Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

TEST REPORT

FCC PART 15.236

Report Reference No. ..... :	**CTL2201041011-WF**	
Compiled by: (position+printed name+signature)	Happy Guo (File administrators)	
Tested by: (position+printed name+signature)	Cary Gao (Test Engineer)	
Approved by: (position+printed name+signature)	Ivan Xie (Manager)	

Product Name ..... :	UHF Wireless Microphone
Model/Type reference ..... :	CVM-WM200
List Model(s)..... :	See page 3 for details
Trade Mark..... :	COMICA
FCC ID..... :	2AZSQ-CVM-WM200
Applicant's name ..... :	**Shenzhen Commlite Technology Co.,LTD.**
Address of applicant ..... :	5th Floor, Building B, NO. 167 Pingxin North Road, Pinghu Street, Long'gang District, Shenzhen, Guangdong Province, China
Test Firm..... :	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm ..... :	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification..... :	
Standard ..... :	**FCC Part 15.236:**Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz
TRF Originator ..... :	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF..... :	Dated 2011-01
Date of receipt of test item ..... :	Jan. 07, 2022
Date of Test Date..... :	Jan. 07, 2022–Feb. 08, 2022
Data of Issue ..... :	Feb. 09, 2022
Result..... :	**Pass**

TEST REPORT

Test Report No. :	CTL2201041011-WF	Feb. 09, 2022
		Date of issue

Equipment under Test	:	UHF Wireless Microphone
Sample No.		CTL220104101-1-S001
Model /Type	:	CVM-WM200
Listed Models	:	CVM-WM200(A), CVM-WM200(B), CVM-WM200(C), CVM-WM200(D), CVM-WM200II (A), CVM-WM200II (C), CVM-WM200 PRO(A), CVM-WM200 PRO(C), CVM-WM200 TX, CVM-WM200 RX, CVM-WM200II TX, CVM-WM200II RX, CVM-WM200 PRO-TX, CVM-WM200 PRO-RX
Applicant	:	**Shenzhen Commlite Technology Co.,LTD.**
Address	:	5th Floor, Building B, NO. 167 Pingxin North Road, Pinghu Street, Long'gang District, Shenzhen, Guangdong Province, China
Manufacturer	:	**Shenzhen Commlite Technology Co.,LTD.**
Address	:	5th Floor, Building B, NO. 167 Pingxin North Road, Pinghu Street, Long'gang District, Shenzhen, Guangdong Province, China

Test result	**Pass ***

* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

** Modified History **

Revision	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2022-02-09	CTL2201041011-WF	Tracy Qi

Table of Contents Page

1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:
FCC Rules Part 15.236: Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz

ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

According to KDB 206256 D01 Wireless Microphone Certification v02.

1.2. Test Description

TestSpecificationclause		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.236(d)	RF Power Output	PASS
FCC Part 15.236(f)(2)	Occupied Bandwidth	PASS
FCC Part 15.236(g) ETSI EN 300 422-1 v1.4.2	Necessary Bandwidth Spurious emissions	PASS
FCC Part 15.236(f)(3)	Frequency Stability	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSIC63.10 requirements.

1.3.2 Laboratoryaccreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: 9618B

CABidentifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered byInnovation, Science and Economic Development Canada to test to Canadian radio equipment requirementswith Registration No.: 9618B on Jan.22, 2019.

1.4. Statement of the measurement uncertainty

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

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission9KHz~30MHz	±3.40dB	(1)
Radiated Emission30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

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

2. GENERAL INFORMATION

2.1. Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Descriptionof EUT

Product Name:	UHF Wireless Microphone
Model/Type reference:	CVM-WM200
Power supply:	DC 3V by 2*AA batteries
Hardware Version:	1.4
Software Version:	1.0.4
Wireless microphone	
Modulation:	FM
Operation frequency:	Group A: 534.125-557.875MHz Group B: 566.125-589.875MHz
Channel number:	96
Channel separation:	250KHz
Antenna type:	Internal Antenna
Antenna gain:	2.53dBi

Note1: For more details, please refer to the user's manual of the EUT.
Note2: Antenna gain provided by the applicant.
Note3: The product cannot be configured to operate outside the current frequency band plan through software configuration, Third parties are not allowed to change any software parameter configuration of the product.

2.3. Description of Test Modes and Test Frequency

The system is configured to test under continuous transmission conditions and transmission frequency through the switch button control. And the number of channels provided to EUT is 96, select channel 00/49/95 for testing.

Operation Frequency List：

Group-A		Group-B	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	**534.125**	**00**	**566.125**
01	**534.375**	**01**	**566.375**
02	**534.625**	**02**	**566.625**
--	--	--	--
48	**545.875**	**48**	**577.875**
49	**546.125**	**49**	**578.125**
50	**546.375**	**50**	**578.375**
--	--	--	--
93	**557.375**	**93**	**589.375**
94	**557.625**	**94**	**589.625**
95	**557.875**	**95**	**589.875**

Note: The line display in grey is the channel selected to perform test.

2.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ESH2-Z5	860014/010	2021/05/13	2022/05/12
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2021/04/06	2022/04/05
EMI Test Receiver	R&S	ESCI	1166.5950.03	2021/05/16	2022/05/15
Spectrum Analyzer	Agilent	E4407B	MY41440676	2021/05/13	2022/05/12
Spectrum Analyzer	Agilent	N9020A	US46220290	2021/05/13	2022/05/12
Spectrum Analyzer	Keysight	N9020A	MY53420874	2021/05/13	2022/05/12
Controller	EM Electronics	EM 1000	060859	2021/05/18	2022/05/17
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2021/05/18	2022/05/17
Active Loop Antenna	Da Ze	ZN30900A	/	2021/05/18	2022/05/17
Amplifier	Agilent	8449B	3008A02306	2021/05/13	2022/05/12
Amplifier	Agilent	8447D	2944A10176	2021/05/13	2022/05/12
Temperature/Humidity Meter	Gangxing	CTH-608	02	2021/05/13	2022/05/12
Power Sensor	Agilent	U2021XA	MY55130004	2021/05/13	2022/05/12
Power Sensor	Agilent	U2021XA	MY55130006	2021/05/13	2022/05/12
Spectrum Analyzer	RS	FSP	1164.4391.38	2021/05/13	2022/05/12
Audio signal generator	GOOD WILL INSTRUMENT	8121C	NS 021110854	2021/04/28	2022/04/27
Audio Analyzer	R&S	UPV	1146.2003K02-101721-UW	2021/04/28	2022/04/27

Test Software	
Name of Software	Version
TST-PASS	1.0.5
ES-K1(Below 1GHz)	V1.71
e3(Above 1GHz)	6.111221a

The calibration interval was one year

2.5. Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended to comply with Section 15.236 of the FCC Part 15, Subpart C Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

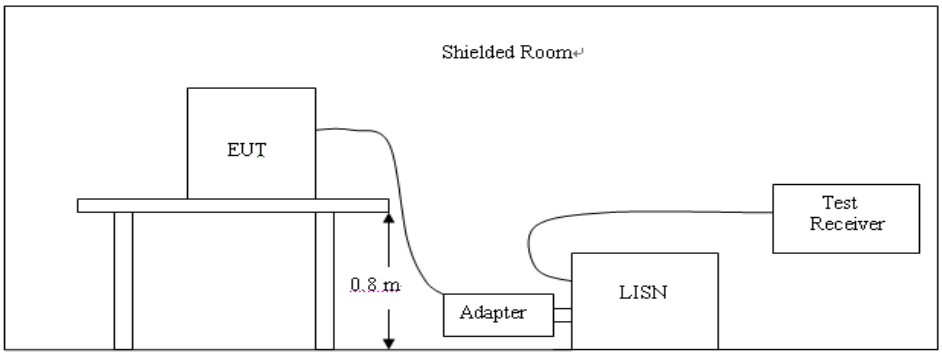
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



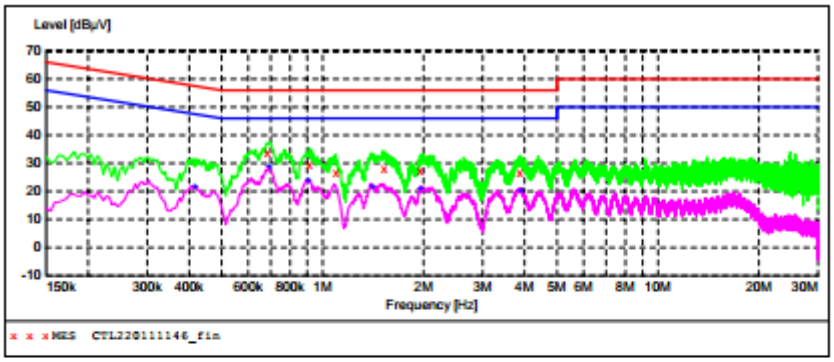
TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. Ifa EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Remark: All modes were test at Low, Middle, and High channel; only the worst result of High Channel was reported as below:

SCAN TABLE: "Voltage (9K-30M) FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL220111146_fin"

1/11/2022 11:45AM

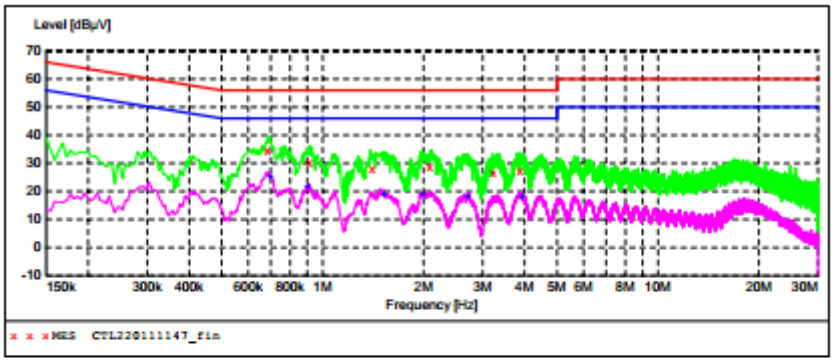
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.685500	33.50	11.2	56	22.5	QP	L1	GND
0.915000	29.40	11.2	56	26.6	QP	L1	GND
1.099500	26.70	11.2	56	29.3	QP	L1	GND
1.527000	28.00	11.2	56	28.0	QP	L1	GND
1.959000	27.60	11.2	56	28.4	QP	L1	GND
3.880500	26.90	11.3	56	29.1	QP	L1	GND

MEASUREMENT RESULT: "CTL220111146_fin2"

1/11/2022 11:45AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.415500	21.90	11.2	48	25.6	AV	L1	GND
0.690000	28.50	11.2	46	17.5	AV	L1	GND
0.906000	23.80	11.2	46	22.2	AV	L1	GND
1.405500	22.00	11.2	46	24.0	AV	L1	GND
1.963500	21.00	11.2	46	25.0	AV	L1	GND
3.903000	20.30	11.3	46	25.7	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL220111147_fin"

1/11/2022 11:47AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.685500	34.70	11.2	56	21.3	QP	N	GND
0.915000	30.00	11.2	56	26.0	QP	N	GND
1.410000	28.30	11.2	56	27.7	QP	N	GND
2.094000	28.60	11.3	56	27.4	QP	N	GND
3.237000	26.30	11.3	56	29.7	QP	N	GND
3.885000	27.60	11.3	56	28.4	QP	N	GND

MEASUREMENT RESULT: "CTL220111147_fin2"

1/11/2022 11:47AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.699000	25.60	11.2	46	20.4	AV	N	GND
0.901500	21.40	11.2	46	24.6	AV	N	GND
1.522500	19.10	11.2	46	26.9	AV	N	GND
1.990500	18.60	11.2	46	27.4	AV	N	GND
2.697000	17.80	11.3	46	28.2	AV	N	GND
3.916500	18.40	11.3	46	27.6	AV	N	GND

3.2. Maximum Output Power

Limit

The maximum radiated power shall not exceed the following values:

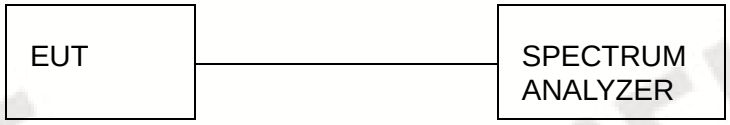
(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

(2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.

Test Configuration

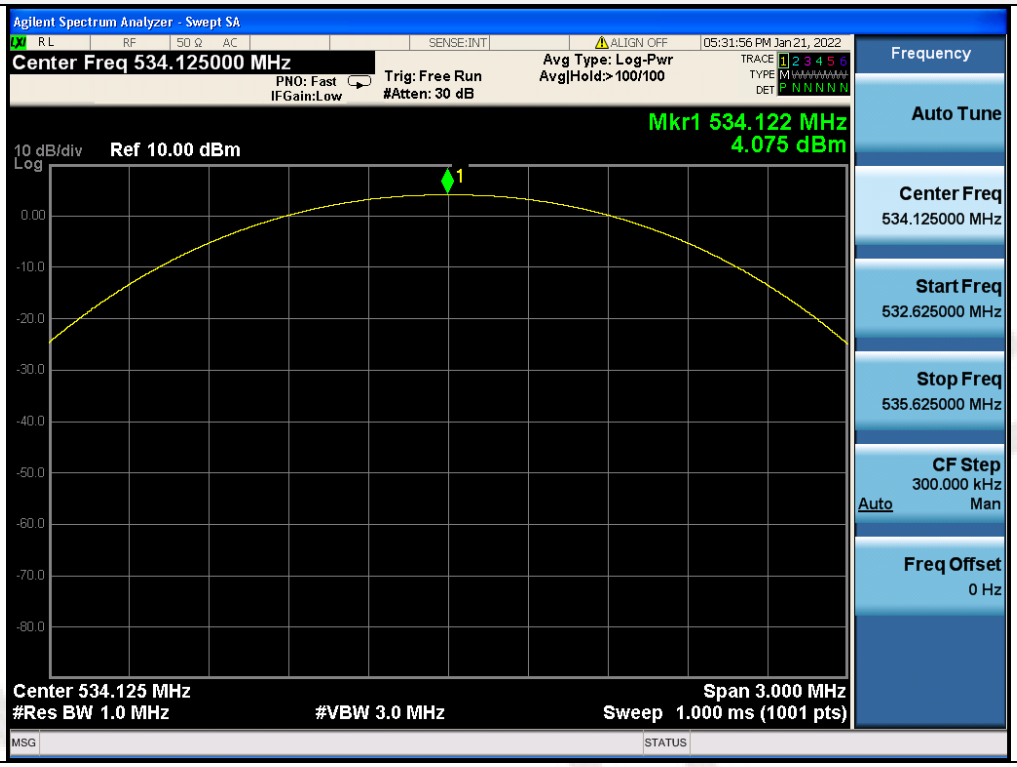
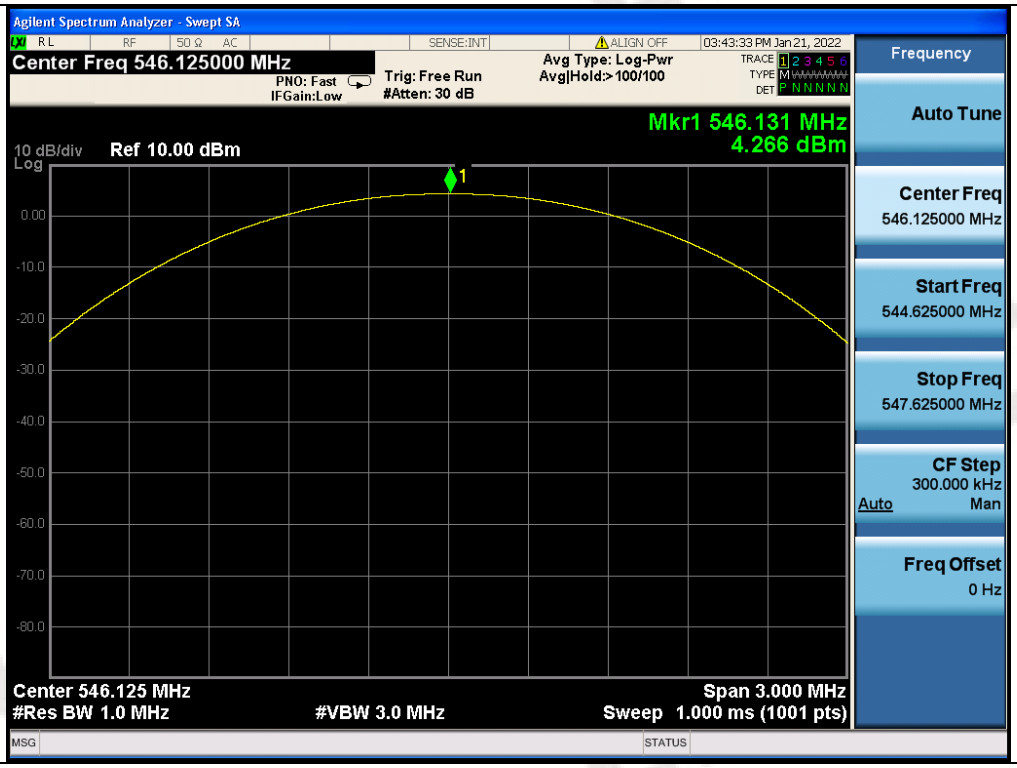


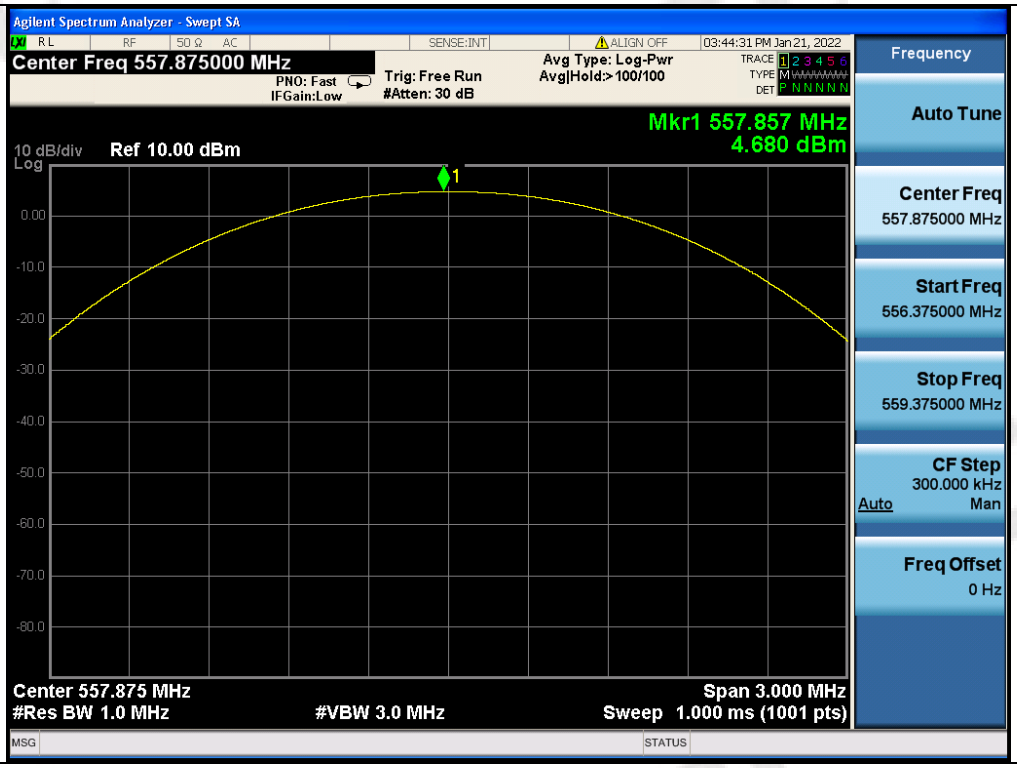
Test Results

Modulation	Channel	Output power (dBm)	Ant. Gain (dBi)	EIRP (dBm)	Limit (dBm)	Result
FM (Group-A)	CH00	4.075	2.53	6.605	17	Pass
	CH49	4.266	2.53	6.796	17	Pass
	CH95	4.680	2.53	7.210	17	Pass
FM (Group-B)	CH00	4.628	2.53	7.158	17	Pass
	CH49	4.543	2.53	7.073	17	Pass
	CH95	4.111	2.53	6.641	17	Pass

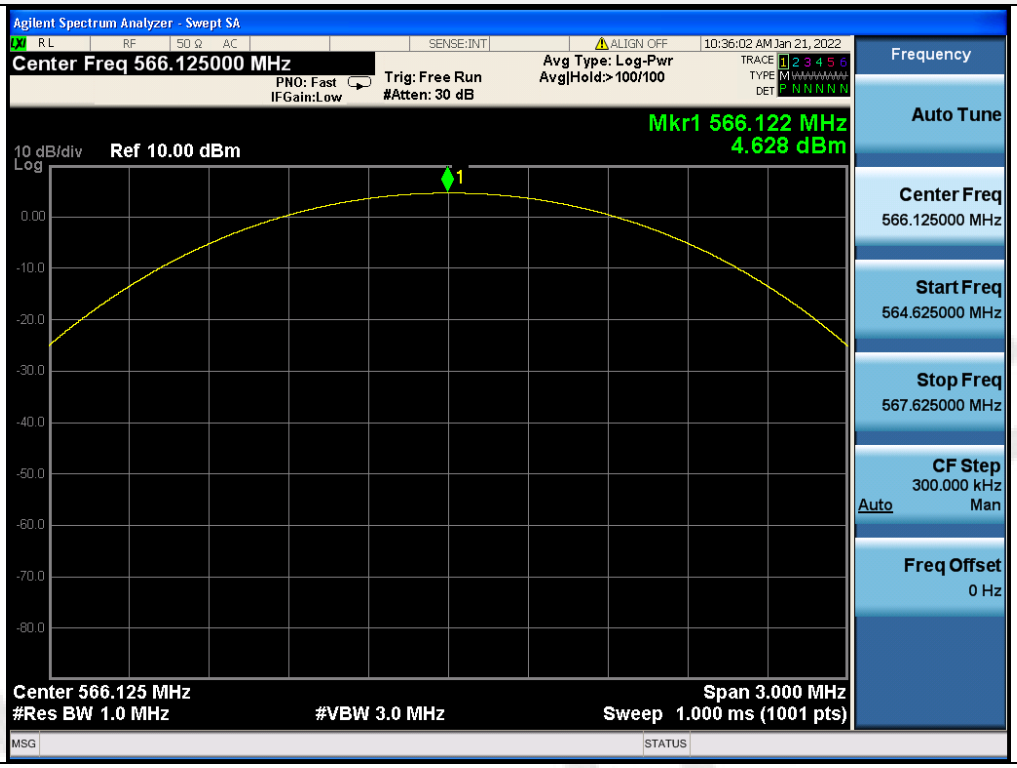
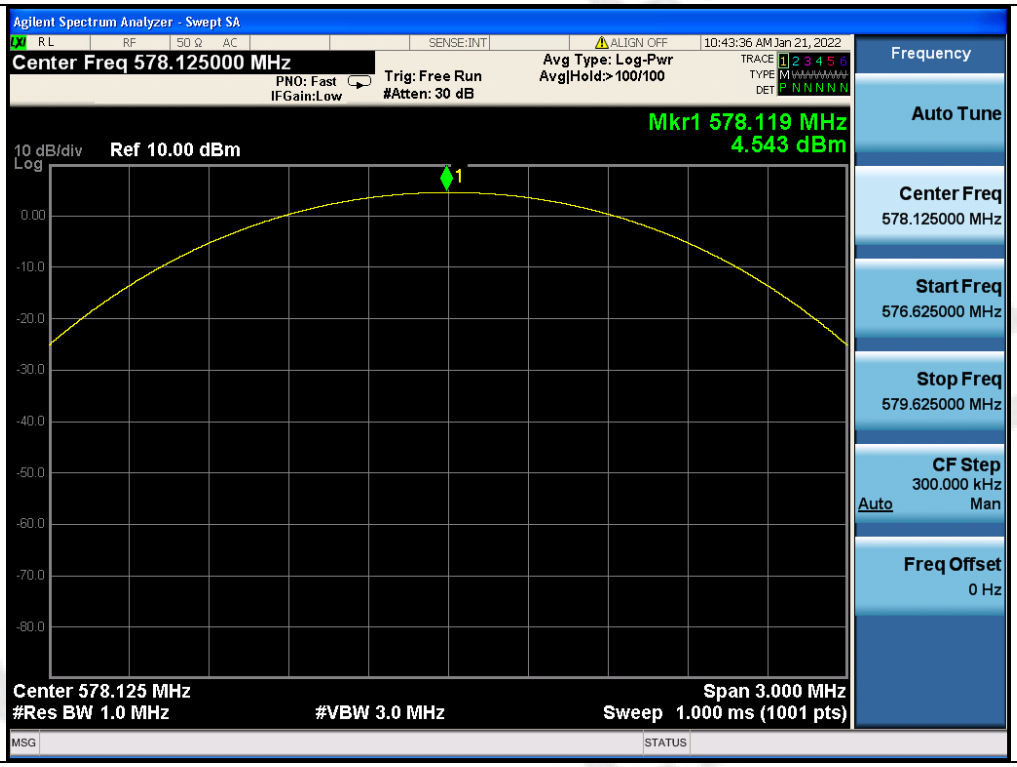
Note: 1.The test results including the cable lose.
2.The RF cable is 50 ohm.

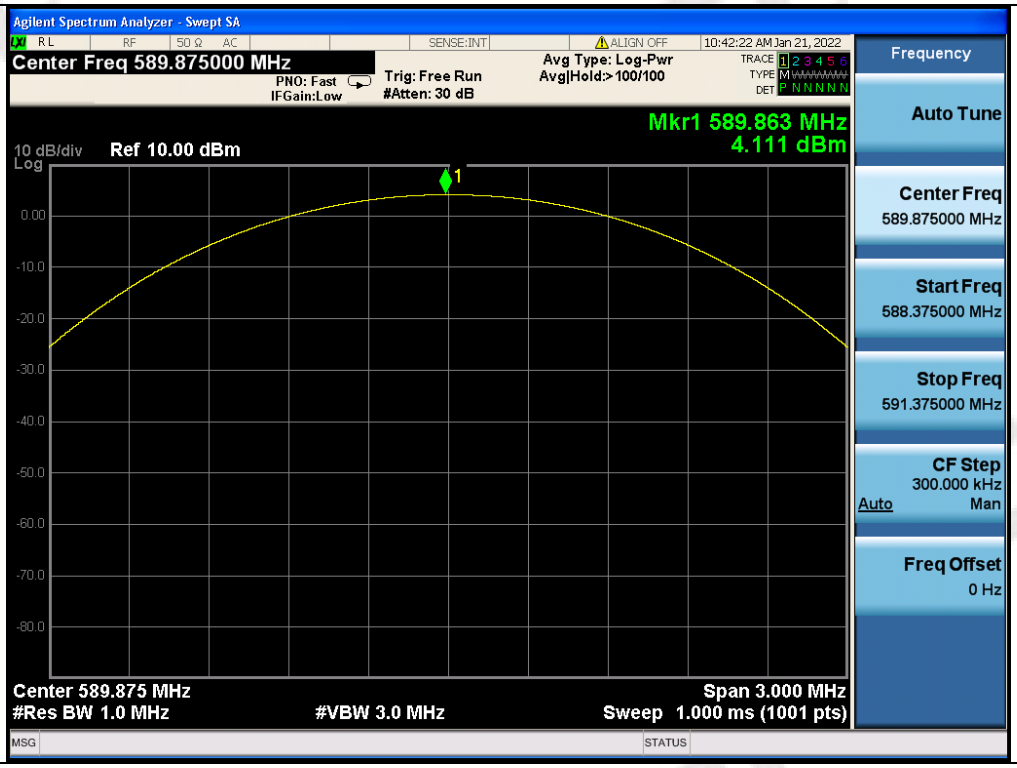
Test plot as follows:

Group-A

CH00

CH49


Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
03:44:31 PM Jan 21, 2022
Center Freq 557.875000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 557.857 MHz
4.680 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 557.875 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
557.875000 MHz
Start Freq
556.375000 MHz
Stop Freq
559.375000 MHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

CH95

Group-B

CH00

CH49


Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
10:42:22 AM Jan 21, 2022
Center Freq 589.875000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 589.863 MHz
4.111 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 589.875 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
589.875000 MHz
Start Freq
588.375000 MHz
Stop Freq
591.375000 MHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

CH95

3.3. Occupied Bandwidth Measurement

Limit

One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.

Test Configuration

Test Procedure

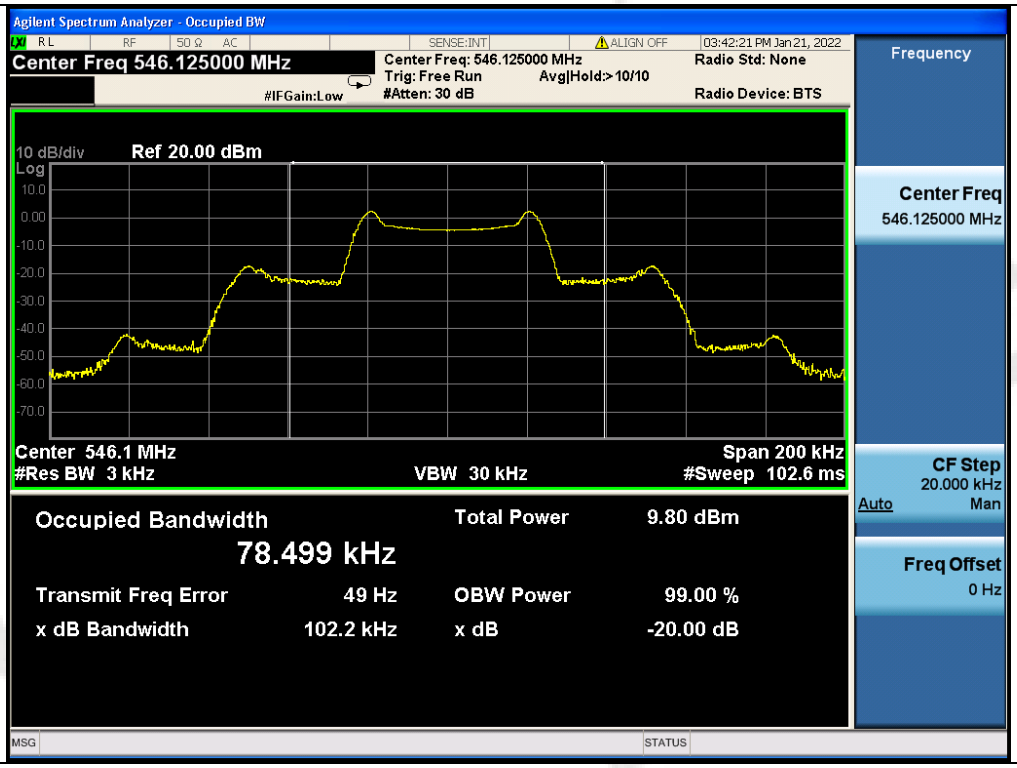
The test shall be modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

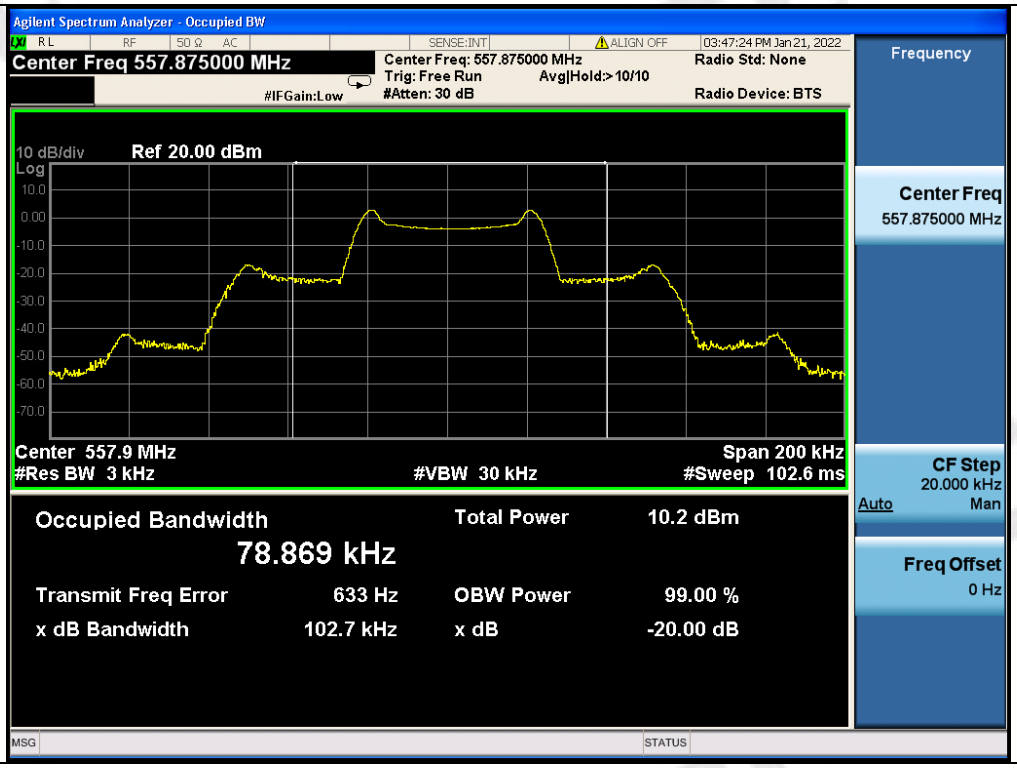
Test Results

Modulation	Channel	99% OBW (KHz)	Limit (KHz)	Result
FM (Group-A)	CH00	74.818	200	Pass
	CH49	78.499	200	
	CH95	78.869	200	
FM (Group-B)	CH00	79.880	200	Pass
	CH49	76.277	200	
	CH95	77.693	200	

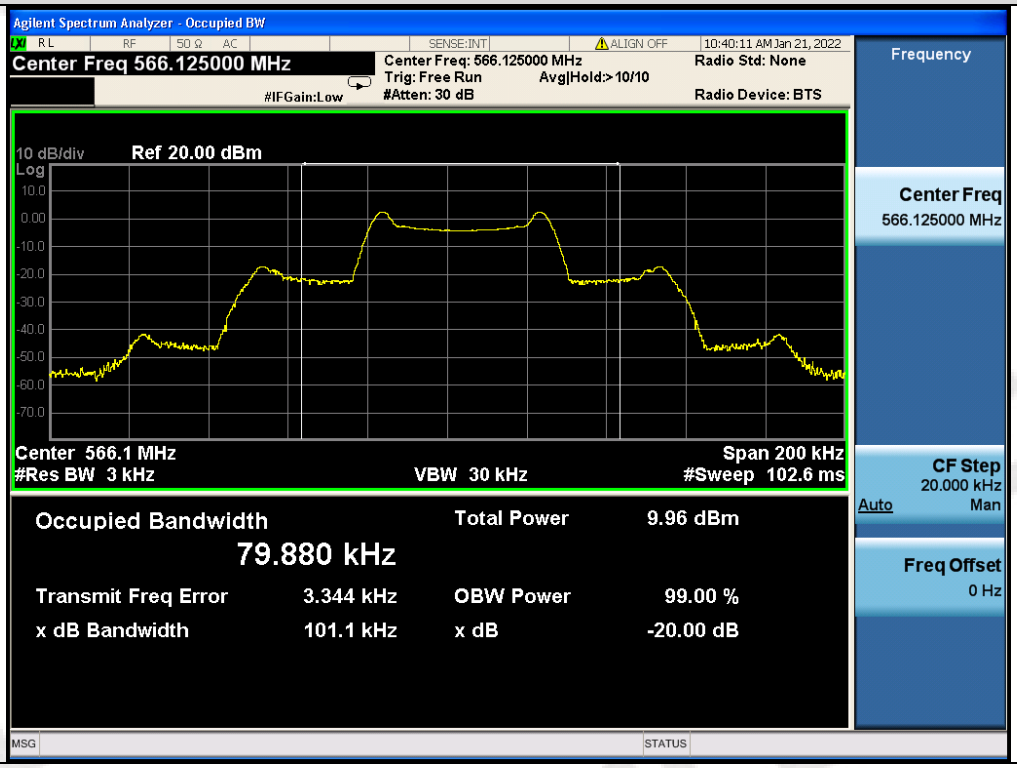
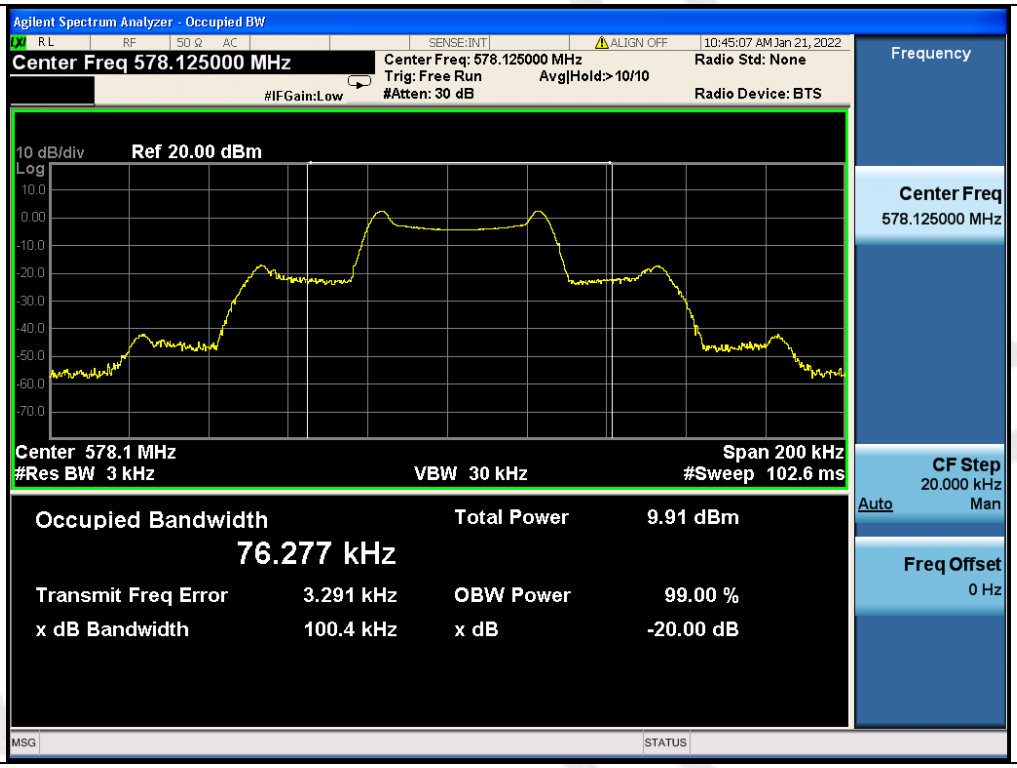
Test plot as follows:

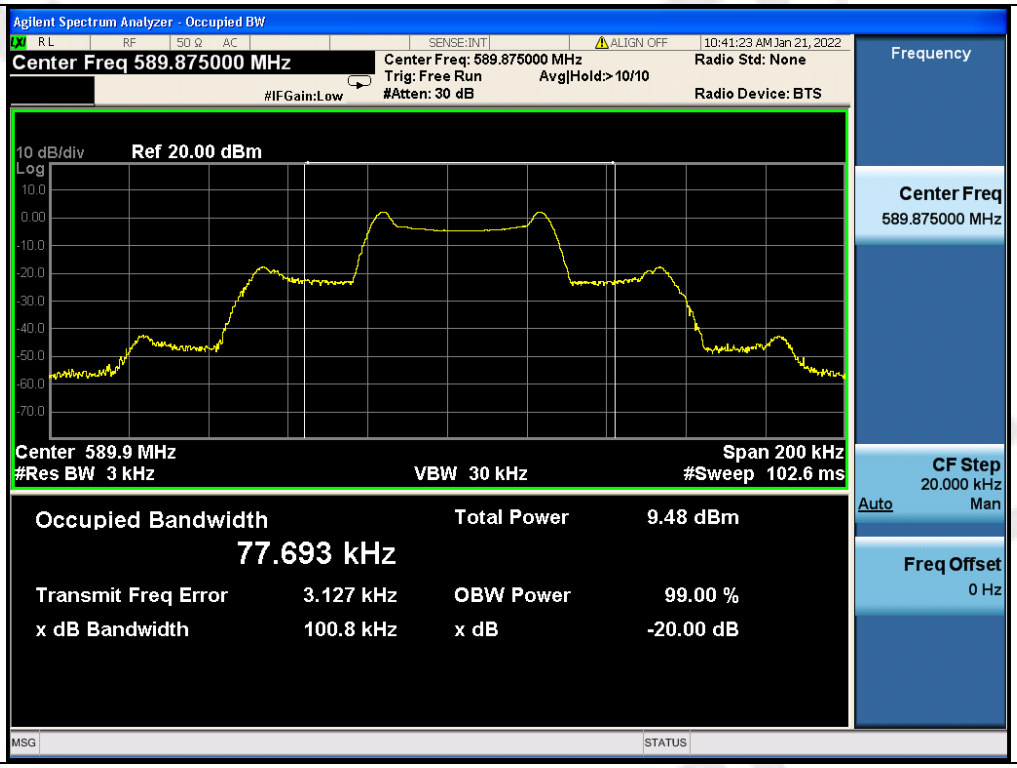
Group-A

CH00

CH49


Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
03:47:24 PM Jan 21, 2022
Center Freq 557.875000 MHz
Center Freq: 557.875000 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 557.9 MHz
#Res BW 3 kHz
#VBW 30 kHz
Span 200 kHz
#Sweep 102.6 ms
Occupied Bandwidth
78.869 kHz
Total Power 10.2 dBm
Transmit Freq Error 633 Hz
OBW Power 99.00 %
x dB Bandwidth 102.7 kHz
x dB -20.00 dB
Center Freq
557.875000 MHz
CF Step
20.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

CH95

Group-B

CH00

CH49

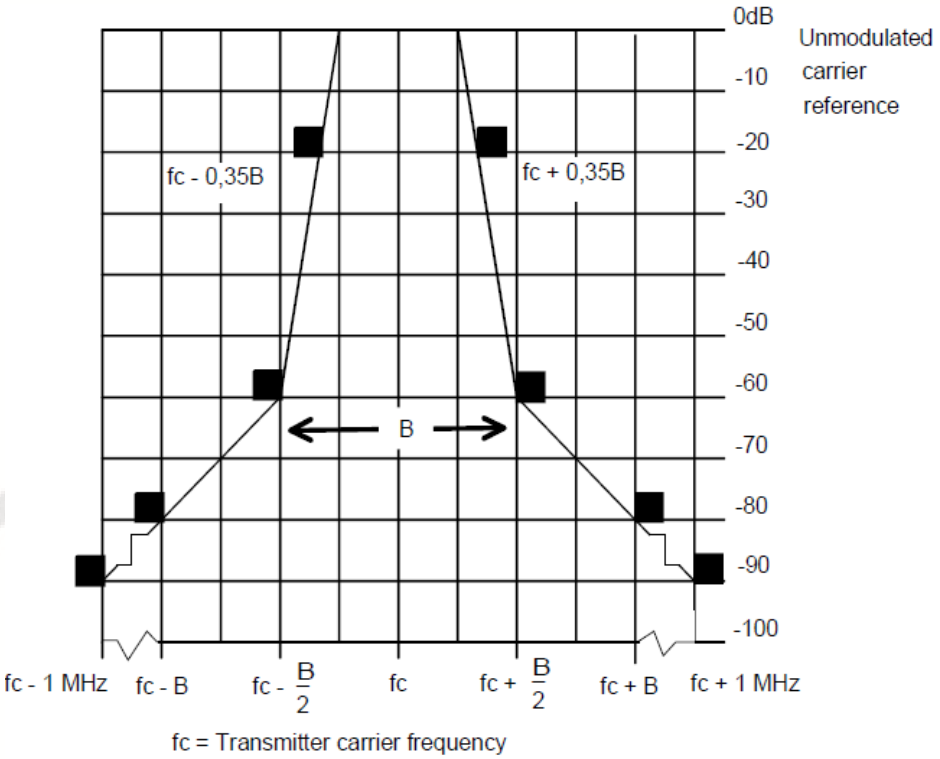

Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
10:41:23 AM Jan 21, 2022
Center Freq 589.875000 MHz
Center Freq: 589.875000 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 589.9 MHz
#Res BW 3 kHz
VBW 30 kHz
Span 200 kHz
#Sweep 102.6 ms
Occupied Bandwidth
77.693 kHz
Total Power 9.48 dBm
Transmit Freq Error 3.127 kHz
OBW Power 99.00 %
x dB Bandwidth 100.8 kHz
x dB -20.00 dB
Center Freq
589.875000 MHz
CF Step
20.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

CH95

3.4. Necessary Bandwidth

LIMIT

According to ETSI EN 300 422-1 V2.1.2 (2017-01) section 8.3.2.2, the trum mask for all analogue systems in the band. The -90 dBc point shall be ±1 MHz from fc easured with an average detector. To comply, a measured value shall fall below the mask limit as shown in figure 3.



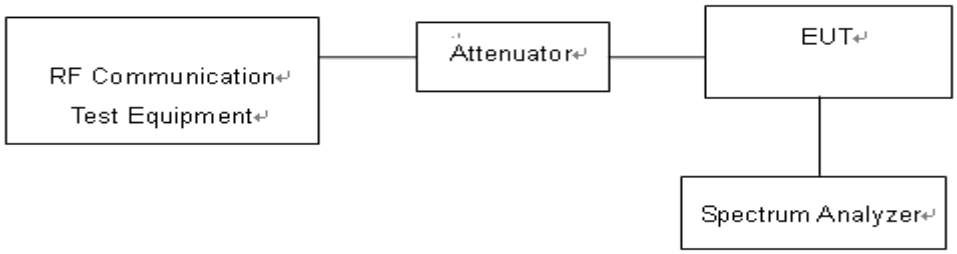
fc = Transmitter carrier frequency

TEST PROCEDURE

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasieak) without weighting filter (flat).
With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer. The corresponding audio output level from the demodulator shall be measured and recorded.
The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output.
The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.
It shall be checked that the audio output level has increased by ≤ 10 dB.
If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).
Measure the input level at the transmitter required to give +12 dB (lim).
The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).
If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.
If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).
The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:

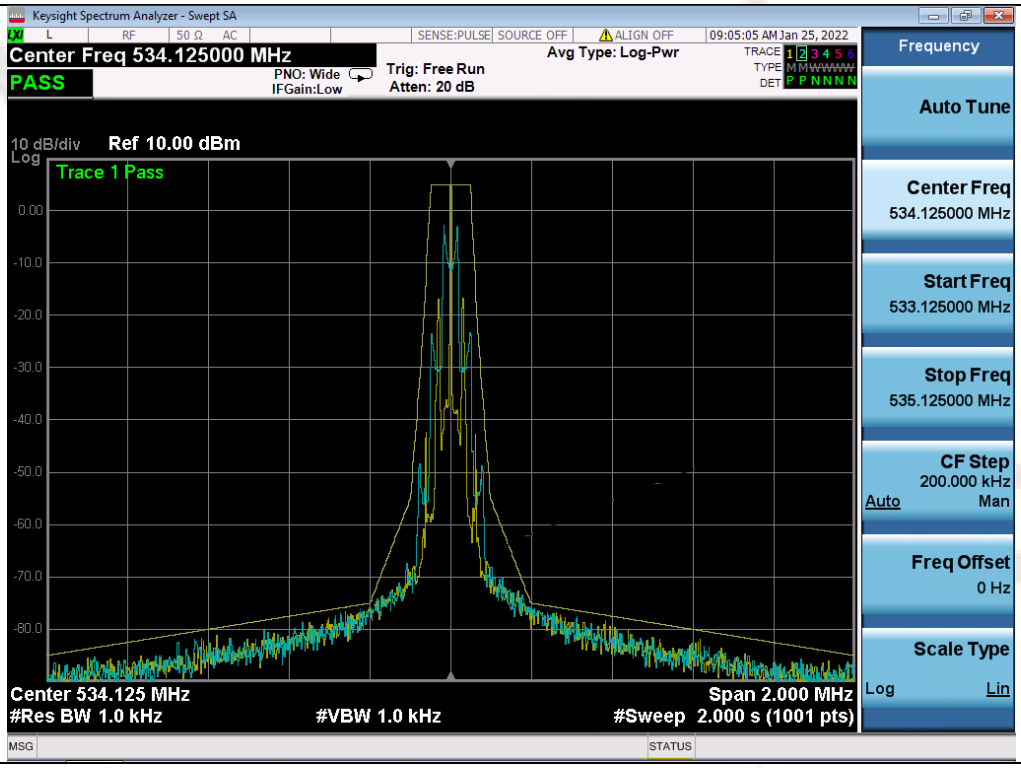
- centre frequency: fc: Transmitter (Tx) nominal frequency;
- dispersion (Span): fc - 1 MHz to fc + 1 MHz;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

TEST CONFIGURATION

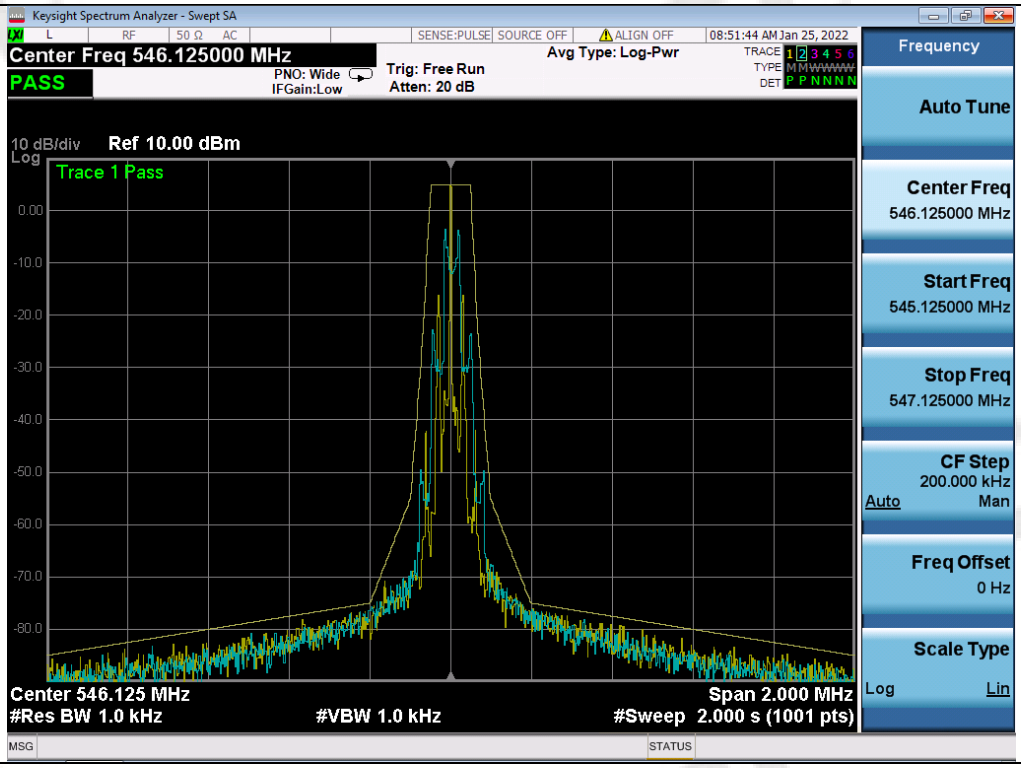


TEST RESULTS

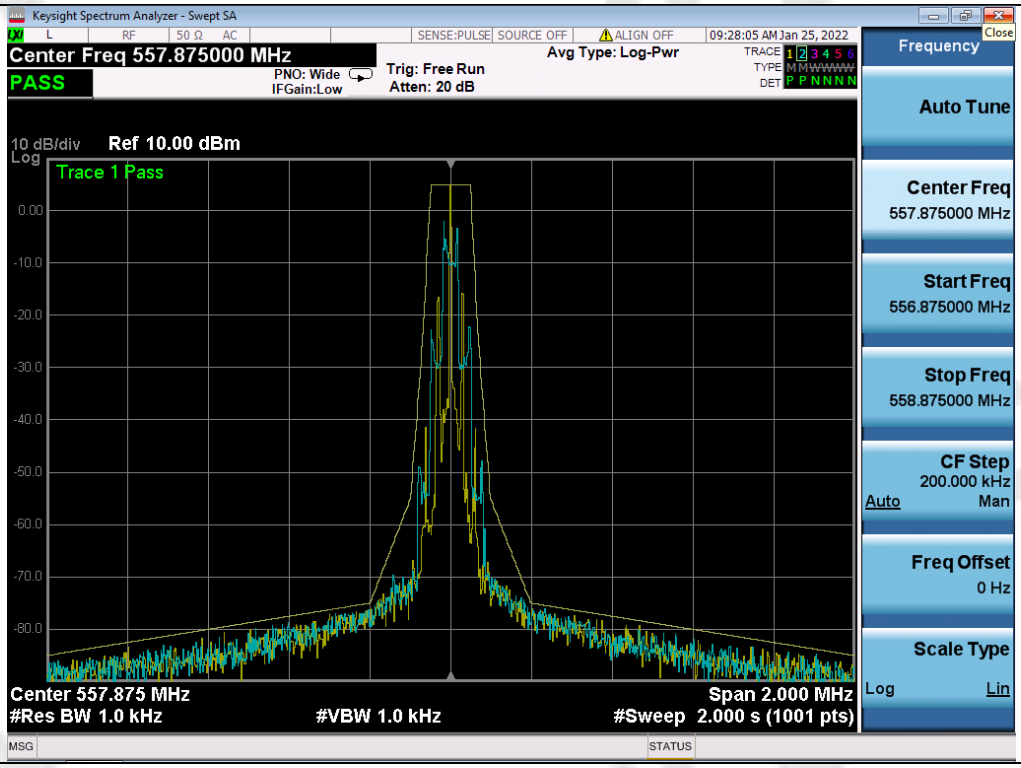
Group-A



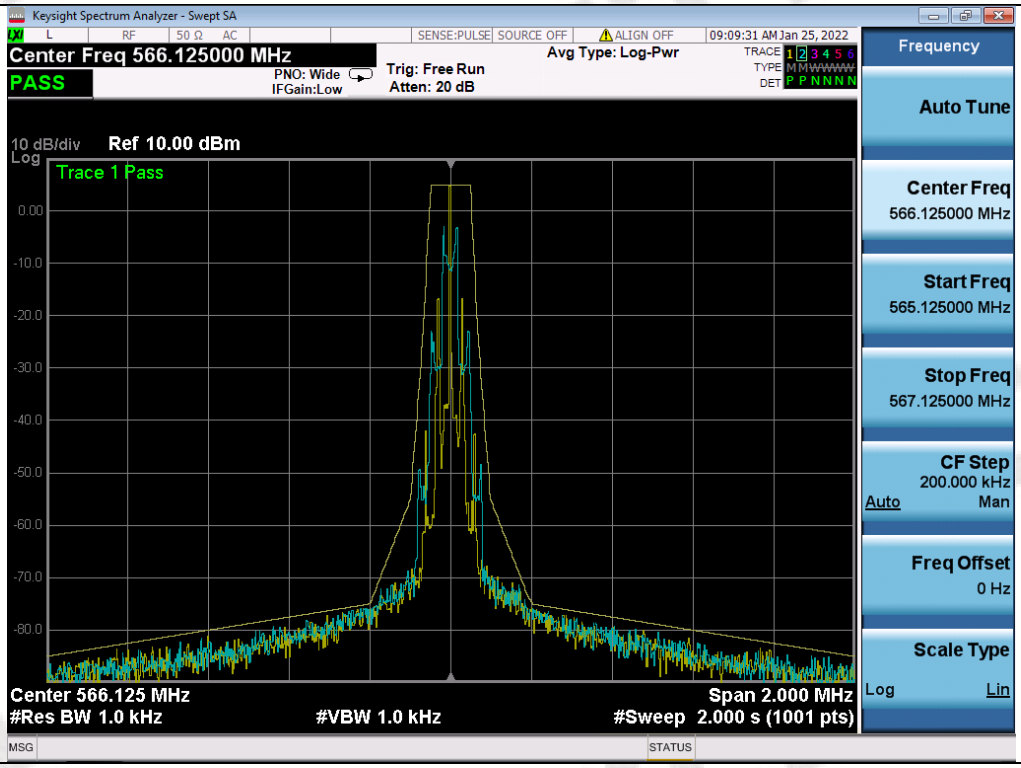
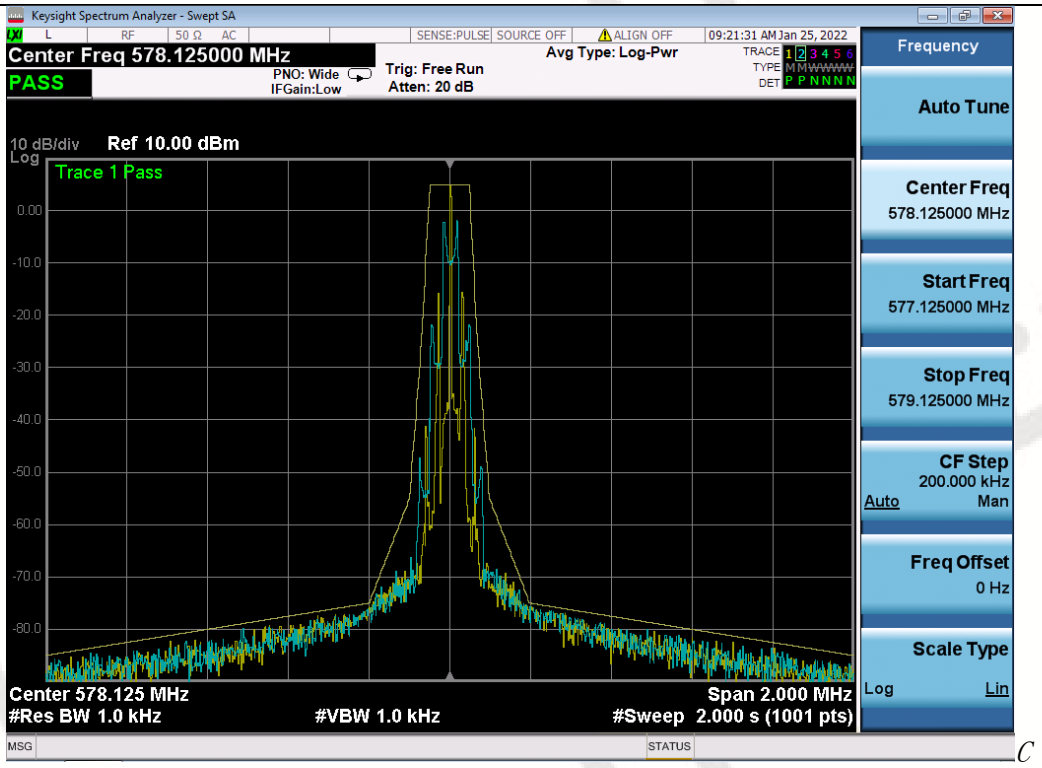
CH00

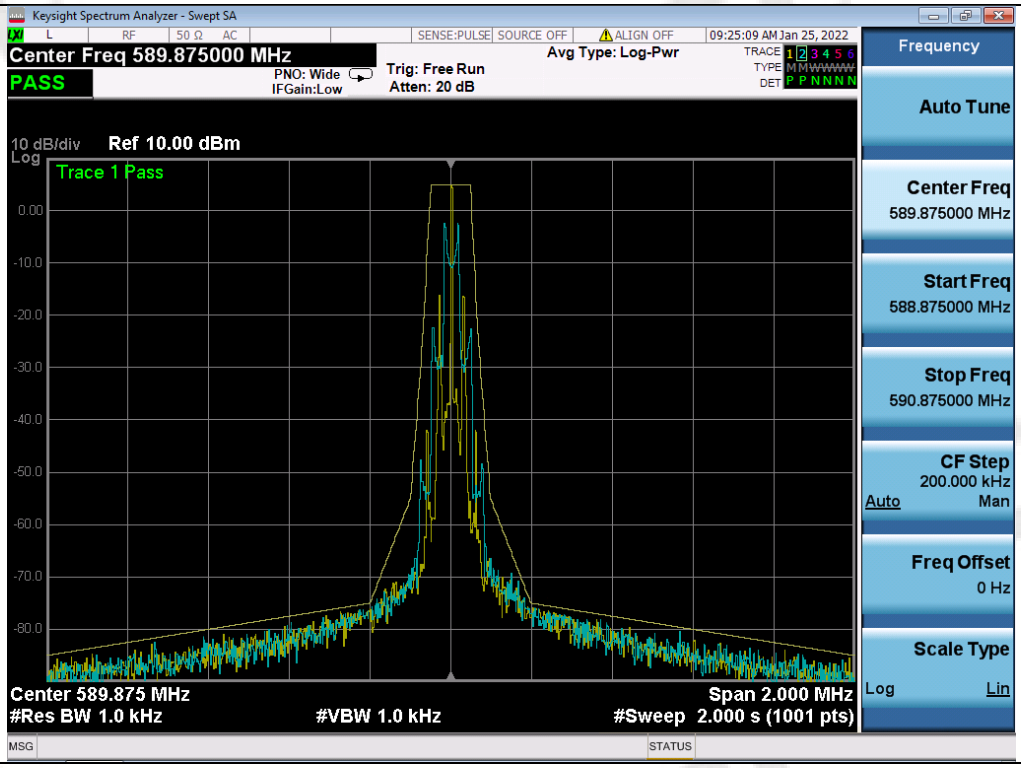

Keysight Spectrum Analyzer - Swept SA
Center Freq 546.125000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
08:51:44 AM Jan 25, 2022
10 dB/div
Log
Ref 10.00 dBm
Trace 1 Pass
Center 546.125 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz
Span 2.000 MHz
#Sweep 2.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
546.125000 MHz
Start Freq
545.125000 MHz
Stop Freq
547.125000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH49


Keysight Spectrum Analyzer - Swept SA
Center Freq 557.875000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
09:28:05 AM Jan 25, 2022
10 dB/div
Log
Ref 10.00 dBm
Trace 1 Pass
Center 557.875 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz
Span 2.000 MHz
#Sweep 2.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
557.875000 MHz
Start Freq
556.875000 MHz
Stop Freq
558.875000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH95

Group-B

CH00

CH49


Keysight Spectrum Analyzer - Swept SA
Center Freq 589.875000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
09:25:09 AM Jan 25, 2022
10 dB/div
Log
Ref 10.00 dBm
Trace 1 Pass
Center 589.875 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz
Span 2.000 MHz
#Sweep 2.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
589.875000 MHz
Start Freq
588.875000 MHz
Stop Freq
590.875000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

CH95

3.5. Transmitter spurious emissions

Limit

Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

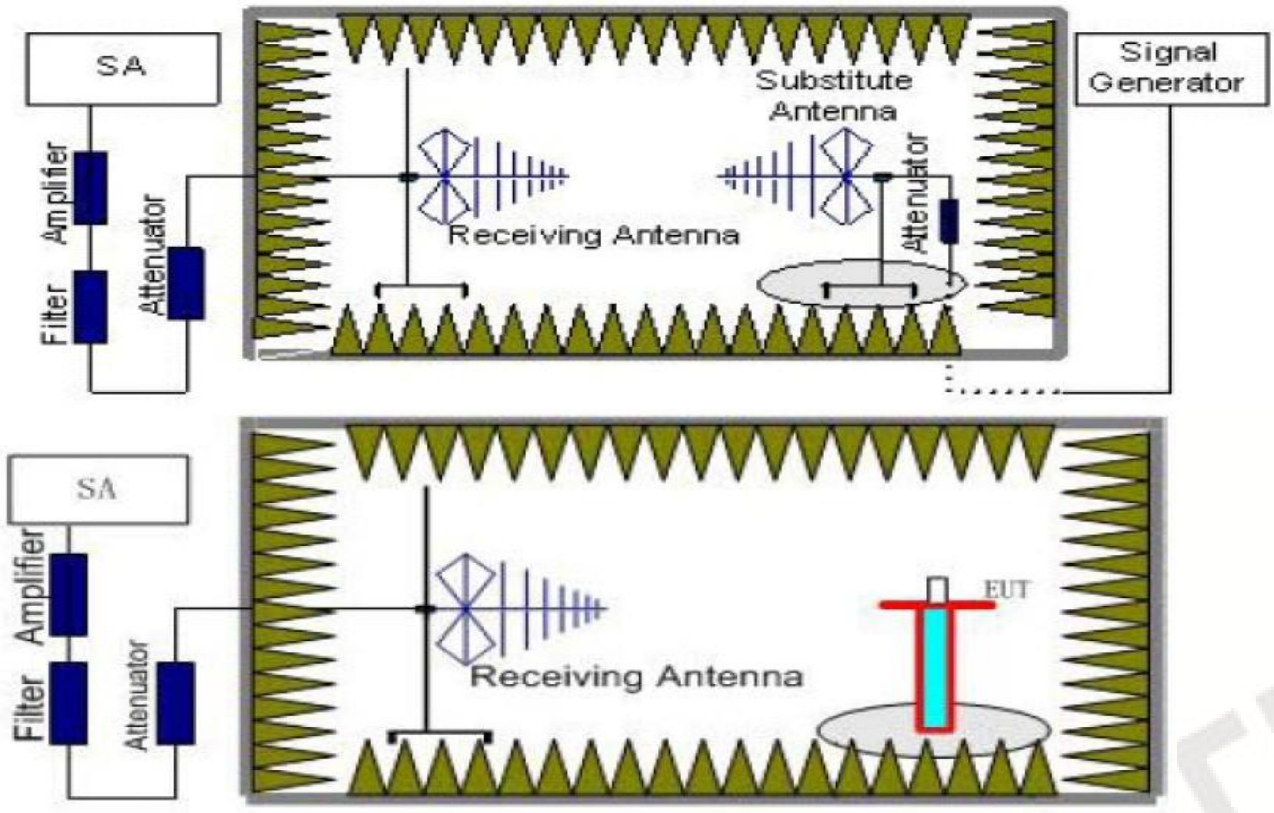
State	Frequency		
	47 MHz to 74 MHz 87,5 MHz to 137 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz
Operation	4 nW	250 nW	1 µW
Standby	2 nW	2 nW	20 nW

Test Procedure

1. EUT shall be placed on a 0.8m high table for frequency below 1GHz
2. EUT shall be placed on a 1.5m high table for frequency above 1GHz, The test distance between the receiving antenna and the EUT is 1m up to 4m, Set EUT in continuous transmitting with maximum output power at test frequency.
3. The table was rotated from 0 to 360 degree to search the highest radiated emission.
4. Repeat step 3 to 4 for each polarization and test channel to find the worst emission level.
5. The results obtained are compared to the limits in order to prove compliance with the requirement.
6. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 6.1 for the test conditions.
7. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 8.4.2 for the measurement method.

Test Configuration

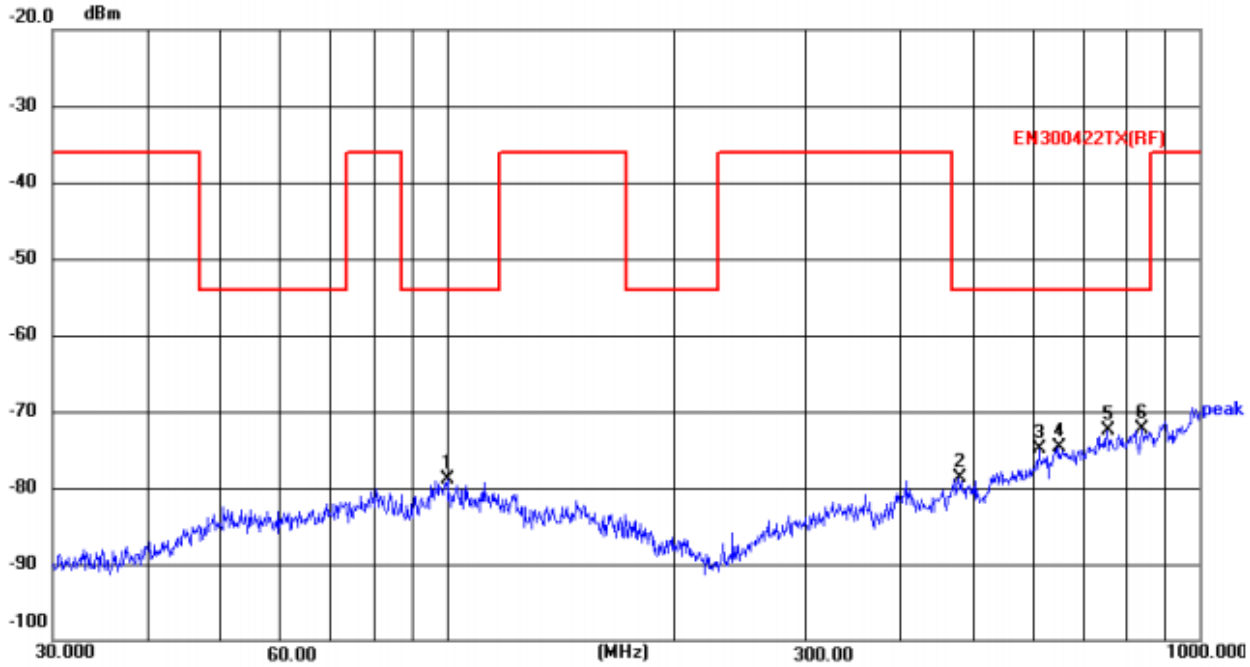
Effective Radiated Power measurement (30 MHz to 12.75 GHz)



Test Results

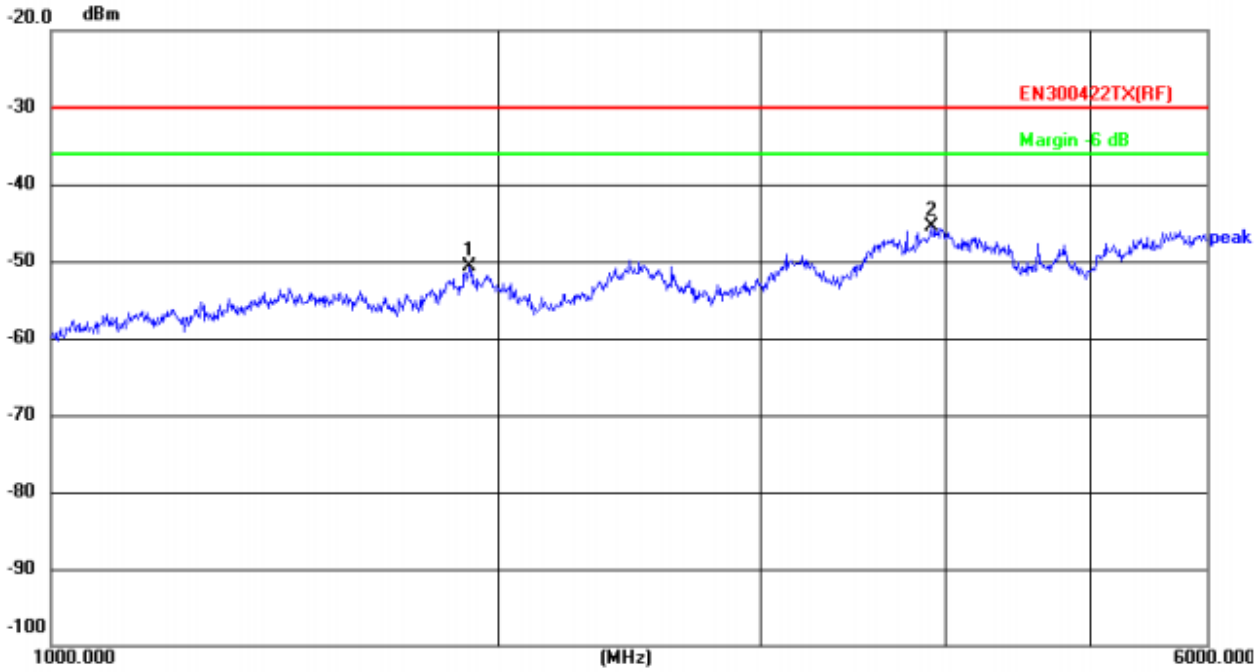
Group-A			
Channel:	CH00	Polarity:	Horizontal

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	100.2286	-108.86	29.97	-78.89	-54.00	24.89	peak	150	0	P
2	478.8456	-108.20	29.40	-78.80	-54.00	24.80	peak	150	0	P
3	612.0642	-106.95	32.03	-74.92	-54.00	20.92	peak	150	0	P
4	649.6597	-107.60	32.97	-74.63	-54.00	20.63	peak	150	0	P
5	752.7432	-107.06	34.63	-72.43	-54.00	18.43	peak	150	0	P
6	839.1818	-107.16	34.77	-72.39	-54.00	18.39	peak	150	0	P

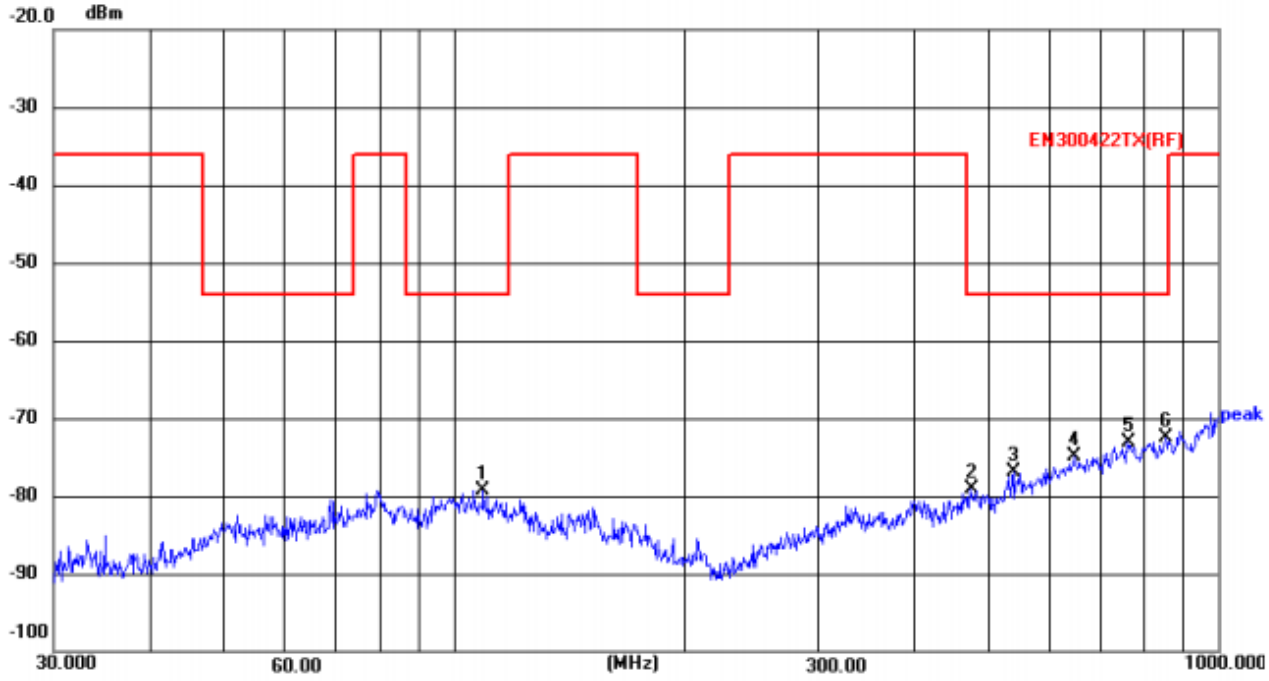
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1912.893	-62.16	11.44	-50.72	-30.00	20.72	peak	150	360	P
2	3916.979	-65.73	20.31	-45.42	-30.00	15.42	peak	150	360	P

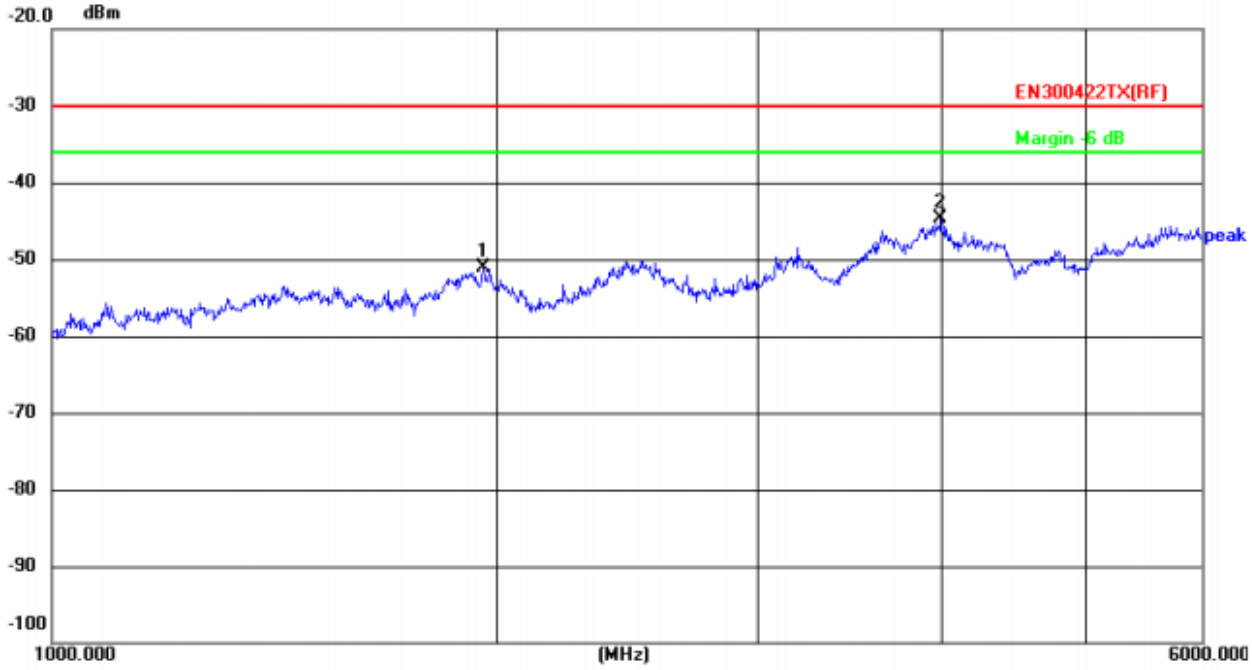
Channel:	CH00	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	109.4116	-108.63	29.35	-79.28	-54.00	25.28	peak	150	0	P
2	473.8347	-108.50	29.32	-79.18	-54.00	25.18	peak	150	0	P
3	539.4775	-107.11	30.28	-76.83	-54.00	22.83	peak	150	0	P
4	647.3856	-107.87	32.95	-74.92	-54.00	20.92	peak	150	0	P
5	760.7036	-107.74	34.61	-73.13	-54.00	19.13	peak	150	0	P
6	854.0247	-107.58	35.08	-72.50	-54.00	18.50	peak	150	0	P

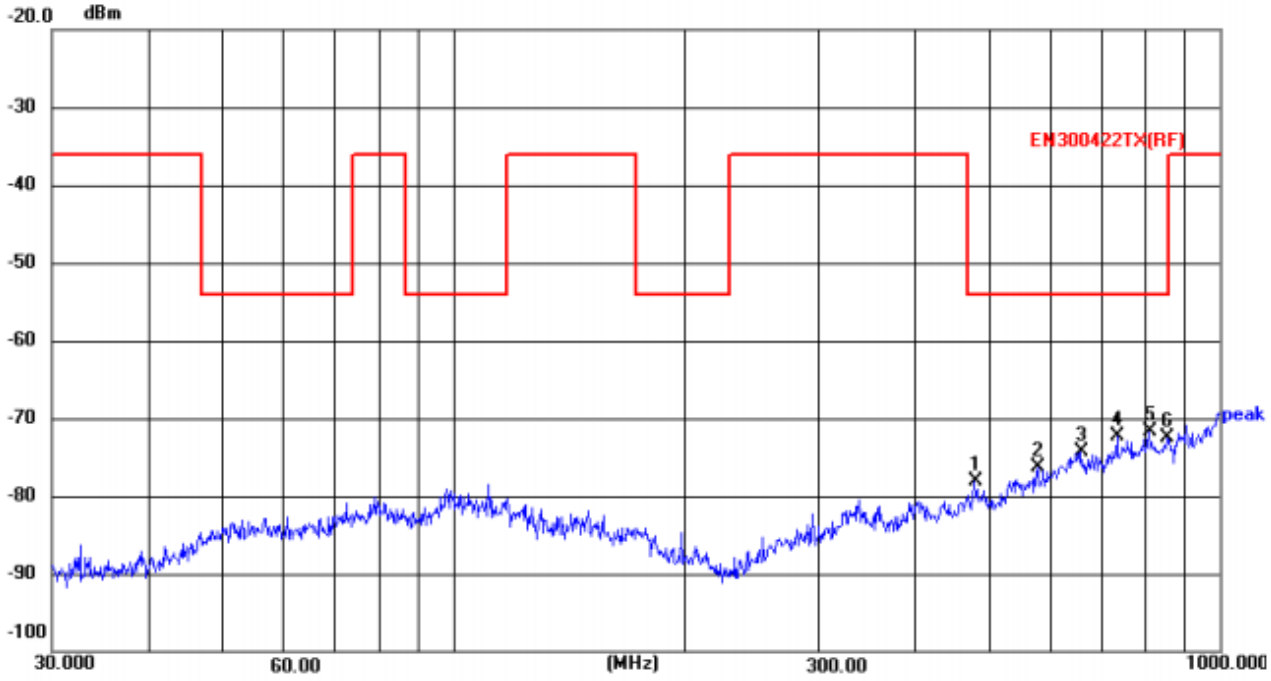
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1957.973	-62.34	11.30	-51.04	-30.00	21.04	peak	150	0	P
2	3994.946	-65.15	20.39	-44.76	-30.00	14.76	peak	150	0	P

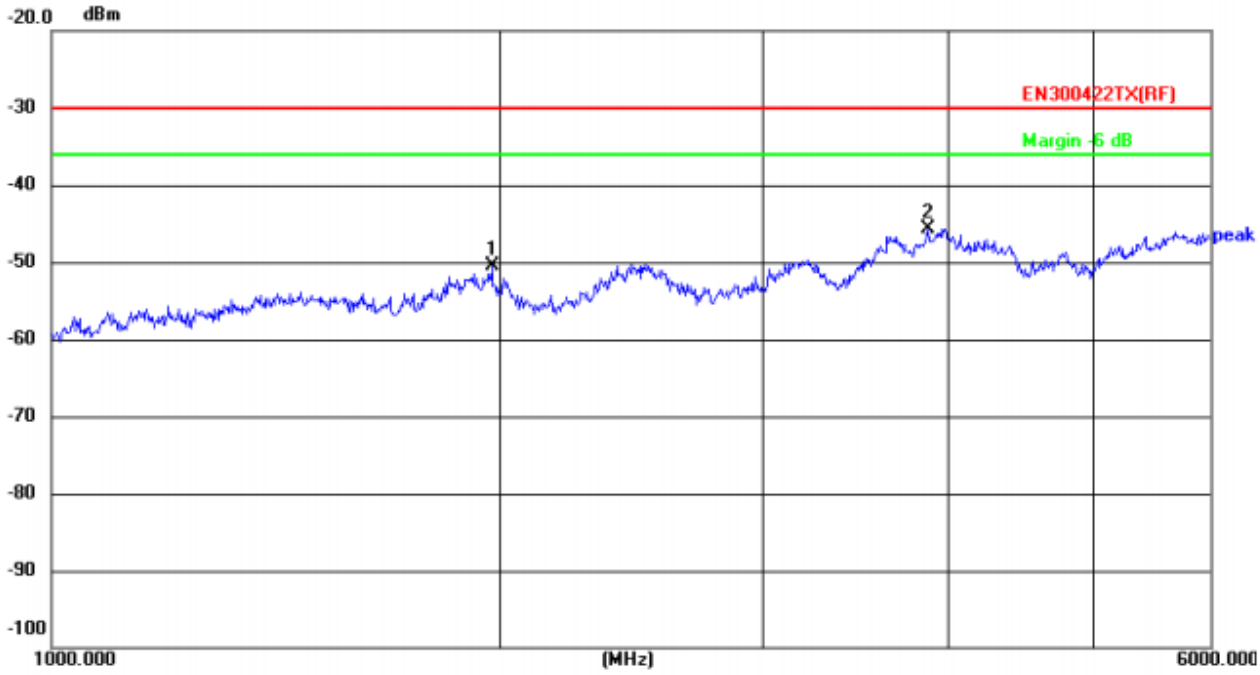
Channel:	CH49	Polarity:	Horizontal

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	478.8456	-107.58	29.40	-78.18	-54.00	24.18	peak	150	0	P
2	578.6699	-106.99	30.69	-76.30	-54.00	22.30	peak	150	0	P
3	658.8362	-107.27	33.01	-74.26	-54.00	20.26	peak	150	0	P
4	734.4913	-106.31	34.06	-72.25	-54.00	18.25	peak	150	0	P
5	807.4291	-107.00	35.34	-71.66	-54.00	17.66	peak	150	0	P
6	854.0247	-107.63	35.08	-72.55	-54.00	18.55	peak	150	0	P

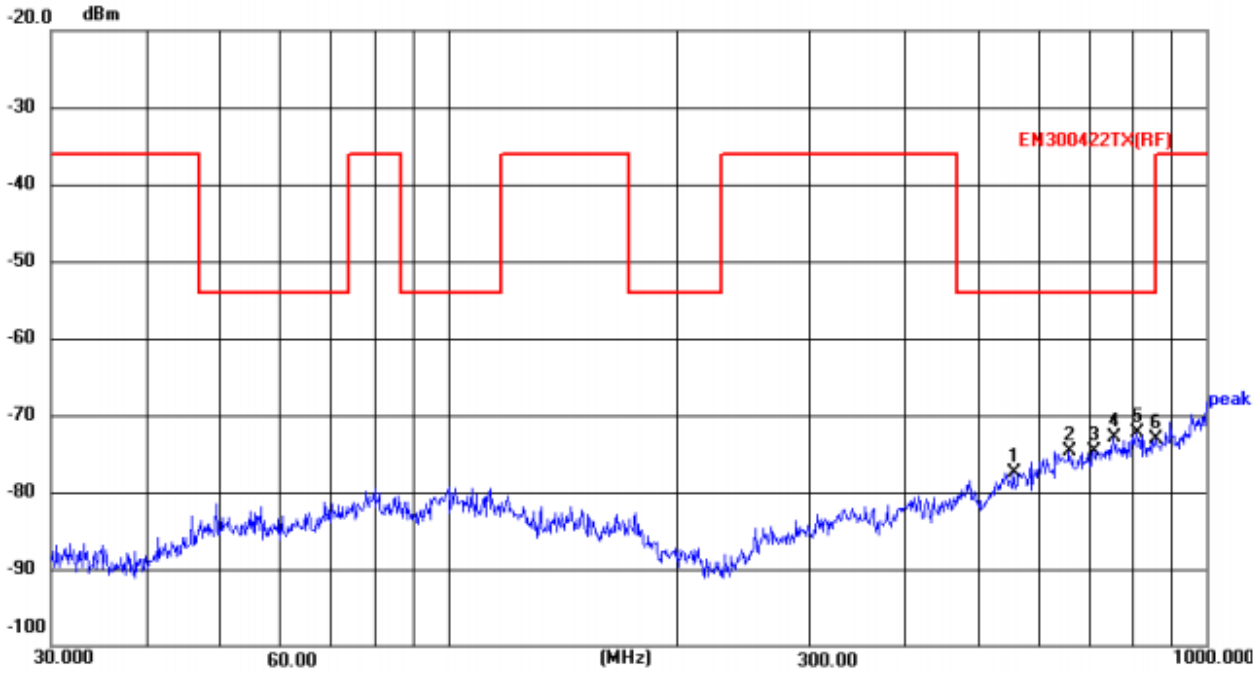
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1975.593	-61.71	11.25	-50.46	-30.00	20.46	peak	150	0	P
2	3882.044	-65.54	19.94	-45.60	-30.00	15.60	peak	150	0	P

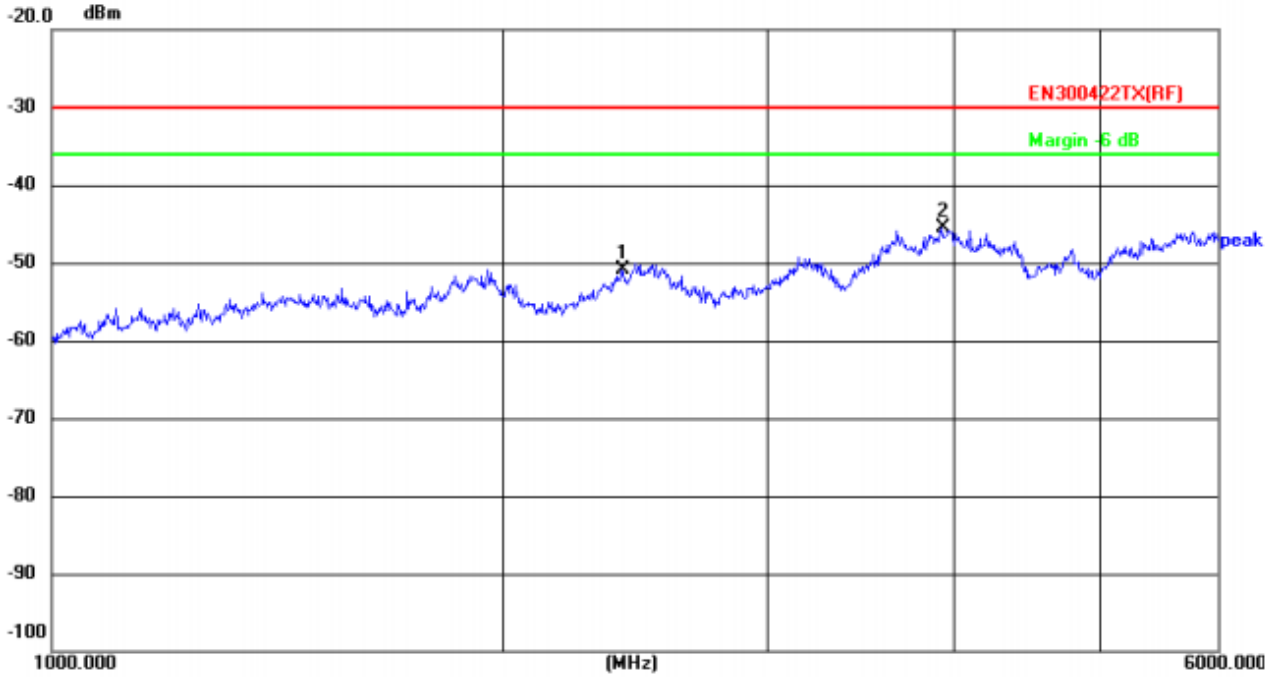
Channel:	CH49	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	556.7744	-107.99	30.59	-77.40	-54.00	23.40	peak	150	0	P
2	658.8362	-107.73	33.01	-74.72	-54.00	20.72	peak	150	0	P
3	709.1823	-108.05	33.43	-74.62	-54.00	20.62	peak	150	0	P
4	752.7432	-107.57	34.63	-72.94	-54.00	18.94	peak	150	0	P
5	807.4291	-107.71	35.34	-72.37	-54.00	18.37	peak	150	0	P
6	857.0247	-108.34	35.28	-73.06	-54.00	19.06	peak	150	0	P

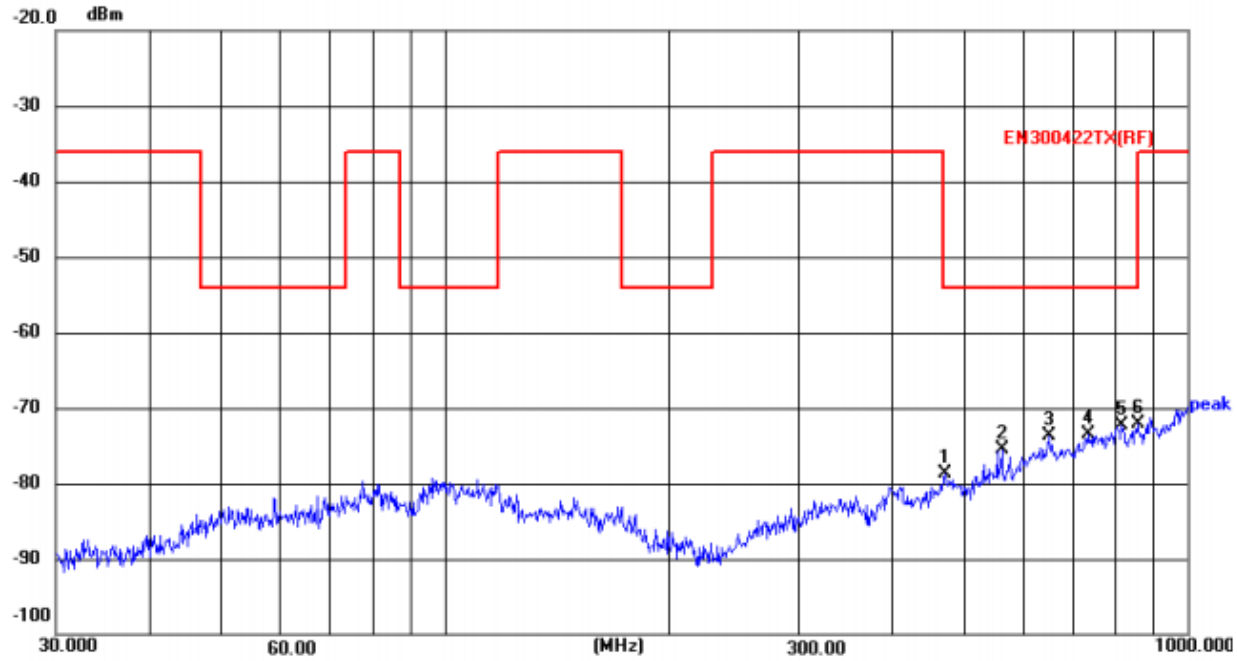
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	2401.685	-63.86	12.99	-50.87	-30.00	20.87	peak	150	360	P
2	3924.004	-65.84	20.31	-45.53	-30.00	15.53	peak	150	360	P

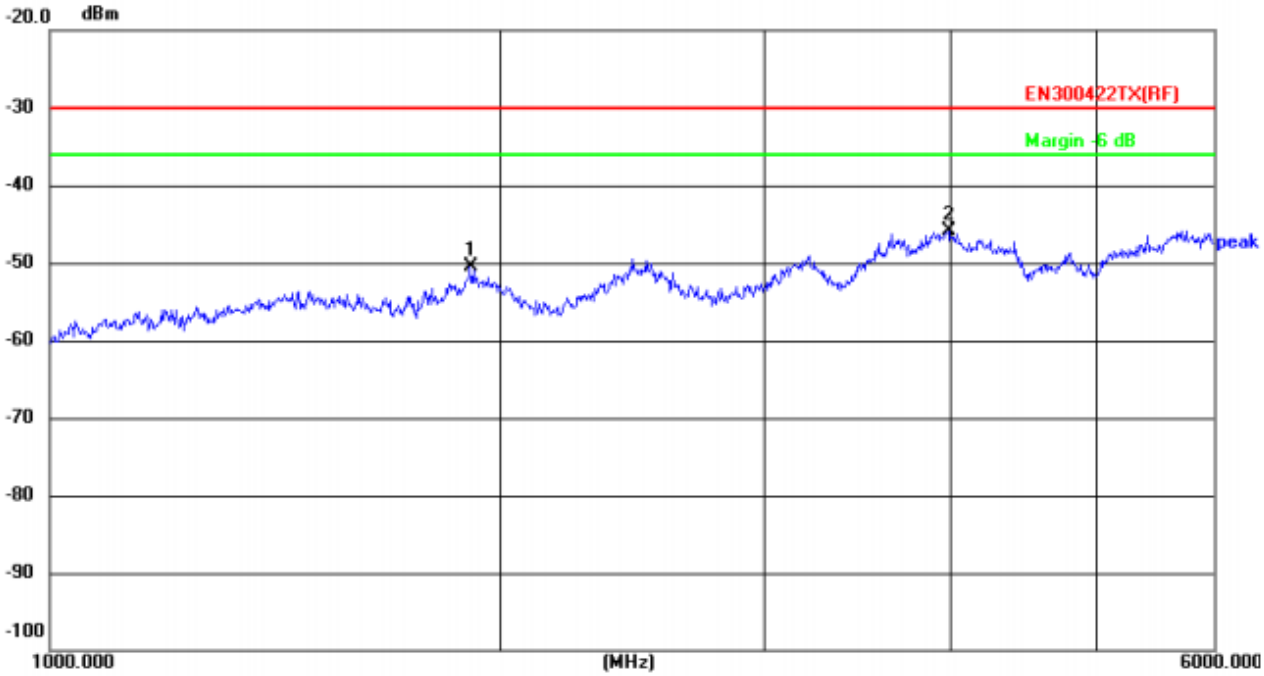
Channel:	CH95	Polarity:	Horizontal

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	472.1760	-108.08	29.30	-78.78	-54.00	24.78	peak	150	0	P
2	562.6624	-106.04	30.59	-75.45	-54.00	21.45	peak	150	0	P
3	651.9417	-106.69	32.98	-73.71	-54.00	19.71	peak	150	0	P
4	734.4913	-107.65	34.06	-73.59	-54.00	19.59	peak	150	0	P
5	815.9678	-107.60	35.30	-72.30	-54.00	18.30	peak	150	0	P
6	857.0247	-107.39	35.28	-72.11	-54.00	18.11	peak	150	0	P

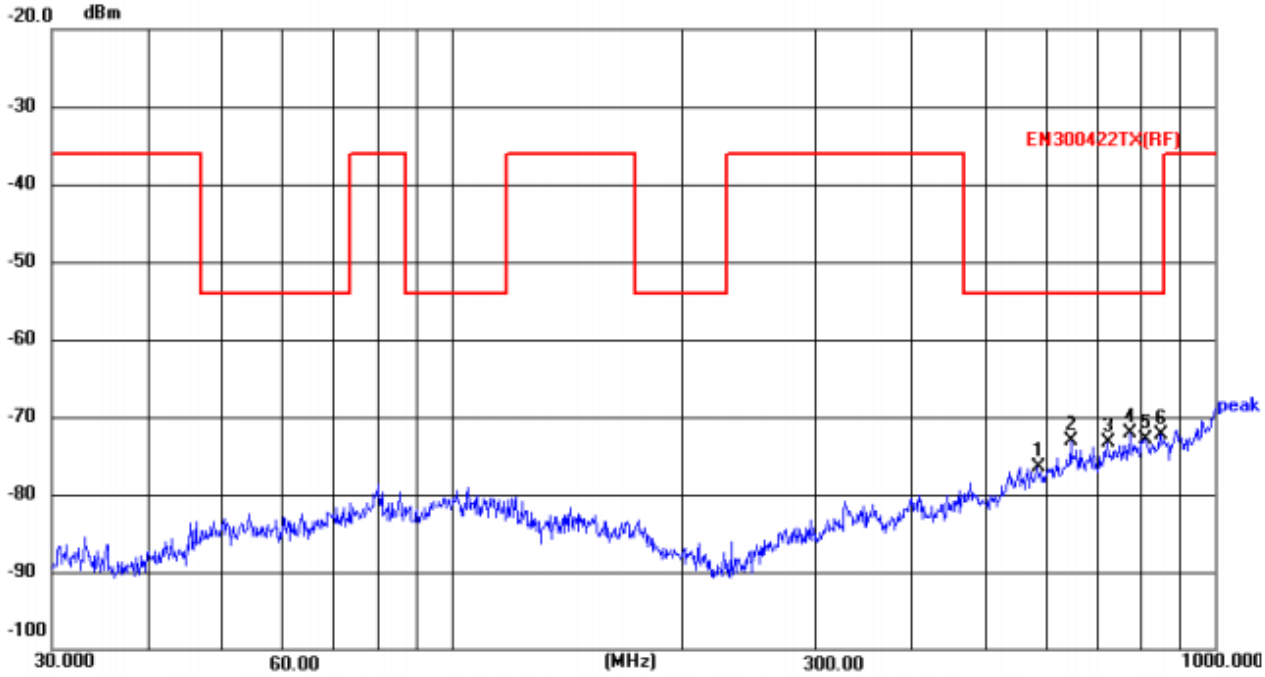
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1909.469	-61.94	11.45	-50.49	-30.00	20.49	peak	150	360	P
2	3987.794	-66.20	20.38	-45.82	-30.00	15.82	peak	150	360	P

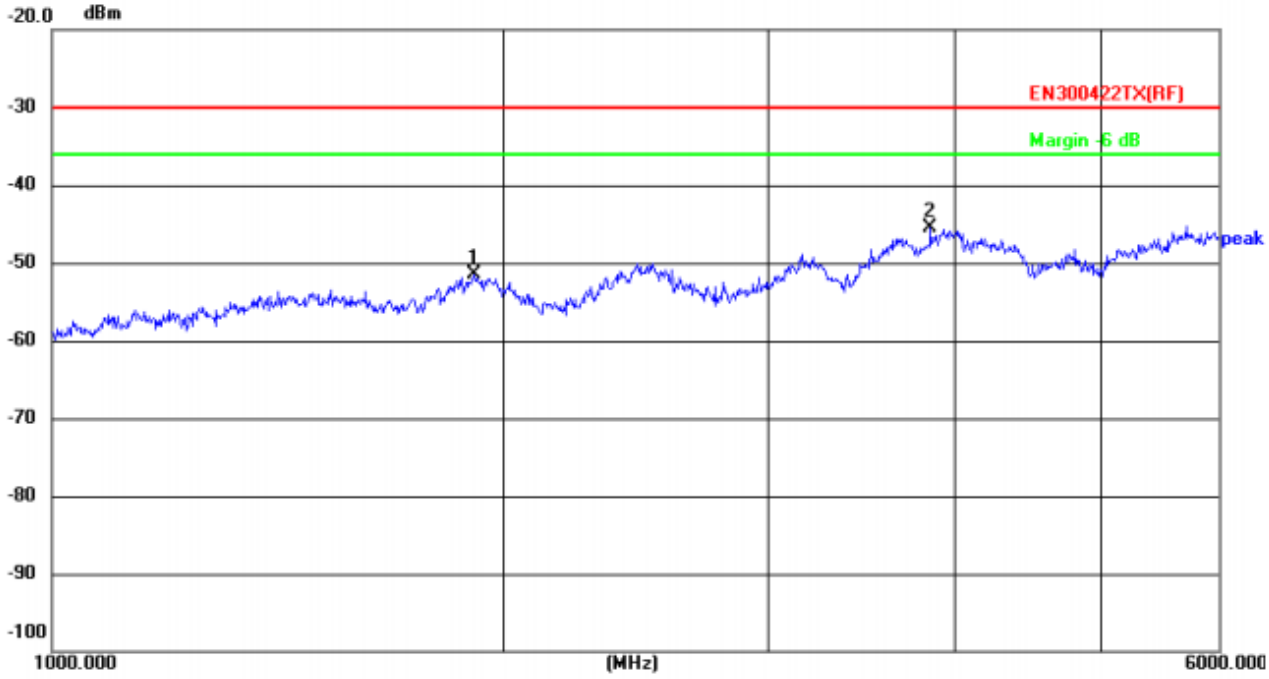
Channel:	CH95	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	584.7895	-107.42	30.88	-76.54	-54.00	22.54	peak	150	0	P
2	647.3856	-106.04	32.95	-73.09	-54.00	19.09	peak	150	0	P
3	721.7259	-107.01	33.74	-73.27	-54.00	19.27	peak	150	0	P
4	774.1584	-106.74	34.61	-72.13	-54.00	18.13	peak	150	0	P
5	810.2654	-108.30	35.47	-72.83	-54.00	18.83	peak	150	0	P
6	851.0353	-107.09	34.88	-72.21	-54.00	18.21	peak	150	0	P

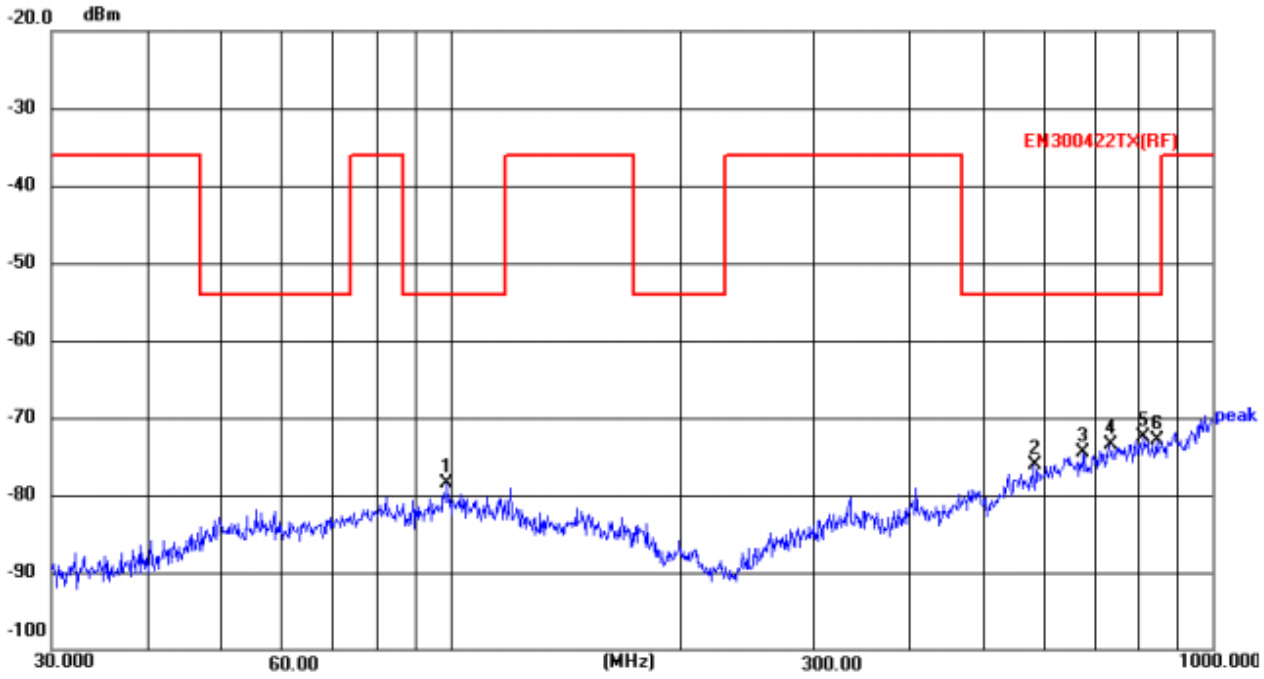
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1912.893	-62.91	11.44	-51.47	-30.00	21.47	peak	150	0	P
2	3854.321	-64.87	19.40	-45.47	-30.00	15.47	peak	150	0	P

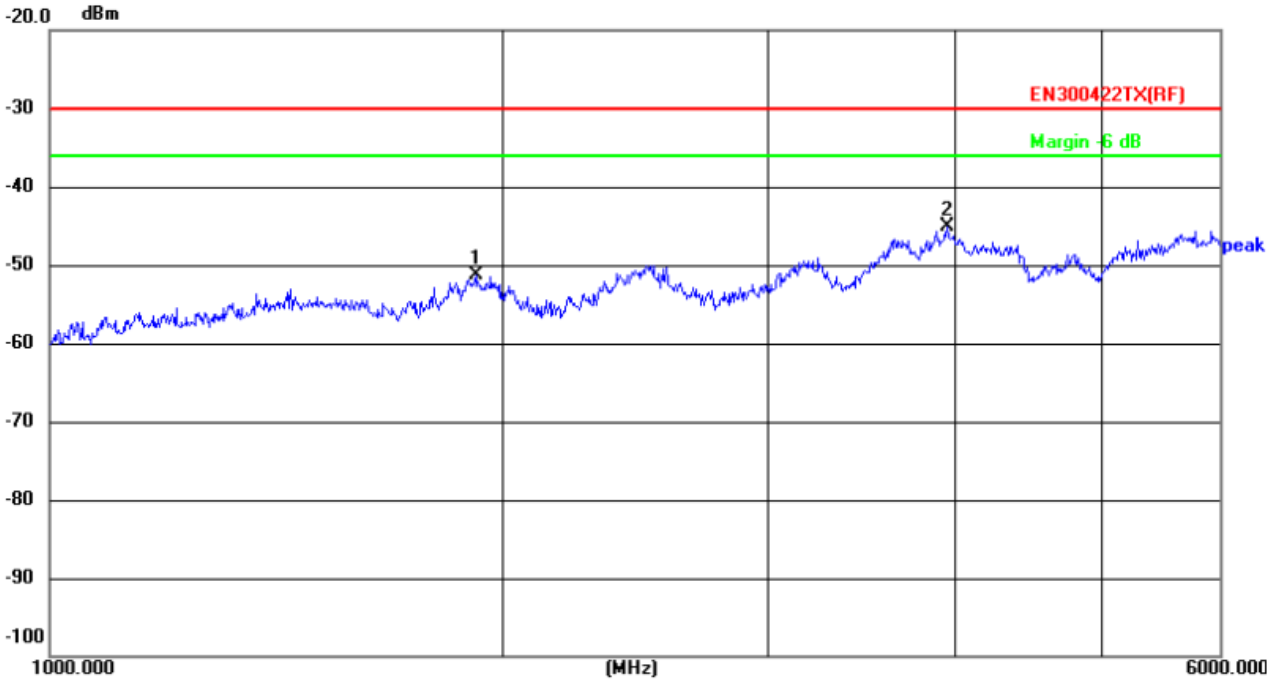
Group-B			
Channel:	*CH00*	*Polarity:*	*Horizontal*

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	99.1797	-108.26	29.72	-78.54	-54.00	24.54	peak	150	0	P
2	582.7425	-106.84	30.82	-76.02	-54.00	22.02	peak	150	0	P
3	677.5798	-107.35	32.83	-74.52	-54.00	20.52	peak	150	0	P
4	731.9203	-107.54	33.96	-73.58	-54.00	19.58	peak	150	0	P
5	813.1115	-107.97	35.38	-72.59	-54.00	18.59	peak	150	0	P
6	845.0878	-107.76	34.79	-72.97	-54.00	18.97	peak	150	0	P

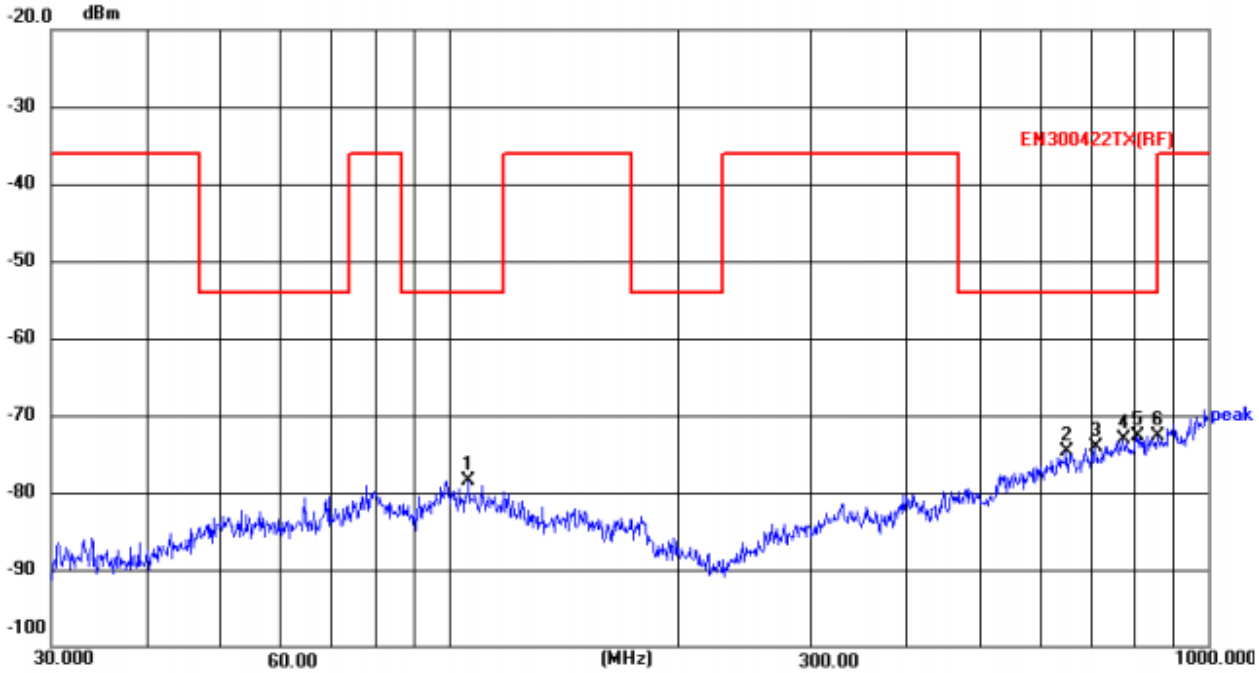
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1919.761	-62.79	11.42	-51.37	-30.00	21.37	peak	150	0	P
2	3952.228	-65.52	20.34	-45.18	-30.00	15.18	peak	150	0	P

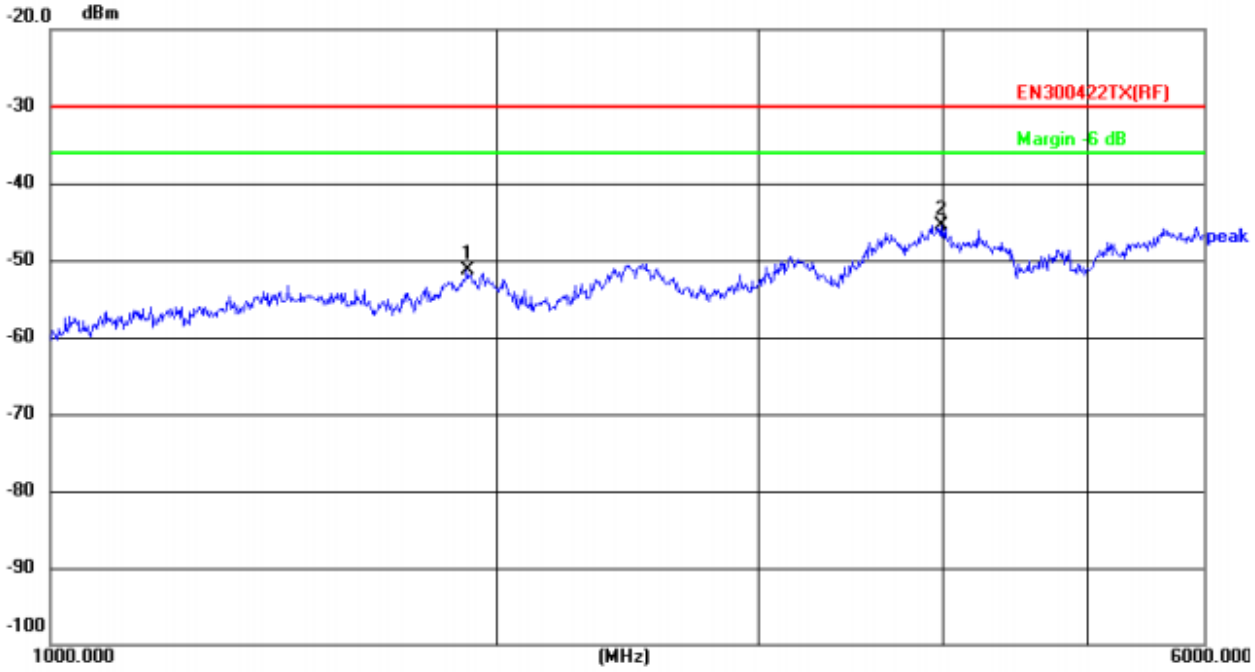
Channel:	CH00	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	106.3850	-108.11	29.56	-78.55	-54.00	24.55	peak	150	0	P
2	649.6597	-107.68	32.97	-74.71	-54.00	20.71	peak	150	0	P
3	709.1823	-107.51	33.43	-74.08	-54.00	20.08	peak	150	0	P
4	771.4486	-107.65	34.48	-73.17	-54.00	19.17	peak	150	0	P
5	804.6028	-107.83	35.18	-72.65	-54.00	18.65	peak	150	0	P
6	857.0247	-107.96	35.28	-72.68	-54.00	18.68	peak	150	0	P

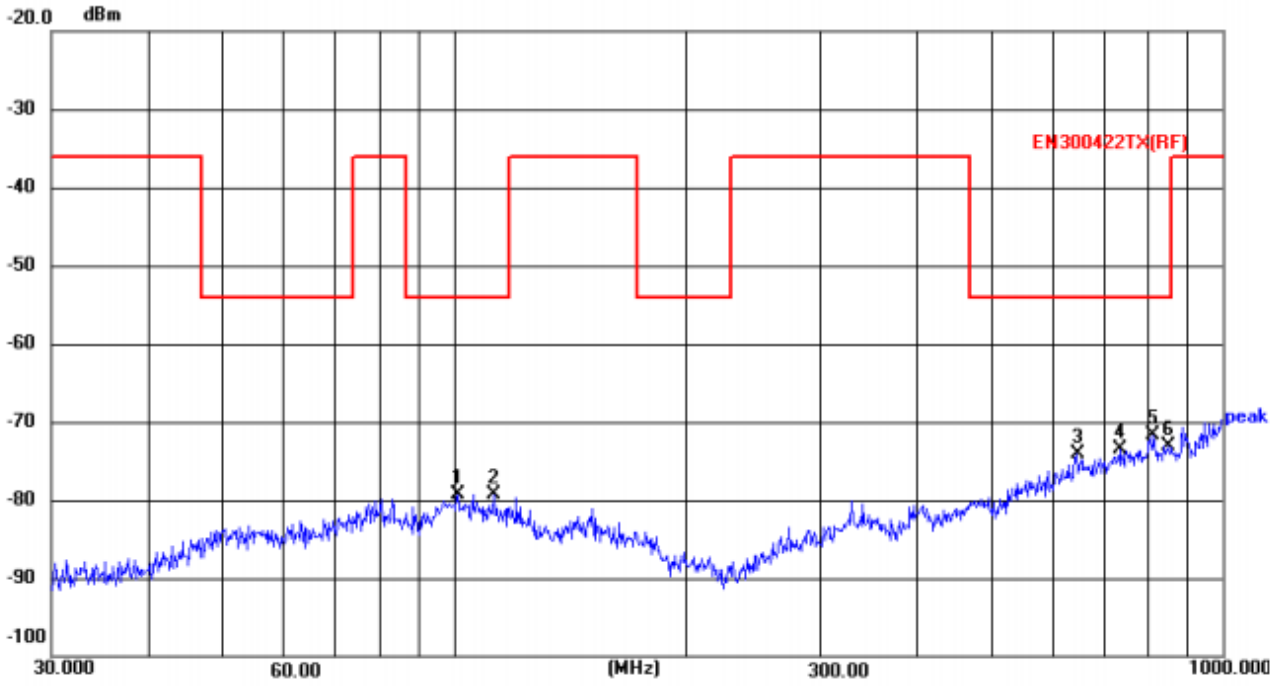
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1909.469	-62.70	11.45	-51.25	-30.00	21.25	peak	150	360	P
2	3987.794	-65.86	20.38	-45.48	-30.00	15.48	peak	150	360	P

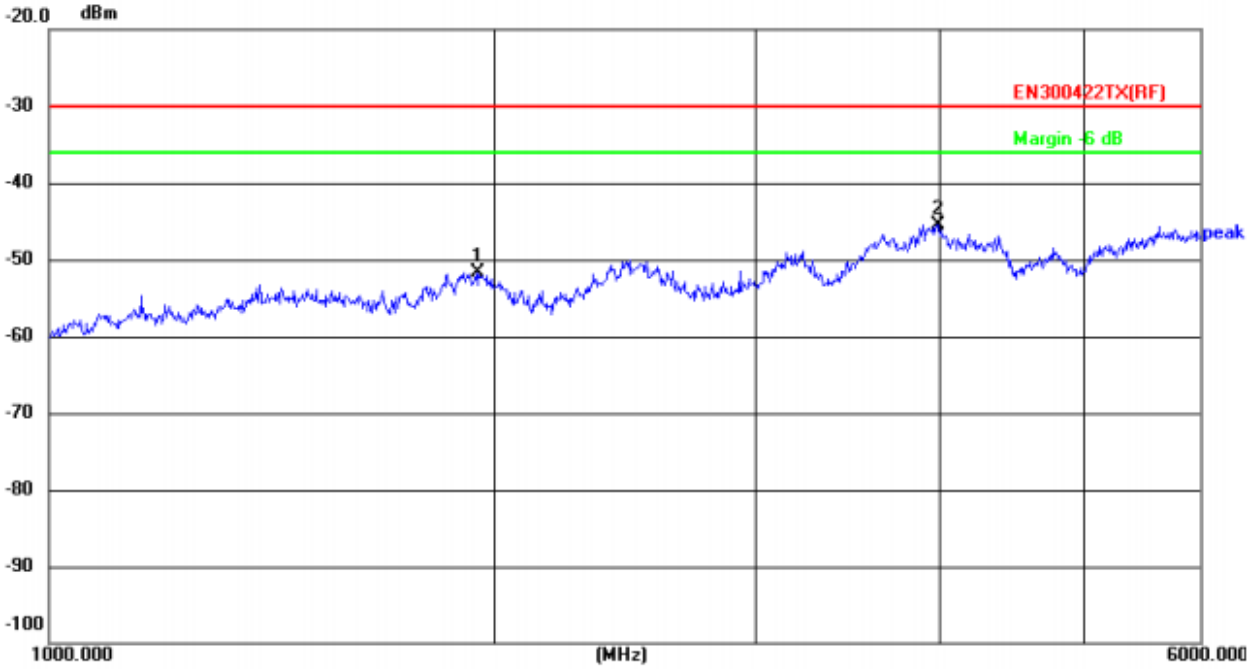
Channel:	CH49	Polarity:	Horizontal

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	101.2885	-109.23	29.91	-79.32	-54.00	25.32	peak	150	0	P
2	112.9196	-108.45	29.14	-79.31	-54.00	25.31	peak	150	0	P
3	645.1195	-107.04	32.93	-74.11	-54.00	20.11	peak	150	0	P
4	734.4913	-107.49	34.06	-73.43	-54.00	19.43	peak	150	0	P
5	813.1115	-107.15	35.38	-71.77	-54.00	17.77	peak	150	0	P
6	851.0353	-108.03	34.88	-73.15	-54.00	19.15	peak	150	0	P

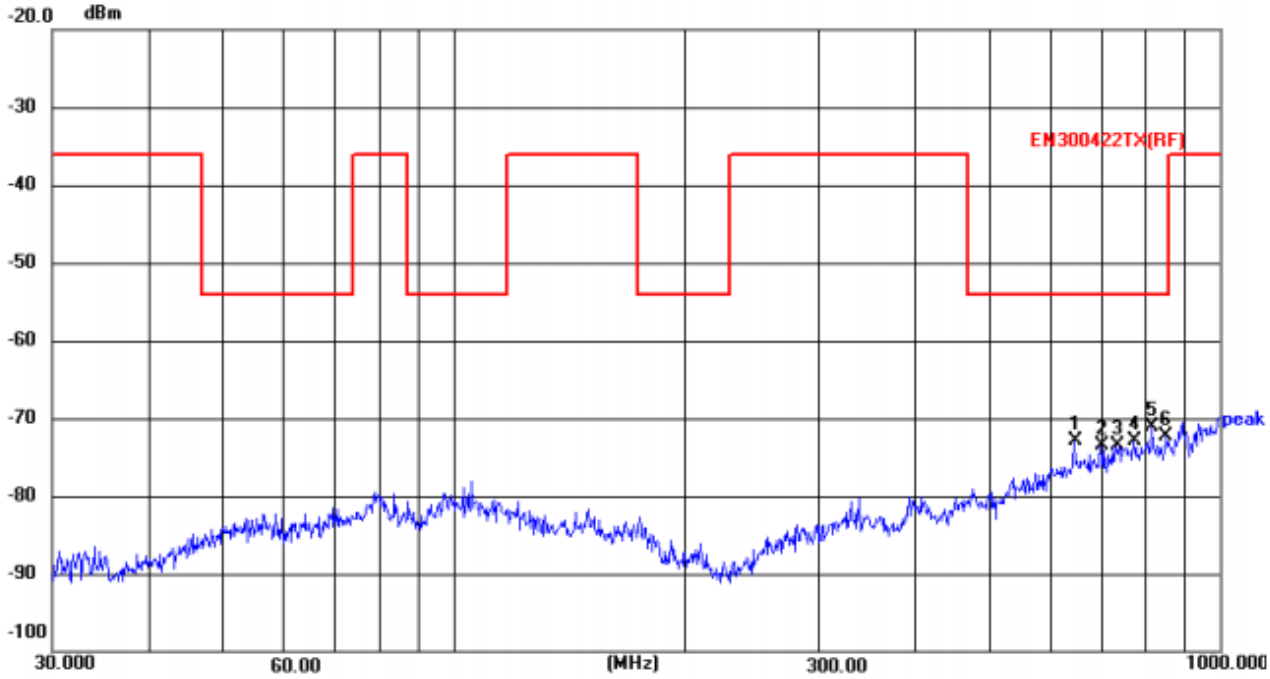
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1950.969	-62.93	11.33	-51.60	-30.00	21.60	peak	150	360	P
2	3987.794	-65.82	20.38	-45.44	-30.00	15.44	peak	150	360	P

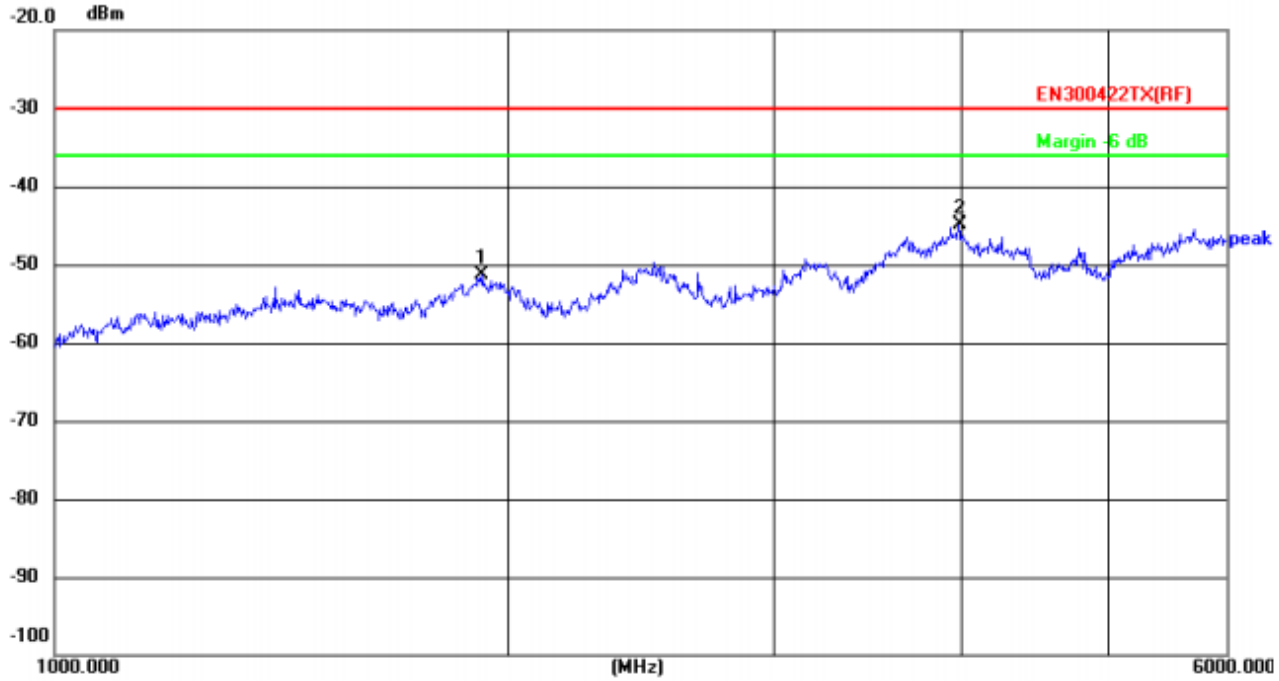
Channel:	CH49	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	645.1195	-105.78	32.93	-72.85	-54.00	18.85	peak	150	0	P
2	699.3046	-106.61	33.13	-73.48	-54.00	19.48	peak	150	0	P
3	731.9203	-107.40	33.96	-73.44	-54.00	19.44	peak	150	0	P
4	771.4486	-107.37	34.48	-72.89	-54.00	18.89	peak	150	0	P
5	815.9678	-106.44	35.30	-71.14	-54.00	17.14	peak	150	0	P
6	851.0353	-107.19	34.88	-72.31	-54.00	18.31	peak	150	0	P

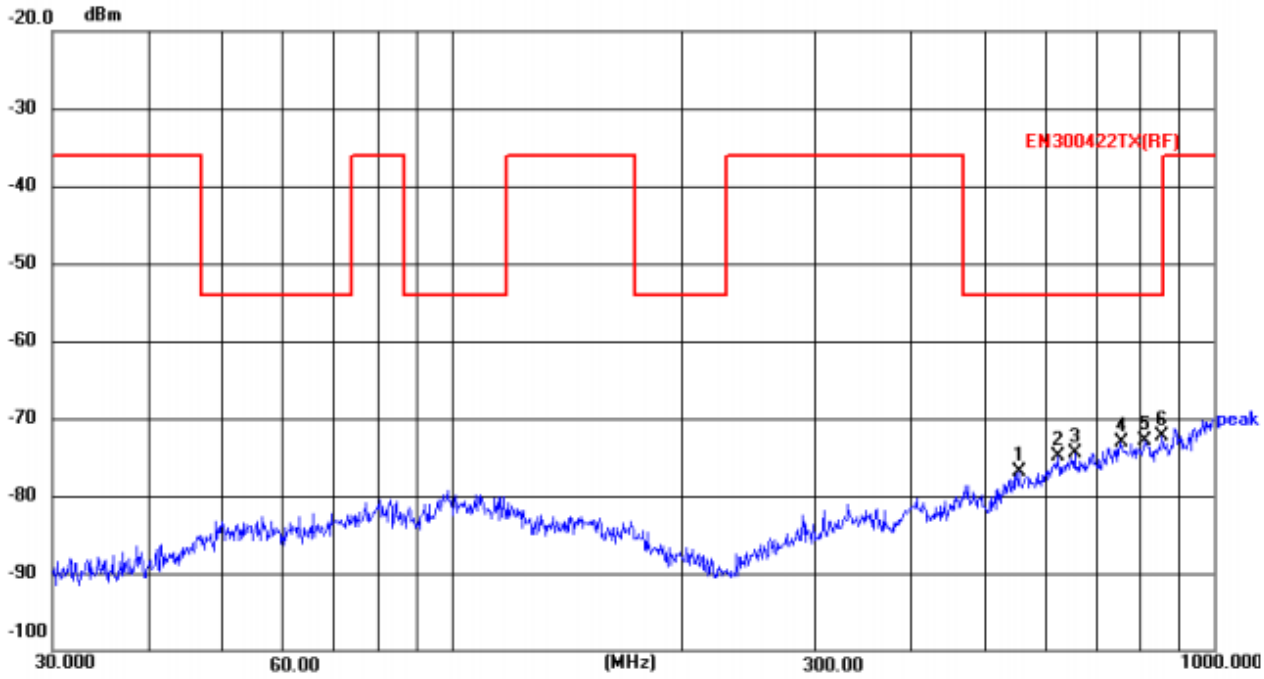
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1923.203	-62.80	11.41	-51.39	-30.00	21.39	peak	150	0	P
2	3980.656	-65.34	20.37	-44.97	-30.00	14.97	peak	150	0	P

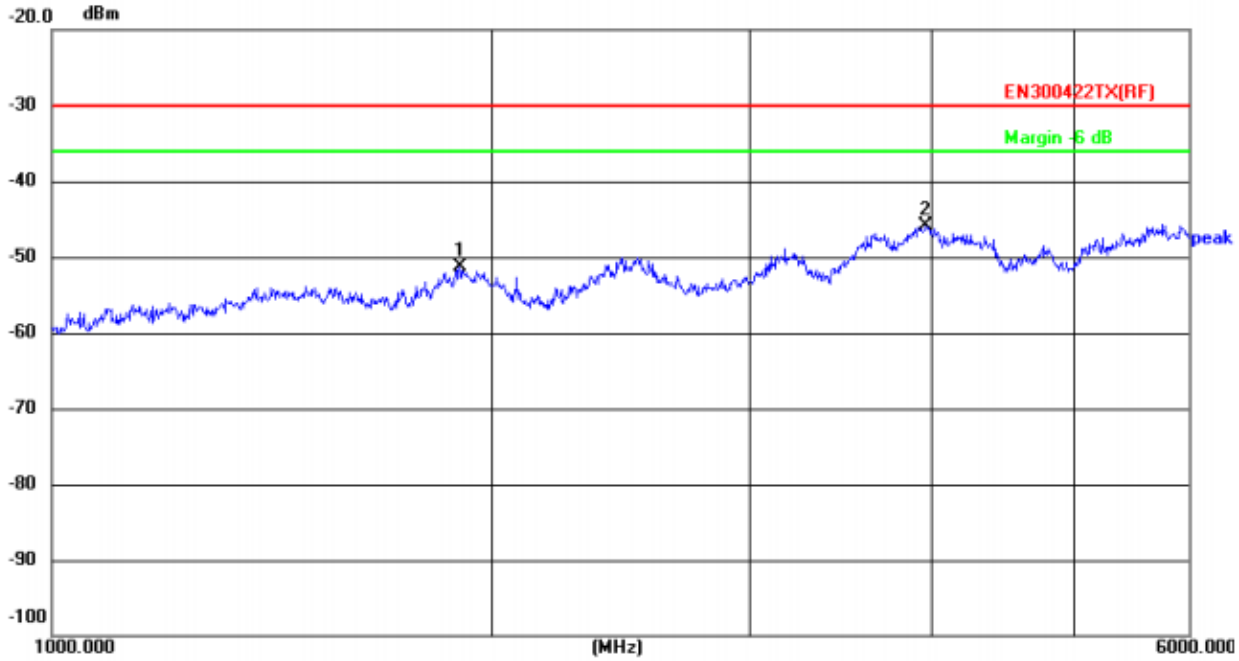
Channel:	CH95	Polarity:	Horizontal

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	554.8254	-107.52	30.56	-76.96	-54.00	22.96	peak	150	0	P
2	625.0780	-107.05	32.23	-74.82	-54.00	20.82	peak	150	0	P
3	656.5300	-107.60	33.00	-74.60	-54.00	20.60	peak	150	0	P
4	752.7432	-107.71	34.63	-73.08	-54.00	19.08	peak	150	0	P
5	810.2654	-108.41	35.47	-72.94	-54.00	18.94	peak	150	0	P
6	854.0247	-107.38	35.08	-72.30	-54.00	18.30	peak	150	0	P

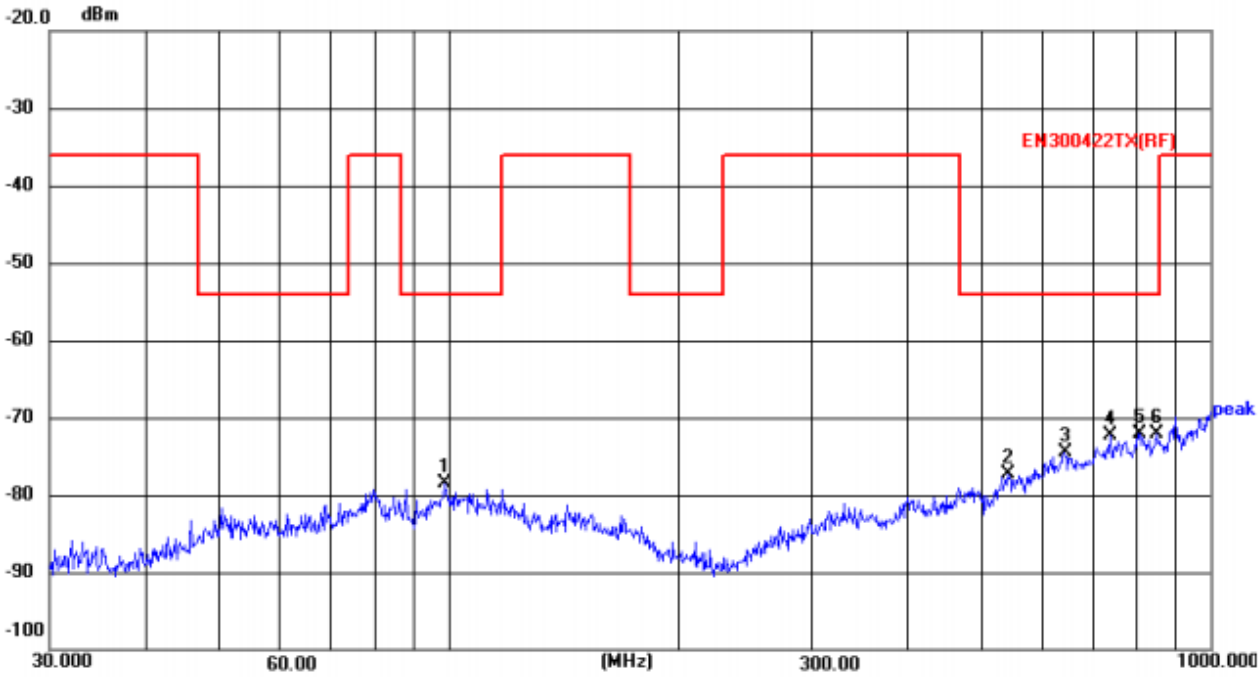
Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1899.233	-62.83	11.47	-51.36	-30.00	21.36	peak	150	0	P
2	3966.416	-66.16	20.35	-45.81	-30.00	15.81	peak	150	0	P

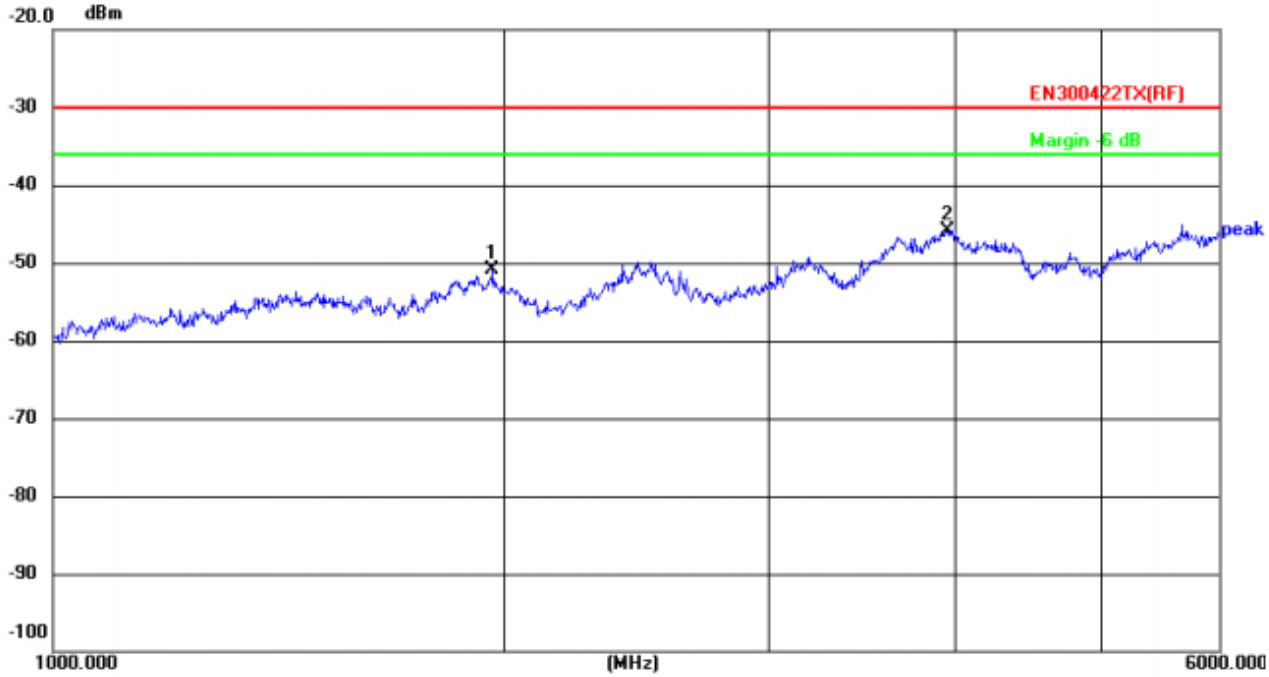
Channel:	CH95	Polarity:	Vertical

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	98.8326	-108.05	29.62	-78.43	-54.00	24.43	peak	150	0	P
2	543.2742	-107.72	30.35	-77.37	-54.00	23.37	peak	150	0	P
3	642.8613	-107.46	32.92	-74.54	-54.00	20.54	peak	150	0	P
4	739.6604	-106.57	34.25	-72.32	-54.00	18.32	peak	150	0	P
5	804.6028	-107.24	35.18	-72.06	-54.00	18.06	peak	150	0	P
6	851.0353	-106.90	34.88	-72.02	-54.00	18.02	peak	150	0	P

Radiated Emission Measurement



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	1965.002	-62.10	11.29	-50.81	-30.00	20.81	peak	150	360	P
2	3952.228	-66.24	20.34	-45.90	-30.00	15.90	peak	150	360	P

3.6. Frequency Stability

Limit

The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

Test Procedure

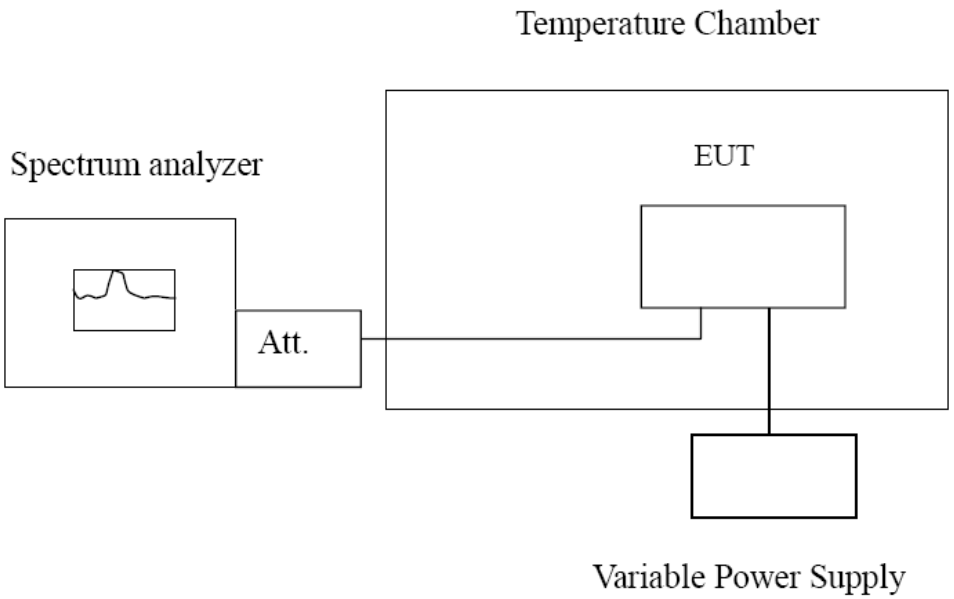
a) Frequency stability versus environmental temperature

1. Setup asTest Configuration for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used.
2. Turn on EUT and set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3 kHz, VBW to 10kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10℃decreased per stage until the lowest temperature -20℃is measured, record all measurement frequencies.

b) Frequency stability versus input voltage

1. Setup asTest Configuration for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used. Install new batteries in the EUT.
2. Set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3kHz, VBW to 10kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. For non hand carried, battery operated device, supply the EUT primary voltage with 85 and 115 percent of the nominal value and record the frequency.

Test Configuration



Test Results

Group-A					
Reference Frequency: 534.125MHz					
Voltage (V)	Temperature (℃)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.0	-20	0.01815	0.00349%	±0.005	PASS
	-10	0.01842	0.00354%		
	0	0.01725	0.00332%		
	10	0.01792	0.00345%		
	20	0.01820	0.00350%		
	30	0.01762	0.00339%		
	40	0.01743	0.00335%		
	50	0.01827	0.00351%		
3.3	25	0.01910	0.00367%		
2.7	25	0.01914	0.00368%		

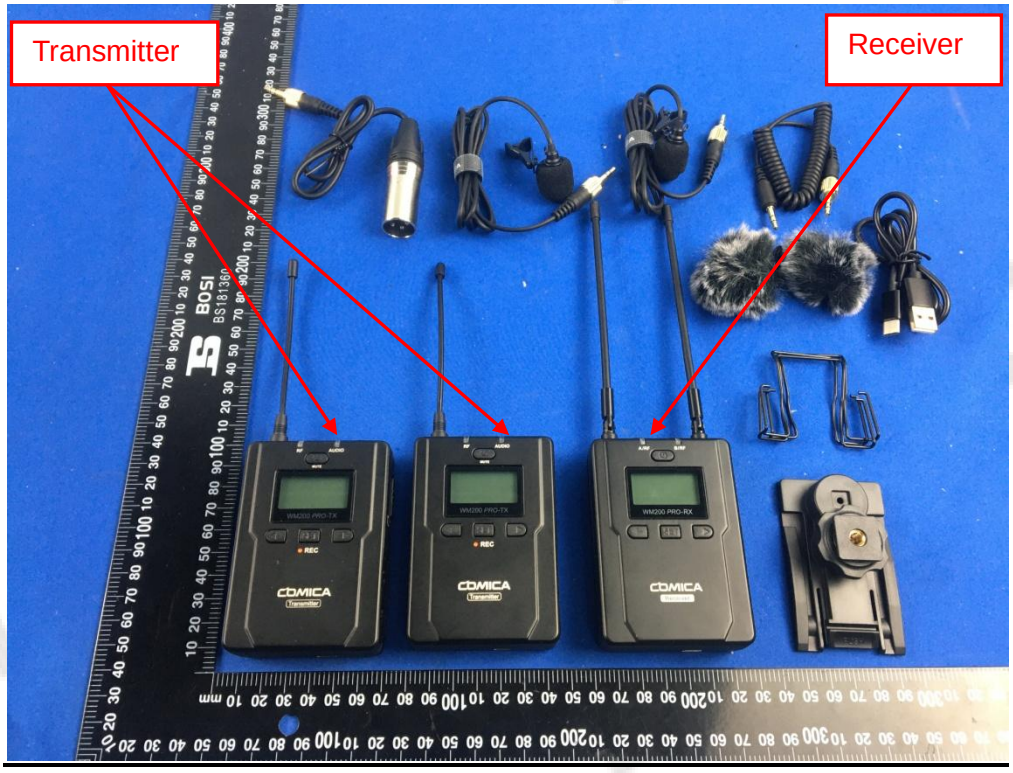
Group-B					
Reference Frequency: 566.125MHz					
Voltage (V)	Temperature (℃)	Frequency error (MHz)	Frequency Tolerance (%)	Limit (%)	Result
3.0	-20	0.01808	0.00347%	±0.005	PASS
	-10	0.01838	0.00352%		
	0	0.01716	0.00328%		
	10	0.01786	0.00343%		
	20	0.01814	0.00347%		
	30	0.01752	0.00326%		
	40	0.01734	0.00334%		
	50	0.01821	0.00350%		
3.3	25	0.01915	0.00364%		
2.7	25	0.01917	0.00361%		

Note: The report tests all channel data, but this report only records the worst channel data.

4. Test Setup Photos of the EUT

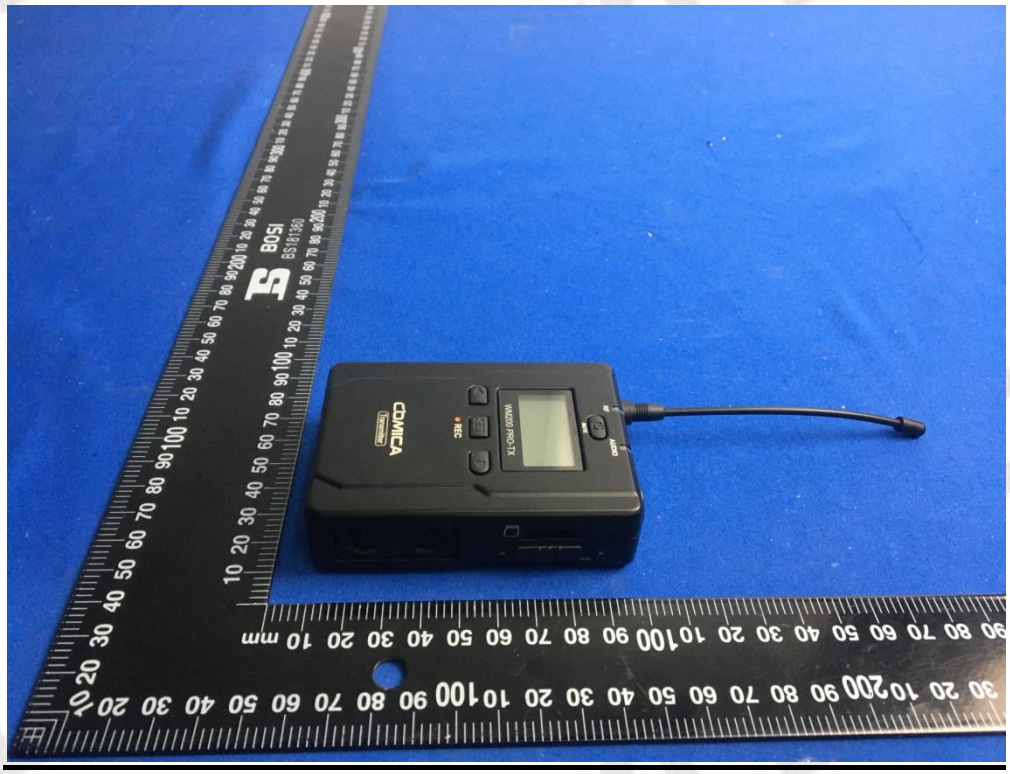
5. External and Internal Photos of the EUT

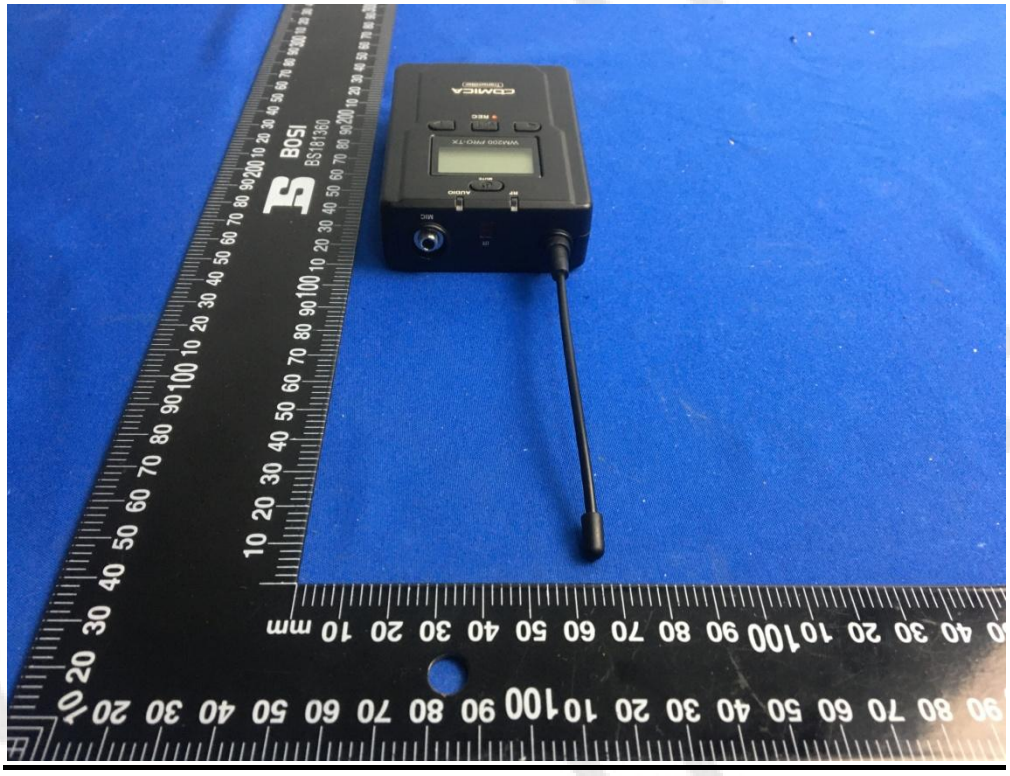
External Photos of EUT




BOSI
BS181360
Transmitter
RoHS

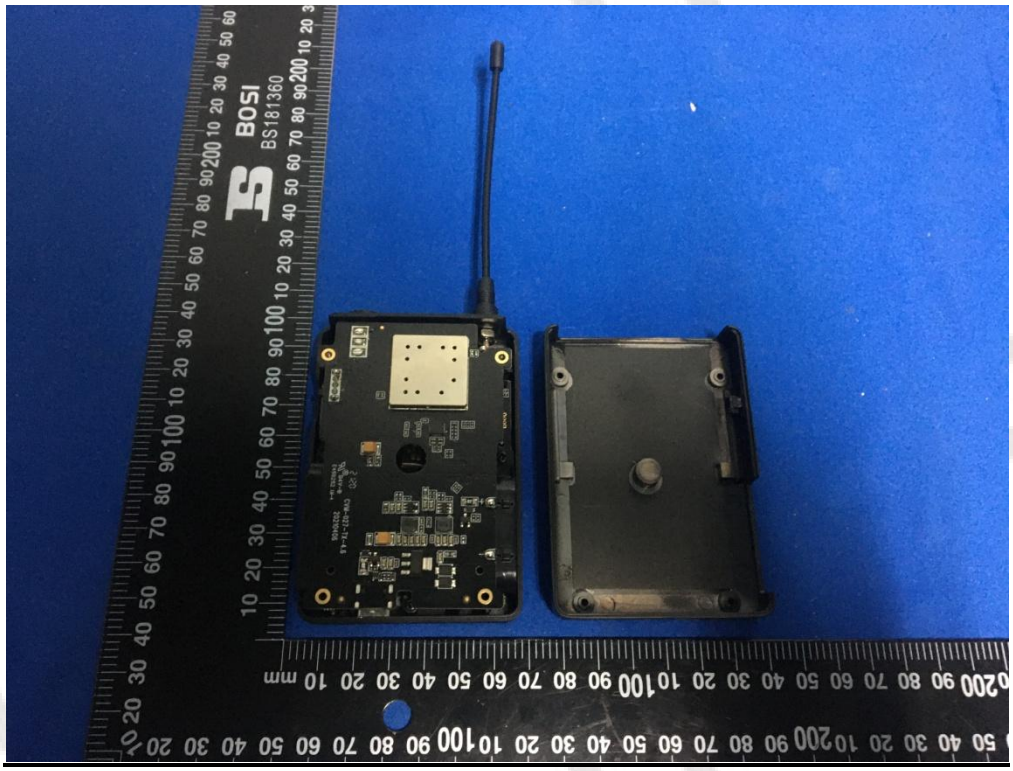

BOSI
BS181360
WM200 PRO-TX
REC
COMICA
Transmitter

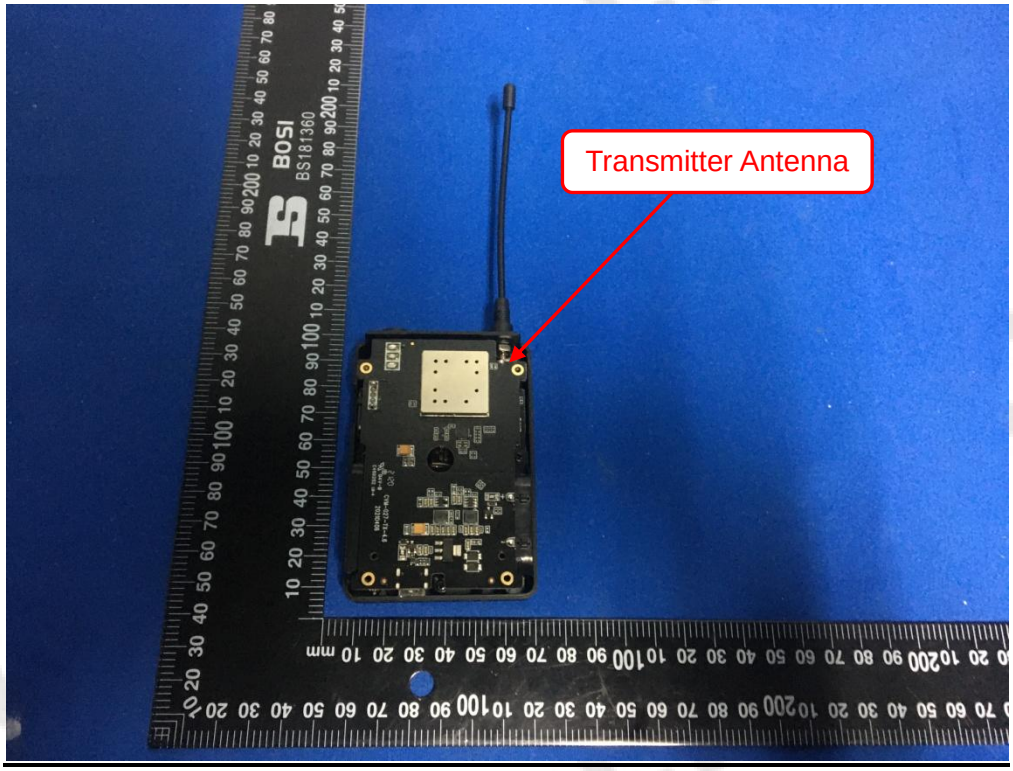

BOSI
BS181360
COMICA
REC
AUDIO

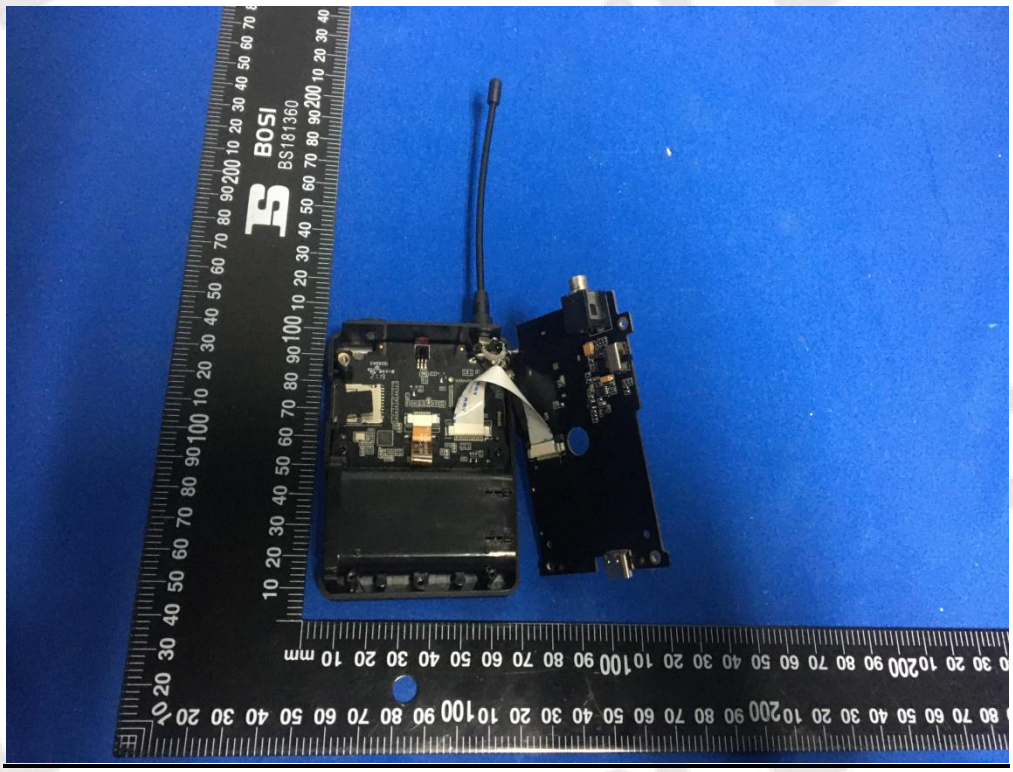

BOSI
BS181360
COMICA
REC
AUDIO
MIC

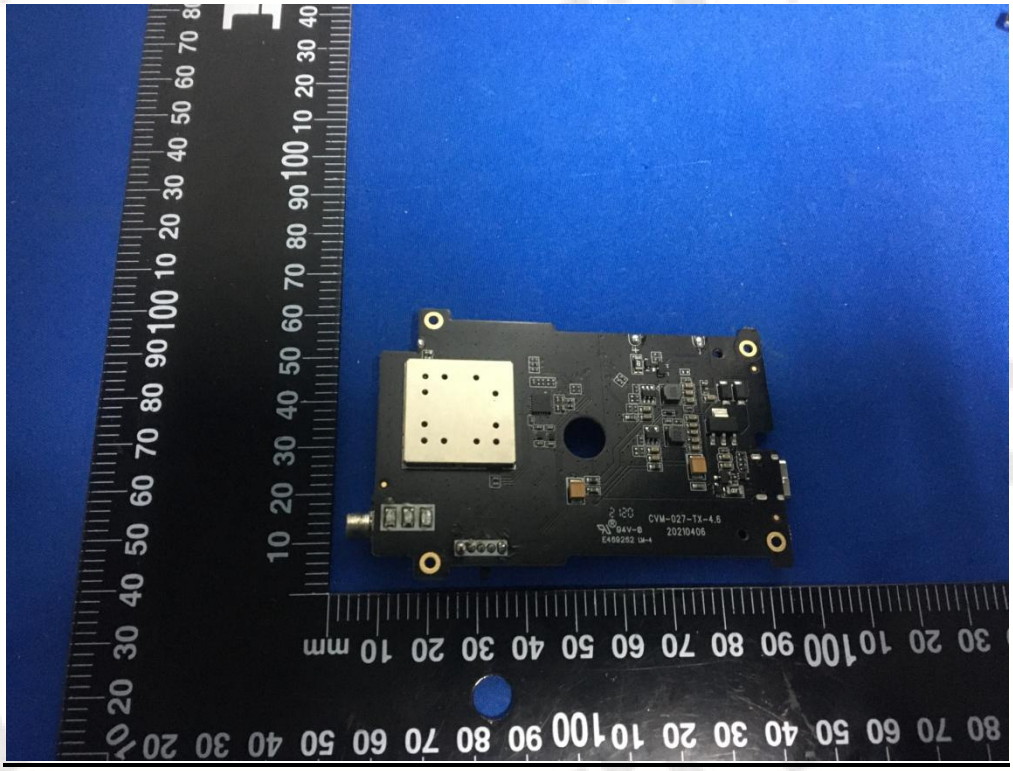

BOSI
BS181360
COMICA
VM200-PRO-TX
REC

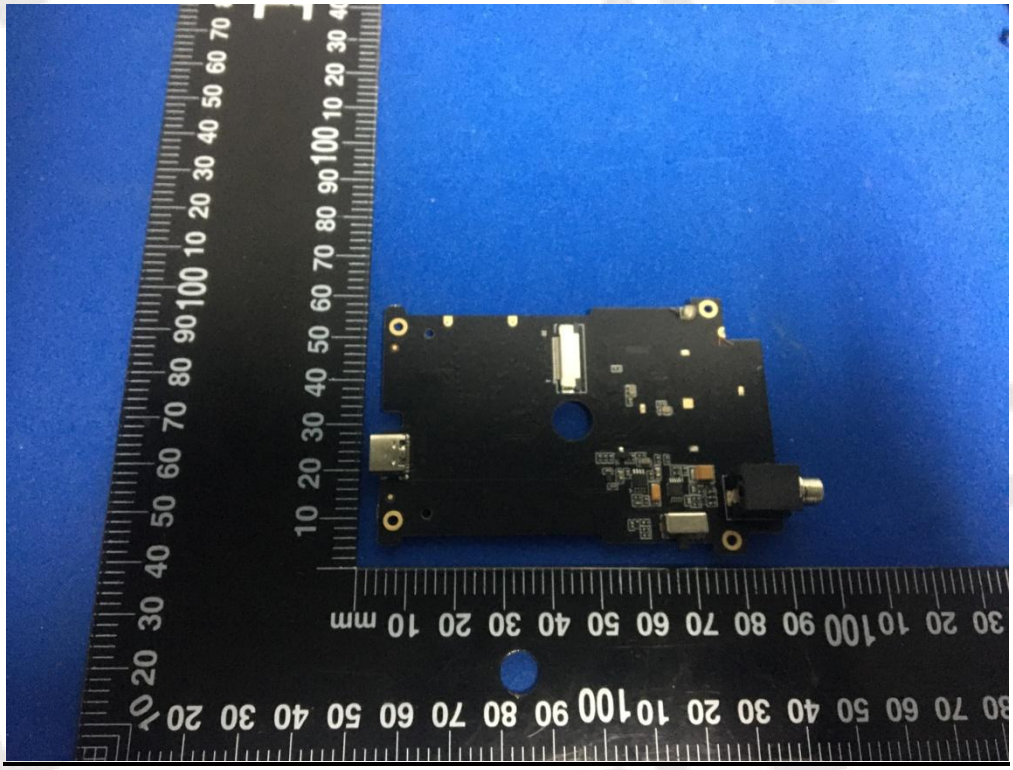
Internal Photos of EUT

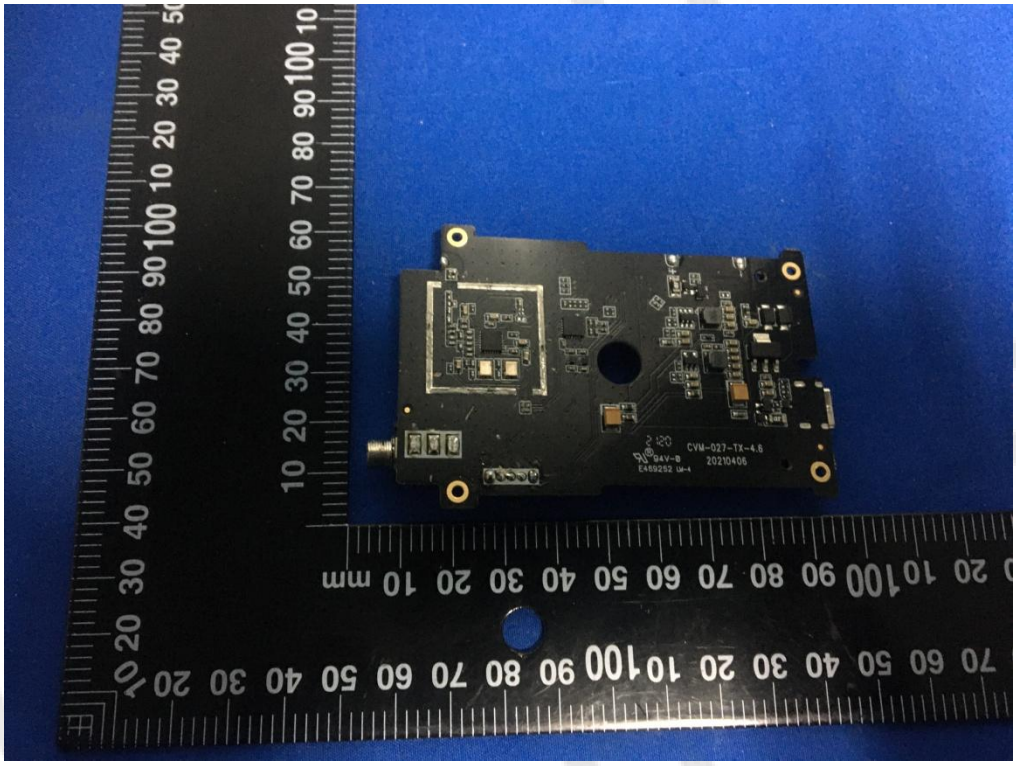





BOSI
BS181360


CVM-027-TX-4.6
20210406

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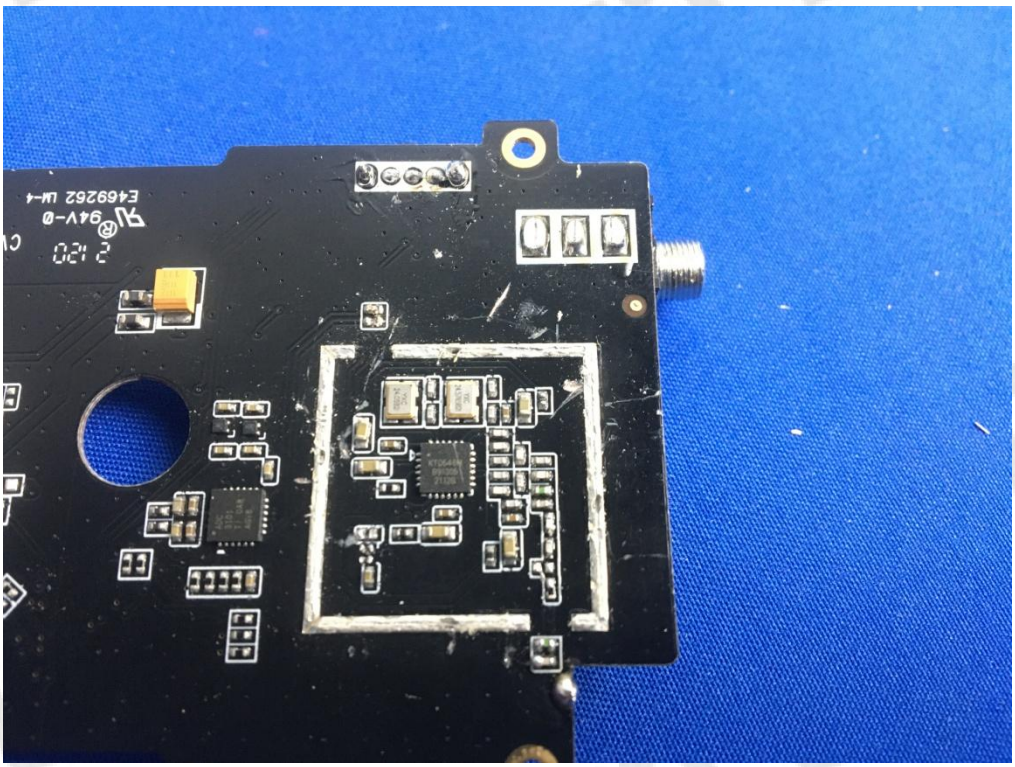
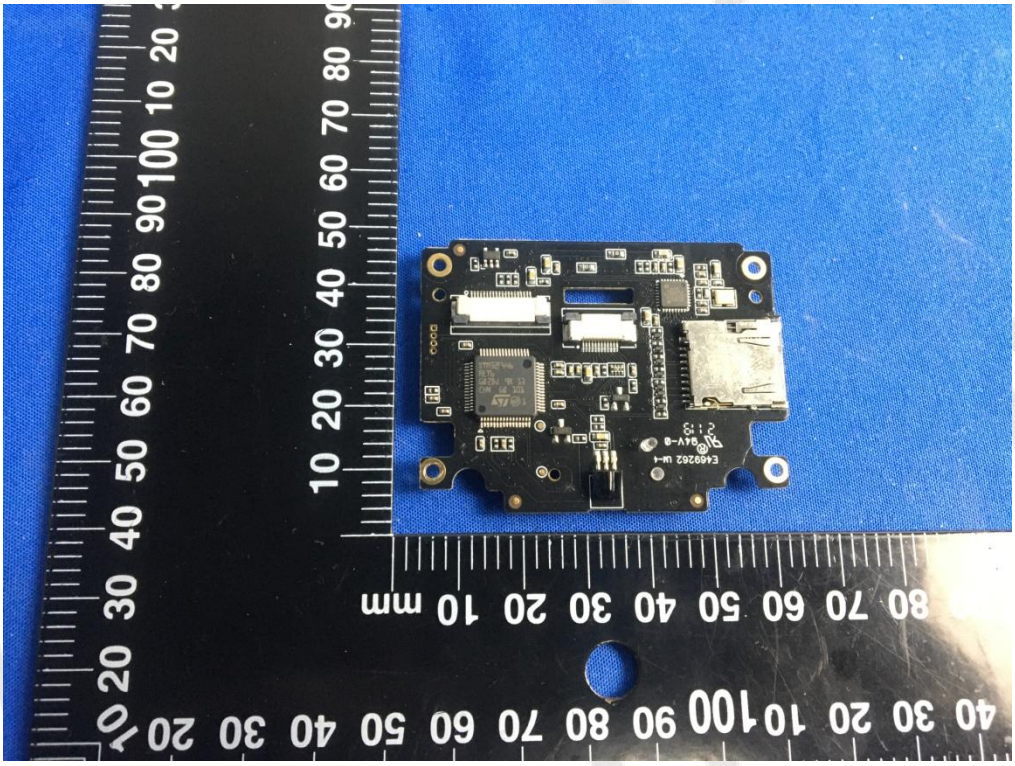
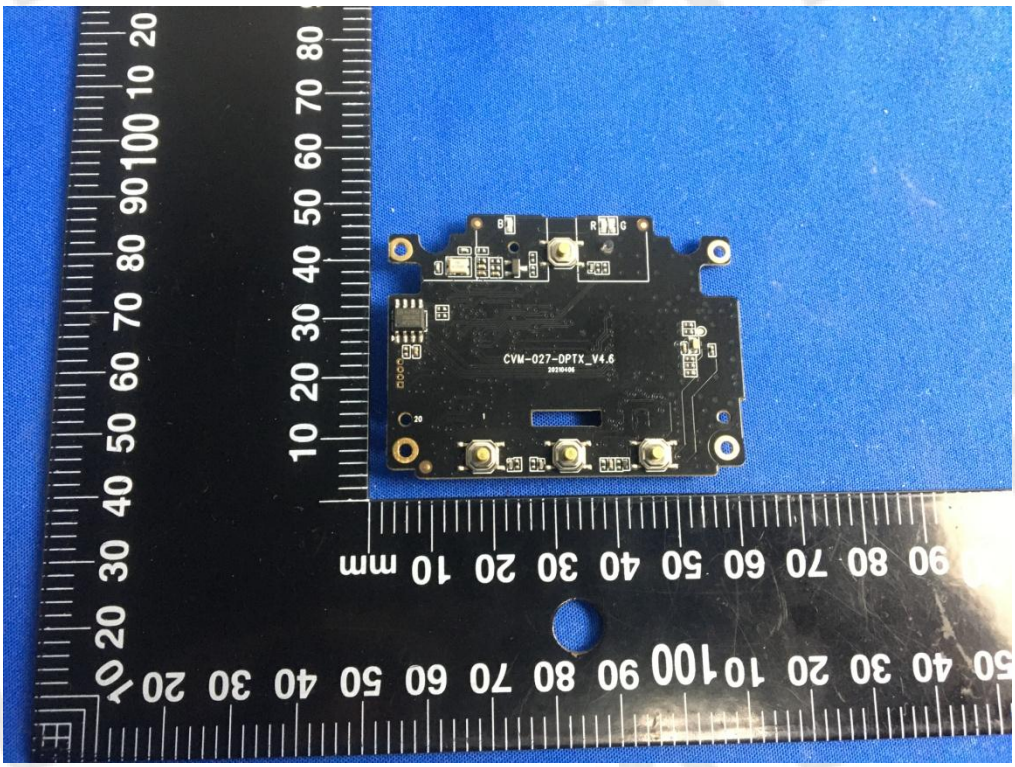
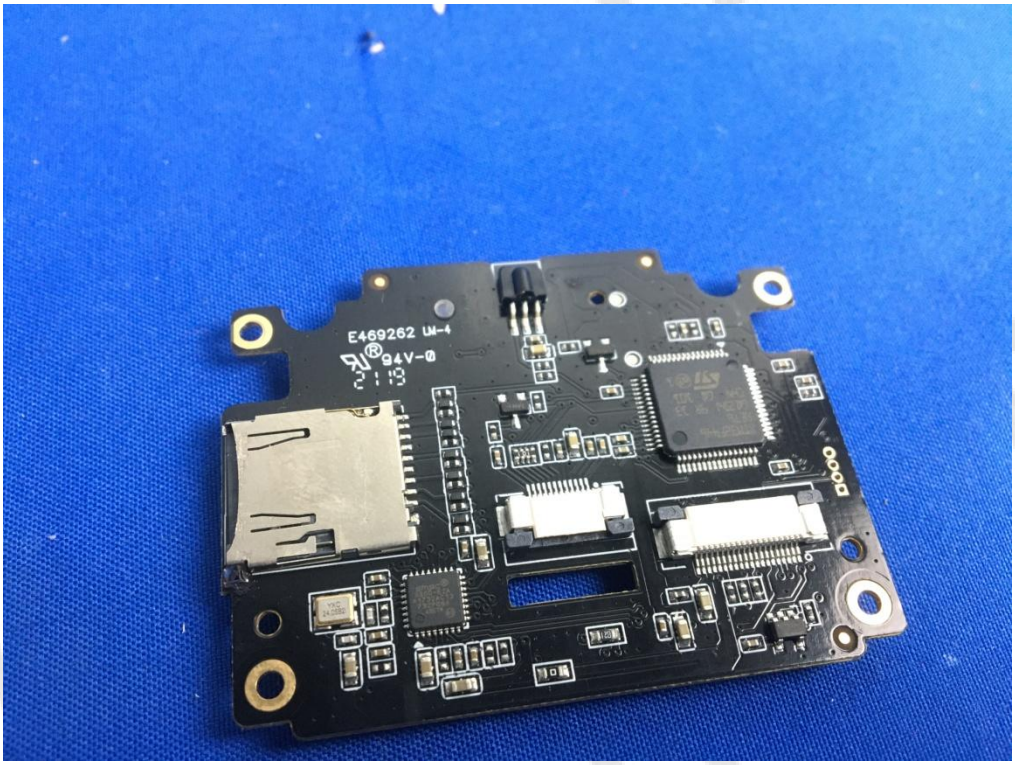
20210406









**********End of Report**********