FCC Radio Test Report

FCC ID: P27SWESW01N

This report concerns (check one): ☒**Original Grant** ☐**Class II Change**

Project No.	:	1608040
Equipment	:	Z-Wave Binary Switch
Model Name	:	SW-ESW01Nxxxxxxxx, SW-BSW01Nxxxxxxxx (the 1st x should be "blank" or "-" ; the rest x could be 0 to 9, A to Z, "blank" or ,for marketing purpose)
Applicant	:	Sercomm Corporation
Address	:	8F, No. 3-1, YuanQu St., NanKang, Taipei, Taiwan 115

Date of Receipt	:	Aug. 08, 2016
Date of Test	:	Aug. 08, 2016 ~ Aug. 24, 2016
Issued Date	:	Aug. 25, 2016
Tested by	:	BTL Inc.

Testing Engineer : Rush Kao
(Rush Kao)

Technical Manager : Jeff Yang
(Jeff Yang)

Authorized Signatory : Andy Chiu
(Andy Chiu)

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1608040	Original Issue.	Aug. 25, 2016

1. CERTIFICATION

Equipment	:	Z-Wave Binary Switch
Brand Name	:	Sercomm
Model Name	:	SW-ESW01Nxxxxxxxx, SW-BSW01Nxxxxxxxx (the 1st x should be “blank” or “-” ; the rest x could be 0 to 9, A to Z, “blank” or ,for marketing purpose)
Applicant	:	Sercomm Corporation
Date of Test	:	Aug. 08, 2016 ~ Aug. 24, 2016
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part15, Subpart C(15.249)/ ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1608040) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.249)			
StandardSection	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.209 15.249	Radiated Spurious Emission	PASS	
-	Bandwidth	PASS	

NOTE:

(1)"N/A" denotes test is not applicable in this test report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

C05: (VCCI RN: C-4742; FCC RN:949005; FCC DN:TW1082)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Below 1GHz):

CB15: (VCCI RN: R-4260; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1GHz):

CB15: (VCCI RN: G-868; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)
C05	CISPR	150 kHz~30MHz	2.04

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)
CB11 (3m)	CISPR	9kHz ~ 150kHz	4.00
		150kHz ~ 30MHz	4.00

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB15 (3m)	CISPR	30 MHz ~ 200 MHz	V	3.06
		30 MHz ~ 200 MHz	H	2.58
		200 MHz ~ 1, 000 MHz	V	3.50
		200 MHz ~ 1, 000 MHz	H	3.10

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB15 (3m)	CISPR	1GHz ~ 6GHz	V	4.14
		1GHz ~ 6GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.
Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.

3.GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Z-Wave Binary Switch	
Brand Name	Sercomm	
Model Name	SW-ESW01Nxxxxxxxx, SW-BSW01Nxxxxxxxx (the 1st x should be “blank” or “-” ; the rest x could be 0 to 9, A to Z, “blank” or ,for marketing purpose)	
Model Difference	SW-ESW01Nxxxxxxxx ==> main board, meter board, power board, RF board SW-BSW01Nxxxxxxxx ==> main board, power board, RF board	
Product Description	Operation Frequency	908.4~916 MHz
	Modulation Technology	FSK
	Data rate	17.2Kbps
	Field Strength	93.80dBuV/m
PowerSource	AC Mains.	
Power Rating	I/P:100-120 VAC/15A	

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the user's manual.

2. Channel List:

Channe	Frequency (MHz)
01	908.4
02	916

3. Table for Filed Antenna:

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internel	N/A	0.14

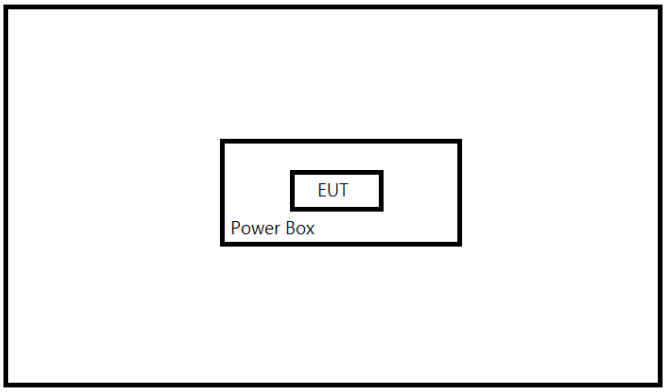
3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	TX Mode

Final Test Mode	Description
Mode 1	TX Mode

3.3BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



3.4DESCRIPTION OF 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.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

4.EMC EMISSION TEST

4.1CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (FREQUENCY RANGE 150KHZ-30MHZ)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.5	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " * " decreases with the logarithm of the frequency

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.2 TESTPROCEDURE

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

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

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

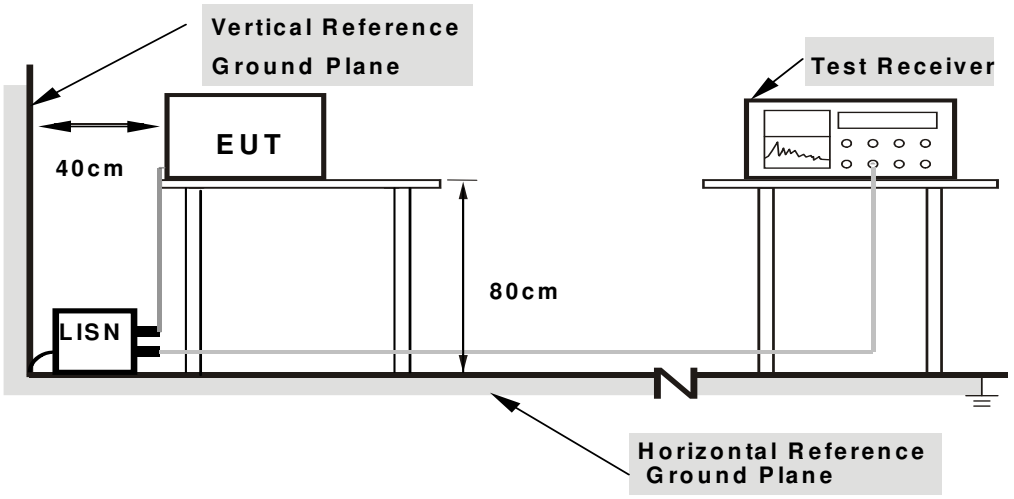
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3DEVIATIONFROMTESTSTANDARD

No deviation

4.1.4 TESTSETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.5EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it).The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting mode.

4.1.6EUT TEST CONDITIONS

Temperature: 24°C
Relative Humidity: 52%
Test Voltage: AC 120V 60Hz

4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits,the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
(2) Measuring frequency range from 150KHz to 30MHz.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1RADIATED EMISSION LIMITS (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Harmonic emissions limits comply with below 54dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section15.209(a) limit in the table below has to be followed.

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

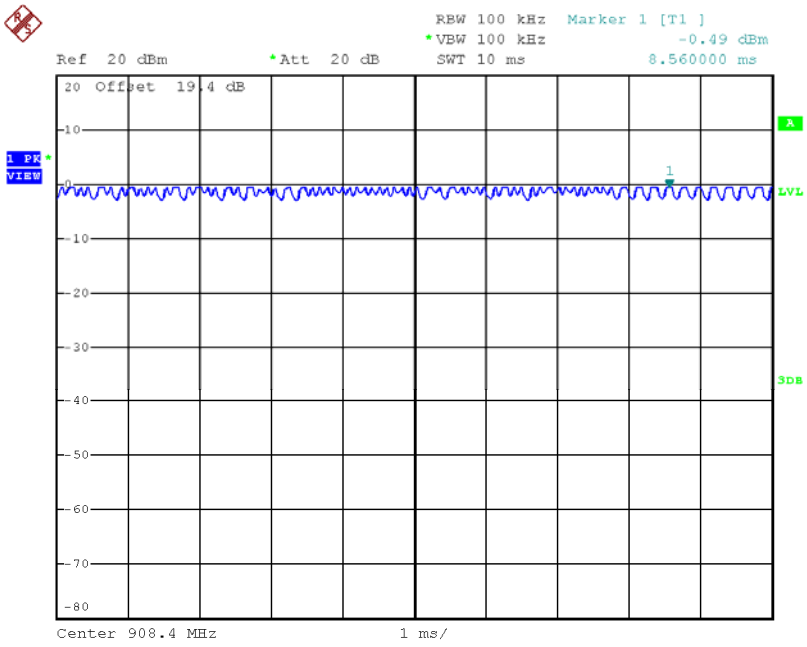
(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

DWELL TIME OF PERIODIC OPERATION MEASUREMENT



Date: 24.AUG.2016 16:09:21

4.2.2 TESTPROCEDURE

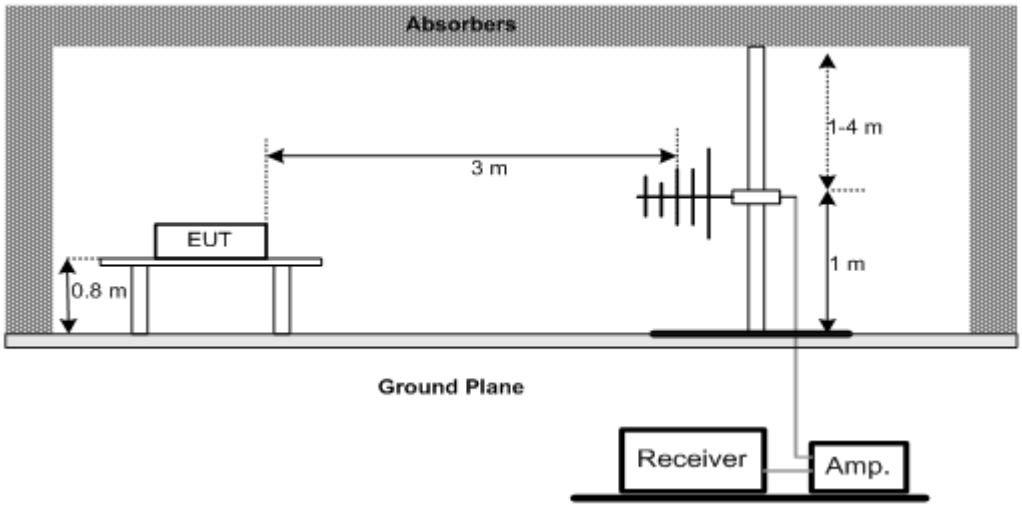
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m,the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3DEVIATIONFROMTESTSTANDARD

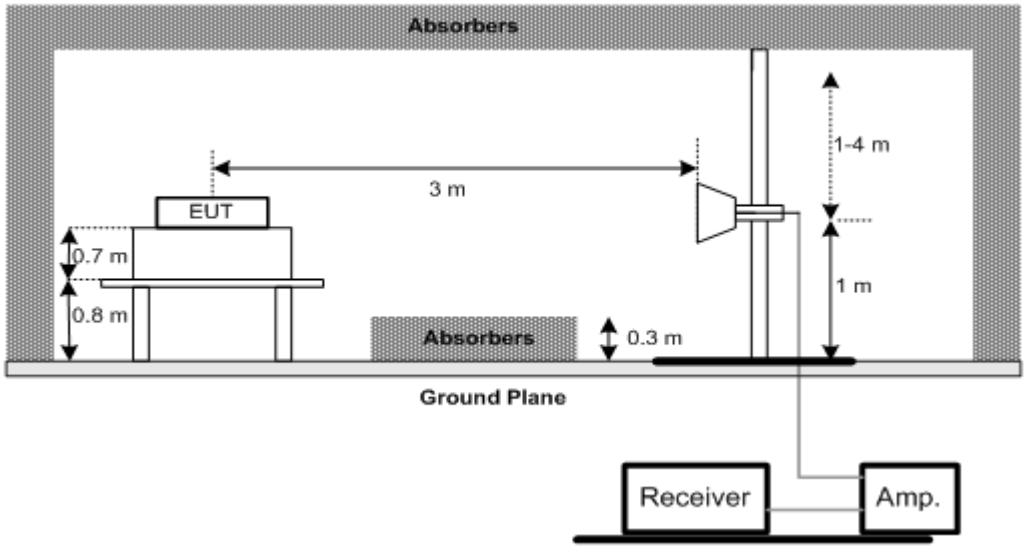
No deviation

4.2.4 TESTSETUP

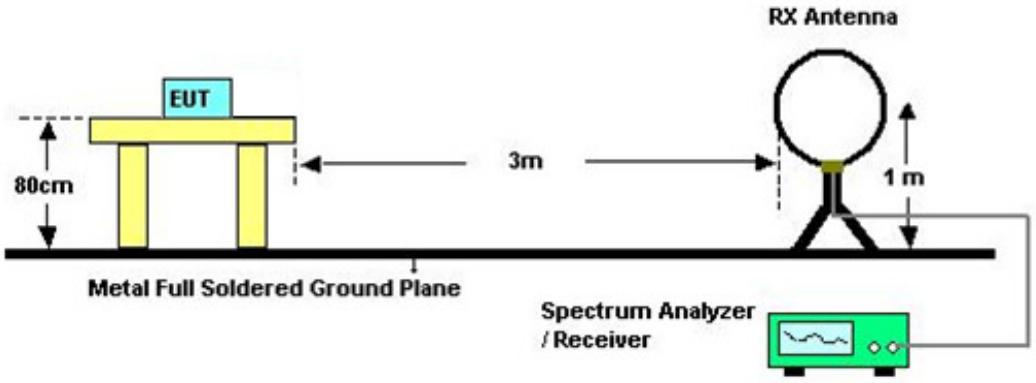
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions below 30MHz



4.2.5EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6EUT TEST CONDITIONS

Temperature: 24°C
Relative Humidity: 52%
Test Voltage: AC 120V 60Hz

4.2.7 TEST RESULTS (BELOW 30MHz)

Please refer to the Attachment B.

Remark:

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
(2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB);.
(3) Limit line = specific limits (dBuV) + distance extrapolation factor..

4.2.8 TEST RESULTS (30 TO 1000 MHz)

Please refer to the Attachment C

4.2.9 TEST RESULTS(ABOVE1000 MHz)

Please refer to the Attachment D

Remark:

(1) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand
(2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

5.BANDWIDTH TEST

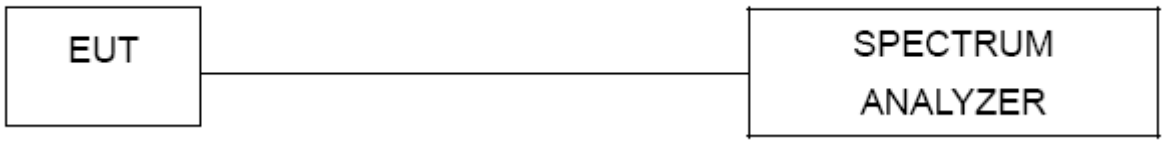
5.1TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW= 3kHz, VBW=3kHz, Sweep time = Auto.

5.2DEVIATION FROM STANDARD

No deviation.

5.3TEST SETUP



5.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.5EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: AC 120V 60Hz

5.6 TEST RESULTS

Please refer to the Attachment E

6.MEASUREMENT INSTRUMENTS LIST AND SETTING

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 26, 2017
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 15, 2017
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 10, 2016
4	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB9168-352	9168-352	Feb. 04, 2017
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-546	Nov. 05, 2017
3	Pre-Amplifier	HP	8447D	2944A08891	Mar. 09 2017
4	Pre-Amplifier	Agilent	8449B	3008A02331	Jan. 24, 2017
5	Test Cable	EMCI	EMC8D-NM-NM-8000	150301	Mar. 09, 2017
6	Test Cable	EMCI	EMC104-SM-SM-2500	150303	Mar. 09, 2017
7	Test Cable	EMCI	EMC104-NM-SM-1000	150304	Mar. 09, 2017
8	Test Cable	EMCI	EMC104-SM-SM-5000	150302	Mar. 29, 2017
9	Test Cable	EMCI	EMC104-SM-SM-800	150305	Mar. 29, 2017
10	EXA Spectrum Analyzer	Agilent	N9010A	MY52220990	Feb. 24, 2017
11	EMI Test Receiver	Agilent	N9038A	MY51210215	Jan. 08, 2017
12	Loop Antenna	EMCO	6502	00042960	Nov. 06. 2016

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

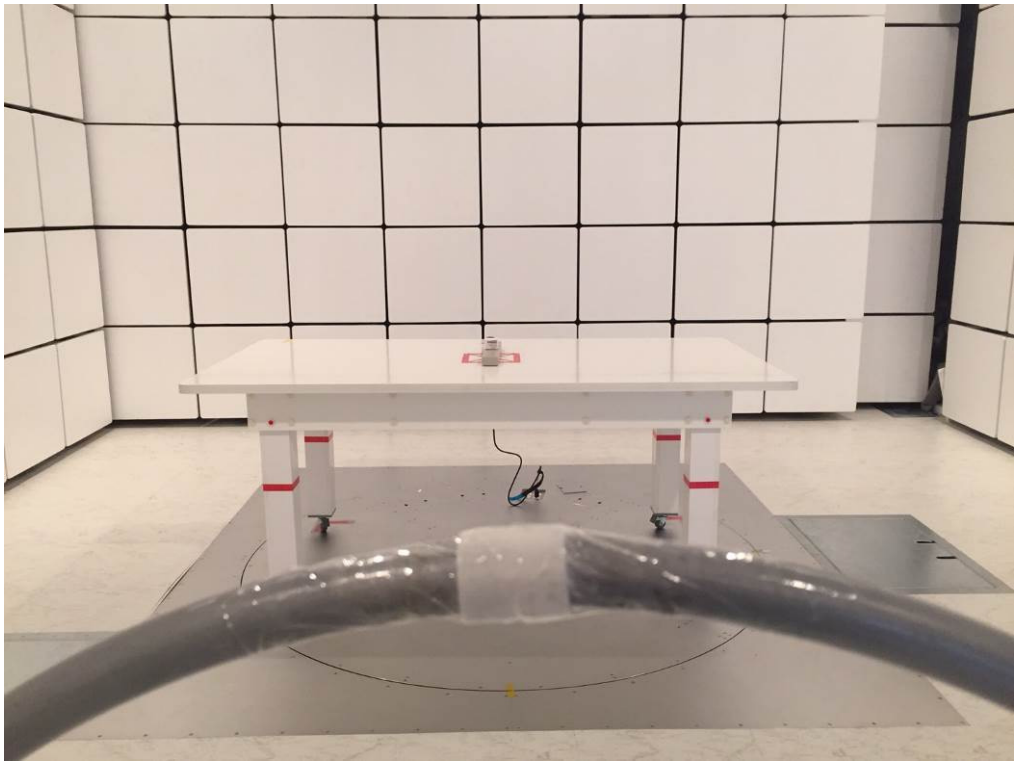
Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

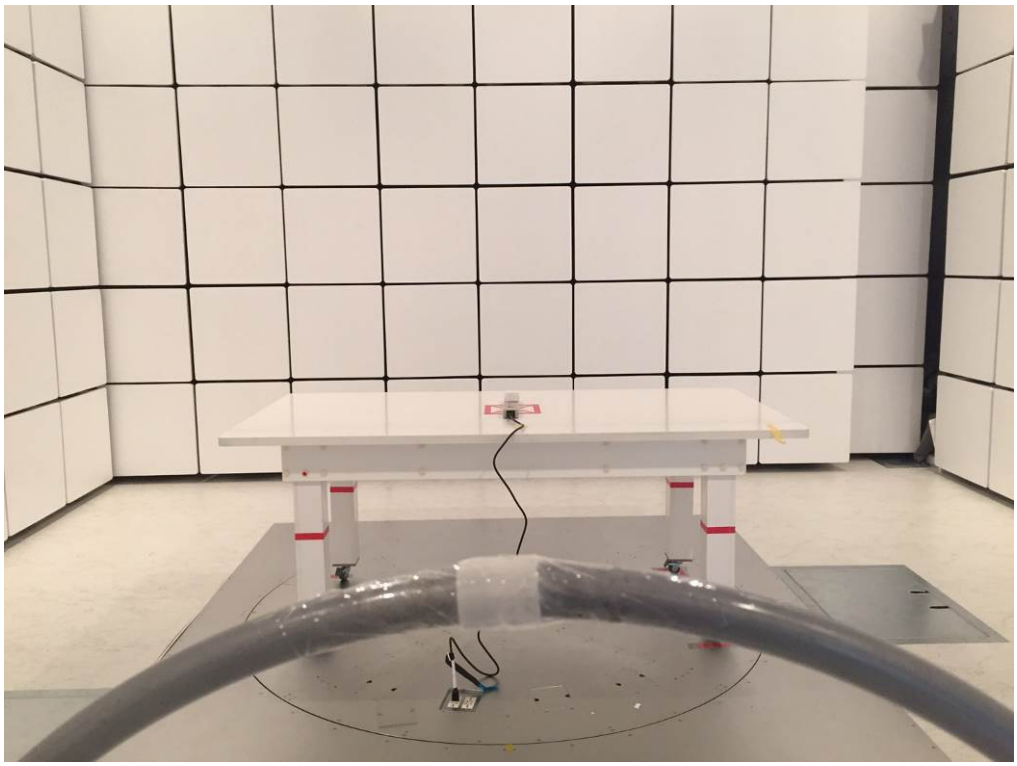
7.EUT TEST PHOTO

Conducted Measurement Photos

Radiated Measurement Photos

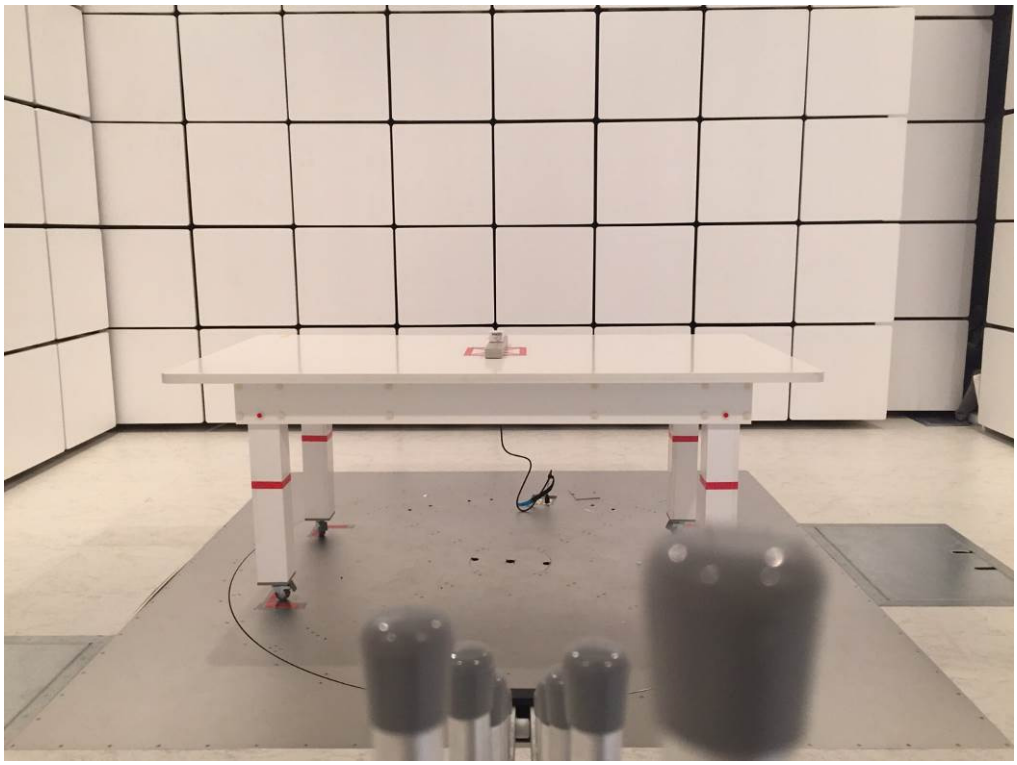
9KHz to 30MHz

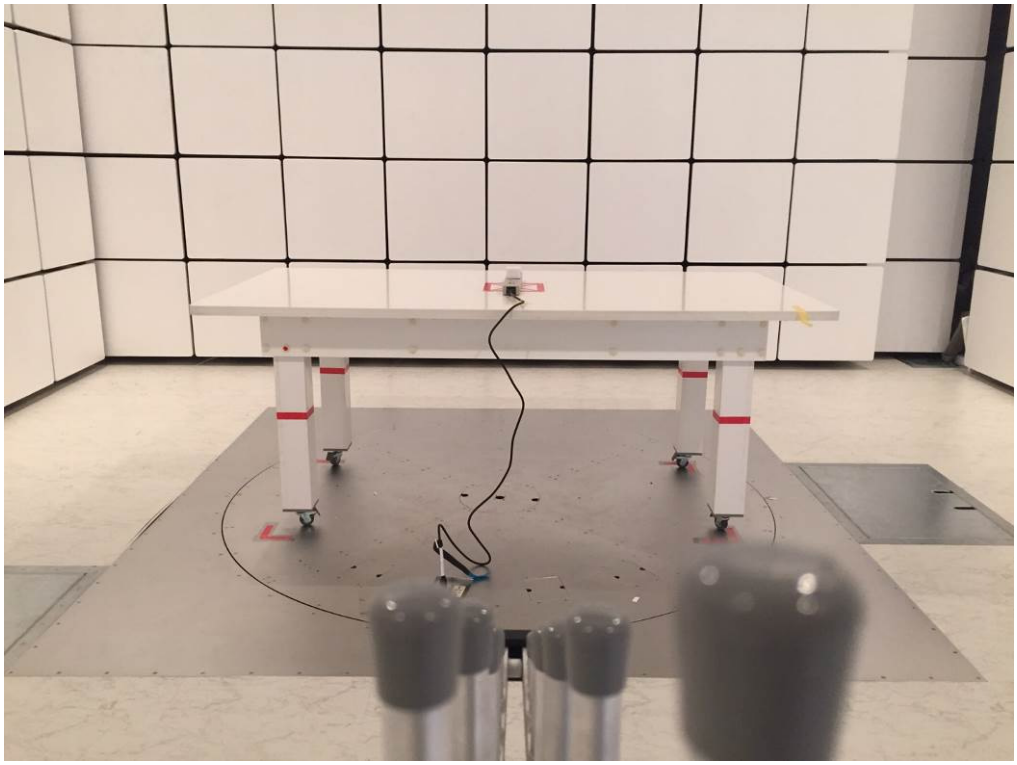




Radiated Measurement Photos

30MHz to 1000MHz





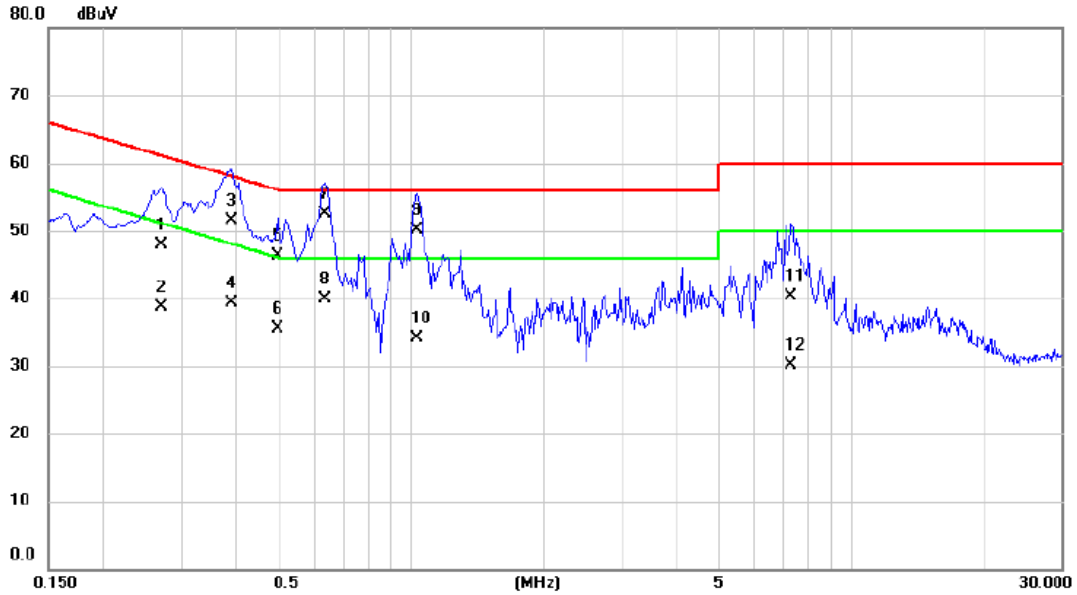
Radiated Measurement Photos

Above 1000MHz

ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX 908.4MHz _ SW-BSW01N

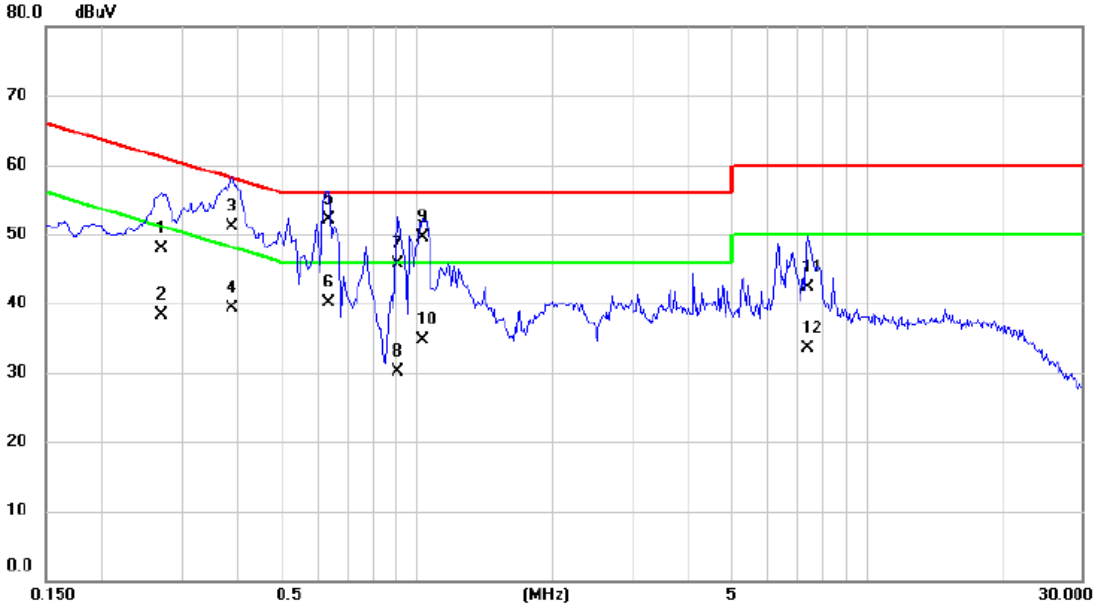
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2704	38.20	9.66	47.86	61.11	-13.25	QP	
2		0.2704	29.10	9.66	38.76	51.11	-12.35	AVG	
3		0.3908	41.90	9.66	51.56	58.05	-6.49	QP	
4		0.3908	29.60	9.66	39.26	48.05	-8.79	AVG	
5		0.4972	36.60	9.67	46.27	56.05	-9.78	QP	
6		0.4972	25.80	9.67	35.47	46.05	-10.58	AVG	
7	*	0.6350	42.90	9.67	52.57	56.00	-3.43	QP	
8		0.6350	30.20	9.67	39.87	46.00	-6.13	AVG	
9		1.0310	40.50	9.67	50.17	56.00	-5.83	QP	
10		1.0310	24.40	9.67	34.07	46.00	-11.93	AVG	
11		7.3000	30.50	9.82	40.32	60.00	-19.68	QP	
12		7.3000	20.20	9.82	30.02	50.00	-19.98	AVG	

Test Mode:	TX 908.4MHz _ SW-BSW01N

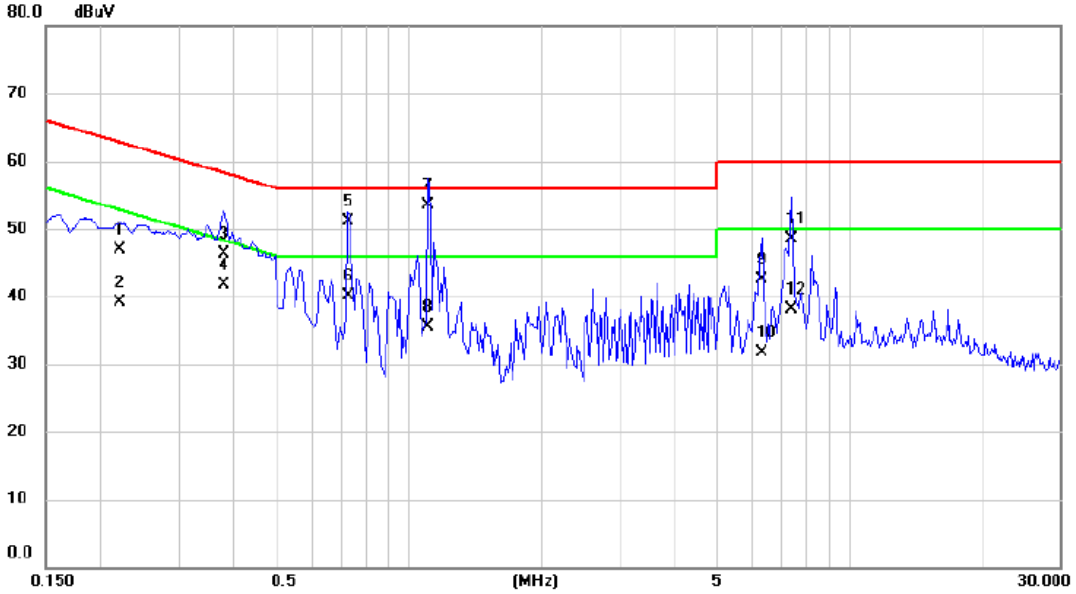
Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2704	38.30	9.66	47.96	61.11	-13.15	QP	
2		0.2704	28.60	9.66	38.26	51.11	-12.85	AVG	
3		0.3887	41.50	9.66	51.16	58.09	-6.93	QP	
4		0.3887	29.60	9.66	39.26	48.09	-8.83	AVG	
5	*	0.6350	42.40	9.67	52.07	56.00	-3.93	QP	
6		0.6350	30.40	9.67	40.07	46.00	-5.93	AVG	
7		0.9050	36.10	9.68	45.78	56.00	-10.22	QP	
8		0.9050	20.40	9.68	30.08	46.00	-15.92	AVG	
9		1.0310	39.90	9.68	49.58	56.00	-6.42	QP	
10		1.0310	25.00	9.68	34.68	46.00	-11.32	AVG	
11		7.4000	32.50	9.83	42.33	60.00	-17.67	QP	
12		7.4000	23.70	9.83	33.53	50.00	-16.47	AVG	

Test Mode:	TX 916MHz _ SW-BSW01N

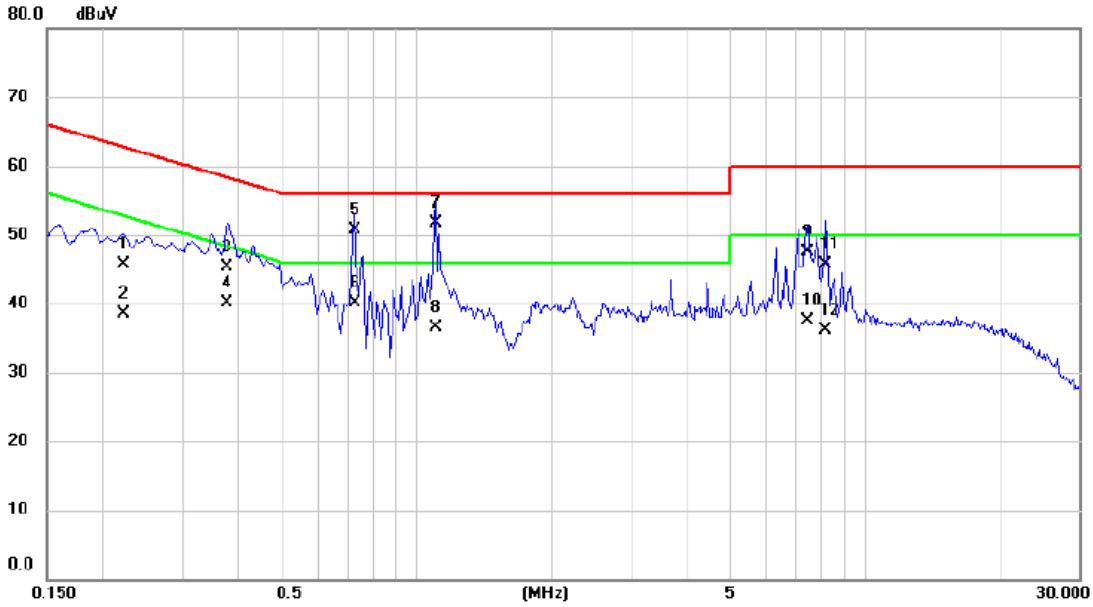
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2207	37.20	9.66	46.86	62.79	-15.93	QP	
2		0.2207	29.50	9.66	39.16	52.79	-13.63	AVG	
3		0.3790	36.60	9.66	46.26	58.30	-12.04	QP	
4		0.3790	32.00	9.66	41.66	48.30	-6.64	AVG	
5		0.7250	41.40	9.67	51.07	56.00	-4.93	QP	
6		0.7250	30.40	9.67	40.07	46.00	-5.93	AVG	
7	*	1.1030	43.80	9.68	53.48	56.00	-2.52	QP	
8		1.1030	25.80	9.68	35.48	46.00	-10.52	AVG	
9		6.3000	32.60	9.82	42.42	60.00	-17.58	QP	
10		6.3000	21.90	9.82	31.72	50.00	-18.28	AVG	
11		7.4000	38.70	9.82	48.52	60.00	-11.48	QP	
12		7.4000	28.20	9.82	38.02	50.00	-11.98	AVG	

Test Mode:	TX 916MHz _ SW-BSW01N

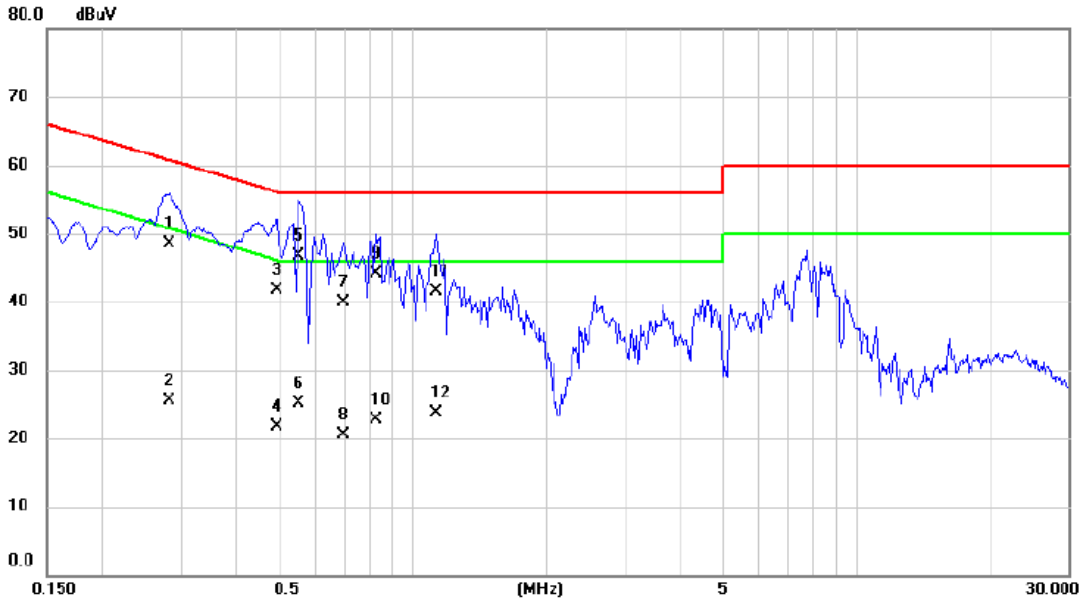
Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2221	36.10	9.66	45.76	62.74	-16.98	QP	
2		0.2221	28.80	9.66	38.46	52.74	-14.28	AVG	
3		0.3782	35.60	9.66	45.26	58.32	-13.06	QP	
4		0.3782	30.40	9.66	40.06	48.32	-8.26	AVG	
5		0.7250	41.10	9.68	50.78	56.00	-5.22	QP	
6		0.7250	30.50	9.68	40.18	46.00	-5.82	AVG	
7	*	1.1030	42.00	9.69	51.69	56.00	-4.31	QP	
8		1.1030	26.90	9.69	36.59	46.00	-9.41	AVG	
9		7.4500	37.70	9.83	47.53	60.00	-12.47	QP	
10		7.4500	27.60	9.83	37.43	50.00	-12.57	AVG	
11		8.1500	35.90	9.82	45.72	60.00	-14.28	QP	
12		8.1500	26.20	9.82	36.02	50.00	-13.98	AVG	

Test Mode:	TX 9.6KHz _ SW-ESW01N

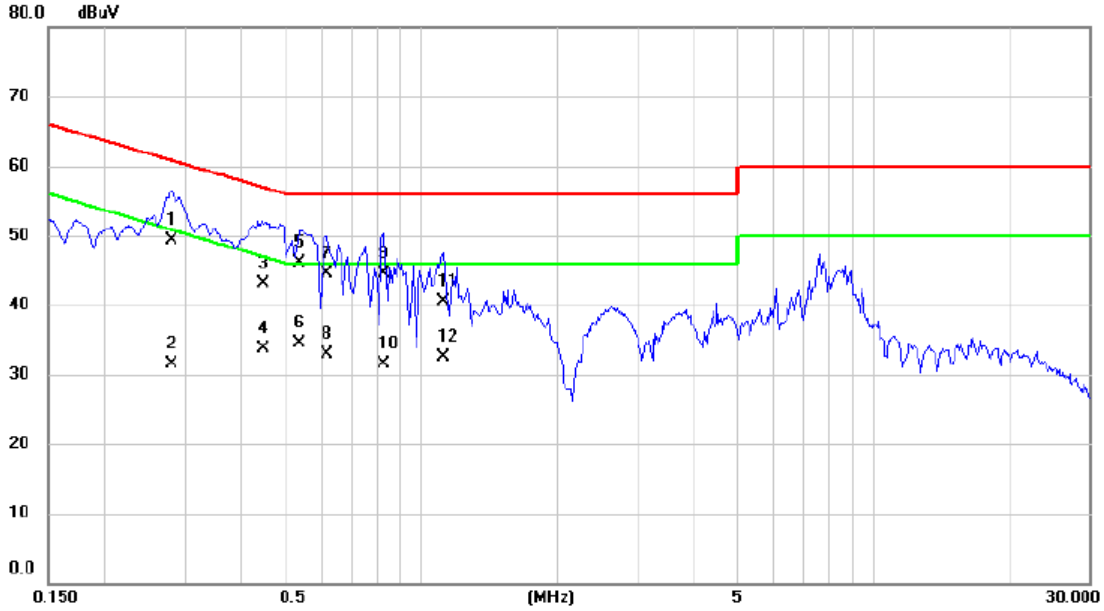
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2823	38.90	9.67	48.57	60.75	-12.18	QP	
2		0.2823	15.80	9.67	25.47	50.75	-25.28	AVG	
3		0.4923	32.10	9.67	41.77	56.13	-14.36	QP	
4		0.4923	12.10	9.67	21.77	46.13	-24.36	AVG	
5	*	0.5540	37.10	9.67	46.77	56.00	-9.23	QP	
6		0.5540	15.50	9.67	25.17	46.00	-20.83	AVG	
7		0.6980	30.20	9.67	39.87	56.00	-16.13	QP	
8		0.6980	10.80	9.67	20.47	46.00	-25.53	AVG	
9		0.8240	34.50	9.67	44.17	56.00	-11.83	QP	
10		0.8240	13.10	9.67	22.77	46.00	-23.23	AVG	
11		1.1300	31.80	9.68	41.48	56.00	-14.52	QP	
12		1.1300	14.10	9.68	23.78	46.00	-22.22	AVG	

Test Mode:	TX 9.6KHz _ SW-ESW01N

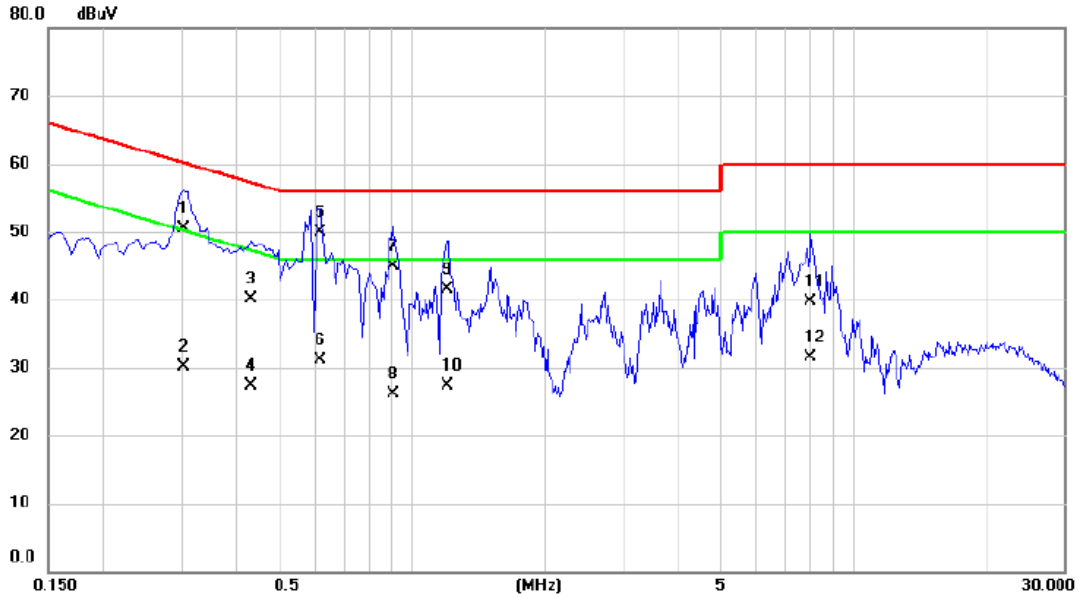
Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2802	39.70	9.67	49.37	60.81	-11.44	QP	
2		0.2802	21.80	9.67	31.47	50.81	-19.34	AVG	
3		0.4454	33.50	9.67	43.17	56.96	-13.79	QP	
4		0.4454	24.00	9.67	33.67	46.96	-13.29	AVG	
5	*	0.5360	36.50	9.67	46.17	56.00	-9.83	QP	
6		0.5360	24.80	9.67	34.47	46.00	-11.53	AVG	
7		0.6170	34.80	9.67	44.47	56.00	-11.53	QP	
8		0.6170	23.30	9.67	32.97	46.00	-13.03	AVG	
9		0.8240	34.90	9.68	44.58	56.00	-11.42	QP	
10		0.8240	21.90	9.68	31.58	46.00	-14.42	AVG	
11		1.1210	30.90	9.69	40.59	56.00	-15.41	QP	
12		1.1210	22.80	9.69	32.49	46.00	-13.51	AVG	

Test Mode:	TX 908.4MHz _ SW-ESW01N

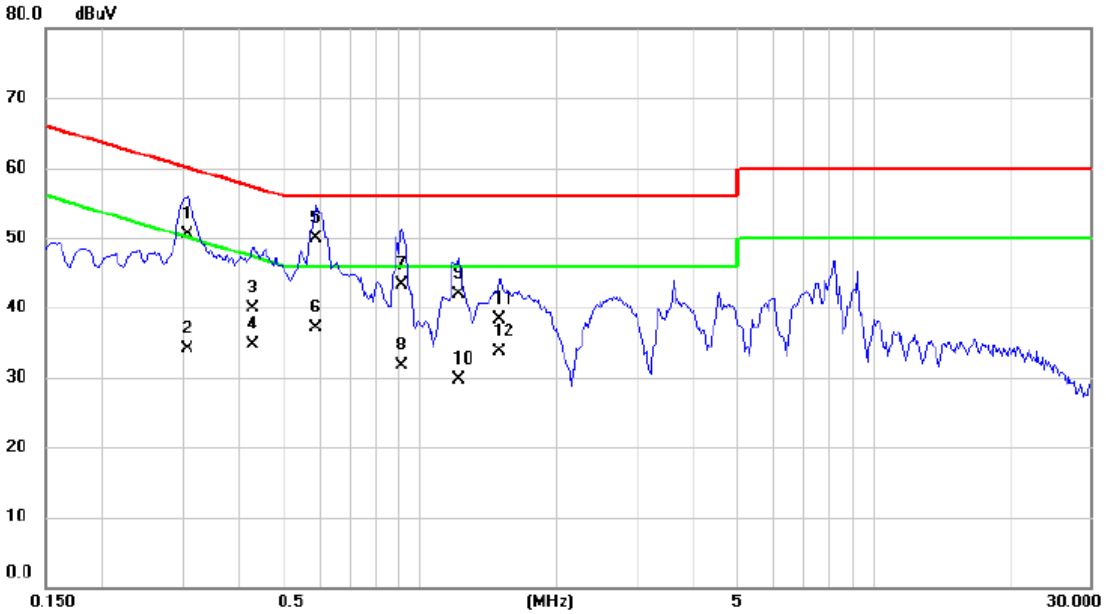
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3033	40.90	9.66	50.56	60.15	-9.59	QP	
2		0.3033	20.40	9.66	30.06	50.15	-20.09	AVG	
3		0.4314	30.50	9.67	40.17	57.23	-17.06	QP	
4		0.4314	17.60	9.67	27.27	47.23	-19.96	AVG	
5	*	0.6170	40.20	9.67	49.87	56.00	-6.13	QP	
6		0.6170	21.50	9.67	31.17	46.00	-14.83	AVG	
7		0.9050	35.20	9.67	44.87	56.00	-11.13	QP	
8		0.9050	16.50	9.67	26.17	46.00	-19.83	AVG	
9		1.2020	31.90	9.68	41.58	56.00	-14.42	QP	
10		1.2020	17.60	9.68	27.28	46.00	-18.72	AVG	
11		8.0000	29.80	9.82	39.62	60.00	-20.38	QP	
12		8.0000	21.60	9.82	31.42	50.00	-18.58	AVG	

Test Mode:	TX 908.4MHz _ SW-ESW01N

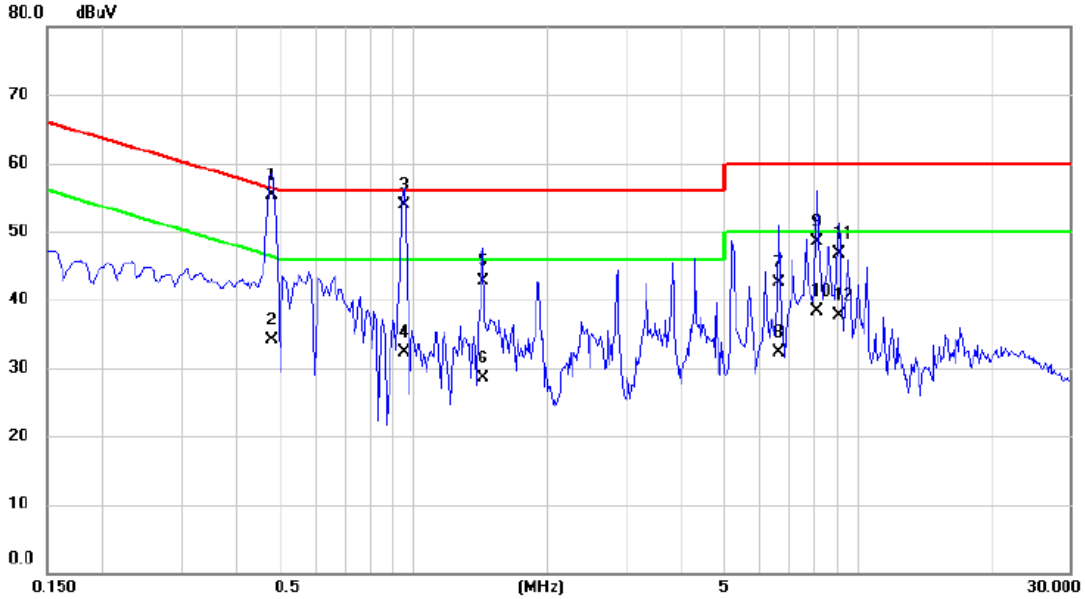
Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3075	40.90	9.66	50.56	60.04	-9.48	QP	
2		0.3075	24.50	9.66	34.16	50.04	-15.88	AVG	
3		0.4293	30.20	9.67	39.87	57.27	-17.40	QP	
4		0.4293	25.10	9.67	34.77	47.27	-12.50	AVG	
5	*	0.5900	40.20	9.67	49.87	56.00	-6.13	QP	
6		0.5900	27.50	9.67	37.17	46.00	-8.83	AVG	
7		0.9140	33.70	9.68	43.38	56.00	-12.62	QP	
8		0.9140	22.10	9.68	31.78	46.00	-14.22	AVG	
9		1.2200	32.30	9.69	41.99	56.00	-14.01	QP	
10		1.2200	20.00	9.69	29.69	46.00	-16.31	AVG	
11		1.4990	28.70	9.70	38.40	56.00	-17.60	QP	
12		1.4990	24.10	9.70	33.80	46.00	-12.20	AVG	

Test Mode:	TX 916MHz _ SW-ESW01N

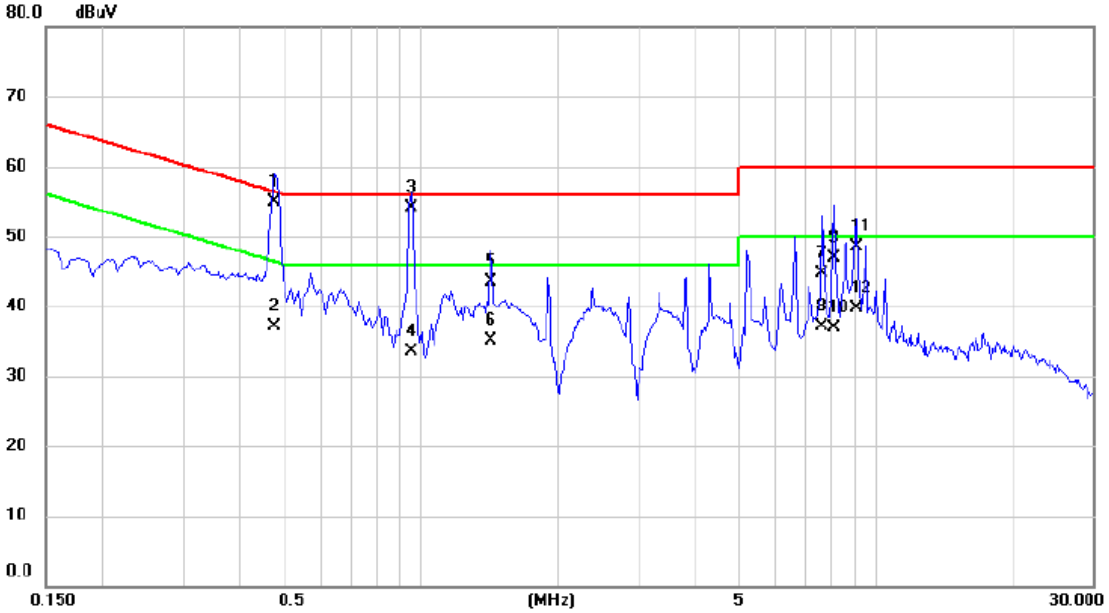
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4783	45.60	9.67	55.27	56.37	-1.10	QP	
2		0.4783	24.50	9.67	34.17	46.37	-12.20	AVG	
3		0.9500	44.20	9.67	53.87	56.00	-2.13	QP	
4		0.9500	22.70	9.67	32.37	46.00	-13.63	AVG	
5		1.4360	33.10	9.69	42.79	56.00	-13.21	QP	
6		1.4360	18.80	9.69	28.49	46.00	-17.51	AVG	
7		6.6500	32.60	9.82	42.42	60.00	-17.58	QP	
8		6.6500	22.40	9.82	32.22	50.00	-17.78	AVG	
9		8.1000	38.70	9.82	48.52	60.00	-11.48	QP	
10		8.1000	28.50	9.82	38.32	50.00	-11.68	AVG	
11		9.0500	36.90	9.82	46.72	60.00	-13.28	QP	
12		9.0500	27.90	9.82	37.72	50.00	-12.28	AVG	

Test Mode:	TX 916MHz _ SW-ESW01N

Neutral

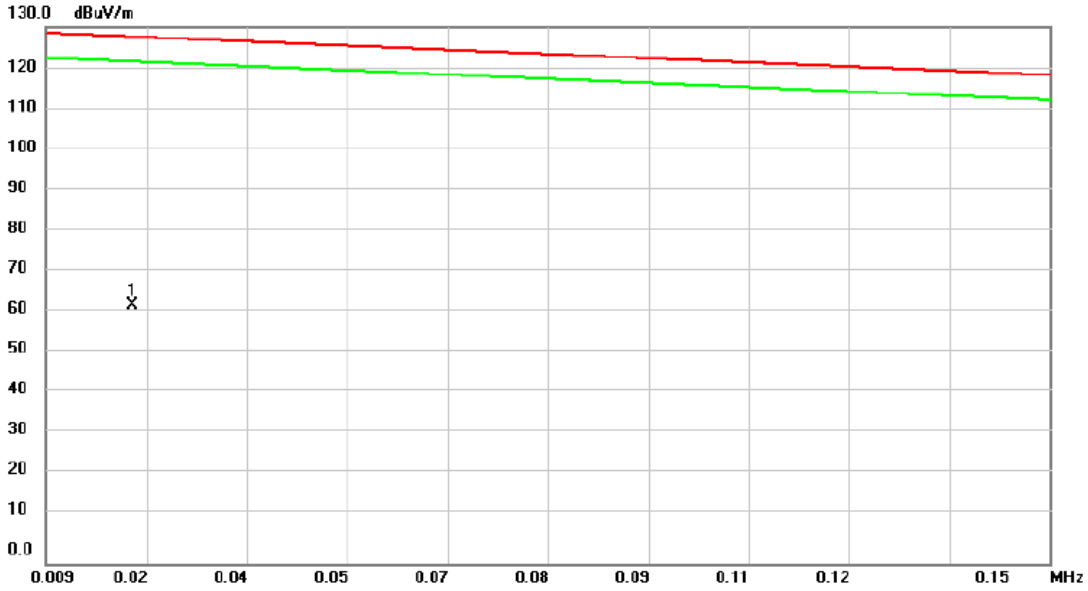


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4770	45.20	9.67	54.87	56.39	-1.52	QP	
2		0.4770	27.40	9.67	37.07	46.39	-9.32	AVG	
3		0.9500	44.40	9.68	54.08	56.00	-1.92	QP	
4		0.9500	23.90	9.68	33.58	46.00	-12.42	AVG	
5		1.4270	33.90	9.70	43.60	56.00	-12.40	QP	
6		1.4270	25.50	9.70	35.20	46.00	-10.80	AVG	
7		7.6000	34.90	9.82	44.72	60.00	-15.28	QP	
8		7.6000	27.30	9.82	37.12	50.00	-12.88	AVG	
9		8.1000	37.00	9.82	46.82	60.00	-13.18	QP	
10		8.1000	27.00	9.82	36.82	50.00	-13.18	AVG	
11		9.0500	38.60	9.83	48.43	60.00	-11.57	QP	
12		9.0500	29.80	9.83	39.63	50.00	-10.37	AVG	

ATTACHMENT B -RADIATED EMISSION (9KHZ to 30MHZ)

Test Mode:	TX Mode_908.4MHz

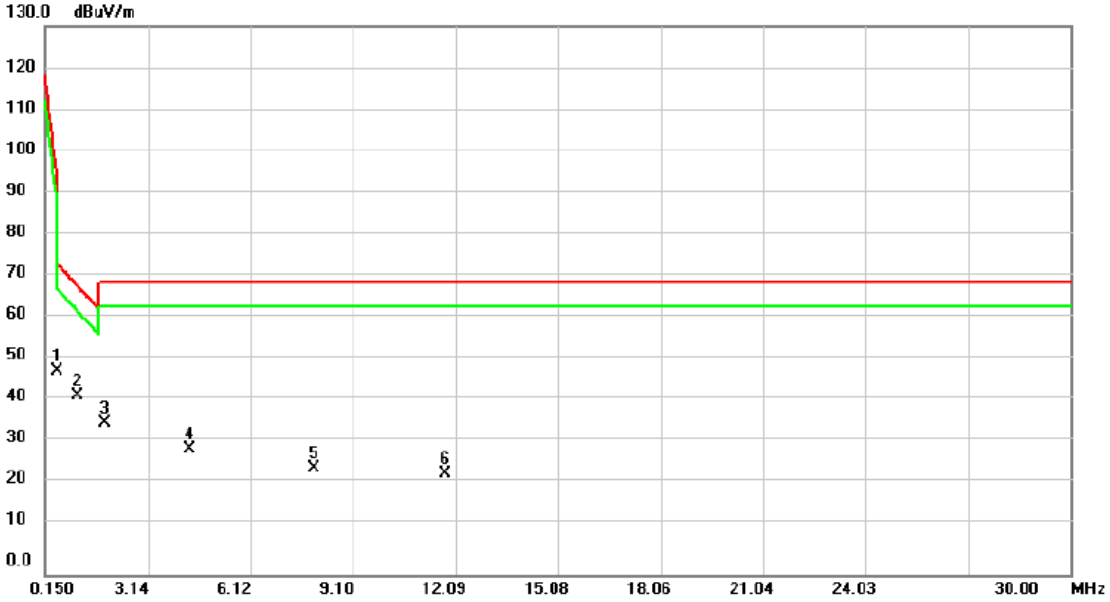
OPEN



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0212	45.16	17.42	62.58	127.64	-65.06	peak	

Test Mode:	TX Mode_908.4MHz

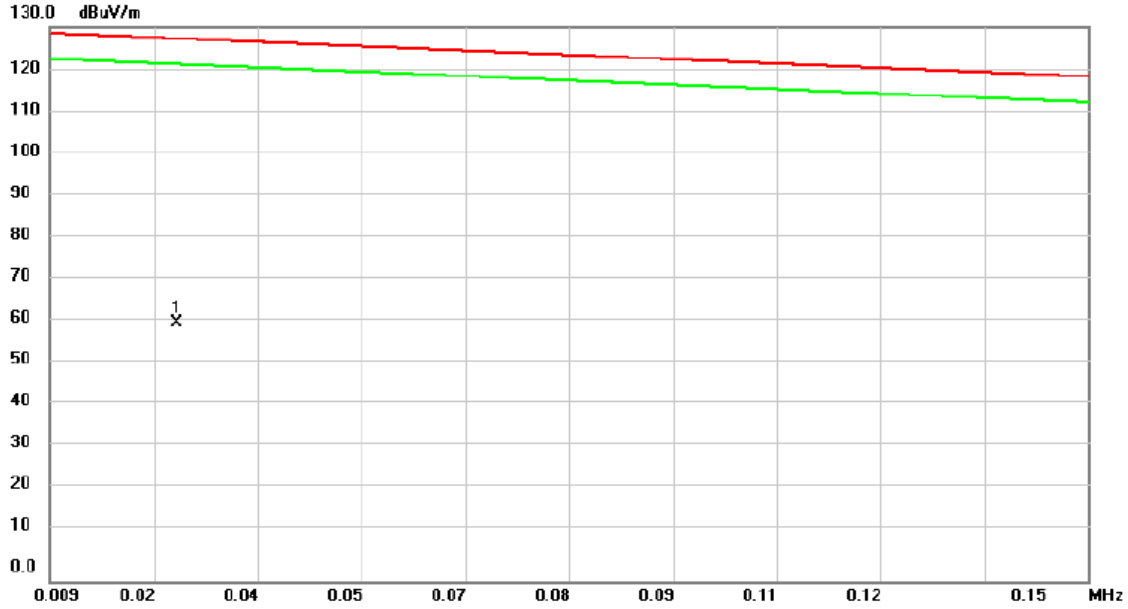
OPEN



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.5080	36.55	11.80	48.35	73.64	-25.29	peak	
2		1.0750	30.36	11.97	42.33	68.59	-26.26	peak	
3		1.8810	24.44	11.60	36.04	69.54	-33.50	peak	
4		4.3290	18.38	11.30	29.68	69.54	-39.86	peak	
5		7.9706	13.82	11.34	25.16	69.54	-44.38	peak	
6		11.7911	12.65	11.25	23.90	69.54	-45.64	peak	

Test Mode:	TX Mode_908.4MHz

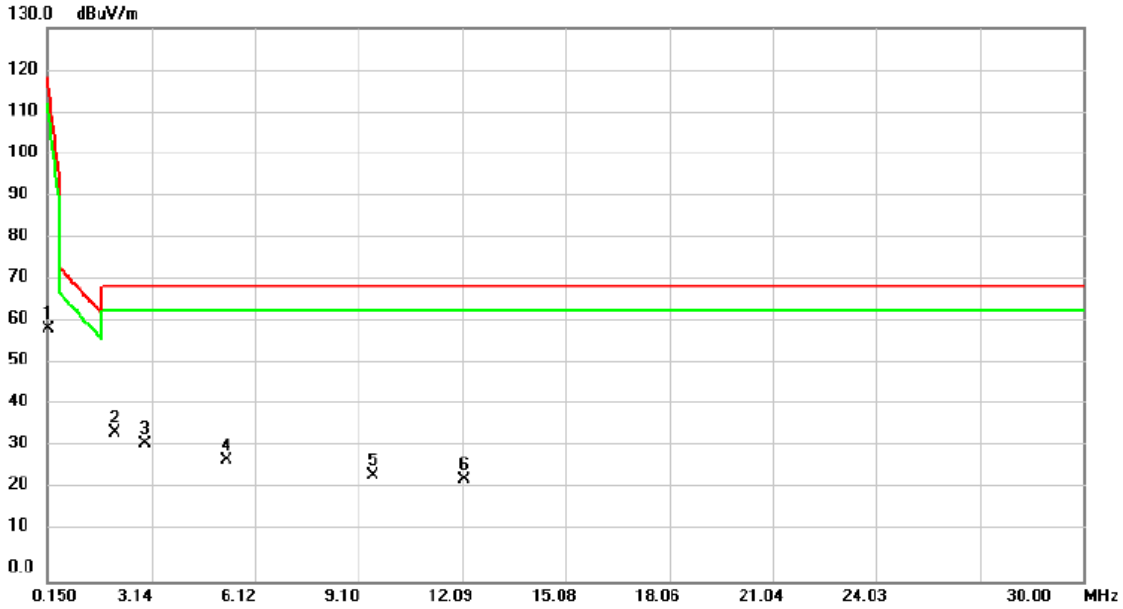
CLOSE



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0262	44.44	16.04	60.48	127.28	-66.80	peak	

Test Mode:	TX Mode_908.4MHz

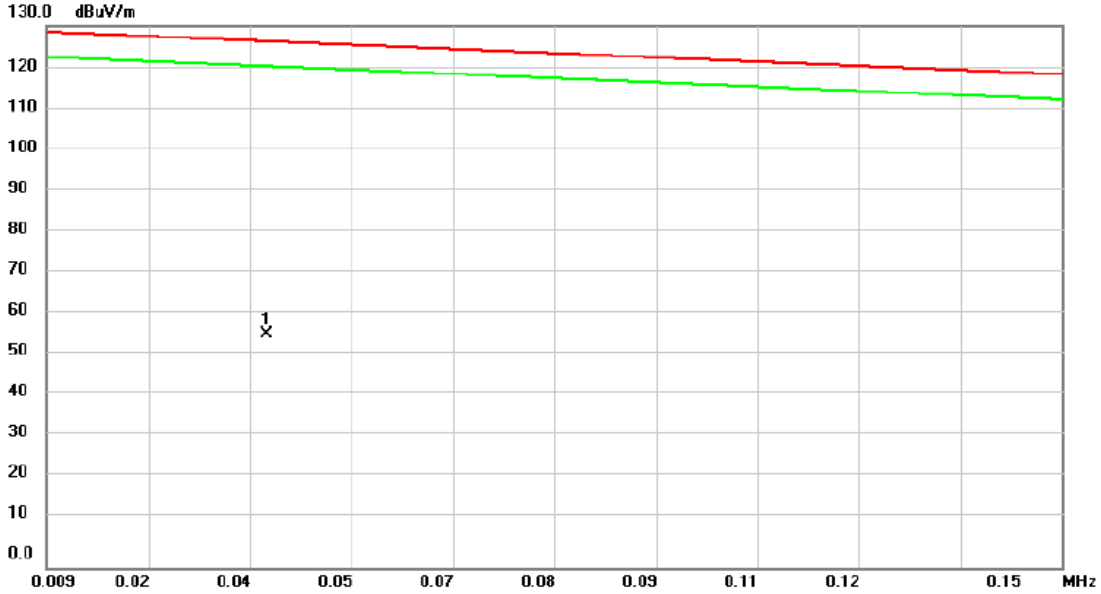
CLOSE



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.16	12.03	59.19	118.34	-59.15	peak	
2	*	2.0604	23.36	11.52	34.88	69.54	-34.66	peak	
3		2.9560	21.26	11.12	32.38	69.54	-37.16	peak	
4		5.2842	16.97	11.39	28.36	69.54	-41.18	peak	
5		9.5228	13.44	11.31	24.75	69.54	-44.79	peak	
6		12.1493	12.61	11.24	23.85	69.54	-45.69	peak	

Test Mode:	TX Mode_916MHz

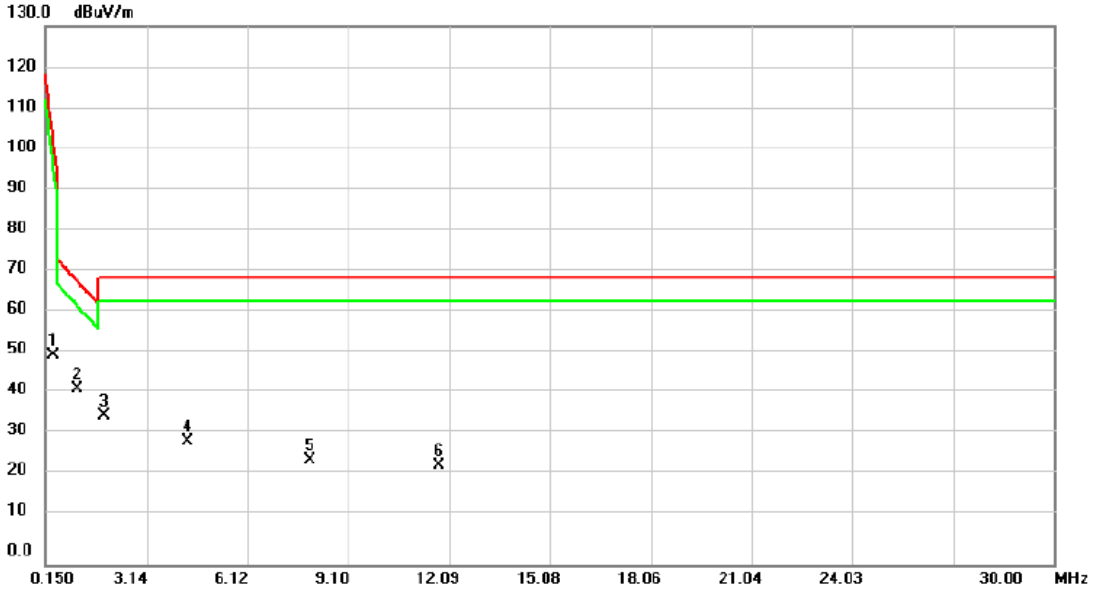
OPEN



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0395	42.02	14.05	56.07	126.32	-70.25	peak	

Test Mode:	TX Mode_916MHz

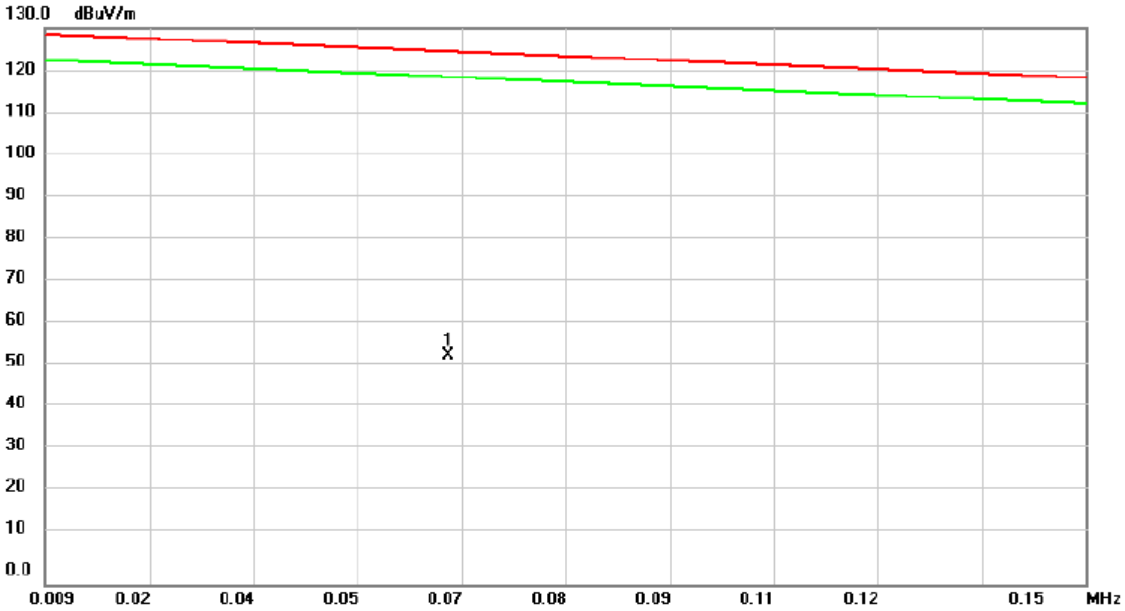
OPEN



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.3886	38.80	11.80	50.60	101.12	-50.52	peak	
2	*	1.0750	30.36	11.97	42.33	68.59	-26.26	peak	
3		1.8810	24.44	11.60	36.04	69.54	-33.50	peak	
4		4.3290	18.38	11.30	29.68	69.54	-39.86	peak	
5		7.9706	13.82	11.34	25.16	69.54	-44.38	peak	
6		11.7911	12.65	11.25	23.90	69.54	-45.64	peak	

Test Mode:	TX Mode_916MHz

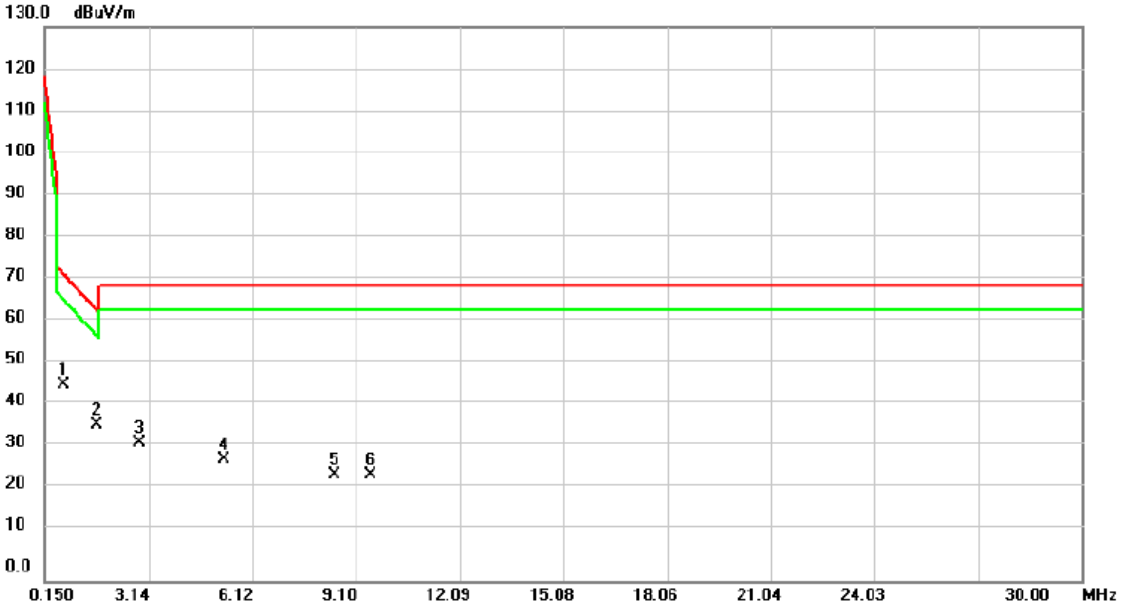
CLOSE



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0637	40.61	12.75	53.36	124.57	-71.21	peak	

Test Mode:	TX Mode_916MHz

CLOSE

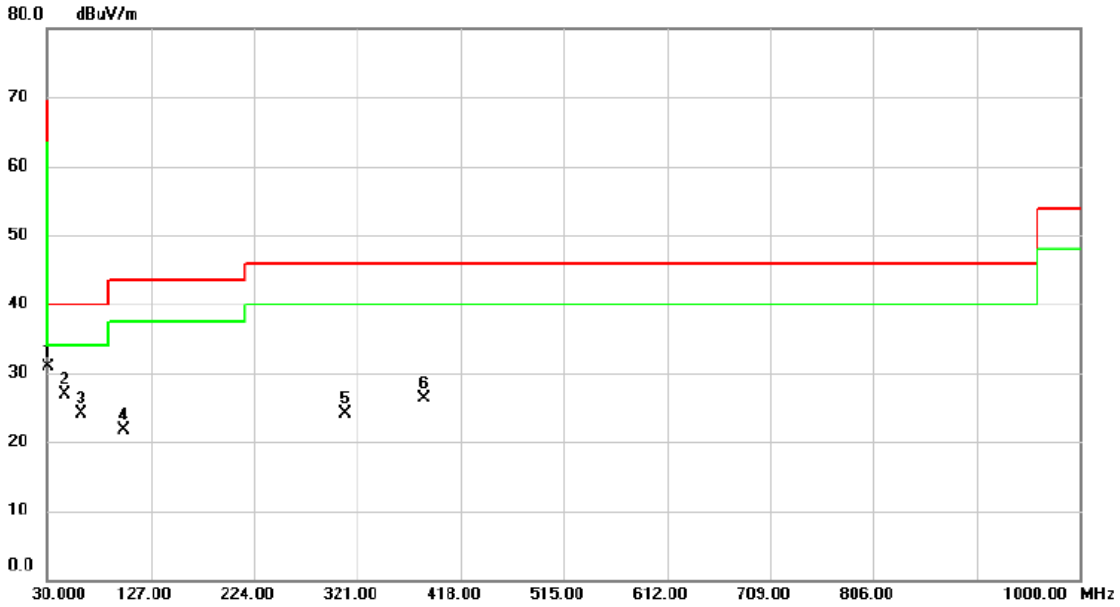


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.6873	34.17	11.87	46.04	72.04	-26.00	peak	
2		1.6425	24.87	11.71	36.58	63.53	-26.95	peak	
3		2.8664	21.25	11.16	32.41	69.54	-37.13	peak	
4		5.2842	16.97	11.39	28.36	69.54	-41.18	peak	
5		8.4780	13.54	11.33	24.87	69.54	-44.67	peak	
6		9.5228	13.44	11.31	24.75	69.54	-44.79	peak	

ATTACHMENT C -RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode:	TX Mode_908.4MHz

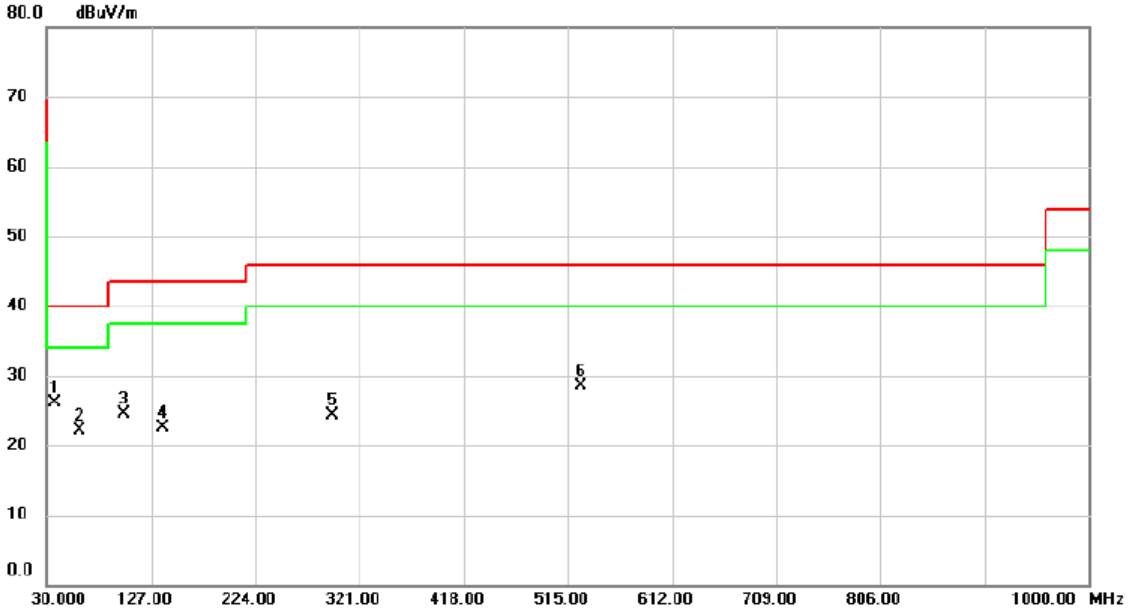
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	30.0000	39.87	-8.91	30.96	40.00	-9.04	peak	
2		45.5200	35.13	-8.25	26.88	40.00	-13.12	peak	
3		61.0400	33.20	-9.00	24.20	40.00	-15.80	peak	
4		101.7800	34.18	-12.41	21.77	43.50	-21.73	peak	
5		310.3300	31.33	-7.19	24.14	46.00	-21.86	peak	
6		383.0800	31.51	-5.27	26.24	46.00	-19.76	peak	

Test Mode:	TX Mode_908.4MHz

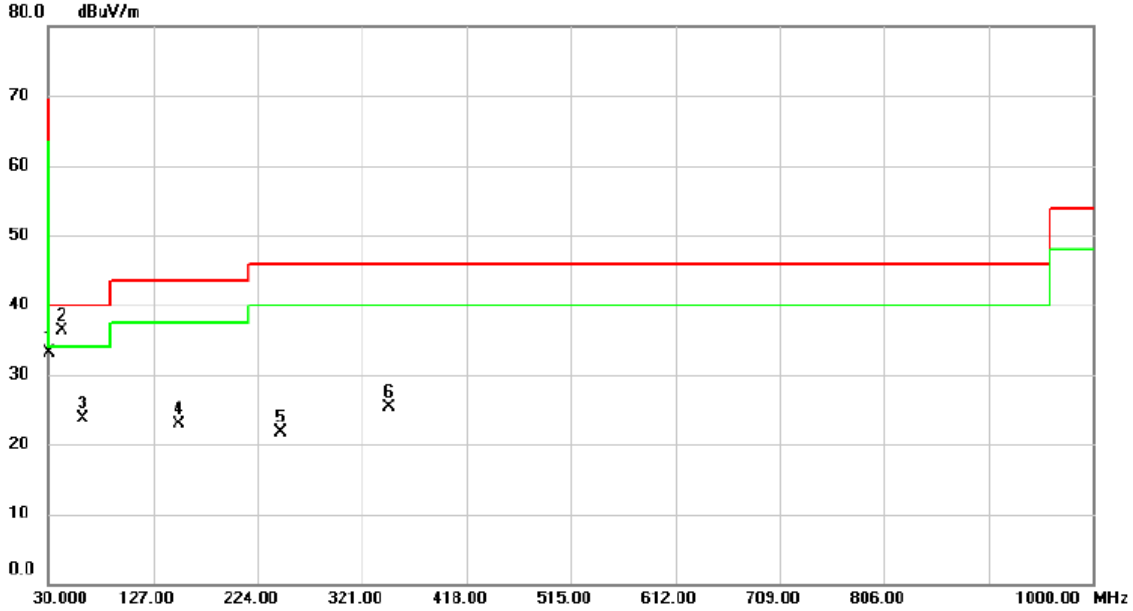
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	36.7900	34.92	-8.87	26.05	40.00	-13.95	peak	
2		60.0700	30.94	-8.84	22.10	40.00	-17.90	peak	
3		101.7800	37.00	-12.41	24.59	43.50	-18.91	peak	
4		138.6400	31.18	-8.77	22.41	43.50	-21.09	peak	
5		295.7800	31.85	-7.55	24.30	46.00	-21.70	peak	
6		527.6100	30.49	-2.04	28.45	46.00	-17.55	peak	

Test Mode:	TX Mode_916MHz

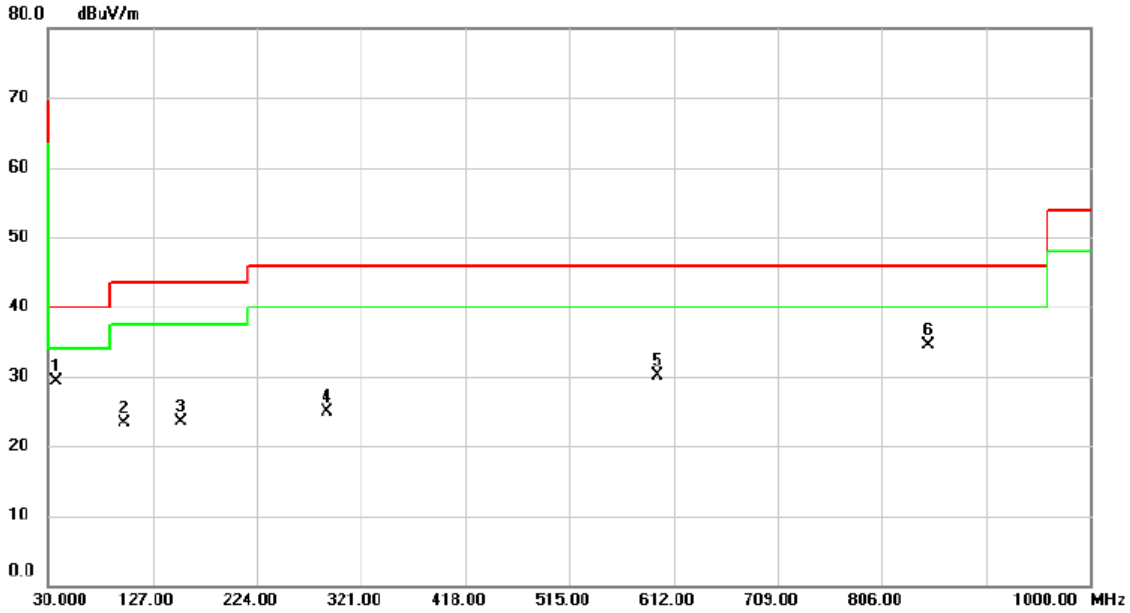
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		30.0000	42.08	-8.91	33.17	40.00	-6.83	peak	
2	*	41.6400	44.79	-8.54	36.25	40.00	-3.75	peak	
3		62.0100	32.91	-9.16	23.75	40.00	-16.25	peak	
4		151.2500	31.70	-8.72	22.98	43.50	-20.52	peak	
5		245.3400	31.11	-9.31	21.80	46.00	-24.20	peak	
6		346.2200	31.48	-6.10	25.38	46.00	-20.62	peak	

Test Mode:	TX Mode_916MHz

Horizontal

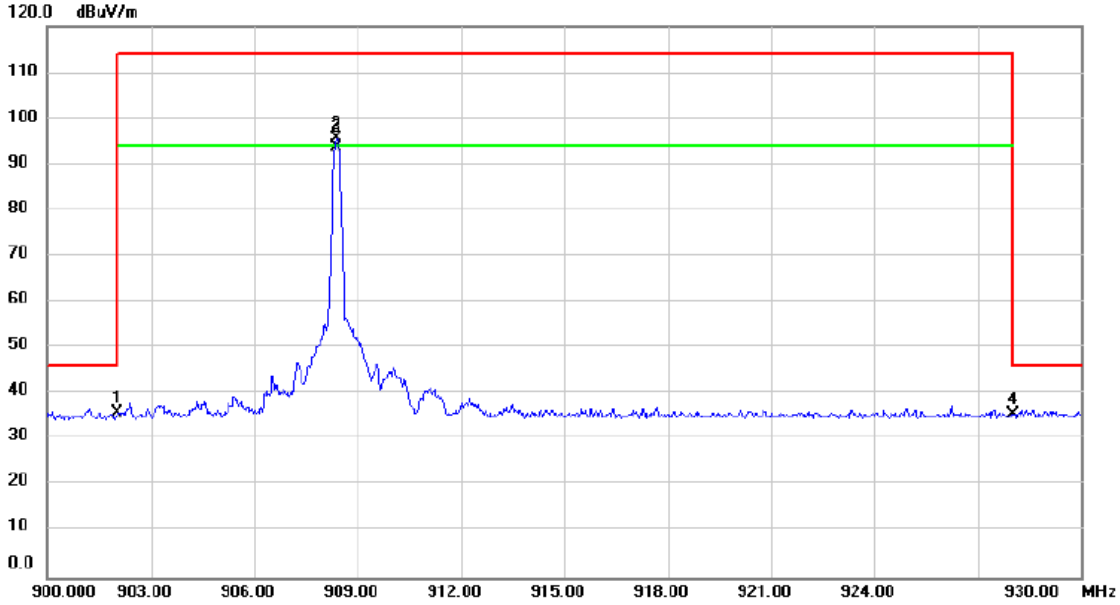


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	36.7900	38.27	-8.87	29.40	40.00	-10.60	peak	
2		100.8100	35.92	-12.56	23.36	43.50	-20.14	peak	
3		153.1900	32.28	-8.68	23.60	43.50	-19.90	peak	
4		289.9600	32.56	-7.62	24.94	46.00	-21.06	peak	
5		596.4800	30.45	-0.31	30.14	46.00	-15.86	peak	
6		848.6800	30.89	3.58	34.47	46.00	-11.53	peak	

ATTACHMENT D -RADIATED EMISSION (ABOVE 1000MHZ)

Orthogonal Axis :	X
Test Mode :	TX Mode_908.4MHz

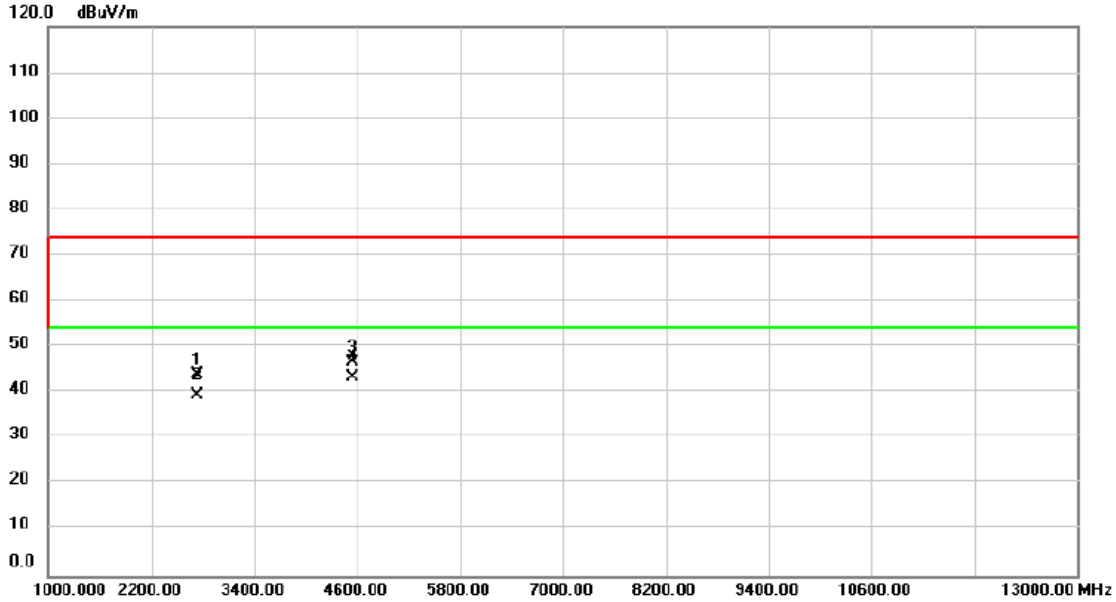
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		902.0000	4.30	31.65	35.95	46.00	-10.05	peak	
2		908.4000	63.91	31.74	95.65	114.00	-18.35	peak	
3	*	908.4000	62.06	31.74	93.80	94.00	-0.20	AVG	
4		928.0000	3.54	32.02	35.56	46.00	-10.44	peak	

Orthogonal Axis :	X
Test Mode :	TX Mode_908.4MHz

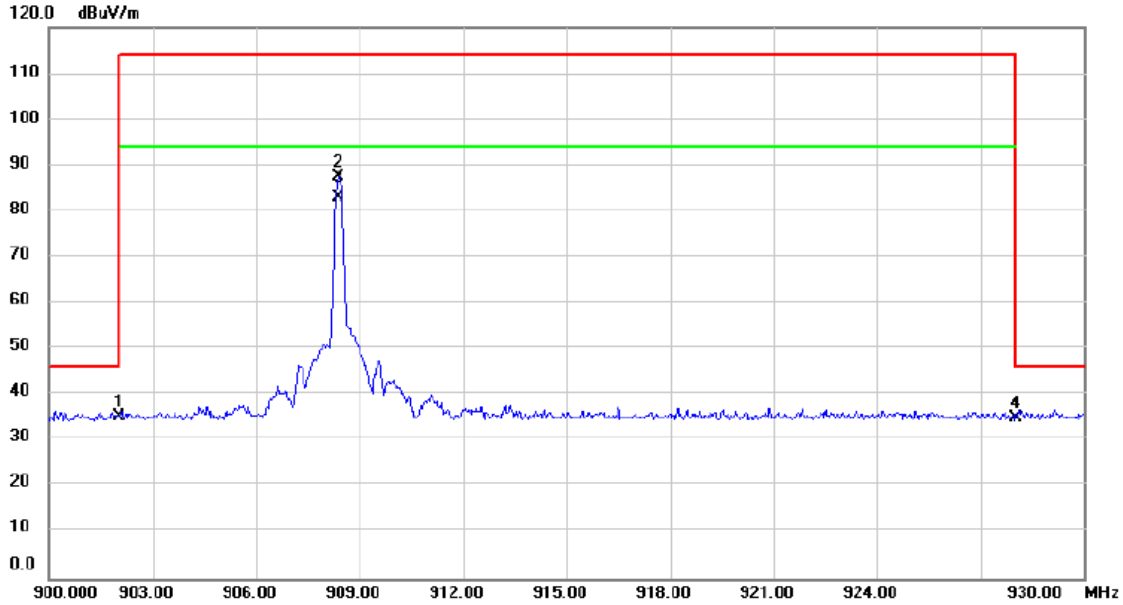
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2728.000	58.77	-14.94	43.83	74.00	-30.17	peak	
2		2728.000	54.46	-14.94	39.52	54.00	-14.48	AVG	
3		4540.000	57.74	-10.94	46.80	74.00	-27.20	peak	
4	*	4540.000	54.14	-10.94	43.20	54.00	-10.80	AVG	

Orthogonal Axis :	X
Test Mode :	TX Mode_908.4MHz

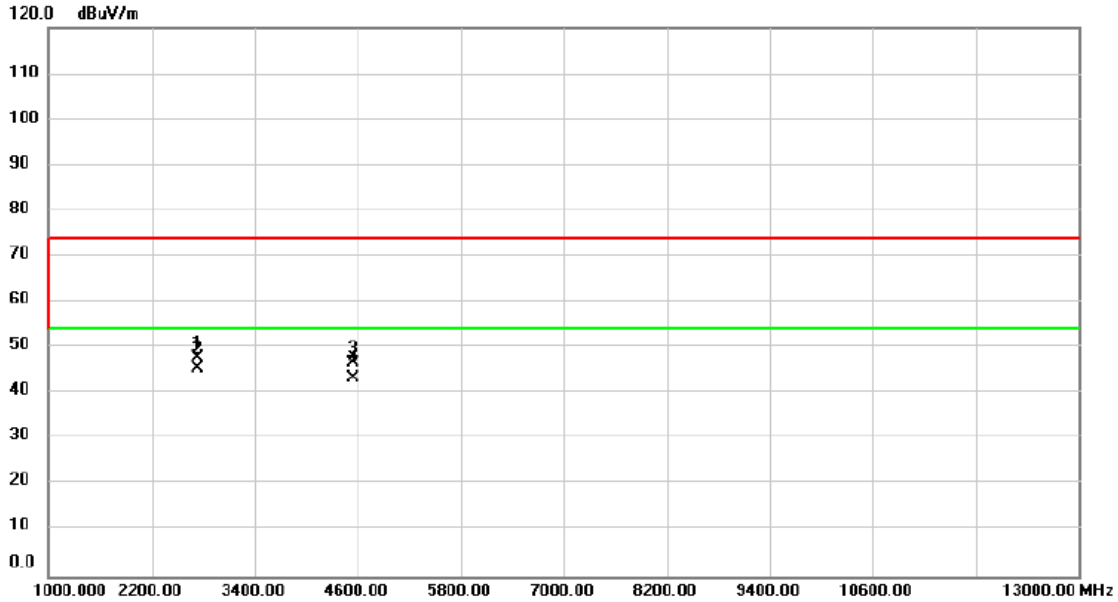
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	902.0000	3.45	31.65	35.10	46.00	-10.90	peak	
2		908.4000	55.81	31.74	87.55	114.00	-26.45	peak	
3		908.4000	51.17	31.74	82.91	94.00	-11.09	AVG	
4		928.0000	2.91	32.02	34.93	46.00	-11.07	peak	

Orthogonal Axis :	X
Test Mode :	TX Mode_908.4MHz

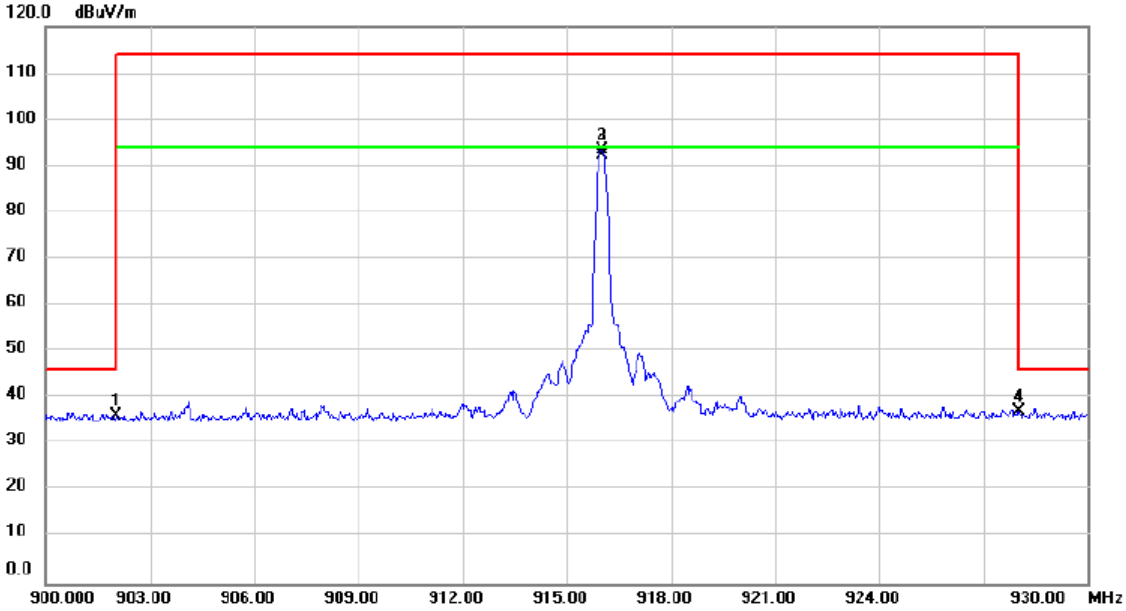
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2728.000	62.67	-14.94	47.73	74.00	-26.27	peak	
2	*	2728.000	60.27	-14.94	45.33	54.00	-8.67	AVG	
3		4540.000	57.72	-10.94	46.78	74.00	-27.22	peak	
4		4540.000	54.44	-10.94	43.50	54.00	-10.50	AVG	

Orthogonal Axis :	X
Test Mode :	TX Mode_916MHz

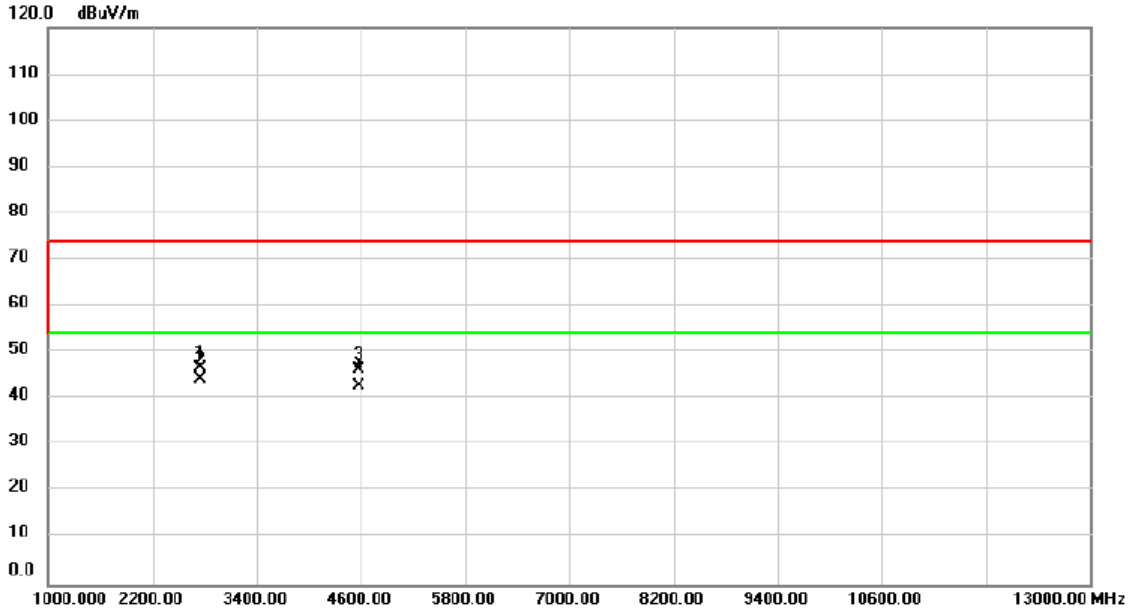
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		902.0000	4.55	31.65	36.20	46.00	-9.80	peak	
2		916.0000	61.63	31.85	93.48	114.00	-20.52	peak	
3	*	916.0000	60.45	31.85	92.30	94.00	-1.70	AVG	
4		928.0000	5.05	32.02	37.07	46.00	-8.93	peak	

Orthogonal Axis :	X
Test Mode :	TX Mode_916MHz

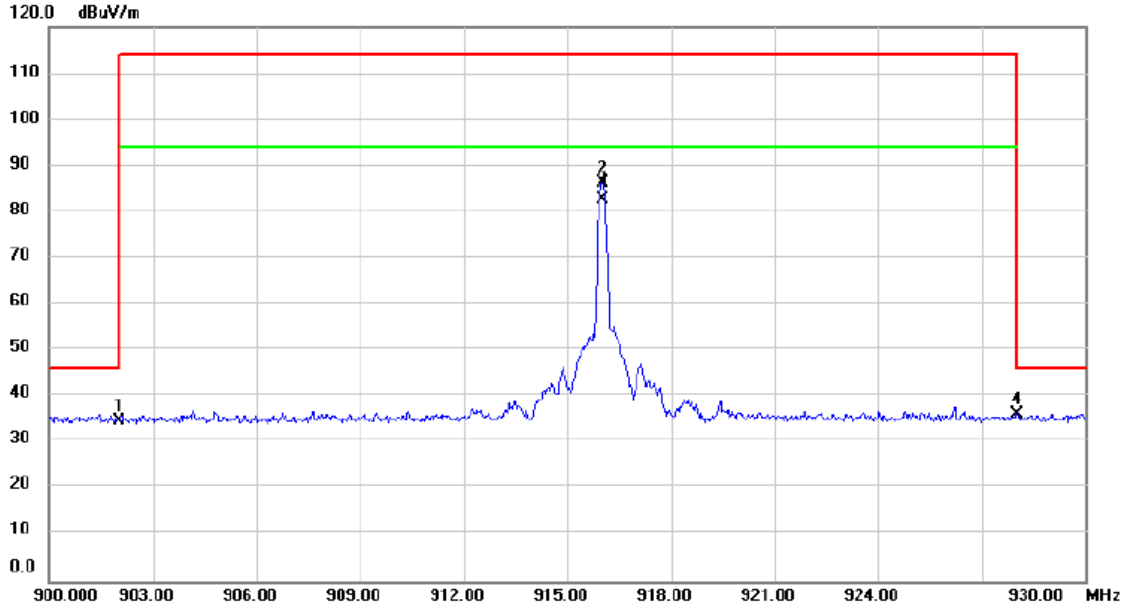
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2752.000	61.58	-14.84	46.74	74.00	-27.26	peak	
2	*	2752.000	59.23	-14.84	44.39	54.00	-9.61	AVG	
3		4576.000	57.11	-10.88	46.23	74.00	-27.77	peak	
4		4576.000	53.56	-10.88	42.68	54.00	-11.32	AVG	

Orthogonal Axis :	X
Test Mode :	TX Mode_916MHz

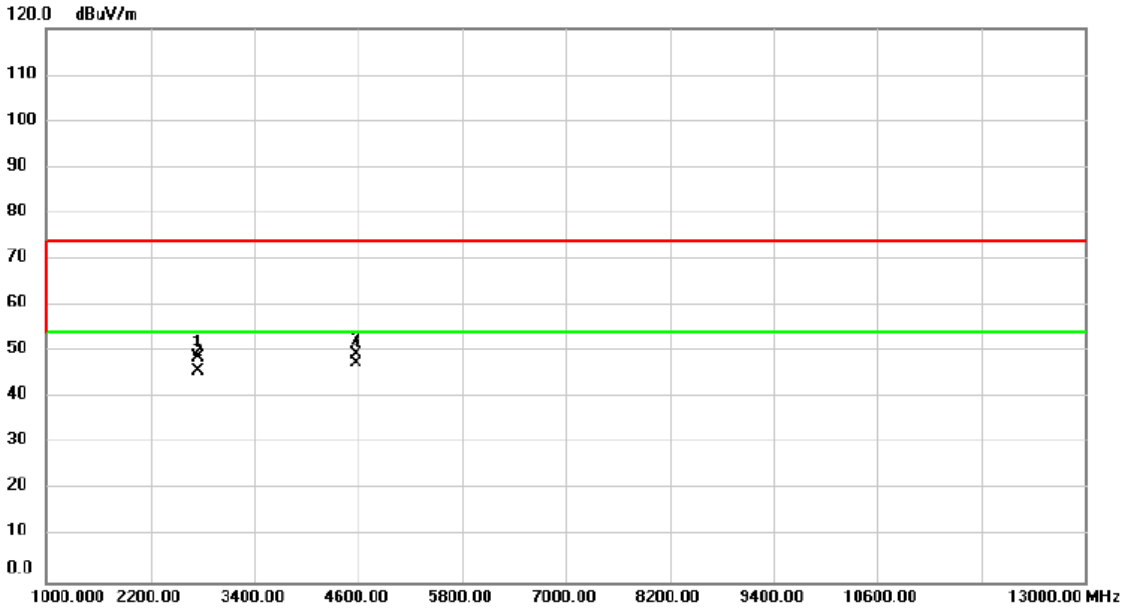
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		902.0000	2.88	31.65	34.53	46.00	-11.47	peak	
2		916.0000	54.50	31.85	86.35	114.00	-27.65	peak	
3		916.0000	50.92	31.85	82.77	94.00	-11.23	AVG	
4	*	928.0000	3.99	32.02	36.01	46.00	-9.99	peak	

Orthogonal Axis :	X
Test Mode :	TX Mode_916MHz

Horizontal



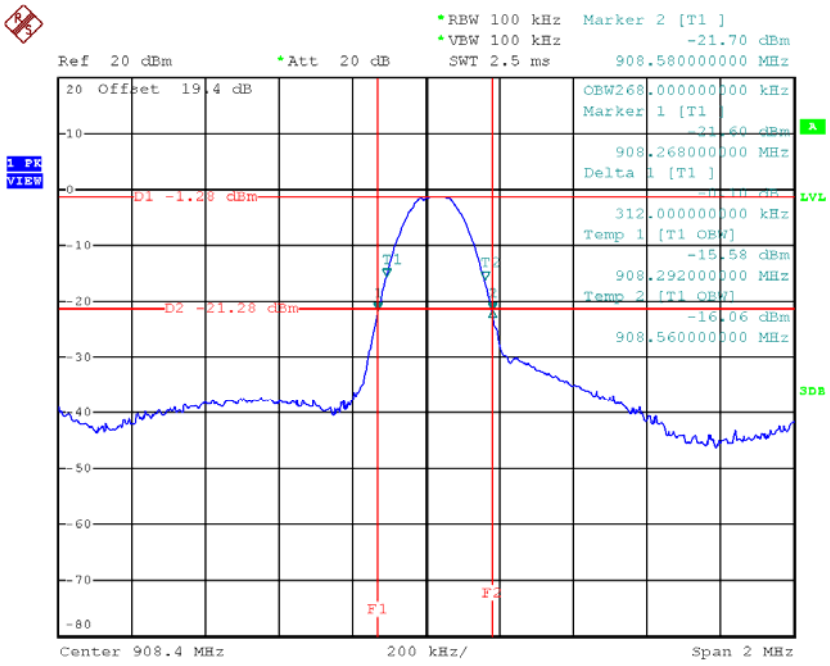
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2752.000	63.61	-14.84	48.77	74.00	-25.23	peak	
2		2752.000	60.45	-14.84	45.61	54.00	-8.39	AVG	
3		4576.000	60.32	-10.88	49.44	74.00	-24.56	peak	
4	*	4576.000	58.35	-10.88	47.47	54.00	-6.53	AVG	

ATTACHMENT E - BANDWIDTH

Test Mode :	TX Mode_908.4MHz

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)
908.4	0.910	0.268

TX Mode

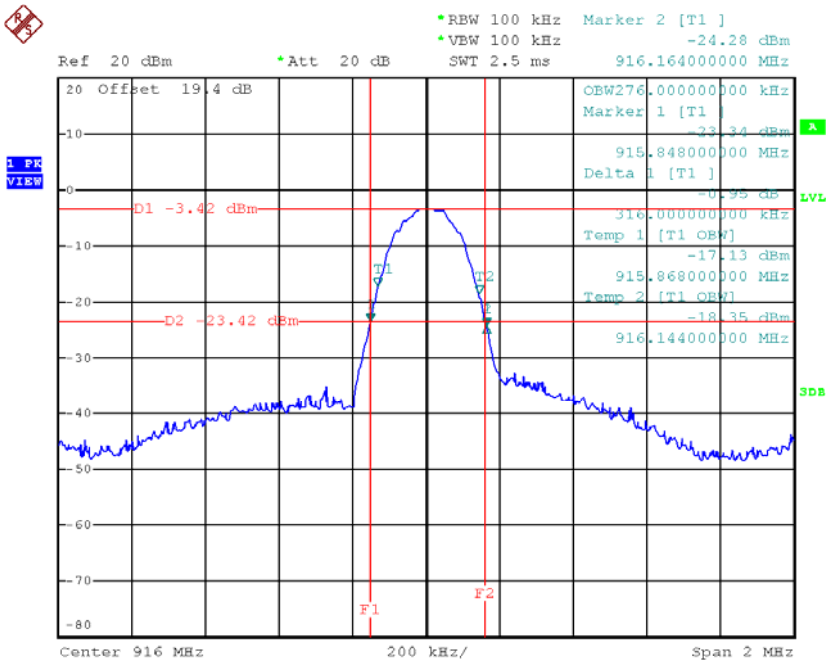


Date: 24.AUG.2016 15:40:40

Test Mode :	TX Mode_916MHz

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)
916	0.916	0.276

TX Mode



Date: 24.AUG.2016 15:37:53