RF TEST REPORT

Product Name: Intercom Audio Ski Goggles

Model Name: OUNCE R2, OUNCE R1

FCC ID: 2AQAB-OUNCER2

Issued For : DongGuan Luckysonics Co., Ltd

Room801,Building A1,Guangda WE Valley,Road2,Song Shan Lake,DongGuan City, GuangDong Province,China

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China

Report Number:	LGT23K039RF03
Sample Received Date:	Nov. 10, 2023
Date of Test:	Nov. 10, 2023 – Jan. 26, 2024
Date of Issue:	Jan. 26, 2024

TEST REPORT CERTIFICATION

Applicant:	DongGuan Luckysonics Co., Ltd
Address:	Room801, Building A1, Guangda WE Valley, Road2, Song Shan Lake, DongGuan City, GuangDong Province, China
Manufacturer:	DongGuan Luckysonics Co., Ltd
Address:	Room801, Building A1, Guangda WE Valley, Road2, Song Shan Lake, DongGuan City, GuangDong Province, China
Product Name:	Intercom Audio Ski Goggles
Trademark:	318
Model Name:	OUNCE R2, OUNCE R1
Sample Status:	Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 90 ANSI C63.26-2015	PASS

Prepared by:

Zane Shan

Zane Shan
Engineer

Approved by:

Vita Li
Technical Director

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Revision History

Rev.	Issue Date	Contents
00	Jan. 26, 2024	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 90			
Standard Section	Test Item	Judgment	Remark
FCC Part 90.205	Maximum Transmitter Power	PASS	--
FCC Part 90.209	Occupied Bandwidth	PASS	--
FCC Part 90.210	Emission Mask	PASS	--
FCC Part 90.210	Transmitter Radiated Spurious Emssion	PASS	--
FCC Part 90.210	Spurious Emssion on Antenna Port	PASS	--
FCC Part 90.213	Frequency Stability Test	PASS	--
FCC Part 90.214	Transisent Frequency Behavior	PASS	--
FCC Part 2.1047	Modulation Characteristic	PASS	--

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report.

1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF output power, conducted	±0.68dB
2	Unwanted Emissions, conducted	±2.988dB
3	All emissions, radiated 9K-30MHz	±2.84dB
4	All emissions, radiated 30M-1GHz	±4.39dB
5	All emissions, radiated 1G-6GHz	±5.10dB
6	All emissions, radiated>6G	±5.48dB
7	Conducted Emission (9KHz-150KHz)	±2.79dB
8	Conducted Emission (150KHz-30MHz)	±2.80dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	Intercom Audio Ski Goggles
Trademark:	318
Model Name:	OUNCE R2
Series Model:	OUNCE R1
Model Difference:	Only for the model name and appearance colors are different
Operation Frequency:	410-470MHz
Modulation Type:	FM
Channel Separation:	12.5KHz
Antenna Type:	Spring Antenna
Antenna Gain (dBi):	-2.06
Channel List:	Please refer to the Note 3.
Adapter:	Input: AC 100~240V, 50/60HZ, 0.25A Output: DC 5V, 2A
Battery:	Capacity: 1250mAh Rated Voltage: 3.7V
Hardware Version:	V1.0
Software Version:	V1.0
Connecting I/O Port(s):	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.

3.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	410.0125	--	--	3200	450.0000
2	410.0250	2400	440.0000	--	--
3	410.0375	2401	440.0125	4795	469.9375
--	--	2402	440.0250	4796	469.9500
1598	429.9750	2403	440.0375	4797	469.9625
1599	429.9875	--	--	4798	469.9750
1600	430.0000	3198	449.9750	4799	469.9875
1601	430.0125	3199	449.9875	4800	470.0000

Test channel:

Channel	Frequency (MHz)
1	410.0125
2401	440.0125
4799	469.9875

2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions
Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Pretest Mode	Description
Mode 1	CH1 TX Mode
Mode 2	CH2401 TX Mode
Mode 3	CH4799 TX Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH1 TX Mode
Mode 2	CH2401 TX Mode
Mode 3	CH4799 TX Mode

Note:
(1) All above mode has been measurement, only worst data was reported.
(2) The battery is fully-charged during the radited and RF conducted test.

2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	HKF-16	N/A	N/A

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

(2) “YES” is means “with core”; “NO” is means “without core”.

2.4 EQUIPMENTS LIST

Radiated Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2023.04.13	2024.04.12
Active loop Antenna	ETS	6502	00049544	2022.06.02	2025.06.01
Spectrum Analyzer	Keysight	N9010B	MY60242508	2023.04.10	2024.04.09
Audio Analyzer	R&S	UPL	N/A	2023.04.27	2024.04.26
Bilog Antenna(30M-1G)	SCHWARZBECK	VULB 9168	01447	2022.06.05	2025.06.04
Horn Antenna(1-18G)	SCHWARZBECK	3115	10SL0060	2022.06.02	2025.06.01
Horn Antenna(18-40G)	A-INFO	LB-180400-KF	J211060273	2022.06.08	2025.06.07
Pre-amplifier(30M-1G)	EMtrace	RP01A	02019	2023.04.07	2024.04.06
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2023.04.07	2024.04.06
Pre-amplifier(18-40G)	com-mw	LNPA_18-40-01	18050003	2023.04.07	2024.04.06
Temperature & Humidity	KTJ	TA218B	N.A	2023.04.24	2024.04.23
Testing Software	EMC-I_V1.4.0.3_SKET				

Conducted Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Signal Analyzer	Keysight	N9020A	MY50530994	2023.10.12	2024.10.11
Signal Analyzer	Keysight	N9010B	MY60242508	2023.04.10	2024.04.09
MXG Vector Signal Generator	Keysight	N5182B	MY59100717	2023.04.07	2024.04.06
Intercom comprehensive tester	HP	8920A	348A05658	2023.04.27	2024.04.26
Audio Analyzer	R&S	UPL	N/A	2023.04.27	2024.04.26
Power Senor	MW	MW100-RFCB	MW220324LG-33	2023.04.13	2024.04.12
Temperature & Humidity	KTJ	TA218B	N.A	2023.04.24	2024.04.23
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2023.05.10	2024.05.09
Attenuator	eastsheep	90db	N.A	2023.04.10	2024.04.09
Testing Software	MTS8200_ V2.0.0.0_MW				

3. MAXIMUM TRANSMITTER POWER

3.1 LIMITS

Per FCC Part 2.1046 and Part 90.205: The output power shall not exceed by more than 20 percent either the output power shown in the Radio Equipment List [available in accordance with § 90.203(a)(1)] for transmitters included in this list or when not so listed, the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

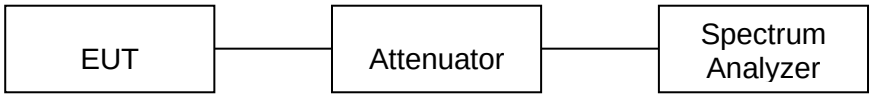
3.2 TEST PROCEDURE

Measurements shall be made to establish the radio frequency power delivered by the transmitter the standard output termination. The power output shall be monitored and recorded and no adjustment shall be made to the transmitter after the test has begun, except as noted bellow:
If the power output is adjustable, measurements shall be made for the highest and lowest power levels. The EUT connect to the Spectrum Analyzer through 30 dB attenuator.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP BLOCK DIAGRAM



3.5 TEST RESULT

Modulation Type	Channel Sparation	Test Channel	Test Frequency (MHz)	Test Results (dBm)	Antenna Gain (dBi)	ERP (dBm)	Test Results (W)	Limit (W)
FM	12.5KHz	CH1	410.0125	26.510	-2.060	22.300	0.17	0.16-0.24
		CH2401	440.0125	26.660	-2.060	22.450	0.18	
		CH4799	469.9875	26.890	-2.060	22.680	0.19	

Note: The rate power is 0.2W. The limit of the high output power is 0.16~0.24W.

4. OCCUPIED BANDWIDTH

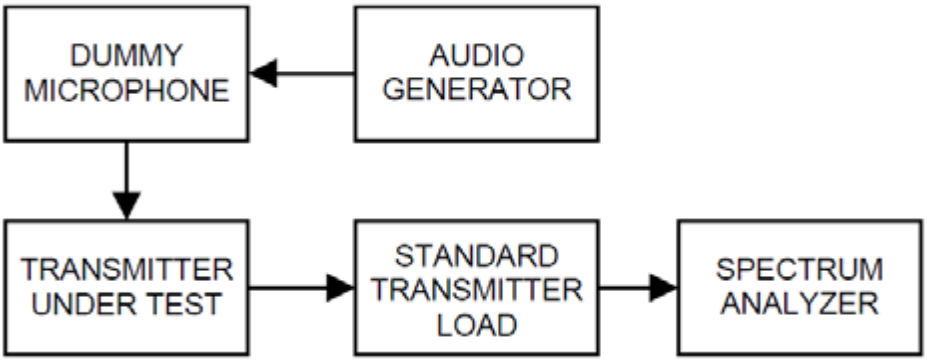
4.1 LIMIT

Occupied Bandwidth: The EUT was connected to the audio signal generator and the spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the bandwidth of 99% power can be measured by the spectrum analyzer.
The maximum authorized bandwidth shall not be more than that normally authorized for voice operations.

4.2 TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. The EUT was modulated by 2.5KHz Sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5kHz (12.5kHz channel spacing) and 5kHz(25kHz channel spacing)
3. Set EUT as normal operation.
4. Set SPA Center Frequency=fundamental frequency, RBW=100Hz, VBW=1KHz, span =50KHz.
5. Set SPA Max hold. Mark peak, Set 99% Occupied Bandwidth and 26dB Occupied Bandwidth.

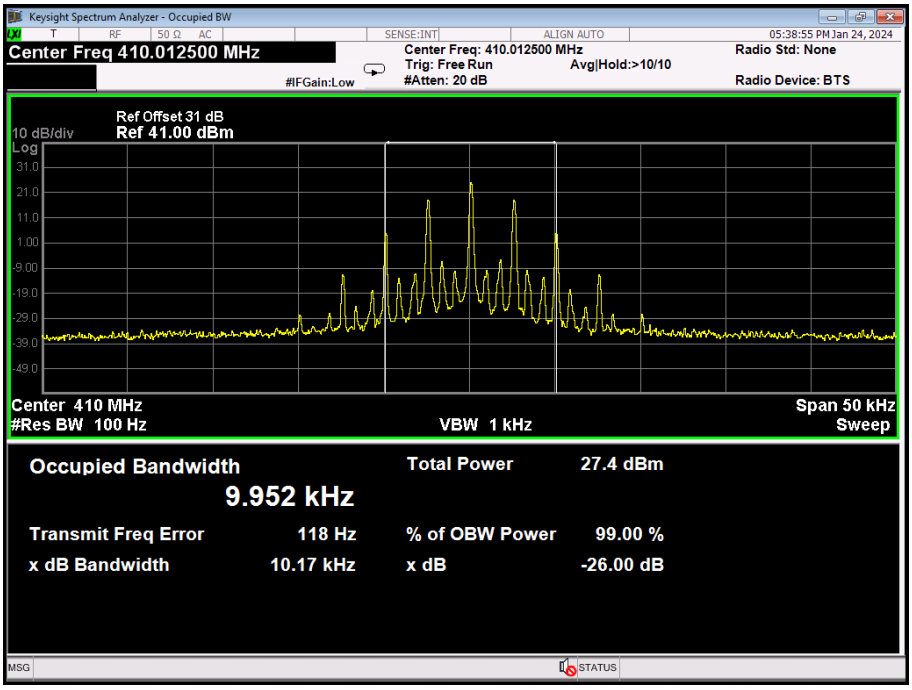
4.3 TEST SETUP



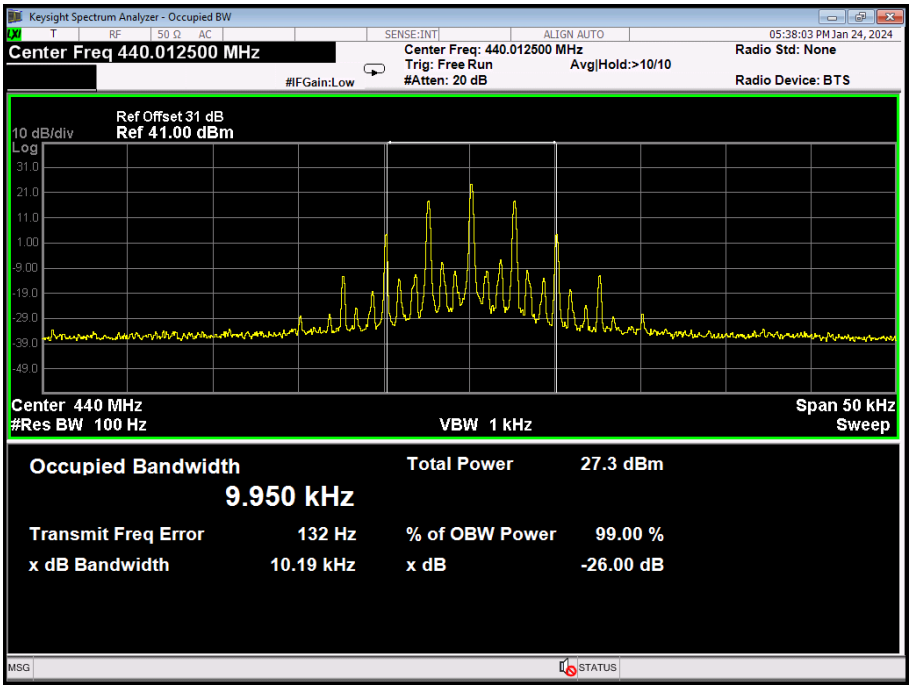
4.4 TEST RESULT

Modulation Type	Channel Bandwidth	Test Channel	Test Frequency (MHz)	Occupied Bandwidth (KHz)		Limits (KHz)
				99%	26dB	
FM	12.5KHz	CH1	410.0125	9.952	10.170	11.25
		CH2401	440.0125	9.950	10.190	
		CH4799	469.9875	9.954	10.170	

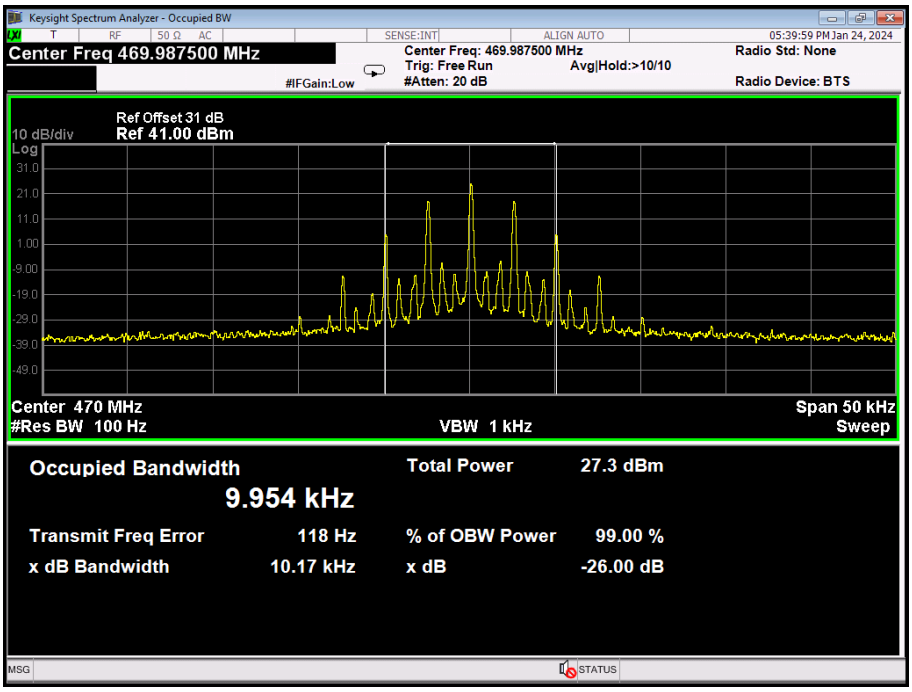
CH1


Keysight Spectrum Analyzer - Occupied BW
Center Freq 410.012500 MHz
Center Freq: 410.012500 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
05:38:55 PM Jan 24, 2024
Ref Offset 31 dB
10 dB/div
Ref 41.00 dBm
Log
Center 410 MHz
#Res BW 100 Hz
VBW 1 kHz
Span 50 kHz
Sweep
Occupied Bandwidth
9.952 kHz
Total Power
27.4 dBm
Transmit Freq Error
118 Hz
% of OBW Power
99.00 %
x dB Bandwidth
10.17 kHz
x dB
-26.00 dB
MSG
STATUS

CH2401


Keysight Spectrum Analyzer - Occupied BW
Center Freq 440.012500 MHz
Center Freq: 440.012500 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
05:38:03 PM Jan 24, 2024
Ref Offset 31 dB
10 dB/div
Ref 41.00 dBm
Log
Center 440 MHz
#Res BW 100 Hz
VBW 1 kHz
Span 50 kHz
Sweep
Occupied Bandwidth
9.950 kHz
Total Power
27.3 dBm
Transmit Freq Error
132 Hz
% of OBW Power
99.00 %
x dB Bandwidth
10.19 kHz
x dB
-26.00 dB
MSG
STATUS

CH4799


Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:39:59 PM Jan 24, 2024
Center Freq 469.987500 MHz
Center Freq: 469.987500 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Ref Offset 31 dB
10 dB/div
Ref 41.00 dBm
Log
31.0
21.0
11.0
1.00
-9.00
-19.0
-29.0
-39.0
-49.0
Center 470 MHz
#Res BW 100 Hz
VBW 1 kHz
Span 50 kHz
Sweep
Occupied Bandwidth
9.954 kHz
Total Power
27.3 dBm
Transmit Freq Error
118 Hz
% of OBW Power
99.00 %
x dB Bandwidth
10.17 kHz
x dB
-26.00 dB
MSG
STATUS

5. EMISSION MASK

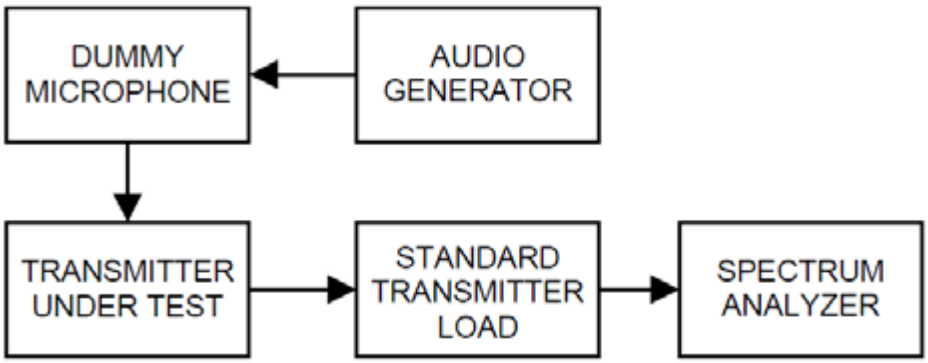
5.1 PROVISIONS APPLICABLE

Emission Mask D, 12.5 kHz channel bandwidth equipment: For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:
(1) On any frequency from the center of the authorized bandwidth f0 to 5.625 kHz removed from f_0: Zero dB.
(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd -2.88 kHz) dB.
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuationorized bandwidth: At least 43 + 10 log (P) dB.

5.2 TEST PROCEDURE

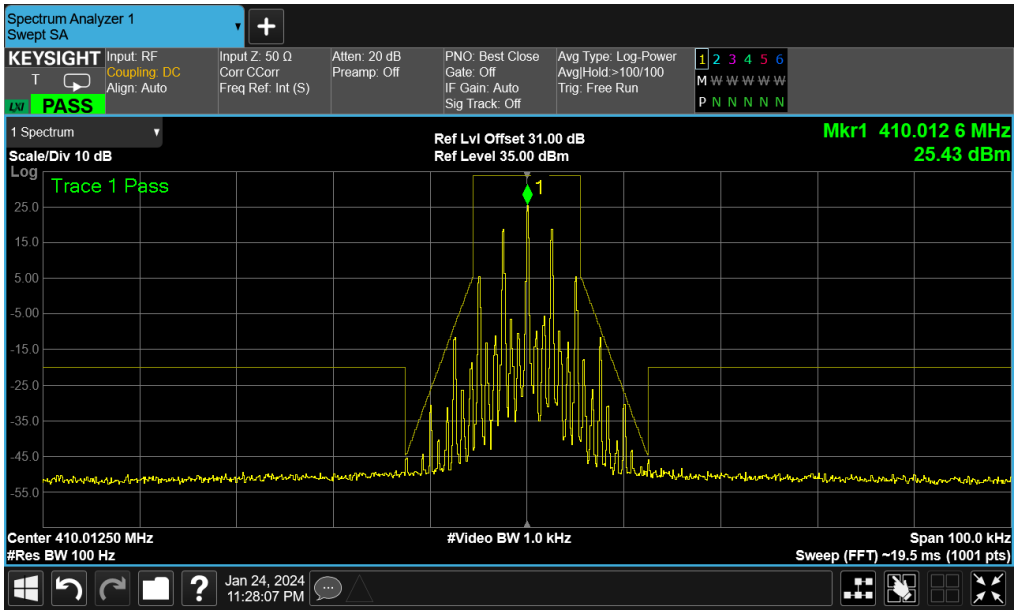
1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. The EUT was modulated by 2.5KHz Sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5kHz (12.5kHz channel spacing) and 5kHz(25kHz channel spacing)
3. Set EUT as normal operation.
4. Set SPA Center Frequency=fundamental frequency, RBW=100Hz, VBW=1KHz, span =100KHz.

5.3 TEST SETUP

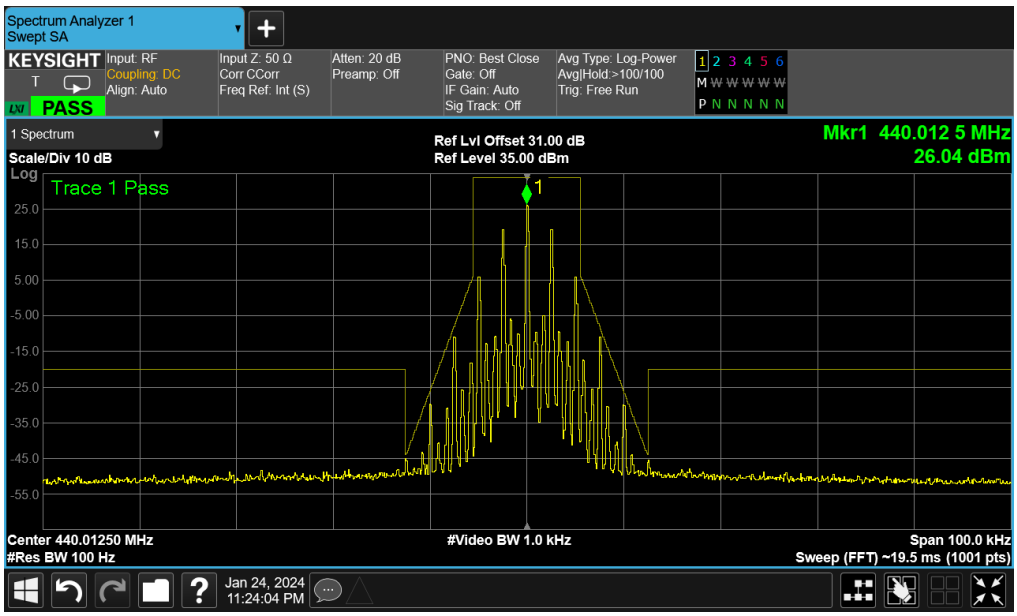


5.5 TEST RESULTS

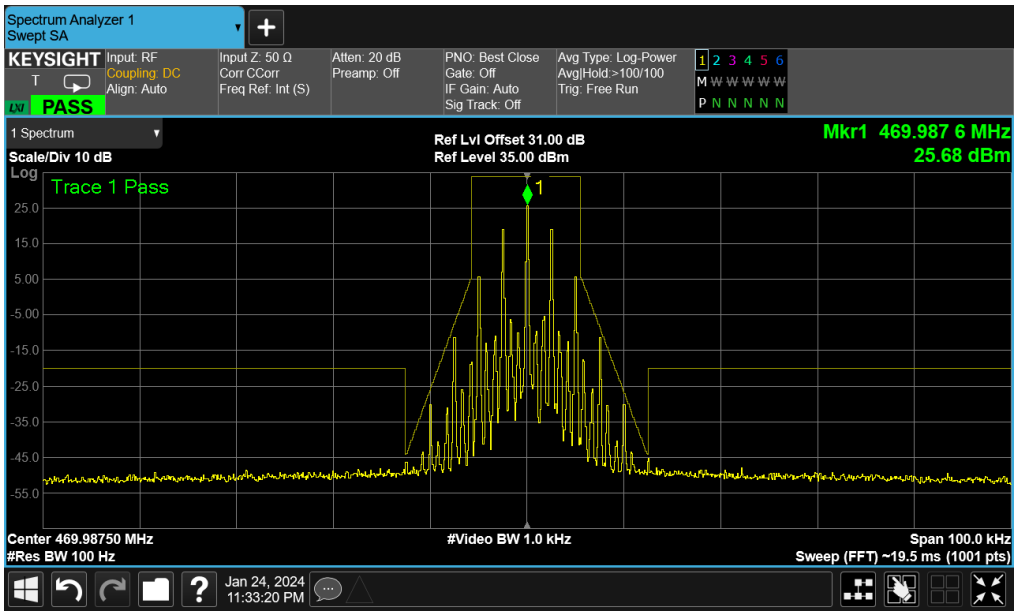
CH1



CH2401



CH4799


Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corr CCorr
Freq Ref: Int (S)
Atten: 20 dB
Preamp: Off
PNO: Best Close
Gate: Off
IF Gain: Auto
Sig Track: Off
Avg Type: Log-Power
Avg|Hold:>100/100
Trig: Free Run
PASS
1 Spectrum
Scale/Div 10 dB
Ref Lvl Offset 31.00 dB
Ref Level 35.00 dBm
Mkr1 469.987 6 MHz
25.68 dBm
Log
Trace 1 Pass
25.0
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
Center 469.98750 MHz
#Res BW 100 Hz
#Video BW 1.0 kHz
Span 100.0 kHz
Sweep (FFT) ~19.5 ms (1001 pts)
Jan 24, 2024
11:33:20 PM

6. TRANSMITTER RADIATED SPURIOUS EMSSION

6.1 PROVISIONS APPLICABLE

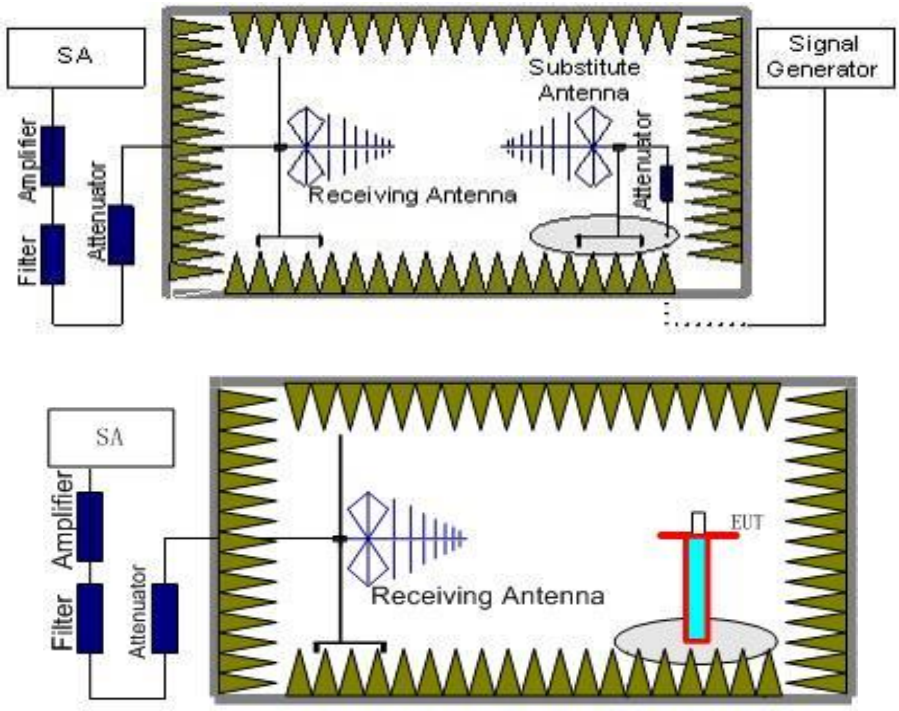
According to the TIA/EIA 603 test method, and according to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:
1. On any frequency removed from the center of the authorized bandwidth fo to 5.625 KHz removed from fo: Zero dB
2. On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 5.625 KHz but no more than 12.5 KHz: At least 7.27dB
3. On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 12.5 KHz: At least 50+10 log (P) dB or 70 dB, which ever is lesser attenuation.

6.2 TEST PROCEDURE

The procedure of effective radiated power is as follows:

a. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.
b. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
c. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100KHz,VBW=300KHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (P_r).
d. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
e. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test. The measurement results are obtained as described below:
Amplifier for substituation test; The measurement results are amend as described below:
Corrected Amplitude =Mea(dBm)-CF(dB)

6.3 TEST SETUP



6.4 TEST RESULTS

Channel 1(410.0125MHz)								
Frequency	Measured Amplitude	Cable Loss	Antenna gain	Corrected Factor	Corrected Amplitude	Limit	Margin	RX Antenna Polar
(MHz)	(dBm)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	(H/V)
819.969	-44.15	4.12	6.2	2.08	-42.07	-20	-22.07	H
819.969	-39.02	4.12	6.2	2.08	-36.94	-20	-16.94	V
1229.915	-46.09	5.81	6.7	0.89	-45.20	-20	-25.20	H
1229.915	-45.23	5.81	6.7	0.89	-44.34	-20	-24.34	V
2049.925	-48.98	7.95	8.3	0.35	-48.63	-20	-28.63	H
2049.925	-44.87	7.95	8.3	0.35	-44.52	-20	-24.52	V

Channel 2401(440.0125MHz)								
Frequency	Measured Amplitude	Cable Loss	Antenna gain	Corrected Factor	Corrected Amplitude	Limit	Margin	RX Antenna Polar
(MHz)	(dBm)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	(H/V)
879.931	-42.22	4.12	6.2	2.08	-40.14	-20	-20.14	H
879.931	-42.15	4.12	6.2	2.08	-40.07	-20	-20.07	V
1319.954	-48.53	5.81	6.7	0.89	-47.64	-20	-27.64	H
1319.954	-47.17	5.81	6.7	0.89	-46.28	-20	-26.28	V
2199.939	-46.91	7.95	8.3	0.35	-46.56	-20	-26.56	H
2199.939	-47.30	7.95	8.3	0.35	-46.95	-20	-26.95	V

Channel 4799(469.9875MHz)								
Frequency	Measured Amplitude	Cable Loss	Antenna gain	Corrected Factor	Corrected Amplitude	Limit	Margin	RX Antenna Polar
(MHz)	(dBm)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	(H/V)
939.873	-44.24	4.12	6.2	2.08	-42.16	-20	-22.16	H
939.873	-43.74	4.12	6.2	2.08	-41.66	-20	-21.66	V
1409.956	-47.25	5.81	6.7	0.89	-46.36	-20	-26.36	H
1409.956	-46.74	5.81	6.7	0.89	-45.85	-20	-25.85	V
2349.832	-49.26	7.95	8.3	0.35	-48.91	-20	-28.91	H
2349.832	-48.95	7.95	8.3	0.35	-48.60	-20	-28.60	V

Note: Corrected Amplitude =Mea(dBm)-CF(dB)
Corrected Factor= CL(dB)- AG(dBi)
We were not recorded other points as values lower than limits

7. SPURIOUS EMSSION ON ANTENNA PORT

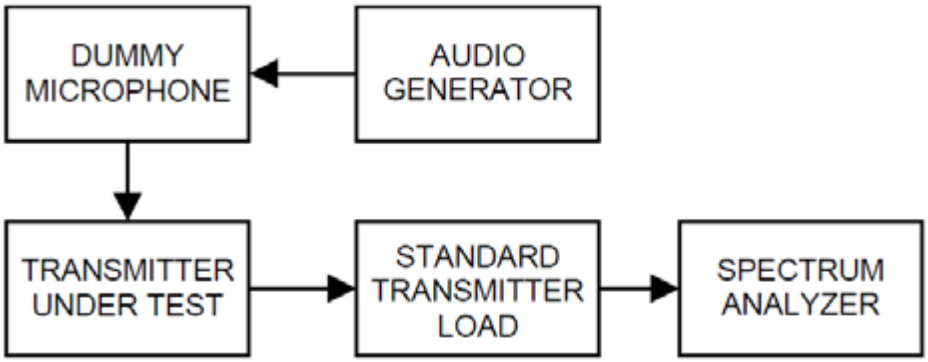
7.1 LIMIT

According to the TIA/EIA 603 test method, and according to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:
1. On any frequency removed from the center of the authorized bandwidth fo to 5.625 KHz removed from fo: Zero dB
2. On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 5.625 KHz but no more than 12.5 KHz: At least 7.27dB
3. On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 12.5 KHz: At least 50+10 log (P) dB or 70 dB, which ever is lesser attenuation.

7.2 TEST PROCEDURE

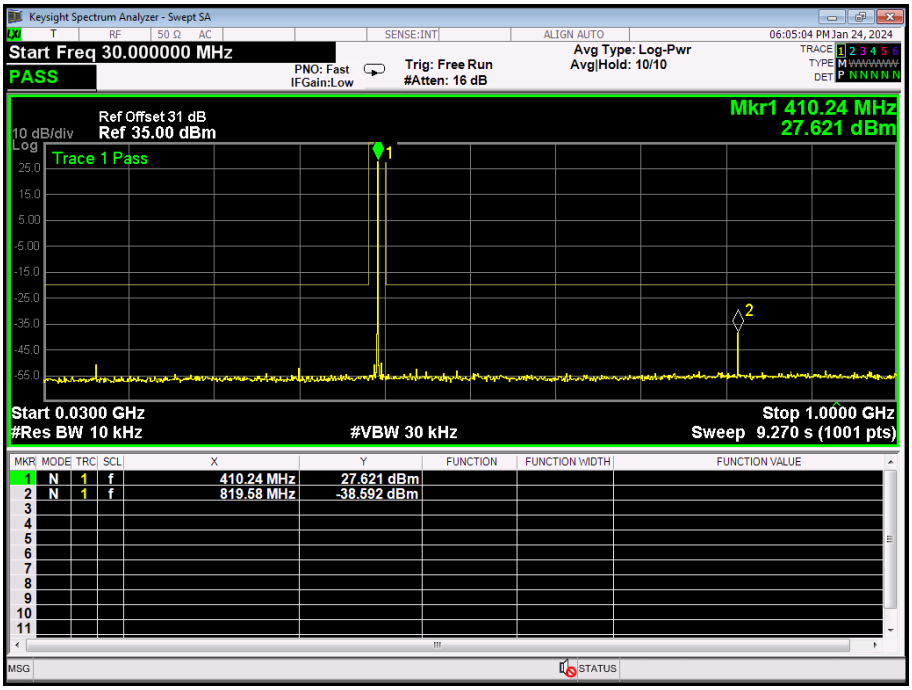
1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. Sufficient scans were taken to show any out of band emission up to 10th. Harmonic for the lower and the highest frequency range.
3. Set EUT as normal operation.
4. Set RBW 100kHz, VBW 300 kHz in the frequency band 30MHz to 1GHz,while set RBW=1MHz. VBW=3MHz from the 1GHz to 10th Harmonic.
5. The audio input was set to 0 to get the unmodulated carrier, the resulting picture is print out for each channel separation.

7.3 TEST SETUP

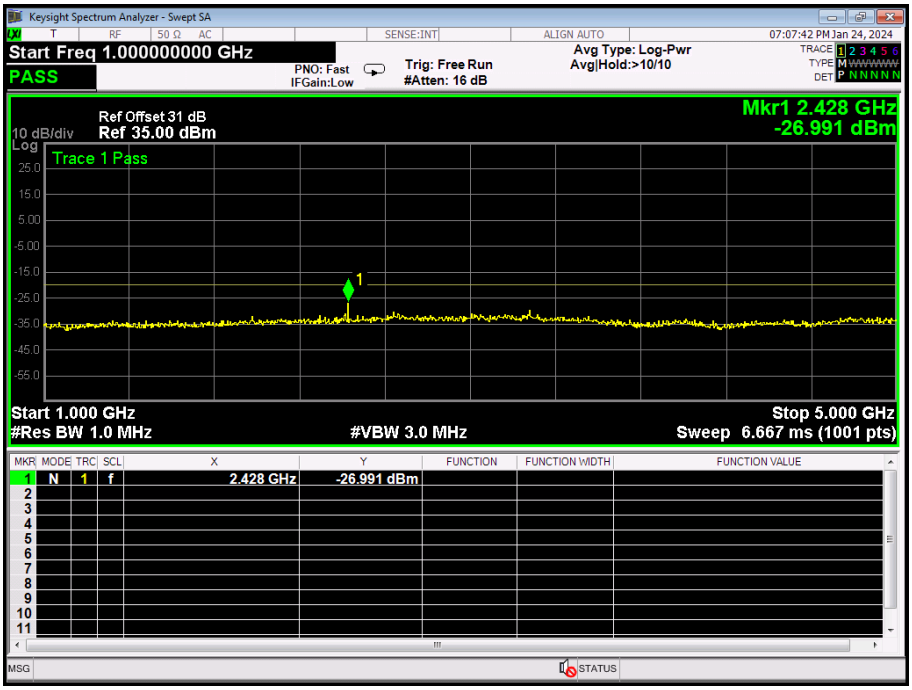


7.4 TEST RESULT

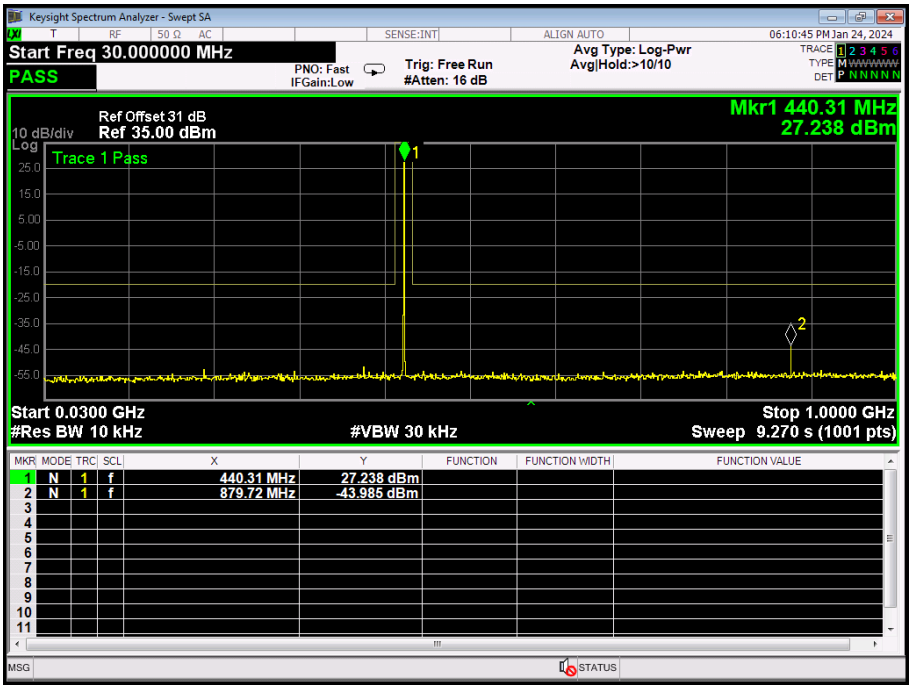
CH1 30MHz-1GHz



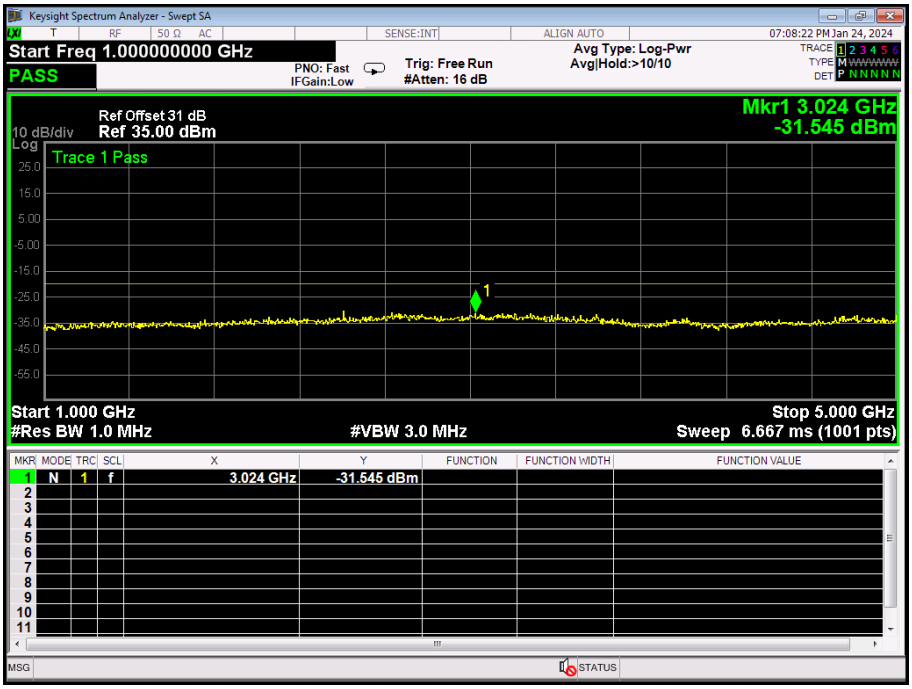
CH1 1GHz-5GHz



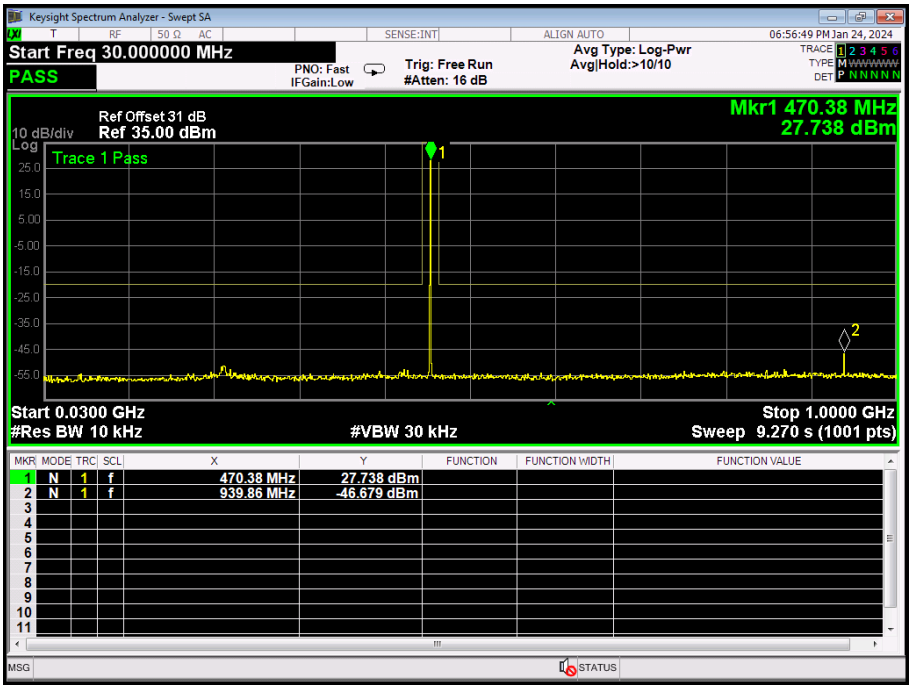
CH2401 30MHz-1GHz



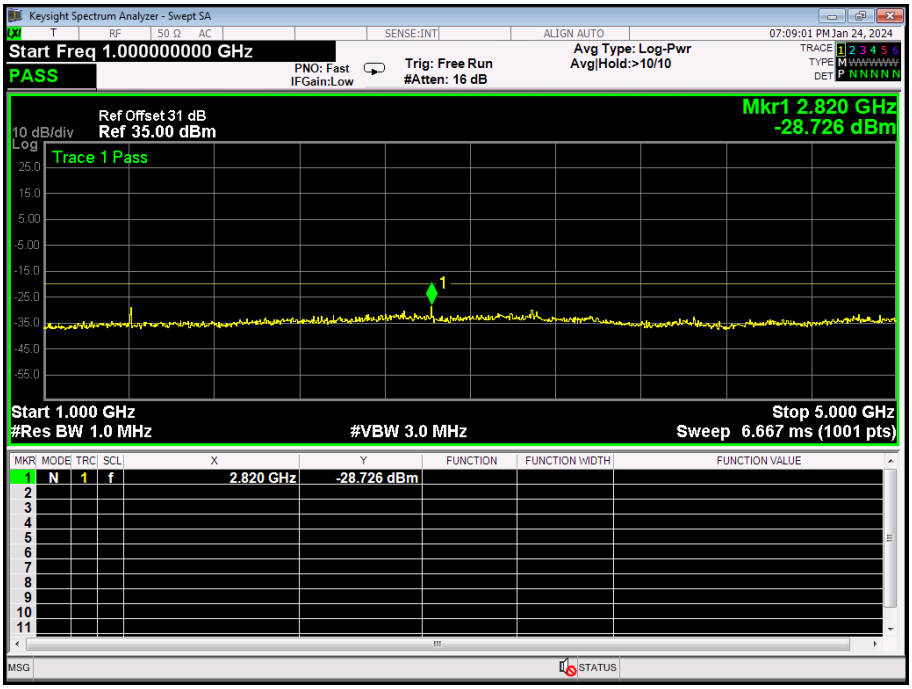
CH2401 1GHz-5GHz



CH4799 30MHz-1GHz



CH4799 1GHz-5GHz



8. FREQUENCY STABILITY

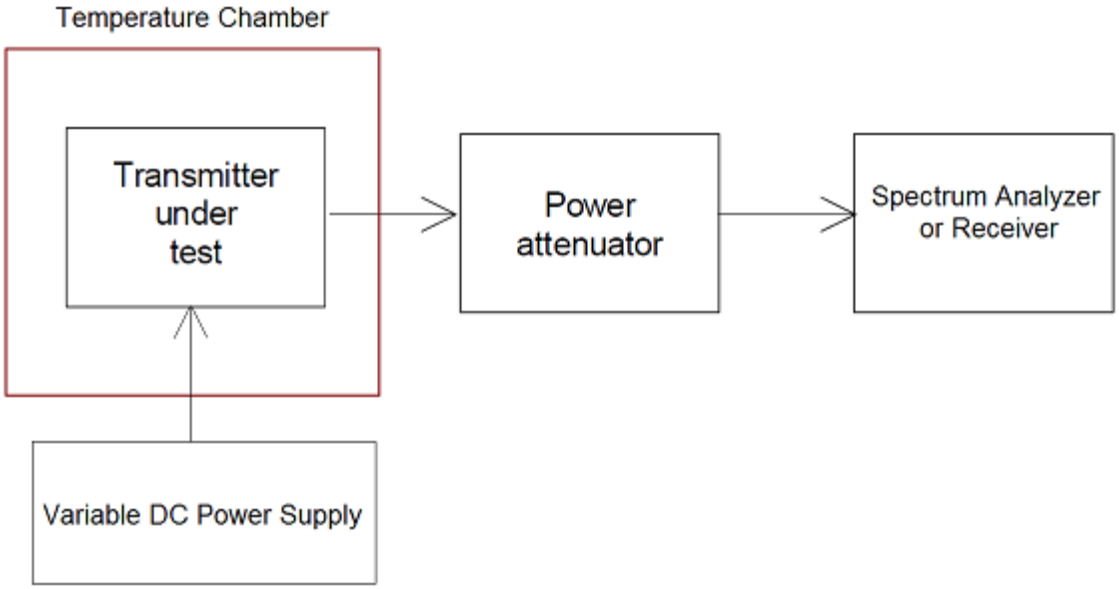
8.1 LIMIT

The carrier frequency stability shall not exceed ±2.5 ppm.

8.2 TEST PROCEDURE

1. The frequency stability shall be measured with variation of ambient temperature from -30℃ to +50℃
2. For battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. Vary primary supply voltage from 3.15V to 4.26V.
4. The EUT was set in the climate chamber and connected to an external DC power supply. The RF output was directly connected to Spectrum Analyzer The coupling loss of the additional cables was recorded and taken in account for all the measurements. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

TX mode.

8.5 TEST RESULT

Channel 1						
Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Deviation (ppm)	Limits	Result
30	Normal Voltage	410.0125	410.01287	0.901	2.5ppm	PASS
-20		410.0125	410.01235	-0.370		
-10		410.0125	410.01241	-0.208		
0		410.0125	410.01240	-0.233		
10		410.0125	410.01252	0.048		
20		410.0125	410.01260	0.253		
30		410.0125	410.01309	1.445		
40		410.0125	410.01268	0.432		
50		410.0125	410.01184	-1.600		
20	Maximum Voltage	410.0125	410.01279	0.702		
20	BEP	410.0125	410.01278	0.676		

Channel 2401						
Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Deviation (ppm)	Limits	Result
30	Normal Voltage	440.0125	440.01199	-1.163	2.5ppm	PASS
-20		440.0125	440.01324	1.688		
-10		440.0125	440.01228	-0.490		
0		440.0125	440.01209	-0.941		
10		440.0125	440.01243	-0.170		
20		440.0125	440.01255	0.109		
30		440.0125	440.01168	-1.865		
40		440.0125	440.01235	-0.336		
50		440.0125	440.01274	0.546		
20	Maximum Voltage	440.0125	440.01307	1.286		
20	BEP	440.0125	440.01269	0.422		

Channel 4799						
Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Deviation (ppm)	Limits	Result
30	Normal Voltage	469.9875	469.98726	-0.507	2.5ppm	PASS
-20		469.9875	469.98774	0.500		
-10		469.9875	469.98742	-0.169		
0		469.9875	469.98699	-1.088		
10		469.9875	469.98718	-0.676		
20		469.9875	469.98737	-0.282		
30		469.9875	469.98710	-0.852		
40		469.9875	469.98786	0.770		
50		469.9875	469.98766	0.339		
20	Maximum Voltage	469.9875	469.98788	0.804		
20	BEP	469.9875	469.98810	1.286		

9. MODULATION CHARACTERISTIC

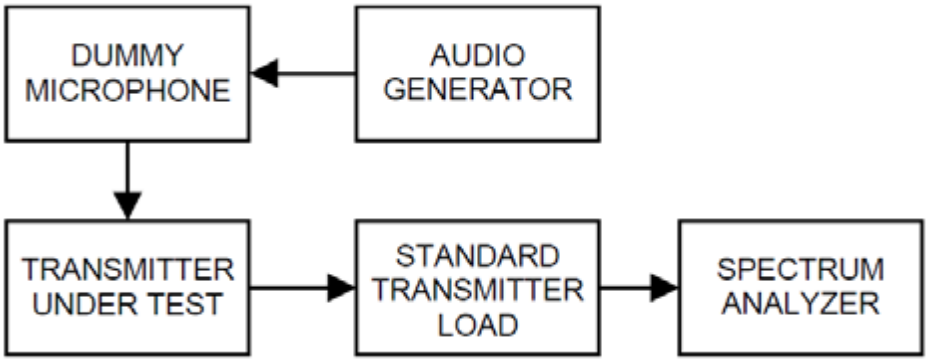
9.1 LIMIT

FCC Part 2.1047
(a) Equipment which utilizes voice modulated communication show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.
(b) Equipment which employs modulation limiting,a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

9.2 TEST PROCEDURE

The test procedure please reference TIA 603-E 2.2.3.

9.3 TEST SETUP

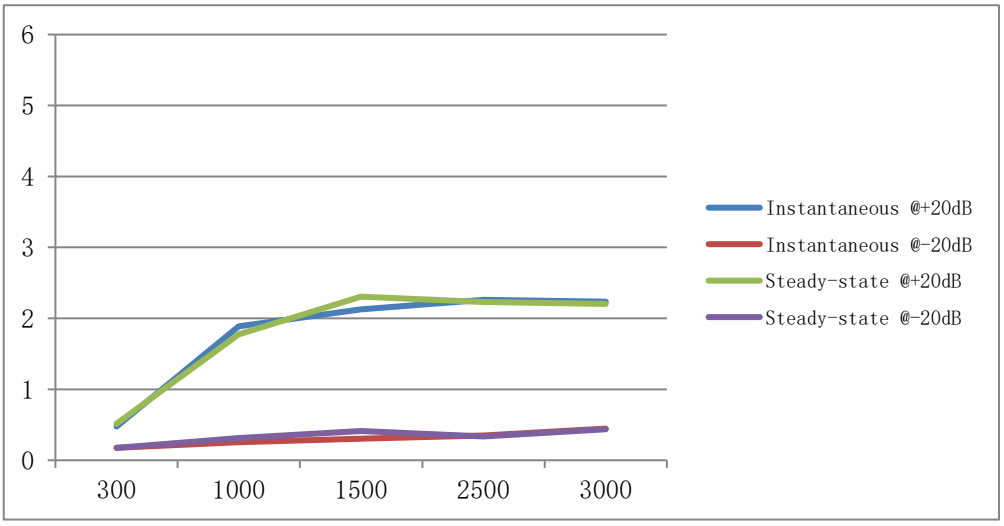


9.4 TEST RESULT

Note: All mode has been tested, only shown the worst case in this report.

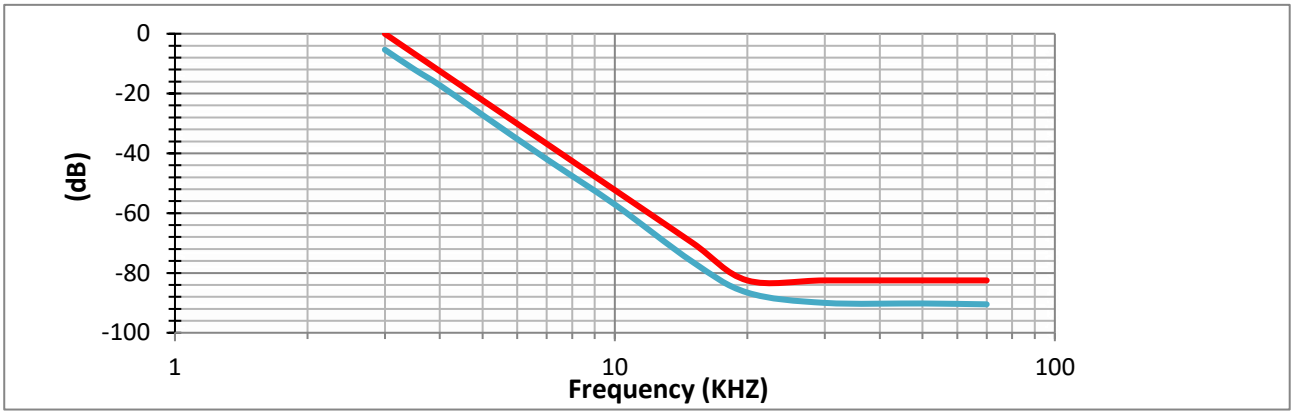
MODULATION LIMIT:

Channel 4799						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.475	0.176	0.515	0.174	±2.5	Pass
1000	1.886	0.255	1.774	0.313		
1500	2.125	0.306	2.306	0.412		
2500	2.261	0.348	2.231	0.336		
3000	2.237	0.446	2.204	0.437		



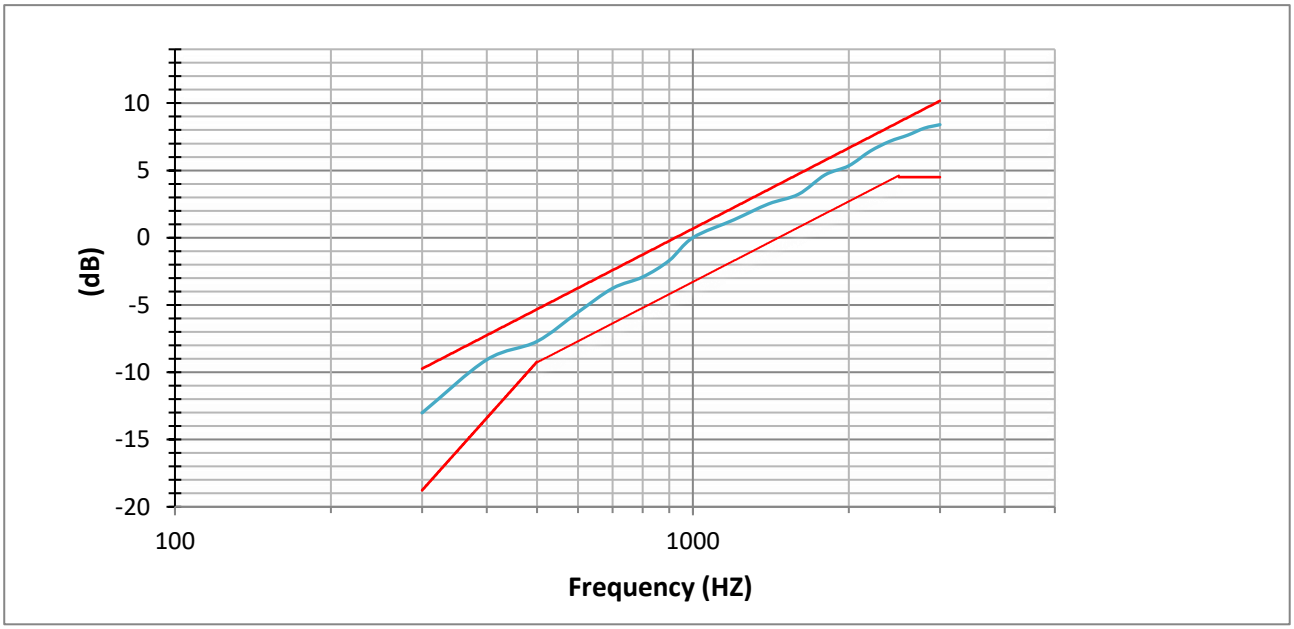
AUDIO LOW PASS FILTER RESPONSE:

Channel 4799			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-5.35	PASS
3.5	-6.7	-11.92	
4	-12.5	-17.23	
5	-22.2	-27.15	
7	-36.8	-41.96	
10	-52.3	-57.14	
15	-69.9	-76.25	
20	-82.5	-86.57	
30	-82.5	-90.01	
50	-82.5	-90.21	
70	-82.5	-90.49	



AUDIO FREQUENCY RESPONSE:

Channel 4799		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-13.02	PASS
400	-9.07	
500	-7.71	
600	-5.54	
700	-3.76	
800	-2.92	
900	-1.70	
1000	0.00	
1200	1.33	
1400	2.51	
1600	3.23	
1800	4.67	
2000	5.34	
2200	6.43	
2400	7.16	
2600	7.62	
2800	8.14	
3000	8.4	



10. TRANSMITTER FREQUENCY BEHAVIOR

10.1 LIMIT

Section 90.214
Transient frequencies must be within the maximum frequency difference limits during the time intervals indicated:

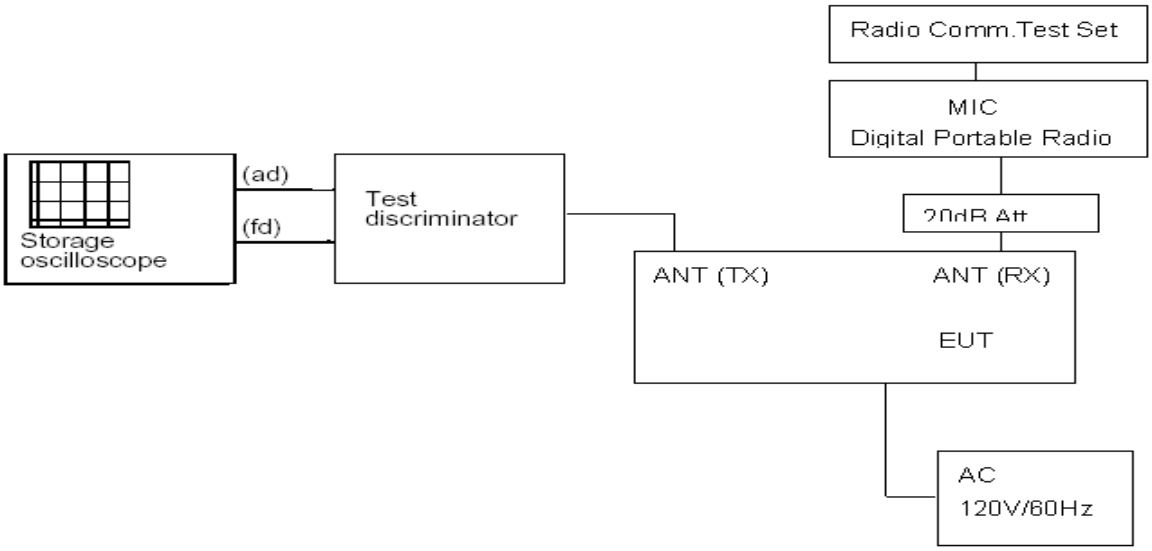
Time intervals [1, 2]	Maximum frequency difference [3]	All equipment	
		150 to 174 MHz	421 to 512MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 KHz Channels			
t_1 [4]	± 25.0 KHz	5.0 ms	10.0 ms
t_2	± 12.5 KHz	20.0 ms	25.0 ms
t_3 [4]	± 25.0 KHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 KHz Channels			
t_1 [4]	± 12.5 KHz	5.0 ms	10.0 ms
t_2	± 6.25 KHz	20.0 ms	25.0 ms
t_3 [4]	± 12.5 KHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 KHz Channels			
t_1 [4]	±6.25 KHz	5.0 ms	10.0 ms
t_2	±3.125 KHz	20.0 ms	25.0 ms
t_3 [4]	±6.25 KHz	5.0 ms	10.0 ms

1. t_{on} is the instant when a 1 KHz test signal is completely suppressed, including any capture time due to phasing.
   t_1 is the time period immediately following t_{on}.
   t_2 is the time period immediately following t_1.
   t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
   t_{off} is the instant when the 1 KHz test signal starts to rise.
2. During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in § 90.213.
3. Difference between the actual transmitter frequency and the assigned transmitter frequency.
4. If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

10.2 TEST PROCEDURE

a. Use Digital portable radio which manufactured by VictelGlobal Communications Corporation Limited which uses same protocol as the DUT connect to RX antenna by 20Att in order to avoid damaging DUT;
b. Connect DUT into Test discriminator and Storage Oscilloscope and keep DUT stats ON;
c. Inut 1KHz signal into digital portable radio;
d Set the modulation domain analyzer to trigger on the rising edge of the waveform in order to capture a single-shot turn-on of the transmitter signals;
e Keep the digital protable radio in OFF state and Key the PTT of digital portable radio;
f Observe the stored oscilloscope of modulation domain analyzer.The signal trace shall be maintained within the allowable limits during the periods t_1 and t_2,and shall also remain within limits following t_2;
g Adjust the modulation domain anzlyzer to trigger on the falling edge of the transmitter waveform in order to capture a single-shot turn-off transmitter of the transmitter signal.
h Keep the digital portable radio in ON state and Unkey the PTT of digital portable radio;
i Observe the stored oscilloscope of modulation domain analyzer. The signal trace shall be maintained within the allowable limits during the period t_3

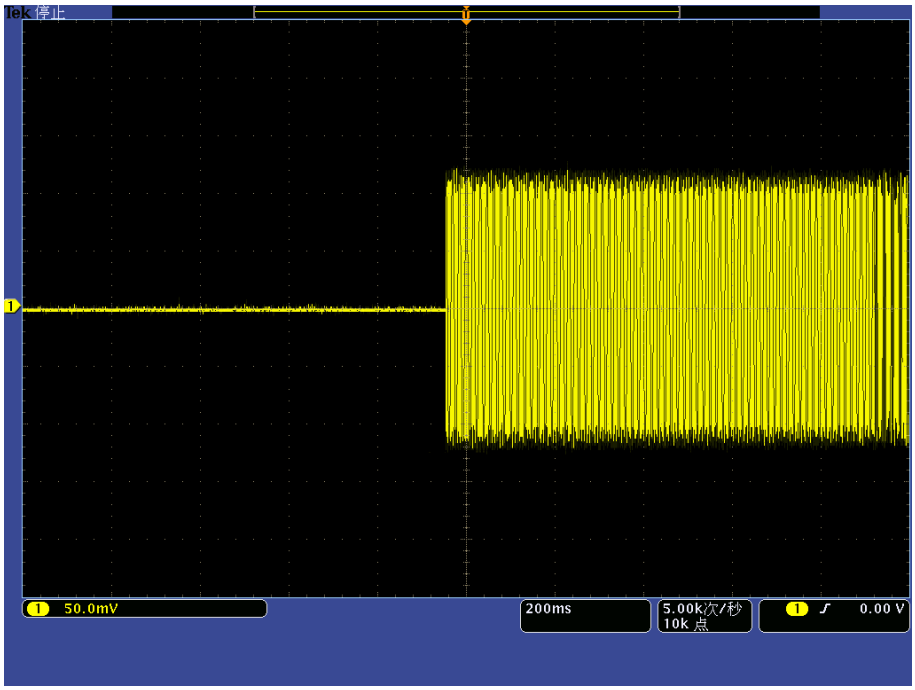
10.3 TEST SETUP



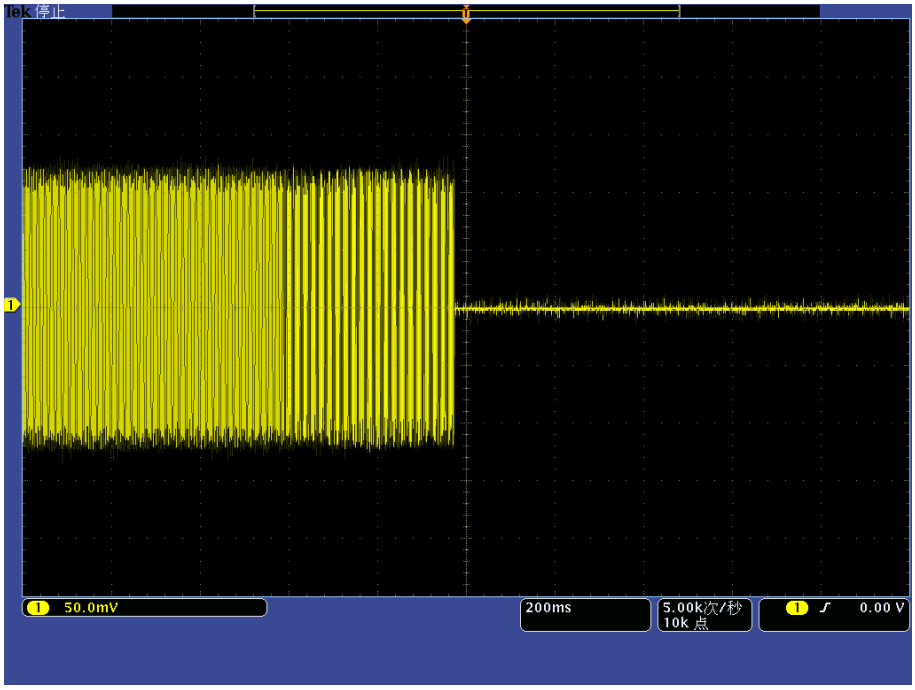
10.4 TEST RESULT

Note: All mode has been tested, only shown the worst case in this report.

Transmitter Frequency Behaviour @ 12.5 KHz Channel Separation------Off – On



Transmitter Frequency Behaviour @ 12.5 KHz Channel Separation------On – Off



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