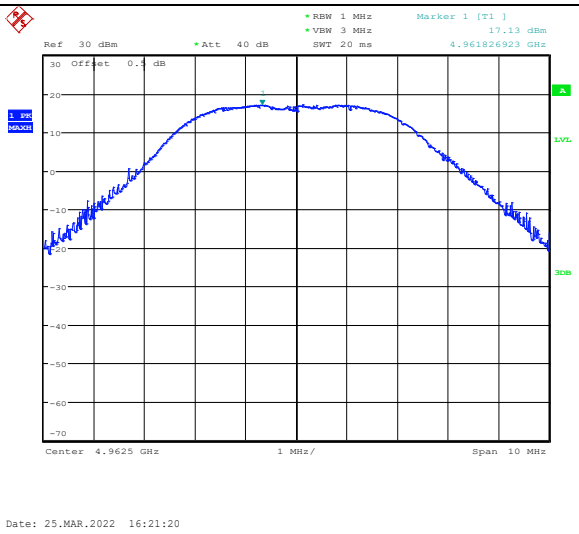
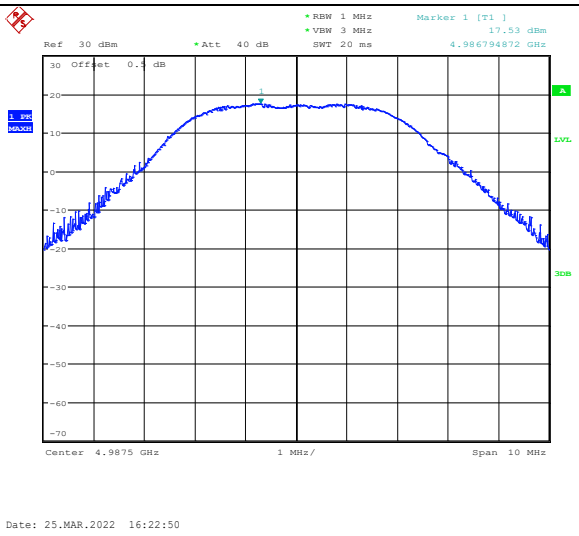
Chain 0：

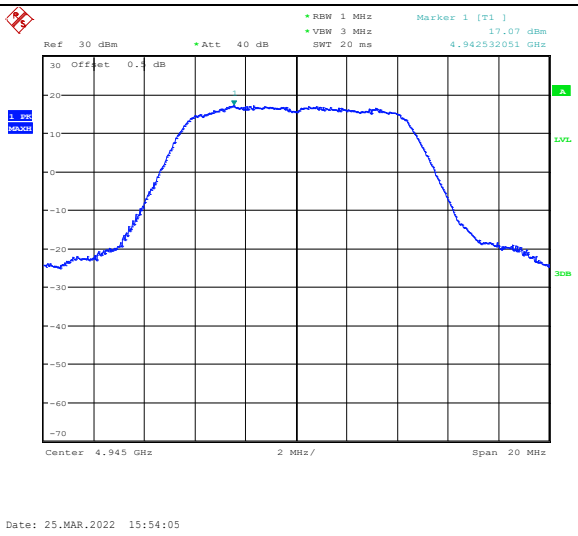
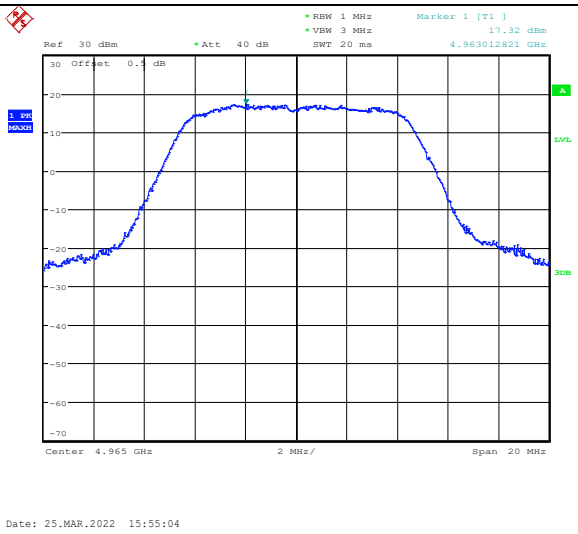
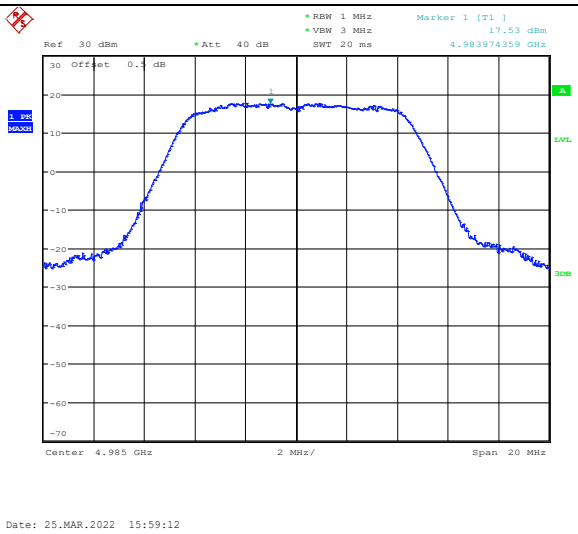
Maximum power spectral density	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

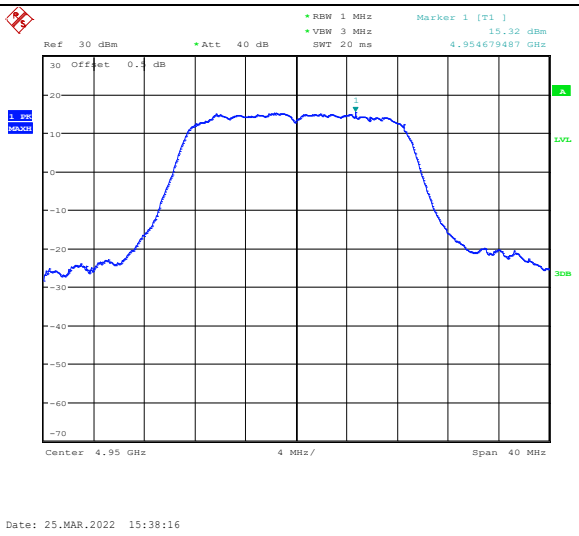
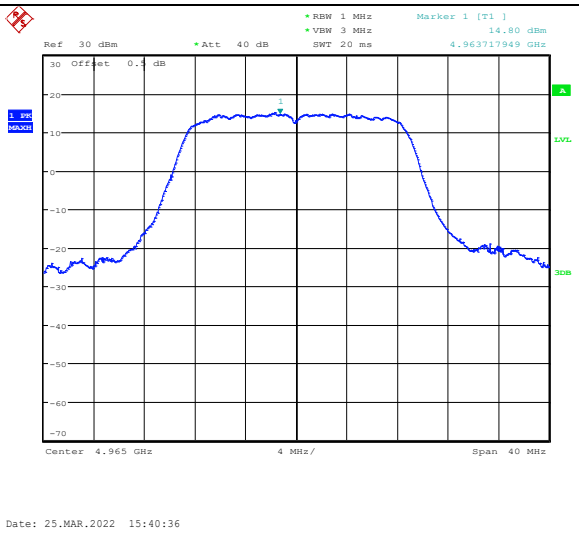
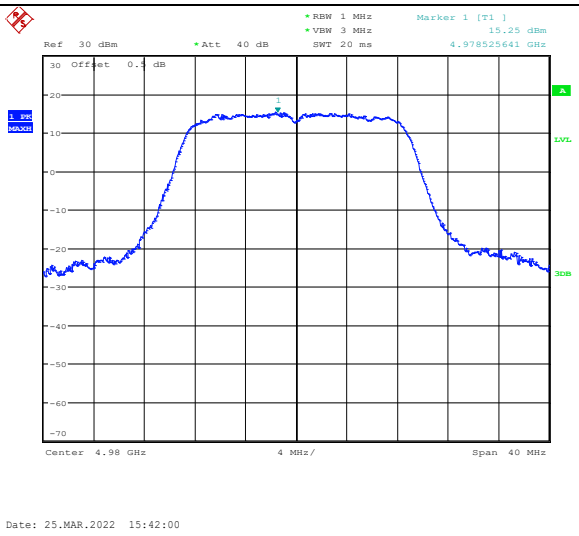
Maximum power spectral density	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Maximum power spectral density	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

Chain 1：

Maximum power spectral density	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

Maximum power spectral density	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Maximum power spectral density	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

4.5 Peak Excursion:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.4	Relative Humidity: (%)	67	Temperature: (℃)	100.4

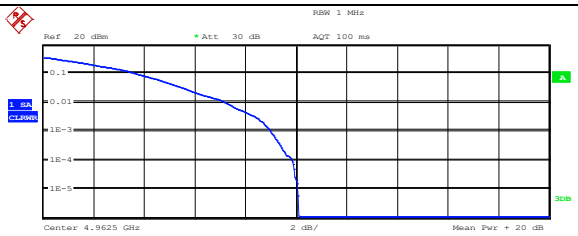
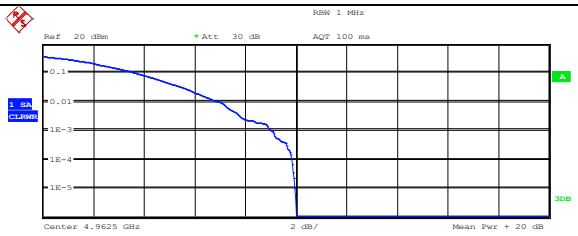
Test Equipment List and Details:

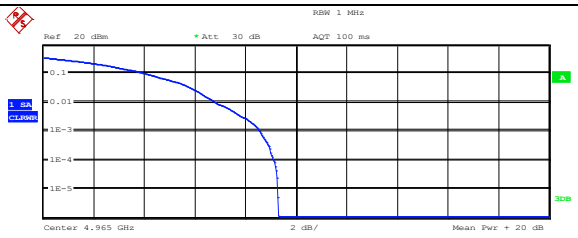
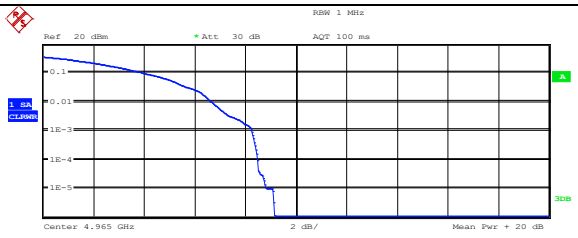
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200160/026	2021-10-26	2022-10-25
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A

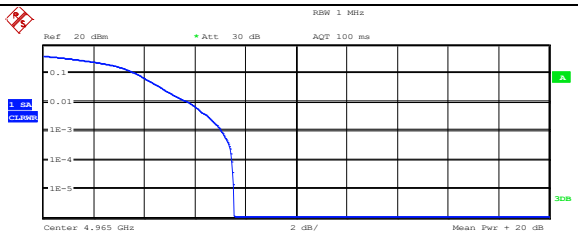
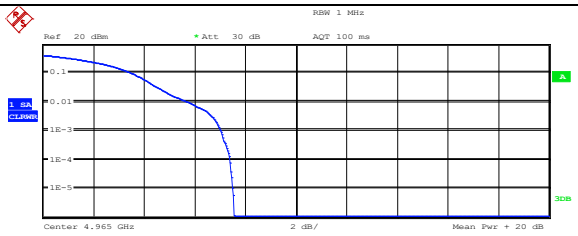
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Channel Bandwidth (MHz)	Antenna Chain	Test Frequency (MHz)	Peak Excursion (dB)	Limit (dB)
5	0	4962.5	8.97	13
	1	4962.5	9.04	13
10	0	4965	8.56	13
	1	4965	8.24	13
20	0	4965	7.05	13
	1	4965	7.02	13

Peak Excursion-5M	
Chain 0	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 7.77 dBm Peak 17.87 dBm Crest 10.10 dB 10 % 3.69 dB 1 % 7.21 dB .1 % 8.97 dB .01 % 9.84 dB Date: 26.MAR.2022 14:01:37
Chain 1	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 5.18 dBm Peak 15.19 dBm Crest 10.02 dB 10 % 3.69 dB 1 % 6.96 dB .1 % 9.04 dB .01 % 9.84 dB Date: 26.MAR.2022 14:02:39

Peak Excursion-10M	
Chain 0	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean -4.04 dBm Peak 5.25 dBm Crest 9.29 dB 10 % 4.07 dB 1 % 6.79 dB .1 % 8.56 dB .01 % 9.10 dB Date: 26.MAR.2022 14:05:59
Chain 1	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean -2.91 dBm Peak 6.23 dBm Crest 9.14 dB 10 % 4.01 dB 1 % 6.63 dB .1 % 8.24 dB .01 % 8.49 dB Date: 26.MAR.2022 14:04:56

Peak Excursion-20M	
Chain 0	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean -5.12 dBm Peak 2.42 dBm Crest 7.54 dB 10 % 3.65 dB 1 % 5.74 dB .1 % 7.05 dB .01 % 7.47 dB Date: 26.MAR.2022 14:07:16
Chain 1	 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean -4.43 dBm Peak 3.13 dBm Crest 7.56 dB 10 % 3.49 dB 1 % 5.74 dB .1 % 7.02 dB .01 % 7.37 dB Date: 26.MAR.2022 14:07:59

4. 6 EMISSION MASK:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-28
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.3	Relative Humidity: (%)	65	Temperature: (℃)	101.2

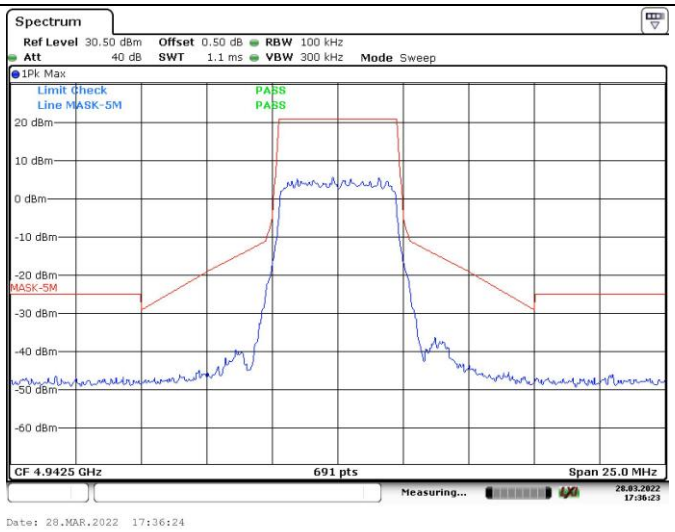
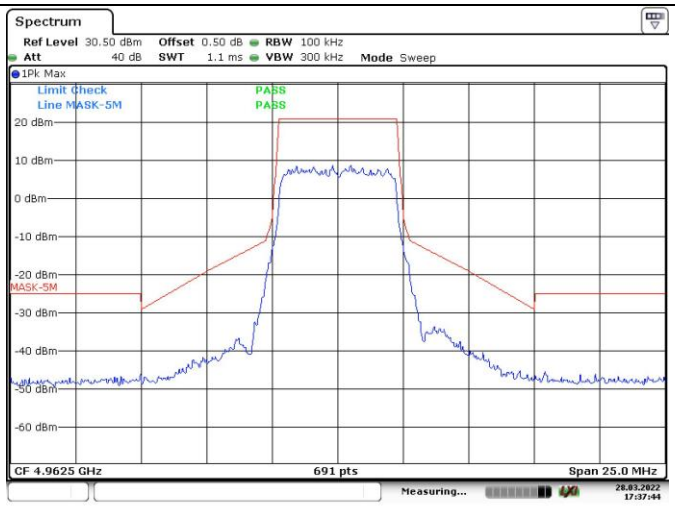
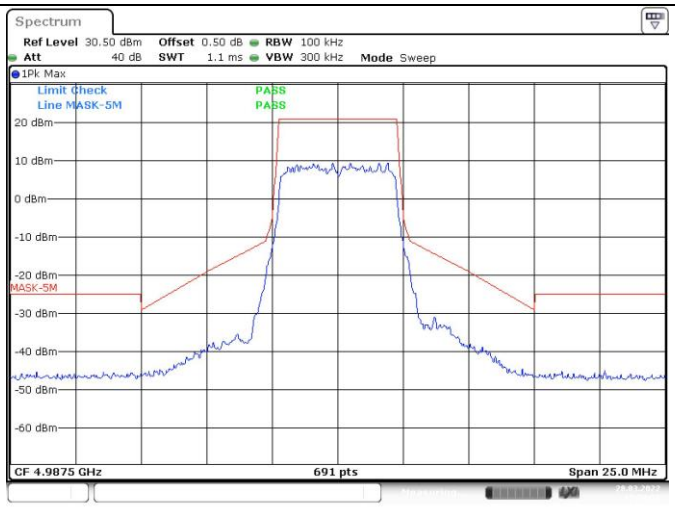
Test Equipment List and Details:

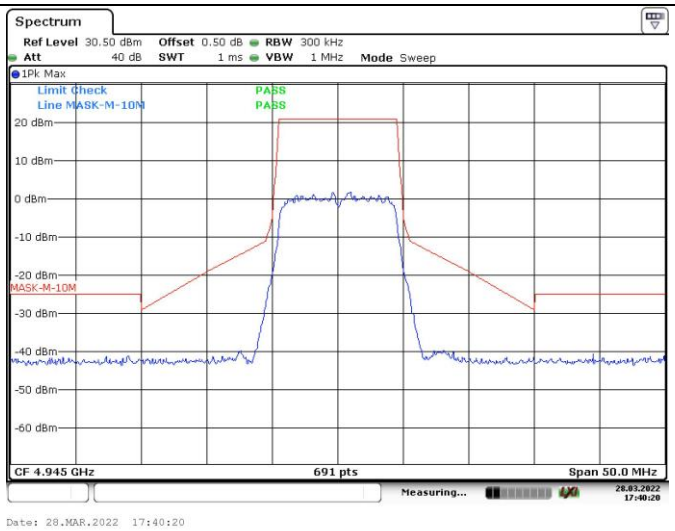
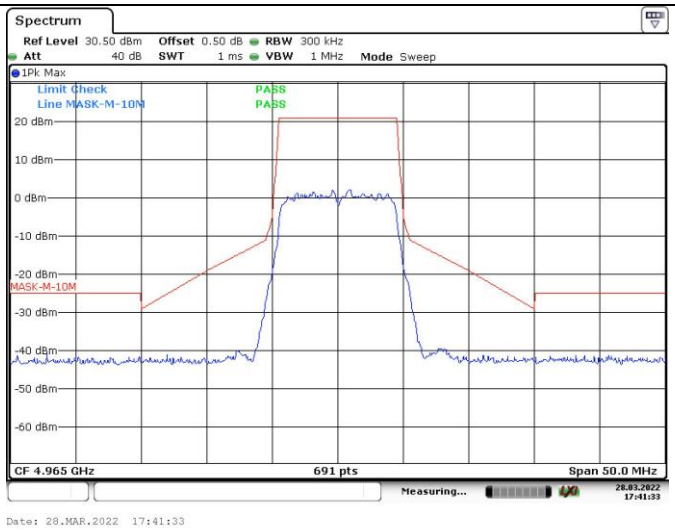
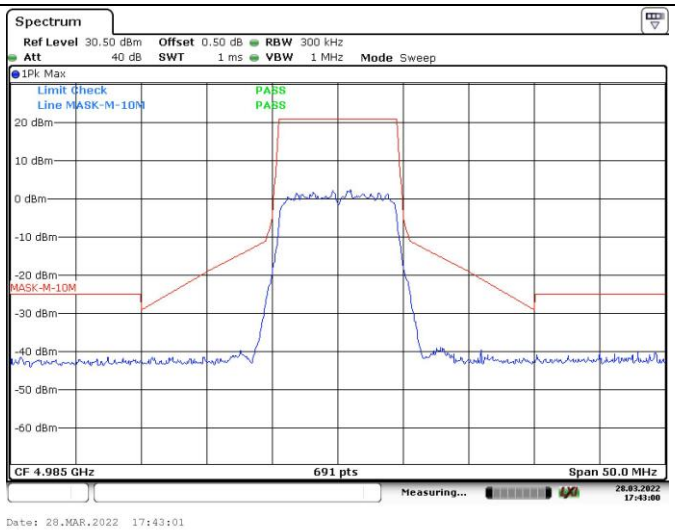
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021/10/10	2022/10/9
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A

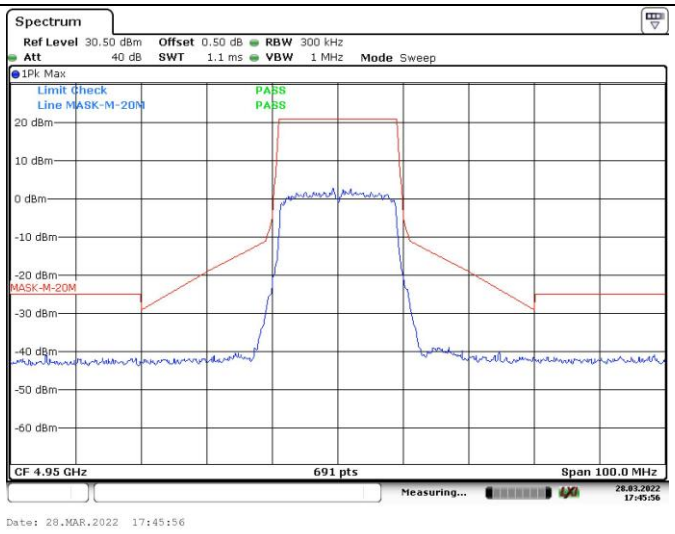
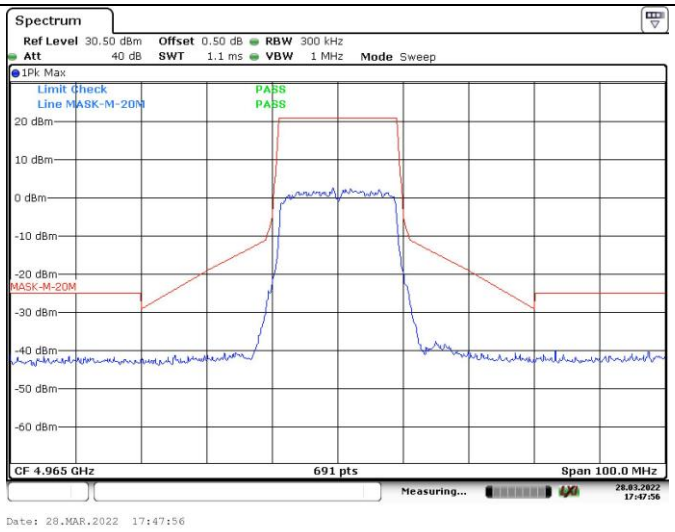
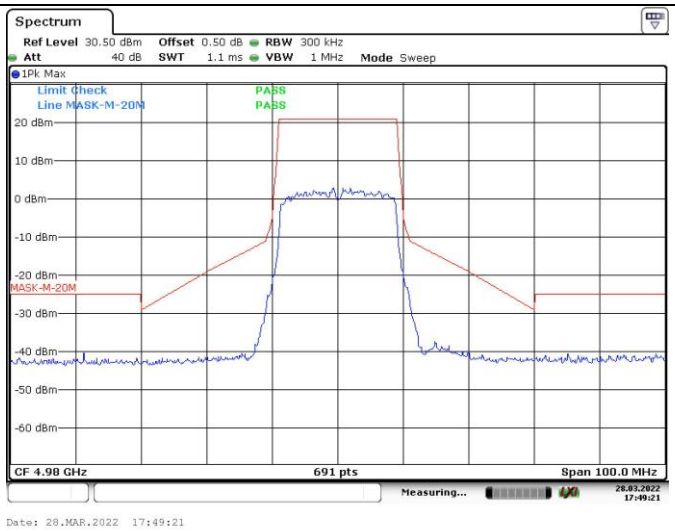
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

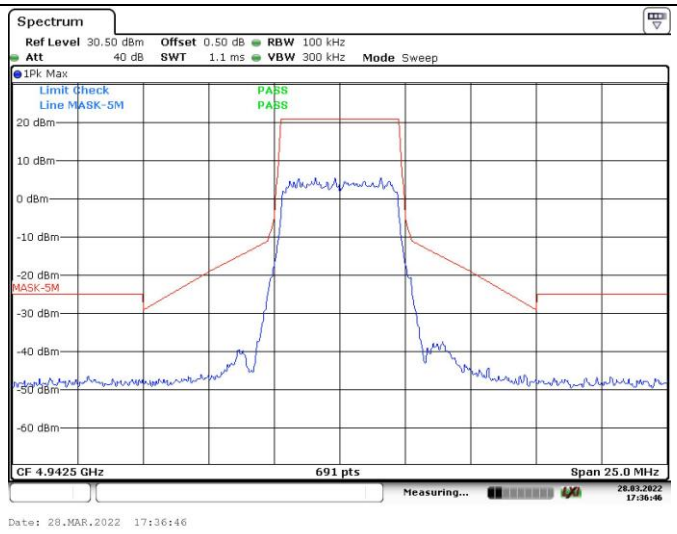
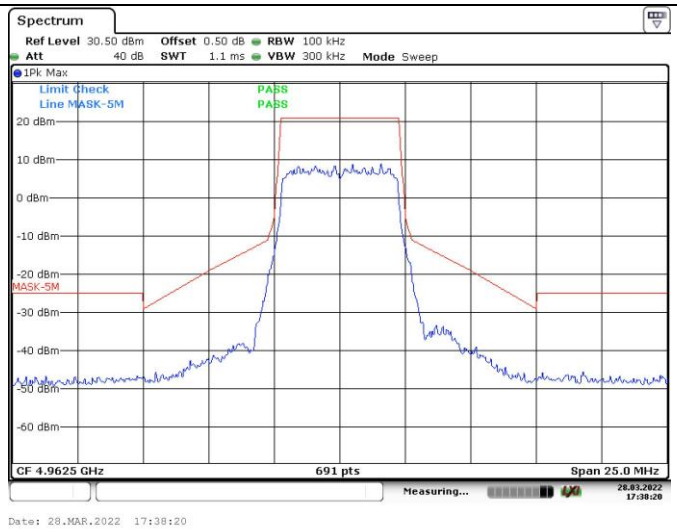
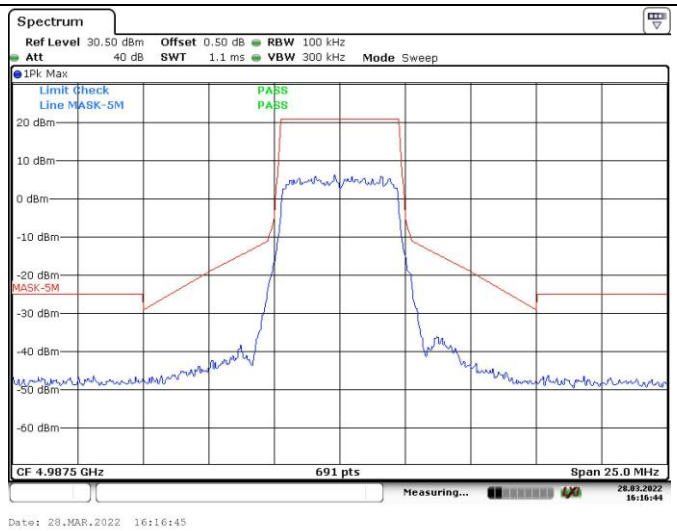
13dBi/34 dBi Antenna Gain:
Chain 0:

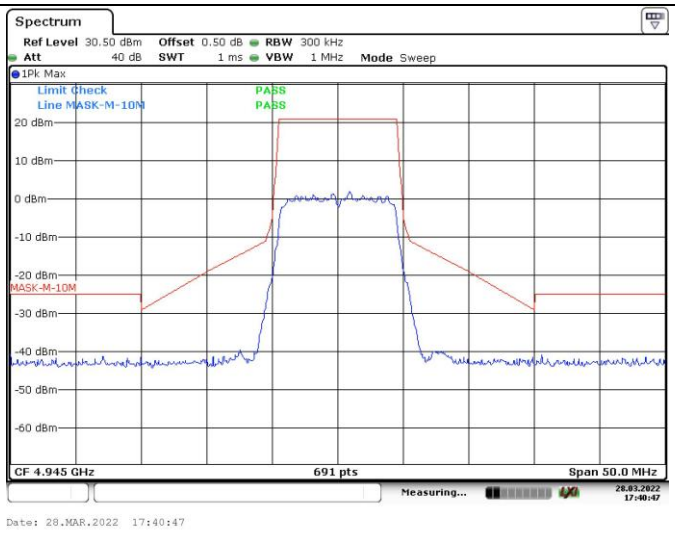
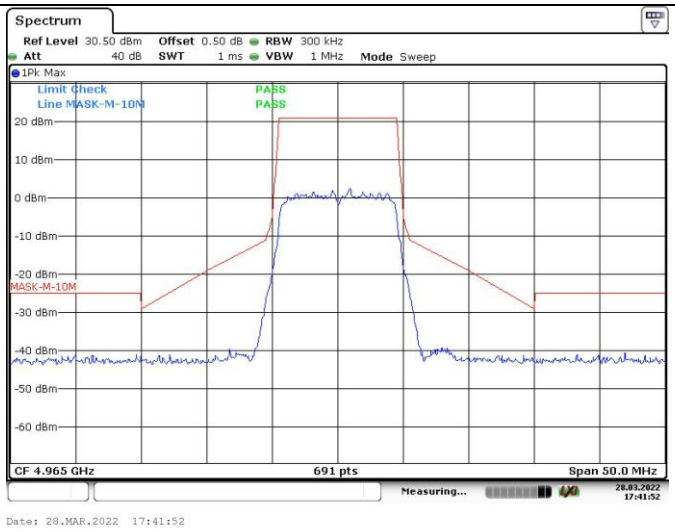
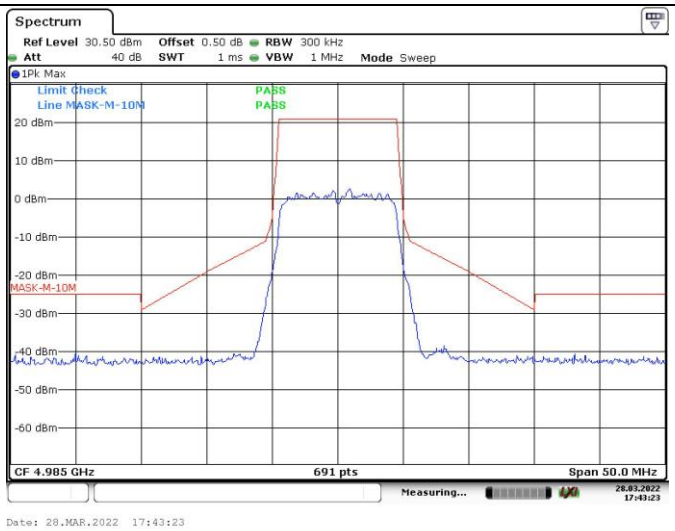
Emission Mask	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

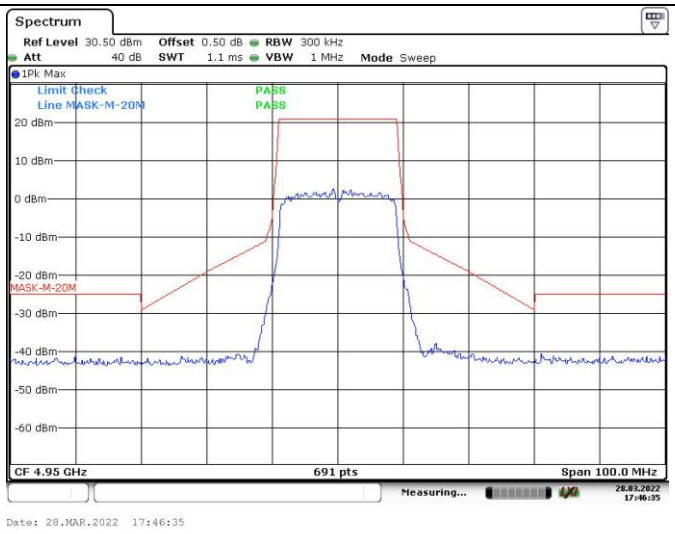
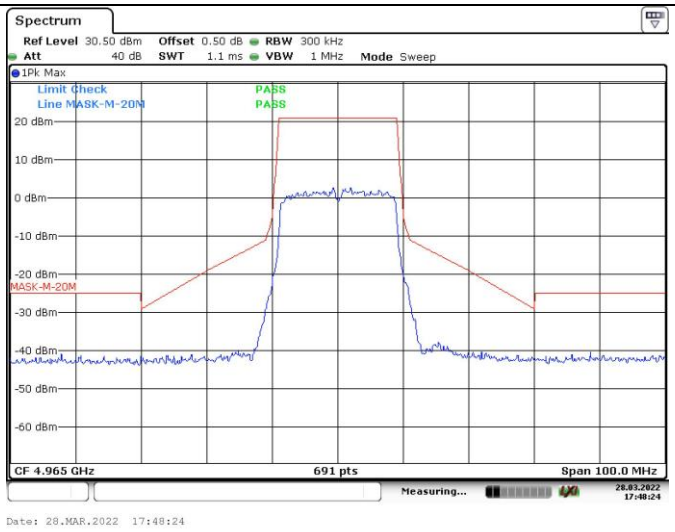
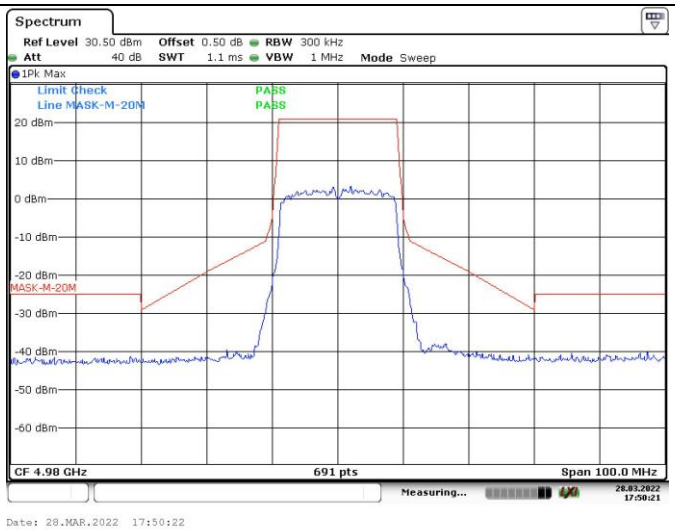
Emission Mask	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Emission Mask M	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

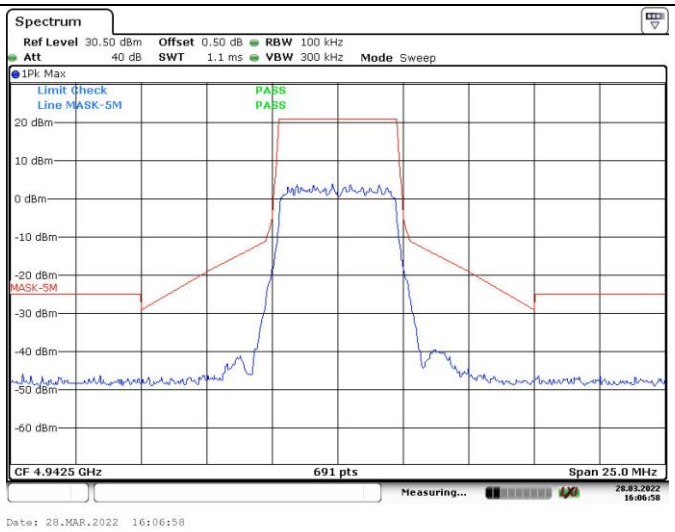
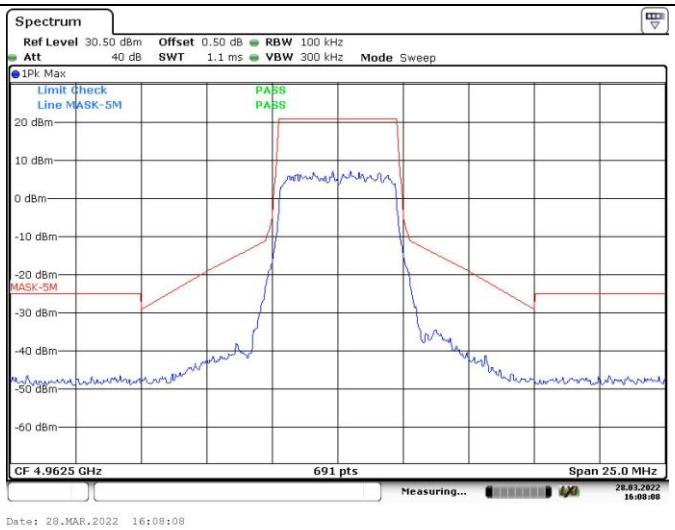
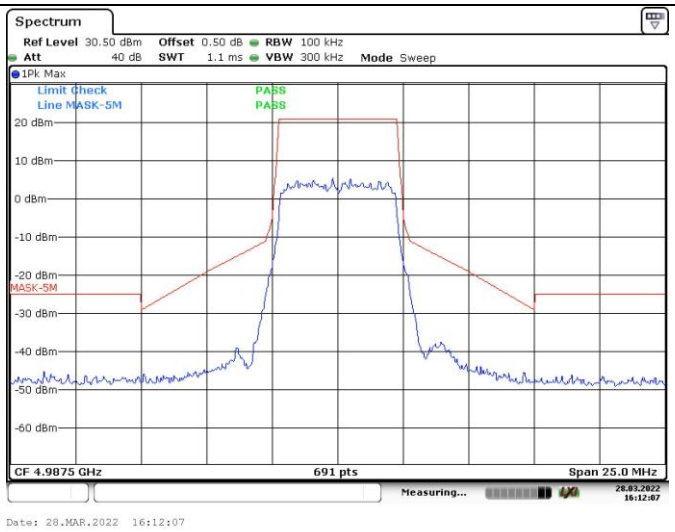
Chain 1：

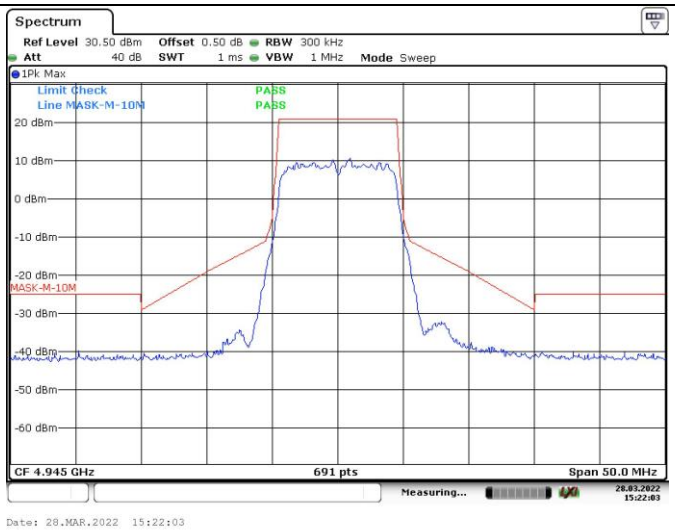
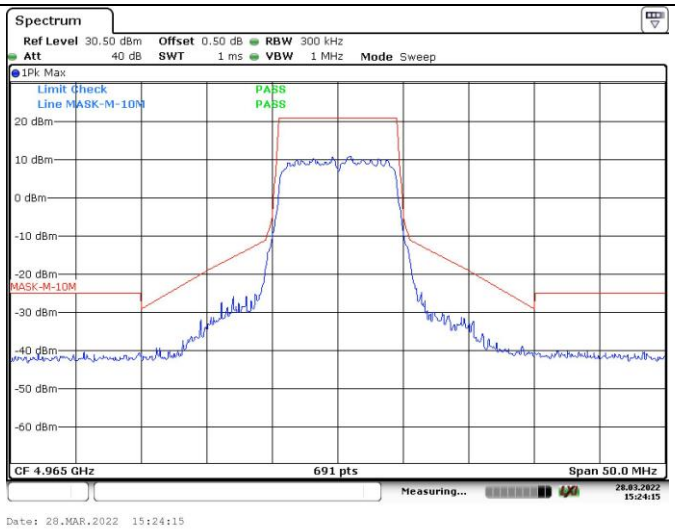
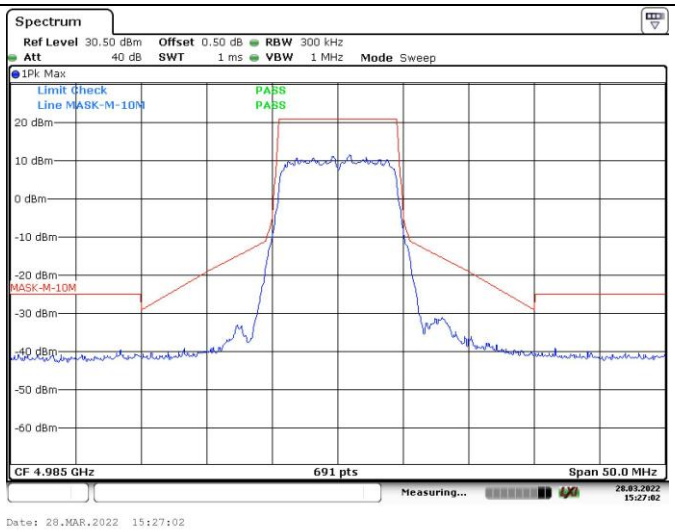
Emission Mask	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

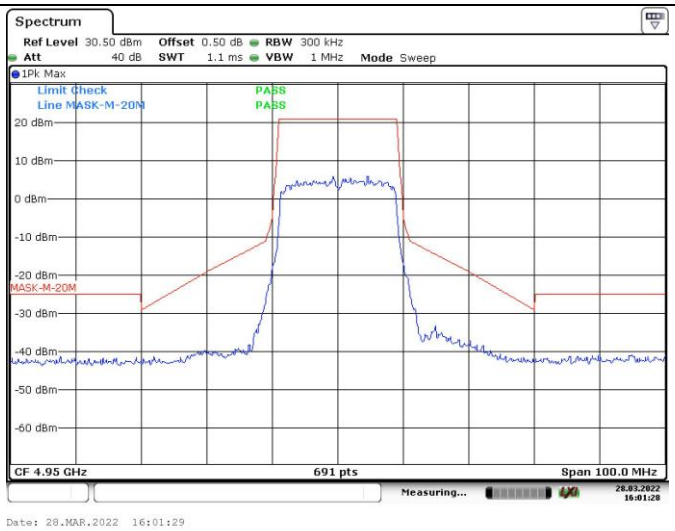
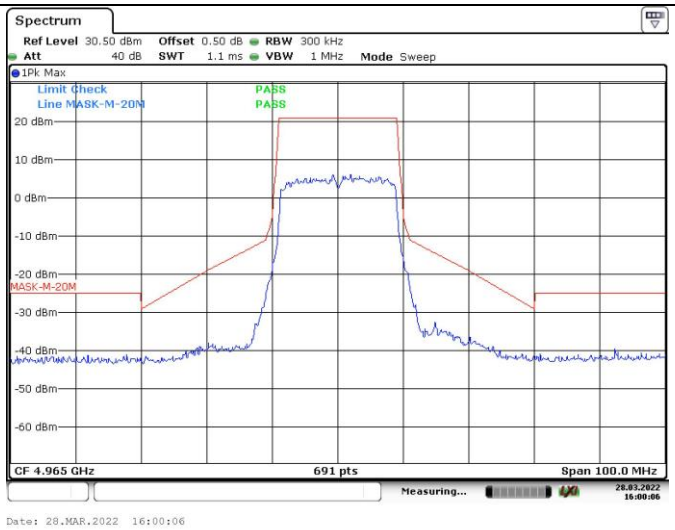
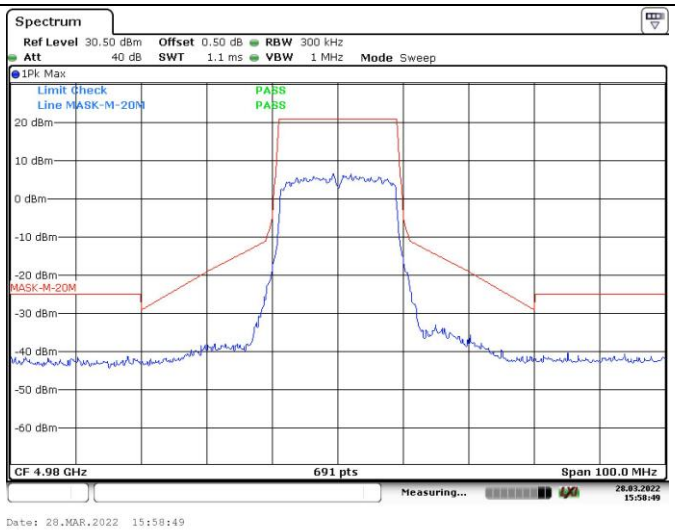
Emission Mask	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Emission Mask	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

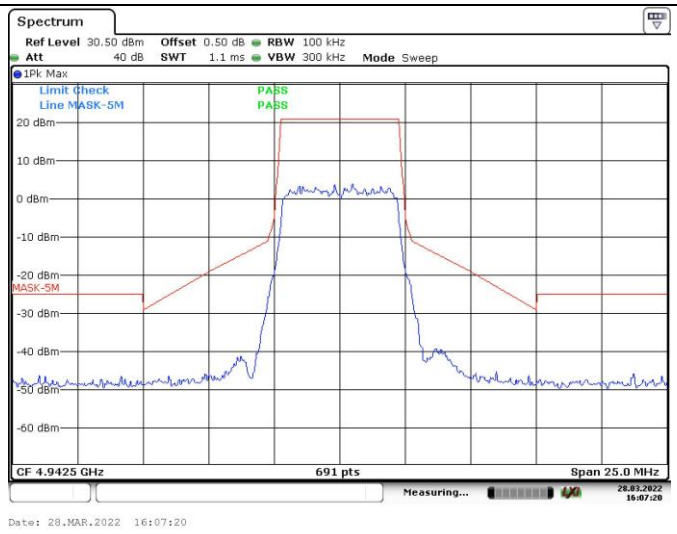
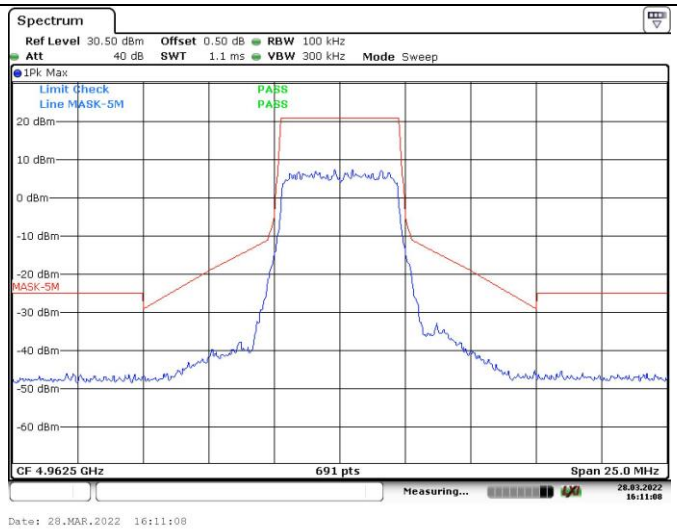
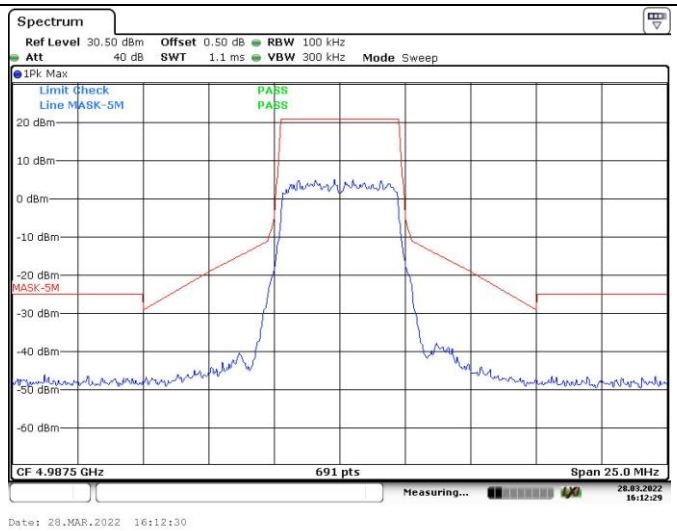
21dBi/23dBi Antenna:
Chain 0:

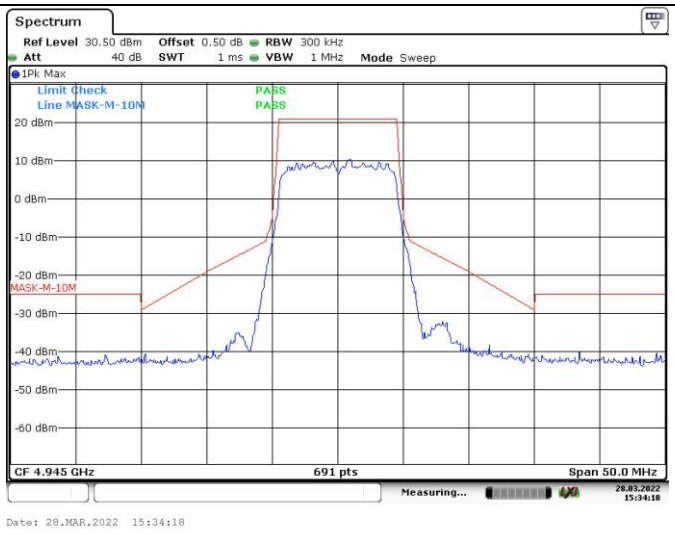
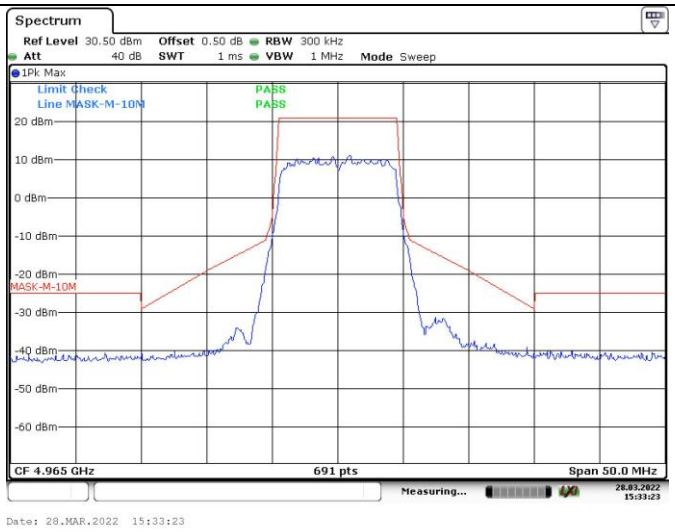
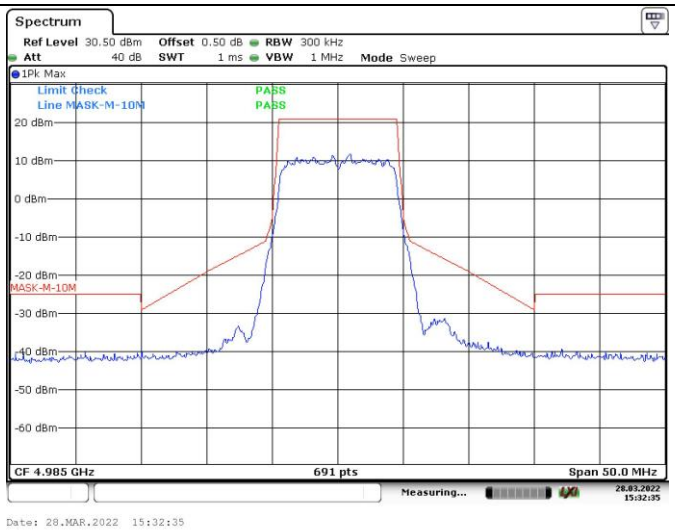
Emission Mask	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

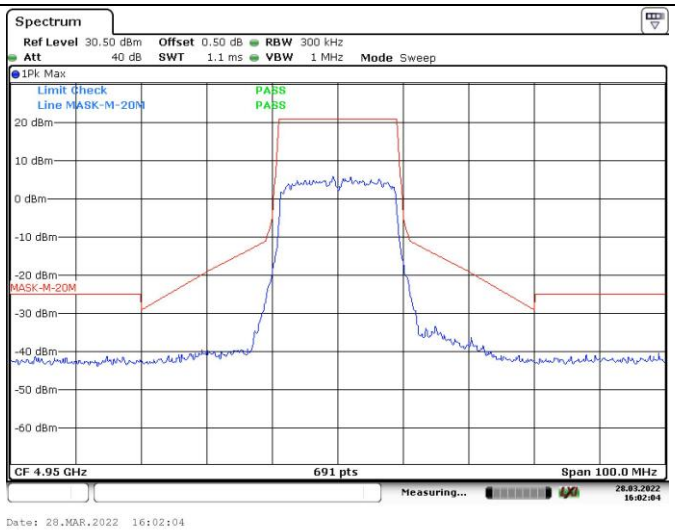
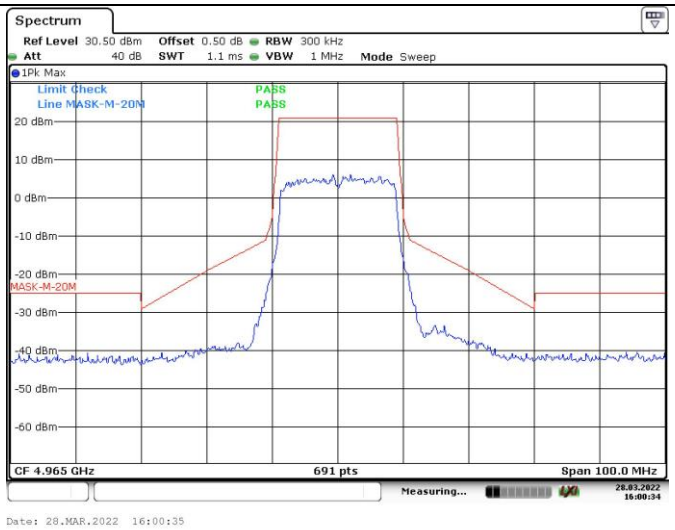
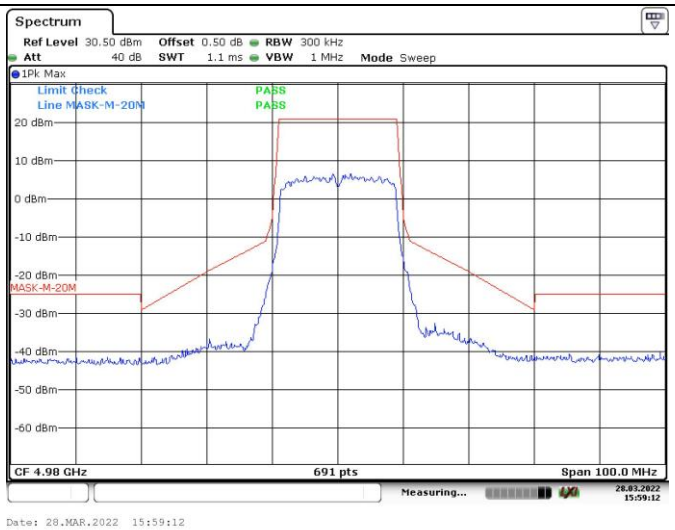
Emission Mask	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Emission Mask	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

Chain 1：

Emission Mask	
5M Lowest Channel	
5M Middle Channel	
5M Highest Channel	

Emission Mask	
10M Lowest Channel	
10M Middle Channel	
10M Highest Channel	

Emission Mask	
20M Lowest Channel	
20M Highest Channel	
20M Middle Channel	

4.7 Spurious Emission at Antenna port:

Serial Number:	CR21090075-RF-S1	Test Date:	2022-03-26~2022-03-28
Test Site:	RF	Test Mode:	Transmitting (high power level was tested)
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.3~23.4	Relative Humidity: (%)	65~67	Temperature: (℃)	100.4~101.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

(All emissions are under limit more than 3dB, so combined two chain compliance the limit)