Shenzhen CTL Electromagnetic Technology Co., Ltd.
Tel: +86-755-89486194 Fax: +86-755-89486187

FCC PART 15 SUBPART D & INDUSTRY CANADA RSS-213, ISSUE 2

TEST REPORT

Report Reference No.....:	**CTL11078417-S-WF2**
Compiled by (position+printed name+signature) .:	File administrators Andy Zhang
Name of the organization performing the tests (position+printed name+signature) .:	Test Engineer Kendy Wang
Approved by (position+printed name+signature) .:	Manager Tracy Qi
Date of issue.....:	September 14, 2011
Representative Laboratory Name.:	**Shenzhen CTL Electromagnetic Technology Co., Ltd.**
Address .....:	Zone B，4/F, Block 20，Guangqian Industrial Park, Longzhu Road,Nanshan,Shenzhen 518055 China.
Test Firm .....:	**Bontek Compliance Testing Laboratory Ltd**
Address .....:	1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China
Applicant's name.....:	**The Great Arnoldi, LLC**
Address .....:	c/o Gallion & Spielvogel LLP, 75 Rockefeller Plaza, 18th Floor, NY, NY 10019
Test specification:	
Standard.....:	FCC Part 15 Subpart D: Unlicensed Personal Communications Service Devices RSS-213, Issue 2: 2 GHz Licence-exempt Personal Communications Service Devices (LE-PCS)
TRF Originator.....:	Shenzhen CTL Electromagnetic Technology Co., Ltd.
Master TRF.....:	Dated 2011-01

Test item description .....:	911 Emergency Phone(Base)
FCC ID……..:	**ZUPJIC-911B**
IC……..:	**9808A-JIC911B**
Trade Mark .....:	Just In Case
Model/Type reference .....:	JIC-911
Work Frequency Range……..:	1921.536~1928.448MHz
Antenna Type……:	Integrated antenna
Result .....:	**Positive**

T E S T R E P O R T

Test Report No. :	CTL11078417-S-WF2	September 14, 2011 Date of issue

Equipment under Test	:	911 Emergency Phone
Model /Type	:	JIC-911
Listed Models	:	/
Applicant	:	The Great Arnoldi, LLC
Address	:	c/o Gallion & Spielvogel LLP, 75 Rockefeller Plaza, 18th Floor, NY, NY 10019
Manufacturer		NEO TELECOM CORPORATION
Address		39E,Comfort Garden, HengLi Town,DongGuan City, GuangDong Province, China

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Part 15 Subpart D: Unlicensed Personal Communications Service Devices

ANSI C63.4-2003: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2003)

ANSI C63.17-2006: Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices

RSS-213 Issue 2: December 2005: 2 GHz Licence-exempt Personal Communications Service Devices (LE-PCS)

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample : July 20, 2011

Testing commenced on : July 25, 2011

Testing concluded on : August 15, 2011

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ● 120V / 60 Hz o 115V / 60Hz
o 12 V DC o 24 V DC
● Other (specified in blank below)

DC 6V from adapter

2.3. Short description of the Equipment under Test (EUT)

The tested equipment is a DECT Base that complies with ETSI EN 300175. The frequencies have been reprogrammed to comply with the FCC and IC requirements to an Isochronous UPCS device after FCC Part 15D and Industry Canada RSS-213 Issue 2.

The EUT is a responding device as described in ANSI C63.17 and is designed to operate together with a DECT Handset, which is then the initiating device.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

Test Mode:

1. The EUT has been tested under normal operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel low (1921.536MHz), mid (1924.992MHz) and high (1928.448MHz) with highest data rate are chosen for full testing.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

Manufacturer :
Model No. :
Manufacturer :
Model No. :

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

This submittal(s) (test report) is intended for **FCC ID: ZUPJIC-911B** filing to comply with of the FCC Part 15D Rules and for **IC: 9808A-JIC911B** filing to comply with of the RSS-213 Issue 2.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

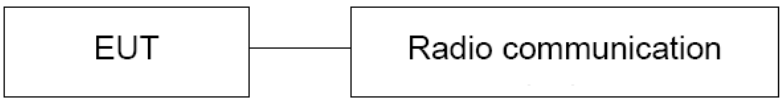
3.3. Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

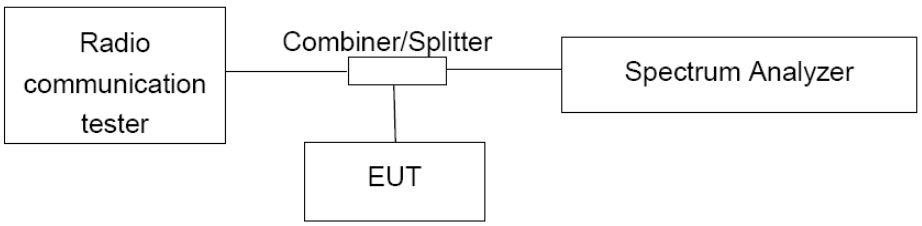
3.4. Configuration of Tested System

Frequency and Timing Measurements



This setup is used for measuring Frame repetition stability, Jitter, Carrier frequency stability at normal and extreme temperatures.

Conducted Emission Tests



This setup is used for all conducted emission tests.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory 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 Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

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

3.6. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Last Cal.	Due. Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	2011/04/14	2012/04/13
2	Spectrum Analyzer	Agilent	E4402B	2011/04/14	2012/04/13
3	Dual Directional Coupler	Agilent	778D	2011/04/14	2012/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2011/04/14	2012/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2011/04/14	2012/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2011/04/14	2012/04/13
7	High-Pass Filter	K&L	9SH10-2700/X12750-O/O	2011/04/14	2012/04/13
8	High-Pass Filter	K&L	41H10-1375/U12750-O/O	2011/04/14	2012/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2011/04/14	2012/04/13
10	AC Power Supply	IDRC	CF-500TP	2011/04/14	2012/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2011/04/14	2012/04/13
12	RF Current Probe	FCC	F-33-4	2011/04/14	2012/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2011/04/14	2012/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2011/04/14	2012/04/13
15	Amplifier	HP	8447D	2011/04/14	2012/04/13
16	SIGNAL GENERATOR	HP	8647A	2011/04/14	2012/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2011/04/14	2012/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2011/04/14	2012/04/13
19	EMI Test Receiver	R&S	ESPI	2011/04/14	2012/04/13
20	Spectrum Analyzer	Agilent	E7405A	2011/04/14	2012/04/13
21	Spectrum Analyzer	HP	8593E	2011/04/14	2012/04/13

3.7. Summary of Test Result

Requirement	FCC Paragraph #	IC RSS-213 Paragraph #	Required	Customer Declaration	Test Pass
Coordination with fixed microwave	15.307(b)	-	☒	☒	☐
Cross Reference	15.309(b)	RSS-GEN 6	☒	☐	☒
Labeling requirements	15.311,15.19(a)(3)	RSS-GEN 5.2	☒	☒	☐
Power line Conducted Emission	15.315,15.207	6.3	☐	☐	☐
Antenna Requirement	15.317, 15.203	4.1(e)	☒	☒	☐
Digital Modulation Techniques	15.319(b)	6.1	☒	☒	☐
Peak transmit Power	15.319(c)	6.5	☒	☐	☒
Power Spectral Density	15.319(d)	4.3.2.1	☒	☐	☒
Antenna gain	15.319(e)	4.1(e)	☒	☒	☐
Automatic discontinuation of transmission	15.319(f)	4.3.4	☒	☒	☐
Safety exposure levels	15.319(i)	RSS-GEN 5.5	☒	☐	☒
Emission Bandwidth	15.323(a)	6.4	☒	☐	☒
Monitoring time	15.323(c)(1)	4.3.4(b)(1)	☒	☐	☒
Monitoring threshold	15.323(c)(2)	4.3.4(b)(2)	☒	☒	☐
Maximum transmit period	15.323(c)(3)	4.3.4(b)(3)	☒	☐	☒
System acknowledgement	15.323(c)(4)	4.3.4(b)(4)	☒	☐	☒
Least Interfered Channel, LIC	15.323(c)(5)	4.3.4(b)(5)	☒	☐	☒
Random waiting	15.323(c)(6)	4.3.4(b)(6)	☒	☒	☐
Monitoring bandwidth and reaction time	15.323(c)(7)	4.3.4(b)(7)	☒	☐	☒
Monitoring antenna	15.323(c)(8)	4.3.4(b)(8)	☒	☒	☐
Monitoring threshold relaxation	15.323(c)(9)	4.3.4(b)(9)	☒	☐	☒
Duplex system LBT	15.323(c)(10)	4.3.4(b)(10)	☒	☒	☐
Co-located device LBT	15.323(c)(11)	4.3.4(b)(11)	☒	☒	☐
Fair access	15.323(c)(12)	4.3.4(b)(12)	☒	☒	☐
Emissions inside and outside the subband	15.323(d)	6.7	☒	☐	☒
Frame period and jitter	15.323(e)	4.3.4(c)	☒	☐	☒
Carrier frequency stability	15.323(f)	6.2	☒	☐	☒

4. TEST CONDITIONS AND RESULTS

4.1. Antenna Requirement

Applicable Standard

According to CFR47 § 15.203 & RSS-213 4.1(e), an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

This product has an integrated antennas arrangement; please refer to the internal photos. Their maximum gains are 0.5 dBi, fulfill the requirement of this section.

Result: Compliant.

4.2. Antenna Gain

Applicable Standard

According to CFR 47 §15.319 (e):

The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

Result: The antenna gain is less than 0.5 dBi provided by manufacturer, which is less than 3 dBi.

4.3. RF Exposure

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	842/f	2.19/f	*(180/f\2\)	30
30-300	27.5	0.073	0.2	30
300-1500.	/	/	f/1500	30
1500-100,000.	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Test Result:

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

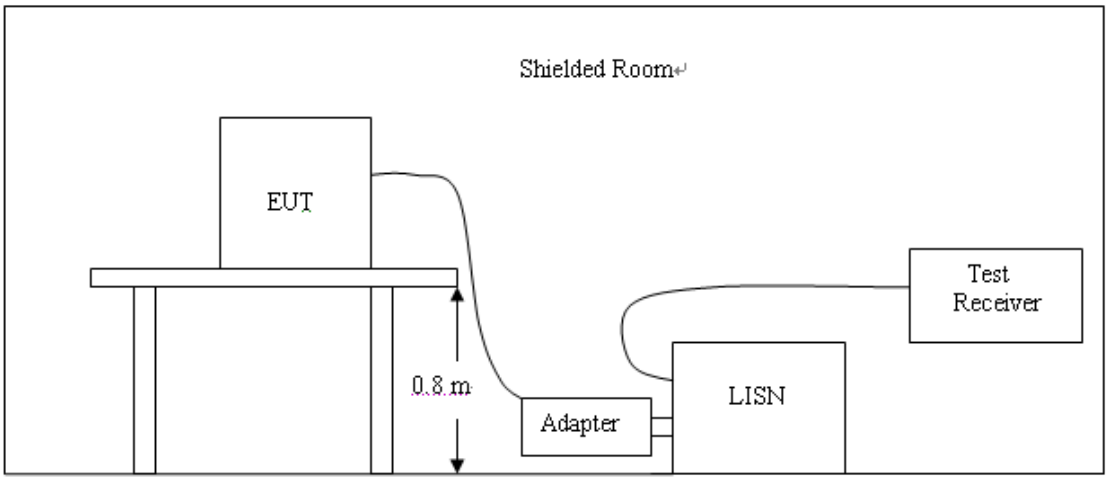
Maximum peak output power at antenna input terminal (dBm): 20.31
Maximum peak output power at antenna input terminal (mW): 107.40
Prediction distance (cm): 20
Prediction frequency (MHz): 1928.448
Antenna Gain, typical (dBi): 0.5
Maximum Antenna Gain (numeric): 1.122
The worst case is power density at predication frequency at 20 cm (mW/cm^2): 0.024
MPE limit for general population exposure at prediction frequency (mW/cm^2): 1.0

0.024 (mW/cm^2) < 1 (mW/cm^2)

Result: Pass

4.4. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμv)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

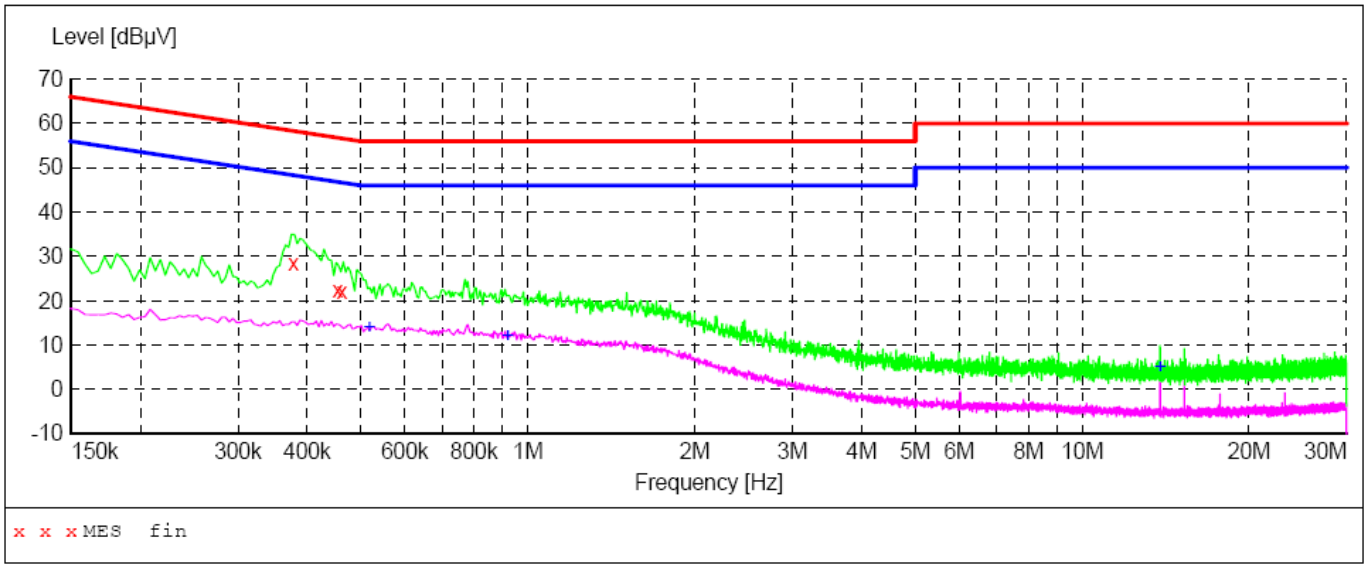
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

RSS-213 6.3 The limits of AC power line conducted emissions are given is RSS-Gen, Section 7.

The RBW/VBW for 150KHz to 30MHz: 9KHz

TEST RESULTS

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



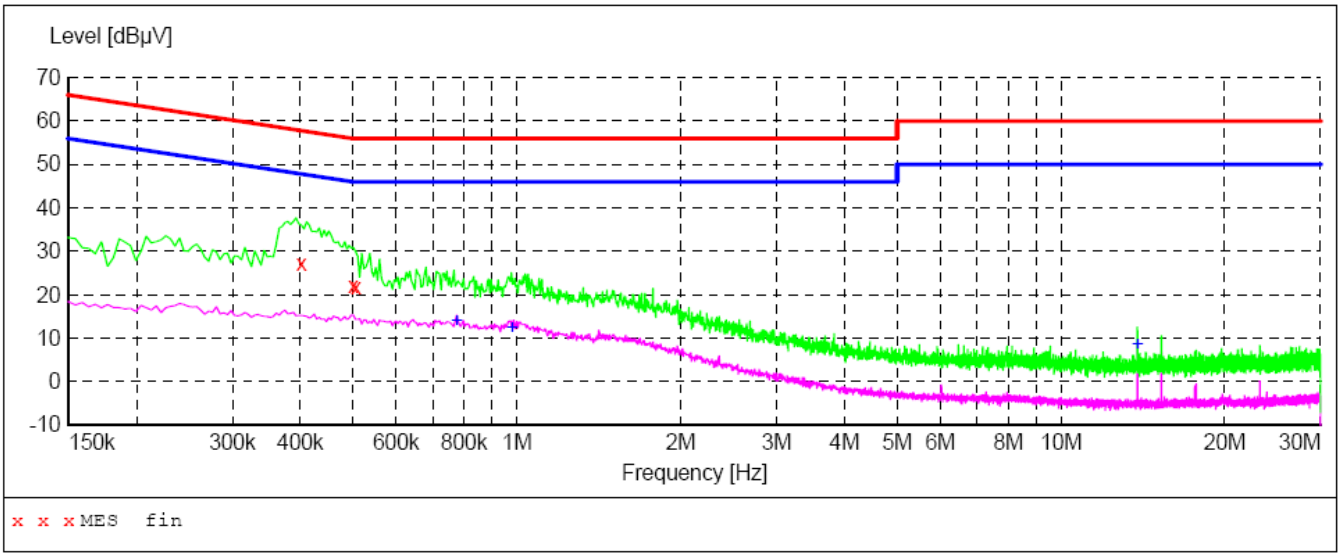
MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.378000	28.60	10.2	58	29.7	QP	N	GND
0.454000	22.30	10.2	57	34.5	QP	N	GND
0.462000	22.00	10.2	57	34.7	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.518000	14.00	10.2	46	32.0	AV	N	GND
0.920000	12.20	10.3	46	33.8	AV	N	GND
13.826000	5.00	10.6	50	45.0	AV	N	GND

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



MEASUREMENT RESULT:

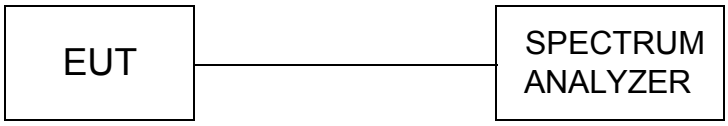
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.402000	27.10	10.2	58	30.7	QP	L1	GND
0.500000	22.10	10.2	56	33.9	QP	L1	GND
0.506000	21.70	10.2	56	34.3	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.776000	14.00	10.2	46	32.0	AV	L1	GND
0.980000	12.60	10.3	46	33.4	AV	L1	GND
13.826000	8.50	10.6	50	41.5	AV	L1	GND

4.5. Emission Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

Resolution bandwidth	1.0% of the emission bandwidth (as close as possible)
Video bandwidth	>3 times the resolution bandwidth
Number of sweeps	sufficient to stability the trace
Detection mode	peak detection with maximum hold

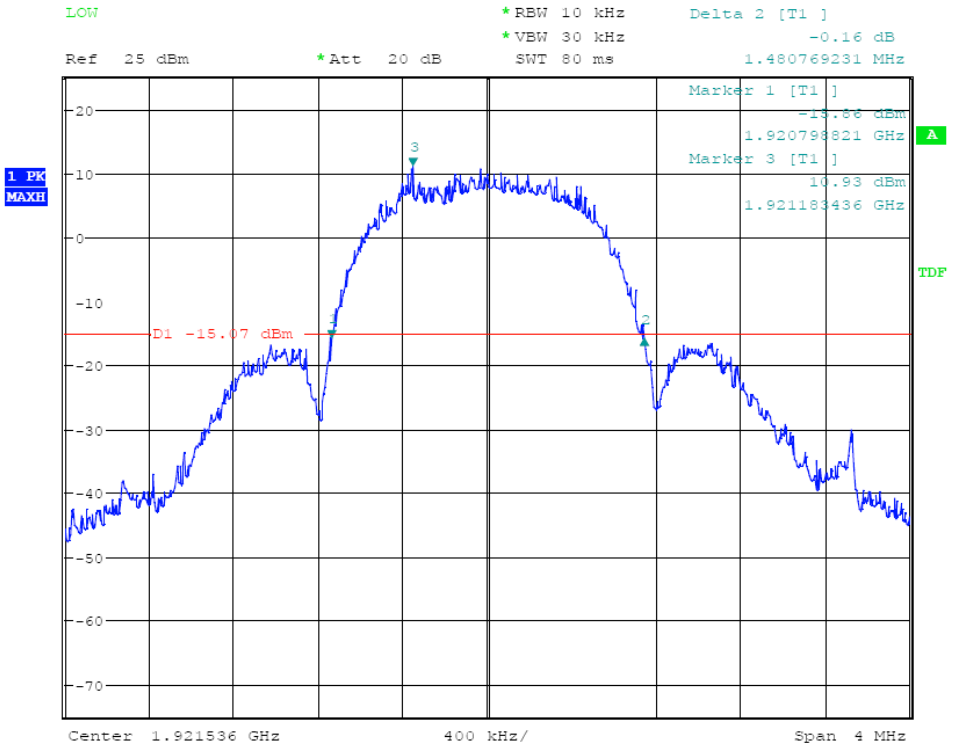
LIMIT

50 kHz < OBW <2.5 MHz

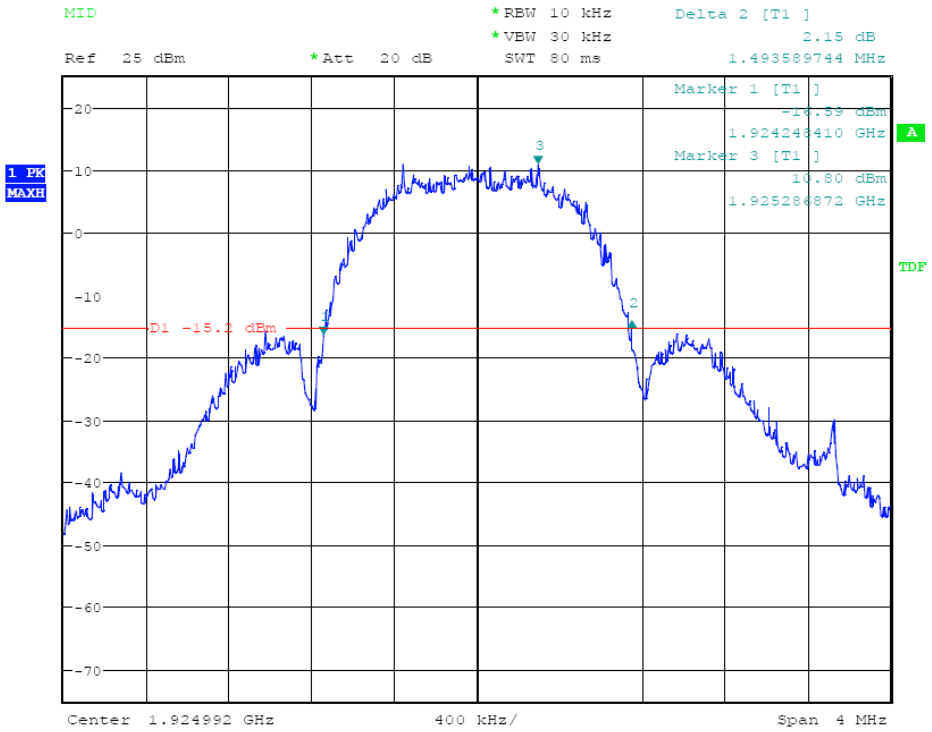
TEST RESULTS

CHANNEL	Center Frequency (MHz)	26 dB Bandwidth (MHz)	MINIMUM LIMIT (MHz)
Low	1921.536	1.48	50 kHz < OBW <2.5 MHz
Middle	1924.992	1.49	50 kHz < OBW <2.5 MHz
High	1928.448	1.48	50 kHz < OBW <2.5 MHz

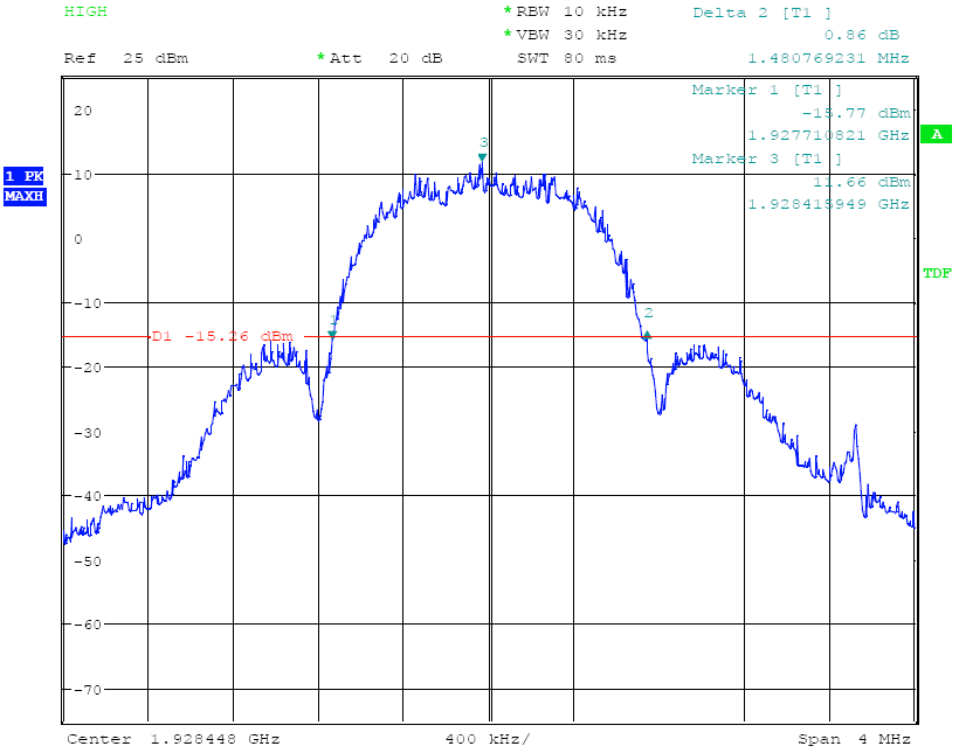
Low Channel:



Middle Channel:



High Channel:



4.6. Peak Transmit Power

Applicable Standard

The peak power output as measured over an interval of time equal to the transmission-burst duration of the device under all conditions of modulation. [47 CFR 15, subpart D, 15.303 (f)].

FCC 15.319(c) & (e) same as RSS-213 6.5
(c) Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz. Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. 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 peak measurement for the emission in question over the full bandwidth of the channel.

(e) The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

RSS-213 4.3.1 Peak Transmit Power
The transmitter shall be modulated with digital sequence(s) representative of those encountered in a real system operation. The peak transmit power shall be measured and recorded.

Test Procedure

Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

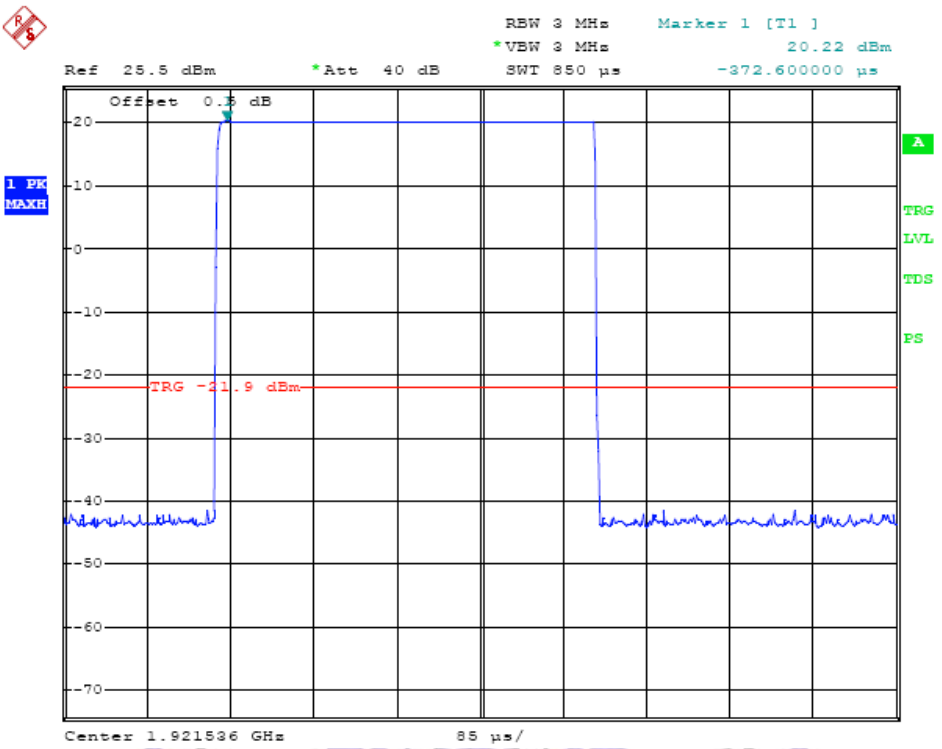
RBW	≥ Emission bandwidth
Video bandwidth	≥ RBW
Span	Zero
Center frequency	Nominal center frequency of channels
Amplitude scale	Log (linear may be used if analyzer has sufficient linear dynamic range and accuracy)
Detection	Peak detection
Trigger	Video
Sweep rate	Sufficiently rapid to permit the transmit pulse to be resolved accurately

Test Results

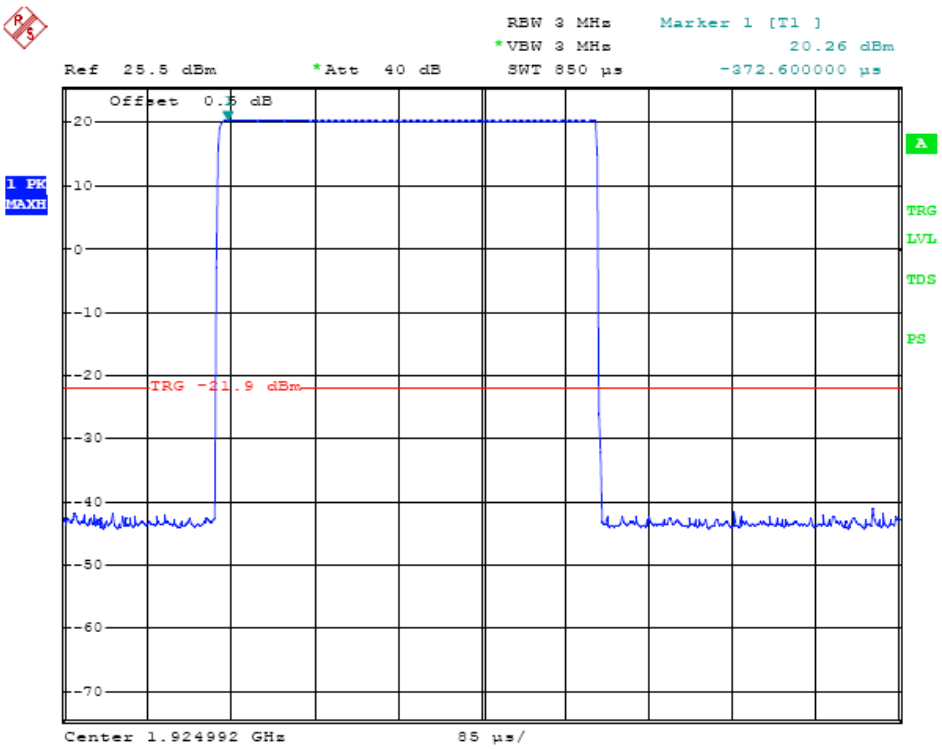
Frequency(MHz)	Peak Transmit Power (dBm)	Peak Power Limit (dBm)	PASS / FAIL
1921.536	20.22	20.87	PASS
1924.992	20.26	20.87	PASS
1928.448	20.31	20.87	PASS

Limit: Conducted: 5 Log (B) – 10 = 20.87 dBm
Where B is the emission bandwidth in Hz measured at 26 dBm.

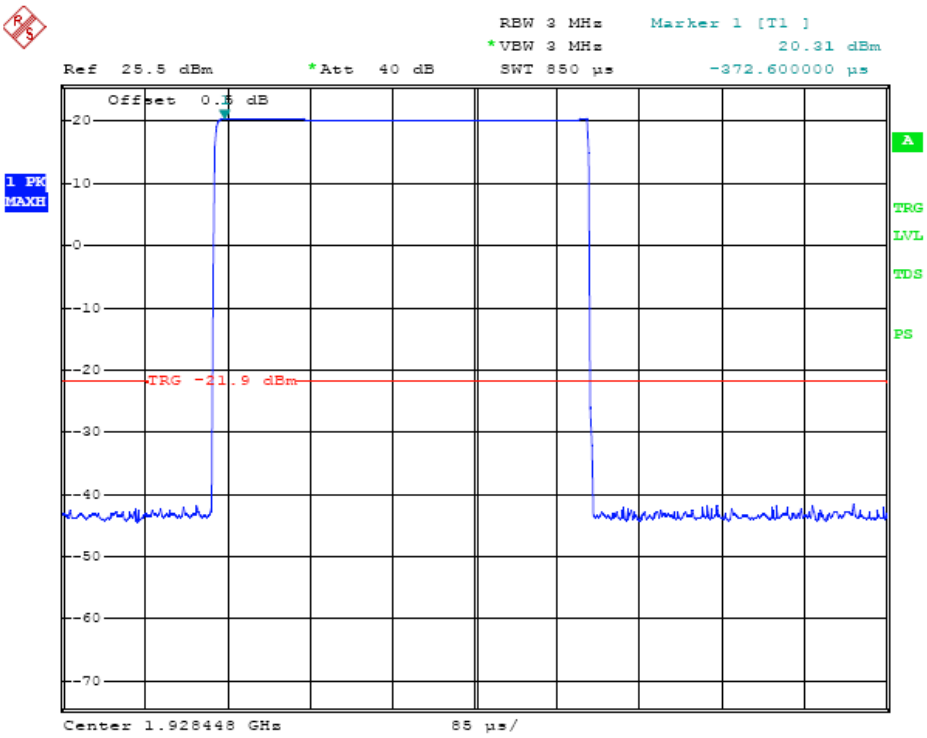
Low Channel



Middle Channel



High Channel



4.7. Power Spectral Density

Applicable Standard

The average pulse energy in a 3 kHz bandwidth is divided by the pulse duration.

The power spectral density shall not exceed 3mW in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

The power spectral density is measured in accordance with ANSI C63.17.2006 Clause 6.1.5.

RSS-213 4.3.2.1 Peak Power Spectral Density Test

This test is to measure the occupied bandwidth and the maximum power spectral density. With the transmitter modulated as in Section 4.3.1, obtain spectrum plots. Record the maximum spectral level of the modulated signal as the reference spectral level (dBs). Measure and record the 99% bandwidth. Measure and record the power spectral density per 3 kHz.

RSS-213 6.6 Power Spectral Density

The peak-hold power spectral density shall not exceed 12 milliwatts per any 3 kHz bandwidth. As an alternative to the peak-hold power spectral density, the time-averaged power spectral density may be measured and it shall not exceed 3 milliwatts per any 3 kHz bandwidth.

Test Configuration

Test Procedure

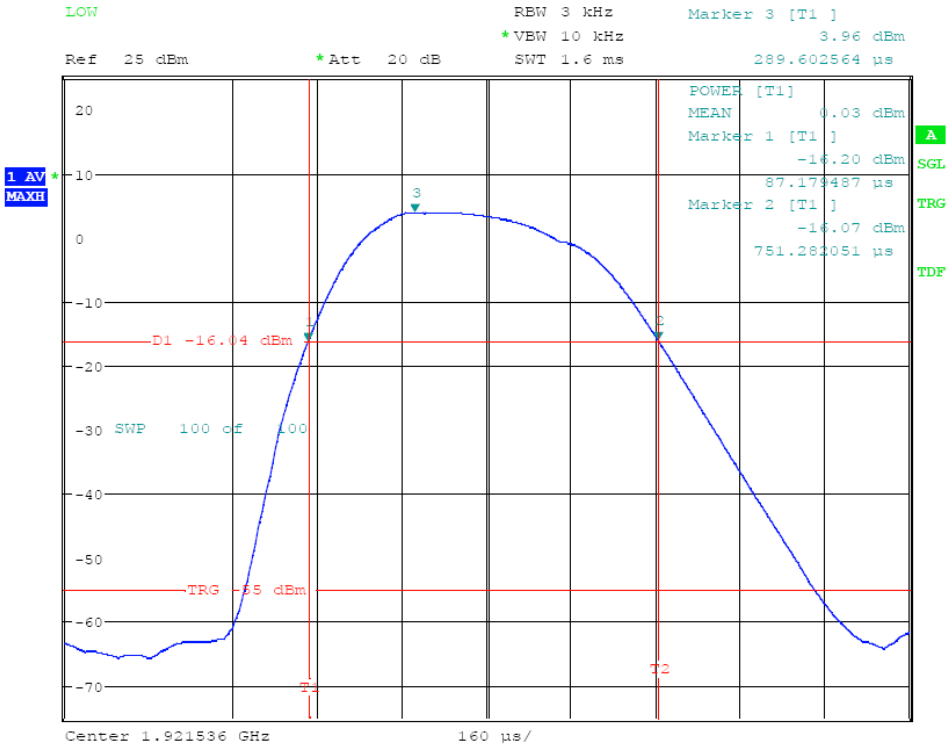
Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

RBW	3kHz
Video bandwidth	≥ 3 × RBW
Span	Zero span at frequency with the maximum level (frequency determined in 6.1.3 if the same type of signal (continuous versus burst) was used in 6.1.3)
Center frequency	Spectral peak as determined in 6.1.3
Sweep time	For burst signals, sufficient to include essentially all of the maximum length burst at the output of a 3 kHz filter (e.g., maximum input burst duration plus 600 μs). For continuous signals, 20 ms.
Amplitude scale	Log power
Detection	Sample detection and averaged for a minimum of 100 sweeps
Trigger	External or internal

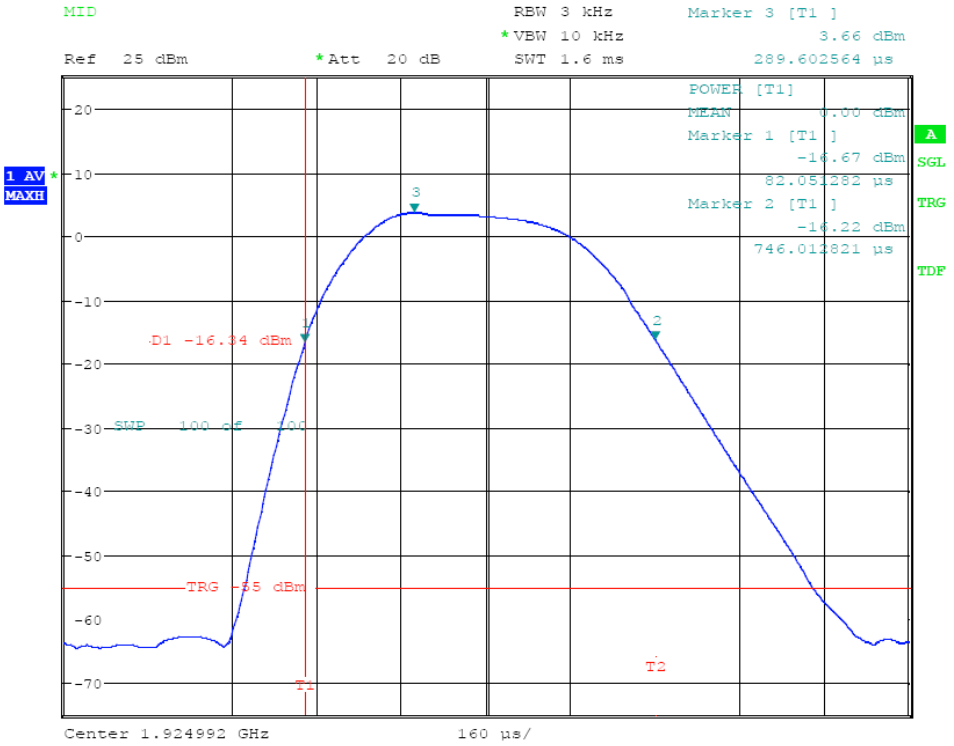
Test Results

Channel	Power Spectral Density (dBm)	Maximum limit (dBm)	PASS / FAIL
1921.536	0.03	4.77	PASS
1924.992	0.00	4.77	PASS
1928.448	0.05	4.77	PASS

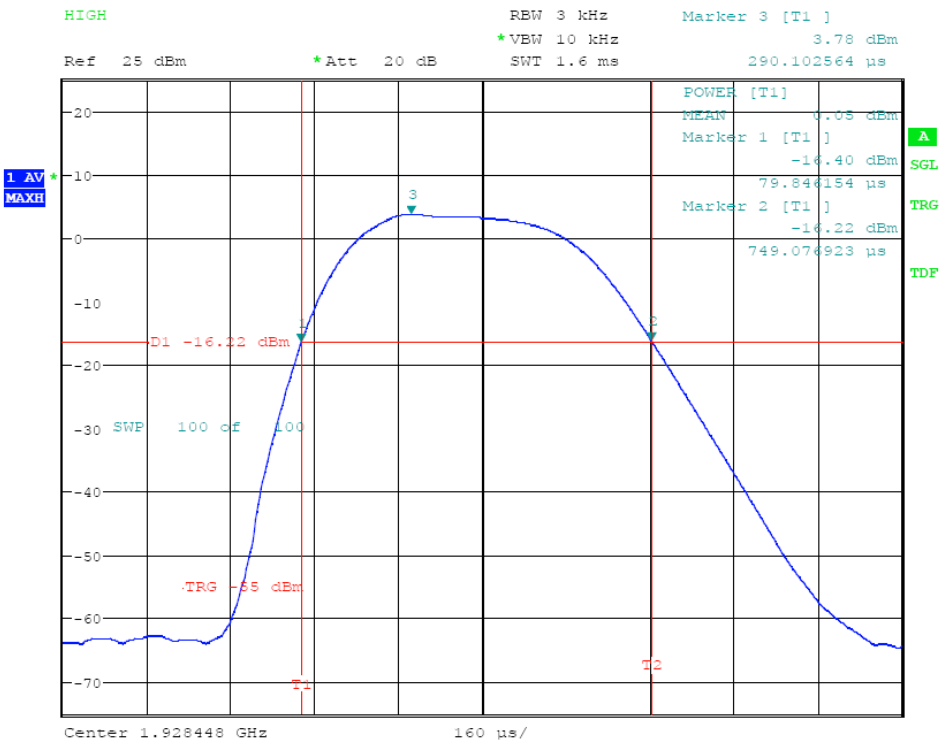
Low Channel



Middle Channel



High Channel



4.8. Emissions inside and outside the subband

Applicable Standard

FCC 15.323(d) Emissions inside the sub-band must comply with the following emission mask:
Emissions inside the subband same as RSS-213 6.7.2
1. In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device;
2. in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator;
3. in the bands between 3B and the sub-band edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator.

Where B = emission bandwidth

Emissions outside the subband same as RSS-213 6.7.1
1. 30 dB between the sub-band and 1.25 MHz above or below the sub-band;
2. 50 dB between 1.25 and 2.5 MHz above or below the sub-band;
3. 60 dB at 2.5 MHz or greater above or below the sub-band.

Test Configuration

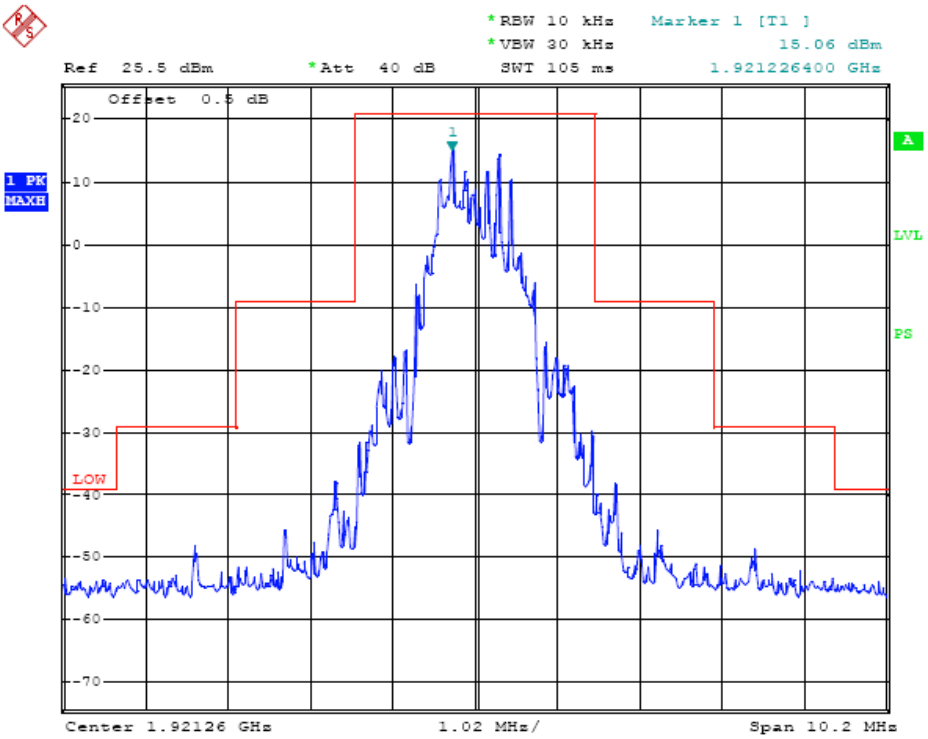
Test Procedure

Measurement method according to ANSI C63.17 2006 paragraph 6.1.6

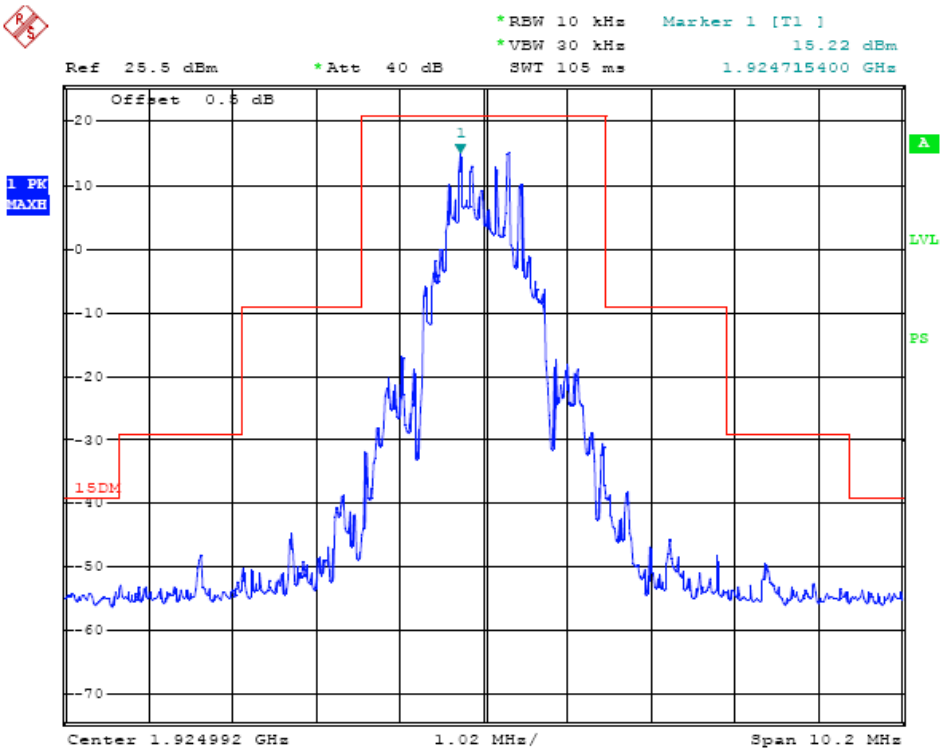
Test Results

Note: Photos of worst-case display follow:

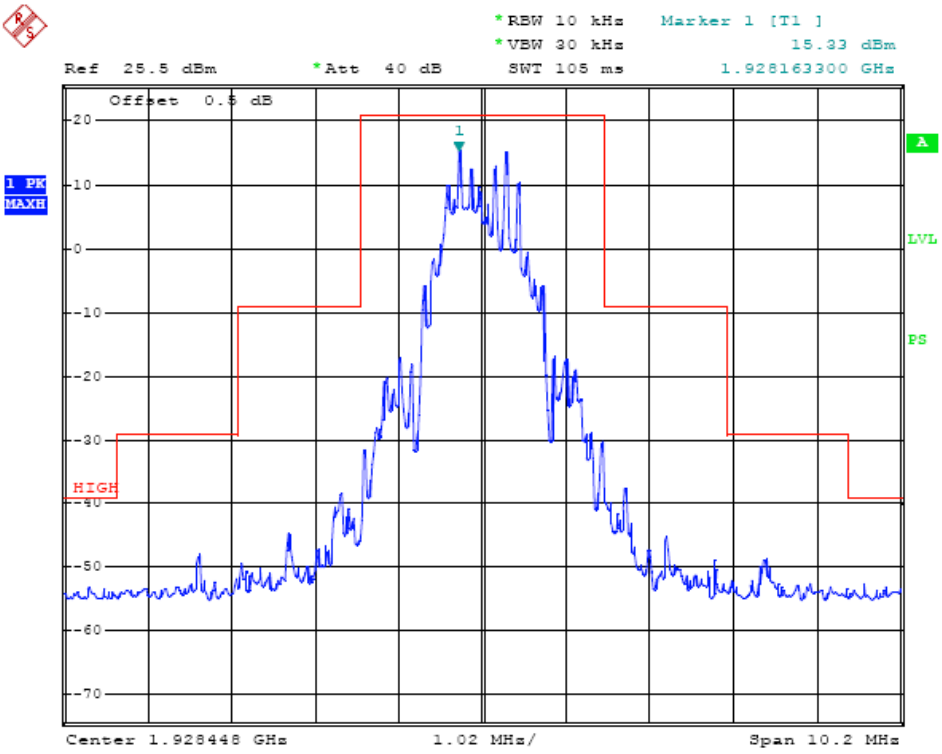
Low Channel (Unwanted Emission inside the Sub-band)



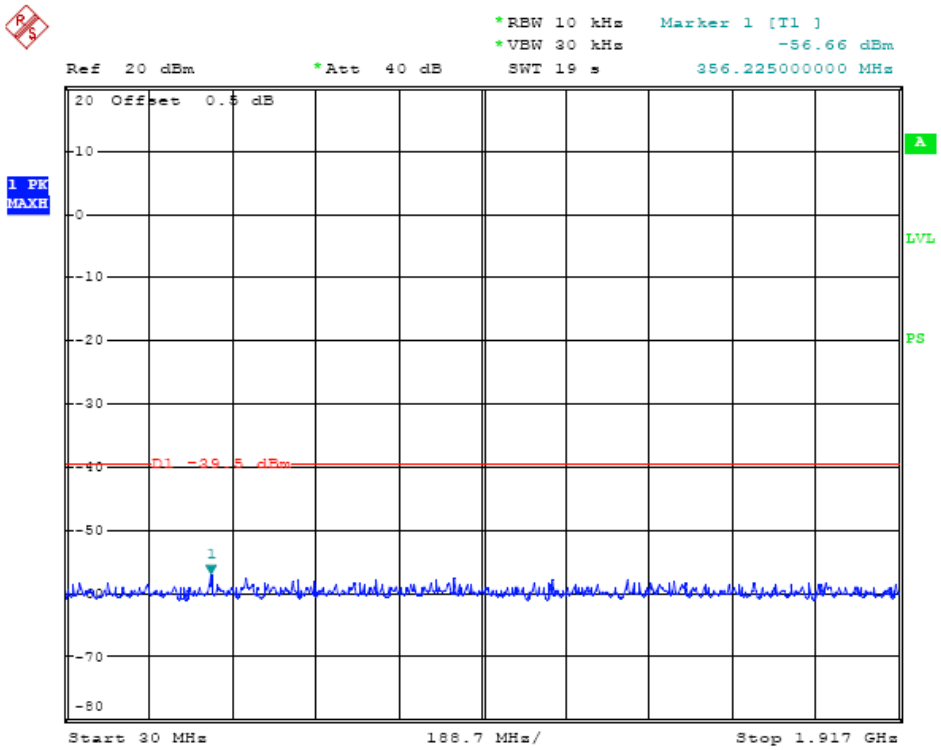
Middle Channel (Unwanted Emission inside the Sub-band)

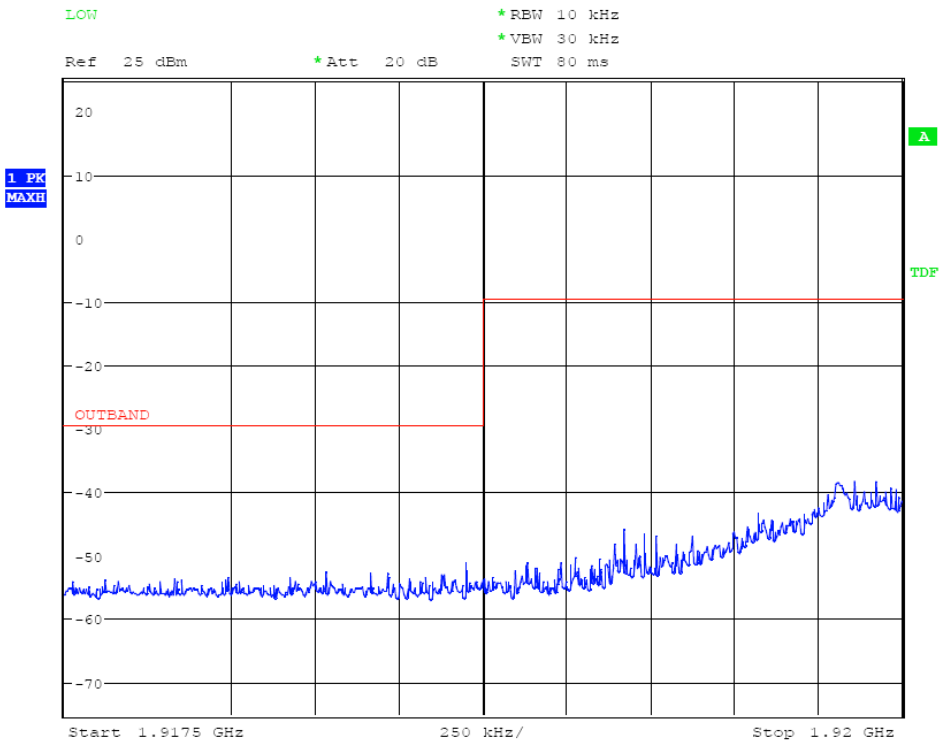


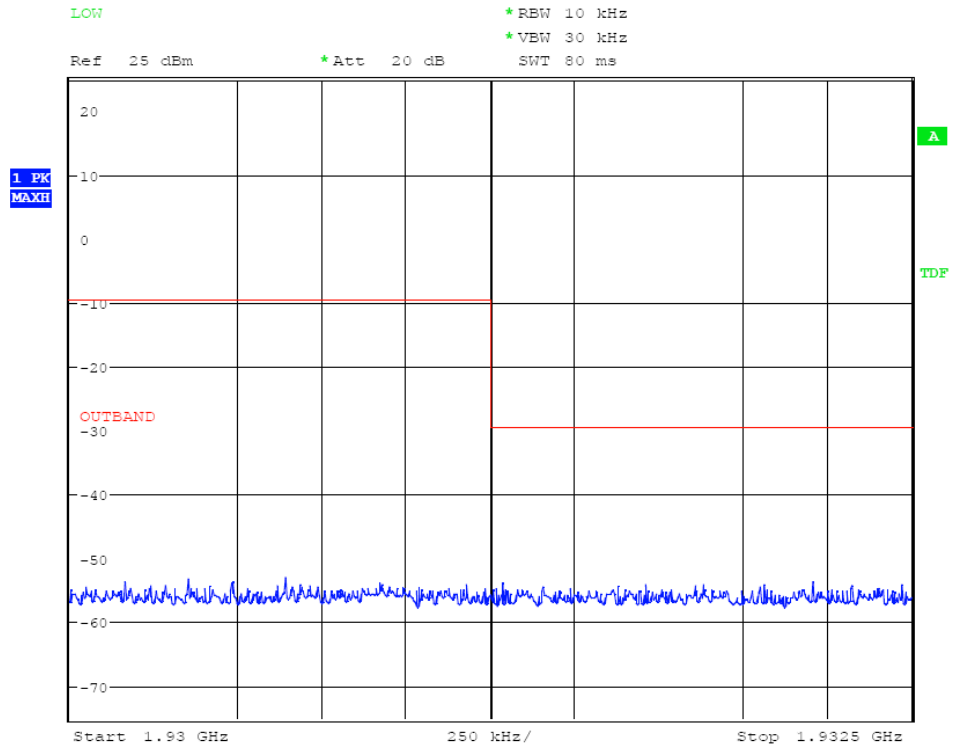
High Channel (Unwanted Emission inside the Sub-band)

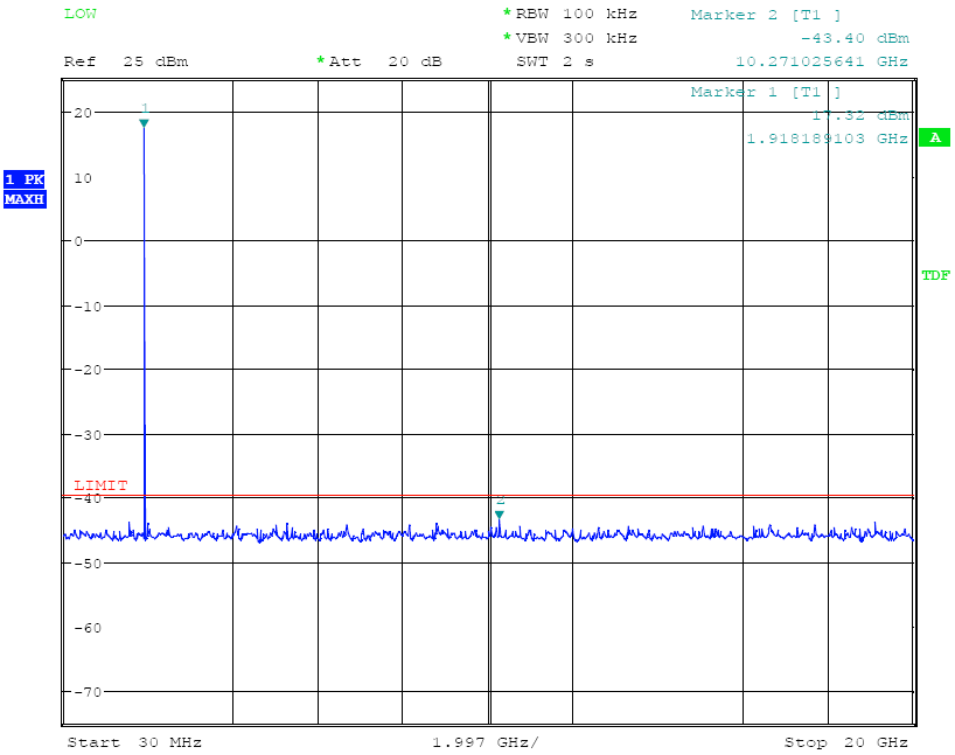


Low Channels (Unwanted Emission outside the Sub-band)

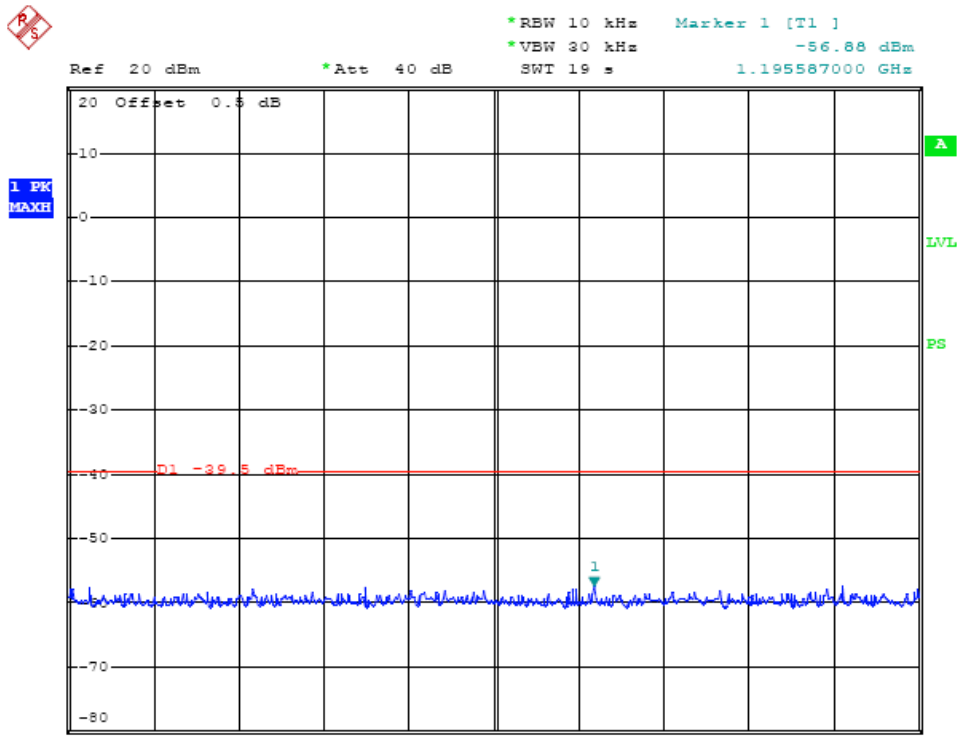


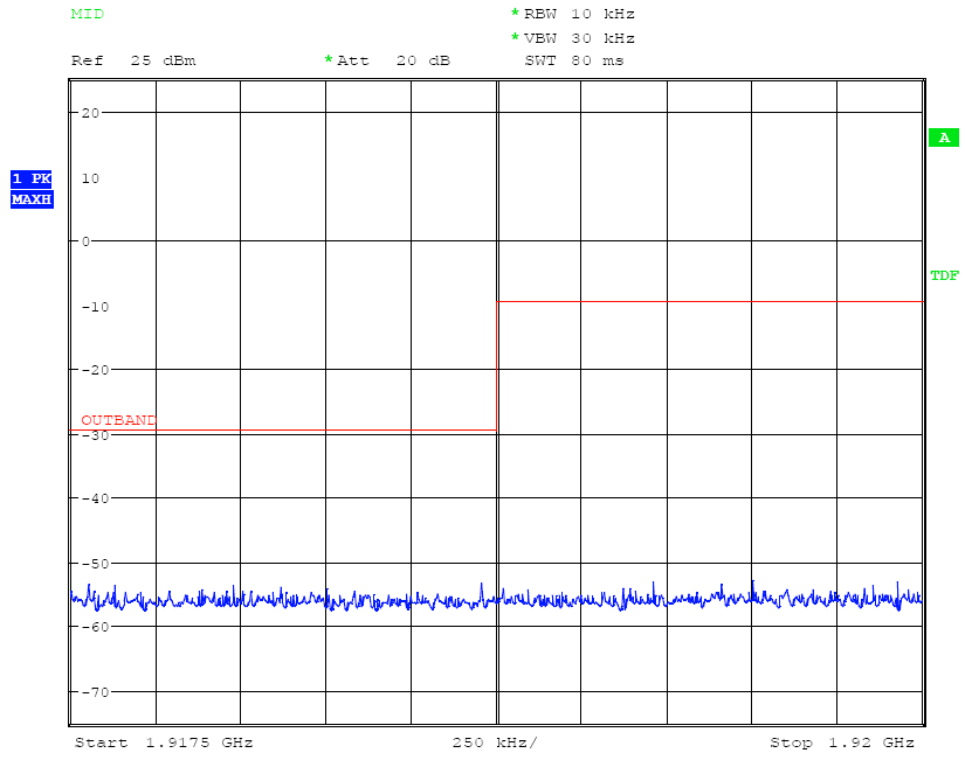


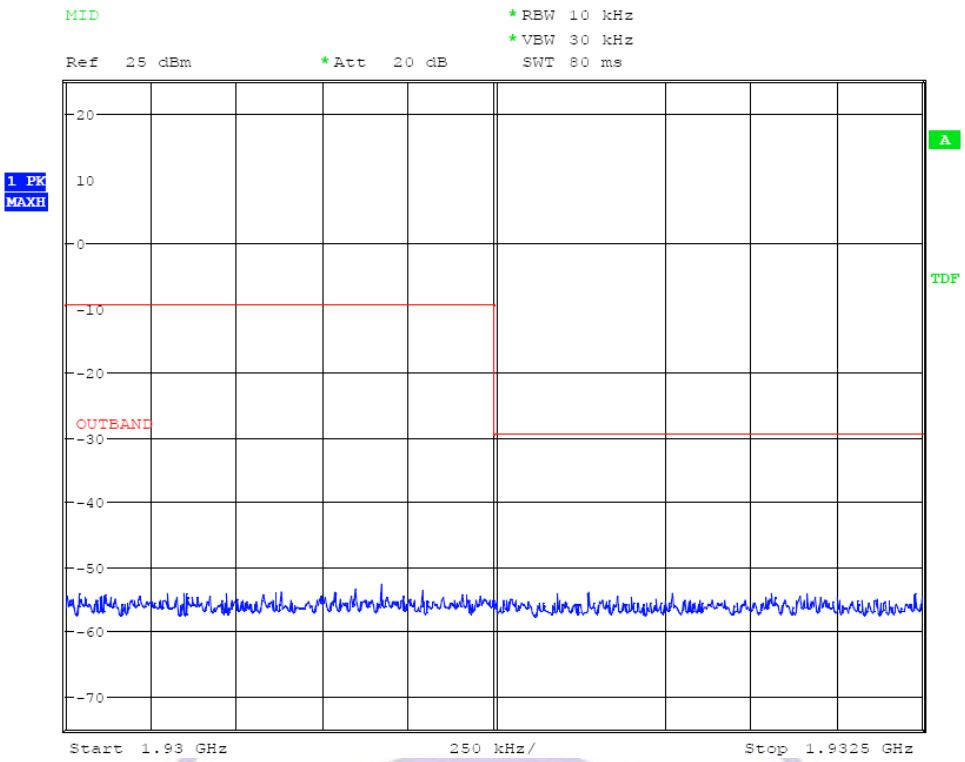

LOW
*RBW 10 kHz
*VBW 30 kHz
Ref 25 dBm
*Att 20 dB
SWT 80 ms
1 PK
MAXH
A
TDF
OUTBAND
Start 1.93 GHz
250 kHz/
Stop 1.9325 GHz

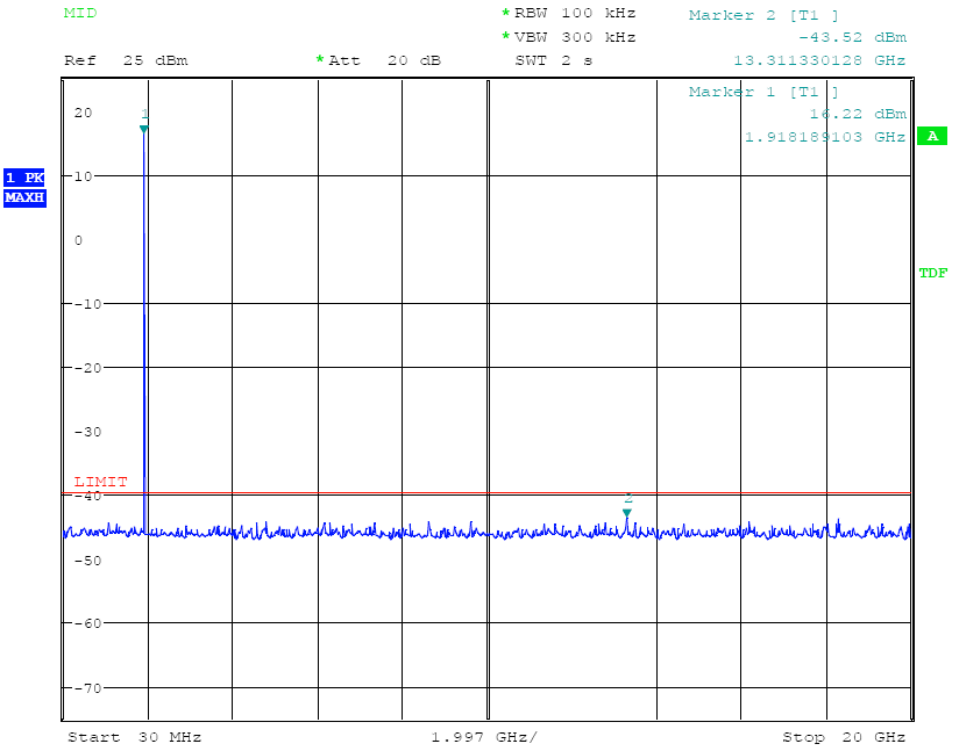

LOW
*RBW 100 kHz
*VBW 300 kHz
Ref 25 dBm
*Att 20 dB
SWT 2 s
Marker 2 [T1]
-43.40 dBm
10.271025641 GHz
Marker 1 [T1]
1.91818 GHz
1 PK
MAXH
A
TDF
LIMIT
Start 30 MHz
1.997 GHz/
Stop 20 GHz

Middle Channels (Unwanted Emission outside the Sub-band)

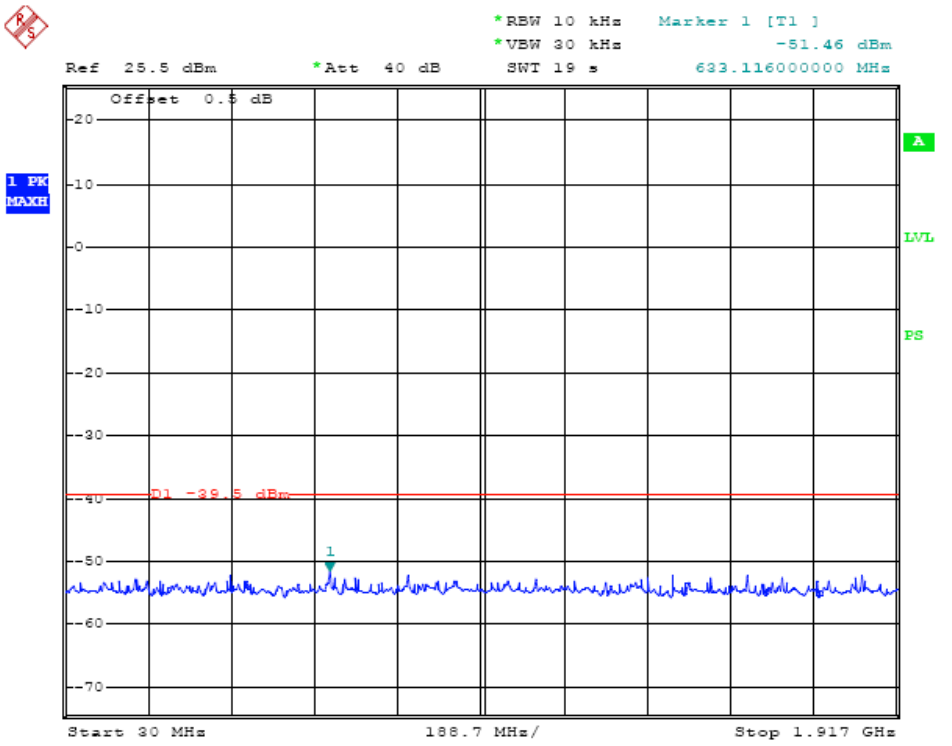


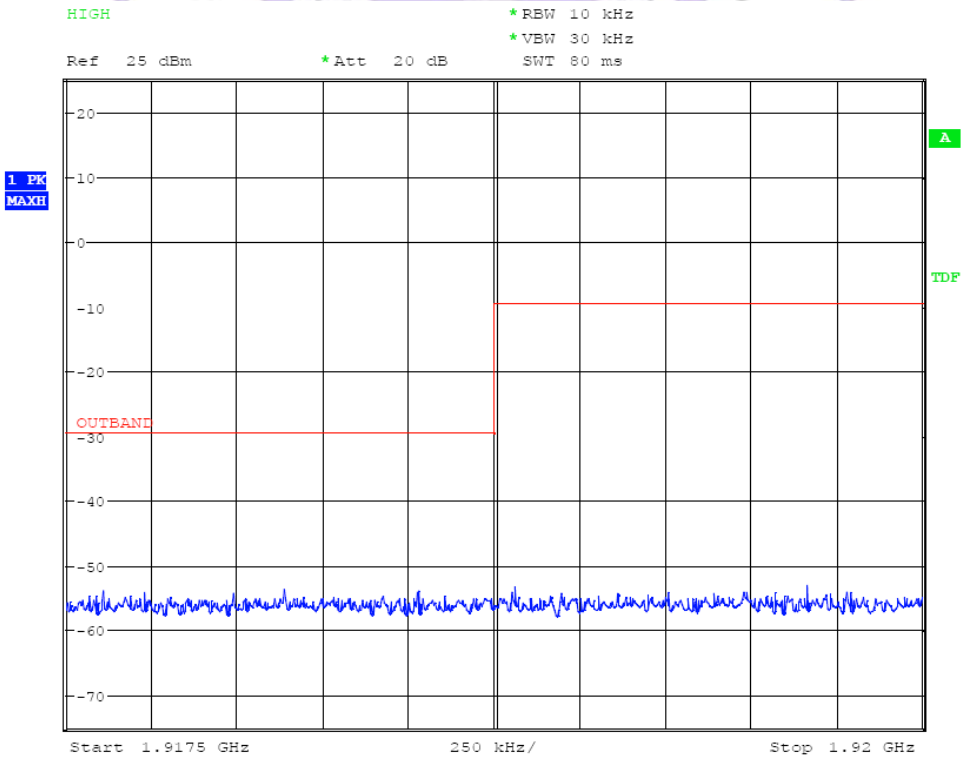


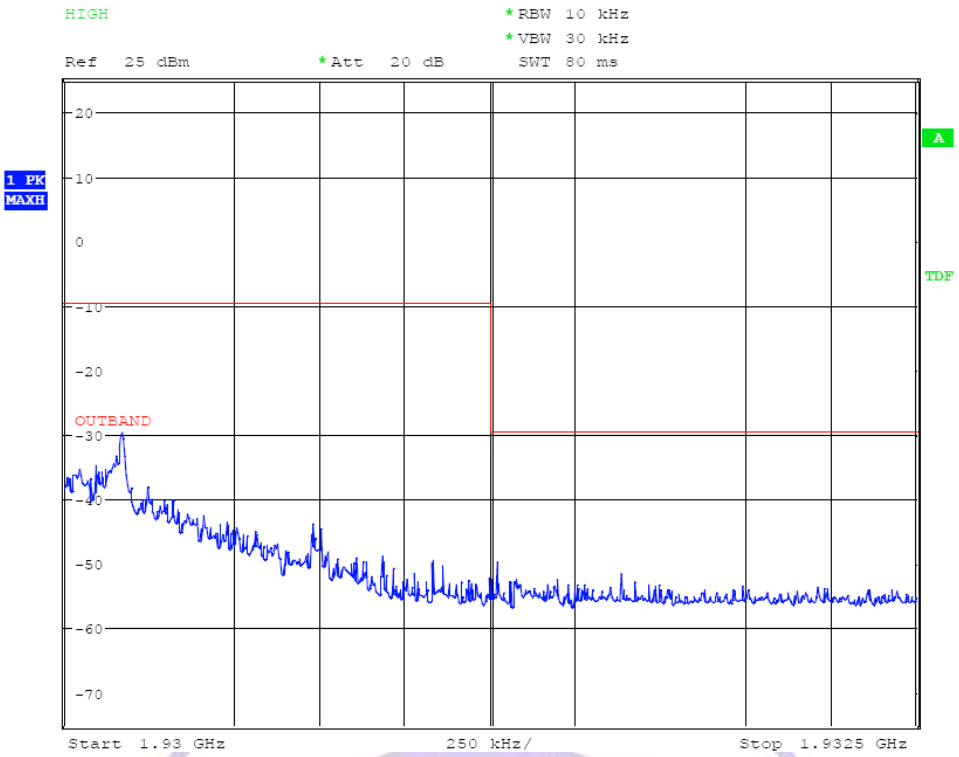

MID
*RBW 10 kHz
*VBW 30 kHz
Ref 25 dBm
*Att 20 dB
SWT 80 ms
1 PK
MAXH
A
TDF
OUTBAND
Start 1.93 GHz
250 kHz/
Stop 1.9325 GHz

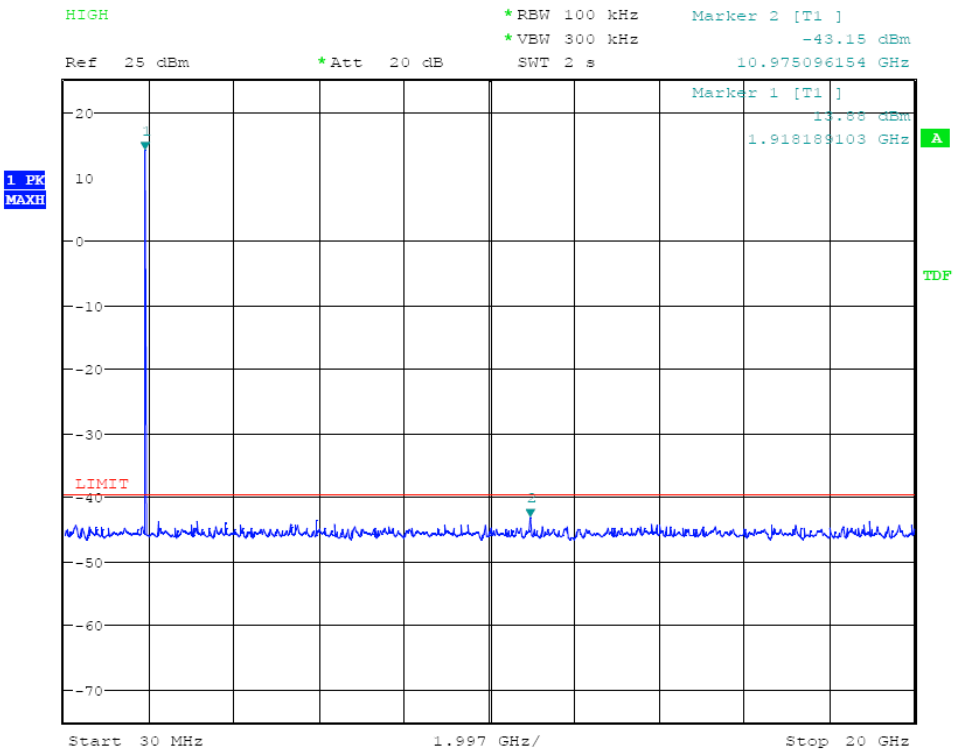

MID
*RBW 100 kHz
*VBW 300 kHz
Ref 25 dBm
*Att 20 dB
SWT 2 s
Marker 2 [T1]
-43.52 dBm
13.311330128 GHz
Marker 1 [T1]
16.22 dBm
1.918189103 GHz
1 PK
MAXH
A
TDF
LIMIT
Start 30 MHz
1.997 GHz/
Stop 20 GHz

High Channels (Unwanted Emission outside the Sub-band)





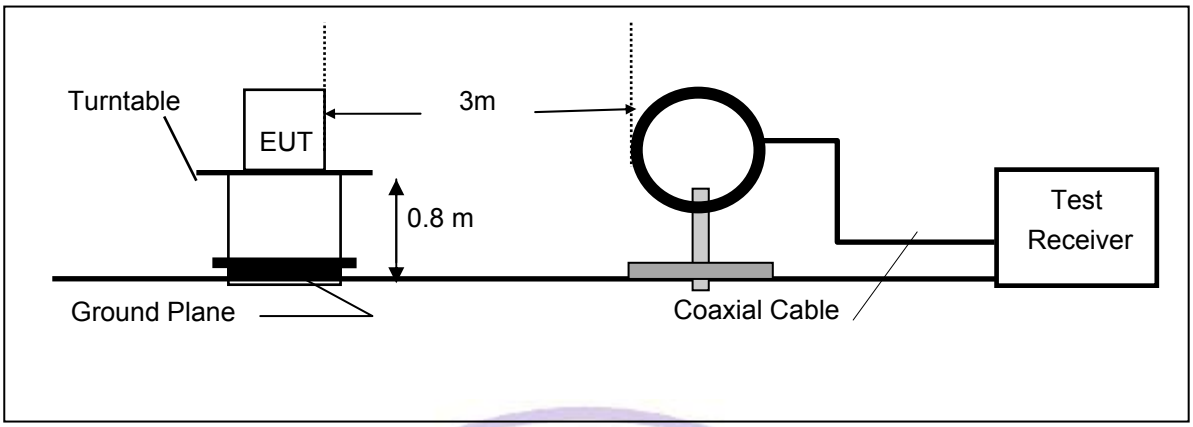

HIGH
*RBW 10 kHz
*VBW 30 kHz
Ref 25 dBm
*Att 20 dB
SWT 80 ms
1 PK
MAXH
A
TDF
OUTBAND
Start 1.93 GHz
250 kHz/
Stop 1.9325 GHz


HIGH
*RBW 100 kHz
*VBW 300 kHz
Ref 25 dBm
*Att 20 dB
SWT 2 s
Marker 2 [T1]
-43.15 dBm
10.975096154 GHz
Marker 1 [T1]
1.918189103 GHz
1 PK
MAXH
A
TDF
LIMIT
Start 30 MHz
1.997 GHz/
Stop 20 GHz

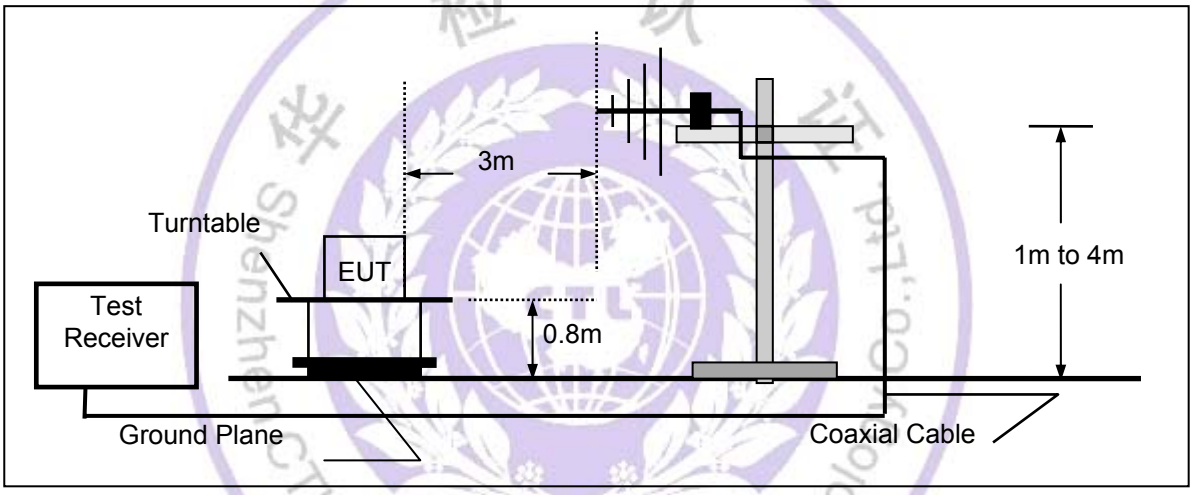
4.9. Radiated Emission

Test Configuration

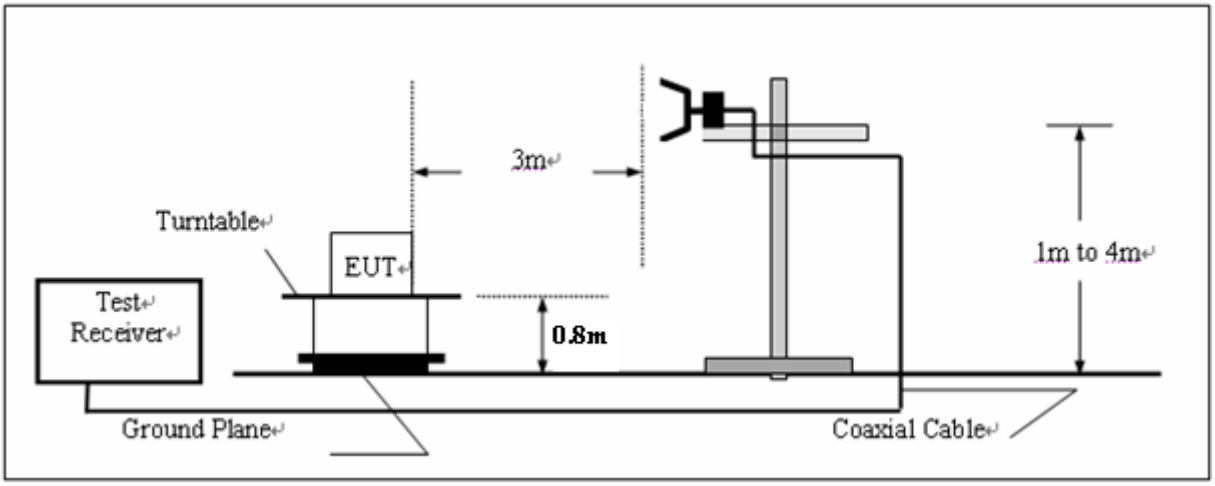
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

TEST PROCEDURE

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30MHz-1GHz and peak and Average detection modes for frequencies above 1GHz.

LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

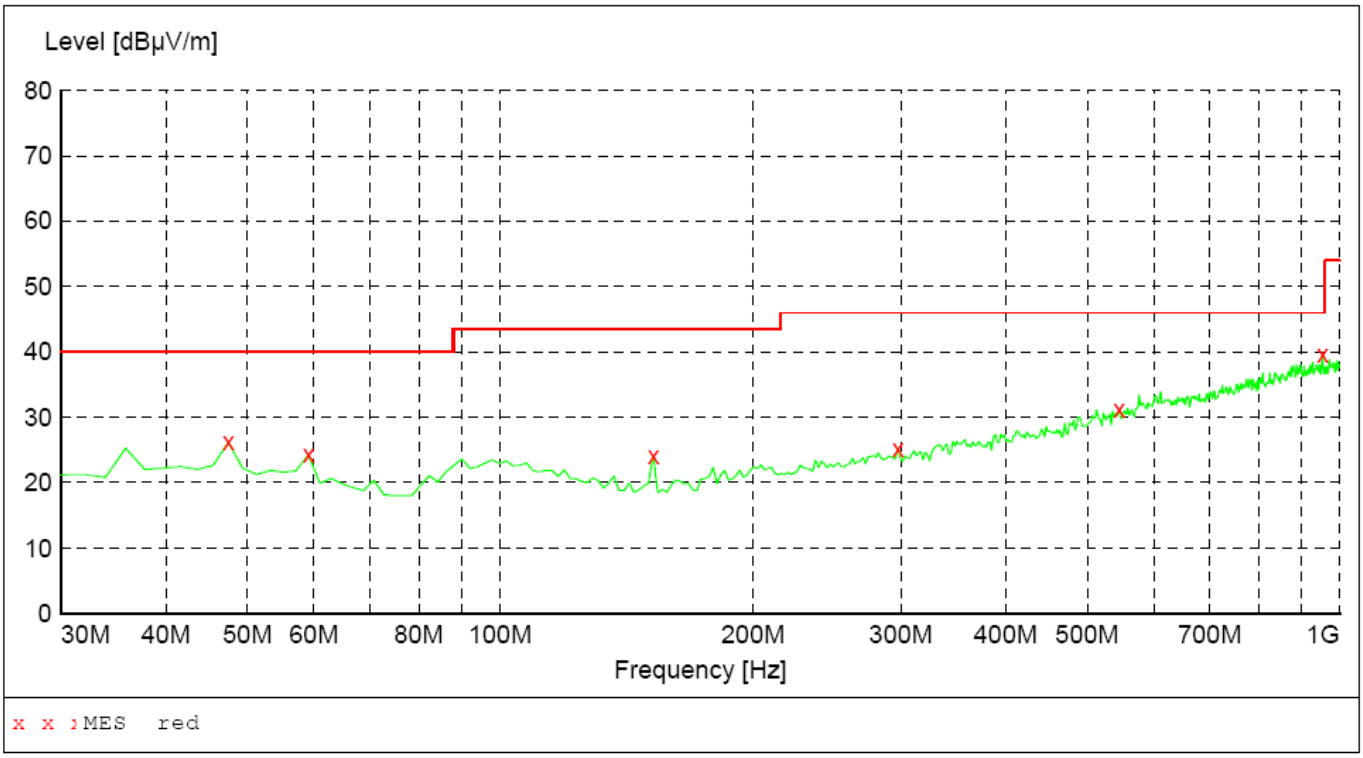
The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.17 - 2006. The specification used was the FCC 15.209 and FCC 15.319(g) limits.

TEST RESULTS

Below 1GHz:
The radiated measurement are performed the each channel (low/mid/high), the datum recorded below (the middle channel) is the worst case for all the test mode and channel.

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

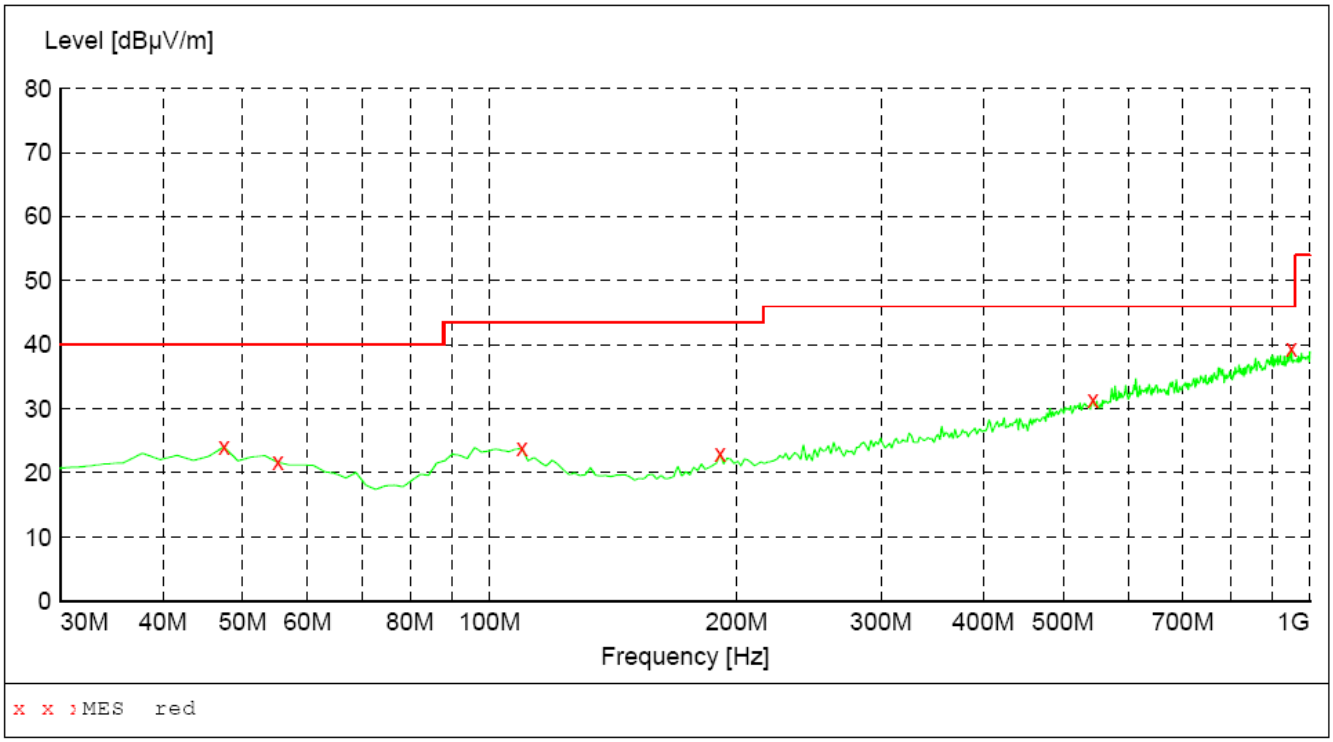


MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	26.20	15.8	40.0	13.8	---	100.0	0.00	VERTICAL
59.100000	24.30	14.6	40.0	15.7	---	100.0	0.00	VERTICAL
152.220000	24.20	13.4	43.5	19.3	---	100.0	0.00	VERTICAL
297.720000	25.20	18.7	46.0	20.8	---	100.0	0.00	VERTICAL
546.040000	31.20	25.1	46.0	14.8	---	100.0	0.00	VERTICAL
953.440000	39.60	31.8	46.0	6.4	---	100.0	0.00	VERTICAL

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT:

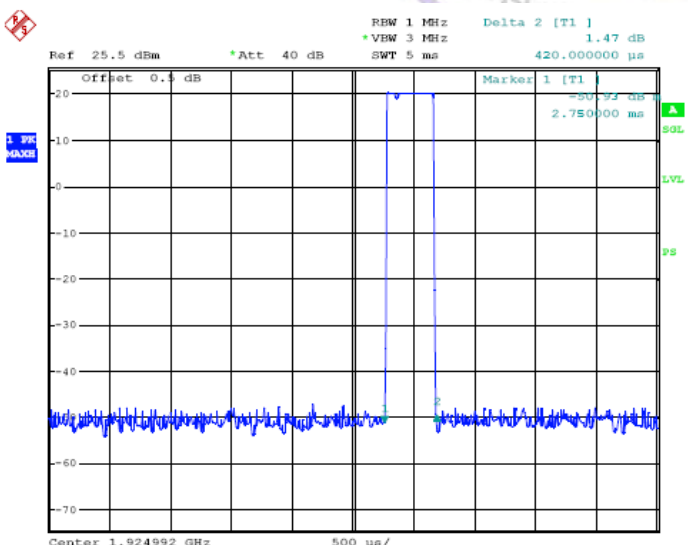
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	24.10	15.8	40.0	15.9	---	100.0	0.00	HORIZONTAL
55.220000	21.70	15.6	40.0	18.3	---	100.0	0.00	HORIZONTAL
109.540000	23.80	16.8	43.5	19.7	---	300.0	0.00	HORIZONTAL
191.020000	23.00	16.1	43.5	20.5	---	300.0	0.00	HORIZONTAL
544.100000	31.50	25.0	46.0	14.5	---	100.0	0.00	HORIZONTAL
949.560000	39.50	31.8	46.0	6.5	---	100.0	0.00	HORIZONTAL

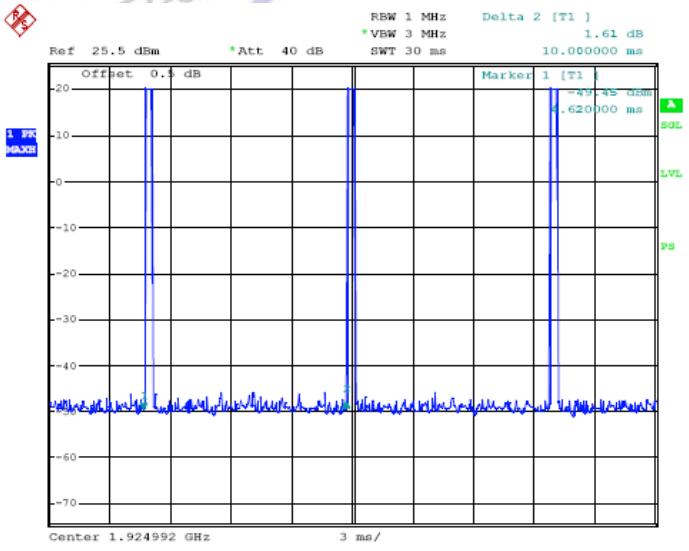
Above 1GHz:

Freq. (MHz)	S.A. Reading (dBμV/m)	Detector PK/QP/AV	Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBuV/m)	FCC Part 15.319(g)/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)	Remarks
Low Channel												
3843.072	51.42	PK	335	1.4	V	32.10	7.56	31.60	59.48	74	14.52	Harmonic
5764.608	46.23	PK	265	1.5	V	34.50	9.69	32.60	57.82	74	16.18	Harmonic
5764.608	45.62	PK	325	1.5	H	34.50	9.69	32.60	57.21	74	16.79	Harmonic
3843.072	47.21	PK	275	1.4	H	32.10	7.56	31.60	55.27	74	18.73	Harmonic
1494.18	48.02	PK	275	1.0	V	25.80	5.37	34.60	44.59	74	29.41	Spurious
1077.55	49.08	PK	282	1.0	H	25.10	4.78	35.00	43.96	74	30.04	Spurious
Middle Channel												
2727.450	48.40	PK	110	1.1	H	32.10	7.90	33.80	54.60	74	19.40	Spurious
5774.976	46.81	PK	237	1.1	V	34.50	6.5	33.60	54.21	74	19.79	Harmonic
3849.984	51.05	PK	24	1.4	V	32.10	4.32	33.70	53.77	74	20.23	Harmonic
5774.976	45.85	PK	260	1.5	H	34.50	6.5	33.60	53.25	74	20.75	Harmonic
3849.984	47.92	PK	179	1.5	H	32.10	4.32	33.70	50.64	74	23.36	Harmonic
1640.280	48.18	PK	235	1.1	V	27.80	5.62	34.20	47.4	74	26.6	Spurious
High Channel												
6773.54	46.51	PK	310	1.0	V	37.80	9.52	33.60	60.23	74	13.77	Spurious
3856.896	50.29	PK	334	1.2	V	32.10	7.56	31.60	58.35	74	15.65	Harmonic
5785.344	46.53	PK	125	1.5	H	34.50	9.69	32.60	58.12	74	15.88	Harmonic
5785.344	45.68	PK	338	1.1	V	34.50	9.69	32.60	57.27	74	16.73	Harmonic
3856.896	47.86	PK	36	1.5	H	32.10	7.56	31.60	55.92	74	18.08	Harmonic
1874.74	48.06	PK	320	1.2	H	28.30	5.99	34.20	48.15	74	25.85	Spurious

Field Strength of Emission (Average)							
Frequency (MHz)	Cord. Peak Amplitude @ 3m (dBμV/m)	Ant. Polar (H/V)	Duty Cycle Factor (dB)	Corrected Amplitude. (dBμV/m)	FCC 15.319(g)/209		Comment
					Limit (dBμV/m)	Margin (dB)	
Low Channel							
3843.072	59.48	V	-27.35	32.13	54	21.87	Harmonic
5764.608	57.82	V	-27.35	30.47	54	23.53	Harmonic
5764.608	57.21	H	-27.35	29.86	54	24.14	Harmonic
3843.072	55.27	H	-27.35	27.92	54	26.08	Harmonic
7686.144	44.59	V	-27.35	17.24	54	36.76	Harmonic
7686.144	43.96	H	-27.35	16.61	54	37.39	Harmonic
Middle Channel							
7699.968	54.60	H	-27.7	26.90	54	27.10	Harmonic
5774.976	54.21	V	-27.7	26.51	54	27.49	Harmonic
3849.984	53.77	V	-27.7	26.07	54	27.93	Harmonic
5774.976	53.25	H	-27.7	25.55	54	28.45	Harmonic
3849.984	50.64	H	-27.7	22.94	54	31.06	Harmonic
7699.968	47.40	V	-27.7	19.70	54	34.30	Harmonic
High Channel							
7713.792	60.23	V	-27.35	32.88	54	21.12	Harmonic
3856.896	58.35	V	-27.35	31.00	54	23.00	Harmonic
5785.344	58.12	H	-27.35	30.77	54	23.23	Harmonic
5785.344	57.27	V	-27.35	29.92	54	24.08	Harmonic
3856.896	55.92	H	-27.35	28.57	54	25.43	Harmonic
7713.792	48.15	H	-27.35	20.80	54	33.20	Harmonic

Note: Duty Cycle=Ton/Tp*100%
Ton = 420 μs = 0.42 ms; Tp = 10.0 ms
Duty Cycle = 4.2%; Duty cycle factor = 20lg (Duty Cycle) = -27.54 dB





4.10. Frequency Stability

Applicable Standard

Per §15.323(f), the frequency stability of the carrier frequency of the intentional radiator shall be maintained within ±10 ppm over 1 hour or the interval between channel access monitoring, whichever is shorter. The frequency stability shall be maintained over a temperature variation of −20° to +50 °C at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of 20 °C. For equipment that is capable only of operating from a battery, the frequency stability tests shall be performed using a new battery without any further requirement to vary supply voltage

RSS-213 6.2 Frequency Stability

The carrier frequency stability shall be maintained within ±10 ppm (±0.001%).

Test Procedure

This procedure should be carried out for each of the following test cases:

Temperature	Supply Voltage
20℃	85-115% or new batteries
-20℃[a]	Normal
+50℃	Normal

[a] Use the lowest temperature at which the EUT is specified to operate if it is above -20 ℃.

Using the mean carrier frequency at 20℃ and at nominal supply voltage as the reference, the mean carrier frequency shall be maintained within ±10 ppm at the two extreme temperatures (or as declared by the manufacturer) and at normal temperature (typically 20℃) at the two extreme supply voltages. This test does not apply to an EUT that is capable only of operating from a battery.

Test Results

Temperature (℃)	Voltage (VAC)	Channel Frequency (MHz)	Measured Frequency Offset (kHz)	Measured Frequency Offset (ppm)	Limit (ppm)
20	102	1924.992	-5	-2.60	±10
	120	1924.992	-3	-1.56	±10
	138	1924.992	-2	-1.04	±10
-20	120	1924.992	-3	-1.56	±10
50	120	1924.992	-6	-3.12	±10

4.11. Specific Requirements for UPCS Device

Automatic Discontinuation of Transmission, FCC Part 15.319(f) same as RSS-213 4.3.4 (a)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. The provisions in this section are not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Test Procedure:
Please according to the declaration provided by manufacturer.

Test result:

Meet the requirement.

Monitoring Time FCC 15.323 (c) (1) same as RSS-213 4.3.4 (b)(1)

Immediately prior to initiating transmission, devices must monitor the combined time and spectrum window in which they intend to transmit. For a period of at least 10 milliseconds for systems designed to use a 10 milliseconds or shorter frame period or at least 20 milliseconds for systems designed to use a 20 milliseconds frame period

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 7.3.4

Test result:

EUT monitors the combined time and spectrum window prior to initiation of transmission. Test result please according to FCC15.323(c) (4).

Lower Monitoring Threshold Part15.323 (c)(2) same as RSS-213 4.3.4 (b)(2)

The monitoring threshold must not be more than 30 dB above the thermal noise power for a bandwidth equivalent to the emission bandwidth used by the device.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 7.3.1

Test result:

Not Apply

Maximum Transmit Period FCC Part15.323 (c) (3) same as RSS-213 4.3.4 (b)(3)

If no signal above the threshold level is detected, transmission may commence and continue with the same emission bandwidth in the monitored time and spectrum windows without further monitoring. However, occupation of the same combined time and spectrum windows by a device or group of cooperating devices continuously over a period of time longer than 8 hours is not permitted without repeating the access criteria.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 8.2.2

Test result:

Repetition of Access Criteria	Measured Maximum Transmission Time (Second)	Limit (Second)	Results
First	27650	28,800	Pass
Second	27600	28,800	Pass

System Acknowledgement, FCC Part15.323 (c) (4) same as RSS-213 4.3.4 (b)(4)

Once access to specific combined time and spectrum windows is obtained an acknowledgment from a system participant must be received by the initiating transmitter within one second or transmission must cease. Periodic acknowledgments must be received at least every 30 seconds or transmission must cease. Channels used exclusively for control and signaling information may transmit continuously for 30 seconds without receiving an acknowledgment, at which time the access criteria must be repeated.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 8.1.1, 8.2.1

Test result:

Test	Time taken (second)	Limit (second)	Result
Connection acknowledgement	0.0060	1	PASS
Change of access criteria for control information	N/A	30	PASS
Transmission cease time	7.20	30	PASS
Pulse length	0.01	0.01	PASS

Note: N/A=Not Applicable

Least Interfered Channel (LIC) Selection, FCC Part15.323 (c) (5) same as RSS-213 4.3.4 (b)(5)

If access to spectrum is not available as determined by the above, and a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level below a monitoring threshold of 50 dB above the thermal noise power determined for the emission bandwidth may be accessed.

A device utilizing the provisions of this paragraph (5) must have monitored all access channels defined for its system within the last 10 seconds and must verify, within the 20 milliseconds (40 milliseconds for devices designed to use a 20 millisecond frame period) immediately preceding actual channel access, that the detected power of the selected time and spectrum windows is no higher than the previously detected value.

The power measurement resolution bandwidth for this comparison must be accurate to within 6 dB. No device or group of cooperating devices located within 1 metre of each other shall during any frame period occupy more than 6 MHz of aggregate bandwidth, or alternatively, more than one third of the time and spectrum windows defined by the system.

Measurement procedure

Measurement method according to ANSI C63.17 2006 paragraph 7.3.2, 7.3.3, 7.3.4

Calculation of monitoring threshold limits:

Lower threshold: TL = 15 log10B – 184 + 30 - P (dBm)

Upper threshold: TU = 15 log10B – 184 + 50 - P (dBm)

B = emission bandwidth (Hz)

P = peak transmit power (dBm)

Calculated thresholds:

T_L: Lower threshold (dBm)	-80.9
T_U: Upper threshold (dBm)	-60.9

Limit:

Used results	Emission bandwidth (MHz)	1.49
	Peak transmit power (dBm)	19.50
Limits	$T_{LR} < T_L+U_M$ = -80.9 + 6 = -74.9 (dBm)	
	$T_{UR} < T_U+U_M$ = -60.9 + 6 = -54.9 (dBm)	

Results:

Least interfered channel	Pass
T_{LR}: Lower threshold (dBm)	n.a.
T_{UR}: Upper threshold (dBm)	-60.9

Note 1: The upper threshold is applicable for systems which have defined a minimum of 40 duplex system access channels.

Note 2: f1=1921.536 MHz, f2=1928.448MHz

Random waiting FCC 15.323(c)(6) same as RSS-213 4.3.4 (b)(6)

If the selected combined time and spectrum windows are unavailable, the device may either monitor and select different windows or seek to use the same window after waiting an amount of time, randomly chosen from a uniform random distribution between 10 and 150 milliseconds, commencing when the channel becomes available.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 8.1.3

Test result:

The manufacturer declares that this provision is not utilized by the EUT.

Monitoring Bandwidth, FCC Part 15.323 (c) (7)

The monitoring system bandwidth must be equal to or greater than the emission bandwidth of the intended transmission and have a maximum reaction time less than 50xSQRT (1.25/emission bandwidth in MHz) microseconds for signals at the applicable threshold level but shall not be required to be less than 50 microseconds

RSS-213 4.3.4 (b)(7)

The monitoring system bandwidth must be equal to or greater than the occupied bandwidth of the intended transmission. Note: Testing of the monitoring system bandwidth is not required if the designed bandwidth from the manufacturer is available and given in the test report.

The monitor shall have a maximum reaction time less than 50 √ (1.25/occupied bandwidth in MHz) microseconds for signals at the applicable threshold level but shall not be required to be less than 50 microseconds.

If a signal is detected that is 6 dB or more above the threshold level, the maximum reaction time shall be 35 √ (1.25/occupied bandwidth in MHz) microseconds but shall not be required to be less than 35 microseconds.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 7.5

Test result:

Calculation of applied pulse eidth and maximum reaction time: For emission bandwidth > 1.25MHz, the pulse width is always 35us and 50us.

Used results	Emission bandwidth B (MHz)	1.49 MHz
Maximum reaction time and pulse width	$50\sqrt{1.25/B}$ (μs)	45.8 μs
	$35\sqrt{1.25/B}$ (μs)	32.1 μs

Pulse width (μs)	Connection
50 μs or $50\sqrt{(1.25/B)}$	no
35 μs or $35\sqrt{(1.25/B)}$	no

Monitoring Antenna, FCC Part15.323 (c) (8)

The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location.

RSS-213 4.3.4 (b)(8)

The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location. Note: A monitoring antenna of the same model (and manufacturer) as the transmitting antenna is considered equivalent. An antenna not of the same model but of the same type (e.g. both are horn antennas of different manufacturers) is considered equivalent if the main beam antenna gains are within 3 dB of each other. Both antennas are to be installed to point at the same general coverage area.

Test procedure:

Measurement method according to ANSI C63.17 2006 paragraph 4

Test result:

The antenna of the EUT used for transmission is the same interior antenna that used for monitoring.

Monitoring threshold relation FCC 15.323(c) (9)

Devices that have a power output lower than the maximum permitted under the rules can increase their monitoring detection threshold by one decibel for each one decibel that the transmitter power is below the maximum permitted.

RSS-213 4.3.4 (b)(9)

Devices that have a power output lower than the maximum permitted under this standard may increase their detection threshold by 1 dB for each 1 dB that the transmitter power is below the maximum permitted.

Test procedure:

Measurement method according to ANSI C63.17 2006 paragraph 4

Test result: Not apply based on 15.323 (c)(5)

Duplex Connections, FCC Part15.323 (c) (10)

An initiating device may attempt to establish a duplex connection by monitors both its intended transmit and receive time and spectrum windows. If both the intended transmit and receive time and spectrum windows meet the access criteria, then the initiating device can initiate a transmission in the intended transmit time and spectrum window. If the power detected by the responding device can be decoded as a duplex connection signal from the initiating device, then the responding device may immediately begin transmitting on the receive time and spectrum window monitored by the initiating device.

RSS-213 4.3.4 (b)(10)

A device initiating a communication (hereafter called an initiating device) may attempt to establish a duplex connection by monitoring both its intended transmit and receive time and spectrum windows. If both the intended transmit and receive time and spectrum windows meet the access criteria, then the initiating device can initiate a transmission in the intended transmit time and spectrum window. If the power detected by the responding device can be decoded as a duplex connection signal from the initiating device, then the responding device may immediately begin transmitting on the receive time and spectrum window monitored by the initiating device.

Test procedure:

Measurement method according to ANSI C63.17 clause 8.3

Test result:

The manufacturer declares that this provision is not utilized by the EUT.

Alternative monitoring interval for co-located devices, FCC Part 15.323 (c) (11) same as RSS-213 4.3.4 (b)(11)

An initiating device that is prevented from monitoring during its intended transmit window due to monitoring system blocking from the transmissions of a co-located (within one meter) transmitter of the same system, may monitor the portions of the time and spectrum windows in which they intend to receive over a period of at least 10 milliseconds. The monitored time and spectrum window must total at least 50 percent of the 10 millisecond frame interval and the monitored spectrum must be within 1.25 MHz of the center frequency of channel(s) already occupied by that device or co-located co-operating devices. If the access criteria is met for the intended receive time and spectrum window under the above conditions, then transmission in the intended transmit window by the initiating device may commence.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 8.4

Test result:

The manufacturer declares that this provision is not utilized by the EUT.

Fair Access, FCC Part 15.323 (c) (12) same as RSS-213 (b)(12)

The provisions of FCC Part15.323(c)(10) or (c)(11) shall not be used to extend the range of spectrum occupied over space or time for the purpose of denying fair access to spectrum to other devices.

Test result:

The manufacturer declares that this device does not use any mechanisms as provided by Part15.323 (c) (10) or (c) (11) to extend the range of spectrum occupied over space or time for the purpose of denying fail access to spectrum to other device.

Frame Repetition Stability, Part15 .323 (e) same as RSS-213 4.3.4 (C)

The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in these sub-bands shall be 20 milliseconds or 10 milliseconds/X where X is a positive whole number.

Test procedure:

Measurement method according to ANSI C63.17 2006 clause 6.2.2, 6.2.3

Test result:

Frame Repetition Stability:

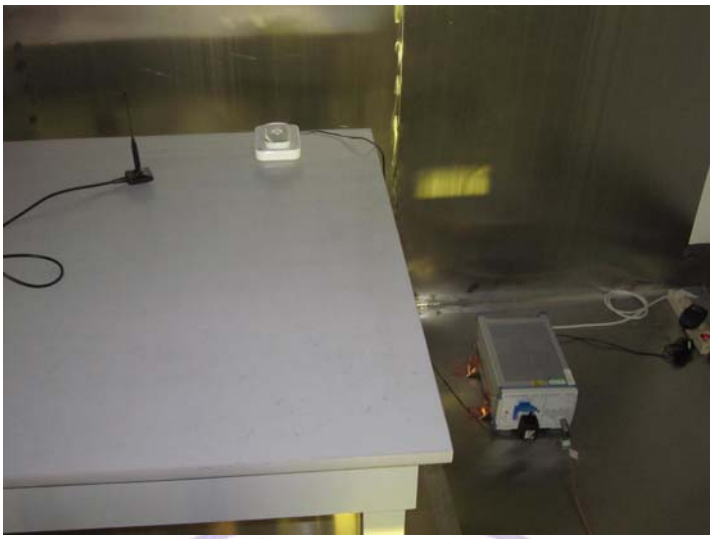
Frame Repetition Stability (ppm)	Limit (ppm)	Result (Pass/Fail)
1.44	10	Pass

Frame Period and Jitter:

Max.pos.Jitter (us)	Max.neg.Jitter (us)	Frame period (ms)	Limit	
			Frame Period (ms)	Jitter (μs)
0.05	-0.04	10.00000	20 or10/X	25us

Note: X is a positive whole number.

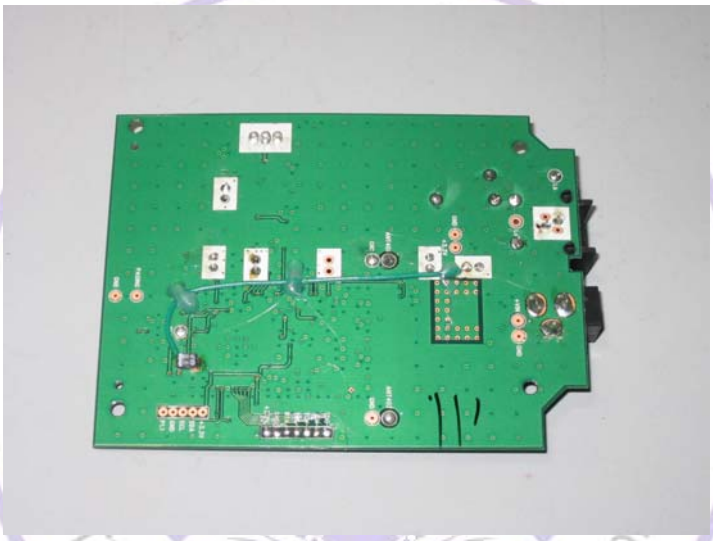
5. Test Setup Photos of the EUT

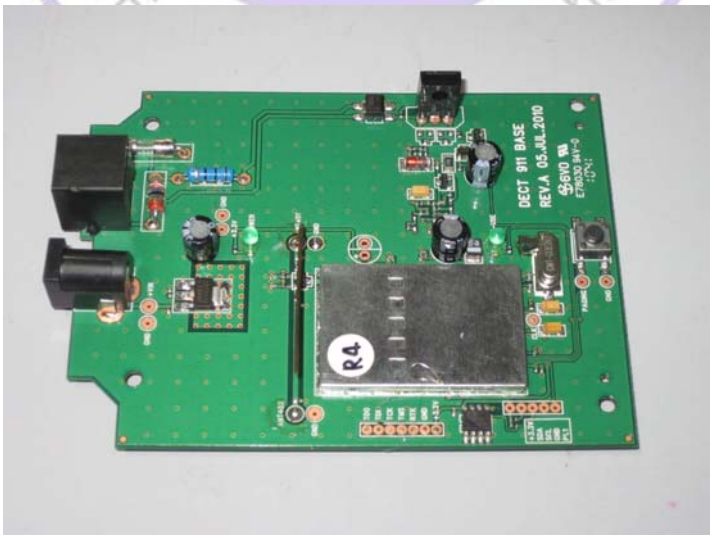


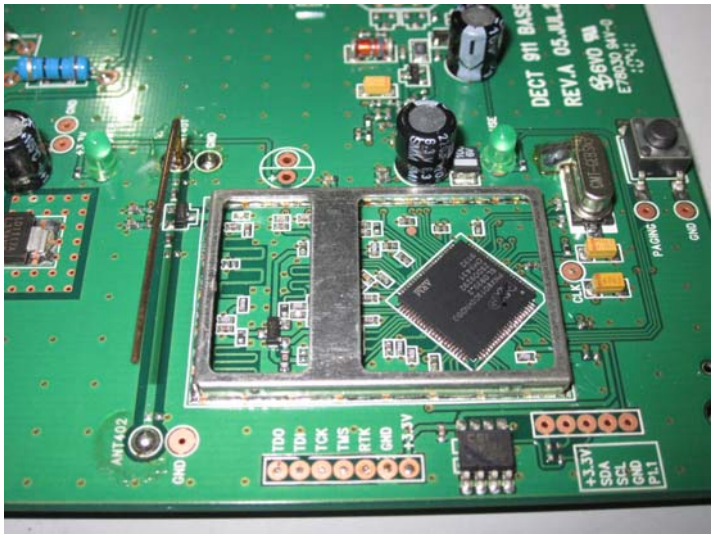
6. External and Internal Photos of the EUT

External Photos

Internal Photos







.....End of Report.....