

FCC Radio Test Report

FCC ID: 2AN03PA-25W

Report No. : TB-FCC177917
Applicant : ShenZhen SHIDU Digital Technolgy Co.,Ltd
Equipment Under Test (EUT)
EUT Name : Wireless Microphone
Model No. : PA-25W
Series Model No. : SD-U2, SD-U6, SD-U8, SD-U9, SD-U10, SD-U15, SDU16, SD-U17, SD-U18, SD-U20, SD-U30, SD-S28, SD-S20, SD-S30, SD-S278, SD-298, SD-S40, SD-S611, SD-S613, SD-S615, SD-S619, SD-S92, SD-S93, SD-S94, SD-S96, SD-97, SD-S98, SD-S99, SD-M500,SD-M800, SD-M900, SD-M1000, SD-M2000
Brand Name : amp up
Sample ID : 20201217-20-1#&20201217-20-2#
Receipt Date : 2020-12-21
Test Date : 2020-12-22 to 2021-03-01
Issue Date : 2021-03-01
Standards : FCC Part 15, Subpart C (15.236)
Test Method : ANSI C63.10: 2013
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above,
The EUT technically complies with the FCC requirements

Test/Witness Engineer : *Rebecca*
Engineer Supervisor : *Ivan Su*
Engineer Manager : *Ray Lai*



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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1. General Information about EUT

1.1 Client Information

Applicant	:	ShenZhen SHIDU Digital Technolgy Co.,Ltd
Address	:	F6, Zhaofeng, HangKong Rd, Bao'an, Shenzhen, China
Manufacturer	:	ShenZhen SHIDU Digital Technolgy Co.,Ltd
Address	:	F6, Zhaofeng, HangKong Rd, Bao'an, Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Wireless Microphone	
Models No.	:	PA-25W, SD-U2, SD-U6, SD-U8, SD-U9, SD-U10, SD-U15, SDU16, SD-U17, SD-U18, SD-U20, SD-U30, SD-S28, SD-S20, SD-S30, SD-S278, SD-298, SD-S40, SD-S611, SD-S613, SD-S615, SD-S619, SD-S92, SD-S93, SD-S94, SD-S96, SD-97, SD-S98, SD-S99, SD-M500,SD-M800,, SD-M900, SD-M1000, SD-M2000	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance.	
Product Description	:	Operation Frequency: 501MHz~540MHz	
	:	Number of Channel: 40 Channels	
	:	Max Power Output:	7.49dBm
	:	Antenna Gain:	1.95dBi External Antenna
	:	Equipment System:	Digital systems
Power Rating	:	USB Input: DC 5V DC 3.7V 550mAh by Li-ion Battery	
Software Version	:	SD-PA25W-V1.4	
Hardware Version	:	SHIDU-U8-V2.2	
Remark	:	The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.	

Note:

Applicable Standards: FCC CFR 47 Part 2, & 15, KDB 206256 D01 vO2, ANSI C63.10- 2013, ANSI C63.26 2015

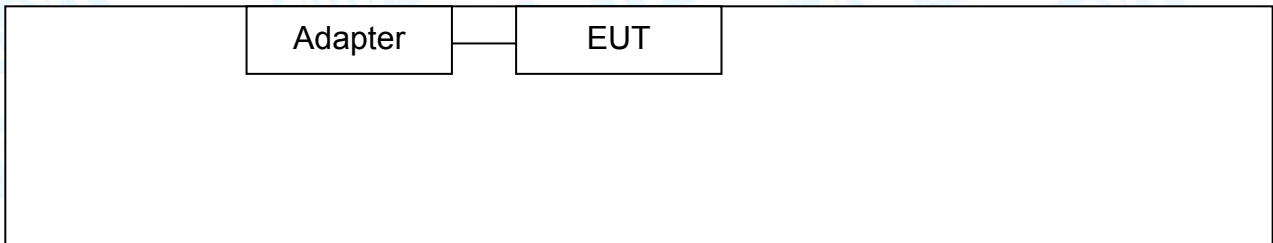
(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

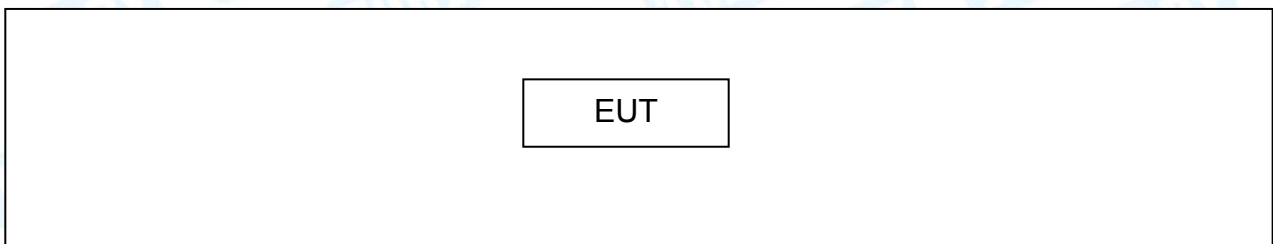
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	501	15	515	29	529
02	502	16	516	30	530
03	503	17	517	31	531
04	504	18	518	32	532
05	505	19	519	33	533
06	506	20	520	34	534
07	507	21	521	35	535
08	508	22	522	36	536
09	509	23	523	37	537
10	510	24	524	38	538
11	511	25	525	39	539
12	512	26	526	40	540
13	513	27	527		
14	514	28	528		

1.3 Block Diagram Showing the Configuration of System Tested

Charging+TX Mode



TX Mode



1.4 Description of Support Units

Equipment Information				
Name	Model	FCC ID/VOC	Manufacturer	Used “√”
ADAPTER	05002000	---	HUAWEI	√
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
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1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	Description
Mode 1	Charging+TX Mode
For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode(Channel 01/20/40)

Note:

For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

- (1)According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.
- (2)During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

Control by pressing the button. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF mode.

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz	± 3.50 dB
	150kHz to 30MHz	± 3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351.Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

2. Test Summary

FCC Part 15 Subpart C(15.236)				
Standard Section	Test Item	Test Sample(s)	Judgment	Remark
15.207(a)	Conducted Emission	20201217-20-1#	PASS	N/A
15.236(d)(2)	RF Power Output	20201217-20-2#	PASS	N/A
15.236(f)(2)	Occupied Bandwidth	20201217-20-2#	PASS	N/A
15.236(g) 8.3 of ETSI EN 300 422-1	Emission Mask	20201217-20-2#	PASS	N/A
15.236(g) 8.4 of ETSI EN 300 422-1	Radiated Spurious Emission	20201217-20-2#	PASS	N/A
15.236(f)(3)	Frequency Stability vs. Temperature Frequency Stability vs. Voltage	20201217-20-2#	PASS	N/A

Note: N/A is an abbreviation for Not Applicable.

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE

4. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 06, 2020	Jul. 05, 2021
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 06, 2020	Jul. 05, 2021
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 06, 2020	Jul. 05, 2021
LISN	Rohde & Schwarz	ENV216	101131	Jul. 06, 2020	Jul. 05, 2021
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 07, 2020	Jul. 06, 2021
Pre-amplifier	Sonoma	310N	185903	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	HP	8449B	3008A00849	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Mar.01, 2020	Feb. 28, 2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.01, 2020	Feb. 28, 2021
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 11, 2020	Sep. 10, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 11, 2020	Sep. 10, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 11, 2020	Sep. 10, 2021

5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard
FCC Part 15.207

5.1.2 Test Limit

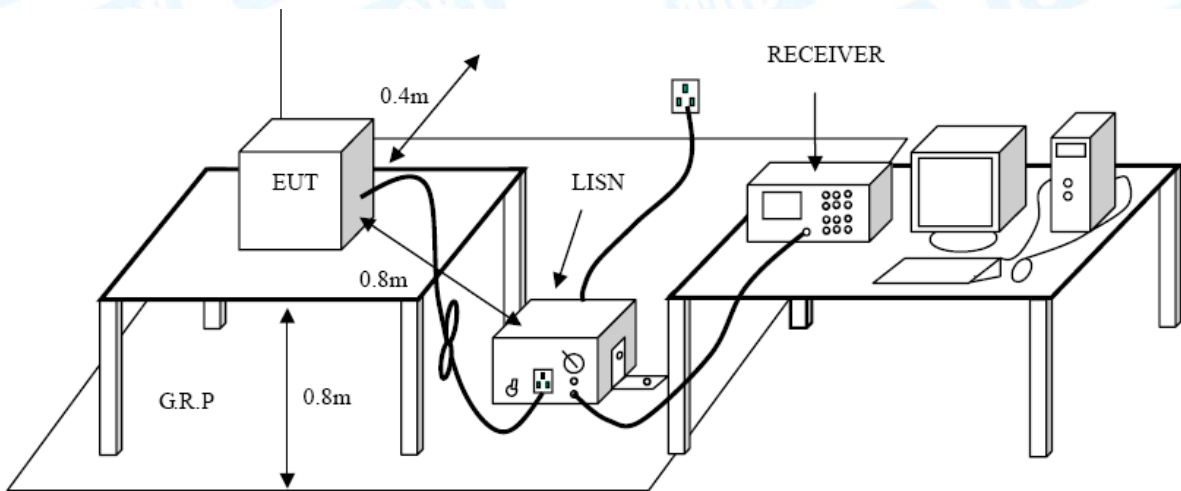
Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.2 Test Setup



5.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A.

6. RF Output Power Test

6.1 Test Standard and Limit

6.1.1 Test Standard:

FCC Part 15.236(d)(2)

6.1.2 Test Limit

§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.

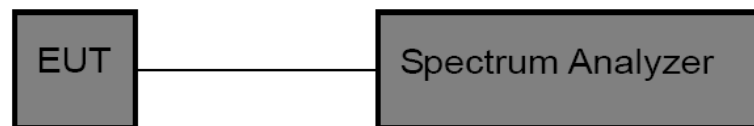
(d) The maximum radiated power shall not exceed the following values:

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

Procedure: KDB 971168 D01 Average Power Measurements section 5.2.1

Power Limit 20mW= 13dBm

6.2 Test Setup



6.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above.

- (1) Set the $RBW \geq \text{Bandwidth}$
- (2) Set $VBW \geq 3 * RBW$
- (3) Set $\text{Span} \geq 3 * RBW$
- (4) Sweep time=auto
- (5) Measurement points $\geq 2 \text{ span} / RBW$
- (6) Detector=Average
- (7) Trace mode= max hold.

Allow trace to fully stabilize, and then use peak marker function to determine the Average amplitude level.

- (8) Radiated RF power= Conduction measurement Level + Ant. Gain

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

6.6 Test Data

Please refer to the Attachment B.

7. Bandwidth Test

7.1 Test Standard and Requirement

7.1.1 Test Standard

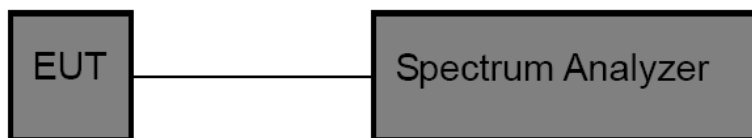
FCC Part 15.236(f)(2)

7.1.2 Test 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.

7.1.3 Requirement: ANSI C63.26 sec. 5.4.3

7.2 Test Setup



7.2 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:
Bandwidth: RBW=10 kHz, VBW=30kHz.
- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

7.6 Test Data

Please refer to the Attachment C.

8. Emission Mask Test

8.1 Test Standard

(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

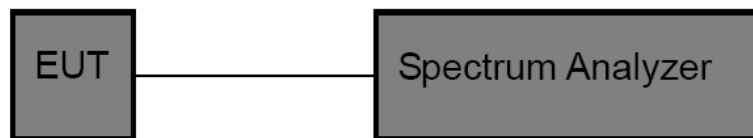
8.2 Test Limit

The transmitter output spectrum shall be within the mask defined in figure 4. This mask may also be used for analogue.



Figure 4: Spectrum mask for digital systems below 1 GHz

8.3 Test Setup



8.4 Test Procedure

Measure the "Maximum Relative Level (dBc) at Specified Carrier Offsets" with the following spectrum analyser setup:

- Centre Frequency = f_c
- Span $\geq 5 \times B$
- Detector = RMS
- Trace Mode = Peak Hold
- RBW&VBW = 1 kHz
- Sweep time ≥ 2 s

8.5 Deviation From Test Standard

No deviation

8.6 Test Data

Please refer to the Attachment D.

9. Radiated Spurious Emission Test

9.1 Test Standard and Limit

9.1.1 Test Standard: FCC Part 15.236(g)

Requirement: ETSI EN 300 422-1 V1.4.2

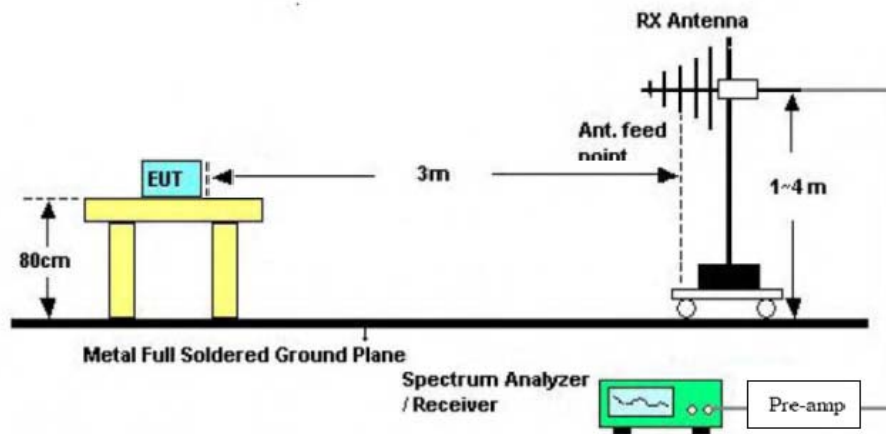
(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in 58.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

9.1.2 Limits

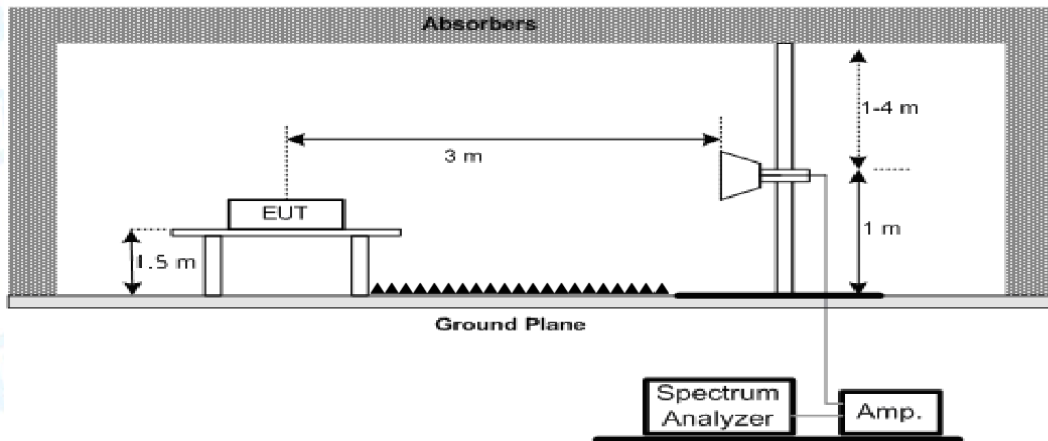
State	Frequency		
	47 MHz to 74 MHz 87,5 MHz to 137 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz
Operation	4 nW	250 nW	1 µW
Standby	2 nW	2 nW	20 nW

9.2 Test Setup

A. Radiated Emission Test Set-Up Frequency Below 1 GHz.



B. Radiated Emission Test Set-Up Frequency Above 1 GHz.



9.3 Test Procedure

1. The EUT was placed on the top of the turntable in chamber.
2. The test shall be made in the transmitting mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. This measurement shall be repeated with the transmitter in standby mode where applicable.
4. For spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable.
5. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
6. Replace the EUT by standard antenna and feed the RF port by signal generator.
7. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
8. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
9. The level of the spurious emission is the power level of (8) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.
10. The measurement shall be repeated at the lowest and the highest channel of the stated frequency range.

9.4 Deviation From Test Standard

No deviation

9.5 Test Data

Please refer to the Attachment E.

10. Frequency stability

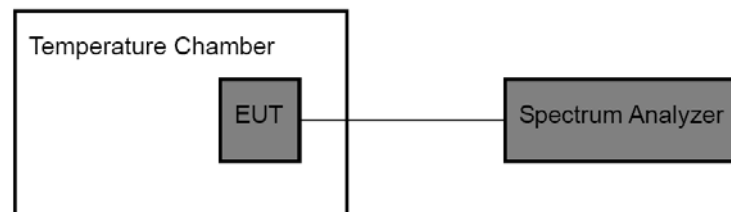
10.1 Test Standard and Limit

10.1.1 Test Standard: FCC 15.236(f)(3)

10.1.2 Test Limit

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.005\%$ 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.

10.2 Test Setup



10.3 Test Procedure

The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 °C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worst case number used in the table below. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 °C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst-case number was again used in the table below. This procedure was repeated in 10-degree increments up to $+50$ °C.

10.4 Deviation From Test Standard

No deviation

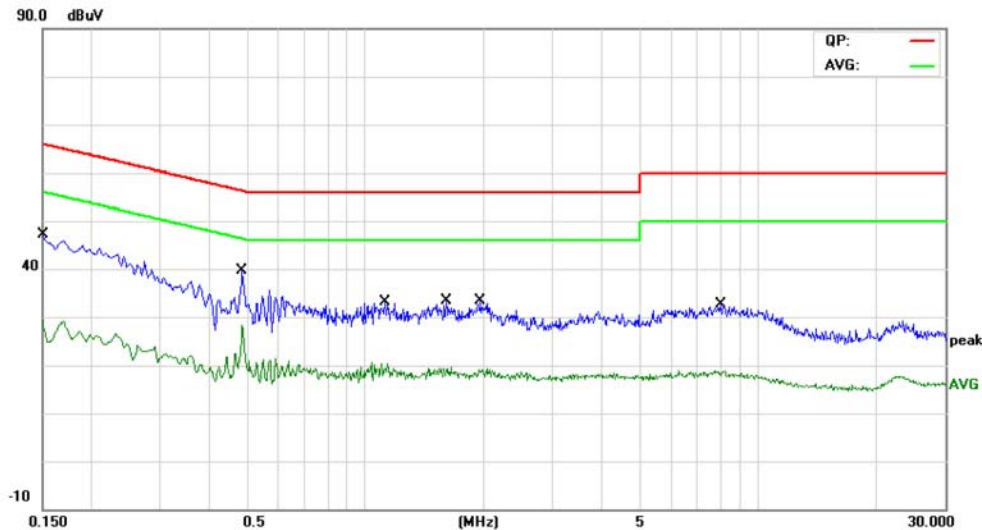
10.5 Test Data

Please refer to the Attachment F.

Attachment A-- Conducted Emission Test Data

Remark: All channels have been tested and Shows only the worst channels.

Temperature:	23.3°C	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	Mode 1(Charging + TX Mode Channel 01)		
Remark:	Only worst case is reported		

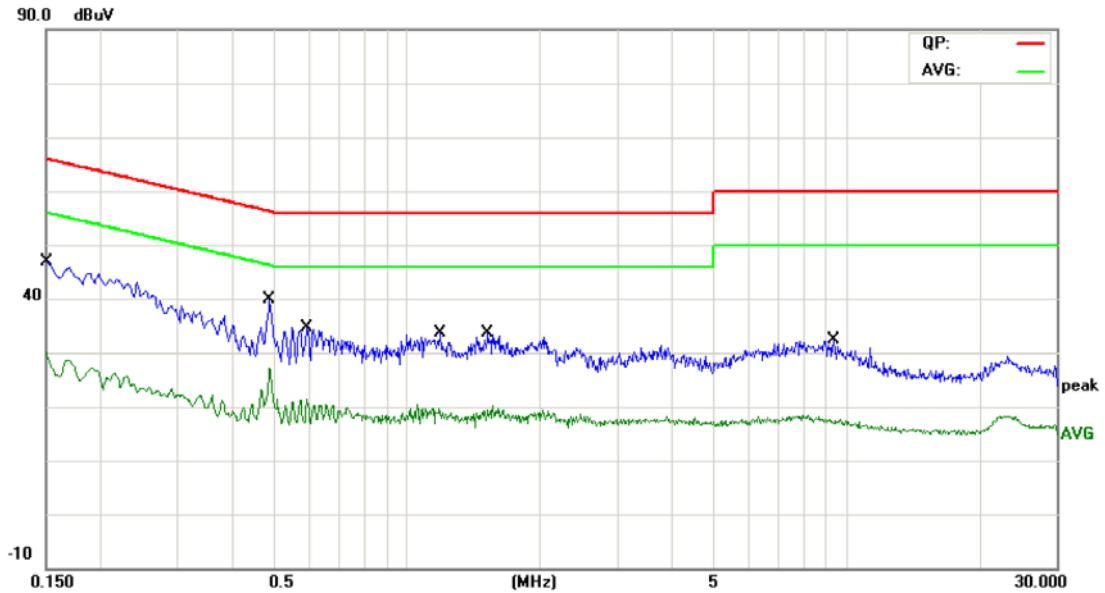


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1500	34.77	9.70	44.47	65.99	-21.52	QP
2		0.1500	18.85	9.70	28.55	55.99	-27.44	AVG
3		0.4860	26.95	9.70	36.65	56.24	-19.59	QP
4	*	0.4860	17.54	9.70	27.24	46.24	-19.00	AVG
5		1.1180	18.54	9.79	28.33	56.00	-27.67	QP
6		1.1180	9.55	9.79	19.34	46.00	-26.66	AVG
7		1.6019	17.51	9.74	27.25	56.00	-28.75	QP
8		1.6019	8.73	9.74	18.47	46.00	-27.53	AVG
9		1.9620	16.27	9.70	25.97	56.00	-30.03	QP
10		1.9620	7.86	9.70	17.56	46.00	-28.44	AVG
11		8.0219	14.92	9.80	24.72	60.00	-35.28	QP
12		8.0219	7.32	9.80	17.12	50.00	-32.88	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)

Temperature:	23.3°C	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1(Charging + TX Mode Channel 01)		
Remark:	Only worst case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1500	34.40	9.80	44.20	65.99	-21.79	QP
2		0.1500	18.07	9.80	27.87	55.99	-28.12	AVG
3		0.4860	27.60	9.80	37.40	56.24	-18.84	QP
4	*	0.4860	18.00	9.80	27.80	46.24	-18.44	AVG
5		0.5899	21.25	9.80	31.05	56.00	-24.95	QP
6		0.5899	10.68	9.80	20.48	46.00	-25.52	AVG
7		1.1860	17.37	9.80	27.17	56.00	-28.83	QP
8		1.1860	8.37	9.80	18.17	46.00	-27.83	AVG
9		1.5220	18.53	9.80	28.33	56.00	-27.67	QP
10		1.5220	8.86	9.80	18.66	46.00	-27.34	AVG
11		9.3500	14.54	9.90	24.44	60.00	-35.56	QP
12		9.3500	6.55	9.90	16.45	50.00	-33.55	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)

Attachment B--Power Output Test Data

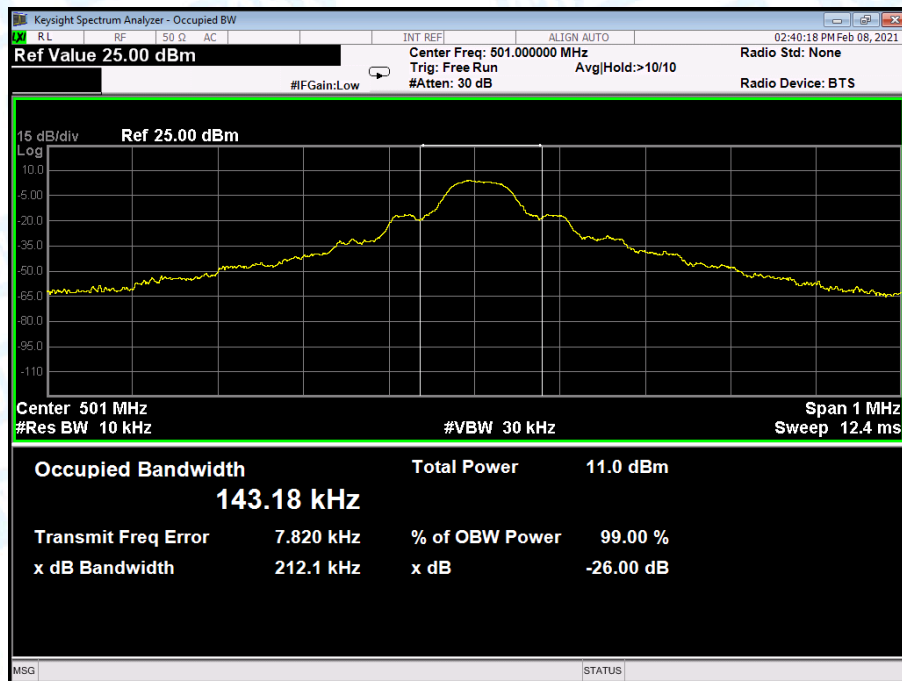
Frequency (MHz)	Conduction measurement Level (dBm)	Ant. Gain(dBi)	Radiated RF power(dBm)	Limit	Margin (dB)
501	5.54	1.95	7.49	50mw (16.98dBm)	-9.49
520	4.50	1.95	6.45		-10.53
540	4.36	1.95	6.31		-10.67

Note: Radiated RF power= Conduction measurement Level + Ant. Gain

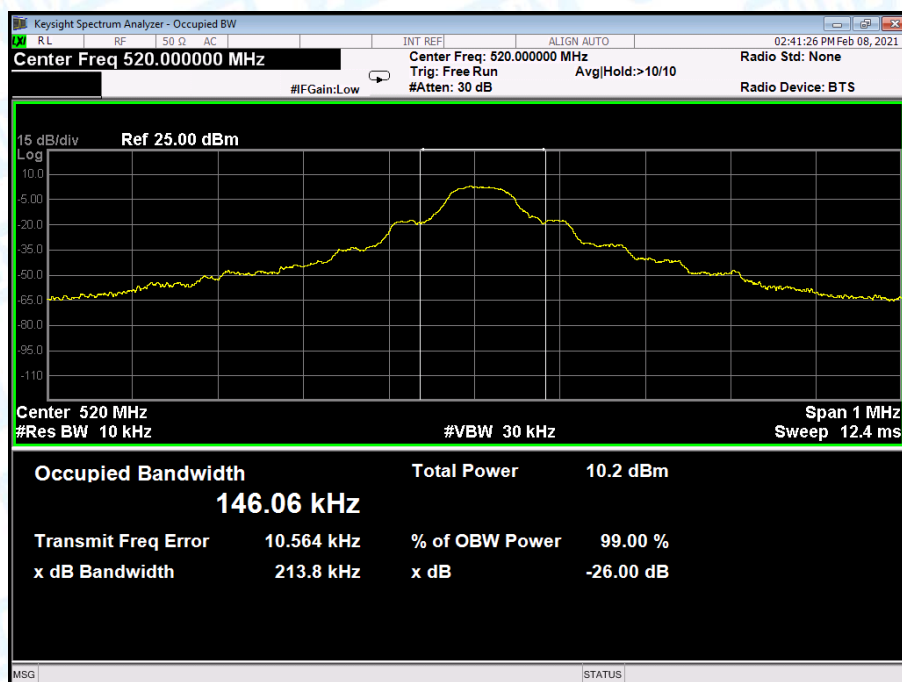
Attachment C--Bandwidth Test Data

Channel Frequency (MHz)	99% Bandwidth (KHz)	26dB Bandwidth (KHz)
501	143.18	212.1
520	146.06	213.8
540	102.94	205.0

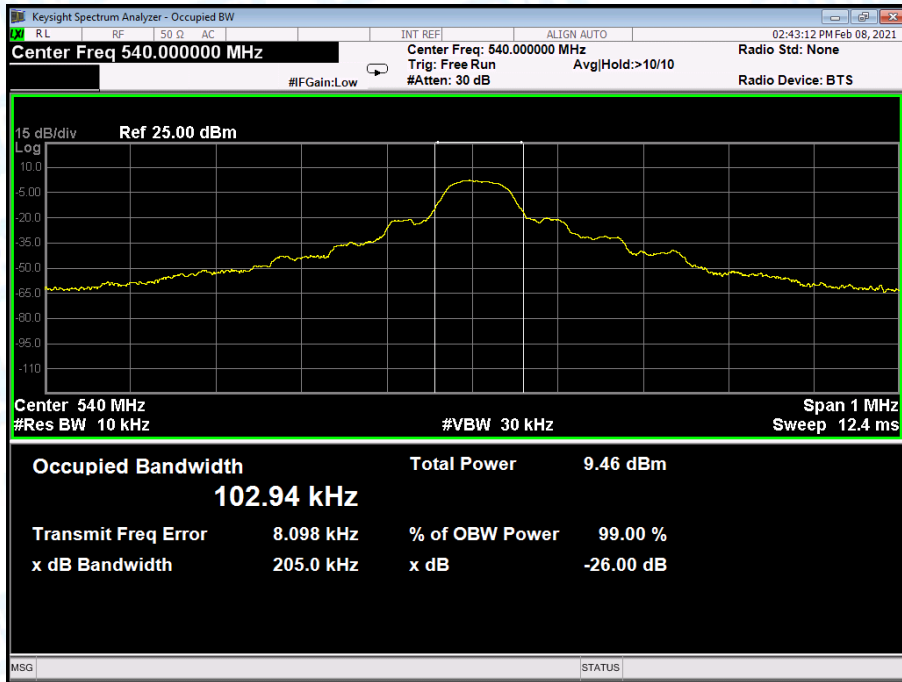
501MHz



520MHz

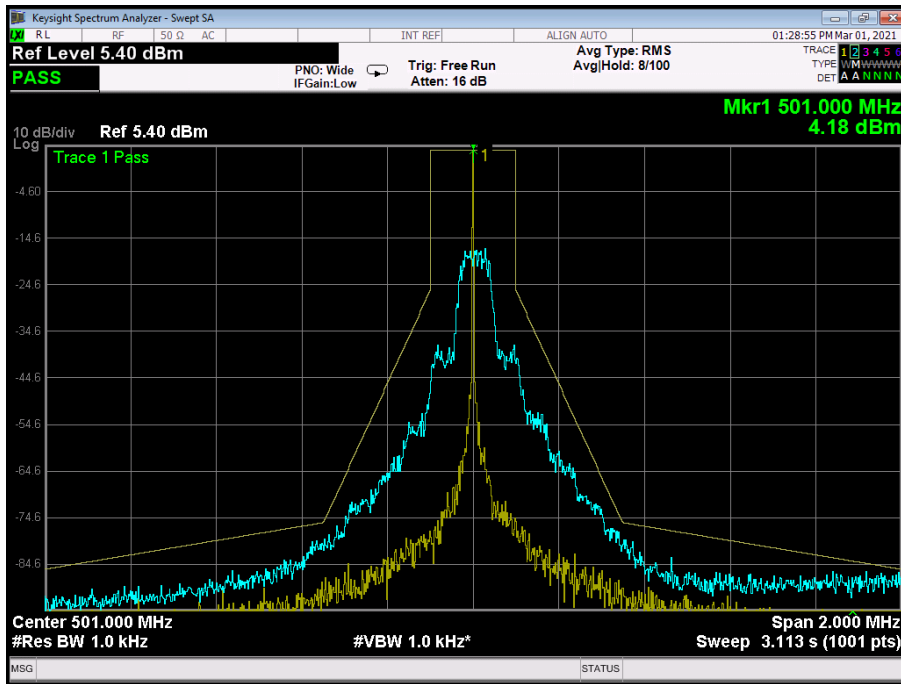


540MHz

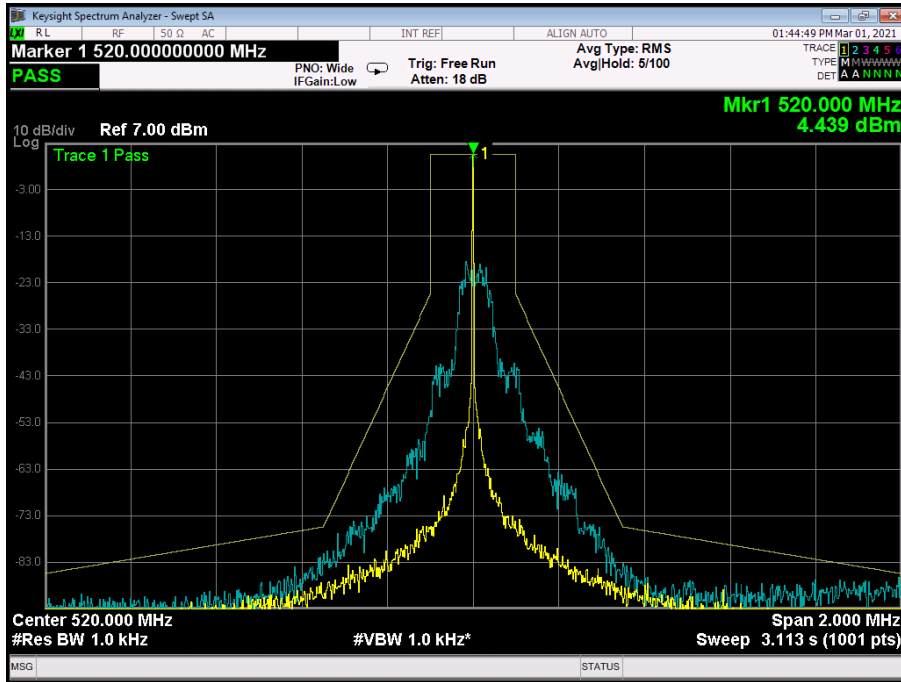


Attachment D--Emission Mask Test Data

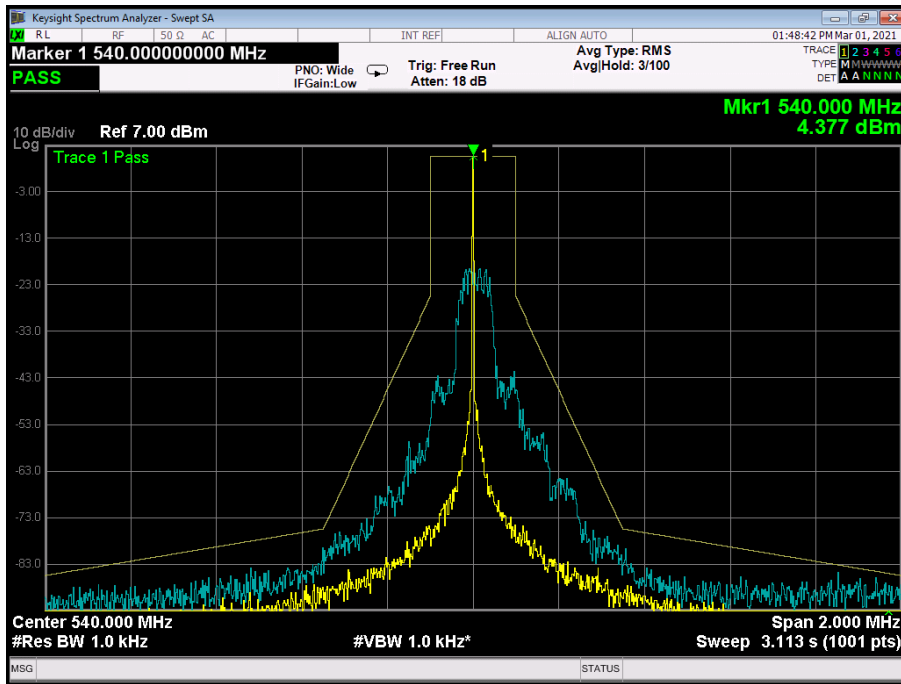
Temperature:	26°C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V (Normal)
Test Mode :	TX 501MHz		
Result:	PASS		



Temperature:	26°C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V (Normal)
Test Mode :	TX 520MHz		
Result:	PASS		



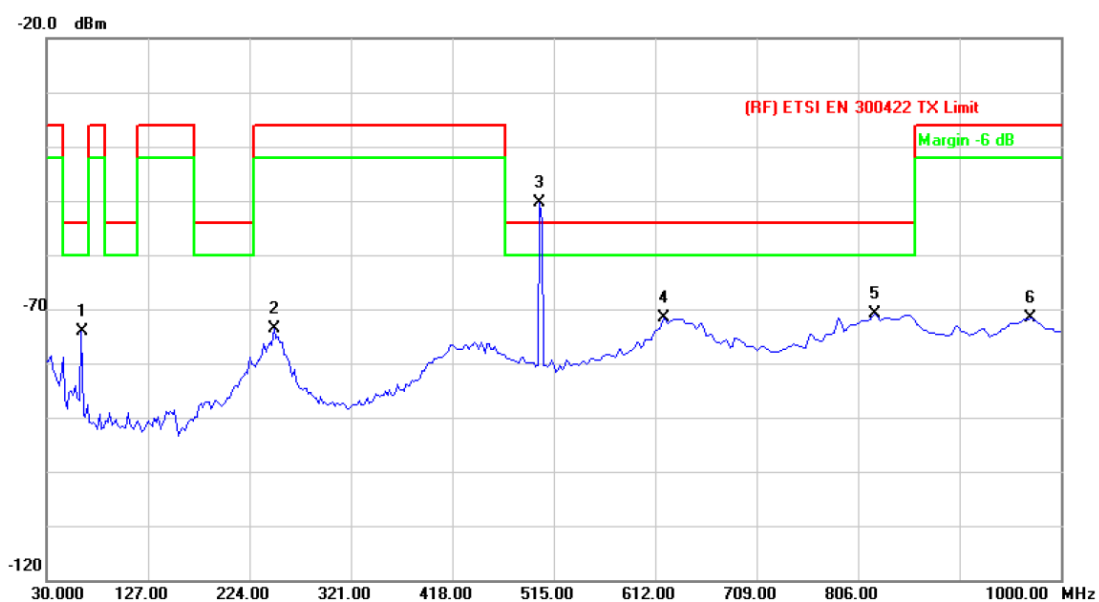
Temperature:	26°C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V (Normal)
Test Mode :	TX 540MHz		
Result:	PASS		



Attachment E--Radiated Spurious Emission Test Date

Below 1 GHz

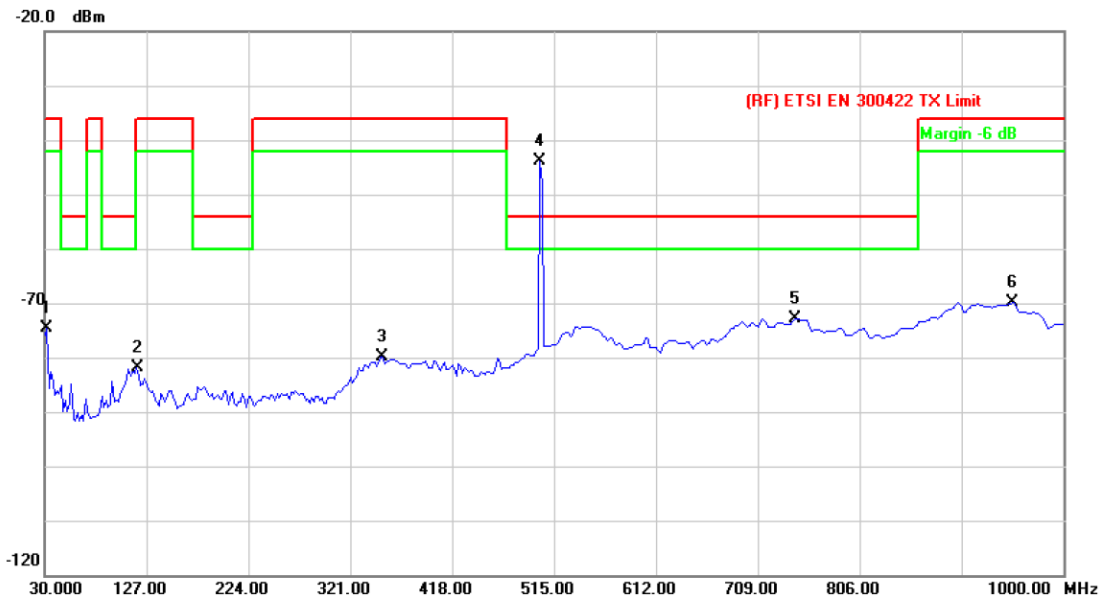
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 501MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		63.9828	-64.96	-9.20	-74.16	-54.00	-20.16	peak
2		247.6819	-78.17	4.62	-73.55	-36.00	-37.55	peak
3	*	502.9395	-49.30	-0.99	-50.29	Fundamental Frequency		peak
4		620.7096	-78.33	6.77	-71.56	-54.00	-17.56	peak
5		821.7103	-78.69	7.79	-70.90	-54.00	-16.90	peak
6		972.3374	-79.68	8.00	-71.68	-36.00	-35.68	peak

Emission Level= Read Level+ Correct Factor

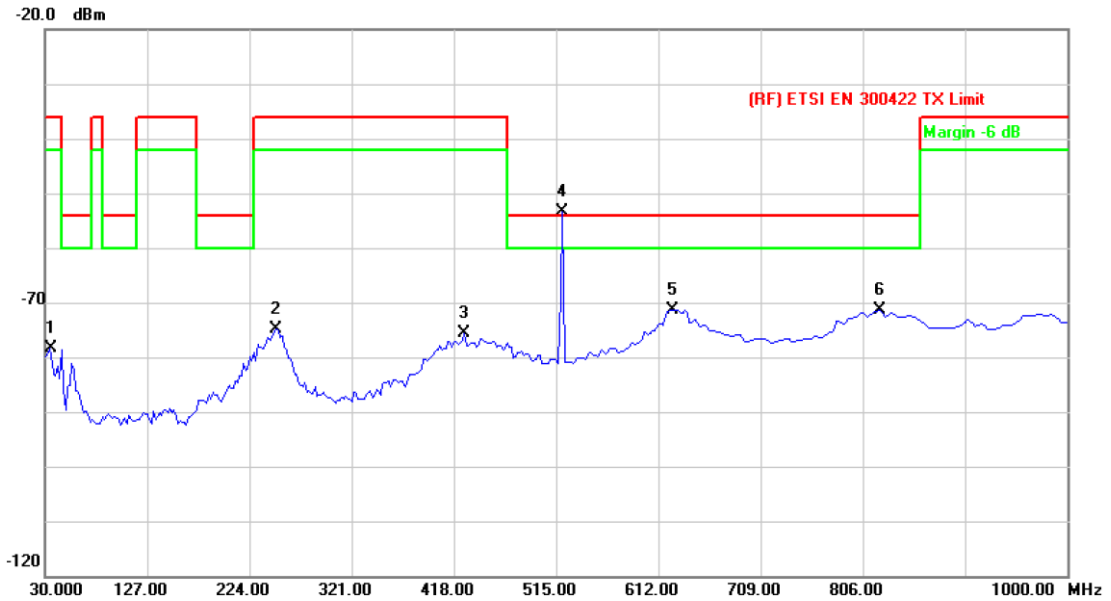
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 501MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		32.1795	-66.69	-7.93	-74.62	-36.00	-38.62	peak
2		118.6014	-77.84	-3.92	-81.76	-36.00	-45.76	peak
3		351.7079	-79.21	-0.65	-79.86	-36.00	-43.86	peak
4	*	502.9395	-44.88	1.09	-43.79	Fundamental Frequency		peak
5		744.8661	-78.61	5.72	-72.89	-54.00	-18.89	peak
6		952.0937	-78.76	8.94	-69.82	-36.00	-33.82	peak

Emission Level= Read Level+ Correct Factor

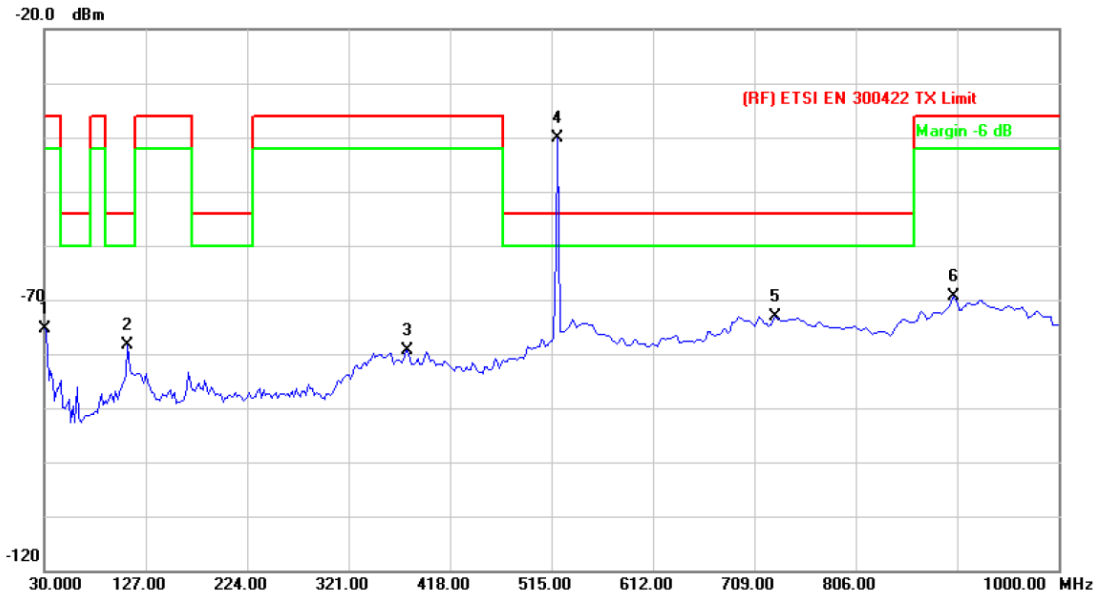
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 520MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		35.2512	-77.20	-1.19	-78.39	-36.00	-42.39	peak
2		249.4250	-80.03	5.07	-74.96	-36.00	-38.96	peak
3		428.0193	-78.06	2.38	-75.68	-36.00	-39.68	peak
4	*	520.8882	-52.11	-1.23	-53.34	Fundamental Frequency		peak
5		625.0780	-78.80	7.53	-71.27	-54.00	-17.27	peak
6		821.7103	-79.14	7.79	-71.35	-54.00	-17.35	peak

Emission Level= Read Level+ Correct Factor

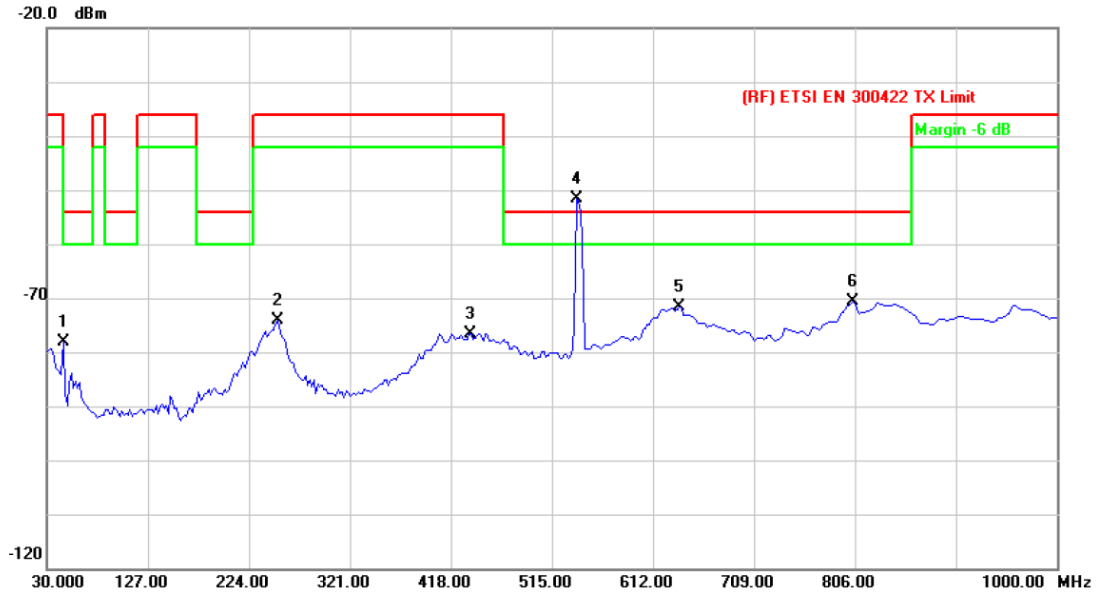
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 520MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		30.0000	-68.91	-6.54	-75.45	-36.00	-39.45	peak
2		111.3468	-74.78	-3.54	-78.32	-54.00	-24.32	peak
3		377.2591	-78.17	-1.31	-79.48	-36.00	-43.48	peak
4	*	520.8882	-43.27	3.10	-40.17	Fundamental Frequency		peak
5		729.3583	-78.82	5.68	-73.14	-54.00	-19.14	peak
6		900.1474	-77.75	8.32	-69.43	-36.00	-33.43	peak

Emission Level= Read Level+ Correct Factor

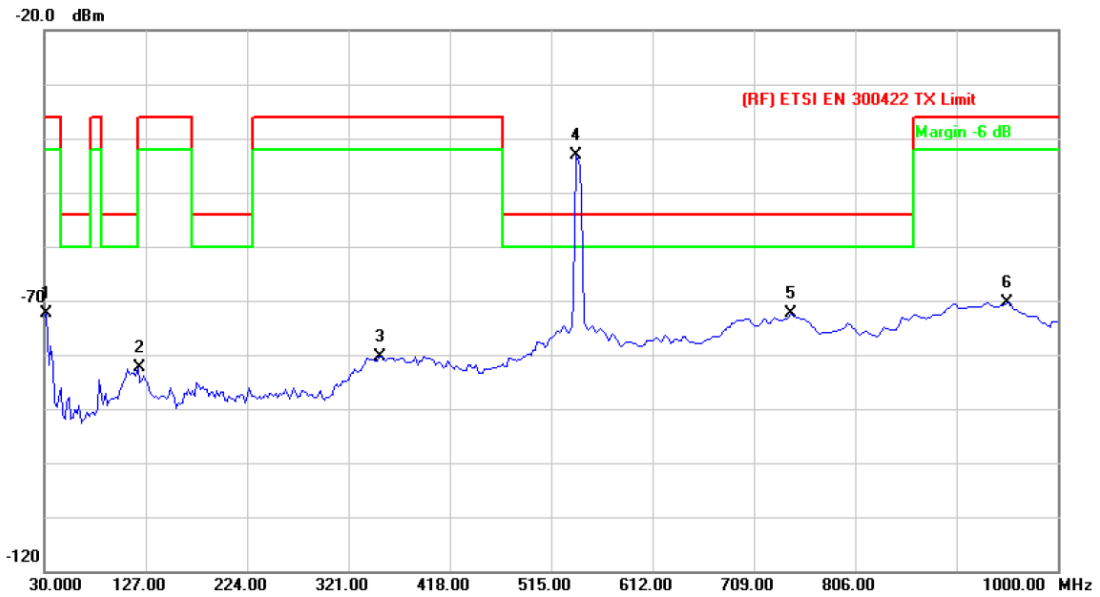
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 540MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		46.0164	-70.75	-7.40	-78.15	-36.00	-42.15	peak
2		251.1804	-78.74	4.73	-74.01	-36.00	-38.01	peak
3		437.1199	-78.88	2.37	-76.51	-36.00	-40.51	peak
4	*	539.4775	-50.93	-0.64	-51.57	Fundamental Frequency		peak
5		638.3686	-78.31	6.78	-71.53	-54.00	-17.53	peak
6		804.6028	-77.42	6.82	-70.60	-54.00	-16.60	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 540MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		

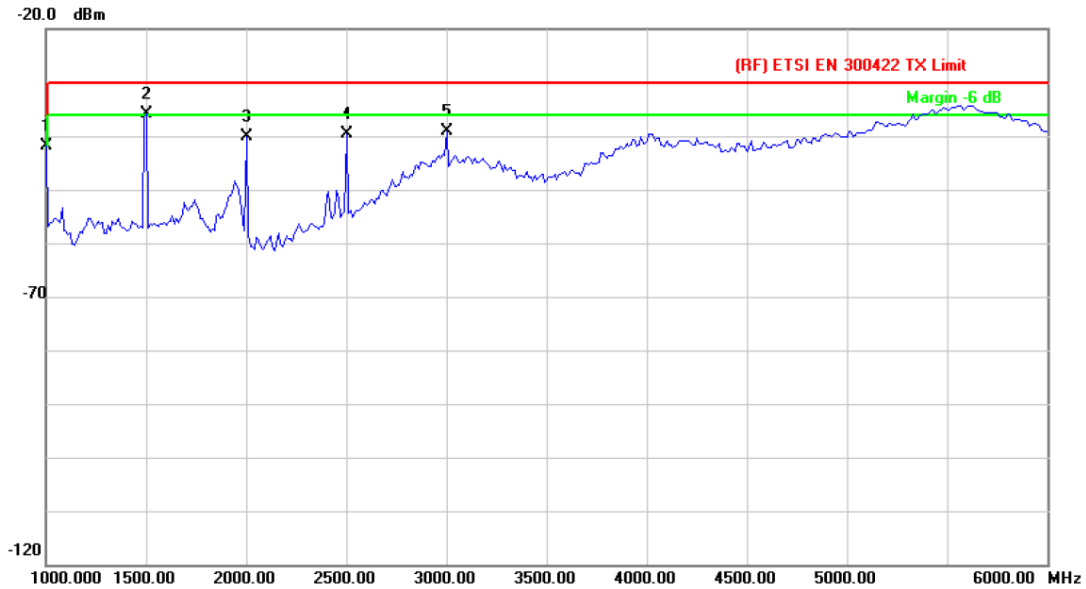


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		32.1795	-64.45	-7.93	-72.38	-36.00	-36.38	peak
2		121.1231	-78.16	-4.20	-82.36	-36.00	-46.36	peak
3		351.7079	-79.67	-0.65	-80.32	-36.00	-44.32	peak
4	*	539.4775	-47.49	4.27	-43.22	Fundamental Frequency		peak
5		744.8661	-78.17	5.72	-72.45	-54.00	-18.45	peak
6		952.0937	-79.20	8.94	-70.26	-36.00	-34.26	peak

Emission Level= Read Level+ Correct Factor

Above 1 GHz

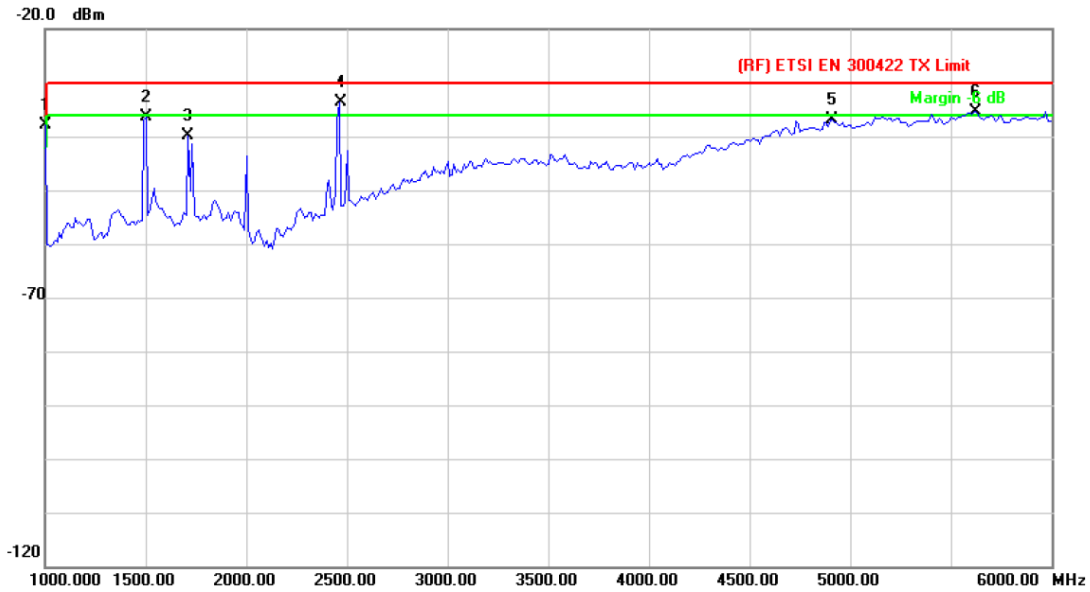
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 501MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1	*	1000.0000	-45.87	3.92	-41.95	-36.00	-5.95	peak
2	!	1504.591	-47.44	11.46	-35.98	-30.00	-5.98	peak
3		2004.115	-48.41	8.25	-40.16	-30.00	-10.16	peak
4		2502.727	-50.01	10.34	-39.67	-30.00	-9.67	peak
5		3004.588	-60.01	20.77	-39.24	-30.00	-9.24	peak

Emission Level= Read Level+ Correct Factor

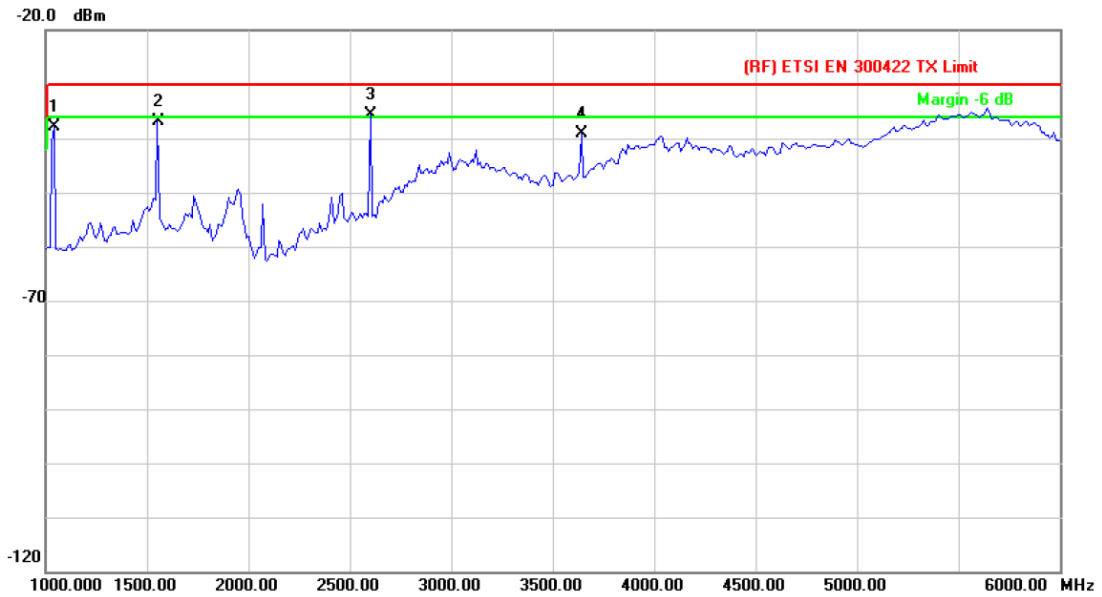
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 501MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1	*	1000.0000	-41.68	3.81	-37.87	-36.00	-1.87	peak
2		1504.591	-45.67	9.31	-36.36	-30.00	-6.36	peak
3		1711.770	-48.78	8.94	-39.84	-30.00	-9.84	peak
4	!	2467.108	-45.59	12.03	-33.56	-30.00	-3.56	peak
5		4909.060	-64.62	27.70	-36.92	-30.00	-6.92	peak
6	!	5625.198	-64.59	29.15	-35.44	-30.00	-5.44	peak

Emission Level= Read Level+ Correct Factor

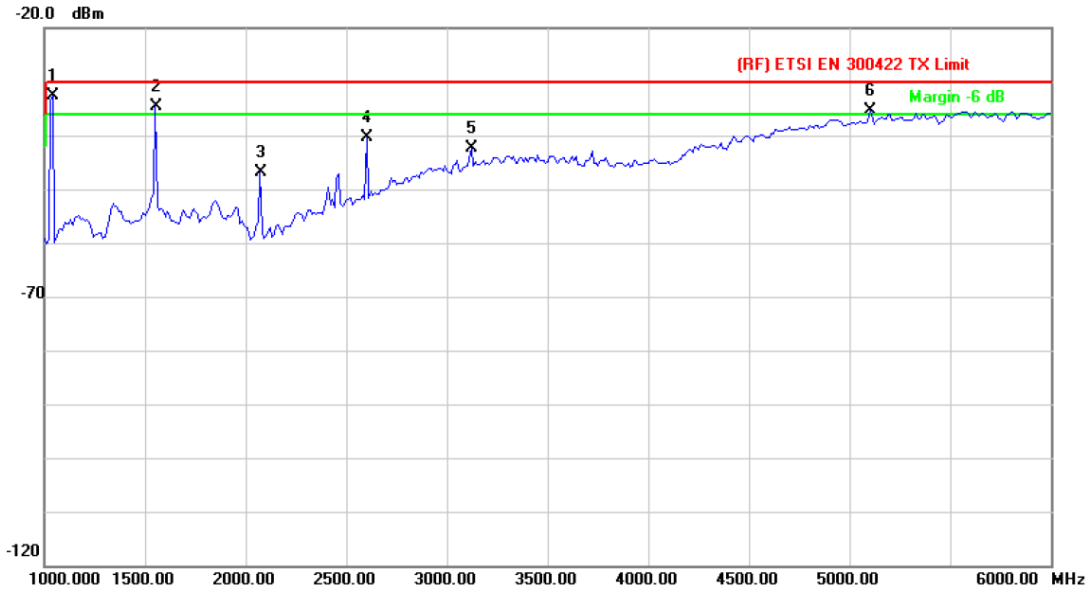
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 520MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		1040.206	-46.09	8.34	-37.75	-30.00	-7.75	peak
2		1559.486	-47.80	10.97	-36.83	-30.00	-6.83	peak
3	*	2603.351	-48.02	12.46	-35.56	-30.00	-5.56	peak
4		3646.072	-58.43	19.19	-39.24	-30.00	-9.24	peak

Emission Level= Read Level+ Correct Factor

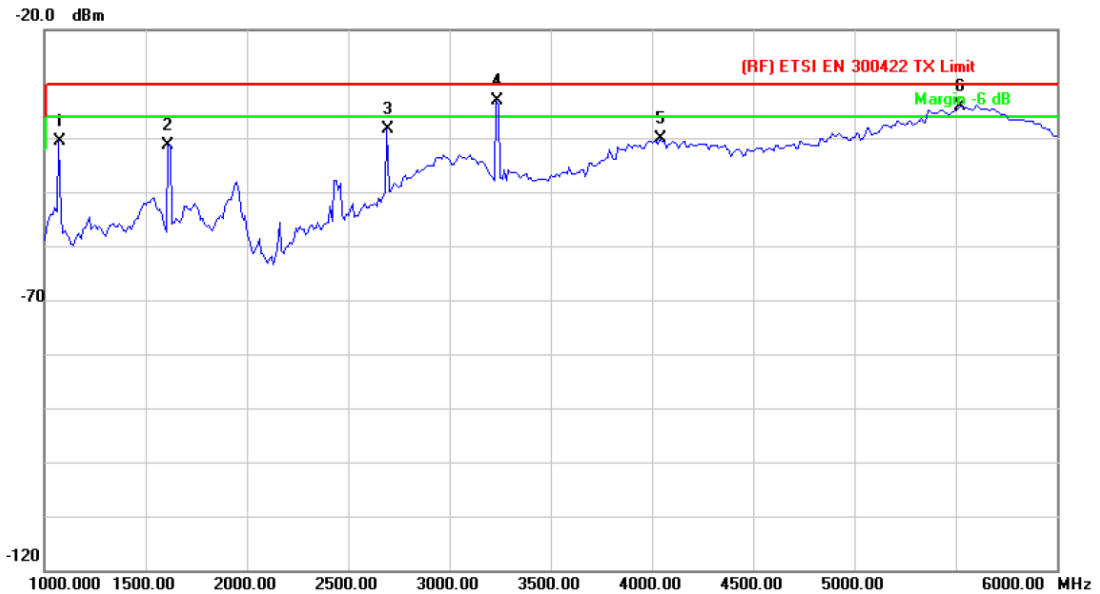
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 520MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1	*	1040.206	-35.74	3.18	-32.56	-30.00	-2.56	peak
2	!	1559.486	-46.25	11.74	-34.51	-30.00	-4.51	peak
3		2077.235	-56.20	9.24	-46.96	-30.00	-16.96	peak
4		2603.351	-53.94	13.60	-40.34	-30.00	-10.34	peak
5		3125.390	-61.45	19.10	-42.35	-30.00	-12.35	peak
6	!	5106.433	-63.90	28.48	-35.42	-30.00	-5.42	peak

Emission Level= Read Level+ Correct Factor

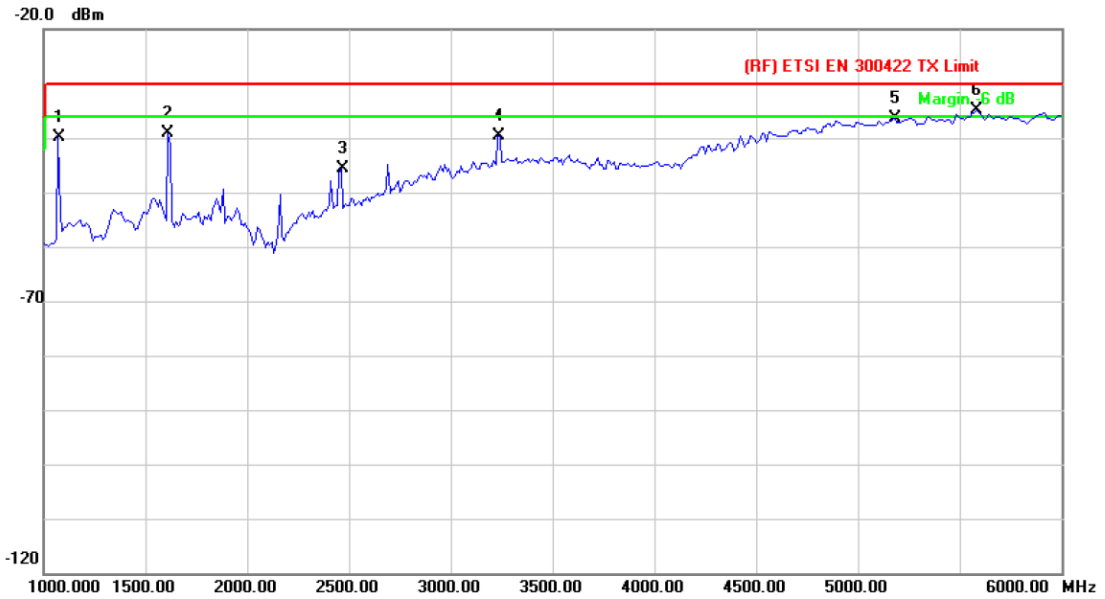
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 540MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		1078.158	-47.72	7.05	-40.67	-30.00	-10.67	peak
2		1616.384	-49.14	7.73	-41.41	-30.00	-11.41	peak
3		2698.334	-52.91	14.46	-38.45	-30.00	-8.45	peak
4	*	3239.420	-52.12	18.97	-33.15	-30.00	-3.15	peak
5		4045.367	-64.71	24.47	-40.24	-30.00	-10.24	peak
6	!	5525.306	-64.74	30.62	-34.12	-30.00	-4.12	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		
Test Mode:	TX Mode 540MHz		
Remark:	All channels were tested and only the worst channels were shown in the report.		



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector
1		1078.158	-44.33	4.51	-39.82	-30.00	-9.82	peak
2		1616.384	-48.00	8.86	-39.14	-30.00	-9.14	peak
3		2467.108	-57.73	12.03	-45.70	-30.00	-15.70	peak
4		3239.420	-59.00	19.45	-39.55	-30.00	-9.55	peak
5		5180.156	-65.07	28.62	-36.45	-30.00	-6.45	peak
6	*	5585.026	-64.01	29.17	-34.84	-30.00	-4.84	peak

Emission Level= Read Level+ Correct Factor

Attachment F--Frequency Stability Test Data

Pressure:	1010 hPa	Test Voltage :	DC 3.7V (Normal)
Test Mode :	TX 520MHz (Modulation)		
Remark:	All channels were tested and only the worst channels were shown in the report.		
Test Conditions	Measurement Frequency(MHz)	Test Voltage	Measurement Frequency(MHz)
-30°C	520	85%	520.006
-20°C	520	90%	520.007
-10°C	520	95%	520.006
0°C	520	100%	520.005
10°C	520	105%	520.006
20°C	520	110%	520.007
30°C	520	115%	520.006
40°C	520		
50°C	520		
Max. Deviation Frequency			0.007
Max. Frequency Error			0.00013%
Limits			±0.005%
Result			PASS
Note: The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency.			

-----END OF REPORT-----