Prüfbericht-Nr.: *Test Report No.:*	16071449 001	**Auftrags-Nr.:** *Order No.:*	174040971	Seite 1 von 37 *Page 1 of 37*
Kunden-Referenz-Nr.: *Client Reference No.:*	352690	**Auftragsdatum:** *Order date.:*	12 Oct 2015	
Auftraggeber: *Client:*	Sam Ash Music Corporation 262 Duffy Avenue, Hicksville, NY 11801			
Prüfgegenstand: *Test item:*	UHF Wireless System			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	CH99, CH88			
Auftrags-Inhalt: *Order content:*	TUV Rheinland - EMC service			
Prüfgrundlage: *Test specification:*	TIA/EIA-603-D-2010 FCC 47 CFR Part 74.861, Subpart H: 2013			

Wareneingangsdatum: *Date of receipt:*	12 Oct 2015
Prüfmuster-Nr.: *Test sample No.:*	174040971-001
Prüfzeitraum: *Testing period:*	Refer to test report
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Guangdong) Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
18 Dec 2015	Storm Shu / Assistant Project Manager	

kontrolliert von / *reviewed by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
	Max Y. C. Yao / Department Manager	

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*
Prüfmuster vollständig und unbeschädigt
Test item complete and undamaged

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)		F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested

Prüfbericht-Nr.: *Test Report No.:*	16071449 001	**Auftrags-Nr.:** *Order No.:*	174040971	Seite 1 von 37 *Page 1 of 37*
Kunden-Referenz-Nr.: *Client Reference No.:*	352690	**Auftragsdatum:** *Order date.:*	12 Oct 2015	
Auftraggeber: *Client:*	Sam Ash Music Corporation 262 Duffy Avenue, Hicksville, NY 11801			
Prüfgegenstand: *Test item:*	UHF Wireless System			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	CH99, CH88			
Auftrags-Inhalt: *Order content:*	TUV Rheinland - EMC service			
Prüfgrundlage: *Test specification:*	TIA/EIA-603-D-2010 FCC 47 CFR Part 74.861, Subpart H: 2013			

Wareneingangsdatum: *Date of receipt:*	12 Oct 2015
Prüfmuster-Nr.: *Test sample No.:*	174040971-001
Prüfzeitraum: *Testing period:*	Refer to test report
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Guangdong) Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by:*

Storm hu

18 Dec 2015 Storm Shu / Assistant Project Manager

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by:*

21 Dec 2015

Max Y. C. Yao / Department Manager

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*
Prüfmuster vollständig und unbeschädigt
Test item complete and undamaged

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)		F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested

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Mail: service@de.tuv.com · Web: www.tuv.com

TEST SUMMARY

5.1 CONDUCTED OUTPUT POWER
RESULT: *Pass*

5.2 SPURIOUS RADIATION MEASUREMENT (TX)
RESULT: *Pass*

5.3 MODULATION CHARACTERISTICS MEASUREMENT
RESULT: *Pass*

5.4 OCCUPIED BANDWIDTH
RESULT: *Pass*

5.5 FREQUENCY TOLERANCE
RESULT: *Pass*

5.6 EMISSION MASK
RESULT: *Pass*

5.7 ELECTROMAGNETIC FIELDS
RESULT: *Pass*

Contents

1. General Remarks

1.1. Complementary Materials

All attachments are integral parts of this test report.

2. Test Sites

2.1. Test Facilities

TÜV Rheinland(Guangdong) Ltd. EMC Laboratory.
No.102, 1F of Southwest and No.205, 2F of West Warehouse Building, No.767 Tianyuan Road, Tianhe District, Guangzhou, Guangdong, P.R.China

2.2. List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	16.Mar.2016	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	16.Mar.2016	1 year
Trilog-Broadband Antenna	VULB9168 (30MHz-1GHz)	SCHWARZBECK MESSELEKTRONIK	209	16.Mar.2016	2 years
Double-Ridged Waveguide Horn Antenna	HF906 (1-18GHz)	Rohde & Schwarz	100385	16.Mar.2016	2 years
Pre-amplifier	AFS42-00101800-25-S-42	MITEQ	1101599	16.Mar.2016	2 years
Band Reject Filter	BRM50702	Micro-Tronics	023	16.Mar.2016	2 years
Standard Gain Horn Antenna	3160-09 (18-26.5GHz)	EMCO	21642	16.Mar.2016	5 years
Pre-amplifier	AFS33-18002650-30-8P-44	MITEQ	1108282	16.Mar.2016	2 years
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	16.Mar.2016	1 year
Loop Antenna	HFH2-Z2 (<30MHz)	Rohde & Schwarz	100111	16.Mar.2016	2 years
EMI Test Receiver	ESCS30	Rohde & Schwarz	100316	16.Mar.2016	1 year

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
Two-Line V-Network	ESH3-Z5	Rohde & Schwarz	100308	16.Mar.2016	1 year
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100701	16.Mar.2016	1 year

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.

2.3. Trace ability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4. Calibration

All equipment requiring calibration is calibrated periodically by the manufacturer or accredited calibration services according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5. Abbreviations

PASS	means 'complied with requirement'	**N/A**	means 'not applicable'
FAIL	means 'not complied'	**N.C.R.**	means 'no calibration required'

2.6. Measurement Uncertainty

Table 2: Measurement Uncertainty

Testing Item	Frequency Range	Uncertainty
Conducted Emission (Mains port)	0.09MHz - 30MHz	2.26 dB
Radiated Emission (966 Chamber: 3m)	0.09MHz - 30MHz	4.42 dB
Radiated Emission (966 Chamber: 3m)	30MHz – 1000MHz	5.16 dB
Radiated Emission (966 Chamber: 3m)	Above 1000MHz	2.22 dB

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

3. General Product Information

3.1. Product Function and Intended Use

The tested sample is a **"UHF Wireless System"** with model number as shown in the cover page of test report for new approval.
The tested sample has microphone input function.
CH99 and CH88 are same except the model names, therefore the all tests were performed on CH99 only.

3.2. Rating and Physical Characteristics

Product name:	Wireless Microphone	
Model name:	CH99	CH88
Rating:	3Vdc	
Frequency range:	470 ~ 494MHz	
	494 ~ 518MHz	
	518 ~ 542MHz	
	542 ~ 566MHz	
Channel numbers:	320	
Bandwidth:	200kHz	
Modulation:	FM	
Antenna:	Integral	
Temperature	-10 ~ +60 ℃	

3.3. Noise Generating or Sources of Interference

1) IC circuits

3.4. Noise Suppressing Parts

Please refer to Attachment Photo Documentation for details.

3.5. Submitted Documents

1) Circuit diagram
2) Block diagram
3) User manual
4) PCB Layout
5) BOM List

4. Test Set-up and Operation Modes

4.1. Test Methodology

The test methodology used is based on the requirement of 47 CFR PART 15, section 15.31, 15.33, 15.35, 15.107 and 15.109, or of ICES-003.

The test methods, which have been used, are based on ANSI C63.10 or CAN/CSA-CEI/IEC CISPR 22.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the instructions for use.

4.2. Independent and Test Operation Modes

The basic operation mode is:
A. Transmitter mode
1. Low CH
2. Middle CH
3. High CH

4.3. Special Accessories and Auxiliary Equipment

The EUT was tested as an independent unit with the following equipment:

Description	Manufacturer	Model No.	S/N	Certification
N/A	N/A	N/A	N/A	N/A

4.4. Countermeasures to achieve EMC compliance

The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

4.5. Test Setup

The test setup was realized on a table of 80cm height during all the tests.
The test arrangement is configured and set according to manufacturer's installations.

Diagram 1 of Configuration for testing other test items

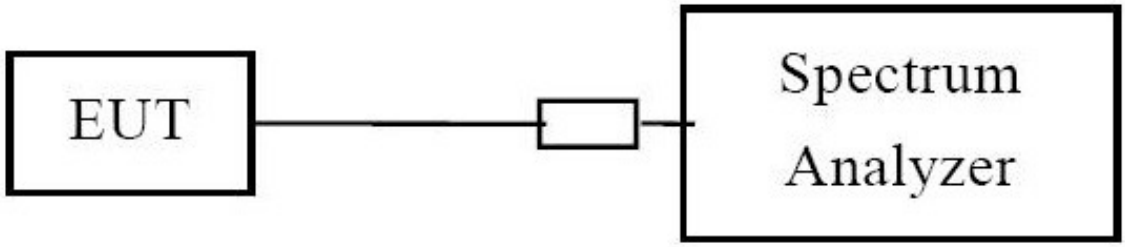


Diagram 2 of Measurement Equipment Configuration for Testing Radiated Emission

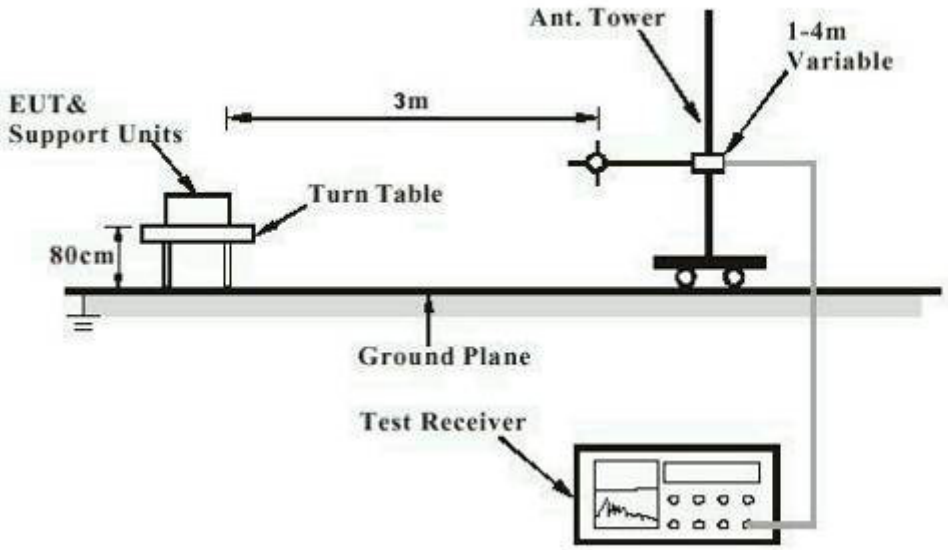
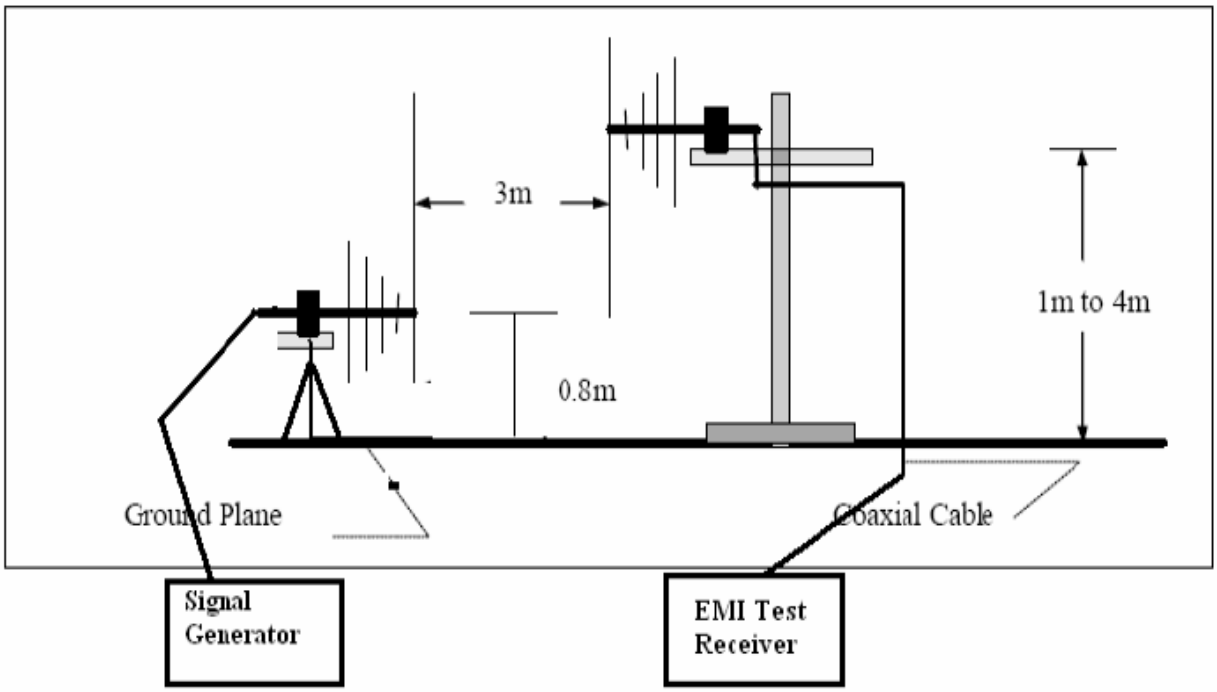


Diagram 3 of Measurement Equipment Configuration for Substitution Method



5. Test Results EMISSION

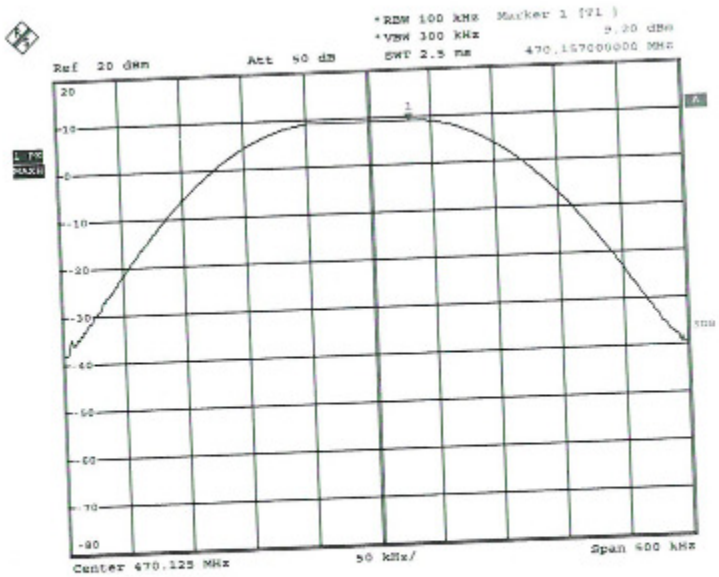
5.1. Conducted Output Power

RESULT:	**PASS**

Date of testing	:	24 Nov 2015
Test specification	:	FCC Part 2 Per Section 2.1046(a)
Guide	:	ANSI/TIA-603-D-2010, clause 2.2.1
Limits	:	FCC Part 74 Per Section 74.861(e)(1)
Kind of test site	:	3m Anechoic Chamber
Operation mode	:	Transmitting (unmodulated)
Temperature	:	23°C
Humidity	:	50%
Limit	:	174-216MHz: 50mW (17dBm) 470-608MHz: 250mW (17dBm) 614-806MHz: 250mW (24dBm)

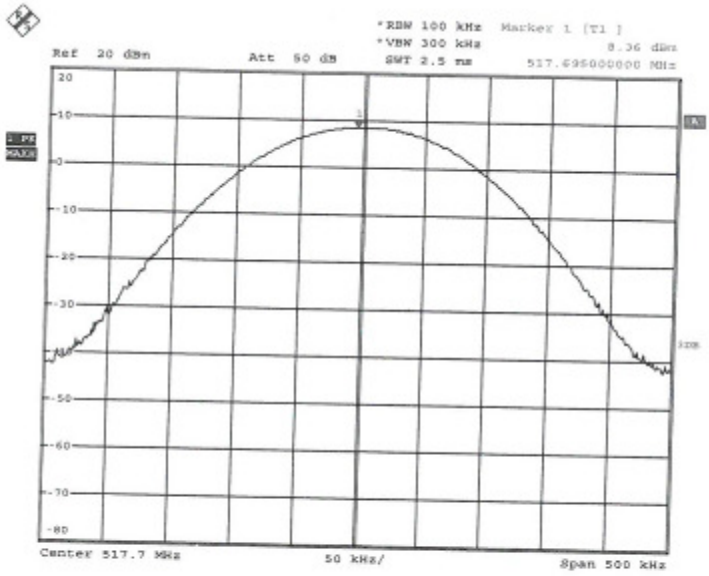
Figure 1: Conducted Output Power

Low CH (470.125MHz):



CH99 peak power L

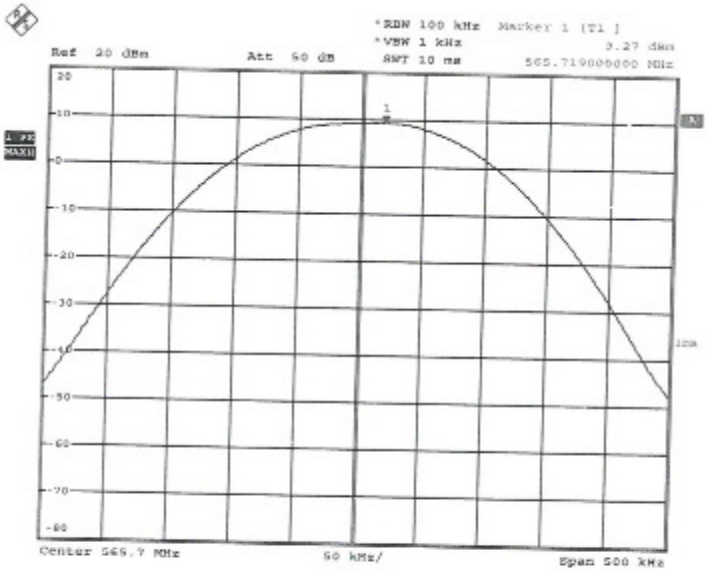
Middle CH (517.7MHz):



Date: 24.NOV.2015 02:12:06

CH99 peak power M

High CH (565.7MHz):



Date: 24.NOV.2015 02:04:35

CH99 peak power H

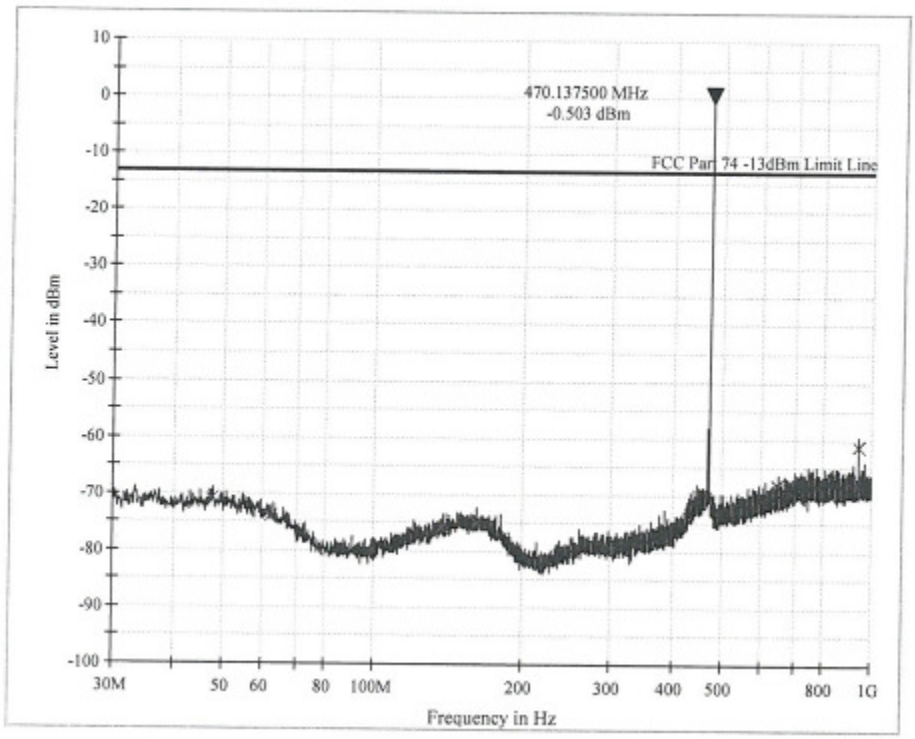
Sign-off Test Data

5.2. Spurious Radiation Measurement

RESULT:	**PASS**

Date of testing	:	09 Nov 2015
Test specification	:	FCC Part 2 Per Section 2.1053(a) and 2.1057
Guide	:	ANSI/TIA-603-D-2010, clause 2.2.12
Limits	:	FCC Part 74 Per Section 74.861(e)(6)(iii)
Kind of test site	:	3m Full-Anechoic Chamber
Operation mode	:	Transmitting (unmodulated)
Temperature	:	23°C
Humidity	:	50%

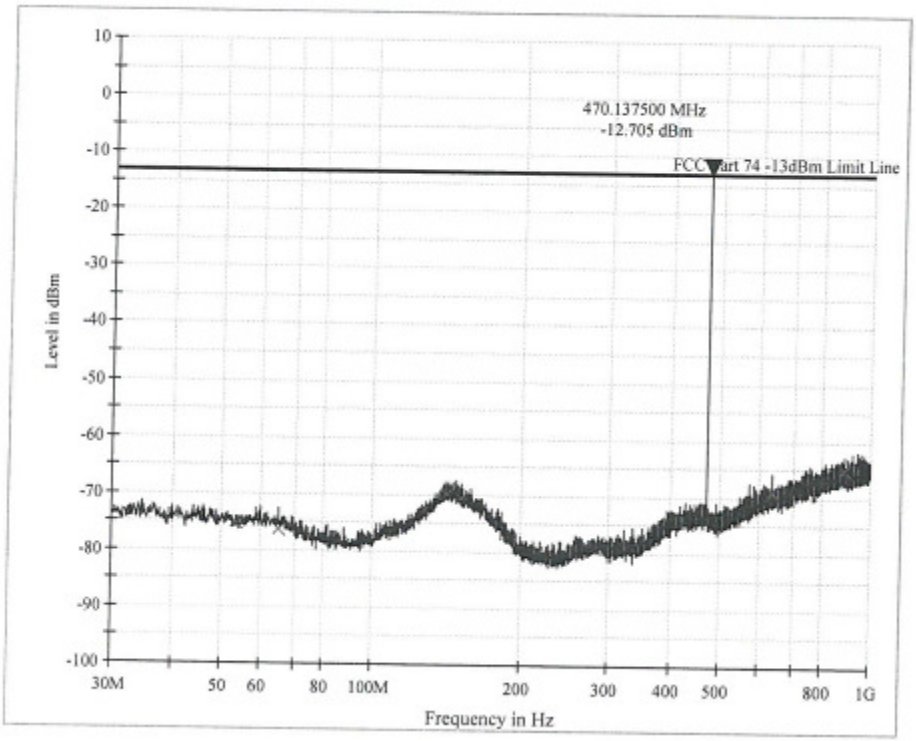
Figure 2: TX Spurious Radiation, 30 – 1000 MHz, Vertical (CH99, Low CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
47.440000	-71.0	1000.0	100.000	V	-74.9	58.0	-13.0	
62.380000	-74.0	1000.0	100.000	V	-77.3	61.0	-13.0	
136.840000	-75.7	1000.0	100.000	V	-79.1	62.7	-13.0	
161.680000	-74.9	1000.0	100.000	V	-77.5	61.9	-13.0	
648.160000	-68.1	1000.0	100.000	V	-72.7	55.1	-13.0	
940.360000	-61.2	1000.0	100.000	V	-70.6	48.2	-13.0	

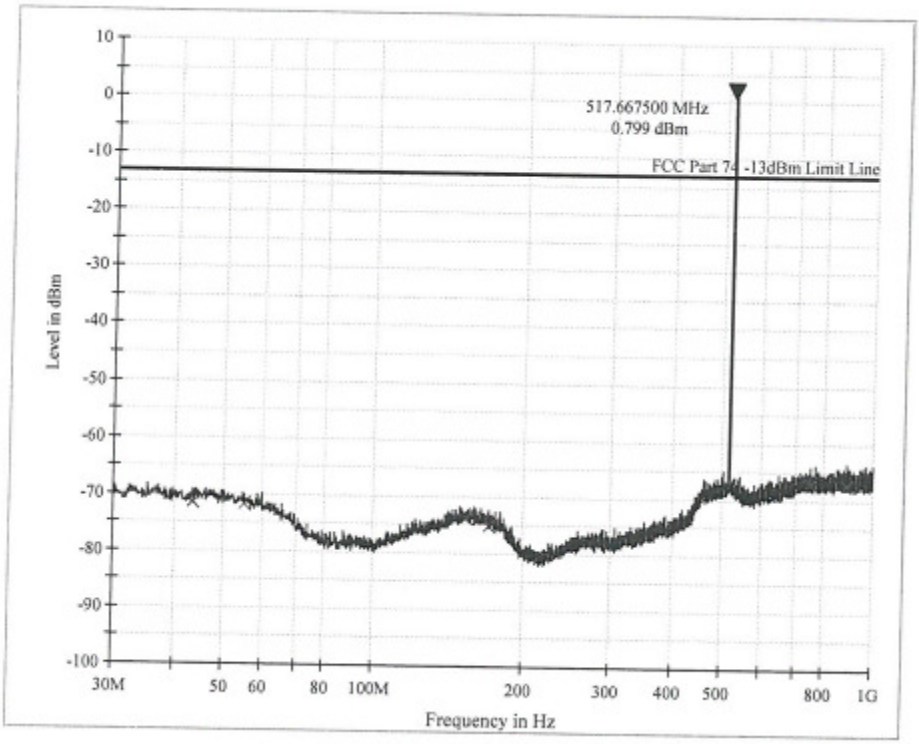
Figure 3: TX Spurious Radiation, 30 – 1000 MHz, Horizontal (CH99, Low CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
53.500000	-75.3	1000.0	100.000	H	-78.7	62.3	-13.0	
65.140000	-76.3	1000.0	100.000	H	-79.2	63.3	-13.0	
141.160000	-69.7	1000.0	100.000	H	-73.0	56.7	-13.0	
151.480000	-70.7	1000.0	100.000	H	-73.4	57.7	-13.0	
635.980000	-68.8	1000.0	100.000	H	-72.7	55.8	-13.0	
884.800000	-64.9	1000.0	100.000	H	-68.6	51.9	-13.0	

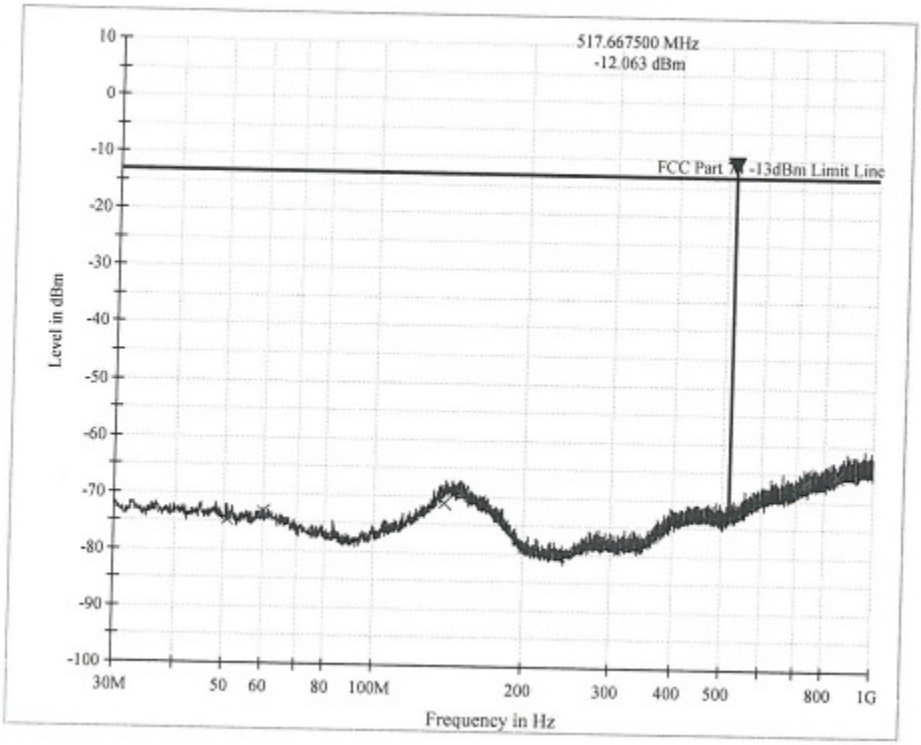
Figure 4: TX Spurious Radiation, 30 – 1000 MHz, Vertical (CH99, Middle CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
43.240000	-71.4	1000.0	100.000	V	-74.9	58.4	-13.0	
55.000000	-71.9	1000.0	100.000	V	-75.8	58.9	-13.0	
153.700000	-73.7	1000.0	100.000	V	-77.6	60.7	-13.0	
170.920000	-75.1	1000.0	100.000	V	-78.0	62.1	-13.0	
749.500000	-67.0	1000.0	100.000	V	-70.8	54.0	-13.0	
889.540000	-67.2	1000.0	100.000	V	-70.6	54.2	-13.0	

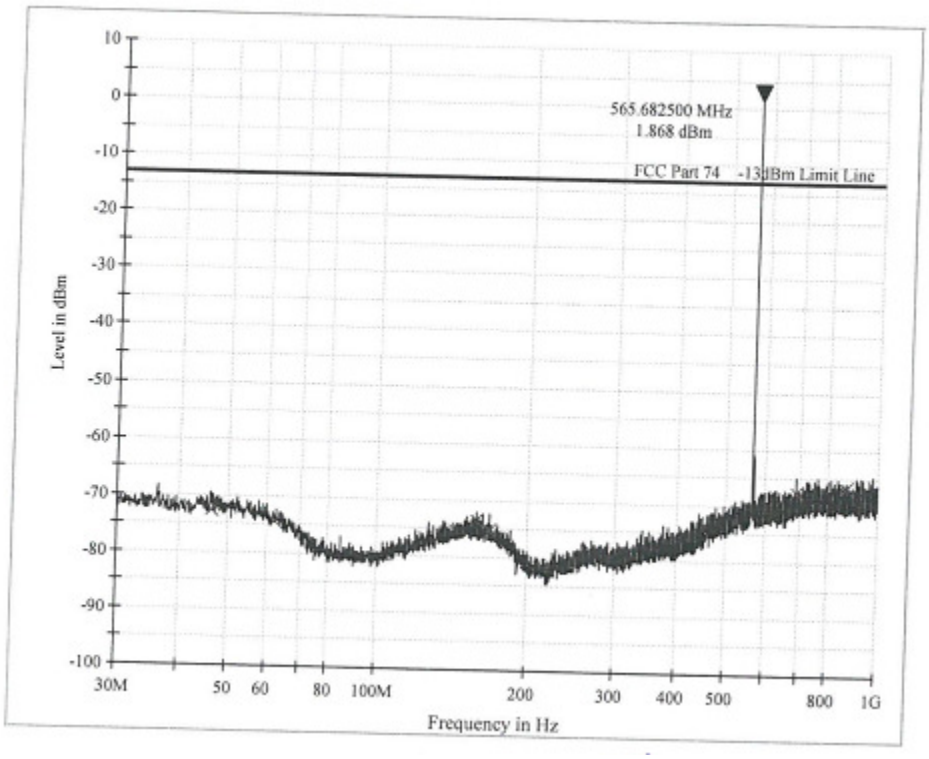
Figure 5: TX Spurious Radiation, 30 – 1000 MHz, Horizontal (CH99, Middle CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
50.620000	-74.6	1000.0	100.000	H	-78.3	61.6	-13.0	
59.920000	-73.2	1000.0	100.000	H	-78.3	60.2	-13.0	
138.520000	-71.1	1000.0	100.000	H	-73.3	58.1	-13.0	
150.160000	-69.5	1000.0	100.000	H	-73.2	56.5	-13.0	
726.700000	-67.1	1000.0	100.000	H	-71.0	54.1	-13.0	
849.880000	-65.5	1000.0	100.000	H	-69.2	52.5	-13.0	

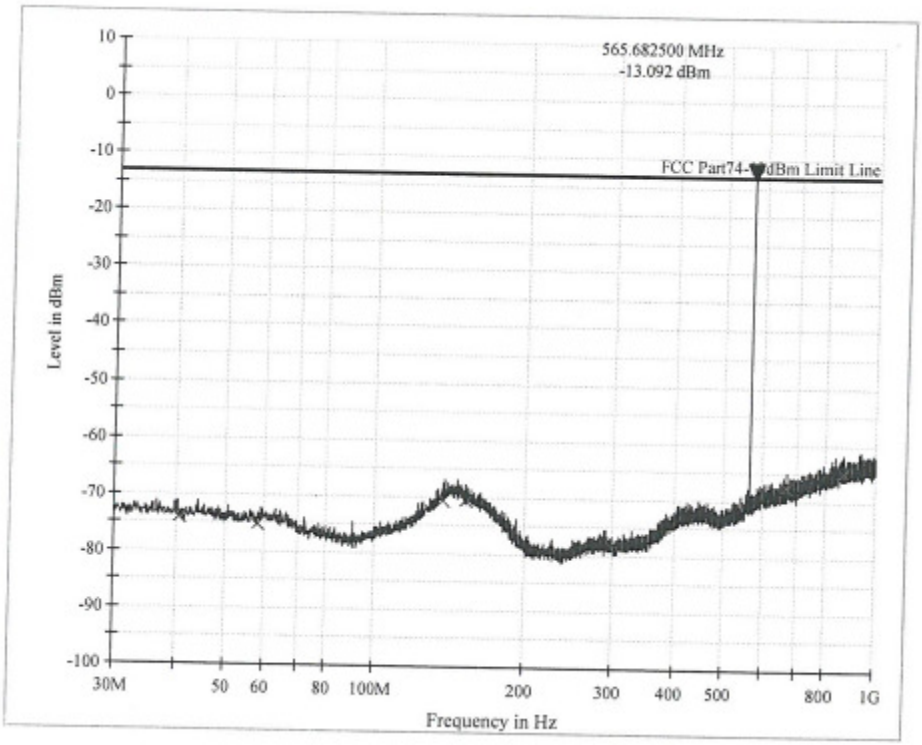
Figure 6: TX Spurious Radiation, 30 – 1000 MHz, Vertical (CH99, High CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
46.480000	-72.8	1000.0	100.000	V	-74.8	59.8	-13.0	
62.140000	-74.5	1000.0	100.000	V	-77.2	61.5	-13.0	
158.020000	-73.5	1000.0	100.000	V	-77.4	60.5	-13.0	
167.860000	-75.3	1000.0	100.000	V	-77.8	62.3	-13.0	
692.500000	-67.5	1000.0	100.000	V	-71.6	54.5	-13.0	
865.300000	-66.6	1000.0	100.000	V	-70.7	53.6	-13.0	

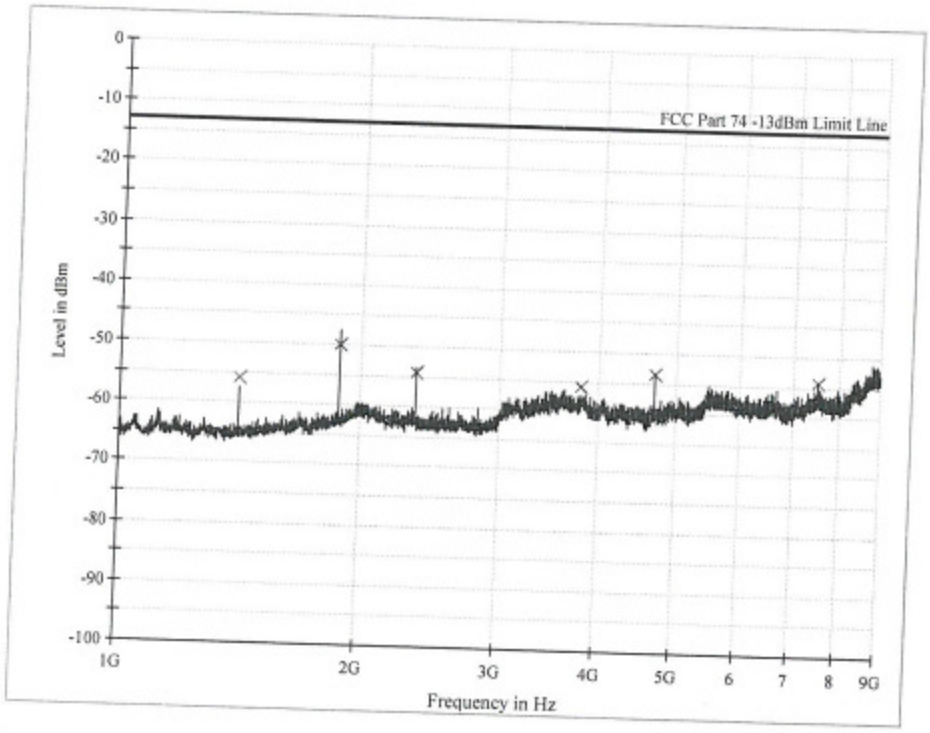
Figure 7: TX Spurious Radiation, 30 – 1000 MHz, Horizontal (CH99, High CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
40.540000	-73.9	1000.0	100.000	H	-77.9	60.9	-13.0	
58.000000	-75.2	1000.0	100.000	H	-78.5	62.2	-13.0	
137.680000	-70.6	1000.0	100.000	H	-73.6	57.6	-13.0	
152.080000	-70.6	1000.0	100.000	H	-73.5	57.6	-13.0	
671.920000	-67.6	1000.0	100.000	H	-72.2	54.6	-13.0	
864.220000	-64.9	1000.0	100.000	H	-68.9	51.9	-13.0	

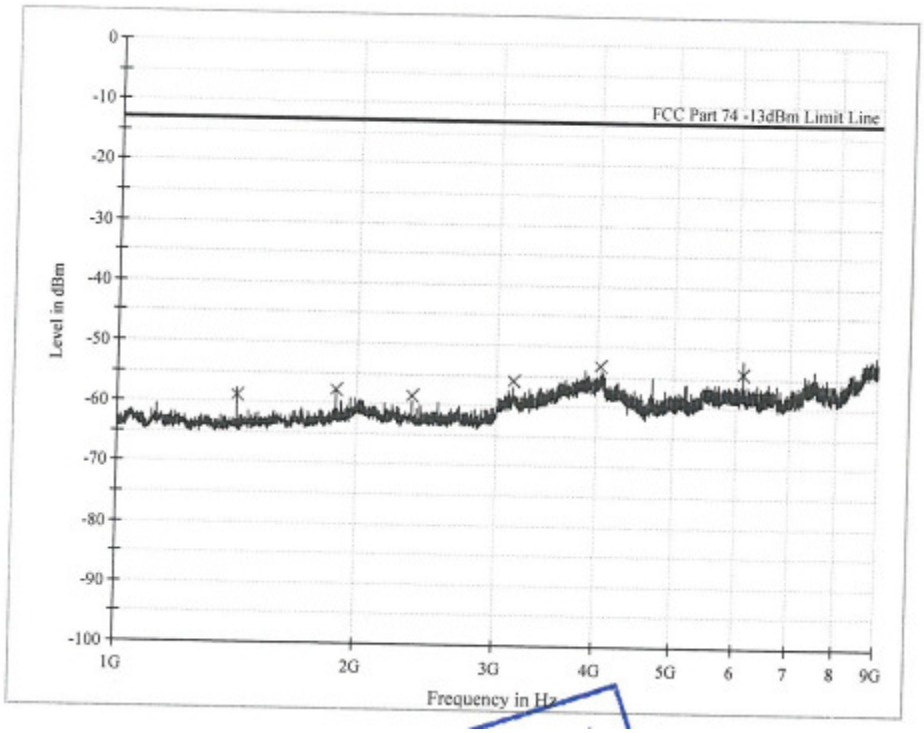
Figure 8: TX Spurious Radiation, Above 1GHz, Vertical (CH99, Low CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1410.000000	-55.8	1000.0	1000.000	V	-114.7	42.8	-13.0	
1880.000000	-50.1	1000.0	1000.000	V	-111.6	37.1	-13.0	
2350.000000	-54.2	1000.0	1000.000	V	-111.7	41.2	-13.0	
3789.000000	-56.0	1000.0	1000.000	V	-107.7	43.0	-13.0	
4701.000000	-53.4	1000.0	1000.000	V	-107.5	40.4	-13.0	
7523.000000	-54.2	1000.0	1000.000	V	-101.7	41.2	-13.0	

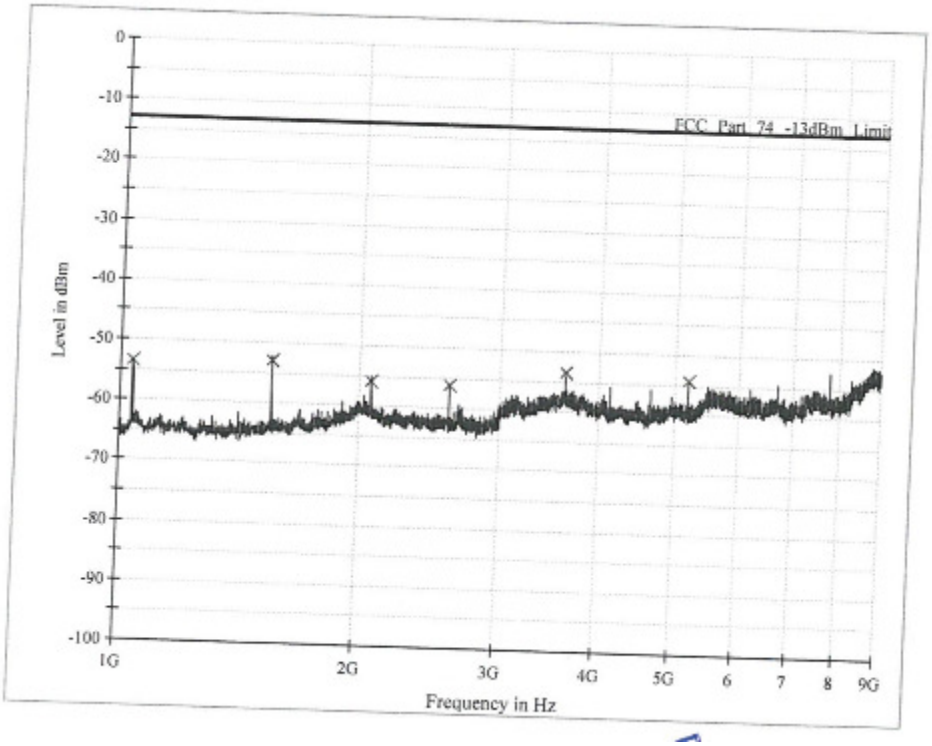
Figure 9: TX Spurious Radiation, Above 1GHz, Horizontal (CH99, Low CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1410.000000	-58.8	1000.0	1000.000	H	-114.1	45.8	-13.0	
1880.000000	-57.7	1000.0	1000.000	H	-112.0	44.7	-13.0	
2350.000000	-58.6	1000.0	1000.000	H	-112.1	45.6	-13.0	
3148.000000	-56.0	1000.0	1000.000	H	-108.9	43.0	-13.0	
4046.000000	-53.3	1000.0	1000.000	H	-105.2	40.3	-13.0	
6112.000000	-54.2	1000.0	1000.000	H	-105.4	41.2	-13.0	

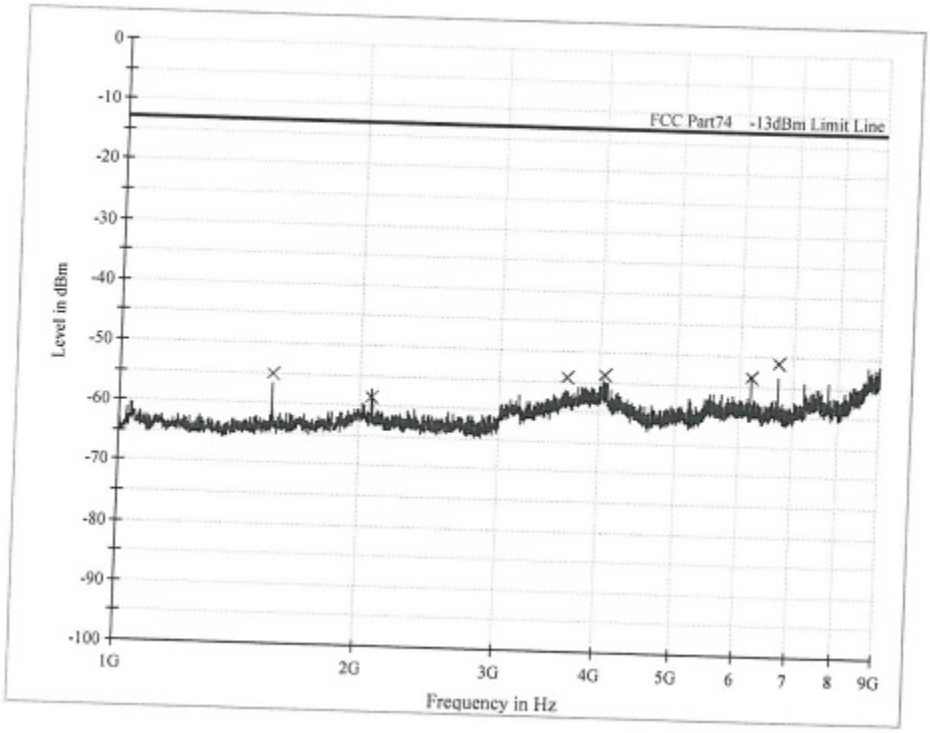
Figure 10: TX Spurious Radiation, Above 1GHz, Vertical (CH99, Middle CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1035.000000	-53.6	1000.0	1000.000	V	-113.7	40.6	-13.0	
1553.000000	-53.0	1000.0	1000.000	V	-113.7	40.0	-13.0	
2070.000000	-56.0	1000.0	1000.000	V	-110.7	43.0	-13.0	
2588.000000	-56.1	1000.0	1000.000	V	-111.2	43.1	-13.0	
3624.000000	-53.5	1000.0	1000.000	V	-107.7	40.5	-13.0	
5178.000000	-54.2	1000.0	1000.000	V	-106.1	41.2	-13.0	

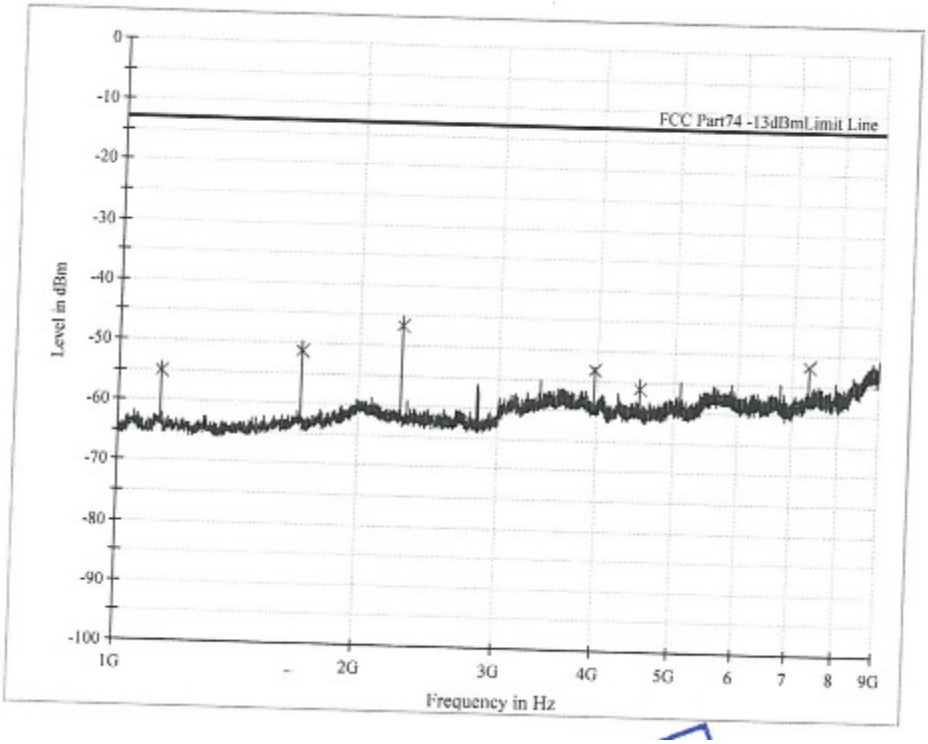
Figure 11: TX Spurious Radiation, Above 1GHz, Horizontal (CH99, Middle CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1553.000000	-55.0	1000.0	1000.000	H	-113.2	42.0	-13.0	
2070.000000	-58.7	1000.0	1000.000	H	-111.3	45.7	-13.0	
3633.000000	-54.3	1000.0	1000.000	H	-107.2	41.3	-13.0	
4053.000000	-53.9	1000.0	1000.000	H	-105.2	40.9	-13.0	
6213.000000	-53.4	1000.0	1000.000	H	-105.9	40.4	-13.0	
6730.000000	-51.1	1000.0	1000.000	H	-105.1	38.1	-13.0	

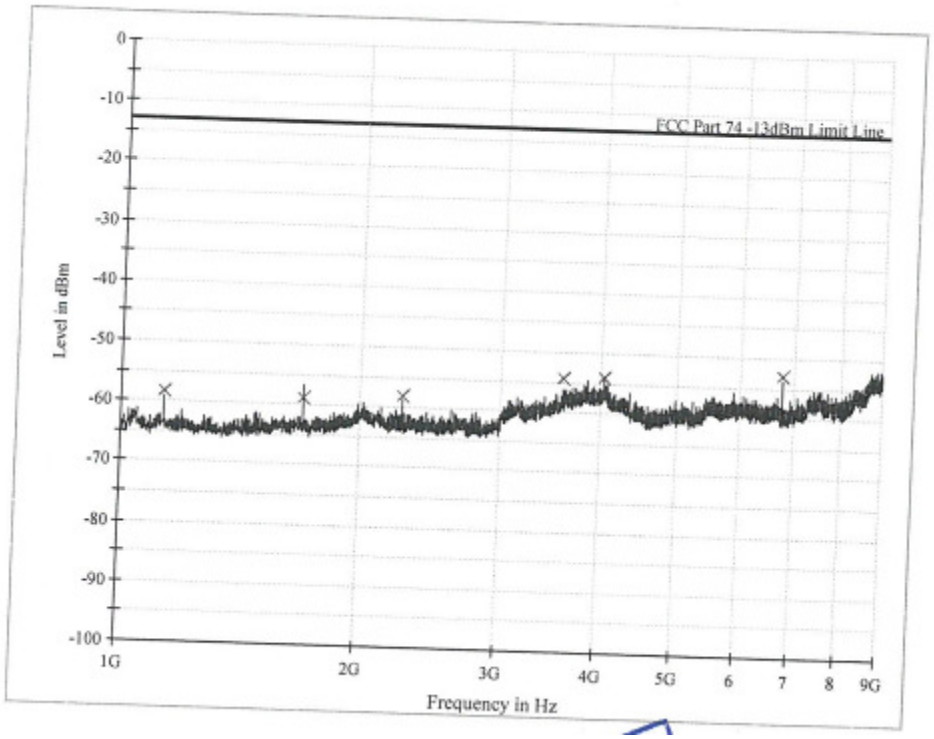
Figure 13: TX Spurious Radiation, Above 1GHz, Vertical (CH99, High CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1131.000000	-55.0	1000.0	1000.000	V	-114.2	42.0	-13.0	
1697.000000	-51.2	1000.0	1000.000	V	-112.8	38.2	-13.0	
2262.000000	-46.7	1000.0	1000.000	V	-111.5	33.7	-13.0	
3960.000000	-53.2	1000.0	1000.000	V	-108.4	40.2	-13.0	
4526.000000	-56.2	1000.0	1000.000	V	-107.5	43.2	-13.0	
7354.000000	-51.8	1000.0	1000.000	V	-102.3	38.8	-13.0	

Figure 13: TX Spurious Radiation, Above 1GHz, Horizontal (CH99, High CH)



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBm)	Comment
1131.000000	-58.3	1000.0	1000.000	H	-113.6	45.3	-13.0	
1696.000000	-58.7	1000.0	1000.000	H	-112.7	45.7	-13.0	
2262.000000	-58.0	1000.0	1000.000	H	-112.0	45.0	-13.0	
3591.000000	-54.2	1000.0	1000.000	H	-107.7	41.2	-13.0	
4032.000000	-53.9	1000.0	1000.000	H	-105.3	40.9	-13.0	
6789.000000	-53.0	1000.0	1000.000	H	-105.2	40.0	-13.0	

5.3. Modulation Characteristics measurement

RESULT:	**PASS**

Date of testing	:	24 Nov. 2015
Test specification	:	FCC Part 2 Per Section 2.1047(a) and (b)
Guide	:	ANSI/TIA-603-D-2010, clause 2.2.3
Limits	:	FCC Part 74 Per Section 74.861(e)(3) FCC Part 2 Per Section 2.1047(a) and (b)
Operation mode	:	Transmitting
Temperature	:	20°C
Humidity	:	51%

Figure 14: Modulation Characteristics measurement (CH99)

Modulation Limiting

Frequency (Hz)	Deviation (kHz)
100	7.7
200	8.2
300	8.5
400	8.6
500	8.5
600	8.6
700	8.6
800	8.7
900	8.8
1000	9.2
1500	9.4
2000	9.9
3000	10.9

Frequency (Hz)	Deviation (kHz)
4000	10.9
5000	12.9
6000	13.7
7000	14.6
8000	15.3
9000	16.1
10000	16.5
12000	16.9
13000	16.4
14000	15.1
15000	13.1
16000	10.9
17000	8.8

Modulation (dB)		-20	-10	0	5	15	20
400Hz	kHz	8.1	14.1	24.7	32.3	47.7	53.2
800Hz	kHz	8.2	14.4	25.3	32.1	46.5	52.1
2kHz	kHz	9.4	16.5	28.9	36.8	46.7	49.3
5kHz	kHz	12.2	21.5	36.2	43.8	56.5	59.3
9kHz	kHz	15.2	26.8	43.4	49.8	57.9	58.3
12kHz	kHz	16.1	28.1	43.5	49.8	55.5	55.7
14kHz	kHz	14.3	25.1	38.5	42.5	46.5	46.7

Maximum Deviation

Maximum Deviation	Limit
71kHz	75kHz

Audio Frequency Response

Modulation Frequency (Hz)	Input Level (mV)	Audio Frequency Response (dB)
100	22.75	1.08
300	21.91	0.75
500	21.51	0.59
700	21.10	0.43
1000	20.09	0
1500	17.90	-1.0
2000	13.58	-2.02
2500	15.92	-3.40
3500	11.37	-4.94
5000	8.72	-7.25

5.4. Occupied Bandwidth

RESULT:	**PASS**

Date of testing	:	26 Nov 2015
Test specification	:	FCC Part 2 Per Section 2.1049(c)1
Guide	:	ANSI/TIA-603-D-2010, clause 2.2.11
Limits	:	FCC Part 74 Per Section 74.861(e)(3), 74.861(e)(5) and 74.861(e)(6)
Operation mode	:	Transmitting (modulated)
Temperature	:	20°C
Humidity	:	51%

Figure 15: Occupied Bandwidth (CH99)

Occupied Bandwidth

Equipment under test: CH99
Ambient temperature: 22℃
Relative humidity: 54%
Result: Pass
Remark: RBW = 300Hz VBW = 1KHz

Channel	Frequency (GHz)	Test Result (kHz)
H	0.5657	86.0
M	0.5177	97.2
L	0.470125	74.0

5.5. Frequency tolerance

RESULT:	**PASS**

Date of testing	:	26 Nov 2015
Test specification	:	FCC Part 2 Per Section 2.1055
Guide	:	ANSI/TIA-603-C-2004, clause 2.2.2
Limits	:	FCC Part 74 Per Section 74.861(e)(4)
Operation mode	:	Transmitting (unmodulated)
Temperature	:	-30°C to 50°C
Humidity	:	51%

Figure 16: Frequency tolerance (CH99)

CH99

The Frequency Tolerance (temperature)

Test condition	Power supply	Low Frequency (MHz) (470.125)	Middle Frequency (MHz) (517.7)	High Frequency (MHz) (565.7)
-30°C	DC 3.0V	470.14938	517.6912	565.6924
-20°C	DC 3.0V	470.14994	517.6986	565.7002
-10°C	DC 3.0V	470.14995	517.70384	565.70092
0°C	DC 3.0V	470.12567	517.7026	565.70403
10°C	DC 3.0V	470.12563	517.70136	565.70265
20°C	DC 3.0V	470.12585	517.70125	565.701834
30°C	DC 3.0V	470.12526	517.70132	565.70024
40°C	DC 3.0V	470.12528	517.7084	565.70032
50°C	DC 3.0V	470.125446	517.70126	565.700446
60°C	DC 3.0V	470.125546	517.70126	565.70084
Frequency Error:		0.00186	0.0088	0.0076
Frequency tolerance:		0.0004%	0.0017%	0.0013%
Frequency Tolerance Limit:		0.005%		

CH99

Table 1: The measurement of Frequency Tolerance (supply voltage)

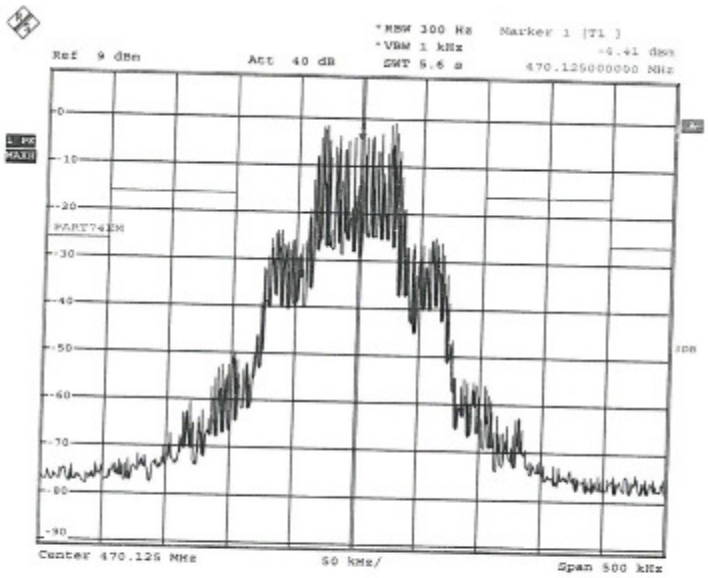
Temperature (°C)	Power supply	Low Frequency (MHz) (470.125)	Middle Frequency (MHz) (517.7)	High Frequency (MHz) (565.7)
20	DC3.3	470.125546	517.7024	565.7018
20	DC3.0	470.125536	517.7036	565.7002
20	DC2.7	470.12623	517.7046	565.7106
Frequency Error:		0.00123	0.0046	0.0106
Frequency tolerance:		0.00026%	0.00088%	0.0019%
Frequency Tolerance Limit:		0.005%		

5.6. Emission Mask

RESULT:	**PASS**

Date of testing	:	26 Nov 2015
Test specification	:	FCC Part 2 Per Section 2.1053(a) and 2.1057
Guide	:	ANSI/TIA-603-C-2004, clause 2.2.12
Limits	:	FCC Part 74 Per Section 74.861(e)(6)(7)
Operation mode	:	Transmitting (modulated)
Temperature	:	20°C
Humidity	:	51%

Figure 17: Emission Mask (CH99, Low CH)

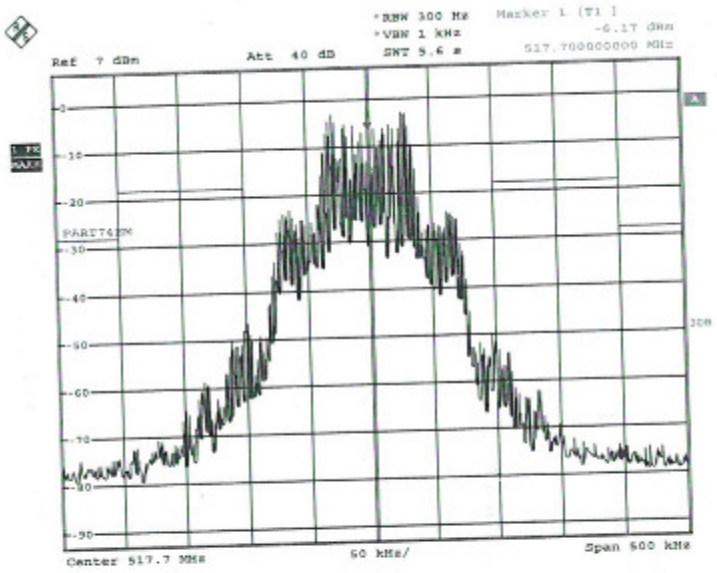


Date: 24.NOV.2015 02:23:29

CH99 Emission mask (With 2.5KHz modulating)

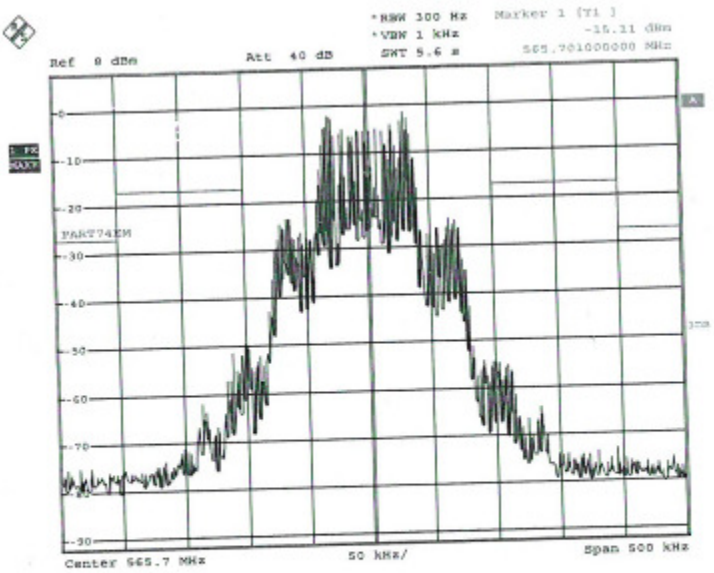
Sign-off Test Data

Figure 18: Emission Mask (CH99, Middle CH)



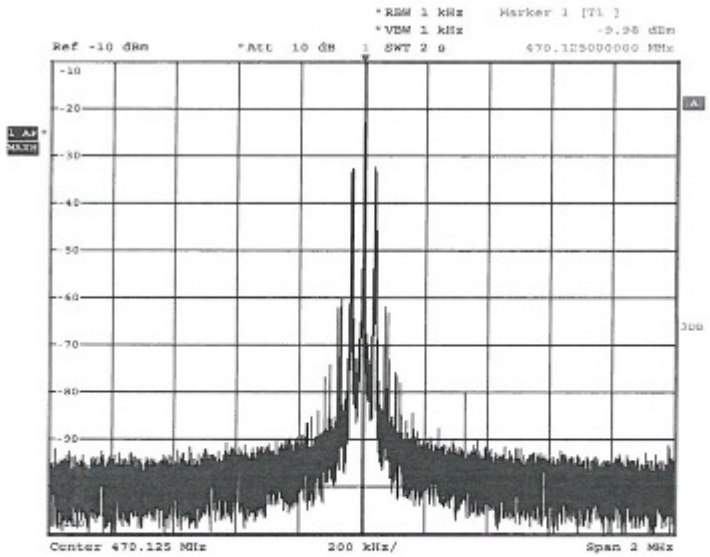
CH99 Emission mask (With 2.5KHz modulating) M

Figure 19: Emission Mask (CH99, High CH)



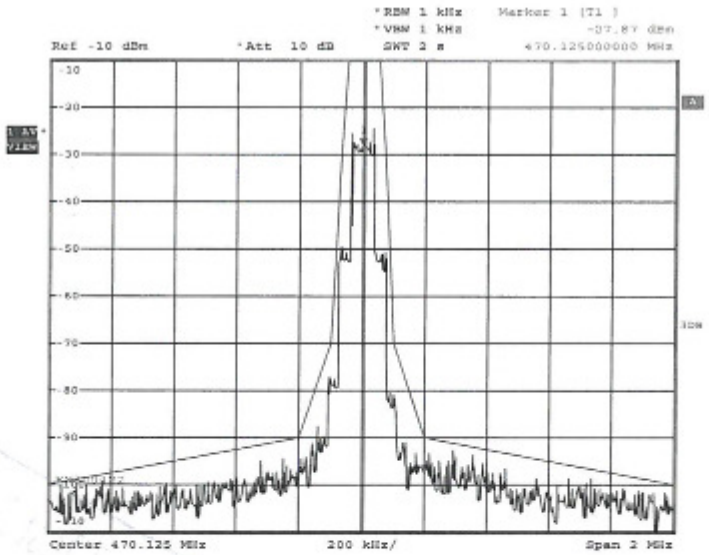
CH99 Emission mask (With 2.5KHz modulating) H

Figure 20: Emission Mask in ETSI EN300 422-1 V1.4.2 (CH99, Low CH)



Date: 15.NOV.2015 10:07:14

CH99 Necessary bandwidth Low without Modulating (470.125MHz)

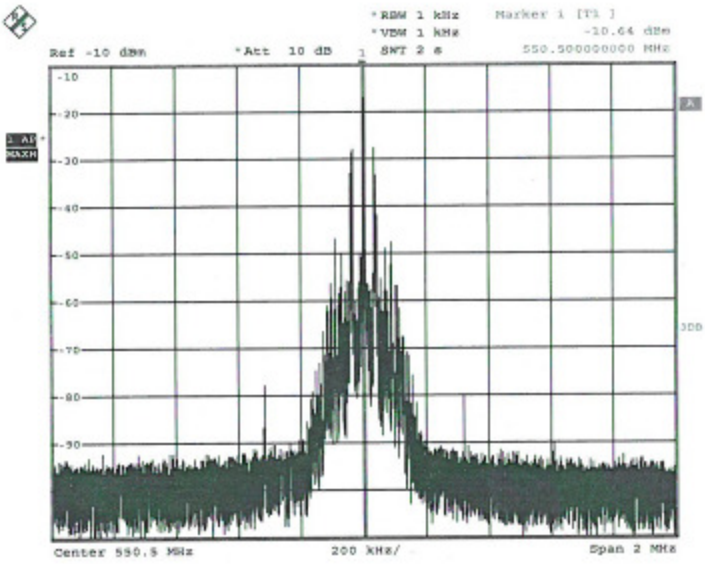


Date: 15.NOV.2015 10:09:13

CH99 Necessary bandwidth Low with Modulating (470.125MHz)

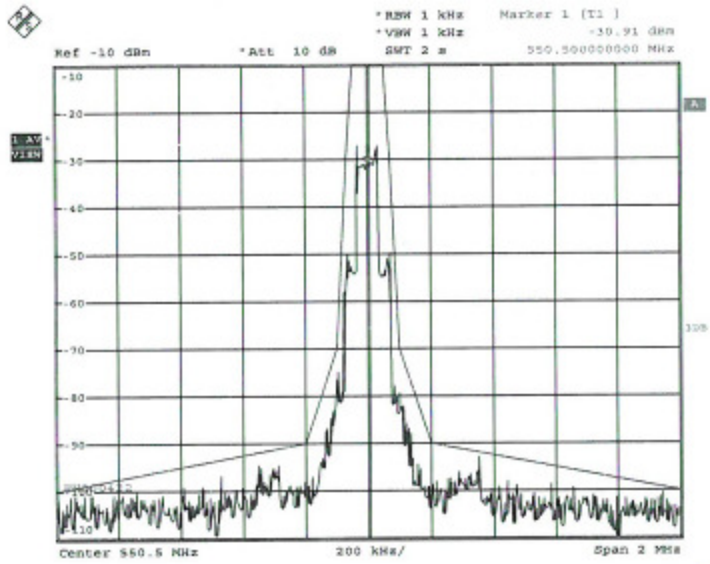
Sign-off Test Data

Figure 21: Emission Mask in ETSI EN300 422-1 V1.4.2 (CH99, Middle CH)



Date: 19.NOV.2015 22:10:19

CH99 Necessary bandwidth Middle without Modulating (550.5MHz)

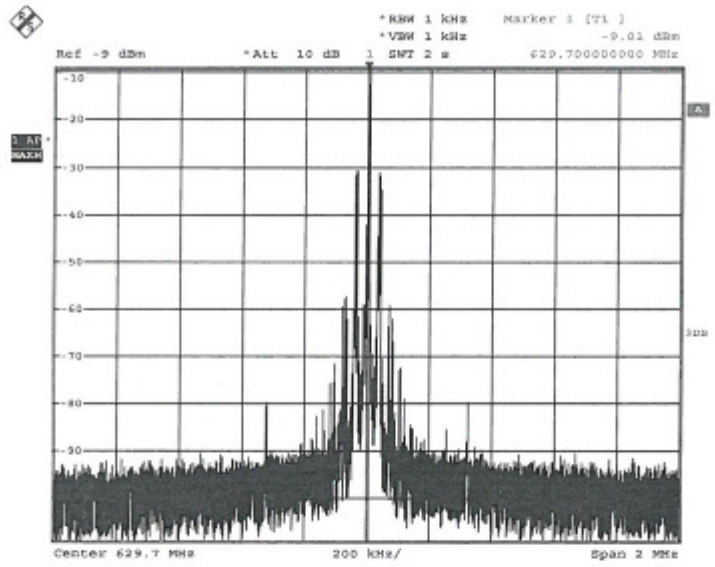


Date: 19.NOV.2015 22:13:06

CH99 Necessary bandwidth Middle with Modulating (550.5MHz)

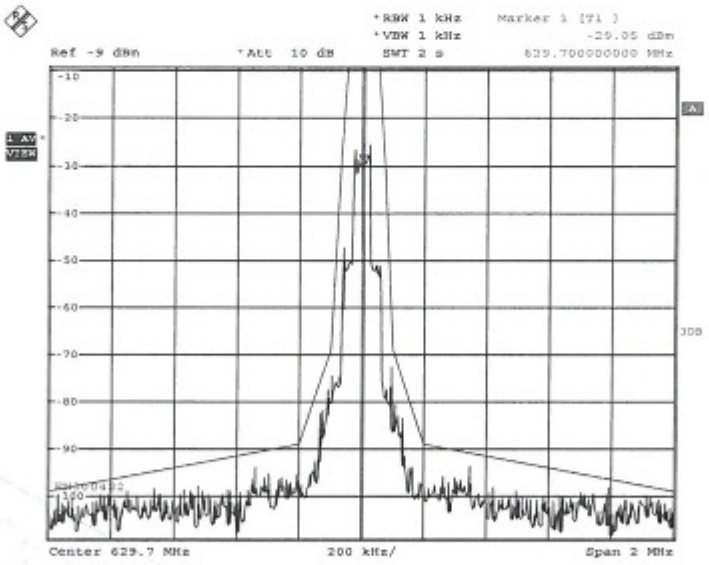
Sign-off Test Data

Figure 22: Emission Mask in ETSI EN300 422-1 V1.4.2 (CH99, High CH)



Date: 19.NOV.2015 22:15:39

CH99 Necessary bandwidth High without Modulating (629.7MHz)



Date: 19.NOV.2015 22:18:01

CH99 Necessary bandwidth High with Modulating (629.7MHz)

Sign-off Test Data

5.7. Electromagnetic Fields

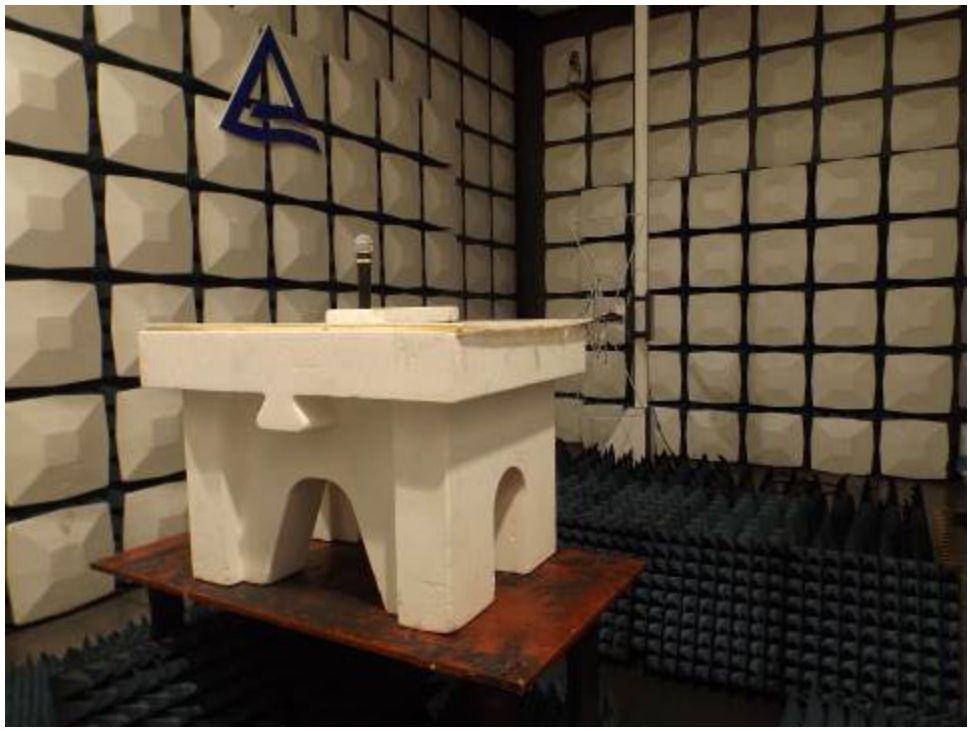
RESULT:	**PASS**

Date of testing : 24 Nov 2015
Guide : FCC KDB Publication 447498

The minimum distance for the EUT is <5mm, since maximum peak output power of the transmitter is 8.45mW(9.27dBm)<22mW, hence the EUTs are exclueded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile and Portable RF Exposure. Guidance v06.

6. Photographs of Test Setup

Picture 1: Spurious Radiation Measurement, 30MHz-1GHz (CH99)



Picture 2: Spurious Radiation Measurement, Above 1GHz (CH99)

7. List of Tables

8. List of Figures

9. List of Pictures