10. Occupied Bandwidth (ESMR)

10.1 *Test Specification*

FCC Parts 2.1049; 90.2.09

10.2 *Test Procedure*

(Temperature (23°C)/ Humidity (34%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (loss = 41.3 dB).
The spectrum analyzer was set to proper resolution B.W.

OBW function (99%) was employed for this evaluation.
Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

10.3 *Test Limit*

N/A

10.4 *Test Results*

Modulation	Port	Operating Frequency	Reading
	(Input/Output)	(MHz)	(MHz)
LTE 64QAM	Input	864.5	4.5
	Output	864.5	4.5
	Input	866.5	4.5
	Output	866.5	4.5
W-CDMA	Input	864.5	4.1
	Output	864.5	4.1
	Input	866.5	4.2
	Output	866.5	4.1
GSM	Input	863.2	0.2
	Output	863.2	0.2
	Input	867.8	0.2
	Output	867.8	0.2

Figure 69 Occupied Bandwidth ESMR Test Results Table

JUDGEMENT: Passed

See additional information in *Figure 70* to *Figure 81*.

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

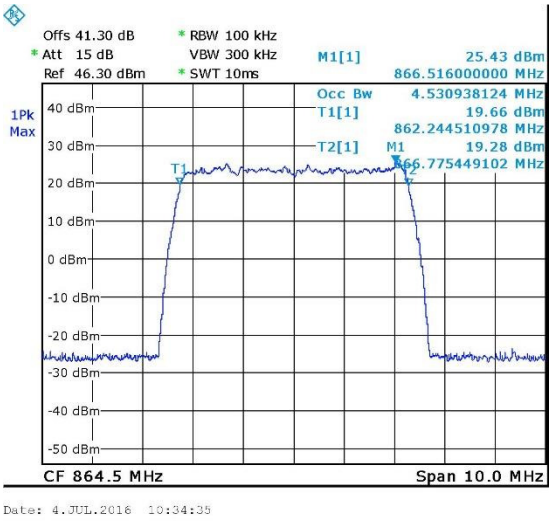


Figure 70. — 864.5MHz LTE 64QAM Input

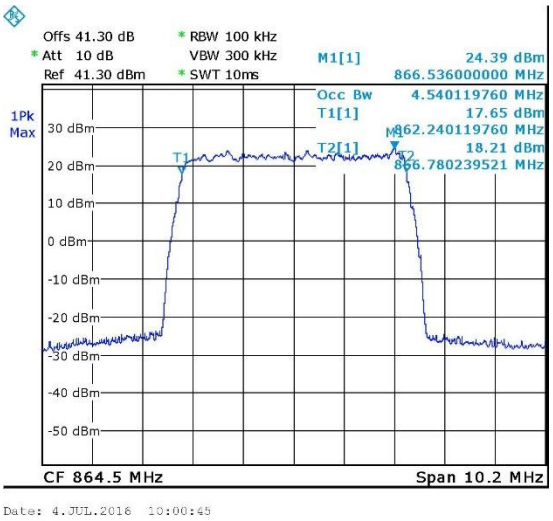
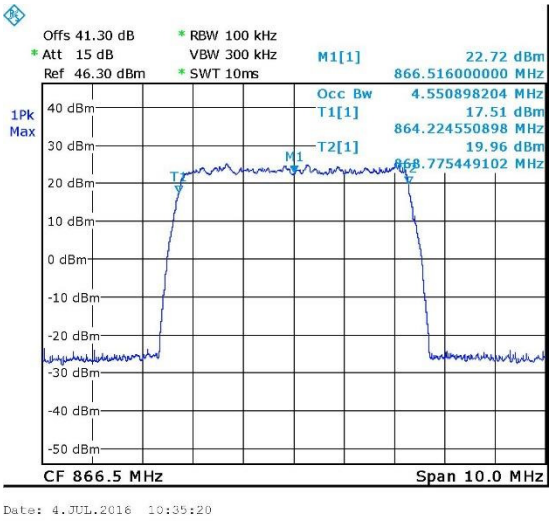


Figure 71. — 864.5MHz LTE 64QAM Output

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3



igure 72. — 866.5MHz LTE 64QAM Input

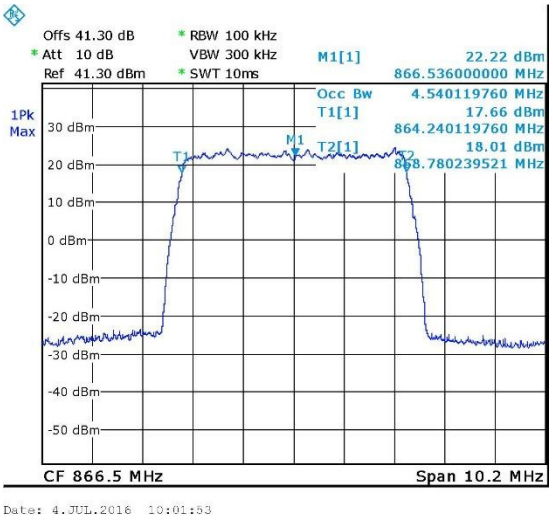


Figure 73. — 866.5MHz LTE 64QAM Output

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

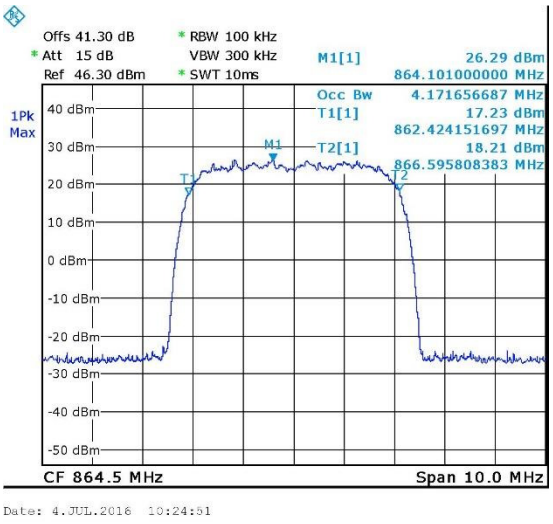
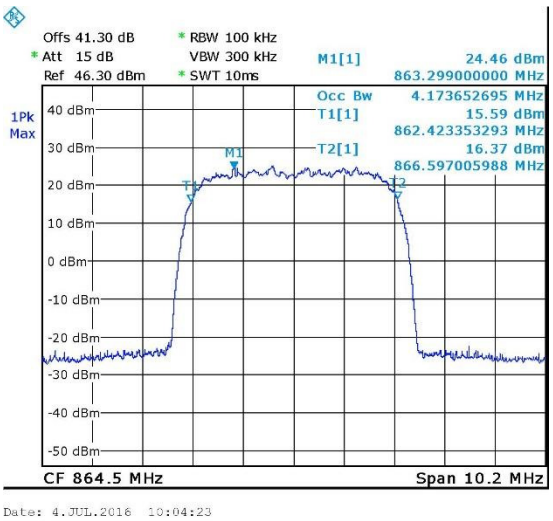


Figure 74. — 864.5MHz WCDMA Input



igure 75. — 864.5MHz WCDMA Output

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

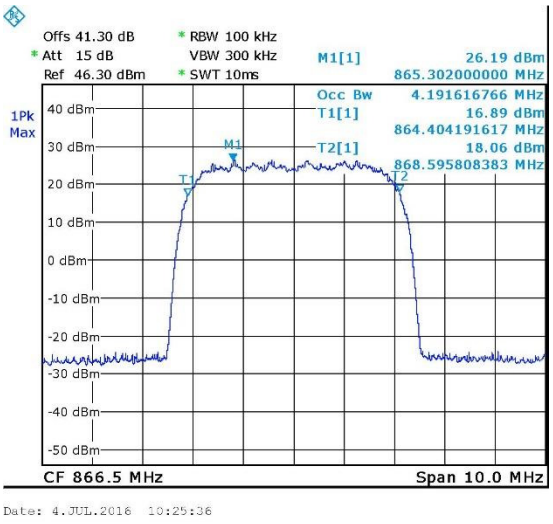


Figure 76. — 866.5MHz WCDMA Input

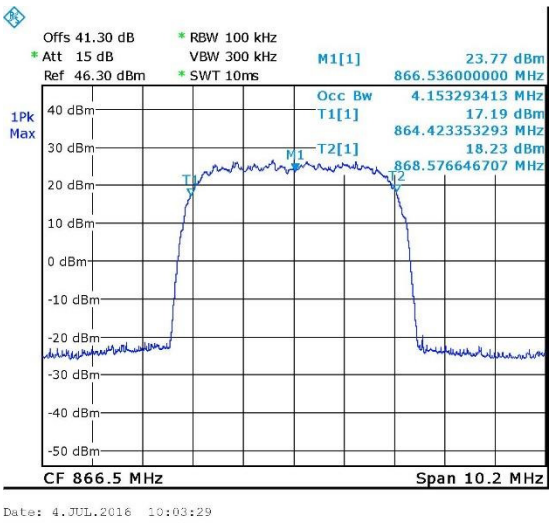


Figure 77. — 866.5MHz WCDMA Output

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

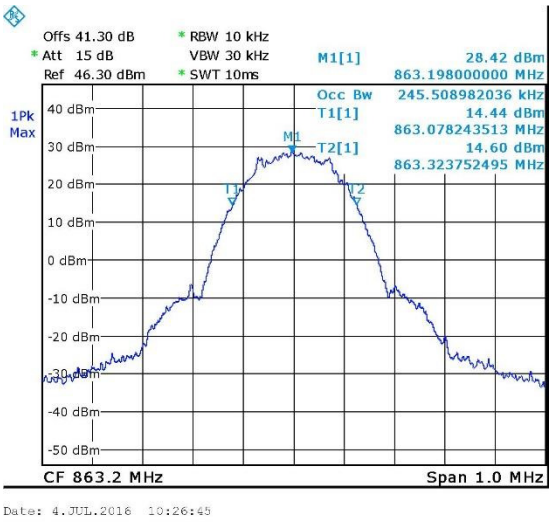


Figure 78. — 863.2MHz GSM Input

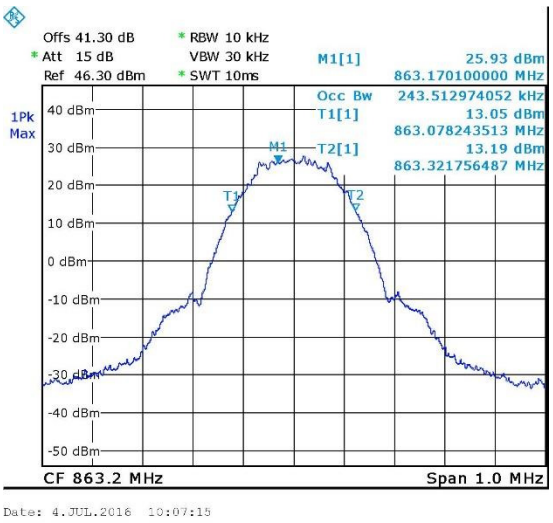


Figure 79. — 863.2MHz GSM Output

Occupied Bandwidth (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

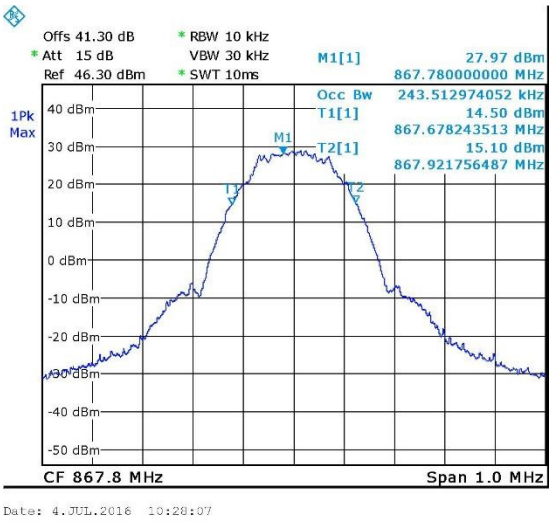


Figure 80. — 867.8MHz GSM Input

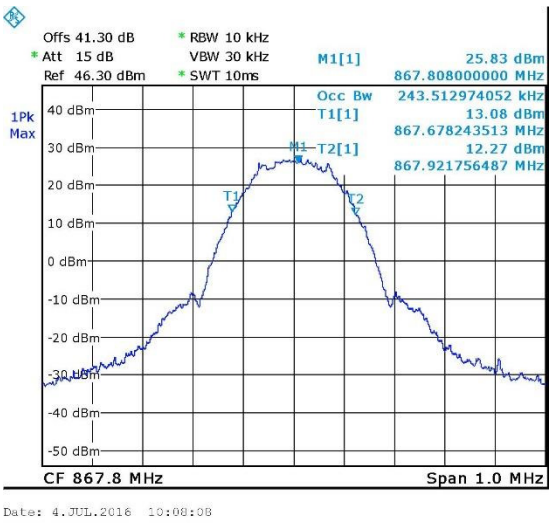


Figure 81. — 867.8MHz GSM Output

10.5 *Test Equipment Used; Occupied Bandwidth (ESMR)*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Date
Spectrum Analyzer	R&S	FSL6	100194	February 29, 2016	March 1, 2017
EXG Vector Signal Generator	Agilent	N5172B	MY51350584	July 1, 2016	July 1, 2017
40 dB Attenuator	Weinschel	WA 39-40-33	A1323	April 3, 2016	April 3, 2017

Figure 82 Test Equipment Used Occupied Bandwidth ESMR

11. Spurious Emissions at Antenna Terminals (ESMR)

11.1 *Test Specification*

FCC Part 90, Section 90.210

11.2 *Test Procedure*

(Temperature (22°C)/ Humidity (37%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max Loss= 31.5 dB).

The resolution bandwidth was set to 1.0 kHz for the frequency range 9 kHz – 1 MHz, 100 kHz for the frequency range 1 MHz to 1 GHz, and 1 MHz in the frequency range 1.0 – 10.0 GHz.

11.3 *Test Limit*

The power of any emission outside of the authorized operating frequency ranges(862-869MHz) must be attenuated below the transmitting power (P) by a factor of at least 43 + log (P) dB, yielding –13dBm.

11.4 *Test Results*

JUDGEMENT: Passed

See additional information in *Figure 83* to *Figure 88*.

Note – The peaks appearing in the plots in the above mentioned figures relate to the transmission frequency.

Spurious Emissions at Antenna Terminals (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

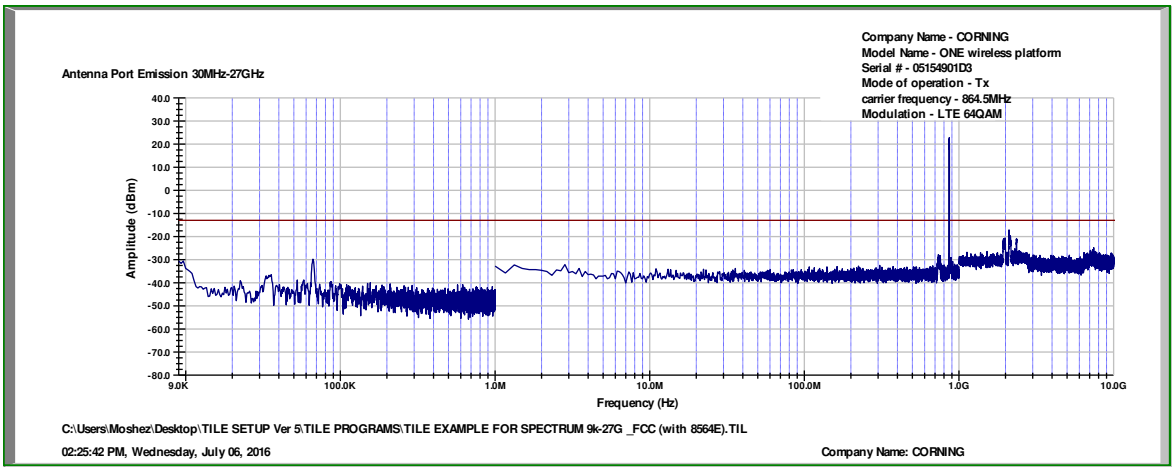


Figure 83. — 864.5 LTE 64QAM

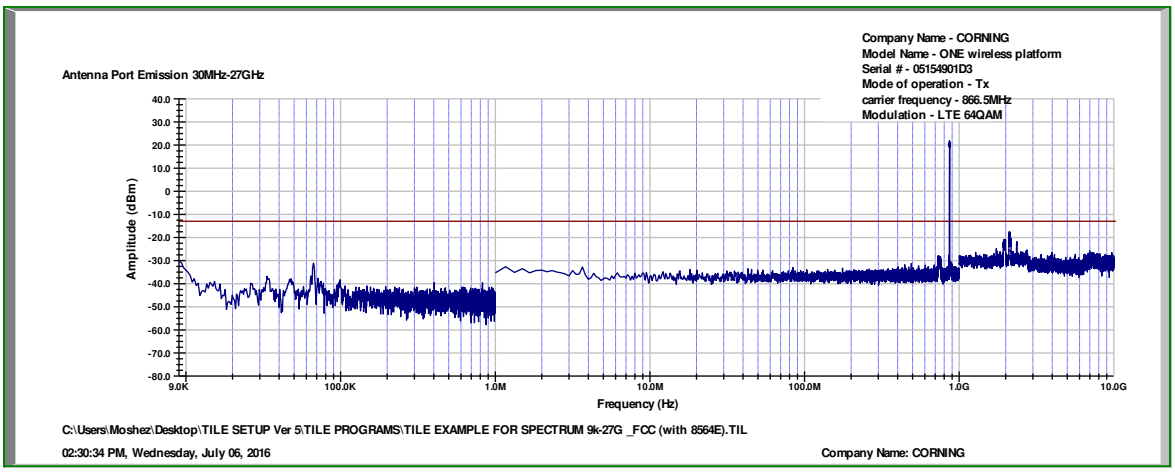
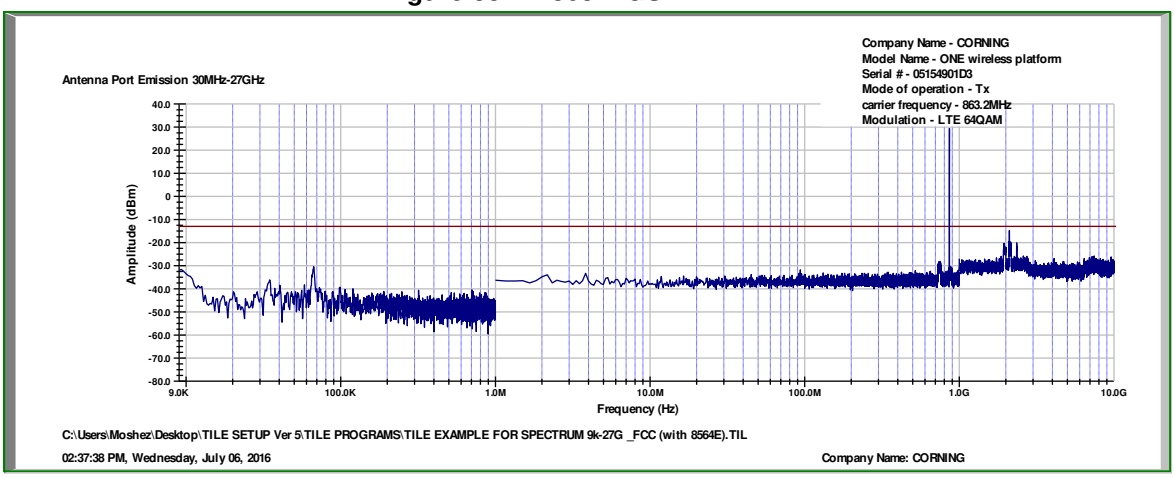


Figure 84. — 866.5 LTE 64QAM

Figure 85. — 863.2 GSM



Spurious Emissions at Antenna Terminals (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

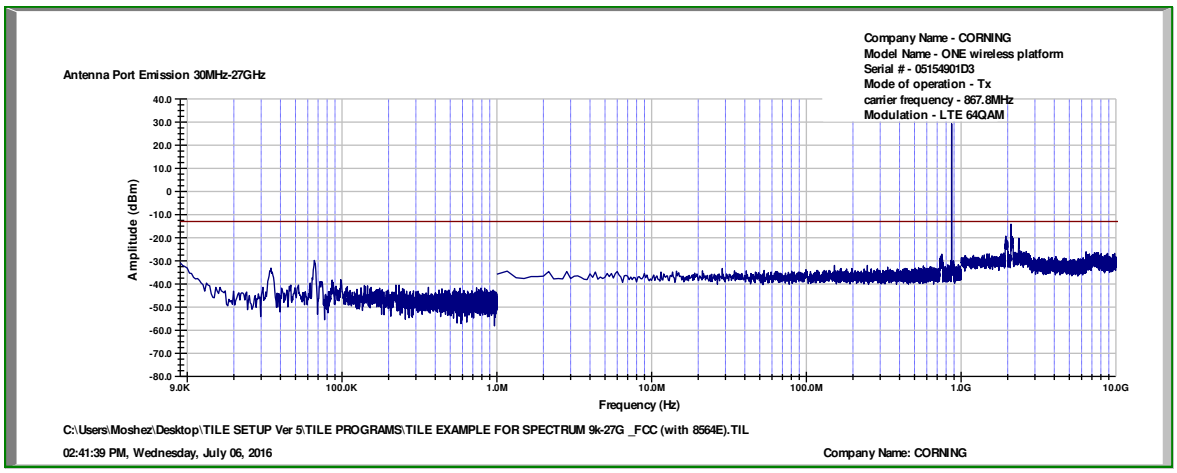


Figure 86. — 867.8 GSM

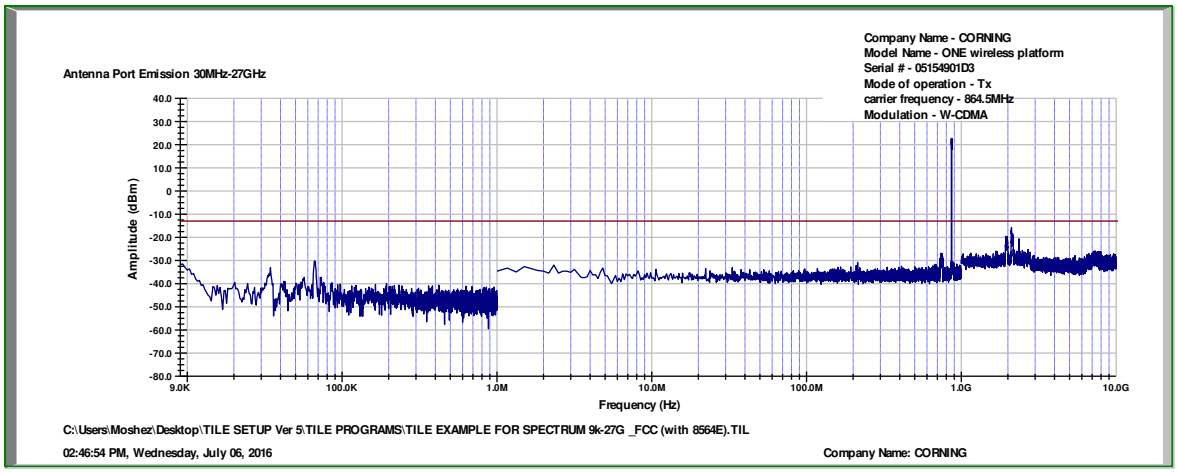


Figure 87. — 864.5 WCDMA

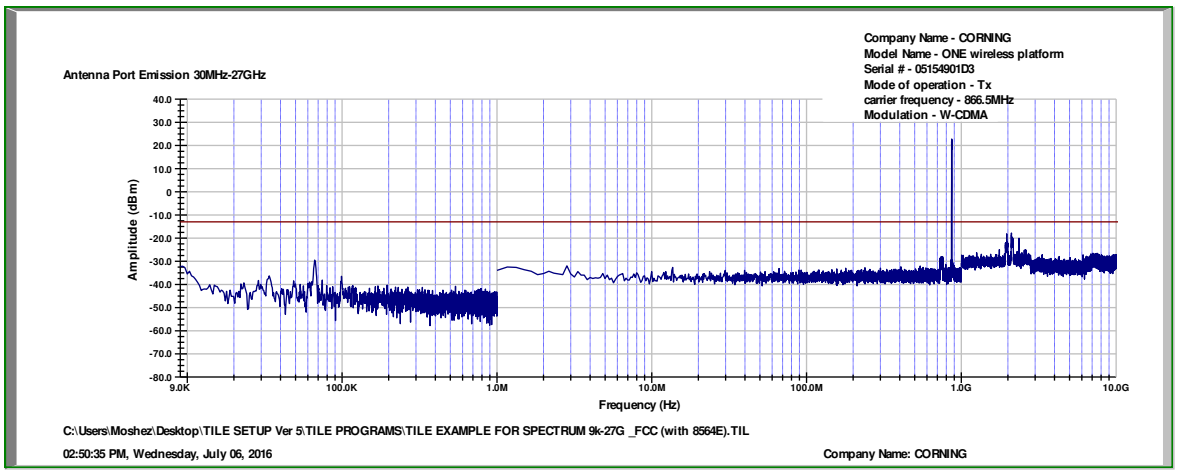


Figure 88. — 866.5 WCDMA

11.5 *Test Equipment Used; Spurious Emissions at Antenna Terminals ESMR*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Date
Spectrum Analyzer	HP	8564E	3442A00275	March 10, 2016	March 10, 2017
EXG Vector Signal Generator	Agilent	N5172B	MY51350584	July 1, 2016	July 1, 2017
30 dB Attenuator	MCL	BW-S30W5	533	July 5, 2016	July 5, 2017

Figure 89 Test Equipment Used

12. Band Edge Spectrum (ESMR)

12.1 *Test Specification*

FCC Part 2.1051

12.2 *Test Procedure*

(Temperature (23°C)/ Humidity (35%RH))
The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (41.3 dB).The spectrum analyzer was set to 100 kHz R.B.W.

12.3 *Test Limit*

The power of any emission outside of the authorized operating frequency ranges (862-869MHz) must be attenuated below the transmitting power (P) by a factor of at least 43 + log (P) dB, yielding –13dBm.

12.4 *Test Results*

Modulation	Operation Frequency	Band Edge Frequency	Reading	Limit	Margin
	(MHz)	(MHz)	(dBm)	(dBm)	(dB)
LTE 64QAM	864.5	862.0	-15.0	-13.0	-2.0
	866.5	869.0	-13.5	-13.0	-0.5
GSM	863.2	862.0	-27.3	-13.0	-14.3
	867.8	869.0	-27.0	-13.0	-14.0
W-CDMA	864.5	862.0	-23.0	-13.0	-10.0
	866.5	869.0	-23.6	-13.0	-10.6

Figure 90 Band Edge Spectrum Results ESMR

See additional information in *Figure 91* to *Figure 96*.

JUDGEMENT: Passed by 0.5 dB

Band Edge Spectrum (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

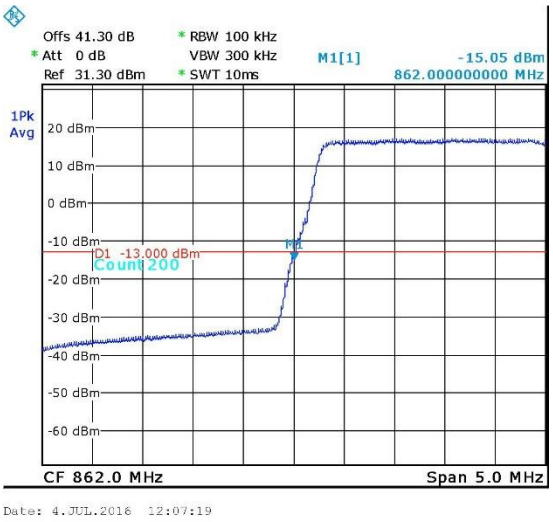


Figure 91. — LTE 64QAM 864.5MHz

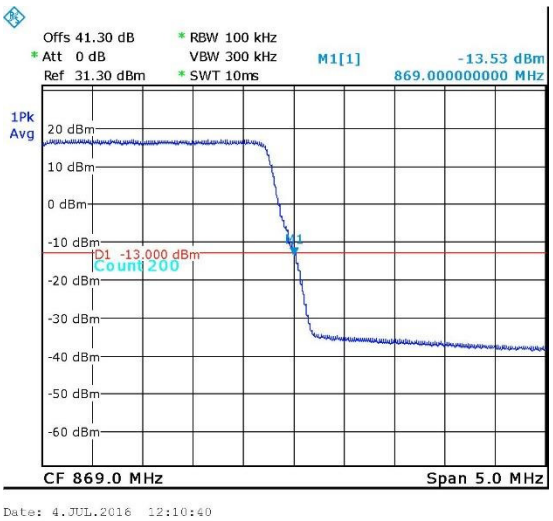


Figure 92. — LTE 64QAM 866.5 MHz

Band Edge Spectrum (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

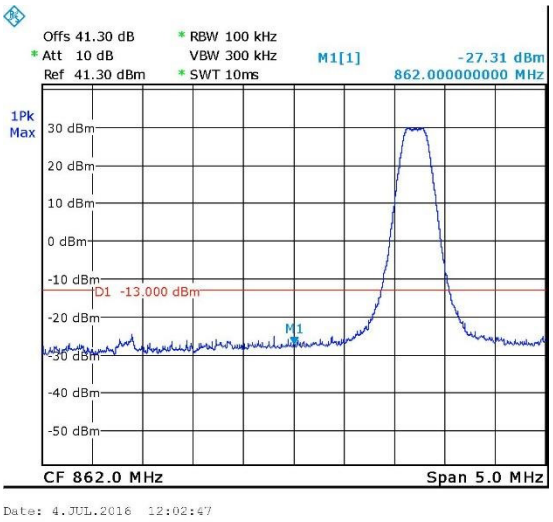


Figure 93. — GSM - 863.2MHz

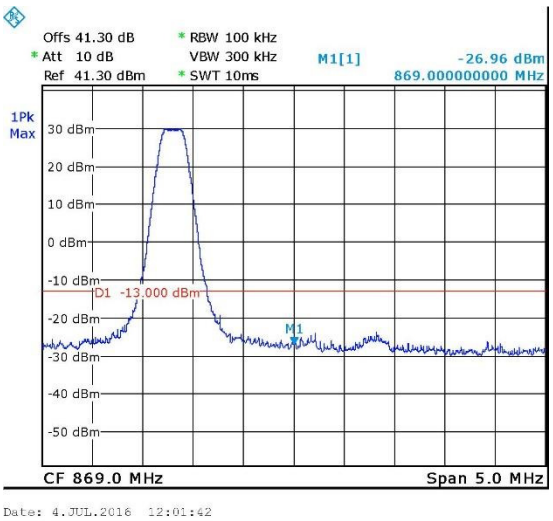


Figure 94. — GSM - 867.8 MHz

Band Edge Spectrum (ESMR)

E.U.T Description	ONE- Optical Network Evolution Wireless Platform
Type	MRU (Mid Power Remote Unit)
Serial Number:	05154901D3

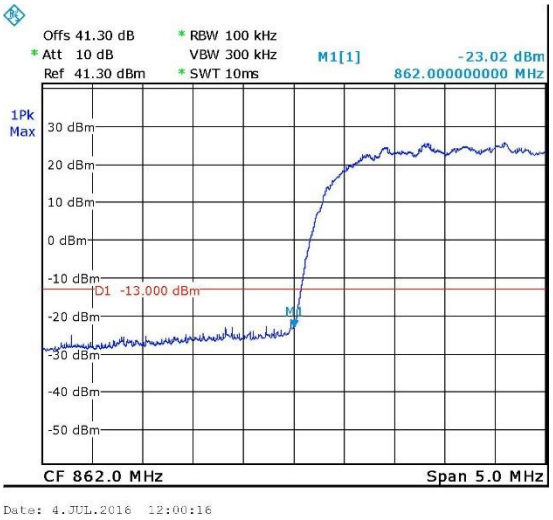


Figure 95. — W-CDMA - 864.5 MHz

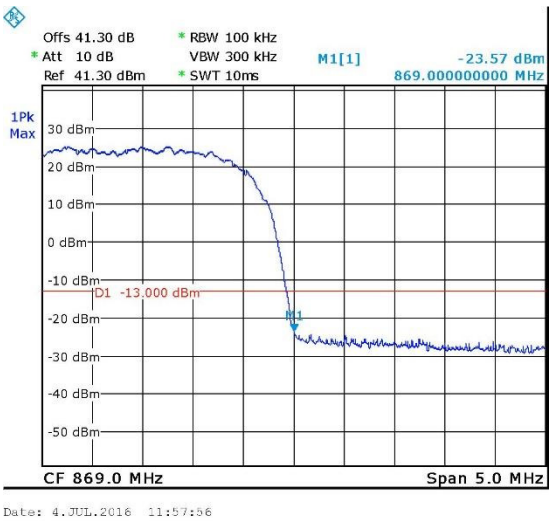


Figure 96. — W-CDMA - 866.5 MHz

12.5 *Test Equipment Used; Band Edge Spectrum ESMR*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Date
Spectrum Analyzer	R&S	FSL6	100194	February 29, 2016	March 1, 2017
EXG Vector Signal Generator	Agilent	N5172B	MY51350584	July 1, 2016	July 1, 2017
40 dB Attenuator	Weinschel	WA 39-40-33	A1323	April 3, 2016	April 3, 2017

Figure 97 Test Equipment Used

13. Spurious Emissions (Radiated) (ESMR)

13.1 *Test Specification*

FCC, Part 90, Section 90.210

13.2 *Test Procedure*

(Temperature (23°C)/ Humidity (39%RH))
The test method was based on ANSI/TIA-603-D: 2010, Section 2.2.12
Unwanted Emissions: Radiated Spurious.

For measurements between 0.009MHz-30.0MHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 0.009MHz-30MHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

For measurements between 30.0MHz-1.0GHz:
A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.
The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

For measurements between 1.0GHz-10.0GHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 1.0GHz -10.0GHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

The E.U.T. was replaced by a substitution antenna (dipole 30MHz-1GHz, Horn Antenna above 1GHz) driven by a signal generator. The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).
The signals observed in step (a) were converted to radiated power using:

$$P\ (dBm) = P_g(dBm) - \text{Cable Loss (dB)} + \text{Substitution Antenna Gain (dBd)}$$

P = Equivalent Isotropic Radiated Power.
P_g = Signal Generator Output Level.

A Peak detector was used for this test.

The test was performed in 3 operational frequencies: low, mid and high each at 3 modulations: GSM, WCDMA and LTE 64QAM.

Testing was performed when the RF port was connected to 50 Ω termination.

The test results table below describe only results with the highest emission.

13.3 *Test Results*

JUDGEMENT: Passed by 31.6 dB

The E.U.T met the requirements of the FCC, Part 90, Section 90.210 specifications.

Carrier Channel	Freq.	Antenna Pol.	Maximum Peak Level	Signal Generator RF Output	Cable Loss	Antenna Gain	Effective Radiated Power Level	Limit	Margin
(MHz)	(MHz)	(V/H)	(dBµV/m)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)
863.2	1726.4	V	50.8	-49.9	0.5	4.9	-45.5	-13.0	-32.5
	1726.4	H	50.5	-49.0	0.5	4.9	-44.6	-13.0	-31.6
867.8	1735.9	V	50.7	-49.9	0.5	4.9	-45.5	-13.0	-32.5
	1735.9	H	51.0	-49.0	0.5	4.9	-44.6	-13.0	-31.6

Figure 98 Spurious Emission (Radiated) (ESMR) Test Results Table (Highest Emission)

13.4 *Test Equipment Used; Spurious Emissions (Radiated) ESMR*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EMI Receiver	HP	85422E	3906A00276	March 3, 2016	March 3, 2017
RF Filter Section	HP	85420E	3705A00248	March 3, 2016	March 3, 2017
EMI Receiver	R&S	ESCI7	100724	February 29, 2016	March 1, 2017
Spectrum Analyzer	HP	8593EM	3536A00120ADI	March 10, 2016	March 10, 2017
Active Loop Antenna	EMCO	6502	9506-2950	November 5, 2015	November 30, 2016
Antenna Biconical	EMCO	3110B	9912-3337	March 24, 2016	March 24, 2018
Antenna Log Periodic	EMCO	3146	9505-4081	April 23, 2016	April 23, 2017
Horn Antenna 1G-18G	ETS	3115	29845	May 19, 2015	May 19, 2018
40dB attenuator	Weinschel Engineering	WA 39-40-33	A1323	April 3, 2016	April 3, 2017
MXG Vector Signal generator	Agilent	N5182A	MY49060440	July 1, 2016	July 1, 2017
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	N/A	N/A
Antenna Mast	ETS	2070-2	-	N/A	N/A
Turntable	ETS	2087	-	N/A	N/A
Mast & Table Controller	ETS/EMCO	2090	9608-1456	N/A	N/A

Figure 99 Test Equipment Spurious Emissions (Radiated) ESMR

14. Intermodulation Conducted

14.1 *Test Procedure*

(Temperature (22°C)/ Humidity (37%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max loss = 44.0dB). The spectrum analyzer was set to 1 kHz resolution BW for the frequency range 9.0-150.0 kHz, 10 kHz for the frequency range 150 kHz–1.0 MHz, 100 kHz for the frequency range 1.0 MHz – 30 MHz, and 1MHz for the frequency range 30 MHz - 24GHz.

5 input signals were sent simultaneously to the E.U.T. as follows:

LTE band: 742.0 MHz, 0 dBm

CELL & ESMR band: 878.0 MHz, 0 dBm

PCS band: 1962.5 MHz, 0 dBm

AWS band: 2132.5 MHz, 0 dBm

WCS band: 2355.0 MHz, 0 dBm

The frequency range of 9 kHz – 24.0 GHz was scanned for unwanted signals.

14.2 *Test Results*

JUDGEMENT: Passed

See additional information in *Figure 100.*

Note – The peaks appearing in the below plot relate to the transmission frequency.

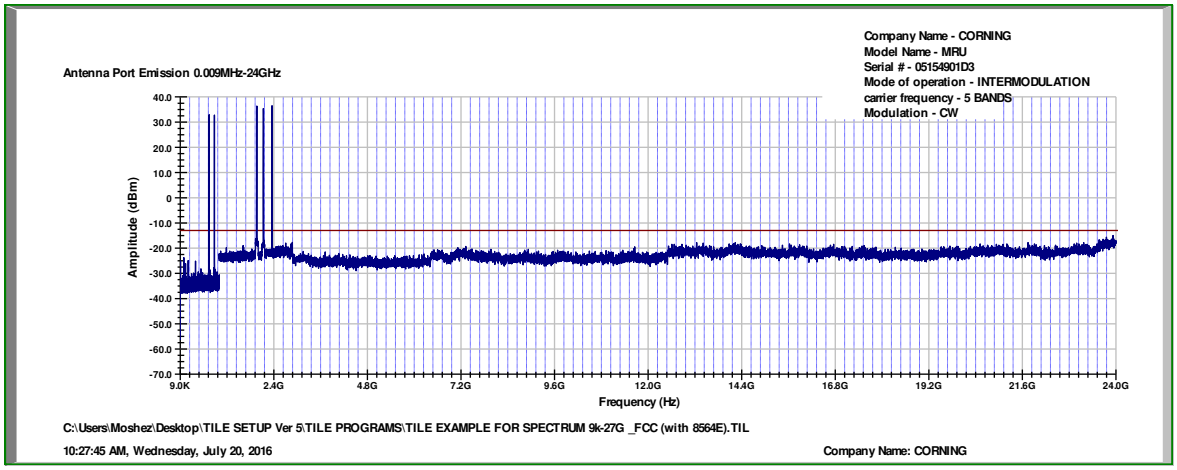


Figure 100 Intermodulation Conducted

14.3 *Test Equipment Used; Intermodulation Conducted*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
Spectrum Analyzer	HP	8564E	3442A00275	March 10, 2016	March 10, 2017
EXG Vector Signal Generator	Agilent	N5172B	TE4384	July 1, 2016	July 1, 2017
EXG Vector Signal Generator	Agilent	N5172B	MY513500584	July 1, 2016	July 1, 2017
MXG Vector Signal Generator	Agilent	N5182A	MY48180244	July 1, 2016	July 1, 2017
MXG Vector Signal Generator	Agilent	N5182A	MY49060440	July 1, 2016	July 1, 2017
Signal Generator	HP	E4432B	GB40050998	July 1, 2016	July 1, 2017
40 dB Attenuator	Weinschel Engineering	WA 39-40-33	A1323	April 3, 2016	April 3, 2017

Figure 101 Test Equipment Used

15. Intermodulation Radiated

15.1 *Test Procedure*

The test method was based on ANSI/TIA-603-D: 2010, Section 2.2.12 Unwanted Emissions: Radiated Spurious.

For measurements between 0.009MHz-30.0MHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 0.009MHz-30MHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.
The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

For measurements between 1.0GHz-24.0GHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 1.0GHz -24.0GHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The emissions were measured at a distance of 3 meters.

The E.U.T. was replaced by a substitution antenna (dipole 30MHz 1GHz, Horn Antenna above 1GHz) driven by a signal generator. The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).
The signals observed in step (a) were converted to radiated power using:

$P_d(dBm) = P_g(dBm) – Cable\ Loss\ (dB) + Substitution\ Antenna\ Gain\ (dBd)$

P_d = Dipole equivalent power (result).
P_g = Signal generator output level.

5 input signals were sent simultaneously to the E.U.T. as follows:

LTE band: 742.0 MHz, 0 dBm

CELL & ESMR band: 878.0 MHz, 0 dBm

PCS band: 1962.5 MHz, 0 dBm

AWS band: 2132.5 MHz, 0 dBm

WCS band: 2355.0 MHz, 0 dBm

A Peak detector was used for this test.

Testing was performed when the RF port was connected to 50 Ω termination.

The test results table below describe only results with the highest radiation.

15.2 *Test Limit*

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB, yielding –13dBm.

15.3 *Test Results*

JUDGEMENT: Passed

For additional information see *Figure 102.*

Freq.	Antenna Pol.	Maximum Peak Level	Signal Generator RF Output	Cable Loss	Antenna Gain	Effective Radiated Power Level	Limit	Margin
(MHz)	(V/H)	(dBµV/m)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)
1565.0	V	55.0	-45.7	0.5	7.0	-39.2	-13.0	-26.2
1565.0	H	54.5	-45.5	0.5	7.0	-39.0	-13.0	-26.0
3039.0	V	51.3	-53.9	0.5	10.0	-44.4	-13.0	-31.4
3039.0	H	51.5	-53.0	0.5	10.0	-43.5	-13.0	-30.5
3434.0	V	51.9	-53.5	0.5	10.0	-44.0	-13.0	-31.0
3434.0	H	52.0	-52.0	0.5	10.0	-42.5	-13.0	-29.5
4118.0	V	51.7	-47.1	0.5	9.5	-38.1	-13.0	-25.1
4118.0	H	51.9	-50.0	0.5	10.8	-39.7	-13.0	-26.7
4688.0	V	59.3	-43.2	0.5	10.8	-32.9	-13.0	-19.9
4688.0	H	57.2	-45.0	0.5	10.8	-34.7	-13.0	-21.7
3523.0	V	53.1	-51.9	0.5	10.0	-42.4	-13.0	-29.4
3523.0	H	53.5	-50.5	0.5	10.0	-41.0	-13.0	-28.0
2249.0	V	51.8	-48.7	0.5	7.0	-42.2	-13.0	-29.2
2249.0	H	50.6	-49.4	0.5	7.0	-42.9	-13.0	-29.9
1915.0	V	59.6	-40.7	0.5	7.0	-34.2	-13.0	-21.2
1915.0	H	50.8	-49.0	0.5	7.0	-42.5	-13.0	-29.5
5571.0	V	57.6	-46.2	0.5	10.8	-35.9	-13.0	-22.9
5571.0	H	57.7	-42.9	1.0	9.7	-34.2	-13.0	-21.2
3303.0	V	52.2	-52.9	0.5	10.0	-43.4	-13.0	-30.4
3303.0	H	52.5	-52.5	0.5	10.0	-43.0	-13.0	-30.0

Figure 102 Intermodulation Radiated Results

15.4 *Test Instrumentation Used; Radiated Measurements Intermodulation*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EMI Receiver	HP	85422E	3906A00276	March 3, 2016	March 3, 2017
RF Filter Section	HP	85420E	3705A00248	March 3, 2016	March 3, 2017
EMI Receiver	R&S	ESCI7	100724	February 29, 2016	March 1, 2017
Spectrum Analyzer	HP	8593EM	3536A00120ADI	March 10, 2016	March 10, 2017
Active Loop Antenna	EMCO	6502	9506-2950	November 5, 2015	November 30, 2016
Antenna Biconical	EMCO	3110B	9912-3337	March 24, 2016	March 24, 2018
Antenna Log Periodic	EMCO	3146	9505-4081	April 23, 2016	April 23, 2017
Horn Antenna 1G-18G	ETS	3115	29845	May 19, 2015	May 19, 2018
Horn Antenna 18G-26G	ARA	SWH-28	1007	March 30, 2016	March 30, 2018
Low Noise Amplifier	Narda	LNA-DBS-0411N313	013	May 25, 2016	May 25, 2017
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	March 1, 2016	March 1, 2017
Signal Generator	Marconi	2022D	119196015	March 1, 2016	March 1, 2017
Signal Generator	HP	8648C	3623A04126	February 29, 2016	March 1, 2017
Signal Generator	HP	ESG-4000A/E4422A	US36220118	February 29, 2016	March 1, 2017
MXG Vector Signal generator	Agilent	N5182A	MY49060440	July 1, 2016	July 1, 2017
ESG Vector Signal generator	Agilent	E4438C	MY45094064	July 1, 2016	July 1, 2017
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	N/A	N/A
Antenna Mast	ETS	2070-2	-	N/A	N/A
Turntable	ETS	2087	-	N/A	N/A
Mast & Table Controller	ETS/EMCO	2090	9608-1456	N/A	N/A

Figure 103 Test Equipment Used

16. Out-of-Band Rejection (ESMR/CELL)

16.1 *Test Specification*

KDB 935210 D05 v01r01, Section 3.3

16.2 *Test Procedure*

(Temperature (22°C)/ Humidity (37%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max Loss= 41.5 dB).

The signal and spectrum analyzer frequency range was set to ±250% of the passband, Dwell time set to approximately 10msec.

RBW was set between 1% to 5% of the E.U.T passband and VBW set to ≥3*RBW.

16.3 *Test Limit*

N/A

16.4 *Test Results*

JUDGEMENT: Passed

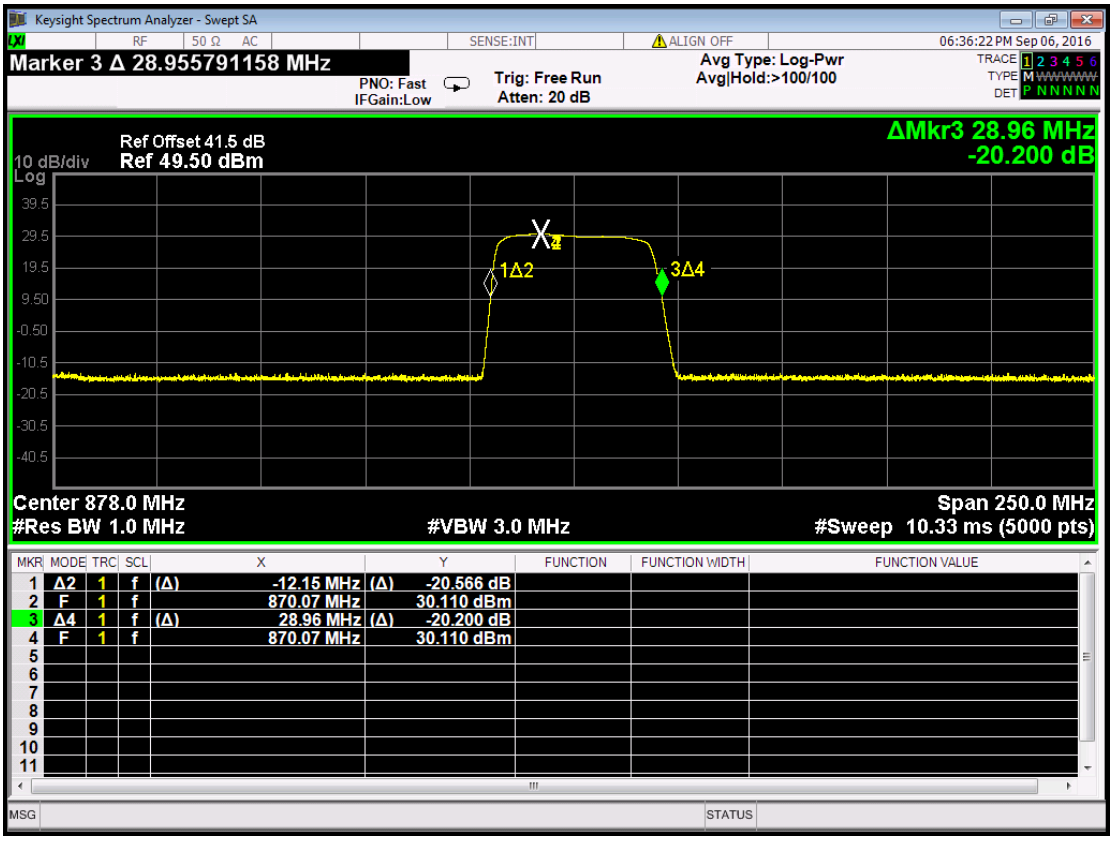


Figure 104. — Out-of-Band Rejection Plot

16.5 *Test Equipment Used; Out-of-Band Rejection*

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Date
EXA Spectrum Analyzer	Agilent	N9010A	MY49061070	July 21, 2016	July 21, 2017
EXG Vector Signal Generator	Agilent	N5172B	MY51350584	July 1, 2016	July 1, 2017
40 dB Attenuator	Weinschel	WA 39-40-33	A1323	April 3, 2016	April 3, 2017

Figure 105 Test Equipment Used

17. APPENDIX A - CORRECTION FACTORS

17.1 *Correction factors for* *CABLE* from EMI receiver to test antenna at 3 meter range.

Frequency (MHz)	Cable Loss (dB)	Frequency (MHz)	Cable Loss (dB)
0.010	0.4	50.00	1.2
0.015	0.2	100.00	0.7
0.020	0.2	150.00	2.1
0.030	0.3	200.00	2.3
0.050	0.3	300.00	2.9
0.075	0.3	500.00	3.8
0.100	0.2	750.00	4.8
0.150	0.2	1000.00	5.4
0.200	0.3	1500.00	6.7
0.500	0.4	2000.00	9.0
1.00	0.4	2500.00	9.4
1.50	0.5	3000.00	9.9
2.00	0.5	3500.00	10.2
5.00	0.6	4000.00	11.2
10.00	0.8	4500.00	12.1
15.00	0.9	5000.00	13.1
20.00	0.8	5500.00	13.5
		6000.00	14.5

NOTES:

1. The cable type is SPUMA400 RF-11N(X2) and 39m long

2. The cable is manufactured by Huber + Suhner

17.2 *Correction factors for RF cable for Semi Anechoic Chamber*

FREQ (MHz)	LOSS (dB)
1000.0	1.5
2000.0	2.1
3000.0	2.7
4000.0	3.1
5000.0	3.5
6000.0	4.1
7000.0	4.6
8000.0	4.9
9000.0	5.7
10000.0	5.7
11000.0	6.1
12000.0	6.1
13000.0	6.2
14000.0	6.7
15000.0	7.4
16000.0	7.5
17000.0	7.9
18000.0	8.1
19000.0	8.8
20000.0	9.1

17.3 *Correction factors for Horn ANTENNA*

Model: 3115
Antenna serial number: 29845
10 meter range

FREQUENCY (MHz)	AFE (dB/m)	FREQUENCY (MHz)	AFE (dB/m)
1000	22.4	10000	36.1
2000	25.2	11000	37.0
3000	31.1	12000	41.3
4000	30.2	13000	38.1
5000	34.2	14000	41.7
6000	31.6	15000	39.0
7000	34.7	16000	38.8
8000	34.8	17000	43.2
9000	36.2	18000	43.7

17.4 *Correction factors for* *Horn ANTENNA*

Model: SWH-28
Antenna serial number: 1007
1 meter range

FREQUENCY (GHz)	AFE (dB/m)	Gain (dBi)
18.0	40.3	16.1
19.0	40.3	16.3
20.0	40.3	16.1
21.0	40.3	16.3
22.0	40.4	16.8
23.0	40.5	16.4
24.0	40.5	16.6
25.0	40.5	16.7
26.0	40.6	16.4

17.5 *Correction factors for ACTIVE LOOP ANTENNA*

Model 6502
S/N 9506-2950

FREQUENCY (MHz)	Magnetic Antenna Factor (dBs/m)	Electric Antenna Factor (dB/m)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	-42.3	9.2

17.6 *Correction factors for Biconical Antenna EMCO Model 3110B serial 9912-3337*

Frequency [MHz]	AF [dB/m]
30.0	14.18
35.0	13.95
40.0	12.84
45.0	11.23
50.0	11.10
60.0	10.39
70.0	9.34
80.0	9.02
90.0	9.31
100.0	8.95
120.0	11.53
140.0	12.20
160.0	12.56
180.0	13.49
200.0	15.27

17.7 *Correction factors forLog Periodic Antenna EMCO Model 3146 serial 9505-4081*

Frequency [MHz]	AF [dB/m]
200.0	11.47
250.0	12.06
300.0	14.77
400.0	15.77
500.0	18.01
600.0	18.84
700.0	20.93
800.0	21.27
900.0	22.44
1000.0	24.10